Chinese Political and Economic Governance System and the Imbalance between Consumption and Investment

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Abstract

The Chinese government has been pursuing economic growth under the guidance of "growth is a hard principle". In the context of the Chinese political and economic governance system, local governments have employed the overtaking strategy (placing primary emphasis on the development of capital and technology-intensive industries) and the real estate development strategy to push for economic growth and fiscal revenue growth. This led to a repressed labor share and an elevated capital and government share in primary and secondary income distribution structure. Using the empirical strategy of Acemoglu et al. (2003), we confirm that the development strategies have shaped an imbalanced consumption-investment structure through primary and secondary income distribution structure as well as other channels. It suggests that the Chinese government will be able to accomplish China's transition from an investment-led growth model to a consumption-based growth model only if it modifies its political and economic governance system and removes the distortions in development strategies.

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1. Introduction

China's growing current account surplus has been a hot topic for both economic analyses and policy debate (Blanchard, 2005; Yu, 2007; Goldstein and Lady, 2008). It has been widely regarded as one major factor contributing to global economy imbalances and the global financial crisis triggered by the U.S. subprime credit crisis (Kawai and Zhai, 2009). In this view, China's large current surplus and investment in the U.S. Treasury bonds helped lower the U.S. interest rates and caused property and equity market bubbles in the U.S., which then led to the subprime credit crisis and the global financial crisis (Krugman, 2009, 2010). Thus, the rebalancing of the U.S. and China bilateral trade balances is considered a prerequisite for the sustained global recovery (Goldstein, 2010).

This undertaking, however, requires an understanding of what are the fundamental reasons for China's growing current account surplus. In our view, China's external imbalances coexist with its internal imbalances, both of which stem from, to a large extent, the "growth first strategy" of the Chinese government and the resultant income distribution structure favoring capital and government instead of labor. It is widely documented that the ruling Chinese Communist Party (CCP) and the public reached an implicit social contract in which the government promised to deliver rapid economic growth in return for the acceptance of the public of an authoritarian political regime. To achieve the goal of promoting economic growth, the CCP has established a regionally decentralized authoritarian regime characterized by political centralization and economic decentralization. The central leadership employs

promotion tournament and tax sharing system to motivate regional bureaucrats to pursue rapid local economic growth. Naturally, regional bureaucrats adopt the overtaking strategy, i.e., to place primary emphasis on the development of capital and technology-intensive industries, and the real estate development strategy, to stimulate local economic growth. As a consequence, these strategies led to an income distribution structure biased toward capital and government and against labor. A repressed labor share and an elevated capital and government share would discourage consumption and encourage savings and investment, resulting in a salient feature of internal macroeconomic imbalances, that is, the consumption-investment structure imbalances. Moreover, this internal imbalance coexists with external imbalance. Overinvestment and underconsumption enlarged the gap between aggregate supply and effective demand (Lin et al., 2010; Wang and Fan, 2009). The insufficiency of domestic consumption demand pushed firms to export their products to overseas markets so that production surplus has turned into trade surplus. Hence, the phenomena of the overinvestment and underconsumption, high return on capital (Bai et al., 2006), high enterprise and government savings in China, and high trade surplus are endogenous to the overtaking strategy and the real estate market development strategy generated by the Chinese political and economic governance system. This in turn helps us solve some puzzles about the Chinese economic structure adjustment and global economy rebalancing, i.e., why the Chinese central government's efforts to increase domestic household consumption failed miserably and why it is so difficult for China to transform its model of economic growth from an investment-led one to a

consumption-based one.

Using province-level panel data set over the period 1996-2007, we show that the proxy indicators of the overtaking strategy and the real estate development strategy have resulted in an imbalanced consumption-investment structure. One important channel is the biased income distribution structure that favors capital and government. In addition, the government's development strategies affect the consumption-investment structure through other channels. Our study points out that the Chinese political and economic governance system, which was widely acclaimed as the institutional foundation for China's economic miracle in the past three decades, has also generated serious distortions in primary and secondary income distribution structure, which is a major source of income distribution inequality and social tensions. This directly contributes to underconsumption and overinvestment, and generates enormous difficulties for China's transition from an investment-led growth model to a consumption-based growth model in the current China.

In our analysis, we also take into consideration how the consumption–investment structure evolves with the level of economic development and demographic structure. We expect to observe a U-shaped relationship between consumption ratio and GDP per capita and an inverted U-shaped relationship between investment ratio and real GDP per capita, and a U-shaped relationship between consumption ratio and the aged dependency ratio and an inverted U-shaped relationship between investment ratio and the aged dependency ratio. Our analysis confirms this prediction.

This paper makes the following contributions to the literature. First, we provide a

coherent framework for understanding both the internal imbalance, i.e., the unbalanced consumption-investment structure, and the external imbalance, i.e., the growing trade surplus, in China.

Second, following the empirical strategy of Acemoglu et al. (2003), we confirm that the Chinese political and economic governance system has shaped an imbalanced consumption-investment structure through the biased income distribution structure as well as other channels. It suggests that getting the incentives in the governance system right and removing the distortions in the primary income distribution structure are necessary to achieving a consumption-based growth model in China.

Third, this study enriches the literature on the macroeconomic imbalances of China by emphasizing their institutional foundations. A growing literature has addressed the reasons for China's external macroeconomic imbalances, which may be broadly grouped into six categories: measurement errors (Zhang, 2009), savings and investment gap (Feenstra et al., 1999; Bernanke, 2007; Chinn and Ito, 2007; Zhou, 2009; Woo, 2006), industrial relocation (Lardy, 1994, 2006; Greenspan, 2005; Li and Li, 2006), by-product of policies promoting growth (Corden, 2009), exchange rate distortion (Krugman, 2009, 2010; Goldstein, 2010) and imbalances between consumption and investment (Blanchard, 2005; Lin et al., 2010; Lin, 2011; Huang and Tao, 2010; Huang, 2010a; Huang, 2010b; Huang and Wang, 2010; Wang and Fan, 2009; Fang and Jin, 2010). Though each category provides valuable insights, no much work has linked explicitly the Chinese political and economic governance system with China's macroeconomic imbalances.

The rest of this paper is organized as follows. Section 2 develops our hypotheses in detail. Section 3 introduces data and lays out the econometric models and estimation methods. Section 4 discusses the results of empirical tests of the abovementioned hypotheses. The final section concludes and offers some important policy implications.

2. Hypothesis Development

2.1. The Overtaking Strategy and Consumption-Investment Imbalances

It is observed that there is a substantial shift in development policies pursued by local governments around the mid-1990s (Cai, 2009; Bergsten et al., 2009; Rodrik, 2006, 2010；Anderson，2008). Before then, local governments promoted labor-intensive industries, which is consistent with China's comparative advantage in the global economy. Afterwards, local governments pursued an overtaking development strategy by promoting capital and technology-intensive industries, which is deviant from China's comparative advantage.

This transition in development strategy coincided well with the formulation of the growth-first strategy of the central leadership. The late Chinese paramount leader, Deng Xiaoping, had a tour of South China and gave a series of speeches in early 1992. He adopted a pragmatic approach in emphasizing that the primary task of Chinese government was to pursue economic growth, which was a hard principle. Clearly, the Chinese leadership realized that the CCP did not have procedural legitimacy in keeping the monopoly of political power so that it must deliver superior performance in economic growth to win performance legitimacy (Jefferson and Zhang, 2008). Otherwise, the regime could hardly be maintained.

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A regionally decentralized authoritarian system has laid institutional foundation for the fulfillment of the growth-first strategy. China is characterized by highly centralized political and personnel control at the national level, and a decentralized administrative and economic system at the provincial and local levels (see, e.g., Blanchard and Shleifer, 2001；; Clarke, Murrell, and Whiting, 2008; Xu, 2011). This allows the central government to motivate local bureaucrats to achieve high growth targets through promotion tournament. It is documented in the literature that, in order to achieve the goal of the growth-first strategy, the political appointments and promotions of regional and local bureaucrats were based on their performance in promoting economic growth and their performance relative to that of their immediate predecessors (Tsui and Wang，2004; Li and Zhou, 2005; Chen et al., 2005). One important method of accelerating local GDP growth is to adopt an industrial policy that places primary emphasis on the development of capital and technology-intensive industries instead of labor-intensive ones (Peneder, 2003; Lin and Chang, 2009; Rodrik, 2006, 2010; Hausmann et al., 2007). In the traditional neo-classical growth model, the accumulation of capital and capital deepening play a vital role in promoting output growth, which is largely verified by subsequent empirical studies (see, e.g., Mankiw, Romer and Weil, 1992). Recently, in examining the world growth experience, Jorgensen and Vu (2009, 2010) show that approximately 40-50% of world growth can be attributed to the accumulation and deployment of capital. Surprisingly, the use of labor input and productivity growth contribute only 25-33% and 20-35% respectively. Hence, the growth experience of the world economy has testified to the

importance of capital and technology-intensive industries in raising GDP growth. Thus, it is not surprising that local bureaucrats with career concerns and facing the pressure of promotion tournament gave priority to the development of capital and technology-intensive industries.

At the same time, the tax sharing system reform also strengthened the incentives of local bureaucrats to promote capital and technology-intensive industries. On the one hand, the central government has centralized tax revenues to a large extent through the tax sharing reform, but at the same time, the responsibilities of local governments for local public expenditure largely remained intact. This generated mounting pressures on the fiscal capacity of local governments, which forced local bureaucrats to explore new avenues for raising tax revenues. Local governments understandably strove to develop capital and technology-intensive industries that could swiftly raise local GDP growth and tax revenue growth. On the other hand, the sharing scheme of production-based value added taxes (VAT) is the cornerstone of the tax sharing reform between the central and local governments. The production-based VAT is divided between the central and local governments at a ratio of 75:25 as a basis rate. If the local government collects an amount of value-added taxes more than the contracted target, the division between the central and local governments will follow the ratio of 52.5:47.5, which is much more favorable to the local government due to the tax rebate scheme. These taxation schemes further motivate local governments to develop capital and technology-intensive industries because these industries typically require substantial fixed asset investments that could forcefully

generate GDP growth and VAT revenues.

In a nutshell, under the guidance of the growth-first development strategy, the regionally decentralized authoritarian system in China has generated bureaucratic promotion tournament on the basis of local economic growth record, which encouraged local bureaucrats to promote tirelessly the development of capital and technology-intensive industries. This incentive is reinforced by the tax-sharing system reform that started in 1994. They form the institutional foundations for the local development strategy that gives priority to capital and technology-intensive industries. Only by pushing hard those capital and technology-intensive industries are local bureaucrats able to achieve high growth in local GDP and local tax revenues, which in turn enhance the promotion prospects of local bureaucrats and relieve local fiscal expenditure burden.

As shown in Figure 1, the proportion of asset value of heavy industry in the total asset value of industries has remained above 65% since 1994 and displayed an upward trend. In 1994, the ratio was around 65%, but it rose to 71% in 2003 and nearly 77% in 2009. The proportion of annual average net value of fixed assets of heavy industry in that of all industries exhibited a similar pattern.

The capital and technology-intensive industries have also contributed a substantial and an increasing share in industrial value added. Figure 2 shows that the ratio of value added of heavy industry to total industrial value added in China has remained above 60% in almost all years since 1994, and it reached nearly 66% in 2003, and 70% in 2007.

Consequently, it is natural for the capital and technology-intensive industries to play a leading role in generating tax revenues. Figure 3 illustrates that the value added tax payable of heavy industry accounts for a proportion of 65%-75% in the period 1994-2009. Similarly, the proportion of total tax payable of heavy industry in that of all industries has remained above 56% in the period 1994-2009, and exhibited a rising trend since 1998, reaching 68% in 2009.

The overtaking strategy consists of a series of industrial policies to support the development of capital and technology-intensive industries. This strategy is expected to raise the share of budgetary revenues and capital income in the national income and reduce that of labor income. On the one hand, the overtaking strategy raises the amount of capital employed and the expected return on capital so as to increase the share of capital income in GDP. According to the neo-classical economic theory, the share of labor income is affected by the capital-output ratio and the elasticity of substitution between labor and capital in the production function. When the substitution elasticity between capital and labor is larger than one, an increase in the capital-output ratio is accompanied by a decrease in labor's share in income. In other words, when one unit increment in capital use crowds out more than one unit of labor, the income share of labor would decline (Bentolila and Saint-Paul, 2003). It is widely documented in the literature that capital and unskilled labor are substitutes whereas capital and skilled labor are typically complements (Schneider, 2011). Under China's overtaking strategy, the industrial development biased toward capital and technology-intensive industries typically means a large degree of substitution of capital for

unskilled labor. Recent empirical studies find that the elasticity of substitution between labor and capital was greater than 1 in 28 industries in the period 1996-99 and in 20 industries in the period 2000-5 (Yuan and Li, 2008). Therefore, the overtaking strategy might well result in a declining labor share and a rising capital share in income by encouraging resources to flow to capital and technology-intensive industries.

In addition to increasing capital employment, the overtaking strategy also raises the return on capital. (1) Local governments took a wide range of measures to lower the costs of doing business. They provide preferential tax treatment, repress land use fees, offer fiscal subsidies, and overlook environmental protections to provide favorable treatment for investors. One striking aspect is that local governments were enthusiastic with establishing economic and/or high-tech industry development zones, and granted the enterprises engaged in capital and technology-intensive industries therein with many favorable treatments. (2) Local governments spared no effort to improve infrastructure facilities. This could attract foreign direct investment (FDI) (Zhang et al., 2007), and could directly create demand for the products of capital and technology-intensive industries and boost local GDP growth. Consequently, it is documented in the literature that the structure of local government expenditure is highly biased toward infrastructure investment rather than those related to social welfare, which has weakened the social safety net for local residents and intensified households' motive for precautionary savings (Fu and Zhang, 2007; Nitikin et al., 2011). (3) Moreover, China's state-dominated financial system with financial

repression helped lower the cost of capital. The tight restriction on capital outflow and the lack of alternative investment instruments enable household savings deposited in banks to keep rising, leading to an increasing supply of capital. The interest rate regulations kept costs of loans at a low level. These factors pushed down costs of capital (Huang, 2010), and facilitated local governments to provide low-cost financing from the state-controlled financial system to investors. (4) In addition, local bureaucrats often helped maintain monopoly positions for the firms in local markets through market segmentation. By restricting the flow of products from other regions, local governments allowed local enterprises to retain market monopoly power so as to achieve a high rate of return on investment (Lin and Liu, 2004). These actions, when combined together, have stimulated the development of capital and technology-intensive industries by raising the return on capital and the share of capital income in value added [1]

On the other hand, the overtaking strategy steered resources away from labor-intensive industries towards capital-intensive ones, repressing the expansion of demand for labor and employment. Moreover, local governments did not make sufficient efforts to uphold labor rights. To push for GDP growth, local governments went all out to attract investment. When conflicts between capital and labor arise, local governments give priority to protecting the interests of capital while largely overlooking workers' rights (Lu and Gao, 2010). Since the overtaking strategy facilitates capital and technology-intensive industries to raise funds from the state-

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Rodrik(2010) expressed similar viewpoints.

dominated financial system, medium and small-sized enterprises in labor-intensive industries typically found it hard to obtain loans. Their investment relied heavily on retained profits. To enlarge retained earnings, those enterprises typically squeezed labor compensation and lengthened working hours. At the same time, the fierce competition in labor-intensive industries has further forced enterprises to keep a low wage rate and fringe benefits for labor. These factors slowed down the expansion of labor force and the rise in wage rate and fringe benefits for workers, resulting in an increasing capital share and a diminishing labor share in labor-intensive industries. Therefore, we can infer that the overtaking strategy will increase capital share and reduce labor share in GDP.

The overtaking strategy is also expected to raise the share of government income. Firstly, capital and technology-intensive industries often have higher value added from which governments can collect a larger amount of value added taxes. Secondly, taxation capacity variation across industries also matters. Value added taxes are the major source of government income from primary income distribution. It is easier for tax authority to collect taxes from firms operating in capital- and technology-intensive industries than those in labor-intensive industries. Capital- and technology-intensive industries often have a higher proportion of large firms than do labor-intensive industries. It is widely documented in the literature that in developing countries large firms are typically more visible and are subject to more intensive oversight of governments than do small firms. When the governments have relatively weak taxation capacity and limited resources for tax enforcement, taxes and

regulations are often enforced only among those large firms (Tybout, 2000). Hence, firms in capital- and technology-intensive industries are less likely to evade tax payment, and the bias of industrial development toward these firms would result in a larger government share in primary income distribution. Thirdly, the design of the value added tax system creates distortions. By 2008, the production-based value added tax does not give deduction to the previous tax payment for fixed asset purchases so that there exists double taxation of fixed asset depreciations (Guo and Lv, 2010). For capital and technology-intensive industries, this double taxation is much more serious because of the larger purchase value of fixed assets, and consequently government income share is also higher. Hence, preferential development of capital and technology-intensive industries is expected to raise the government share of income.

So far, we have demonstrated that the overtaking strategy would result in a primary income distribution structure biased toward capital and government and against labor. However, it is noteworthy that the overtaking strategy would also result in a secondary income distribution structure biased toward capital and government and against labor. The secondary income distribution structure results from the redistribution efforts of governments through tax collection and fiscal transfers. According to Lv and Guo (2012), the secondary income distribution structure differs from the primary one in China mainly because of the corporate income taxes levied on capital, the social insurance payments collected from labor, and government transfers to labor. In the context of our framework, the overtaking strategy raises

income accruing to capital, which in turn increases the share of corporate income tax and that of government income in GDP in the secondary income distribution structure. At the same time, local government expenditure under the overtaking strategy puts a much larger weight on productive investment such as infrastructure investment than on social welfare improvement. Moreover, the demographic dividends, i.e., the decline in population growth rate coexists with a larger size of working age population than that of aged population, enable social insurance payments collected from labor to exceed that withdrawn by labor. As a result, government transfers to labor and social welfare expenditure share in GDP remain small (Fu and Zhang, 2007). Thus, we expect that, compared with the primary income distribution structure, the overtaking strategy will increase the government share and reduce the labor share in national income after redistribution. Across provinces, those pursuing the overtaking strategy more intensively would have a particularly larger government share and lower labor share in income. On the other hand, relative to the primary income distribution structure, corporate income tax might reduce the share of capital in national income in the secondary income distribution structure, which is confirmed by Lv and Giuo (2012). Nonetheless, because corporate income tax is a type of proportional tax, it would not change the relative size of capital income share between different provinces pursuing the overtaking strategy. Those provinces pursuing the overtaking strategy more intensively are expected to have a higher capital share in the secondary income distribution structure than those less intensively.

Consequently, we expect that the government's redistribution would not benefit

much the labor and the cross-province variation in the secondary income distribution structure would be fairly consistent with that in the primary income distribution. Figures 4-6 present the scatterplots of province-level annual shares of labor, capital and government in the primary income distribution structure (on the horizontal axis) and the secondary income distribution structure (on the vertical axis) in the sample period. Quite strikingly, the labor income share is highly consistent before and after redistribution. The capital income share and the government income share are also quite consistent before and after government income redistribution, although occasionally the capital share is slightly lower and the government share is slightly higher in the post-redistribution period.

The largely same pattern changes in the primary and secondary income distribution structure are expected to contribute to an imbalanced consumption-investment structure, that is, the ratio of consumption to national income would be lowered and that of investment to national income be raised. On the one hand, a declining labor share in GDP would reduce the share of household disposable income in GDP because labor income constitutes the most basic form of household disposable income for most households. Recent studies (see, e.g., Aziz and Cui, 2007; Guo and N'Diaye, 2010) have shown that low disposable household income is a principal culprit of low consumption in the Chinese economy. On the other hand, capital income typically has a lower propensity to consume than does labor income. In the context of the overtaking strategy, governments in China prefer productive investment

to government consumption, especially social welfare provision. [2]Hence, a higher share of government and capital income in GDP is expected to be associated with a higher ratio of investment to GDP and a lower ratio of consumption to GDP.

Hypothesis 1: The regionally decentralized authoritarian regime in China generates an overtaking strategy placing primary emphasis on the development of the capital and technology-intensive industries, which leads to primary and secondary income distribution structure biased toward capital and government and against labor., weakens the social safety net, softens budget constraint, and results in an imbalanced consumption-investment structure.

2.2. The Real Estate Development Strategy and Consumption-Investment Imbalances

Besides the overtaking strategy, the Chinese political and economic governance system has given rise to real estate development scheme as another strategy for local governments to achieve growth in GDP and fiscal revenues. Under the tax-sharing reform scheme, local governments are given land lease revenues as extra-budgetary funds to alleviate their fiscal burden (Nitikin et al.,2011; Liu and Sun; Su et al.,2012). As a natural result, local governments have vehemently pursued the development of the real estate sector. Property market development and the increase in housing market prices can help land lease generate maximum fiscal revenues (Liu and Sun),

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[2] However, it should be emphasized that although a rising share of tax revenues in national income has spurred their tendency to expand investment, local governments that adopt the overtaking strategy will not be constrained by the amount of budgetary revenue. In order to increase investment, they will seek funds from land transfer revenue-based extra-budgetary revenue and land-based mortgage loans (Nitikin et al., 2011).

which provides funds for local governments to pursue various political and economic objectives，especially government-initiated investment in infrastructure, productive activities, etc. Property market development can also stimulate the growth of the related upstream and downstream capital-intensive industries, which gives further impetus to local GDP growth and fiscal revenue growth. Consequently, the real estate development strategy directly contributes to the boom in investment, which reinforces the imbalanced consumption-investment structure. Furthermore, like the overtaking strategy, real estate development strategy is also expected to generate primary and secondary income distribution structure biased toward capital and government and against labor, which would contribute to a distorted consumption-investment structure characterized by underconsumption and overinvestment. It is noteworthy that local governments' land lease system provides an important institutional support to real estate development strategy. By keeping monopoly power over the primary market for land, local governments have strong incentives and discretion to raise land prices by controlling the size of land supply through the land reserve system. Because real estate assets are relatively scarce, illiquid, and of fixed supply in the short run, the increase in land prices was in turn transmitted to housing prices and the burden was borne by house purchasers (Su et al.,2012).

Local governments have adopted various measures to boost real estate market development and raise housing prices. In addition to fine-tuning land supply, local governments stimulated the household demand for housing by phasing out public housing provision scheme in 1998, accelerating the urbanization process, adjusting

taxation strategies, forming collusion with property developers and banks in pushing up housing prices, etc. The dramatic rise in housing prices has encouraged households to form expectations for future increases (Liu and Sun), which induced large amounts of capital to flow into the property market, leading to a spiral increase in housing prices and the expansion of capital-intensive industries. This kind of expectation not only stimulated speculative investment demand for property, but also strengthened the propensity of average households to save for the purpose of property purchase, which further caused consumption to shrink and investment to expand. Hence, we have the following hypothesis.

Hypothesis 2: The regionally decentralized authoritarian regime in China generates real estate development strategy, which leads to primary and secondary income distribution structure biased toward capital and government and against labor , stimulates speculative investment demand through expectations of surging property prices, strengthens households' motive for precautionary savings, and generates huge land lease revenues,and therefore, contribute to an imbalanced consumption-investment structure.

In summary, Hypotheses 1-2 argue that the overtaking strategy and the real estate market development strategy generated by the Chinese political and economic governance system are the fundamental institutional foundations for the imbalanced consumption-investment structure, i.e., under-consumption and over-investment. Meanwhile, albeit the existence of other mechanisms, the distorted primary and secondary income distribution structure reflected in a repressed share of labor income

and an elevated share of capital and government income in national income serve as a major mediating channel for the two development strategies to shape the consumption-investment structure.

2.3. Economic Structural Transformation, Demographic Characteristics, and the Consumption-Investment Structure

In addition to the institutional reasons, consumption and investment structure may evolve with economic structure transformation following economic development[③]. Generally, labor share in value added is smaller in the secondary industry than in other industries. We therefore expect that labor share will decline when an economy transforms from an agriculture-based one to a secondary industry-based one, but will rise when the economy moves toward a tertiary-industry -based one. Thus, labor share in GDP is expected to show a U-shaped relationship with real GDP per capita (Chenery, 1982; Li et al., 2009). Similarly, because capital and government shares are higher in the secondary industry than in other industries, it is not difficult to infer an inverted U-shaped relationship between both capital and government shares and real GDP per capita. Since labor share is of utmost importance to household consumption share in GDP, we expect that consumption rate will display a U-shaped relationship while investment rate an inverted U-shaped relationship with

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[③] Some earlier studies (Rostow,1960;Chenery and Syrquin,1975) argued that at a lower development level, the share of the secondary industry value added in GDP is smaller than that of primary industry, resulting in a lower social organic constitution of capital and therefore a lower investment rate. Then, the investment rate will rise when an economy transforms from a primary industry-based one to a secondary industry-based one, but will decline when the economy moves toward a tertiary-industry-based one. Here, we give a different explanation for the mechanisms behind the effects of structural transformation.

the real GDP per capita (economic development stages).

Hypothesis 3: *Ceteris paribus*, the consumption rate and investment rate display a U-shaped and an inverted U-shaped relationship with real GDP per capita, respectively.

It is noteworthy that besides Hypotheses 1-2, Hypothesis 3 also implies that economic structure transformation might shape the consumption-investment structure through the primary income distribution structure, that is, economic structure shapes the relative shares of labor, capital and government in national income so as to affect the consumption-investment structure.

Moreover, consumption-investment structure is associated with the demographic characteristics. When the dependency ratio, especially the old-age dependency ratio, is small, workers have less need for savings to support the elderly, which would expand consumption. When the old-age dependency ratio rises, the working population faces a higher burden and tends to consume less and save more. Since at this stage the working population still accounts for a large share of the whole population, the decreasing propensity to consume would lead to a shrinking consumption rate and a rising savings rate. When the old-age dependency ratio exceeds some critical level, the society will enter a phase of dissaving, i.e., the consumption (savings) rate of households would increase (decrease).

Hypothesis 4:*Ceteris paribus*, the consumption rate and investment rate display a U-shaped and an inverted U-shaped relationship with the old-age dependency ratio, respectively.

3. Data and Methodology

3.1. Model Specifications

To test Hypotheses 1-4, we conduct province-level panel data regressions. Our analysis consists of several steps. Firstly, we examine the impacts of the overtaking strategy and the real estate development strategy as well as other factors on the consumption-investment structure. We carry out regressions of the following three specifications (Equations 1-3).

$Consumption\ ratio_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate\ Development\ Strategy_{it}$
$+ \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sqit} + \beta_5\ Old\ Age\ Dependency\ Ratio + \beta_6\ Old\ Age$
$Dependency\ Ratio_{-sqit} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (1)

$Investment\ ratio_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate\ Development\ Strategy_{it} +$
$\beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sqit} + \beta_5\ Old\ Age\ Dependency\ Ratio + \beta_6\ Old\ Age$
$Dependency\ Ratio_{-sqit} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (2)

$Consumption\ ratio/Investment\ ratio_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate$
$Development\ Strategy_{it} + \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sqit} + \beta_5\ Old\ Age\ Dependency$
$Ratio + \beta_6\ Old\ Age\ Dependency\ Ratio_{-sqit} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (3)

Here we gauge the consumption-investment structure by three indicators. *Consumption ratio* is the proportion of household consumption expenditure in GDP; *Investment ratio* is the fraction of gross fixed capital formation in GDP. To better capture the relative strength of consumption vis-à-vis investment, we also include the ratio of consumption to investment.

Secondly, we investigate the impacts of the overtaking strategy and the real estate development strategy, along with other factors, upon income distribution

structure (Equations (4)-(7)).

$Labor\ Income\ Share_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate\ Development$

$Strategy_{it} + \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sq\,it} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (4)

$Capital\ Income\ Share_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate\ Development$

$Strategy_{it} + \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sq\,it} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (5)

$Gov't\ Income\ Share_{it} = \beta_1\ Overtaking\ Strategy_{it} + \beta_2\ Real\ Estate\ Development$

$Strategy_{it} + \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sq\,it} + \gamma\ Control_{it} + \alpha_i + \varepsilon_{it}$ (6)

$Labor\ Income\ Share/\ (Capital\ Income\ Share + Gov't\ Income\ Share)_{it} = \beta_1\ Overtaking$

$Strategy_{it} + \beta_2\ Real\ Estate\ Development\ Strategy_{it} + \beta_3\ GDPPC_{it} + \beta_4\ GDPPC_{-sqit} + \gamma$

$Control_{it} + \alpha_i + \varepsilon_{it}$ (7)

Here *Labor income share* is the fraction of GDP serving as labor compensation; *Capital income share* is the ratio of the sum of operating surplus and fixed asset depreciation to GDP; and *Government income share* is the proportion of net production tax in GDP. To capture the relative strength of labor income share, which is instrumental to the determination of household consumption, we also include a dependent variable of the ratio of labor income share to the share of capital and government income.

Finally, we test whether the government strategies have shaped the consumption-investment structure through the income distribution structure. To do so, we follow the strategy of Acemoglu et al. (2003) to conduct a series of regression analyses. We first put *Labor Income Share/ (Capital Income Share+ Gov't Income Share)* into regression equation (3). Then, to assess whether the overtaking strategy and real estate

market development strategy affect the consumption-investment structure via income distribution structure, we adopt the following criteria:

1. If the overtaking strategy and real estate market development strategy lose statistical significance or their statistical significance and/or the magnitude of the estimated coefficients have dropped substantially, while the income distribution structure variable is statistically significant, we can regard primary income distribution structure as a primary mediating channel for the impact of the government strategies on the consumption-investment structure. Since the primary income distribution structure is the main mediating channel, these results would suggest that getting primary income distribution structure right is likely to be an important policy priority.

2. If the variable of income distribution structure is not statistically significant, it is not regarded as one of the channels linking government strategies to an imbalanced consumption-investment structure. In this case, the effect of government strategies on the consumption-investment structure is likely to be working through a variety of other channels.

3. If both income distribution structure and the overtaking strategy and real estate market development strategy are statistically significant, and the statistical significance and magnitude of the latter estimated coefficients have not dropped substantially, we can conclude that primary income distribution structure is only one important channel, but it is not the primary mediating channel via which government strategies translate into an imbalanced consumption-investment structure.

In panel data regression estimation based on Equations (1)-(7) above, we use the method of Driscoll and Kraay (1998) that deals with cross-sectional dependence. If cross-sectional dependence exists but is not addressed, regressions would result in misleading conclusions. Compared with the feasible generalized least squares (FGLS) method, this method could more effectively deal with the problems of autocorrelation, heteroskedasticity, and cross-sectional correlation in small samples where the number of cross-section units is larger than that of time periods.

3.2. Data and Variables

Our empirical analysis is mainly based on panel data from 27 provinces in China in the period 1996-2007. Because of lack of consistent data in the period covered, our sample does not include four province-level administrative regions, i.e., Chongqing, Hainan, Sichuan, and Tibet. Detailed data sources are reported in Appendix A and summary statistics of all key variables are provided in Table 1.

We use three alternative indicators as proxy measures of the intensity of local governments' pursuit of an overtaking strategy. The first one is the technology choice index proposed by Lin (2009), *TCI*. It is defined as *TCI*=(AVI/LI)/(GDP/L) ,where AVI is the value added of the high-technology industries, GDP is the total added value, LI is number of employees in high-technology industry and L is the total number of employees in the province. If a government adopts an overtaking strategy to promote capital and technology-intensive industries, the *TCI* in this province is expected to be larger than otherwise. Under an overtaking strategy, the local government typically granted some monopoly power in output market for those enterprises engaged in capital and technology-intensive industries. At the same time, local governments often provided subsidies and cheap loans for them to lower their

investment and operational costs. These policies tend to raise AVI in the *TCI* indicator. On the contrary, these capital and technology-intensive industries can absorb a relatively small amount of labor (LI), which, coupled with the above factor, helps raise the value of the *TCI* indicator. Hence, when holding income and other conditions constant, a higher value of the *TCI* index (named as variable *the overtaking strategy[1]*) corresponds to a more intensive pursuit of the overtaking strategy.

Based on Hypothesis 1, we expect that the estimated coefficients of *the overtaking strategy[1]* are statistically significant and negative in Equations (1) , (3), (4) and (7), and statistically significant and positive in Equations (2), (5) and (6).

Nevertheless, this *TCI* index has its weaknesses. It is built upon the basis of industrial structure, which might be affected by the natural evolution process of structural transformation in economic development as well as local government policies. To capture more powerfully the intention of local governments to pursue the overtaking strategy, we construct two indices based on local economic and technological development zones as proxy variables for the overtaking strategy. They are the logarithm of the number of local development zones *(the overtaking strategy[2])* and the logarithm of the land area of local development zones *(the overtaking strategy[3])*, respectively, which are taken from the *Directory of Approved Development Zones in China* (2006) **.** Table **2** lists the number and land area of the development zones officially approved by either the central government (the State Council) or provincial governments. It shows that the growth rate of development zones was relatively low in the first eight years. [④] Since Deng's remarks that re-launched

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[④] The first development zone was established in Guangzhou in 1984 with approval obtained directly from the State Council. The practice was originally to emulate the experience of export processing zones in other developing countries. To attract foreign investment and facilitate the import of foreign technology as well as equipment, a special land area is designated, where tax concession and other

economic reforms in 1992, there was a wave of the establishment of development zones. Under the Chinese regional decentralized authoritarian regime, local governments have very strong incentives to seek the approval of the central government (the State Council) or provincial governments for their plans of setting up development zones [5]. By the end of 2006, the total number and land area of the development zones approved by the State Council and provincial governments were 1568 and 999,350 hectares, respectively. Among them, the number of national development zones and provincial-level zones were 222 (14%) and 1,346 (86%), respectively; the land area occupied by national development zones and provincial-level zones were 236,760 (24%) and 762,590 hectares (76%), respectively.

The inventory of official development zones has included information on the nature of these zones and their distribution. This is listed in Table 3. Among the five main categories of national development zones, hi-tech industrial development zones (HIDZs) accounted for over 40 percent of the land areas covered and economic and technological development zones (ETDZs) 27 percent; export processing zones (EPZs) accounted for over 26 percent of the total in number, HIDZs 24 percent, and ETDZs 22 percent. By comparison, those approved by provincial governments were dominated by economic development zones (EDZs), which took nearly 90 percent of the land area designated. Considering that these development zones have set higher technology and capital requirements for entrant firms, we can conclude that they reflect the policy initiatives of local governments in accelerating the development of

preferential treatments are offered to foreign investors(see Lin, G(2009) for details).
[5] In 1993, the State Council formally conducted two level approve system on the establishment of development zones. i.e., the national development zones approved by the State Council, while the provincial development zones approved by provincial governments.

capital and technology-intensive industries.

We use the ratio of land lease (land transfer) revenues to budgetary fiscal revenue as a proxy for local governments' efforts to develop local real estate market. As discussed above, land lease revenues are the major source of extra-budgetary revenues for local governments. To acquire land, local governments typically exercise administrative power to appropriate land use rights at an extremely low acquisition price from farmers. Afterwards, by going through the land consolidation and reorganization process, local governments could sell the land use rights at a much higher price, from which local government reap tremendous land lease revenues. Examining the ratio of land lease revenues to budgetary revenues, we can get a sense of how important land transfer income is to local governments and thus how hard local governments have pushed for property market development. As shown in Table 1, the ratio of land lease revenues to budgetary fiscal income is as high as 23.75% on average, and the maximum ratio in our sample amounts to 170.47%. This shows the importance of land transfer income to local governments. According to Hypothesis 2, we expect that the estimated coefficients of real estate development strategy are negative in Equations (1) , (3), (4) and (7), and positive in Equations (2), (5) and (6).

Real GDP per capita (*GDPPC*) captures the stage of economic development of different provinces. It is derived from the data on nominal GDP per capita and the GDP deflator. To incorporate the potential nonlinear relationship (U-shaped and inverted U-shaped relations), we include both real GDP per capita and its square term (*GDPPC$_{-sq.}$*).

The old-age dependency ratio (*Old Age Dependency Ratio*) is measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in

a province (National Bureau of Statistics, 2009). To allow for the possible U-shaped and inverted-U-shaped relationship, we include both the aged dependency ratio and its squared term (Odr^2).

Besides, we also include two additional control variables in regression analysis, that is, economic openness and private economy development. The variable of economic openness is defined as the sum of exports and imports divided by GDP. The variable of private economy development is defined as the ratio of industrial production value of the non-state sector in the total industrial value (Bai et al.,2004). Economic openness may affect the bargaining power of owners of different types of factors and is expected to raise capital share and lower labor share (Harrison, 2002; Guscina, 2006). After examining over 100 countries over the period 1960-1997, Harrison (2002) finds that economic openness is negatively related to labor share in income. She argues that this is because of the stronger bargaining power of capital than that of labor in a financially-integrated world. Guscina (2006) argues that this "bargaining power" mechanism also plays an important role in generating the negative impacts of economic openness on labor share in industrialized countries. However, Diwan (2000, 2001) notes that the impact of economic openness on labor share varies from country to country, and that results are highly sensitive to the way of modeling. Theoretically, the impacts of private economy development on income shares are ambiguous. On the one hand, private economy could lower labor income share. Azmat et al. (2011) find that privatization has been an important factor in the fall of labor's share of value added over the past two decades in the network

industries in OECD countries. They argue that this occurs because publicly-owned firms have more preference for employment over profits than do privatized firms. This could apply to China in economic transition. Similarly, private economy development in China in the absence of labor rights protection might enhance the bargaining power of capital vis-à-vis labor so as to lower labor income share. On the other hand, the private sector in China is more likely to be engaged in labor-intensive industries than does the state sector. Largely denied access to the state-dominated financial system and other government favorable policies, the private sector firms find it difficult to enter capital and technology-intensive industries having a higher threshold requirement for capital. They are often forced to engage in labor-intensive industries. Consequently, private economy development could boost labor income share.

4. Empirical Results

4.1. Government Development Strategies and the consumption-investment structure in China

In Tables 4-6, we present the regression results of the impacts of government development strategies on the consumption-investment structure, i.e., results for models (1) ,(2) and (3), where we use the three different indicators of the overtaking strategy respectively. We have important findings as follows.

First, a more intensive pursuit of the overtaking strategy and the real estate development strategy is associated with a higher fraction of investment in GDP and a lower fration of consumption in GDP, and therefore a lower ratio of consumption to

investment, i.e., a more imbalanced consumption-investment structure. This is fully consistent with the predictions of Hypotheses 1-2.

Second, consistent with Hypothesis 3, household consumption ratio, investment ratio and ratio of consumption to investment exhibit a U-shaped, an inverted-U shaped and U-shaped relationship with real GDP per capita respectively. When the annual real GDP per capita is smaller (larger) than RMB 17405.1, household consumption ratio decreases (increases) with real GDP per capita. If we look at the data, we find that most provinces of China still lie in the left part of the U-shaped curve with consumption ratio declining with real GDP per capita. When the annual average real GDP per capita is smaller (larger) than RMB 19858.2, investment ratio increases (decreases) with real GDP per capita. Similarly, we find that most of provinces in China still lie in the left area of the inverted U-shaped curve.

Third, household consumption ratio, investment ratio and ratio of consumption to investment exhibit a U-shaped, an inverted-U shaped and U-shaped relationship with the aged dependency ratio respectively, which is consistent with Hypothesis 4. When the aged dependency ratio remains below (above) 14%, household consumption ratio would decrease (increase) in the aged dependency ratio. An examination of the data tells us that most provinces of China still lie in the left part of the U curve with consumption decreasing in the aged dependency ratio. Investment ratio exhibits an opposite pattern. When the aged dependency ratio is smaller (larger) than 14.1%, investment ratio would increase (decrease) in the aged dependency ratio. Similarly, we find that most provinces of China still lie in the upward movement part where

investment rising with aged dependency ratio.

Private economy development does not have robust significant effects on consumption ratio and the ratio of consumption to investment, but has significant positive effects on investment ratio. Economic openness does not have robust significant positive effects on consumption ratio and ratio of consumption to investment, but has basically significant negative effects on investment ratio.

4.2. Government Development Strategies and the Biased Factor Income Distribution Structure

To see how the Chinese political and economic governance system shapes the consumption-investment structure, we analyze how the overtaking strategy, real estate development strategy, etc. affect the structure of factor income distribution, particularly the relative shares of labor vis-à-vis capital and government in national income.

Tables 7-9 present the results on the effects of the overtaking strategy, real estate development strategy, etc. on labor share, capital share and government share in the primary income distribution. Some observations can be made. First, a more intensive pursuit of the overtaking strategy and the real estate development strategy is associated with a lower proportion of labor income in GDP and a higher proportion of capital income and government income in GDP, and therefore a lower ratio of labor income to the sum of capital and government income, i.e., a more biased primary income distribution structure. Most of the estimated coefficients are statistically significant. These findings are fully consistent with Hypotheses 1-2.

Second, as predicted by Hypothesis 3, the labor share in GDP, the capital and governmental shares in GDP and the ratio of labor income to capital and government income displays a U-shaped, an inverted-U shaped, an inverted-U shaped and U-shaped relationship with real GDP per capita.

Private economy development has significant negative effects on labor share, which is consistent with the results of Luo and Zhang (2010). As pointed out by Li et al. (2009), economic transition increases capital owners' bargaining power, resulting in a decline in the labor income share. Besides, with the reforms, redundant workers and the surplus rural labor forces enter the labor market, increase labor supply, and, thus, exert downward pressures on wages (Luo and Zhang, 2010). Economic openness has significant positive effects on labor income share, which is not consistent with the results of Luo and Zhang (2010).

Furthermore, when we use the post-redistribution shares of labor income, capital income and government income as the dependent variable respectively, we also obtain similar results. It is not surprising at all since as shown in Figures 4-6 there is a strong positive relationship between the primary and secondary income distribution structure.

4.3. Income Structure as Channels

So far we have shown that government development strategies have shaped the primary and secondary income distribution structure and the consumption-investment structure. We now turn to test whether the impacts of development strategies upon the consumption-investment structure work through the channel of the income

distribution structure. Tables 10-12 present the results of channel tests. We first present the results of the regressions of the ratio of consumption to investment on the two types of government development strategy proxy variables without including the primary income distribution structure indicators. Clearly, both strategies produce statistically significant and negative impacts on the consumption-investment ratio. Then, we add into regressions (Column 2 of the tables) the indicator of primary income distribution structure, i.e., the ratio of labor income to the sum of capital and government income. We find that the primary income distribution structure variable generates a statistically significant and positive estimated coefficient, whereas the estimated coefficients of the two government strategy proxy variables remain statistically significant, and that of the overtaking strategy drops slightly in magnitude. This indicates that the primary income distribution structure serves as one important mediating channel for the impact of government strategies on the consumption-investment structure, but it is hardly the primary channel. Finally, in column 3 of the tables, we implement the instrumental variable regression to deal with the potential concern of endogeneity of the primary income distribution structure. For example, theoretically, it could be the case that the campaign for investment by government distorts the consumption-investment structure, and raises the share of capital and government income and lowers that of labor income. To tackle this issue, we use the one-year lagged value of the primary income distribution structure indicator as an instrumental variable and conduct the two-stage fixed effects regressions on the panel dataset. Our results remain qualitatively equivalent. The

estimated coefficient of the income distribution structure variable becomes larger in magnitude, while that of the overtaking strategy indicator becomes smaller in magnitude. Compared with the results in Column 2 in the tables, the role of the primary income distribution structure as a channel to mediate the impacts of the overtaking strategy on the consumption-investment structure has increased after we conduct the instrumental variable regressions.

Furthermore, when we test whether the impacts of development strategies upon the consumption-investment structure work through the channel of secondary income distribution structure, we also obtain similar results. It suggests that the overtaking strategy and the real estate development strategy have played an important part in shaping the unbalanced consumption-investment structure. A significant part of the impacts is mediated by the distorted primary and secondary income distribution structure. In addition, Tables 10-12 also show that the overtaking strategy and real estate development strategy indicators remain statistically significant after including the primary income distribution structure indicator. This "residual significance" suggests that the "growth-first" development strategy has also contributed to the biased consumption-investment structure through other channels. For instance, the real estate development strategy has stimulated speculative investment demand through expectations of surging property prices, strengthened households' motive for precautionary savings, and generated huge land lease revenues, while the overtaking strategy has weakened the social safety net for local residents and intensified households' motive for precautionary savings , all of which raise investment and

lower consumption.

Our results suggest that getting primary and secondary income distribution structure right is not enough to achieving a consumption-based growth model in China and Chinese government should reform its political and economic governance system to motivate local governments to spend their fiscal resources on the construction of social safety net.

5. Conclusion

In this paper, we develop a coherent framework for understanding the unbalanced consumption-investment structure in China. We argue that the fundamental cause of the imbalance between consumption and investment in China is China's political and economic governance system, an institutional structure that is credited for China's rapid economic development in the past three decades. The overtaking strategy and the real estate development strategy generated by this governance system contributed tremendously to China's neck breaking economic growth, but at the same time they led to distorted income distribution structure and internal and external macroeconomic imbalances.

Using the overtaking strategy and the real estate development strategy to characterize the behavior of local governments under the regionally decentralized authoritarian system, we document a strong relationship between the two strategies and the imbalanced consumption-investment structure. The impacts of the governance system and its strategies remain on track even after considering the effects of economic structure and demographic structure transformation. Moreover, we verify

that the biased primary and secondary income distribution structure serves as an important mediating channel through which the governance system and its development strategies translate into an imbalanced consumption-investment structure. Our findings imply that the Chinese government will be able to accomplish China's transition from an investment-led growth model to a consumption-based growth model only if it modifies China's political and economic governance system and thus removes the distortions in development strategies.

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Appendix A Data sources

The data on the primary income distribution structure is taken from Lv(2012). The data to calculate household consumption ratio, i.e., household consumption expenditures, GDP, are taken from *China Compendium of Statistics 1949-2004 and China Compendium of Statistics 1949-2008* . The original data to measure investment ratio, that is, gross fixed capital formation and GDP, are from *China Compendium of Statistics 1949-2004 and China Compendium of Statistics 1949-2008* .Besides, the data used to construct the measure TCI^I(1995-2007), i.e., the data on the value added of high-technology industry, *GDP,* employees in high-technology industry, and the total employees, are from *China Compendium of Statistics 1949-2008, China Statistical Yearbook (Various years),and China Statistics Yearbook on High Technology Industry (Various years).* The number of local development zones and the area of local development zones, are taken from *Directory of Approved Development Zones in China* (2006) .The data to measure *real estate development strategy* are from *China Compendium of Statistics 1949-2008.* The original data to measure *GDPPC[@],* i.e., GDP per capita and index of GDP per capita, are from *China Compendium of Statistics 1949-2008.* The data to measure the old dependency ratio, i.e., the number of people aged 65 and over and the number of people aged 15-64, are from *China Statistical Yearbook (Various years). Open* is the sum of exports and imports divided by GDP，which are from *China Compendium of Statistics 1949-2008. Privatization* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004), which are from *China Statistical Yearbook (Various years).*

[@] 1978 is a base year.

Table 1 **Summary statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Consumption ratio	324	40.50	7.77	25.66	69.67
Investment ratio	324	42.08	11.28	24.86	82.58
Consumption ratio/Investment ratio	324	1.04	0.38	0.39	2.17
Labor Income Share	324	49.14	7.83	32.8	69.4
Capital Income Share	324	36.51	7.30	17.2	50.5
Gov't Income Share	324	14.35	3.02	7.6	26.6
Overtaking Strategy[1]	324	3.58	1.69	0.65	10.03
Overtaking Strategy[2]	296	2.96	0.93	0	5.14
Overtaking Strategy[3]	296	9.68	0.85	7.35	11.39
Real Estate Development Strategy	324	23.75	25.76	0.35	170.47
GDPPC	324	3631.11	3399.98	639	25268
Old Age Dependency Ratio	324	11.02	2.55	6.13	21.88
Open	324	32.21	41.43	3.2	176.5
Private economy development	324	44.69	20.67	10.12	88.16

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy[1]*, *Overtaking Strategy[2]*，*Overtaking Strateg[3]* refer to the overtaking strategy, which are measured by the ratio of the added value of high-technology industry per capita to GDP per capita, the logarithm of the number of local development zones, and the logarithm of the area of local development zones, respectively. *Real Estate Development Strategy* represents real estate market development strategy, which is measured by the ratio of land lease revenues to budgetary fiscal revenue. GDPPC is real GDP per capita. *Old Age Dependency Ratio* is measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province. *Open* is the sum of exports and imports divided by GDP. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004)

Table 2   Growth of development zones in China, 1984-2006

	Number				Area(thousand hectares)			
	National	*%*	*Provincial*	*%*	*National*	*%*	*Provincial*	*%*
1984	9	90.00	1	10.00	18.86	96.32	0.72	3.68
1986	11	91.67	1	8.33	19.24	96.39	0.72	3.61
1987	12	92.31	1	7.69	19.26	96.40	0.72	3.60
1988	13	65.00	7	35.00	20.59	78.88	5.51	21.12
1989	16	66.67	8	33.33	29.60	81.30	6.81	18.70
1990	18	60.00	12	40.00	33.88	77.67	9.74	22.33
1991	46	69.70	20	30.30	85.10	85.29	14.68	14.71
1992	116	41.43	164	58.57	163.71	59.43	111.76	40.57
1993	130	32.10	275	67.90	180.50	48.45	192.04	51.55
1994	133	26.60	367	73.40	191.91	43.64	247.82	56.36
1995	136	25.37	400	74.63	199.32	42.46	270.06	57.54
1996	138	24.56	424	75.44	199.70	41.25	284.46	58.75
1997	139	23.56	451	76.44	201.91	40.09	301.76	59.91
1998	139	22.79	471	77.21	201.91	38.94	316.64	61.06
1999	139	22.24	486	77.76	201.91	38.14	327.50	61.86
2000	166	24.48	512	75.52	217.55	38.67	345.05	61.33
2001	173	24.06	546	75.94	224.21	37.92	366.98	62.08
2002	183	22.73	622	77.27	228.51	35.81	409.63	64.19
2003	197	22.39	683	77.61	231.94	34.03	449.61	65.97
2004	203	22.91	683	77.09	232.60	34.10	449.61	65.90
2005	222	24.53	683	75.47	236.76	34.49	449.61	65.51
2006	222	14.16	1346	85.84	236.76	23.69	762.59	76.31

Source:Lin, G(2009),pp.188.

Table 3 Structural characteristics of China's development zones, 2006

	No.	%	Area(thousand ha)	%
National	**222**	**100.00**	**236.76**	**100.00**
Economic Technological Development Zone	**49**	**22.07**	**62.81**	**26.53**
Hi-tech Industrial Development Zone	**53**	**23.87**	**96.35**	**40.70**
Tax Concession Zone	**15**	**6.76**	**3.97**	**1.67**
Export Processing Zone	**58**	**26.13**	**17.07**	**7.21**
Border Economic Cooperation Zone	**14**	**6.31**	**7.85**	**3.31**
Others	**33**	**14.86**	**48.71**	**20.57**
Provincial	**1346**	**100.00**	**762.59**	**100.00**
Economic Development Zone	**1231**	**91.46**	**681.93**	**89.42**
Hi-tech Industrial Park	**65**	**4.83**	**47.63**	**6.25**
Special Industrial Park	**50**	**3.71**	**33.03**	**4.33**
Total	**1568**		**999.35**	

Source: Lin, G(2009),pp.188 and authors's calculation.

Note: Others include various development zones established for tourism, resorts, recreation, logistics, finance,

trading and industrial developments.

Table 4 Growth-First Development Strategy and the Imbalance between Consumption and Investment

Dependent	Consumption ratio (1)	Investment ratio (2)	Consumption ratio / Investment ratio (3)
Overtaking Strategy[1]	-0.55**	1.49***	-0.07***
	（0.015）	（0.001）	（0.000）
Real Estate Development Strategy	-0.01**	0.07***	-0.002***
	（0.016）	（0.000）	（0.003）
GDPPC	-0.0022***	0.0028***	-0.0001***
	（0.000）	（0.000）	（0.000）
GDPPC_sq	6.32e-8 ***	-7.05e-8***	3.06e-9 ***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-2.79**	5.62***	-0.16**
	（0.014）	（0.007）	（0.014）
Old Age Dependency Ratio$_{-sq}$	0.10**	-0.20***	0.005**
	（0.016）	（0.007）	（0.021）
Private Economy Development	-0.03	0.25***	-0.004**
	(0.190)	(0.000)	(0.028)
Open	0.05	-0.17***	0.005***
	(0.198)	(0.003)	(0.006)
Intercept	67.74***	-15.24	2.87***
	(0.000)	（0.244）	(0.000)
N	324	324	324
R^2	0.5527	0.6624	0.6876

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Overtaking Strategy[1]* is measured by the ratio of the added value of high-technology industry per capita to GDP per capita. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 5 Growth-First Development Strategy and the Imbalance between Consumption and Investment

Dependent	Consumption ratio (1)	Investment ratio (2)	Consumption ratio / Investment ratio (3)
Overtaking Strategy^2	-0.95	5.04*	-0.13*
	（0.208）	（0.098）	（0.107）
Real Estate Development Strategy	-0.01**	0.06***	-0.002***
	（0.015）	（0.000）	（0.006）
GDPPC	-0.002***	0.002***	-0.0001***
	（0.000）	（0.038）	（0.000）
GDPPC_sq	7.59e-8 ***	-8.51e-8***	3.98e-9 ***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-2.91**	5.89**	-0.20**
	（0.024）	（0.012）	（0.029）
Old Age Dependency Ratio$_{-sq}$	0.10**	-0.20***	0.006**
	（0.025）	（0.010）	（0.031）
Private Economy Development	0.002	0.18**	-0.002
	(0.949)	(0.017)	(0.559)
Open	0.04	-0.12	0.004
	(0.536)	(0.206)	(0.209)
Intercept	68.62***	-23.71	3.21***
	(0.000)	（0.132）	(0.000)
N	296	296	296
R^2	0.4821	0.6493	0.6190

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Overtaking Strategy^2* is measured by the logarithm of the number of local development zones. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 6 Growth-First Development Strategy and the Imbalance between Consumption and Investment

Dependent	Consumption ratio	Investment ratio	Consumption ratio / Investment ratio
	(1)	(2)	(3)
Overtaking Strategy[3]	-2.54***	8.25***	-0.24***
	（0.001）	（0.000）	（0.000）
Real Estate Development Strategy	-0.01***	0.06***	-0.002***
	（0.007）	（0.000）	（0.003）
GDPPC	-0.002***	0.002***	-0.0001***
	（0.000）	（0.002）	（0.000）
GDPPC_sq	7.39e-8 ***	-8.58e-8***	3.94e-9 ***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-2.35**	4.67**	-0.16**
	（0.030）	（0.015）	（0.039）
Old Age Dependency Ratio$_{-sq}$	0.08**	-0.16**	0.005**
	（0.030）	（0.011）	（0.044）
Private Economy Development	0.009	0.17***	-0.001
	(0.732)	(0.007)	(0.622)
Open	0.03	-0.12*	0.004
	(0.527)	(0.054)	(0.104)
Intercept	86.00***	-80.20***	4.85***
	(0.000)	（0.001）	(0.000)
N	296	296	296
R^2	0.4980	0.6811	0.6431

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Overtaking Strategy[1]* is measured by the logarithm of the area of local development zones. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 7 Growth-First Development Strategy and Biased income distribution structure

Dependent	Labor Income Share	Capital Income Share	Gov't Income Share	Labor Income Share /(Capital Inc Share + Gov't Income Share)
	(1)	(2)	(3)	(4)
Overtaking Strategy[1]	-1.47***	1.35***	0.12	-0.08***
	(0.000)	(0.000)	(0.300)	(0.000)
Real Estate Development Strategy	-0.03***	0.02	0.01*	-0.001***
	(0.002)	(0.134)	(0.102)	(0.001)
GDPPC	-0.0019***	0.001***	0.0007***	-0.00006***
	(0.000)	(0.000)	(0.002)	(0.000)
GDPPC_sq	3.6e-8***	-7.69e-9	-2.83e-8**	9.25e-10 ***
	(0.001)	(0.164)	(0.034)	(0.000)
Private Economy Development	-0.05**	0.09***	-0.04**	-0.004***
	(0.044)	(0.000)	(0.048)	(0.005)
Open	0.12***	-0.10***	-0.01**	0.005***
	(0.000)	(0.000)	(0.030)	(0.000)
Intercept	59.92***	26.35***	13.74***	1.56***
	(0.000)	(0.000)	(0.000)	(0.000)
N	324	324	324	324
R^2	0.4045	0.2975	0.1094	0.4213

Notes: *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy*[1] is measured by the ratio of the added value of high-technology industry per capita to GDP per capita. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 8 Growth-First Development Strategy and Biased income distribution structure

Dependent	Labor Income Share	Capital Income Share	Gov't Income Share	Labor Income Share /(Capital Income Share + Gov't Income Share)
	(1)	(2)	(3)	(4)
Overtaking Strategy[2]	-2.69	1.85	0.84	-0.16
	(0.231)	(0.217)	(0.329)	(0.148)
Real Estate Development Strategy	-0.05***	0.04***	0.01*	-0.002***
	(0.000)	(0.001)	(0.096)	(0.000)
GDPPC	-0.002***	0.002***	0.0007***	-0.00007***
	(0.000)	(0.002)	(0.000)	(0.003)
GDPPC_sq	4.99e-8***	-6.27e-9	-4.36e-8***	1.40e-9 ***
	(0.001)	(0.164)	(0.002)	(0.000)
Private Economy Development	-0.02	0.07**	-0.05**	-0.002
	(0.635)	(0.014)	(0.025)	(0.450)
Open	0.13***	-0.14***	0.007	0.007***
	(0.010)	(0.001)	(0.544)	(0.003)
Intercept	61.57***	26.52***	11.91***	1.65***
	(0.000)	(0.001)	(0.000)	(0.000)
N	296	296	296	296
R^2	0.3270	0.2172	0.1289	0.3101

Notes: *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy*[2] is measured by the logarithm of the number of local development zones. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 9 Growth-First Development Strategy and Biased income distribution structure

Dependent	Labor Income Share	Capital Income Share	Gov't Income Share	Labor Income Share /(Capital Income Share + Gov't Income Share)
	(1)	(2)	(3)	(4)
Overtaking Strategy[3]	-4.10**	3.02***	1.07	-0.23***
	(0.022)	(0.003)	(0.214)	(0.009)
Real Estate Development Strategy	-0.05***	0.03***	0.01*	-0.002***
	(0.000)	(0.002)	(0.108)	(0.000)
GDPPC	-0.002***	0.001***	0.0007***	-0.00008***
	(0.000)	(0.000)	(0.002)	(0.000)
GDPPC_sq	4.84e-8***	-4.44e-9	-4.39e-8***	1.38e-9 ***
	(0.003)	(0.336)	(0.002)	(0.002)
Private Economy Development	-0.01	0.06***	-0.05**	-0.001
	(0.740)	(0.005)	(0.033)	(0.471)
Open	0.13***	-0.14***	0.007	0.006***
	(0.000)	(0.000)	(0.439)	(0.000)
Intercept	92.92***	3.12***	3.96	3.35***
	(0.000)	(0.728)	(0.630)	(0.000)
N	296	296	296	296
R^2	0.3442	0.2288	0.1315	0.3295

Notes: *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy[3]* is measured by the logarithm of the area of local development zones. *Real Estate Development Strategy* is measured by the ratio of land lease revenues to budgetary fiscal revenue. *GDPPC* and *GDPPC_sq* are real GDP per capita and its square term. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). *Open* is the sum of exports and imports divided by GDP. P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 10 Growth-First Development Strategy and the Imbalance between Consumption and Investment: Channel test

Dependent	Consumption ratio / Investment ratio (1)	Consumption ratio / Investment ratio (2)	Consumption ratio / Investment ratio (3)
Labor Income Share / (Capital Income Share + Gov't Income Share)		0.13*	0.21**
		（0.067）	（0.017）
Overtaking Strategy[1]	-0.07***	-0.06***	-0.04***
	（0.000）	（0.000）	（0.002）
Real Estate Development Strategy	-0.002***	-0.002***	-0.002***
	（0.003）	（0.009）	（0.006）
GDPPC	-0.0001***	-0.0001***	-0.0001***
	（0.000）	（0.000）	（0.000）
GDPPC_sq	3.06e-9 ***	2.97e-9***	2.95e-9***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-0.16**	-0.15**	-0.11***
	（0.014）	（0.014）	（0.001）
Old Age Dependency Ratio$_{-sq}$	0.005**	0.005**	0.003***
	（0.021）	（0.023）	（0.008）
Private Economy Development	-0.004**	-0.004*	-0.004**
	(0.028)	（0.062）	（0.027）
Open	0.005***	0.004**	0.005***
	(0.006)	（0.021）	（0.002）
Intercept	2.87***	2.61***	—c
	(0.000)	（0.000）	—
Endogeneity test	—	—	0.07
Method	FE[a]	FE[a]	FE[b]
N	324	324	297
R^2	0.6876	0.6947	0.6841

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy[1]* is measured by the ratio of the added value of high-technology industry per capita to GDP per capita. *Real Estate Development Strategy* represents real estate market development strategy, which is measured by the ratio of land lease revenues to budgetary fiscal revenue. GDPPC is real GDP per capita. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Open* is the sum of exports and imports divided by GDP. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004)

P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

a: Method proposed by Driscoll and Kraay is used.

b: We lag *Laborshare/(Capshare+Govershare)* by one year as instrument variables

c: We use xtivreg2 Command to estimate this model.

Table 11 Growth-First Development Strategy and the Imbalance between Consumption and Investment: Channel test

Dependent	Consumption ratio / Investment ratio (1)	Consumption ratio / Investment ratio (2)	Consumption ratio / Investment ratio (3)
Labor Income Share / (Capital Income Share + Gov't Income Share)		0.20**	0.29***
		（0.014）	（0.002）
Overtaking Strategy^2	-0.13*	-0.11*	-0.07*
	（0.107）	（0.074）	（0.073）
Real Estate Development Strategy	-0.002***	-0.002**	-0.002**
	（0.006）	（0.020）	（0.017）
GDPPC	-0.0001***	-0.0001***	-0.0001***
	（0.000）	（0.000）	（0.000）
GDPPC_sq	3.98e-9 ***	3.81e-9***	3.70e-9***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-0.20**	-0.18**	-0.11***
	（0.029）	（0.026）	（0.003）
Old Age Dependency Ratio$_{-sq}$	0.006**	0.006**	0.003***
	（0.031）	（0.031）	（0.010）
Private Economy Development	-0.002	-0.001	-0.002
	(0.559)	（0.637）	（0.394）
Open	0.004	0.003	0.004**
	(0.209)	（0.308）	（0.035）
Intercept	3.21***	2.72***	─c
	(0.000)	（0.000）	─
Endogeneity test	─	─	0.05
Method	FE^a	FE^a	FE^b
N	296	296	270
R^2	0.6190	0.6404	0.6371

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy^2* is measured by the logarithm of the number of local development zones. *Real Estate Development Strategy* represents real estate market development strategy, which is measured by the ratio of land lease revenues to budgetary fiscal revenue. GDPPC is real GDP per capita. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Open* is the sum of exports and imports divided by GDP. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

a: Method proposed by Driscoll and Kraay is used.

b: We lag *Laborshare/(Capshare+Govershare)* by one year as instrument variables

c: We use xtivreg2 Command to estimate this model.

Table 12 Growth-First Development Strategy and the Imbalance between Consumption and Investment: Channel test

Dependent	Consumption ratio / Investment ratio (1)	Consumption ratio / Investment ratio (2)	Consumption ratio / Investment ratio (3)
Labor Income Share / (Capital Income Share + Gov't Income Share)		0.18**	0.26***
		（0.024）	（0.006）
Overtaking Strategy[3]	-0.24***	-0.21***	-0.16***
	（0.000）	（0.000）	（0.002）
Real Estate Development Strategy	-0.002***	-0.002**	-0.002**
	（0.003）	（0.011）	（0.013）
GDPPC	-0.0001***	-0.0001***	-0.0001***
	（0.000）	（0.000）	（0.000）
GDPPC_sq	3.94e-9 ***	3.78e-9***	3.70e-9***
	（0.000）	（0.000）	（0.000）
Old Age Dependency Ratio	-0.16**	-0.15**	-0.09**
	（0.039）	（0.036）	（0.017）
Old Age Dependency Ratio$_{-sq}$	0.005**	0.004**	0.003**
	（0.044）	（0.044）	（0.048）
Private Economy Development	-0.001	-0.0009	-0.001**
	(0.622)	（0.703）	（0.489）
Open	0.004	0.003**	0.004**
	(0.104)	（0.206）	（0.028）
Intercept	4.85***	4.22***	一c
	(0.000)	（0.000）	一
Endogeneity test	一	一	0.06
Method	FE[a]	FE[a]	FE[b]
N	296	296	270
R^2	0.6431	0.6590	0.6542

Notes: *Consumption ratio* is household consumption ratio, which is the proportion of household consumption in GDP. *Investment ratio* is investment ratio, which is the percentage of the total value of fixed capital formation in GDP. *Labor Income Share* is the share of labor compensation in GDP. *Capital Income Share* is the share of capital return in GDP. *Gov't Income Share* is the share of net production tax in GDP. *Overtaking Strategy[3]* is measured by the logarithm of the area of local development zones. *Real Estate Development Strategy* represents real estate market development strategy, which is measured by the ratio of land lease revenues to budgetary fiscal revenue. GDPPC is real GDP per capita. *Old Age Dependency Ratio* and *Old Age Dependency Ratio$_{-sq}$* are measured as the ratio of the number of people aged 65 and over to the number of people aged 15-64 in a province and its square term. *Open* is the sum of exports and imports divided by GDP. *Private economy development* is the ratio of production value of industry produced by non-state-owned enterprises over that of industry (Bai et al., 2004). P values are in parentheses. *, **, *** indicate significance at 10%, 5%, and 1% level, respectively.

a: Method proposed by Driscoll and Kraay is used.

b: We lag *Laborshare/(Capshare+Govershare)* by one year as instrument variables
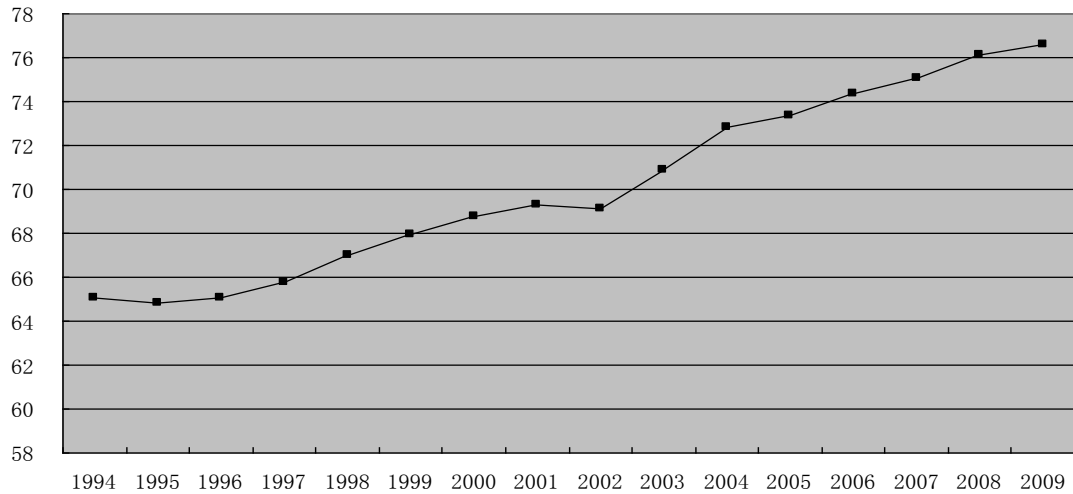
c: We use xtivreg2 Command to estimate this model.

Figure 1 The evolution of ratio of assets of heavy industry to total assets of industry in China

Notes: (1) Industry includes heavy industry and light industry; (2) data sources:*China Industrial Economic Statistical Yearbook* (various years) and *China Statistical Yearbook* (various years)
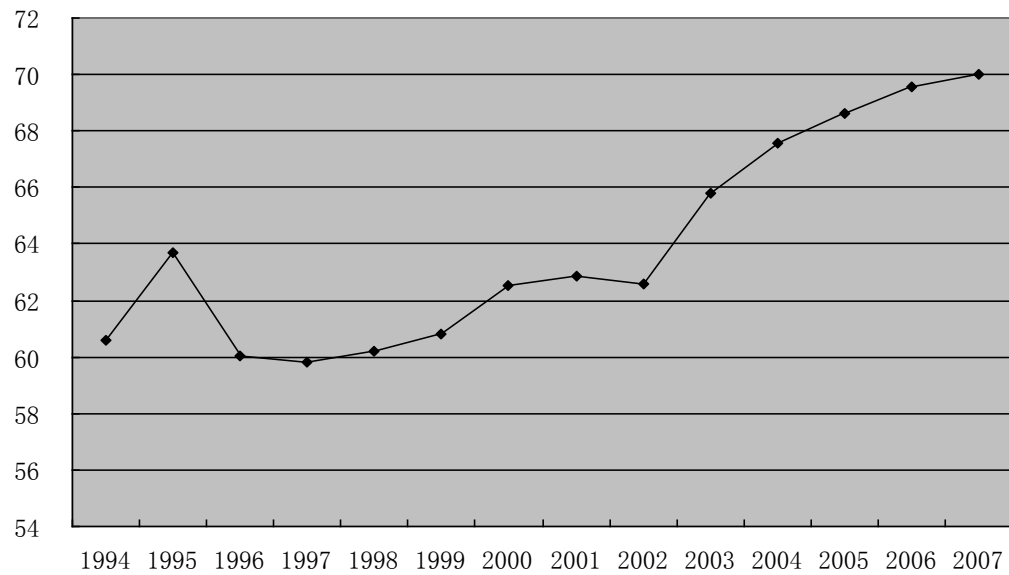

Figure 2 The evolution of ratio of value added of heavy industry to total value added of industry in China

Notes:(1)Industry includes heavy industry and light industry;(2) Figure 4 reveals why Chinese local governments developed capital and technology-intensive heavy industry rather than labor-intensive light industry; (3) data sources: *China Industrial Economic Statistical Yearbook* (various years) and *China Statistical Yearbook* (various years)
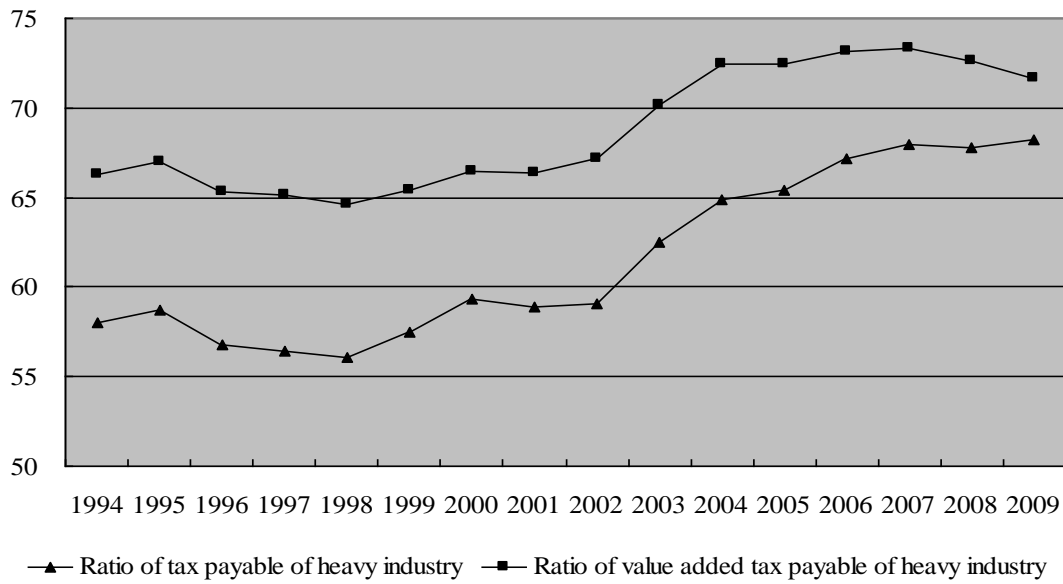
Figure 3 The evolution of ratio of tax payable of heavy industry to total tax payable of industry, and ratio of value added tax payable of heavy industry to total value added tax payable of industry in China

Notes:(1) Manufacturing industries are classified into heavy industry and light industry;(2) tax payable equals the sum of value added tax payable and taxes and other charges on principal business revenues; (3) Figure 6 shows why Chinese local governments developed capital and technology-intensive heavy industry rather than labor-intensive light industry. If taking enterprise income tax in the secondary income distribution into account, our result will be reinforced; (4) data sources:*China Industrial Economic Statistical Yearbook* (various years) and *China Statistical Yearbook* (various years).
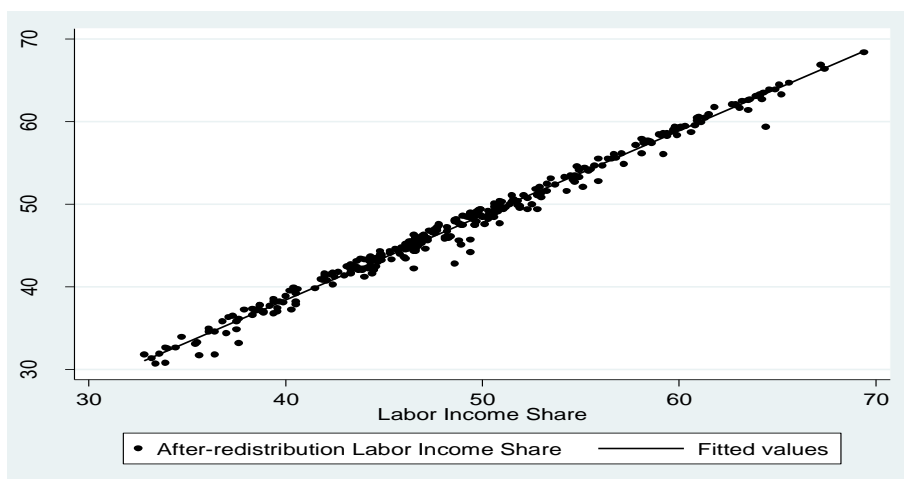

Figure 4 Labor Income Share and After-redistribution Labor Income Share
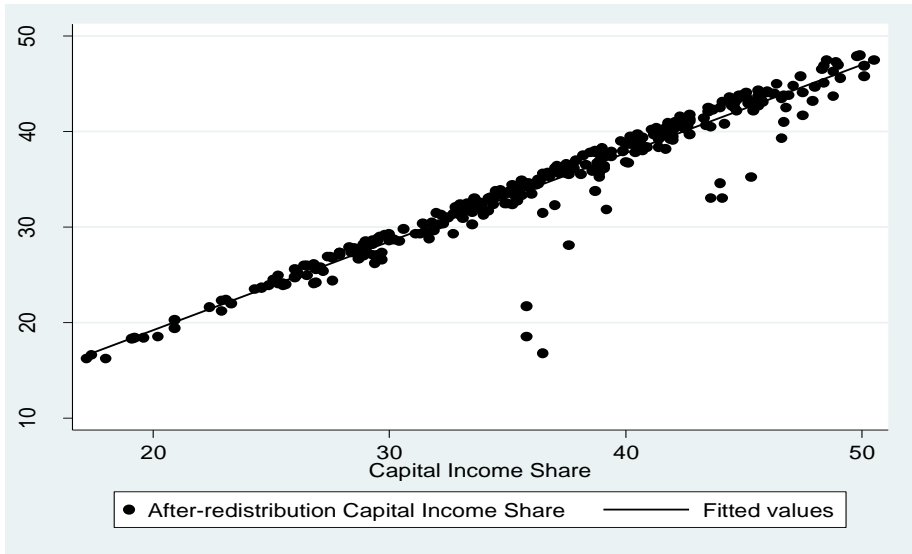
Data source:Lv and Guo(2012).

Figure 5 Capital Income Share and After-redistribution Capital Income Share

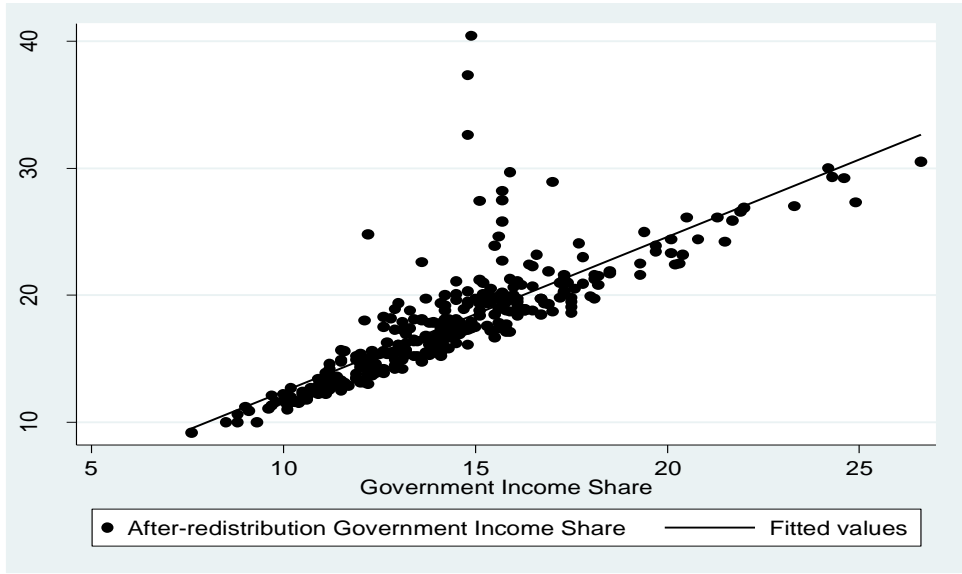Data source:Lv and Guo(2012).

Figure 6 Government Income Share and After-redistribution Government Income Share

Data source:Lv and Guo(2012).