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The Labor Share Question in China

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THE LABOR SHARE QUESTION IN CHINA

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To the Chinese working class.

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ABSTRACT

THE LABOR SHARE QUESTION IN CHINA

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In this study I explore why China's labor share measured by the conventional approach experienced a major decline over the period from the mid-1990s to the outbreak of the global financial and economic crisis in 2008. I adopt a Marxian approach to address this question. Following the Marxian approach, I focus on how the power relation in the sphere of production affects labor's share. I argue that major changes in the power relation that took place during the transition of China's economic system have played a crucial role in the changes of distribution.

To this end, I build homogenous series of labor's share measured by the Marxian approach. This measure changes following an inverse-U shape over the reform era. Further, I analyze the relationship between labor's share measured by the conventional approach and that measured by the Marxian approach with the cointegration method, which shows that there is a long-run relationship between them.

I divide the reform era into two stages according to the Marxian measure. I find that, in the first stage (from 1978 to the early 1990s), resulting from the power relation between the state, cadres and workers, labor's share continuously increased, which led to recurrent inflation and squeezed profits. In the second stage (from the mid-1990s to 2008), the state launched a series of reforms to resolve these problems, resulting in the commodification of labor power and the division between cadres and workers, which repressed the power of workers and caused labor's share to decline.

Based on the historical analysis of the power relation during the transition process, I provide an econometric analysis of the determinants of labor's share measured by the conventional approach over the reform era, using region-level data. I find that there is a U-shaped relationship between the bonus-wage ratio and labor's share in the first stage; also, variables that reflect the power relation (reserve army effect, fallback position, and management-worker inequality) in the second stage have significant effects on labor's share. Both macro and micro evidences support that the power relation is a crucial factor in the determination of labor's share.

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CHAPTER 1

INTRODUCTION

In the past two decades, China's fast economic growth has been increasingly dependent on investment (Zhu and Kotz, 2010). To maintain the growth of investment, China must sustain a fairly high rate of profit, and the fall in labor's share has been seen as a crucial factor to sustain the profitability (Bai et al., 2006). Using a conventional measure of labor's share—the compensation of employees as a percent of GDP[1]—as shown in Figure 1-1, labor's share has experienced a major decline from 49.7 percent in 1978 to 44.7 percent in 2007, which is a part of a larger picture of the decline in labor's share across countries in the neoliberal era of capitalism.[2] After the outbreak of the global financial and economic crisis in 2008, China's growth slowed down and workers' struggles against poor living and working conditions were surging—the strike at the Tonghua Steel Company is a telling example.[3] Partly due to these reasons, labor's share might have begun to recover. In 2012, labor's share returned to 45.6 percent.

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[1] This measure of labor's share is widely used in the literature; however, there is an obvious problem with it: if the ratio of fixed capital to GDP increased overtime, the share of depreciation in GDP would also increase in most cases, which would repress the share of employees' compensation in GDP without any change in distribution relations. In Chapter 2, I will exclude deprecation in the conventional measure of labor's share.

[2] For empirical studies about labor's share across countries, see Chapter 4.

[3] On July 24, 2009, workers at the Tonghua Steel Company launched a strike and beat the general manager to death. The Tonghua Steel Company was a state-owned enterprise that was privatized through a local government-led program by introducing a "strategic" private shareholder in 2005. After privatization, the company laid off workers, constrained wage growth, and cut benefits such as the heating subsidy, while the management gained huge bonuses through privatization. This struggle forced the local government (the biggest shareholder) to introduce another state-owned enterprise to replace the private shareholder.

What are the determinants of China's labor share? This is the question to be addressed in this study. Since most of relevant studies focuses on labor's share measured with the conventional approach,[4] I also take this measure as the objective to be explained. In what follows, "labor's share" refers to the one measured by the conventional approach unless an alternative measure is specified.

Figure 1-1 The Compensation of Employees as A Percent of GDP in China, 1978-2012

Sources: See Appendix A.

In contrast to the current literature, I follow a Marxian approach in terms of methodology and focus on how the power relation in the sphere of production affects China's labor share over the reform era (from 1978 to present). I argue that major changes in the power relation that took place during the transition of China's economic system have played a crucial role in the determination of China's labor share.

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[4] I will discuss different approaches in detail in Chapter 2.

1.1 Debunking the Mainstream Story

Although mainstream economists have widely admitted that there was a downward trend for China's labor share, they explain this trend mainly with sectoral changes, which refers to the decrease of agriculture as a percent of GDP (Bai and Qian, 2009; 2010a; 2010b). Owing to the fact that China's agricultural production is mainly household-based, profits and wages are not distinguishable in statistics and labor's share in agriculture is thus much higher than that in other sectors. So, as the mainstream story claims, sectoral changes automatically cause labor's share of the entire economy to fall. Since sectoral changes are labeled with "modernization" (Brandt et al., 2008; Song et al., 2011), the decline in labor's share should be seen as an inevitable result of "modernization". Mainstream economists and policy makers believe that there is a U-shaped curve relating labor's share to the sectoral structure, because they believe, as the transfer of resources from agriculture to other sectors is finished and the labor-intensive service sector with a higher labor's share becomes the dominant sector of the economy, the overall labor's share will increase (Li et al., 2009). Mainstream economists hence believe promoting sectoral changes is an effective way to raise labor's share in the long run.

Does the decline in labor's share result mainly from sectoral changes? This question needs to be addressed with an analysis of the power relation, which is entirely omitted by the mainstream story. In fact, during China's transition from the state socialist economic system to a capitalism-dominated economic system, sectoral changes have disguised class conflicts.

Sectoral changes involve the redistribution of labor power from agricultural to non-agricultural sectors and from manufacturing to services. In China, the influx of the migrant workers into the urban areas cannot be reduced to the responses of peasants to the urban-rural income gap and the loosening of the restrictions on migration, because the urban

enterprises must have prepared certain social and economic conditions for the absorption of migrant workers. One such condition was the power relation: if the urban working class in the state-owned sector was sufficiently powerful, they would not be replaced by migrant workers who received much lower wages.

One telling example is the labor outsourcing at the Tonghua Steel Company. From 1996 to 2000, this company laid off over 8,000 workers, as it claimed it had hired "too many" workers. During the same period, the company began to outsource some work to outside labor—mostly migrant workers from the rural areas as the wage of a migrant worker was on average only half that of the company's own workers. The company was able to replace its own workers with migrant workers, as a result of weakening workers' power through layoffs. [5]

The massive layoffs in the 1990s resulted in not only the transfer of migrant workers, but also the expansion of the service sector. During the period 1996-2003, the share of industry (mining, manufacturing, and utilities) in total employment decreased from 23.5 percent to 21.6 percent. This is the only period in the reform era that witnessed the decrease of industry's employment share. During the same period, the share of the service sector in total employment increased from 26.0 percent to 29.3 percent.[6] These changes were mainly caused by the relocation of laid-off workers. The China Urban Labor Survey recorded job changes due to layoffs for a sample of 949 people: before being laid off, 42.1 percent of the sample worked in manufacturing and 21.5 percent worked in the service sector; after being laid off, only 14.4 percent worked in manufacturing and 44.3 percent worked in the service sector (Cai, 2004).

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[5] This example is from my interviews in Tonghua, July 2013.

[6] Sources: China Statistic Yearbook 2012.

These examples have shown how sectoral changes intertwined with the dynamics of class struggle in China. The decline of labor's share in China was not an automatic result of sectoral changes, since those changes actually disguised the underlying changes in the power relation. In this perspective, the relationship between sectoral changes and class struggle in China shares similarities with that relationship in the history of world capitalism: industrialization in the early period of traditional capitalist countries separated means of production from labor and forced the proletarianized to work in factories as free labor; financialization in the late period of monopoly capitalist countries strengthened the power of financial capital and dragged the whole economy into the cycles of boom and bust. Along with industrialization and financialization, major changes took place in distribution, but those changes resulted from class struggle, not from the sectoral changes.

1.2   Power Relation and Economic Transition

In China, labor's share is closely associated with the changing power relation in the transition of the economic system. To illustrate the transition, we can start with the incentive systems on the shop floor, and we discuss, when the incentive system did not work due to a powerful working class, how the reserve army of labor emerged and shifted the power relation.

In the Maoist era, there was a recurring debate on "material incentives" and "politics in command" during the transformation of incentive systems. A Soviet wage system was established in 1956; however, there was a lack of consensus among the leadership on how to operate this wage system. In particular, given that the Soviet Union underscored the role of material incentives, there was a debate on whether material incentives such as bonuses and piece-rate wages should be encouraged in China.

Mao Zedong was critical of material incentives. He suggested that the emphasis on material incentives was a reflection of the ignorance of political and ideological work (Mao, 1998). Thus the proponents of "politics in command" proposed an entirely new path to generate work incentives. As I will discuss in Chapter 3, the key of the new path was to make workers recognize that they themselves were the masters of factories, and the purpose of production was consistent with the long-run interests of the working class (Andors, 1977). To this end, material incentives that merely relate workers' contribution with their short-run economic benefits were eliminated, workers were encouraged to participate in the management of factories in various ways, and the income gap between workers and cadres was controlled since significant inequality would be contradictory to workers' position as the masters of factories.

With the end of the Maoist era, the first attack against the working class was the deprivation of political rights that workers gained in the Maoist era. With the loss of workers' political rights, workers could no longer criticize cadres. Without the participation of workers in management, the Maoist incentive system lost its foundation and the material incentive system eventually took its place.

However, the material incentive system could not sustain itself. Capital accumulation in the late 1980s and the early 1990s met with the problem of profit squeeze as material incentives were abused under the particular power relation between the state, cadres, and workers, which I will discuss in detail in Chapter 3. For a capitalist enterprise, if the carrot of material incentives does not work, the stick strategy would take its place—capitalists would reduce production and lay off some workers in order to discipline others. In the early 1990s, however, the management in China's enterprises did not have the power to fire workers unless workers made serious mistakes such as crimes.

If it is impossible to tame workers, the rational strategy for enterprises was to explore new sources of labor power. The early 1990s witnessed policy changes that reduced barriers for migrant workers to work in the urban areas.[7] In the following two decades this new component of the Chinese working class suffered from long working hours and poor working conditions. A 2009 survey from the National Bureau of Statistics has shown that on average migrant workers work 58.4 hours per week, much more than the 44 hours stipulated in China's Labor Law. Nearly 60 percent of migrant workers did not sign any labor contract, and 87 percent of migrant workers did not have access to health insurance.[8]

In the mid-1990s, China launched a massive privatization of state-owned enterprises. Along with this privatization, about 30 million workers were laid off.[9] This was a crucial turning point in China's economic transition that fundamentally altered the power of the working class. Workers with socialist experience had to leave factories, whereas young workers without socialist experience became the majority of the labor force. Due to this change, institutions in state-owned enterprises began to converge with those in private enterprises. Short-term labor contracts and dispatched workers became the routine in both kinds of enterprises.[10]

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[7] In the 1980s, the government strictly controlled the migration of labor forces. Migrant workers were called "blindly floating population". In the 1990s, most of the constraints on migrant workers were eliminated, whereas workers were still facing the possibility of being repatriated. See Lü (2012).

[8] Sources: National Statistical Bureau, "Investigation Report on Migrant Workers 2009," (in Chinese) http://www.stats.gov.cn/tjfx/fxbg/t20100319_402628281.htm.

[9] The number is estimated by the reduction in the employment of the state-owned sector from 1995 to 2000. Data is from *China Statistic Yearbook 2012*.

[10] In the interviews with some workers in state-owned enterprises, I found that new workers in state-owned enterprises mostly signed three-year-long labor contracts, and dispatched workers, who were hired by external labor agencies but worked for state-owned enterprises, were quite common in construction and transportation.

To sum up, during the country's transition of the economic system, as the bonus-centered incentive system could not sustain itself, enterprises needs a reserve army to discipline workers. A continuous influx of migrant workers and the 30 million laid-off workers from the state-owned sector jointly expanded the reserve army of labor within a few years.[11] The reserve army as well as other factors significantly repressed the power of the working class as a whole. This might be a key reason for the major decline of labor's share since the mid-1990s.

1.3   Methodology and Chapter Structure

In this study, I attempt to follow a Marxian approach to address the labor share question, which underscores the relationship between production and distribution. As Marx put it in Chapter 51 of *Das Kapital*, volume 3, "the specific distribution relations are thus merely the expression of the specific historical production relations." (Marx 1981, p.1022)

In Marxian economics, the rate of surplus value is a concept that connects production and distribution, and it is also an entry point to address the labor share question.[12] Marxian economics suggest the distribution between the value of labor power and surplus value is the fundamental distribution in a capitalist economy and plays an important role in the reproduction of the capitalist relation of production. In Marx's analysis, however, the rate of surplus value is defined under certain assumptions.

In *Das Kapital,* volume 1, Marx argued that the market exchange between capital and labor cannot explain the secrets of exploitation and he suggested we enter the sphere of

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[11] Traditionally the reserve army effect means that unemployment reduces workers' bargaining power. In this study, I use a broad interpretation of the meaning of the reserve army effect, which means the *emergence* of the reserve army repressed the bargaining power of workers. In particular, as firms in urban areas were able to hire migrant workers from rural areas, labor forces in rural areas became a component of the reserve army.

[12] I will discuss the connections between the rate of surplus value and labor's share in Chapter 2.

production to find how surplus value is created. To illustrate this question, Marx assumed that all value and surplus value is realized and workers obtain the value of labor power. These assumptions simplify the analysis of the surplus value theory, especially the relationship between labor productivity and the rate of surplus value; however, they abstract the effects of value realization and class struggle on the rate of surplus value.

Firstly, for a capitalist economy, surplus value produced can be equal to or greater than the surplus value realized. The value realization process can greatly affect the amount of surplus value obtained by capital.

Secondly, workers' wages (in value terms) can be greater or lower than the value of labor power due to class struggle. According to Marx, the value of labor power is determined by the value of commodities that are necessary for the reproduction of labor power, and there is a historical and moral element determines what is necessary for the reproduction. Marx argued, "In a given country, at a given period, the average quantity of the means of subsistence necessary for the laborer is practically known."(Marx 1976, p.275) The impact of class struggle on wages occurs both in the short run and in the long run. In the short run, class struggle can make workers' wages temporarily deviate from the known value of labor power; if the deviation lasts in the long run so that workers get used to a new buddle of consumption goods, then it would change the value of labor power by changing the historical and moral element. (Lebowitz 2003)

Therefore, there are mainly four factors determining the rate of surplus value "in a given country, at a given period".

First of all, the value of labor power. If one focuses on a period, the value of labor power should be a constant at the beginning of the period; over the period, the value of labor power may change due to class struggle. Thus, I will consider the changes in the value of labor power as an endogenous factor.

The second factor is labor productivity. The growth of labor productivity can repress the value of labor power by reducing the unit value of consumption goods, which raises the rate of surplus value.

The third factor is realization conditions, reflected by business cycles. Firms realize most of the surplus value produced in booms while they may lose most of it in crises.

The last factor is class struggle, reflected by the power relation in the sphere of production. This power relation is determined by factors in the production process and factors in the labor market: the former refers to the way in which production is organized, such as the relationship between workers and supervisors; the latter refers to the structure and institutions of the labor market, such as the relative size of the reserve army of labor and the fallback position of workers. In contrast to the neoclassical approach which suggest that labor supply and labor demand determines an equilibrium wage, the Marxian approach argues that distribution is not determined in the labor market but in the sphere of production, and that factors in the labor market determines distribution only through their impacts on the power relation in the sphere of production.

In this study, I argue that the power relation in the sphere of production is a crucial factor in the determination of China's labor share over the reform era. To make this argument, I take the following three steps.

In the first step, I describe how labor's share changed over time. Given that the rate of surplus value is the entry point, I measure labor's share with a Marxian approach (which is a transformation of the rate of surplus value). Also, this step clarifies the differences between the Marxian measure and the conventional measure.

The second step is a historical analysis of the power relation during China's economic transition, in which I explain why the power relation shifted from favorable to unfavorable to the working class and how it affected distribution.

In the third step, I examine the factors for the conventionally measured labor's share with an econometric analysis. I will take into account two groups of explanatory variables: one group is the determinants of labor's share measured by the Marxian approach, and the other group is the determinants of the difference between the two measures of labor's share.

This process of analysis is shown Figure 1-2. According to the process, the main part of this study is organized into three chapters.

Figure 1-2 The Process of Analysis
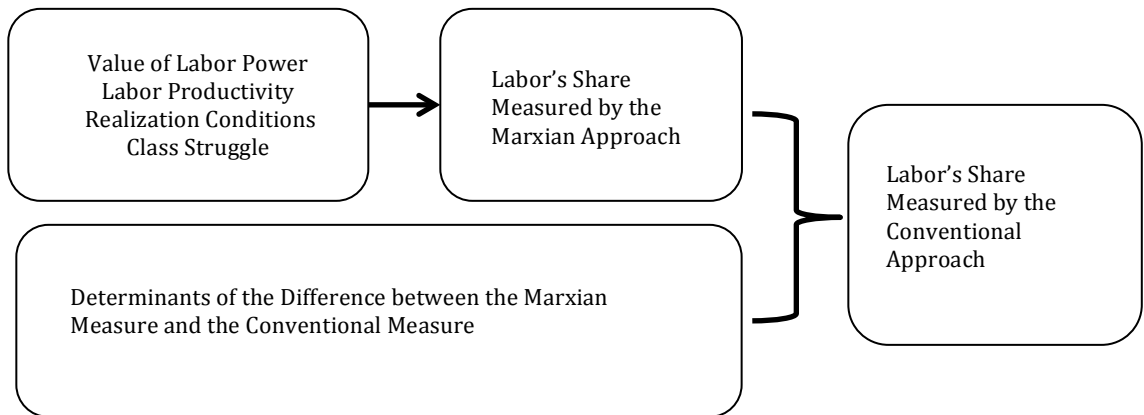
Chapter 2 builds the Marxian measure of labor's share, using data on the national level.[13] In this chapter, I clarify the differences between different approaches and provide a cointegration analysis for the relationship between the Marxian measure and the conventional Measure. The main findings of this chapter include: first, the Marxian measure changed following an inverse-U shape over the reform era; second, there is a long-run relationship between the Marxian measure and the conventional measure.

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[13] Due to data availability, labor's share measured by the Marxian approach can only be calculated on the national level.

Chapter 3 is a historical analysis of the power relation during the transition process. In this chapter, I discuss why the power relation between the state, cadres, and workers changed and how it affected distribution. I argue that, in the first stage of the reform era (1978 to the early 1990s), as a result of the power relation between the state, cadres and the still powerful workers, labor's share measured by the Marxian approach was continuously increased, which led to recurrent inflation and squeezed profits. To resolve these problems, the state launched a series of reforms, resulting in the commodification of labor power and the division between cadres and workers, which repressed the power of workers and caused labor's share measured by the Marxian approach to fall in the second stage of the reform era (mid-1990s to 2008). In this chapter, I also find the determinants of the power relation so as to lay the foundation for the econometric analysis in Chapter 4.

Chapter 4 provides an econometric analysis of the determinants of labor's share over the reform era, using data on the region level. The analysis uses the bonus-wage ratio to reflect the power relation in the first stage of the reform era and another three variables to reflect the power relation in the second stage: the management-worker inequality, the reserve army effect, and the fallback position. In addition to the data on the region level, I also apply the econometric analysis to enterprise-level data. Both macro and micro evidences support that the power relation is a crucial factor in the determination of labor's share.

In addition to the three chapters, Chapter 5 summaries this study and discusses policy implications.

CHAPTER 2

LABOR'S SHARE IN THE PEOPLE'S REPUBLIC OF CHINA, 1956-2012

2.1   Introduction

In this chapter, I build homogeneous series of labor's share in China using a Marxian approach which measures labor's share with the ratio of variable capital to new value. The Marxian measures of labor's share constructed in this chapter correspond to the rate of surplus value reflecting how new value is distributed between productive workers and capitalists. Here distribution is analyzed at the point when new value is distributed between productive workers and capitalists instead of the point when new value is circulated and redistributed.

The power relation in the sphere of production affects the distribution of new value in the sphere of production, for which one can find support in Marx's theory of surplus value, the labor process literature (Braverman, 1974; Marglin, 1974; Edwards, 1979; Gordon et al., 1982; Burawoy, 1985; Gordon, 1996), and the labor discipline literature (Weisskopf et al., 1983; Bowles, 1985; Schor and Bowles, 1987). The Marxian measures will provide an entry point to analyze how the power relation affected distribution.

The approach to measure labor's share in this chapter is also used in the literature that aims at measuring categories based on the Marxian theory of labor value (Moseley 1985; Shaikh and Tonak 1994; Cronin 2001; Maniatis 2005; Paitaridis and Tsoulfidis 2011); however, it is different from another two approaches in the literature.

One approach (hereafter, conventional approach) is based on GDP accounting, which is widely used in both orthodox and heterodox literature (for example, Bentolila and Saint-

paul, 2003; Karabarbounis and Neiman, 2013; Weisskopf, 1979; Onaran et al., 2011).

Heterodox literature often uses the conventional measure as a proxy for the power of the

working class. However, given that GDP accounting does not consider the transfer of

surplus value from productive sectors to unproductive sectors,[14] the conventionally

measured labor's share does not necessarily changes consistently with the rate of surplus

value (or a Marxian measure of labor's share). Moreover, given that GDP accounting does

not distinguish modes of production that coexist in a capitalist economy, the conventional

approach tends to conflate changes in the rate of surplus value and changes in the

composition of modes of production.[15]

The other different approach is also a Marxian approach, which integrates the Marxian

theory of value with a class analysis (Mohun 2005, 2013). This approach defines the

working class and the capitalist class in the first place. Mohun (2005; 2013) suggests that

both workers in productive sectors and unproductive sectors belong to the working class

and both capital owners and supervisory personals belong to the capitalist class and then

calculates distributive shares of classes in new value. While this approach is useful, here I

do not apply it because its definition of the working class has exceeded the sphere of

production such that such that it is difficult to see how the power relation in the sphere of

production affects distribution.

This chapter provides Marxian measures of labor's share and analyzes the relationship

between the Marxian measures and the conventional measure using a cointegration

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[14] Classical economists such as Adam Smith, David Ricardo, and Thomas Malthus share this perspective. Furthermore, as I will discuss later, it is inappropriate to label sectors with "productive" and "unproductive"; here "productive sectors" and "unproductive sectors" are used only for the sake of simplicity.

[15] This deficiency in GDP accounting leads to biases when one measures the power of the working class, especially for developing economies, where a large proportion of total employment is in agriculture (38% in 2010 for low- and middle-income economies) and a large proportion of agriculture is non-capitalist. Data sources: WDI database.

method. This chapter may contribute to the current literature on China's labor share in two aspects.

First, the Marxian measures of labor's share covers the long period of contemporary China from the establishment of the state-socialist system in 1956 to 2012. Few studies in the literature have measured Marxian categories for China. Zhang and Zhao (2007) provide series of China's rate of surplus value over the period 1978-2004; however, they only cover manufacturing. To my knowledge, this chapter might be the first attempt to build series of China's labor share with a Marxian method for such a long period.

Second, there are few studies on the relationship between the Marxian measure and the conventional measure of labor's share using a cointegration method. Piovani (2013) also uses the cointegration method to find a long-run relationship between China's wage share with variables that reflect class power, which should be closest to my study; however, Piovani measures wage share with inconsistent data[16] and only focuses on the industrial sector (mining, manufacturing, and utilities) such that no redistribution of surplus value is taken into account.

The main findings of this chapter are as follows: first, labor's share of the Maoist era was on average higher and more counter-cyclical than that of the reform era; second, labor's share in Marxian measures changed following an inverse-U shape over the period 1978-2008 and began to recover after 2008; third, over the reform era, a long-run relationship exists between the Marxian measures and the conventional measure of labor's share.

In what follows, this chapter is organized into four sections. Section 2 introduces data and methodology for constructing the measures of labor's share. Section 3 discusses the

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[16] The wage share in Piovani (2013) is defined as the ratio of total wages in the industrial sector and value added of the industrial sector; however, the value added data corresponds to the whole industrial sector, while the total wages data only corresponds to wages of "workers and staff" which does not include workers of private enterprises.

trends of labor's share. Section 4 is the cointegration analysis of the relationship between the Marxian measures and the conventional measure of labor's share. Section 5 concludes the chapter.

2.2   Data and Methodology

I provide four measures of labor's share. The first measure, LS1, is a measure with the conventional approach. The second measure, LS2, is a measure with the Marxian approach following Shaikh & Tonak (1994). The last two measures, LS3 and LS4, are Marxian measures that improve LS2 in different ways. This section discusses the data and methodology. Appendix A provides details of data sources and estimation methods.

2.2.1   Conventional Measure: LS1

For LS1, labor's share is defined as the ratio of the compensation of employees to the net domestic product, i.e. GDP subtracting the depreciation of fixed capital. The definition is shown in Equation (2.1).

$$LS1 = CE/(GDP - D) \tag{2.1}$$

CE: Compensation of employees

GDP: Gross domestic products

D: Depreciation

In Equation (2.1), the numerator is the compensation of employees. In China's current statistical system, following the United Nations System of National Accounts (hereafter,

SNA), the compensation of employees includes all income in the form of wages,[17] agricultural income of rural households, and proprietors' income of self-employment units, where one can see the deficiency of GDP accounting from conflating different modes of production.

The denominator in Equation (2.1) is the net domestic product. I use net domestic product instead of gross domestic product because depreciation is determined not by relations of distribution but by technology, the amount of means of production, accounting rules, and tax policies. Although enterprises may hide profits by artificially raising depreciation, it is unclear how this practice may affect the changes in distributive shares over time. Moreover, using net domestic product or gross domestic product leads to no major difference in the trends of labor's share.

With respect to data sources, Hsueh & Li (1999), NBS (2007), and various issues of China Statistical Yearbook provide relevant data over the period 1978-2012. For the period 1956-1977, I make reasonable estimations on the basis of official statistical data. Figure 2-1 plots LS1.

2.2.2   Marxian Measure: LS2

As a Marxian measure, LS2 overcomes the deficiencies of LS1 by excluding the non-capitalist components of the economy in the first place and by taking account of the division between productive and unproductive labor. LS2 is defined by Equation (2.2).

$$LS2 = VC/(VC + SV) \tag{2.2}$$

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[17] In this study, wages refer to all kinds of wage income, including wages, salaries, bonuses, and benefits.

VC: Variable capital

SV: Surplus value

In Equation (2.2), the numerator is variable capital and the denominator is the sum of variable capital and surplus value, which is equal to new value. Equation (2.2) immediately raises two questions.

The first question is what are the non-capitalist components of the Chinese economy. For the Maoist era and the early period of the reform era when the state-socialist economic system still dominated, do we also exclude the non-capitalist components? Section 2.2.2.1 will address this question.

Figure 2-1 Labor's Share Measured by LS1, 1956-2012
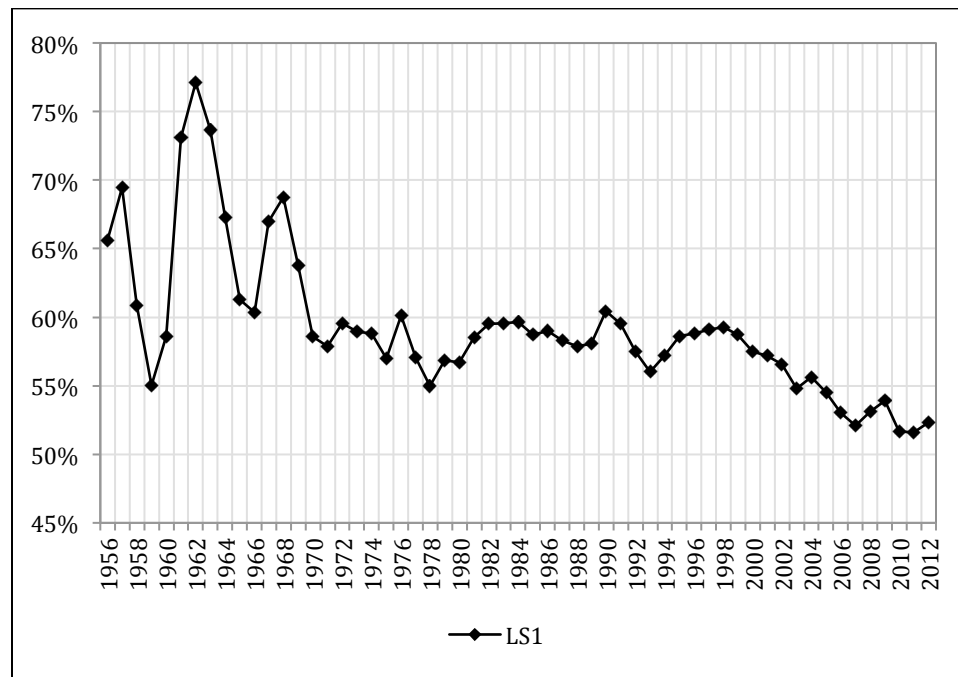
Sources: See Appendix A.

The second question is what are variable capital and surplus value for the economy. Given that only productive labor creates surplus value, this question can be asked in

another way: what is productive labor and what is unproductive labor for the economy. Section 2.2.2.2 will address this question.

Due to data availability, LS2 cannot rigorously follow the Marxian approach, thus some assumptions have to be imposed on the calculation of LS2. Section 2.2.3 will discuss the potential biases caused by the assumptions and propose improved measures, LS3 and LS4, with limited data.

2.2.2.1 Capitalist (Socialist) Components vs. Non-Capitalist (Non-Socialist) Components

China established a state-socialist economic system in 1956 when China completed the socialist transformation of the economy. China experienced the transition towards a capitalism-dominated economic system that started in 1978 and accelerated after 1992. Given these facts, capitalist components did not exist before 1978 and did not play an important role until 1992. Since capitalist components emerged only in the recent two decades, the analysis here will focus on the dominant part of the economy instead of the capitalist part.

I define the dominant part as the enterprise sector of the economy. Specifically, it includes state-owned enterprises, state-holding enterprises, collective enterprises, and private enterprises. Thus, during different periods, the dominant part had different meanings: it refers to the socialist components over the period 1956-1977 and the transitioning socialist components as well as the rising capitalist components over the period 1978-2012. This definition of the dominant part does not ignore the differences between capitalist and socialist components. The aim of this definition is to obtain a comparable measure of labor's share for the entire economy. Neither focusing on socialist components nor focusing on capitalist components can achieve this aim.

In addition, I treat the state sector, i.e. public administration, the legal system, the military, etc., as the dominant part because the value obtained by this sector is mainly a transfer of surplus value from productive sectors of the dominant part.[18]

The dominant part excludes three sectors in the economy: agriculture, self-employment units, and non-profit institutions for scientific research, education, culture, and medical services (hereafter, non-profit institutions).

Agriculture was organized collectively over the most years of the Maoist era and organized by rural households after the de-collectivization reform in the early 1980s. Throughout the whole period, agriculture was not organized in the form of enterprises and it was different from enterprises in many aspects such as organization, distribution, and employment. This practice is in line with Luo (1990) who also suggests that agriculture not belong to the dominant part of China's socialist economy.

Next is the self-employment sector. In the Maoist era, self-employment units were so few that one can safely ignore them, and even in the 1980s, self-employment accounted for a small part of total employment. The self-employment sector expanded after 1992, which was mainly based on household labor and a small proportion of wage labor. Some self-employment units might be as large as small private enterprises in terms of employment but they are not registered as enterprises; however, there is no data to distinguish those enterprises from real self-employment units. Therefore, I assume that all self-employment units belong to the non-dominant part of the economy.

The last sector is non-profit institutions. Over the period 1956-2012, the state mostly funded these institutions. Shaikh & Tonak (1994) treat public-funded institutions of education and medical services in the U.S. as government enterprises, and they suggest that

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[18] I will discuss the transfer of surplus value from productive sectors to non-productive sectors in Section 2.2.2.2. In fact, part of the value obtained by the state sector is a transfer from the non-dominant part, such as agricultural tax.

government enterprises in the U.S. are essentially capitalist enterprises but this need not be the case in other countries. For China, these institutions are not any kind of enterprises in that they aim at fulfilling certain needs of the society, rather than economic objectives such as output and profits. Thus, these institutions belong to the non-dominant part of the economy.

Note that the non-dominant part of the economy is productive but meanwhile unproductive of capital. This relates to the general distinction between productive and unproductive labor and the concrete distinction within the dominant part of an economy. For instance, in a typical capitalist economy, household-based agriculture is productive according to the general distinction because it produces products that satisfy certain needs of people's living; however, it is unproductive of capital based on the concrete distinction because it does not produce surplus value for capital. Both Luo (1990) and Shaikh and Tonak (1994) suggest that there are general and concrete distinctions between productive and unproductive labor.

2.2.2.2   Productive Labor vs. Unproductive Labor

After excluding the non-dominant part of the economy, I focus on the division between productive and unproductive labor within the dominant part of the economy. In the Marxian literature, for a typical capitalist economy, only productive labor produces surplus value for capital, thus only the wages paid to productive workers are variable capital. In general, there are three kinds of unproductive labor in a typical capitalist economy. First, on the micro level, supervisory labor within enterprises used for promoting the production of surplus value is unproductive. Second, labor used for trading activities is unproductive. Shaikh & Tonak (1994) define the redistribution of surplus value between production and trade as "primary flows". Third, labor used for finance and social maintenance (the state

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sector) is unproductive. Shaikh & Tonak (1994) define the surplus value paid by production and trade sectors to the financial and state sectors as "royalty payments" which refers to payments in the forms of interest, ground rent, fees, and taxes, and define this redistribution of surplus value as "secondary flows".

Although it is theoretically inconsistent to apply Marxian conceptions designed for a typical capitalist economy (e.g. surplus value, variable capital) to the state-socialist period of the Chinese economy, there were counterparts of these conceptions under the state-socialist system. The contradiction between promoting industrialization (mainly through accumulation) and enhancing the living standards of the people (mainly through raising wages) did exist under China's state-socialist system (Mao, 1977); thus, it was crucial for China to determine the distribution between economic surplus, using Baran's conception (Baran, 1957), and wages, which can be viewed as state-socialist counterparts of surplus value and variable capital, respectively.[19] For the sake of simplicity, in the following I use Marxian conceptions for the entire period without pointing out that in some cases they actually refer to the state-socialist counterparts.

In the Chinese literature, there were continuous debates throughout the 1980s and the early 1990s on what is productive labor and what is unproductive labor in the socialist economy. These debates to some extent promoted the transition of the statistical system from the Material Product System (hereafter, MPS) to the SNA. These debates brought up three different viewpoints: the first viewpoint, close to the SNA, treats both labor in material production and labor in the trade and service sectors as productive labor (Yu, 1981); the second viewpoint, close to the MPS, treats only labor used for material production as productive labor (Sun, 1981; Wei, 1981); the third viewpoint takes a middle

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[19] This contradiction to a large extent reflects the contradiction between the working class and the elites under China's state-socialist system. For a detailed analysis of the social contradictions in the Maoist era, see Wang (1990).

position, suggesting that labor in material production and some services is productive but labor in the trade, finance, and state sectors is unproductive (Luo, 1990).

The third viewpoint shares many similarities with Shaikh & Tonak (1994): first, labor in the trade, finance, and state sectors is unproductive, so the value gained by these sectors is a transfer of surplus value; second, in addition to the material production defined by the MPS, some services (for example, post services, telecommunications, food and hotel services, services to households) are also productive labor. Nevertheless, different from Shaikh & Tonak (1994), the third viewpoint in the Chinese literature does not treats supervisory labor as unproductive labor. Since supervisory labor is mainly aimed at promoting the production of surplus value, I treat supervisory labor as unproductive labor.

2.2.2.3   Definitions of Variable Capital and Surplus Value

According to the analysis in Section 2.2.2.1 and 2.2.2.2, the whole economy is restructured, by the division between the dominant part and the non-dominant part in the first place, and further by the division between productive labor and unproductive labor within the dominant part, as shown in Table 2-1. For the sake of simplicity, in the following I call sectors in the dominant part "productive sectors" or "unproductive sectors", although supervisory labor of "productive sectors" is unproductive.

Therefore, variable capital is defined as the total wages of productive sectors within the dominant part subtracting wages of supervisory labor, as shown in the following equation.

$$VC = (1 - \alpha)W_p \qquad (2.3)$$

W_p: Total wages of productive sectors

α: Share of wages of supervisory labor in W_p

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Table 2-1 Restructuring the Economy with A Marxian Approach

The whole economy				
Dominant part of the economy	Capitalist (socialist) components	State-owned enterprises, state-holding enterprises, collective enterprises, private enterprises, and the state sector	Productive labor	Mining, manufacturing, utilities, construction, transportation, post and telecommunications, food and hotel services, social services
			Unproductive labor	Supervisory labor, labor used for the trade, finance, and state sectors
Non-dominant part of the economy	Non-capitalist (non-socialist) components	Agriculture, self-employment units, and non-profit institutions for scientific research, education, culture, and medical services		

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Surplus value is composed of three parts: first, net value added[20] of productive sectors subtracting variable capital, which is the sum of supervisory wages, profits, and indirect taxes of productive sectors; second, total output of commerce (the trade sector), which is the sum of intermediate inputs, depreciation of fixed capital, wages, profits, and indirect taxes of commerce; third, royalty payments paid by productive sectors and commerce to the finance sector. Thus, surplus value is defined as follows.

$$SV = \left(NV_p - VC\right) + TO_c + RY_p + RY_c \qquad (2.4)$$

NV_p: Net value added of productive sectors, which is the sum of wages, profits, and indirect taxes of productive sectors.

TO_c: Total output of commerce, which is the sum of intermediate inputs, depreciation of fixed capital, wages, profits, and indirect taxes of commerce.

RY_p: Royalty payments paid by productive sectors to the finance sector.

RY_c: Royalty payments paid by commerce to the finance sector.

With Equation (2.3) and (2.4), we can calculate LS2. A rigorous calculation of LS2 requires input-output tables. Although China began to compile input-output tables as early as 1973, the first input-output table that corresponds to the SNA was complied in 1992 while the earlier tables only contain material production sectors under the MPS; since 1992, input-output tables have been published every two or three years, thus there is no continuous input-output data for the whole economy. Therefore, I use official statistical data

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[20] Note "value added" is different from the Marxian concept "new value". Value added is a concept from GDP accounting, which is the sum of the compensation of employees, profits, indirect taxes, and depreciation of fixed capital. Net value added is value added subtracting depreciation of fixed capital.

under the MPS and the SNA to replace the data that should be obtained from input-output tables. The result of LS2 is given in Figure 2-2.

Figure 2-2 Labor's Share Measured by LS2, 1956-2012
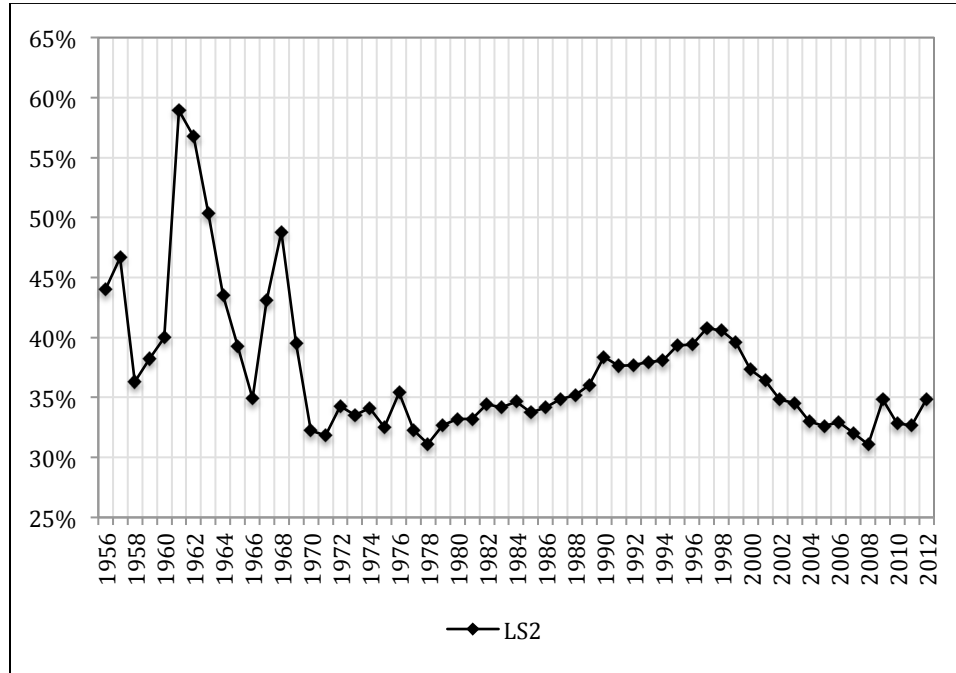
Data Sources: See Appendix A.

2.2.3   Marxian Measures: LS3 and LS4

2.2.3.1   Assumptions Imposed on LS2 and Potential Biases

Due to data availability, the following assumptions are imposed on the calculation of LS2, which might lead to biases in the trends of LS2.

Assumption 1: royalty payments paid by productive sectors and commence to the finance sector are assumed to be paid out of profits, which means that royalty payments have already been included in NV_p and TO_c such that RY_p and RY_c are both zero. In reality, however, these payments are either paid out of profits or treated as costs, which means that royalty payments are not entirely covered by NV_p and TO_c. In general, this assumption will

overestimate LS2, and since royalty payments increased as the economic transition proceeded, the overestimation of LS2 will be worse in later years than in earlier years.

Assumption 2: the wage share of supervisory labor in productive sectors is zero, i.e. α is zero. This obviously unrealistic assumption will also overestimate LS2.

Assumption 3: the different definitions of net value added under the MPS and the SNA do not affect LS2. In fact, since the MPS only focus on material production sectors, there is a discrepancy between the definitions of net value added under the MPS and the SNA. For instance, a manufacturing enterprise purchases services from the food and hotel service sector. This purchase is counted as intermediate inputs of the enterprise under the SNA but net value added under the MPS, thus a part of the net value added of the food and hotel service sector is double counted, which implies that LS2 using MPS data is underestimated. Since MPS data is used only for the period 1956-1977, this assumption will only underestimate LS2 of the Maoist era.

Assumption 4: the redistribution of surplus value only takes place within the country. In reality, surplus value produced by China's productive sectors can be distributed to a foreign trade sector, and vice versa. For instance, Wal-Mart in the U.S. who sells products imported from China may obtain surplus value created by the manufacturing exporter located in China. This transfer of surplus value cannot be estimated without detailed export and import data. Since export surplus became increasingly large in the reform era, the transfer of surplus value from China to foreign countries might be considerable, which means that this assumption will overestimate LS2 in later years relative to that in earlier years.

Assumption 5: the commerce sector does not include trade of real estate. This assumption will overestimate LS2 in that the surplus value distributed to the real estate

sector for its trading activities is assumed to be zero.[21] Since the trade of real estate expanded mainly after the housing reform initiated in 1998, the overestimation should be worse in later years than in earlier years.

All the five assumptions above except Assumption 2 will underestimate LS2 in earlier years or overestimate it in later years. In what follows, with limited data, I first relax Assumption 1 in Section 2.2.3.2 and then both Assumption 1 and 2 in Section 2.2.3.3. Due to data availability, I have to leave the rest of the assumptions for future research.

2.2.3.2   Royalty Payments as Costs and LS3

Equation (2.5) is used to estimate $RY_p + RY_c$.

$$RY_p + RY_c = \beta\left(NV_p + NV_c\right) \tag{2.5}$$

NV_c: Net value added of commerce, which is the sum of wages, profits, and indirect taxes of commerce.

β: The estimated ratio of royalty payments counted as costs of productive sectors and commerce to the net value added of productive sectors and commerce.

The result of LS3 is given in Figure 2-3. The comparison in Figure 2-3 shows that LS2 and LS3 have similar trends.

2.2.3.3   Supervisory Labor and LS4

The wage share of supervisory labor in productive sectors, i.e. α, is determined by two factors.

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[21] Note that this does not refer to the surplus value paid to the real estate sector in the form of ground rent.

The first factor is the employment share of supervisory employees in productive sectors. Different data sources show different information about this factor. The statistical bureau published data about the composition of mining, manufacturing, utilities, and construction employees according to their positions in enterprises for the years 1980-1987, 1990, 1993-1997. This data shows that the employment share of supervisory employees in productive sectors varied within a narrow range from 9.8 percent to 11 percent. Another data source, the worker and staff surveys conducted by the All-China Federation of Trade Unions (hereafter, ACFTU) every five years since 1992, shows that this share grew from 20 percent in 1992 to 32 percent in 1997, then dropped to 24 percent in 2002 and further fell to around 20 percent in 2007 and 2012.[22]

Figure 2-3 The Comparison of LS2 and LS3, 1978-2012
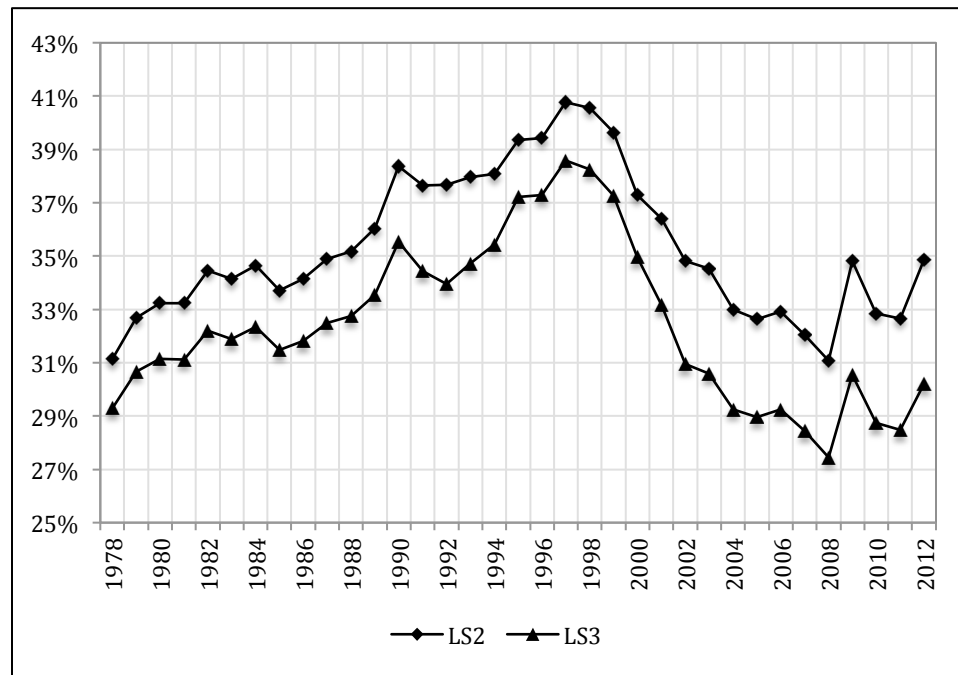
Data Sources: See Appendix A.

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[22] The statistical bureau also conducted smaller surveys on workers and staff in a few cities and counties for the years 1978, 1985, 1988, and 1990-1994.

The statistical bureau data were directly reported by all enterprises. Compared to the statistical bureau data, the ACFTU surveys might be vulnerable to sampling methods.[23] Also, the ACFTU surveys mix up productive sectors and unproductive sectors. Furthermore, micro-level data also suggests that supervisory share of total employment was around 10 percent before 1990.[24] On the other hand, the statistical bureau data suggests that this share was stable but the same data is not available for the years after 1997. Although it seems unreasonable, I assume that the supervisory share of total employment was 10 percent over the period 1978-2012.[25]

The second factor that determines α is the ratio of the average wage level of supervisory employees to that of all employees in productive sectors. This ratio also measures the wage inequality between supervisory employees and productive workers. In the next chapter, I will discuss in detail how this wage inequality reflects changes in the power relation in the sphere of production. I use the wage data from the ACFTU surveys and the smaller surveys conducted by the Statistical Bureau to calculate this ratio and extrapolate the missing data. Although the sampling methods might cause biases in the composition of employees, they should have a much smaller impact on wage inequality because the power relation in the sphere of production affected wage inequality in similar ways across enterprises.

Figure 2-4 gives LS4. Compared to LS3, LS4 is smaller than LS3, and the difference between LS3 and LS4 became slightly greater after 1997 and then slightly smaller after 2007.

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[23] For instance, the 1997 ACFTU survey selected the same amount of enterprises from each subsector of manufacturing, which obviously cannot reflect the actual composition of employees for the whole manufacturing sector.

[24] The micro-level data comes from materials of the mining industry in Henan Province, Zhengzhou No. 5 Cotton Textile Factory, Guangxi No. 1 Machinery Manufacturing Factory, Changzhou Machinery Manufacturing Factory, and Luoyang Glass Group.

[25] Mohun (2013) shows that the supervisory share of total employment in the U.S. was also relatively stable over the period 1964-2010.

2.3 Trends of Labor's Share

2.3.1 Maoist Era vs. Reform Era

LS2 shows that labor's share in the Maoist era was on average higher than that in the reform era. What does this result imply? Does it imply that the power of the working class was greater in the Maoist era?

Figure 2-4 The Comparison of LS3 and LS4, 1978-2012
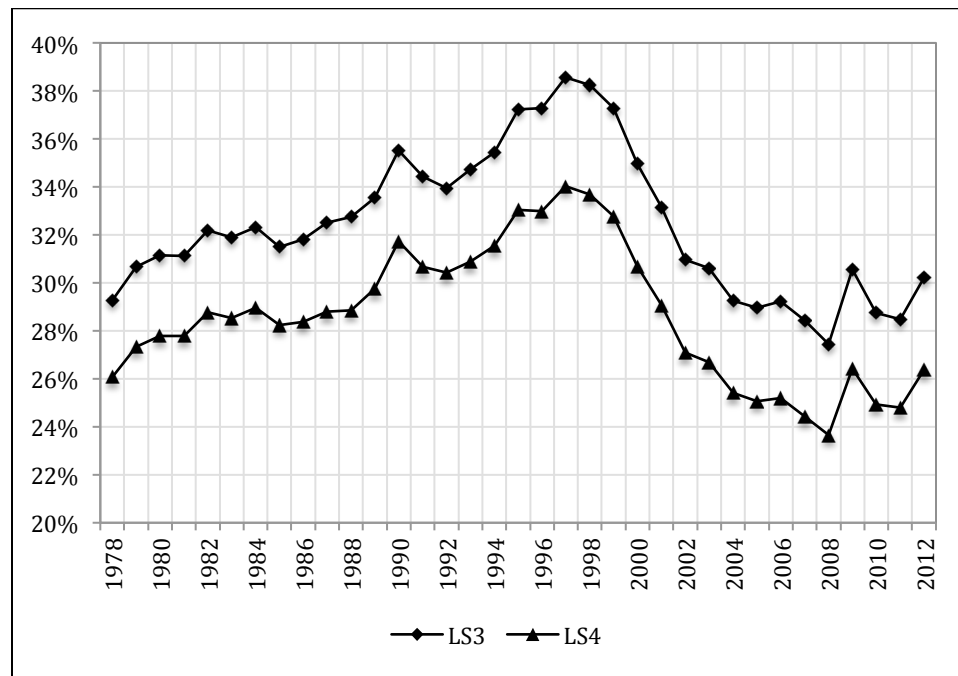
Data Sources: See Appendix A.

One may argue that the higher labor's share in the Maoist era was caused by the economic contractions in the 1960s that led to the decrease in the new value. While this argument is questionable,[26] I suggest that one should not draw conclusions about the power relation in the sphere of production from a simple comparison between labor's shares of the

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[26] This argument is questionable because it only sees the contractions of the economy, but does not explain why wages did not contract as well.

two eras. In the capitalism-dominated system, surplus value is accumulated for the production of more surplus value; while in the state-socialist system, surplus value was accumulated for industrialization, which was relevant to the long-run interests of the working class. This difference suggests that there was a systematic break between the two eras such that changes in the power relation in the sphere of production between the two eras cannot be directly reflected by labor's share.

However, one can still see the difference between the two eras in the relationship between accumulation and distribution. It is true that the economic contractions in the 1960s led to a fall in the new value, but they were not necessarily led to higher labor's share because variable capital could decrease as well. Higher labor's share during contractions implies that there were more wage and job securities in the Maoist era, thus fluctuations of accumulation were not allowed to affect workers' living conditions; while as the transition proceeded, fluctuations of accumulation was increasingly relevant, initially to wage security, and later to both wage and job securities.

This difference can be seen from changes in the counter-cyclical behaviors of labor's share. While labor's share was counter-cyclical throughout the entire period, it was more counter-cyclical in the Maoist era than in the reform era. Table 2-2 gives the correlation coefficients between real GDP growth and labor's share and those between real GDP growth and the growth of labor's share. Both the coefficients in the reform era were higher than those in the Maoist era.

2.3.2 Inverse-U Shape and the Recovery of Labor's Share

Labor's share measured with the Marxian approach show an inverse-U shape in the reform era before 2009, which had a rising trend over the period 1978-1990 and kept growing more slowly over the period 1991-1998, then entered a falling trend until 2008.

This inverse-U shape of labor's share took place along with fast economic growth and development over the reform era. If we consider labor's share as a proxy for inequality, this inverse-U shape of labor's share contradicts the Kuznets curve that depicts an inverse-U shape of the relationship between inequality and economic development (Kuznets, 1955). Using top income ratios and labor's share measured with the conventional approach, Piketty (2014) shows that the Kuznets curve is not supported by the experiences of leading capitalist economies. Here we see that using labor's share measured with the Marxian approach, China's experience does not support the Kuznets curve either.

Table 2-2 Correlations between GDP Growth and the Growth of Labor's Share

Periods	(1) Correlation between real GDP growth and LS2	(2) Correlation between real GDP growth and LS2 growth
1956-1977	-0.557	-0.819
1978-2012	-0.098	-0.225

Sources: NBS (2009) and the author's calculation.

This inverse-U shape of labor's share differs from the US experience. Converting labor's share measured by LS4 into the rate of surplus value for the sake of comparison, China's rate of surplus value fell from 2.8 in 1978 to 1.9 in 1997 and then increased to 3.2 in 2008. The rate of surplus value estimated with similar methods for the U.S. was generally in a rising trend in the post-WWII period except the period 1964-1974 (Paitaridis and Tsoulfidis 2011; Shaikh and Tonak 1994). Over China's reform era, the rate of surplus value in the US increased from 2.2 in 1978 to 3.1 in 1997 and 3.5 in 2007 (Paitaridis and Tsoulfidis 2011). China's rate of surplus value increased much faster than the rate of surplus value in the U.S., while it was lower over the period 1997-2007. Right before the crisis, China's rate of

surplus value was not as high as that in the U.S., which brings up interesting questions whether a high the rate of surplus value plays a key role in crisis tendencies.

This inverse-U shape of labor's share in China may imply that the power relation in the sphere of production changed following an inverse-U shape as well. In the next chapter, I will discuss this issue in detail.

The trends of labor's share coincide with the expansion and contraction of the state-owned sector. Labor's share measured by LS4 reached the peak in 1997, when the Fifteenth Conference of the Communist Party of China accelerated the reform on the state-owned sector, featured by laying off workers, privatizing small-scale enterprises, and transforming large-scale enterprises into share-holding companies. Employment of state-owned and state-holding industrial enterprises dropped by 6 percent in 1997, by 7 percent in 1998, and by about 10 percent each year from 1999 to 2003.

Labor's share might have begun to recover after 2008. A series of events took place along with this recovery. First of all, the financial and economic crisis that initiated in the U.S. led to a recession for leading capitalist economies, which also affected the Chinese economy through the contraction of the demand for China's exports. China's economic growth fell behind the growth of wages, leading to the recovery of labor's share. Secondly, as the long-lasting decline of labor's share constrained workers' capacity to satisfy their needs for the reproduction of labor power, struggles of workers for a living wage surged against this background (Li and Qi, 2014). Third, the recovery of labor's share was also triggered by the reduction in the reserve army of labor which enhancing the bargaining power of workers.

2.4   A Cointegration Analysis of Labor's Share

In the analysis above, I show that there are mainly two differences between labor's shares measured by the Marxian approach and the conventional approach. First, the conventional approach includes both the dominant part and the non-dominant part of the economy, while the Marxian approach only focuses on the dominant part. Second, the Marxian approach takes the transfer of value into account, while the conventional approach does not.

Since the Marxian measure reflects the relationship between production and distribution, it should have an impact on conventionally measured labor's share. In the following I examine whether there is a long-run relationship between the two measures.

This long-run relationship, if it exists, should be related with another two variables: first, the share of the dominant part in the new value of the economy (DS); second, the share of surplus value distributed to unproductive labor as wages (UP). Figure 2-5 and Figure 2-6 plot DS and UP, respectively. Thus, the long-run relationship is expressed as follows:

$$lnLS1_t = \alpha_0 + \alpha_1 lnMLS_t + \alpha_2 lnDS_t + \alpha_3 lnUP_t + \mu_t \qquad (2.6)$$

In Equation (2.6), $lnLS1_t$ is the logarithm of labor's share measured by LS1, $lnMLS_t$ is the logarithm of labor's share measured by one of the Marxian measures (LS2, LS3, or LS4), $lnDS_t$ is the logarithm of the share of the dominant part in the new value of the economy, $lnUP_t$ is the logarithm of the share of surplus value distributed to unproductive labor as wages, and μ_t is the error term. The subscript t indicates that the regression is using time series data. As argued earlier, there were systematic differences between the Maoist era and the reform era, thus the time series analysis here only focuses on the reform era.

Figure 2-5 Share of the Dominant Sector in New Value, 1978-2012
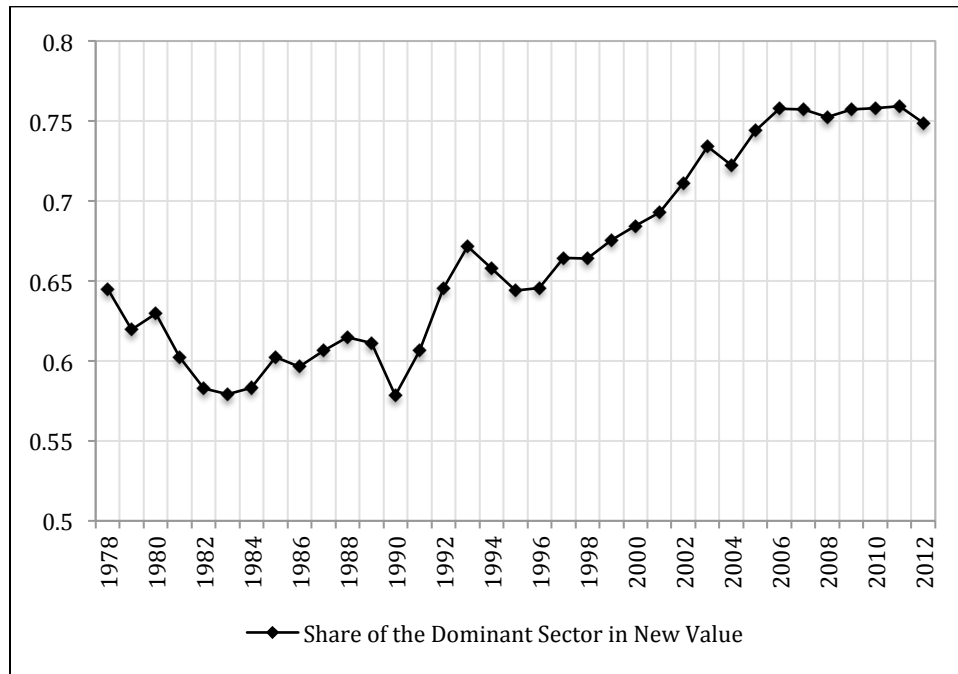
Sources: See Appendix A.

Figure 2-6 Share of Surplus Value Distributed to Unproductive Labor, 1978-2012
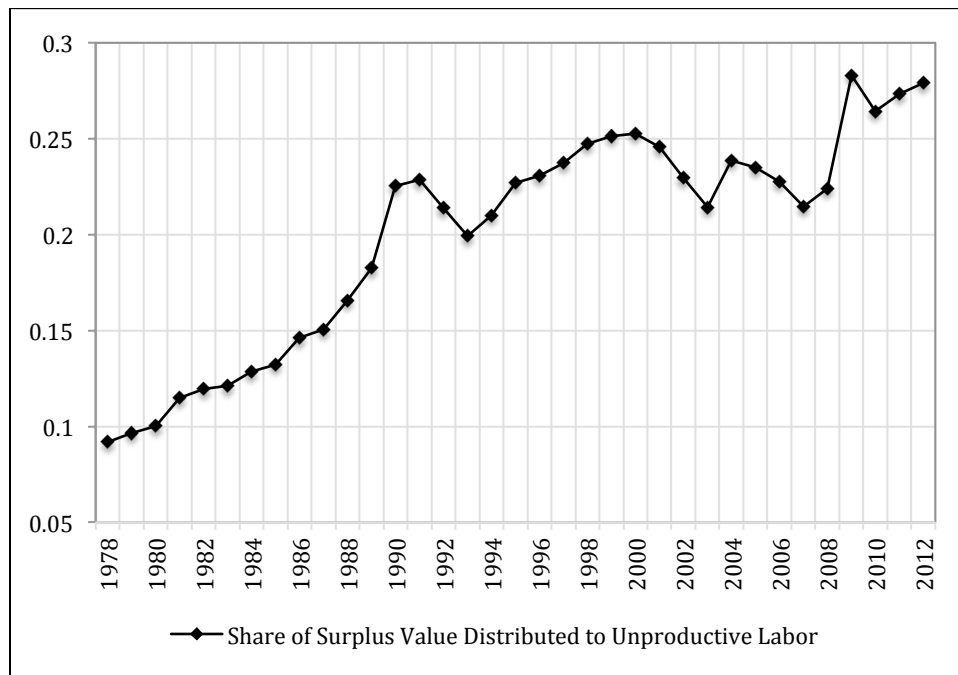
Data Sources: See Appendix A.

To avoid spurious regressions, all variables need to be stationary in levels, or all variables are non-stationary in their levels but stationary in first differences and meanwhile they are cointegrated. Thus, the first step of the analysis is unit root tests. Table 2-3 gives the results of the augmented Dickey-Fuller test and the Pillips-Perron test. The results show that all variables except $lnDS_t$ are non-stationary in levels and stationary in first differences; in other words, all variables except $lnDS_t$ are $I(1)$ variables. For $lnDS_t$, the augmented Dickey-Fuller test suggests that it is $I(1)$ but the Pillips-Perron test suggests that it is $I(0)$. Since unit root tests do not completely support that $lnDS_t$ is $I(1)$, the autoregressive-distributed lag (ARDL) approach to cointegration developed by Pesaran et al. (2001) is applied here. This approach uses bounds test to examine whether a cointegration relation exists among a group of variables that are either $I(0)$ or $I(1)$, which is widely used in recent empirical studies (for example, Halicioglu, 2012; Yavuz et al, 2013; Onafowora and Owoye, 2014).

According to this approach, Equation (2.6) should incorporate short-run adjustment process, thus we have:

$$\Delta lnLS1_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta lnLS1_{t-1} + \sum_{i=0}^{q_1} \beta_2 \Delta lnMLS_t + \sum_{i=0}^{q_2} \beta_3 \Delta lnDS_t + \sum_{i=0}^{q_3} \beta_4 \Delta lnUP_t$$

$$+ \beta_5 lnMLS_{t-1} + \beta_6 lnDS_{t-1} + \beta_7 lnUP_{t-1} + \beta_8 Y98 + v_t \qquad (2.7)$$

In Equation (2.7), the Δ sign means first differences. p and q_i are lag lengths, β_i are coefficients, and v_t is the error term. To take into account the effect of the reform on the state-owned sector, I include a dummy variable for the period from 1998 to 2003.[27] The

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[27] Pesaran et al. (2001) suggest that the critical values must be modified when dummy variables are incorportated. However, in an application of the ARDL approach, Pesaran et al. (2001) also includes time dummies and the fraction of observations where one of the dummies is non-zero is

bounds test uses the OLS result of Equation (2.7) to test the hypothesis $\beta_5 = \beta_6 = \beta_7 = 0$ by comparing the F-statistic with the lower bound and the upper bound of critical values. If the F-statistic is smaller than the lower bound, then there is no long-run relationship between levels of the variables; if the F-statistic is greater than the lower bound but smaller than the upper bound, then the result is inconclusive; if the F-statistic is greater than the upper bound, then there is a long-run relationship between levels of the variables.

Table 2-3 Unit Root Tests

	Augmented Dickey-Fuller Test			
	Intercept		Intercept and trend	
Variables	Level	First difference	Level	First difference
$\ln LS1_t$			-2.925	-5.075*
$\ln LS2_t$	-1.914	-5.962*		
$\ln LS3_t$		-5.251*	-1.744	
$\ln LS4_t$		-5.087*	-1.174	
$\ln DS_t$		-4.210*	-3.162	
$\ln UP_t$	-1.372	-5.498*		
	Pillips-Perron Test			
	Intercept		Intercept and trend	
Variables	Level	First difference	Level	First difference
$\ln LS1_t$		-5.424*	-2.947	
$\ln LS2_t$	-2.056	-6.008*		
$\ln LS3_t$		-5.381*	-1.863	
$\ln LS4_t$		-5.237*	-1.897	
$\ln DS_t$		-6.441*	-6.301*	
$\ln UP_t$	-1.418	-5.676*		

Notes: * denotes rejection of the null hypothesis of a unit root at 1 percent significance level.

According to the Bayesian information criterion, lag lengths (1, 1, 0, 1) are selected for (p, q_1, q_2, q_3). A key assumption of the bounds test is that the residuals of Equation (2.7)

19.2%, and they suggest this dummy has limited impact on critical values. Here the non-zero fraction is 17.1%.

must be serially independent. With these lag lengths (1, 1, 0, 1), there is no serial correlation in the residuals.[28] The results of the bounds test in Table 2-4 support that there is a long-run relationship between levels of the variables, no matter which Marxian measure is used for $lnMLS_t$. Thus, next I run the regression with Equation (2.6) to obtain the long-run results.

Table 2-4 ARDL Bounds Test Result for Cointegration

Which Marxian measure is used for MLS_t	F-statistic	
$LS2_t$	6.27**	
$LS3_t$	9.09***	
$LS4_t$	9.55***	
Critical Values	I(0)	I(1)
1%	5.198	6.845
5%	3.615	4.913
10%	2.958	4.100

Notes: ** and *** denotes 5% and 10% significance levels, respectively. Critical values are from the appendix of Narayan (2005).

Table 2-5 gives the long-run coefficients. The long-run results show that coefficients of labor's share measured by the Marxian approach are positive and statistically significant, which confirms that there is a long-run relationship between the Marxian measure and the conventional measure of labor's share. Taken $LS4_t$ as an example. The long-run results suggest that, for each one percent increase in $LS4_t$, $LS1_t$ will rise by 0.17 percent. Over the period 1998-2012, $LS4_t$ dropped by 22 percent, which corresponds to 4 percent decrease in $LS1_t$, or one-third of the decrease in $LS1_t$ over this period.

The coefficients of $lnDS_t$ are negative and statistically significant. Since the majority of the non-dominant part is household-based agriculture where profits do not exist, the

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[28] The p value of LM test is 0.196.

negative coefficients of $lnDS_t$ are reasonable. This result seems to be consistent with the mainstream story that I criticize in Section 1.1; however, the cointegration analysis does not prove that there is a causal relationship between the sectoral structure and labor's share. Moreover, in Chapter 4, I will show that even the statistical relationship between sectoral structure and labor's share is insignificant in a panel analysis for the period 1999-2010.

Table 2-5 Long-Run Results

	Dependent variable: $lnLS1_t$		
	(1) Using $lnLS2_t$ for $lnMLS_t$	(2) Using $lnLS3_t$ for $lnMLS_t$	(3) Using $lnLS4_t$ for $lnMLS_t$
$lnMLS_t$	0.228***	0.187***	0.174***
	(3.814)	(4.259)	(4.024)
$lnDS_t$	-0.397***	-0.383***	-0.375***
	(-6.590)	(-6.615)	(-6.046)
$lnUP_t$	0.004	0.014	0.018
	(0.242)	(0.969)	(1.204)
Constant	-0.485***	-0.490***	-0.474***
	(-8.138)	(-9.315)	(-7.975)

Notes: *** denotes 1% significance level. The t-statistics are in parentheses.

The coefficients of $lnUP_t$ are statistically insignificant. A possible reason is that wages of unproductive labor is mainly used to facilitate the realization of surplus value, thus they cannot rise to a level that squeezes the surplus value retained by enterprises.

After the long-run regression of Equation (2.6), we obtain the residuals that compose the error correction term in the following error correction expression:

$$\Delta lnLS1_t = \delta_0 + \sum_{i=1}^{p} \delta_1 \Delta lnLS1_{t-1} + \sum_{i=0}^{q_1} \delta_2 \Delta lnMLS_t + \sum_{i=0}^{q_2} \delta_3 \Delta lnDS_t + \sum_{i=0}^{q_3} \delta_4 \Delta lnUP_t$$

$$+\gamma_5 EC_{t-1} + \gamma_6 Y98 + \omega_t \tag{2.8}$$

Equation (2.8) is same as Equation (2.7) except it replaces the level variables in Equation (2.7) with the error correction term EC_{t-1}. The coefficient γ_5 in Equation (2.8) should be negative, which means that $lnLS1_t$ will respond to the deviation from the long-run relationship by offsetting the deviation. Thus, a negative γ_5 will support that there is a long-run relationship between levels of the variables.

Table 2-6 gives the OLS regression results of Equation (2.8), which indicates that γ_5 is negative and its absolute value is smaller than one. This result confirms the existence of the long-run relationship. Furthermore, the regression results have passed diagnostic tests for misspecification, serial correlation, normality, and heteroskedasticity.

2.5   Conclusion

This chapter has constructed homogenous series of labor's share using a Marxian approach, and analyzed the relationship between the Marxian measure and the conventional measure of labor's share. Changes in labor's share measured by the Marxian approach may result from changes in the power relation, which lays the foundation for the next two chapters to analyze institutional factors that caused changes in the power relation. The main findings of this chapter have indicated that, over the reform era, labor's share measured by the Marxian approach increased from 1978 to the early 1990s, declined over the period from the mid-1990s to 2008, and then increased again after 2008. The cointegration analysis has indicated that there is a long-run relationship between the Marxian measure and the conventional measure of labor's share. More detailed analysis of the determinants of labor's share is left to the next two chapters.

Table 2-6 Error-correction representation results

	Dependent variable: $\Delta \ln LS1_t$		
	(1) Using $LS2_t$ for MLS_t	(2) Using $LS3_t$ for MLS_t	(3) Using $LS4_t$ for MLS_t
$\Delta \ln LS1_{t-1}$	0.476***	0.493***	0.509***
	(4.788)	(5.035)	(5.296)
$\Delta \ln MLS_t$	-0.049	-0.060	-0.071
	(-1.059)	(-1.417)	(-1.701)
$\Delta \ln MLS_{t-1}$	-0.134**	-0.118**	-0.128***
	(-2.706)	(-2.635)	(-2.869)
$\Delta \ln DS_t$	-0.390***	-0.399***	-0.403***
	(-6.621)	(-6.848)	(-7.092)
$\Delta \ln UP_t$	0.110***	0.111***	0.115***
	(4.715)	(4.985)	(5.268)
$\Delta \ln UP_{t-1}$	-0.096***	-0.107***	-0.104***
	(-3.567)	(-4.075)	(-4.045)
Year98-03	0.000	-0.002	-0.002
	(0.099)	(-0.613)	(-0.596)
EC_{t-1}	-0.451***	-0.469***	-0.491***
	(-4.300)	(-4.619)	(-4.872)
Constant	0.001	0.002	0.001
	(0.525)	(0.785)	(0.652)
Adjusted R^2	0.898	0.903	0.908
DW	1.958	1.764	1.793
RESET	0.550	0.600	0.650
χ^2_{BG}	0.002	0.361	0.240
χ^2_{JB}	0.324	0.749	0.764
χ^2_{ARCH}	0.259	0.090	0.037

Notes: The lag lengths of regressors are selected according to Schwarz criterion. The t-statistics are in parentheses. DW is Durbin-Watson statistic. RESET is Ramsey F-statistic for omitted variables. χ^2_{BG}, χ^2_{JB}, and χ^2_{ARCH} are statistics used for Breusch-Godfrey serial correlation test, Jarque-Bera normality test, and autoregressive conditional heteroskedasticity test, respectively.

CHAPTER 3

DISTRIBUTION ACCORDING TO WORK: ECONOMIC TRANSITION, THE

POWER RELATION, AND LABOR'S SHARE

3.1   Introduction

In Chapter 2, I have shown that China's labor share in the reform era, measured with a

Marxian approach, had a rising tendency from 1978 to the early 1990s followed by a falling

tendency from the mid-1990s to the outbreak of the global crisis in 2008. Based on this

observation, I divide the entire period 1978-2007 into two stages: the first stage from 1978

to the early 1990s and the second stage from the mid-1990s to 2008.[29] From a perspective

of economic transition, why did the labor share change in such an inverted-U manner? This

is the question to be addressed in this chapter.

Economic transition in this chapter (as well as in other chapters of this study) refers to

the transition from a state socialist economic system to a capitalism-dominated economic

system that took place in China throughout the reform era. This chapter, in particular,

focuses on a crucial aspect of the transition, i.e. the changes in the power relation between

the state, cadres, and workers.[30] I suggest that, in the first stage of the reform era, workers

were still powerful, cadres and workers were close in economic conditions, and cadres tried

[29] This periodization does not take the peak year of labor's share measured with the Marxian approach (1998) as the boundary because Deng Xiaoping's southern tour in 1992 greatly accelerated the economic transition and the reform on the state-owned enterprises already took place a few years before 1998. The period from the early 1990s to the mid-1990s should be considered as a transition between the two stages of the reform era.

[30] Before the reform on state-owned enterprises that started in the mid-1990s, "cadres" in China referred to both officials in governments and managers in factories or enterprises. In this chapter, "cadres" only refers to managers in factories or enterprises.

to increase wages for all workers and themselves; as a result, labor's share measured by the Marxian approach was continuously increased. This power structure, however, led to recurrent inflation and squeezed profits, which threatened accumulation in the first stage.[31] To resolve these problems, the state launched a series of reforms, resulting in the commodification of labor power and the division between cadres and workers, which repressed the power of workers and caused labor's share measured by the Marxian approach to decline in the second stage of the reform era.

This chapter may contribute to the current literature on the causality between economic transition and distribution. A big literature has confirmed the rise of inequality for countries that experienced the economic transition from a central-planned economy to a market economy (Ferreira 1997; Milanovic 1998; Riskin, Zhao, and Li 2001; Giammatteo 2006; Ivanova 2007; Milanovic and Ersado 2010; Aristei and Perugini 2012). Different from the literature that uses Gini coefficients or income shares (for example, decile shares) to measure inequality, this chapter can be seen as a study using labor's share to measure inequality between two classes, capital and labor. I argue that decreasing power of labor in the sphere of production has been a crucial cause of a declining labor's share.[32] In terms of the causality between economic transition and inequality, Mitra and Yemtsov (2006) reviews the existing literature and summarizes six drivers of inequality in transition;[33]

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[31] This chapter uses "accumulation" and "capital accumulation" in different cases: "capital accumulation" is used only after capitalist relation of production emerged in the second stage of the reform era; "accumulation" is used for the Maoist era and the first stage of the reform era.

[32] Piketty (2014) has shown that, in major capitalist countries over long history periods, the profit share in the national income has a positive relationship with the inequality measured by Gini coefficients and income shares. Furthermore, the measure of profit share (or labor share) has an obvious advantage compared to other measures of inequality: the profit share is based on primary distribution, thus it does not miss the retained profits of enterprises that Gini coefficients and income shares usually miss.

[33] These drivers are: (1) wage decompression and growth of the private sector; (2) restructuring and unemployment, reverting to subsistence economy; (3) fiscal adjustment affecting government

however, there is a lack of research on the impact of the changing power relation in economic transition on inequality. Moreover, many studies suggest that inequality in transition was caused by the rising wage inequalities and diminishing social transfers (for example, Milanovic, 1998; Riskin et al., 2001; Mitra and Yemtsov, 2006; Ivanova, 2007), but they did not further explore how the power relation interacts with wage inequalities (especially, management-worker wage inequality) or social transfers. On the other hand, there are studies arguing that class struggles led to income polarization in China's economic transition (for example, Li 1994; Hart-Landsberg and Burkett 2005); nevertheless, they did not explore how class struggles caused labor's share measured by the Marxian approach to change in an inverted-U manner.

In what follows, this chapter is organized into four sections. Section 2 provides an overview of the historical background of the economic transition. Section 3 discusses the power relation in the first stage of the reform era and its impacts on distribution and accumulation, followed by Section 4 which discusses the reforms in the second stage aimed at dealing with the problems with the first stage and their impacts on distribution. Section 5 concludes the chapter.

3.2   Historical Background: The Maoist Factory Regime and Its Foundation[34]

After establishing the public ownership of means of production, China attempted to build up the socialist relation of production through the Maoist factory regime, which emphasized the role of politics in promoting workers' enthusiasm in production. As the slogan "politics in command" expressed, the regime suggested that, if workers realized that

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expenditure and taxation, corruption; (4) price liberalization, inflation and arrears; (5) asset transfer, growth of property income; (6) technological change, increased mobility and globalization.

[34] I follow Burawoy (1985) to use the concept "factory regime" to describe the set of relations and institutions in the workplace of a particular period.

the development of production contributed to the long-term interests of the entire working class, they would voluntarily contribute more efforts in production (Bettelheim 1974; Andors 1977).

The dialectics between short-term and long-term interests of the working class was crucial for the development of China's underdeveloped economy. In practice, this dichotomy of short-term and long-term interests corresponded to the division between wages (or consumption) and profits (or accumulation). To realize both objectives of industrialization (which further relied on accumulation) and the improvements of the people's living conditions, the state had to choose a reasonable proportion to divide the total income into wages and profits. If workers agreed that they could improve their interests in the long run by consuming less in the short run, then industrialization could speed up. Therefore, resulted from the Maoist factory regime, China established a low-wage distribution system for both workers and cadres.[35]

Obviously, it was impossible for the state to force workers to contribute more and to consume less.[36] Therefore, it was necessary to establish the institutional foundation for the Maoist factory regime.

First of all, material incentives, such as bonuses and piece-rate wages, were not encouraged by the state because they tended to undermine the incentives generated by "politics in command".

In 1958, after a few years of the first-five-year plan period, Mao Zedong (1998) criticized the Soviet textbook of political economy for over-emphasizing the role of material incentives: "(The textbook) does not say that, if the interests of all the people are realized,

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[35] Low wages for workers were also aimed at promoting the unity of workers and peasants because the income of peasants was even lower than workers' wages. See Ma (1959).

[36] It is not an effective approach for a state to workers to consumer less and to contribute more through repression.

then the interests of individuals can also be realized; the material interests emphasized by the textbook are in fact the most short-sighted individualism." "From each according to his ability, to each according to his work: the first part of the sentence means people should try all their best in production. Why do people understand this sentence without the first part and always emphasize material incentives?"

Not encouraging material incentives did not imply that the Maoist factory regime must exclude bonuses and piece-rate wages. For example, Ma Wenrui, the Minster of Labor, said in 1959, "How do we encourage workers' enthusiasm in production? We should mainly rely on ideological work. Of course, we cannot omit the role of material encouragement."(Ma 1959) In addition, Xu (1979) suggests that bonuses can be used to limit the bourgeois rights in distribution. Nevertheless, to what extent could a socialist factory regime make use of "material encouragement" was always controversial during the Maoist era.[37]

Secondly, a high-benefit system was established as a complement to the low-wage system since the living conditions of workers played an important role in maintaining workers' enthusiasm in production. The state improved the living conditions of workers by providing various benefits instead of raising wages. Due to the economy of scale in the provision of benefits, it was more rational to provide benefits (such as housing, retirement pensions, medical services, and education) by a single supplier.

Thirdly, factories were not allowed to fire workers because job security was a necessary condition for workers to voluntarily contribute efforts in production. If the future was

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[37] Bonuses and piece-rate wages were widely used before 1958. During the Great Leap Forward movement (1958-1960), workers' enthusiasm in production was so high that the state suggested bonuses and piece-rate wages not be used. However, in the period of economic adjustment (1961-1965), the state allowed factories to use bonuses and piece-rate wages for economic recovery. During the Cultural Revolution (1966-1976), bonuses and piece-rate wages were abandoned by the state again. The changes in the attitude toward bonuses and piece-rate wages reflected the debates among the leadership and conflicts between different attitudes of the leadership toward what is and how to build the socialist relation of production.

uncertain to workers due to the lack of job security, how could workers care about the long-term interests of the working class?

Fourthly, the state made workers the masters of their factories. To this end, the state strictly restricted the economic inequality between cadres and workers.[38] Also, the state weakened the division of labor through workers' participation in management and cadres' participation in manual labor. More importantly, workers had political rights to publicly criticize cadres in a democratic way.[39]

"Politics in command", the low-wage and high-benefit systems, job security, and "masters of factories" were the necessary conditions for the Maoist factory regime. Different from the Soviet factory regime that widely used material incentives and underscored the authority of management, the Maoist factory regime was an innovative way to promote both the development of productive forces and the relation of production. The distribution under the Maoist factory regime was consistent with the power relation between the state, cadres and workers: the state endorsed the power of workers by launching political movements and establishing key institutions for the foundation of the factory regime; cadres' power was repressed by both the state and workers.

Distribution under the Maoist factory regime was determined by the dialectical relationship between the long-term and short-term interests of the working class. In 1959,

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[38] Although it is hard to find the data about the average wages of cadres, there is data about wage standards. The 1963 standards show that a 17-grade cadre (almost the highest grade in enterprises) of Baotou Steel Company could earn 77 Yuan per month, while a medium skilled smelter worker (grade 4) could earn 61.76 Yuan per month (Data sources: Compilation of Wage Standards, Labor Bureau of Hebei Revolution Committee, 1973). Since all the country implemented a complex but unified system of wage standards during the Maoist era, the data of one enterprise can to some extent reflect the situation of the whole country. In addition, during the Maoist era, the state reduced cadres' standard salaries for three times. See Zhang (1998).

[39] In one of the most important documents of the Cultural Revolution, "The Central Committee of the Communist Party of China: Ten Points on Grasping Revolution and Promoting Production", it was clearly said that, "Leaders of factories shall not retaliate against workers, reduce workers' wages, or dismiss workers on the grounds that workers raise critiques and uncover facts."

Ma Wenrui said, "Workers' material and cultural conditions shall be improved on the basis of the development of production and the growth of labor productivity. Wages and benefits must be increased, but they cannot be increased too much."[40] (Ma, 1959) Thus, the growth of labor productivity was a limit of the growth of wages; the growth of wages should be slower than the growth of labor productivity, but faster than the price level (Yuan 1978).

It is undeniable that the state (rather than individual workers) played the most important role in legitimizing a particular division between long-term and short-term interests; however, it is also undeniable that no cadre could occupy any profit as his/her own interests and that the vast majority of profits were accumulated for industrialization.

In terms of time span, the Maoist factory regime lasted for less than two decades.[41] As an innovative factory regime, it did not manage to fix its deficiencies before it was denied with the end of the Maoist era. One of those deficiencies was the stagnation of wages.[42] As shown in Figure 3-1, the real wage in the Maoist era was almost stagnant, compared to the real wage in the reform era. After China established the wage system following the Soviet Union in the 1956 wage reform, workers' wages were raised for only twice (1963 and 1971) before Mao passed away. Due to the stagnation of wages, workers had few opportunities to have their wages adjusted as their work experience accumulated; as a result, workers with different work experience might be paid the same wages, which might undermine the unity

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[40] Also, it was clearly said in "State Council's Decision on the Wage Reform" in 1956. Moreover, in 1956, Premier Zhou said in a meeting with officials from the Ministry of Labor, "I feel guilty and deserve punishment. In recent years, labor productivity has been increased substantially, but workers' wages has not been increased." See Wang (1998).

[41] If we consider the Great Leap Forward movement as the starting point and 1978 as the end, the Maoist factory regime lasted for 18 years.

[42] From 1958 to 1976, the average wage (adjusted by urban consumers' price index) for all workers and cadres was decreased by 4 percent. Nevertheless, this fact is not contradictory with the improvements of the living conditions of workers and cadres because, as the labor participation rate was growing, the average (price-adjusted) wage per household was increased substantially. See Chen (1982, p.282).

of workers. In fact, these deficiencies became the entry point for the reformers to undermine and overthrow the Maoist factory regime.

Figure 3-1 Average Annual Real Wage of Workers in the Formal Sector
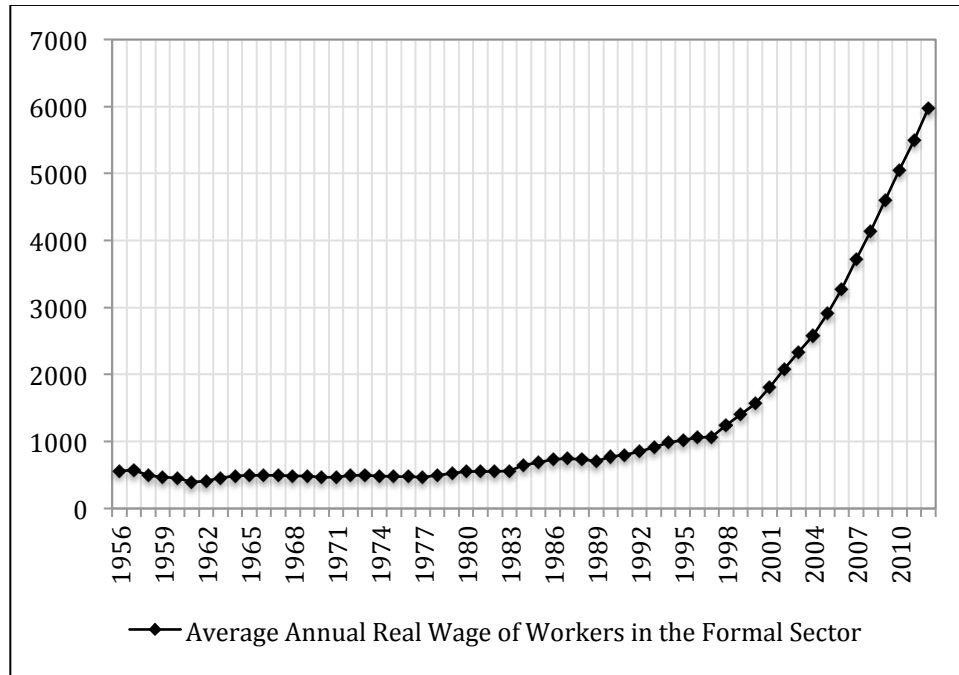
Sources: NBS (2009) and China Statistical Yearbook, various issues.
Notes: The formal sector refers to the urban unit sector, which does not include private enterprises and self-employment. The real wage is in 1952 price level. The price index used here is the urban consumers' price index. The annual real wage does not consider the actual working hours of workers. Since working hours increased in recent years, the hourly real wage might grow more slowly than the annual real wage.

3.3   Rising Wages, Profit Squeeze and Powerful Workers in the First Stage of the Reform Era

3.3.1   1977 Conferences on the Principle of "Distribution according to Work"

After Mao passed away and the "Gang of Four" was arrested, the new leadership announced the end of the Cultural Revolution and initiated to expose and criticize the "crimes of the 'Gang of Four'". Under this atmosphere, the Chinese economists held three

conferences in 1977 to discuss the principle of "distribution according to work" and criticize the distribution system during the Cultural Revolution (in fact, the Maoist distribution system), which was labeled with "egalitarianism", "big pot rice",[43] and "doing more work is the same as doing less work". Interestingly, the same kind of critiques also took place in the period of economic adjustment (1961-1965) after material incentives were attacked and abolished in the Great Leap Forward movement (1958-1960).

Although it appears that the 1977 conferences were academic discussions, few debates took place among the participants. However, there was one debate between Xu He, Su Shaozhi, and Feng Lanrui on whether the principle of "distribution according to work" is the economic foundation for the generation of capitalists and capitalism in a socialist society.[44]

This debate was derived from Mao's talk in 1974, in which he said, "China is a socialist country. Before liberalization, China was almost capitalism. Now China still has the eight-grade wage system, 'distribution according to work', and money exchange, which are not very different from the old society (the capitalist society before liberalization). The difference is that the ownership has changed." [45] According to Mao's talk, Xu argued that the economic relations reflected by the principle of "distribution according to work" are internally related with the economic relations of capitalism, thus the distribution system can be transformed into capitalism under certain conditions. So, Xu suggested China limit "distribution according to work" in the distribution. Su and Feng disagreed with Xu and

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[43] Another similar expression is "iron rice bowl", which refers to high job security, while "big pot rice" refers to egalitarianism in distribution.

[44] This debate was closely related with the 1975 article, "The Bourgeois Rights Are the Economic Foundation for the generation of capitalists and capitalism in a socialist society", written by Yao Wenyuan, a member of the "Gang of Four". Xu's article, written before the end of the Cultural Revolution, was to criticize Yao's article. In Xu's opinion, the bourgeois rights should belong to superstructure rather than economic foundation.

[45] This talk can be related to Marx's critique of the Gotha Program where Marx suggested that in the early stage of the communist society the equal right (the exchange of equal values) is still constrained by bourgeois limitations. See Marx (1875).

supported the principle of "distribution according to work"; however, the only reason they raised was what Mao said, "The difference is that the ownership has changed." Su and Feng (and the majority of the economists in the 1977 conferences) believed that China could never generate capitalism because China had established the public ownership of means of production (Su and Feng, 1978).

Two features of the 1977 conferences as well as the debate should be mentioned here.

First, compared to the economists in the 1960s who were critical to the distribution system established in the Great Leap Forward movement, the majority of economists in the 1977 conferences had a much narrower understanding of "distribution according to work". In 1962, Luo (1978) suggested that "distribution according to work" in a socialist society was different in nature from that in a capitalist society, in four aspects: the right of work— everyone who has labor power can participate in distribution under socialism; no exploitation—anyone who do not work cannot get paid under socialism; the more one produces, the more one gets—wages should be increased as labor productivity grows under socialism; equal pay for equal work—managers should not be paid more than manual workers under socialism. The majority of economists in the 1977 conferences, however, only focus on the topic that workers should be paid differently for different contribution of efforts.

Second, the majority of economists in the 1977 conferences believed that the public ownership guaranteed that China was a socialist country; thus encouraging material incentives would never change the socialist nature of the society. This belief, however, did not see that "politics in command" was a necessary condition of the Maoist factory regime. Encouraging material incentives was not merely a minor change on the distribution system but a major destruction of the Maoist factory regime.

3.3.2 Undermining the Foundation of the Maoist Factory regime

After the 1977 conferences, a series of changes took place that fundamentally destroyed the foundation of the Maoist factory regime. In 1978, the state encouraged enterprises to use bonuses and piece-rate wages in distribution.[46] As Figure 3-2 shows, the share of bonuses and piece-rate wages out of total wages was increased substantially in the first stage. At the beginning, the state still advocated the integration of "politics in command" and material incentives, but a few years later, "politics in command" was replaced with "socialist spiritual civilization" in the official discourse, which had entirely different meaning and much less importance.[47] In 1981, the state defined the congress of worker representatives as the basic institution for workers' participation in management. In contrast to the daily participation in management, the congress of worker representatives that held at most twice each year greatly limited the degree of participation.[48] In 1982 (and a few years followed), the state punished radical workers and cadres in the Cultural Revolution (Gao, 2013). In the same year, the state eliminated the "Four Great Rights"—the right to speak out freely, to air one's views fully, to write big-character posters, and to hold great debates—and the right to launch strikes in the amendment of the Constitution (Li, 1994; Hart-Landsberg and Burkett, 2005).

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[46] See Bureau of Labor of Sichuan Province, "Selected Documents on Labor Issues from April 1978 to August 1980".

[47] See "Notice of Activating Wage Distribution of Enterprises" by Wage Reform Office, Guangxi, March 23, 1987, in "Complied Documents on the Reform of the Wage System, 1985-1990".

[48] I found this change in my interviews in Tonggang. See Tonggang History 1958-1985. The law on the congress of worker representatives can be found in http://cpc.people.com.cn/GB/4162/64165/67447/67827/4586371.html.

Figure 3-2 Share of Bonuses and Piece-rate Wages out of Total Wages in the State-Owned Sector
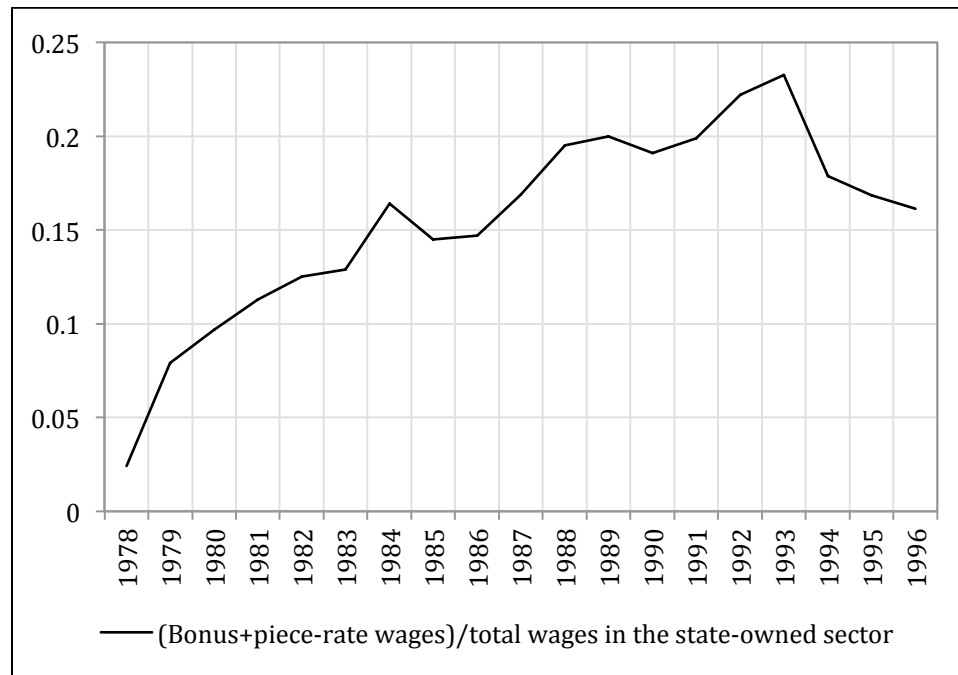
Sources: China Statistical Yearbook, various issues.

To see the consequences of undermining the foundation of the Maoist factory regime, one telling example is the abuse of bonuses right after the state allowed enterprises to use bonuses in 1978. By the abuse of bonuses, I mean bonuses are not distributed as rewards to extra contribution of efforts but the distribution of bonuses are subject to the power relation between workers and cadres. In 1979, the State Council issued an emergent notice criticizing that "some enterprises" followed higher standards of other enterprises in the distribution of bonuses—similar to the "conspicuous consumption" mechanism by which consumers follow higher consumption standards of other consumers—regardless of the contribution of efforts.[49] Interestingly, the same problem of abusing bonuses also took place

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[49] See Bureau of Labor of Sichuan Province, "Selected Documents on Labor Issues from April 1978 to August 1980". In fact, the State Council issued more notices on the abuse of bonuses from

in 1962 when the state allowed enterprises to use bonuses for economic recovery after the Great Leap Forward movement. In the 1962 case, cadres distributed bonuses to workers with poor living conditions regardless of the contribution of efforts.[50] These examples show how necessary "politics in command" was for the Maoist factory regime; one could not undermine the foundation of the regime without creating new problems.

The remaining institutions, as socialist legacies from the Maoist factory regime, were only the high-benefit system and job security. The question is, given that the Maoist factory regime was destroyed, what regime replaced it? Put the question differently: did the reform era create a factory regime that successfully promotes industrialization and the living conditions of the mass? Did the regime successfully coordinate the long-term and short-term interests of the working class?

3.3.3   Contradictions of the Factory regime in the First Stage

History gives negative answers to these questions. As we have seen, the continuously increasing labor share marked the first stage of the reform era. In fact, the profit share (measured with the conventional approach) declined substantially over the first stage of the reform era, as shown in Figure 3-3. A typical profit squeeze took place. In addition, the 1980s and the early 1990s witnessed several rounds of inflation, as shown in Figure 3-4. The literature suggests that one of main reasons for the inflation of this period was the rising wages (for example, Song 1989; Dai and Li 1989; Fan 1990; X. Li 1994; Liu 1989; Xie 1994).

1980 to 1982, which shows that this problem was not merely a short-term problem. Tang (1982) and Wang (1998) also confirmed that the abuse of bonuses was especially serious.

[50] See Bureau of Labor of Hebei Province, "Compiled Documents on Labor Issues".

According to the logic of the reformers, material incentives can encourage workers to contribute more efforts in production and thus promote the growth of labor productivity. If material incentives were well designed, then the growth of labor productivity (and the growth of profits) should be faster than the growth of wages. How could profit squeeze happen?

Figure 3-3 Profit Share in the State-owned Industry, 1980-2011
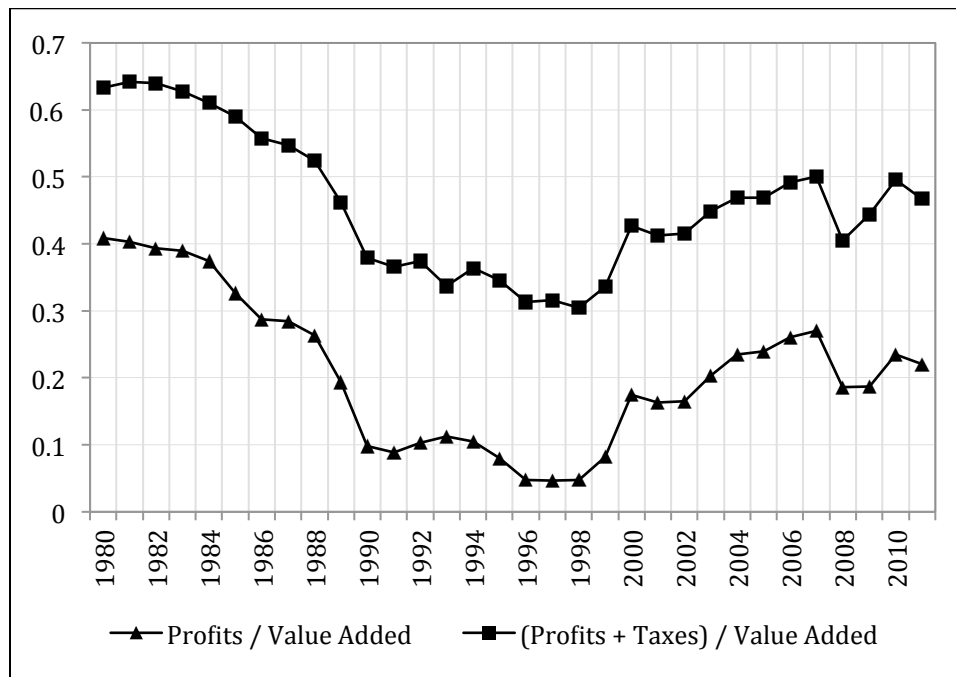
Sources: Profits and taxes data of is from Statistical Yearbook of China's Industrial Economy 1998 for the period 1980-1997 and China Statistical Yearbook various issues for the period 1998-2011. Value added data is from China Statistical Yearbook various issues. Value added data is not available for some years. So, I estimate the value added data based on net output data for the period 1980-1991 and gross output data for the period 2008-2011. The net and gross output data is from China Statistical Yearbook various issues.

The rise of wages and profit squeeze in the first stage of the reform did not result from the deficiencies in the design of material incentives, but from the contradictions with the factory regime. With the high-benefit system and job security, workers were still powerful

at that time. The reform deprived workers of political rights and strengthened the management rights of cadres, but workers and cadres were still close in economic conditions. Cadres tended to increase the interests of both workers and themselves in the enterprise.[51] In other words, workers and cadres cooperated to raise their total interests. Faced the cooperation of workers and cadres, the state tried to improve the design of material incentives in order to repress the growth of wages relative to the growth of profits; however, all the improvements ended with a failure. [52]

Figure 3-4 Urban CPI, 1978-1994 (%)
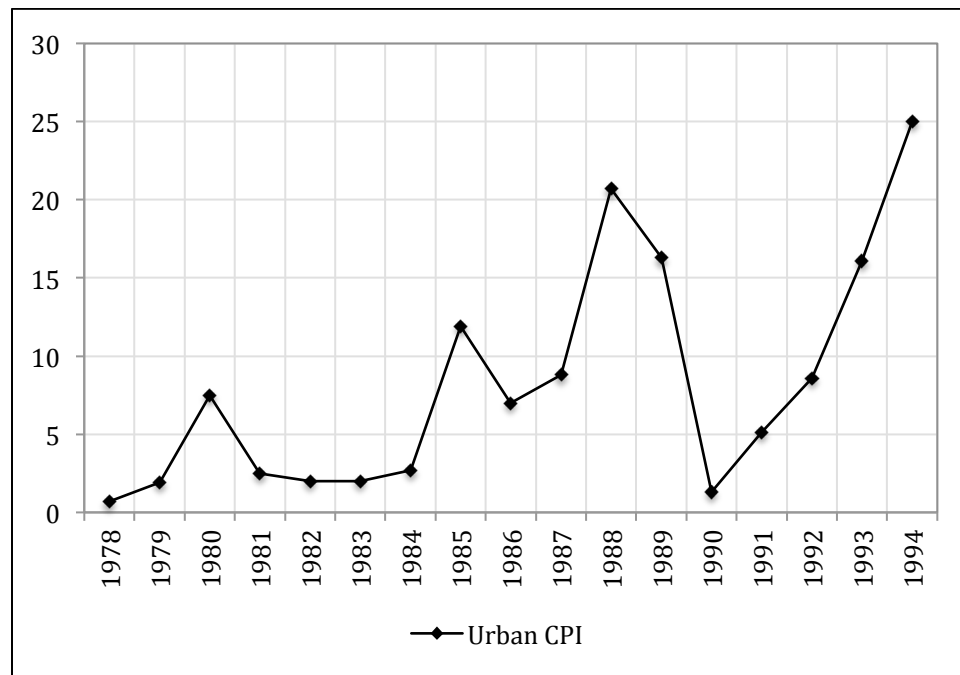
Sources: National Bureau of Statistics, China Statistical Yearbook various issues.

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[51] As Walder (1991) puts it, cadres became "representatives of the interests of their enterprise including, to a considerable extent, the interests of their employees." Walder (1987) also observes that in the 1980s workers' ability to influence the wage bill was increased, and he suggests that "low wage productivity and lax work discipline remained major problems in state industry".

[52] A similar development occurred in the Soviet Union in 1988-89, when the new Law on State Enterprise gave enterprises the right to determine wages while workers had the right to replace the top managers. There followed a period of rapid wage increases (Kotz, 1997, p.81).

To demonstrate this point, we can consider the following evidence.

3.3.3.1   Restricted Economic Inequality between Cadres and Workers

In the early 1980s, economic inequality between cadres and workers was still restricted, although the power relation began to be favorable to cadres.

A survey conducted by the All-China Federation of Trade Unions (ACFTU) in 1983 showed that the living conditions of workers' households were not far away from those of cadres' households, as shown in Table 3-1. Looking at the rows of Table 3-1, one can see controlling work experience how living conditions were related with positions[53]: (1) for the "relatively rich" and the "just fine" categories, workers' and cadres' proportions were close if they began to work after 1957; (2) for the "medium" category and the "relatively difficult" category, differences between the workers' and cadres' proportions were considerable, but the proportions were still comparable (ACFTU, 1983).[54]

Table 3-2 compares the housing conditions of workers and cadres, which shows that the housing differences were even smaller than income differences (ACFTU, 1983).

The small gap in economic conditions did not imply that there was no contradiction between cadres and workers. In fact, according to the 1983 survey, 43 percent of workers suggested that the main problem at that time was the special benefits enjoyed by cadres (ACFTU, 1983).

In 1991, ACFTU conducted another survey similar to the 1983 one, which shows that the gap between workers and cadres was still small at that time, as shown in Table 3-3.

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[53] Similarly, looking at the columns of Table 3-1, one can see how living conditions are related with work experience controlling positions. An important dimension that affects living conditions is not considered in the survey, i.e. the size of households. This is probably why after 1965 workers and cadres with less work experience had better living conditions.

[54] Another example: Zhang (1998) suggests that in Xinjiang before 1985 a cadre's wage might be lower than the wage of a worker with the same work experience.

Nevertheless, 46 percent of workers and 51 percent of cadres suggested that the relationship between cadres and workers became worse than 1984. The 1991 survey also reflected that cadres had controlled almost all the power in the distribution of bonuses, houses, and opportunities for promotions (Feng and Xu, 1993).

Table 3-1 Living conditions of Workers' households and Cadres' households in 1983

Income levels	Relatively rich		Medium		Just Fine		Relatively difficult	
Time begin to work	Workers	Cadres	Workers	Cadres	Workers	Cadres	Workers	Cadres
Before 1949	0.27	0.48	0.40	0.38	0.25	0.11	0.08	0.02
1949-1956	0.15	0.24	0.35	0.42	0.34	0.27	0.16	0.06
1957-1965	0.06	0.07	0.25	0.35	0.41	0.44	0.28	0.13
1966-1976	0.13	0.15	0.39	0.47	0.35	0.33	0.13	0.06
1977-1982	0.26	0.25	0.42	0.48	0.25	0.23	0.08	0.03

Sources: ACFTU (1983).
Notes: This is the how the original data is framed. To understand the meaning of the numbers, for example, the first number (0.27) means that 27 percent of the workers who began to work before 1949 were relatively rich. The investigators considered the price levels of different places to classify the income levels.

Table 3-2 Housing Conditions of Workers and Cadres in 1983

Housing conditions	Over 5 m^2 per person		3-5 m^2 per person		Less than 3 m^2 per person	
Time begin to work	Workers	Cadres	Workers	Cadres	Workers	Cadres
Before 1949	0.38	0.40	0.43	0.47	0.18	0.13
1949-1956	0.20	0.24	0.55	0.58	0.25	0.17
1957-1965	0.23	0.24	0.53	0.59	0.24	0.17
1966-1976	0.19	0.18	0.49	0.56	0.33	0.26
1977-1982	0.26	0.21	0.45	0.44	0.29	0.35

Sources: ACFTU (1983).
Notes: To understand the meaning of the numbers, for example, the first number (0.38) means that, workers whose housing conditions were over 5 square meters per person accounted for 38 percent of the workers who began to work before 1949.

3.3.3.2 The High-Benefit System and Job Security

Workers still enjoyed the high-benefit system and job security, which implies that workers did not have to respond to material incentives with efforts that were sufficient from the perspective of cadres.

Workers' benefits were provided by enterprises through two channels: one was annual expenditure on a variety of benefits (including pensions, medical services, education, subsidies for foods, heating, housing maintenance, cultural services, dining services, and assisting poor households, etc.); another was the unproductive investment carried out by the state or enterprises, used for building workers' houses and other facilities for the provision of benefits. In terms of these two channels, workers enjoyed even better benefits in the first stage of the reform era than in the Maoist era. Over the period 1978-1990, the ratio of annual expenditure on benefits to total wages[55] was raised from 0.14 to 0.32; then it reached its peak of the reform era in 1993 (0.34). The share of unproductive investment out of total investment was raised from 21 percent in 1978 to 46 percent in 1982, and then gradually fell to 26 percent in 1990.

Table 3-3 Income and Housing Conditions of Workers and Cadres in 1991

	Annual income	Housing conditions
Cadres	1.12	1.04
Workers	1.00	1.00

Sources: Feng and Xu (1993).
Notes: The average annual income and the average housing condition of workers (measured by living area per capita of the household) are both standardized as unity.

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[55] Data sources: China Labor Statistical Yearbook 1999. Note that, here, "total wages" is a category used in the data sources, which does not include enterprises' expenditure on benefits. All the measures of labor's share in this dissertation have include enterprises' expenditure on benefits in labor's income.

In terms of job security, although the state tried to expand the number of temporary workers relative to permanent workers, the latter still accounted for the majority of workers by 1990.[56] The state considered full employment as one of its objectives. At the beginning of the reform era, the unemployment problem became serious since the state allowed the school graduates who moved to the countryside in the Maoist era to return to cities. The state carried out a variety of policies to increase employment, such as encouraging state-owned enterprises to establish affiliated collective enterprises, allowing children to take their retired parents' positions; as a result, unemployment quickly dropped from 5.3 million in 1978 to 2.4 million in 1984.[57]

3.3.3.3 Workers' Responses toward National Wage Adjustments

The principle of "distribution according to work" was hardly realized in the national wage adjustments during the early years of the reform era because the state had to take account of workers' responses toward how to carry out these adjustments, which to some extent reflected the power relation between workers and the state.

In 1977, concerned about the conflicts among workers, the state adopted work experience as the standard to decide which workers to obtain wage increases; this standard, however, was unable to reflect workers' contribution of efforts in production (Huang and Shu, 1991).

In 1978, the state decided to raise wages for workers who "had a good performance, made a great contribution, and got low wages"; however, many enterprises used this round of wage adjustment to compensate for workers who did not obtain wage increases in 1977

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[56] The share of permanent workers out of total workers was 87 percent in 1990.

[57] Data sources: National Bureau of Statistics, China Statistical Yearbook various issues.

(Huang and Shu, 1991). Again, the principle of "distribution according to work" did not play its role.

In the 1979 wage adjustment, the state was more determined and claimed that only workers who contributed great efforts in their work could obtain wage increases. In each enterprise, a committee composed of cadres and workers evaluated workers' contribution of efforts.[58] However, more than ten workers across the country committed suicide for not getting wage increases. Partly due to the suicides, the state chose to generally increase workers' wages in the 1982 wage adjustment, regardless the principle of "distribution according to work" (Wang, 1998). After 1982, the state no longer initiated national wage adjustments but relied on enterprises to reform the distribution system.

These examples in the early years of the reform era show the particular system of distribution chosen by the state depended on workers' responses but not on the preference of the state or cadres.

3.3.3.4   State's Improvements of the Distribution System

The state tried to improve the design of the distribution system in the mid-1980s but ended with a failure because cadres had a variety of methods to increase wages and benefits for workers and themselves.

Abandoning national wage adjustments, the state established a double-level incentive system: on the macro level, for some enterprises, the state fixed the proportion of the growth of total wages relative to the growth of profits (or the sum of profits and taxes); for other enterprises, the state allowed them to retain a fixed proportion of profits for reproduction, technical innovation, benefits, and bonuses; on the micro level, an enterprise

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[58] See Bureau of Labor of Sichuan Province, "Selected Documents on Labor Issues from April 1978 to August 1980".

had the autonomy to determine how to distribute the total bonuses (or total wages) and benefits.[59] This attempt failed for two reasons.

One reason was that the fixed proportions used on the macro level of distribution were in practice flexible because cadres could negotiate with the state over these proportions. For example, if the living conditions of workers and cadres were undermined by inflation, cadres could easily legitimate their bargain for a higher proportion (Huang and Shu, 1991). Figure 3-5 shows the share of retained profits out of total profits for North China Pharmaceutical Factory over the period 1979-1990; one can see that this share had been increasing over time.

Figure 3-5 Share of Retained Profits out of Total Profits, North China Pharmaceutical Factory, 1979-1990
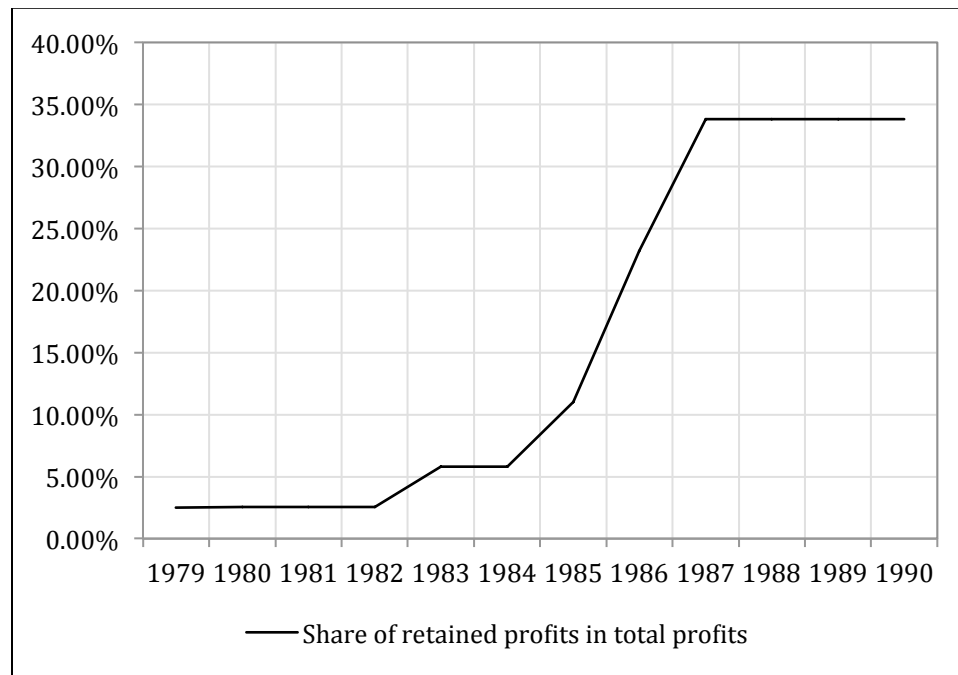
Sources: History of North China Pharmaceutical Factory.

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[59] See Office of Wage Reform, Guangxi Zhuang Autonomous Region, "Compiled Documents on the Reforms of Wage System from 1985 to 1990". This program was proposed as early as 1979. See Ma (1979).

Another reason lied in the high-benefit system in which benefits were distributed mainly according to needs. The state set up the ratio of retained profits to total profits but did not regulate how many retained profits were used as benefits; thus benefits distributed also took an increasingly large share out of retained profits, through which the total profits obtained the state and enterprises (after benefits distributed) was increasingly smaller.[60] The state met with difficulties in sustaining a favorable profit share since cadres distributed increasingly more benefits for both workers and themselves.

He Ping, a former official from the Ministry of Labor, said "there is a phenomena called 'two faces', which means the state's regulation on total wages mismatches the actual situation of enterprises. An example is that, at the beginning of the year, enterprises obey the state, but at the end of the year, the state has to obey enterprises." "In the past more than ten years, total wages stipulated in the state's plan were surpassed by the actually distributed wages by nearly 100 billion Yuan." (He 1993)

The difficulties confronted by the state in fact resulted from the failure of the factory regime after the destruction of the Maoist factory regime. This regime heavily relied on the carrot strategy of material incentives. As He Ping put it, "Wages have to be raised; otherwise the production has to be paralyzed."(He 1993) However, continuous material incentives were only able to bring short-run effect on production. Wang Rong, an official who personally participated in several rounds of wage adjustment, said, "A round of wage adjustment is only effective (for promoting production) for half a year—from the time when the wage adjustment is announced to begin, to the time when the adjustment is finished."(Wang, 1998) As a result the growth of wages was faster than the growth of labor productivity, which means that wages were growing faster than profits (the profit share

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[60] For example, Li (1993) suggests that workers' wage income was regulated by the state but their non-wage income was out of control. The non-wage income here mainly refers to benefits.

falls). In 1989, Jiang Zemin, General Secretary of the Communist Party of China, repeated what was proposed in the 1950s that "the growth of wages should be slower than the growth of labor productivity" (Xu 1989), which implies that the relationship between wages and labor productivity was not well-handled at all.

In addition, the first stage of the reform era witnessed recurring inflation. One of the reasons for inflation lied in the particular power relation. Given the limited production capability of consumption goods in the 1980s, if total wages surpassed the state's plan, then prices of consumption goods would go up. As a response to the rise of prices, enterprises distributed more wages and benefits to workers and cadres, which further imposed pressures on the supply of consumption goods. The spiral inflation was relieved only when the state was determined to control total wages and benefits by reducing the banking loans distributed to enterprises.

Interestingly, Dong and Putterman (2001; 2003) find that hardening budget constraints, without at the same time relieving state-owned enterprises from their social burdens, was a major proximate cause of redundant labor in the early 1990s.

3.4   Class Division and the Commodification of Labor Power in the Second Stage of the
        Reform Era

Over the past three decades, the economic system in China became a capitalism-dominated system. Here I argue that this transition has to be understood from the failure of the factory regime in the first stage of the reform era. The problems with this regime led to a series of reforms aimed at reshaping the power relation between the state, cadres, and workers. Cadres became capitalist managers and no longer pursue wage increases for workers; workers were deprived of high benefits and job security, and thus they had to be more obedient to managers; the state supported this transition with reforms favorable to

the emerging capitalist managers. In this historical process, each reform reshaped the power relation between the state, managers, and workers.

3.4.1 Commodification of Labor Power

In the Maoist era, workers were the masters of factories thanks to workers' political rights. In the first stage of the reform era, workers were deprived of those rights but they were still different from workers under capitalism because of job security and access to the high-benefit system. In 1992, the Fourteenth Congress of the Communist Party of China proposed to establish a socialist market economy, which also initiated the commodification of labor power.

In a conference held in 1993, Li Weiyi, a former official from the Ministry of Labor and Personnel, said, "At present, the state determines the amount and increases of total wages, and with this limit, enterprises carry out distribution autonomously. Does this fit the requirements of a market economy? I think we need do some research on it. Some people suggest that wages should be determined by the market in the socialist market economy."(Li, 1993) In the same conference, Dong Guoying, a professor from the Central Party School, argued that, if labor power is not a commodity under the socialist market economy, it would be impossible to improve the allocation of labor forces and impossible to form the values of other commodities (Dong, 1993).

These examples show that the state began to prepare theoretical foundation for the commodification of labor power. The commodification, however, cannot be resolved in theory; it requires the destruction of the high-benefit system and the formation of a reserve army of labor. In a typical capitalist enterprise, both the carrot strategy of material incentives and the stick strategy of unemployment are used to discipline workers. Since workers would ask for more bonuses for less contribution of efforts, material incentives

cannot work in the long run without the stick of unemployment. The commodification of labor power, through which enterprises could hire and fire workers in the market, actually gave enterprises the stick of unemployment in production.

3.4.2   Destruction of the High-benefit System

In the high-benefit system, the distribution of benefits basically depended on workers' needs instead of their wages. If benefits are linked with wages, and wages are further linked with whether the worker can keep his/her job and whether the enterprise is profitable, then the role of benefits as workers' fallback position would be severely undermined.

The most important benefit for workers at the end of the first stage was housing. Under the public housing system by the end of the first stage, the state and enterprises were responsible for the investments in the construction of public-owned houses, and workers only paid minimum rents for these houses. The public housing system distributed houses to workers and cadres according to work experience, positions, the size of families, and age of children.

By the end of the 1980s, housing subsidies had become a heavy burden for the state and enterprises. In 1988, the state decided to raise rents with the purpose of encouraging workers and cadres to privatize public-owned houses. This attempt, however, failed to threaten the domination of the public housing system because paying rents was still cheaper than buying houses. In 1994, the state further raised rents, encouraged the privatization of houses, and established a housing provident fund system through which workers had to share the costs of purchasing (construction investments included) and maintaining houses. The public housing system was not formally terminated by the state until 1998. Since then, all workers had to purchase houses with their own savings, montage

loans, and the housing provident fund, all of which depended on the wages that workers could earn (Chen 2012).

Like housing, retirement pensions and medical services were also entirely provided by the state and enterprises in the first stage; whereas in the 1990s (retirement pension in 1991 and medical services in 1998), these benefits were transformed into insurances funded by both enterprises and workers themselves. The insurances that workers obtained also depended on the wages they received.

With all the key benefits being linked with wages, workers had to confront difficulties with survivals when housing prices boomed and costs related to retirement and medical services became increasingly high relative to wages. The reform transferred the burden of providing benefits from the state and enterprises to workers themselves. Workers had to work harder and be more obedient to mangers in order to increase their wages and meet the necessary expenditures for the reproduction of labor power.

3.4.3   Formation of the Reserve Army of Labor

There were two main sources of the reserve army of labor: migrant workers from rural areas and laid-off urban workers. In the Maoist era and in the first stage of the reform era, only with the state's permission could factories hire labor forces from the countryside. The de-collectivization of rural economy at the beginning of the reform era brought peasants with fast growing income; however, this growth did not continue after 1985. The slow growth of agricultural income and the rising living costs forced peasants to look for jobs in urban areas (Pun et al., 2012). Since the early 1990s, the state gradually released the constraints on migrant workers (Lü 2012). Nevertheless, migrant workers were mainly hired by private-owned enterprises at the beginning.

In the mid-1990s, state-owned enterprises began to replace urban workers with migrant workers. One example is the labor outsourcing at Tonghua Steel Company, Tonghua, Jilin Province (hereafter referred to as Tonggang). In 1996, Tonggang began to outsource work to migrant workers. The wage of a migrant worker was on average only a half of the wage of an urban worker. Also, Tonggang could fire migrant workers freely. In that year, Tonggang paid 13 million Yuan to migrant workers, which saved 9 percent of total wage expenditure for the company.[61]

In 1997, the 15th Congress of the Communist Party of China launched a drastic reform on state-owned enterprises; one of the objectives of this reform was "increasing efficiency by reducing employment". In fact, workers began to be laid off even earlier. Over the period from the mid-1990s to the early 2000s, more than 30 million workers were laid off by state-owned enterprises, which not only substantially expanded the reserve army of labor but also merged the two sources of the army into one.

The creation of the reserve army was not only a policy consequence but also an intentional action of enterprises to restore profitability. To this end, enterprises even manipulated the labor contract system. Take Tonggang as an example. In 1996, the chief manager of Tonggang announced, "What laws and the government's documents stipulate about wages and benefits could be realized only when Tonggang is able to do so. So many enterprises nowadays cannot pay any wage to their workers. Tonggang cannot realize wage increases for ever." In the following five years, 8,000 workers (22 percent of total employment) were laid off at Tonggang. In 1995, the labor contract system covered all the workers at Tonggang with long-term contracts, which, according to the Labor Law, prevented Tonggang from freely laying off workers. In 2000, the management of Tonggang

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[61] These examples about Tonggang are all from my fieldwork in Tonghua, Jilin Province, 2012 and 2013. Data sources: Tonggang History 1958-1985, Tonggang History 1986-1996, and Tonggang Yearbook various issues.

claimed that the contract system established in 1995 was "too outdated to be effective". To overcome this unpleasant trouble, the management required workers to replace their long-term contracts with three-year-long contracts. Sacrificing the interests of laid-off workers, the profitability of Tonggang did recover in the 2000s. Total profits of Tonggang increased from 105 million Yuan in 2002 to 852 million Yuan in 2004.

Another example is Liuye, a construction company founded in 1963 in Luoyang, Henan Province. Since the early 1990s, most of the production workers were laid off. Liuye established a construction team for each project; each construction team had a manager and some skilled workers from Liuye, while the rest of the workers were all migrant workers. With this regime, Liuye could make full use of the low wages and flexibility of migrant workers, which was impossible before the layoffs took place.[62] In fact, the management made use of the massive layoffs in the 1990s to replace the workers who worked in the socialist era with migrant workers who were not only cheaper but also easily disciplined. In the following two decades this new component of the Chinese working class suffered from long working hours and poor working conditions. A 2009 survey from the National Bureau of Statistics has shown that on average migrant workers work 58.4 hours per week, much more than the 44 hours stipulated in China's Labor Law. Nearly 60 percent of migrant workers did not sign any labor contract, and 87 percent of migrant workers did not have access to health insurance.[63]

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[62] This example is from my fieldwork in Luoyang, Henan Province, 2012.

[63] Sources: National Statistical Bureau, "Investigation Report on Migrant Workers 2009," (in Chinese) http://www.stats.gov.cn/tjfx/fxbg/t20100319_402628281.htm.

3.4.4   Division between Workers and Managers

In a typical capitalist enterprise, capitalists try to make the managers serve for the interests of the shareholders, usually with considerable compensation that tended to divide managers and workers and recruit mangers into the capitalist class. In China, to overcome the problems in the first stage of the reform era, the factory regime must be reformed by transforming cadres into capitalist mangers who have their own interests to pursue and who are separated from workers in economic conditions.

Economic inequality within enterprises was expanded after the reform underscored that distribution should reflect the contribution of managers. In an official document issued by the Ministry of Labor in 1992, it was clearly said, "the income gap between managers and workers should be properly enlarged".[64] In 1993, Li Weiyi, the official mentioned in Section 3.4.1, quoted an article from a right-wing newspaper, saying that "the article argues that we have never carried out the principle of 'distribution according to work' and thus this principle is the Emperor's new clothes to us." "The article suggests that distribution follow the contribution of different factors of production and that enterprises pay compensation to the owners of these factors." (Li, 1993)

After the drastic reform that initiated in 1997, the income gap between workers and managers was openly discussed. In 1999, Tonggang carried out a reform on wages, emphasizing distribution should reflect the contribution of managers, which prepared the legitimacy for huge bonuses to managers. In 2004, a low-level manager at Tonggang received an annual bonus of 15,000 Yuan, which was 60 percent higher than the average wage (including bonuses) for all employees in 2003. In 2005, Tonggang established an annual-basis salary system for middle-level managers, according to which a middle-level

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[64] See Bureau of Labor of Shandong Province, "Selected Documents on Wages from July 1987 to March 1993".

manager would be paid a salary equivalent to six times of the average wage for all employees.[65]

In the same year, in order to reward the efforts in promoting the privatization of state-owned assets, the top managers received shares of the joint-stock company equivalent to 100 million Yuan.[66] Through privatization, top managers of the state-owned enterprises became shareholders of the enterprise. One worker I interviewed called Tonggang's top managers "new capitalists" because they accumulated capital from privatizing the state-owned assets, different from "traditional capitalists" who started with their own money.

From the data of the companies listed in China's domestic stock markets, one can clearly observe the division between workers and managers. We compare the average salary of managers, including board members, supervisors, and executives, with the average wage of urban employees in the formal sector.[67] As shown in Figure 3-4, from 1999 to 2009, the ratio of the managers' average salary to the urban average wage increased from 4.2 to 6.7, or increased by 60 percent.

To sum up, the destruction of the high-benefit system, the formation of the reserve army, and the division between workers and managers together relieve the contradictions of the factory regime in the first stage of the reform era by substantially repressing the power of workers, which explains the decline of the labor share in the second stage of the reform era.

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[65] Data sources: Tonggang History 1958-1985, unpublished book, in the Tonghua City Library.

[66] The Jilin provincial government initiated this privatization program and made the decision on distributing bonuses to the top mangers.

[67] The sample is from CSMAR database, which provides the information about the salaries of about 30,000 board members, supervisors, and executives in the listed companies in China. The formal sector includes state-owned units, collective-owned units, cooperative units, joint-ownership units, limited liability corporations, share-holding corporations, foreign-funded units, and units with funds from Hong Kong, Macao and Taiwan.

Figure 3-6 Managers' Average Salary and the Urban Average Wage, 1999-2009
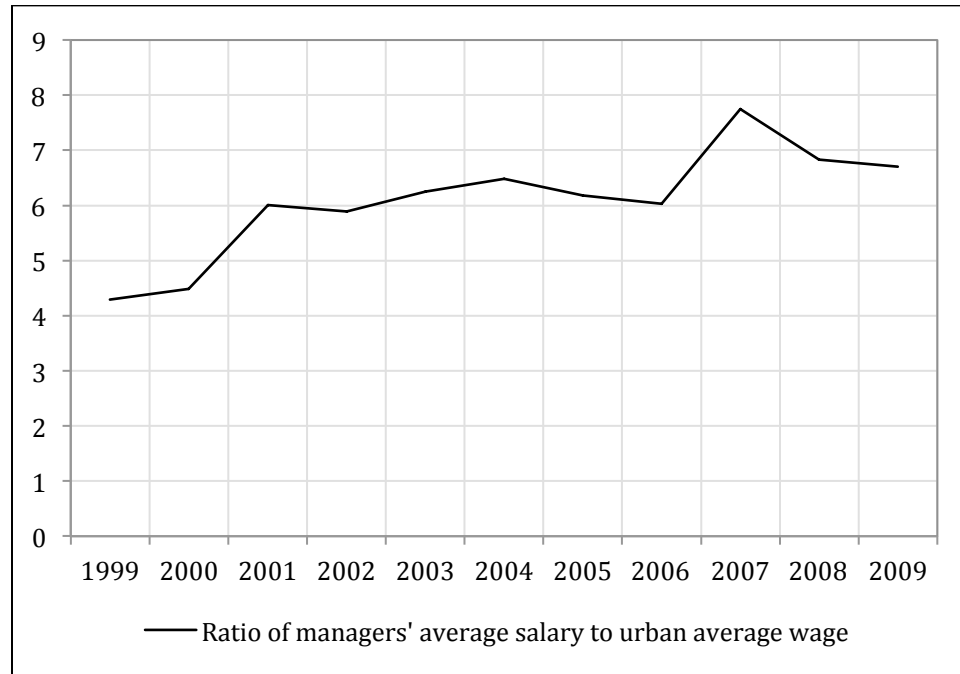
Sources: Data of managers' salaries are from CSMAR Database. The urban average wage is from China Statistical Yearbook 2012.

3.5   Conclusion

In this chapter, I explain the change in the labor share from the changing power relation in the sphere of production over the economic transition. The first stage of the reform era started with the destruction of the foundation for the Maoist factory regime; however, the factory regime in the first stage led to rising wages, squeezed profits, and recurrent inflation. The main reason for this was: first, with the high-benefit system and job security, workers were still powerful; second, workers and cadres were close in economic conditions and cadres tended to negotiated with the state to pursue increases in wages and benefits for all workers and themselves. In the second stage, a series of reforms reshaped the power relations by repressing the power of workers and dividing managers and workers. As the

result, workers became the owners of the commodity of labor power and cadres became capitalist managers.

The experience of the Chinese working class recalls the question what is "distribution according to work". As Luo (1978) suggests, "distribution according to work" in a socialist society requires that wages grow as labor productivity grows—in other words, the labor share should not substantially decline. The narrow perception of "distribution according to work" at the beginning of the reform era helped overthrow the Maoist innovations in coordinating the long-term and short-term interests of the working class. Workers under material incentives were increasingly weak, which finally led to the loss of power through a series of reforms.

CHAPTER 4

THE POWER RELATION AND LABOR'S SHARE IN CHINA: MACRO AND

MICRO EVIDENCES

4.1   Introduction

In this chapter, I explain labor's share in China over the reform era from a perspective of the power relation in the sphere of production. This perspective follows the Marxian approach that emphasizes the role of production in the determination of distribution. I will argue that the power relation in the sphere of production is a crucial factor for China's conventionally measured labor share. To make this argument, I will provide both macro and micro evidences.

The Marxian approach that I follow does not mean distribution is determined solely by factors associated with production. As I have discussed in Section 1.3, there are other factors, such as value realization and the distribution of surplus value, which also affect the conventionally measured labor's share. Moreover, the power relation in the sphere of production does not undermine the importance of factors in the labor market. I argue that factors in the labor market can affect distribution only through their impact on the power relation in the sphere of production.

In contrast to the Marxian approach, the neoclassical approach to the labor share question does not take into account the power relation in the sphere of production. Generally speaking, the neoclassical approach reduces the labor share question into a micro

issue, and then applies the neoclassical production theory to explain the distributive shares within enterprises. In the 1950s, Solow (1958) expresses skeptical opinions on "the relative stability of distributive shares in the advanced capitalist economies over the last 100 years or so" pointed out by Kaldor (1956) and argues that the relative stability of distributive shares does not require a specifically macroeconomic explanation. Solow's 1958 article laid the foundation for the neoclassical approach to the labor share question. Studies following this approach consider the elasticity of substitution and sectoral structure—the two factors discussed by Solow (1958)—as the determinants of labor's share (Bentolila and Saint-paul, 2003; Karabarbounis and Neiman, 2013).

There are other alternative approaches to the labor share question. The post-Keynesian approach suggests that distributive shares play an important role in investment and saving decisions. Labor's share under this approach is determined either by institutional factors (Dutt, 1984; Bhaduri and Marglin, 1990; Hein, 2013), or by the balance of the investment and savings (Skott 1989). The approach derived from the Lewis model (Lewis 1954) can also be applied to the labor share question by assuming an externally determined constant real wage, which challenges the neoclassical assumption that the real wage is determined by the marginal productivity of labor. Appendix C provides a comparison of different approaches with simple models.

This chapter follows the Marxian approach to explain labor's share in China because its emphasis on the power relation in the sphere of production and there were major changes in the power relation during China's economic transition, which may have important effects on distribution, as I have discussed in Chapter 3. This chapter uses a panel analysis with China's regional data and enterprise data to examine how the power relation affects labor's share. Compared to the cointegration analysis in Chapter 2, the panel analysis uses variables available on the regional level and on the enterprise level to straightforwardly

depict the power relation in the sphere of production, instead relying the rate of surplus value or the Marxian measure of labor's share. Specifically, I examine how the bonus-wage ratio, management-worker wage inequality, the reserve army of labor, and the fallback position of workers affect labor's share over the reform era.

The main findings of this chapter are as follows. First, in the first stage of the reform era, there was a U-shape relationship between labor's share and the bonus-wage ratio, which is consistent with the fact that the factory regime centered on material incentives led to a fall in labor's share when those incentives were small but a rise in labor's share when those incentives were increasingly large. Second, in the second stage of the reform era, management-worker wage inequality and the reserve army of labor have a significantly negative effect on labor's share, while the fallback position of workers has a significantly positive effect on labor's share, which implies that the China's economic system has become capitalism-dominated in this stage.

This chapter may contribute to the current literature in three aspects. First of all, it explains China's labor share with the power relation in the sphere of production, while the current literature has not taken this power relation into account. Although privatization and globalization are often considered (Luo and Zhang, 2010), the variables adopted here are more straightforward to reveal the power relation in the sphere of production. Secondly, as I did in Chapter 2, I rigorously follow the Marxian approach to establish the empirical model based on an exploration for the factors of conventionally measured labor's share. Lastly, the empirical model established here is applied to both macro and micro data in order to make the results more robust.

In what follows, this chapter is organized into four sections. Section 4.2 reviews the relevant literature. Section 4.3 establishes the empirical model and discusses the variable

selection issue and data sources. Section 4.4 discusses the econometric strategy and analyzes the econometric results. Section 4.5 concludes this chapter.

4.2   Literature Review

4.2.1   Early Studies

After Kaldor (1956; 1961) proposed the fact of relatively stable distributive shares in the advanced capitalist economies, which Keynes (1939) earlier described as "a bit of a miracle", the labor share question attracted little attention from the orthodox with a few exceptions such as Solow (1958) and Nordhaus (1974). Blanchard (1997) documents the rise of capital's share for European continental countries since the late 1970s and the early 1980s, which brought the labor share question back to discussion. Blanchard (1997) explains this rise of capital's share with the reduction of labor demand as firms reacted to the adverse shift of labor supply during the 1970s. How to measure labor's share was also a concern of the discussion (Krueger, 1999; Gollin, 2002).

In contrast to the orthodox that had kept almost silent on the labor share question for a long time, there were continuous relevant discussions in heterodox economics. Distributive shares in heterodox economics are not only outcomes of distribution, but also crucial for the profitability and thus capital accumulation as well as crisis tendencies of capitalism. Distributive shares measured by the conventional approach are often used to proxy the power of classes (Goodwin, 1967; Boddy and Crotty, 1975; Wolff 1979; Taylor 1979; Weisskopf, 1979; Islam 1988; Sherman, 1990; Raffalovich et al., 1992; Basu and Vasudevan, 2011; Sasaki et al., 2013), while some studies choose to more rigorously follow the Marxian approach (Moseley 1985, 1987). Distributive shares can also reflect institutional shifts under capitalism, which has been discussed by both the Regulation theory (Aglietta, 2000) and the Social Structure of Accumulation theory (Bowles et al., 1984; Kotz et al., 1994).

Contrary to the neoclassical approach, heterodox economics considers distributive shares not only a micro issue that takes place in the production process, but also a macro issue relevant to the power structure between classes and the operation of a capitalist economy.

4.2.2   Recent Studies

Studies on the labor share question in the past fifteen years in general followed the neoclassical approach to different extents. Bentolila and Saint-paul (2003) and Karabarbounis and Neiman (2013) represent applications of the neoclassical approach, while studies such as Diwan (2001), Harrison (2002), and Jayadev (2007) provide empirical analyses that have no relation with the neoclassical approach. Generally speaking, these studies emphasize the role of three factors in the determination of labor's share.

The first factor is globalization. Studies confirm that globalization has a negative effect on labor's share. This strand of literature belongs to broader reflections of globalization since the late 1990s (Rodrik, 1997). Diwan (2001) considers financial crises as "episodes of distributional fights" between labor and capital and finds that capital controls have a positive effect on labor's share (especially during crisis years) with a dataset covering 135 countries over the period from 1975 to the mid-1990s. Diwan's analysis is based on a bargaining power model and finds that the effects of explantary variables during crisis years differ from the effects during non-crisis years. Similarly, using data from more than 100 countries over the period 1960-1997, Harrison (2002) finds that trade shares (export plus import divided by GDP) and exchange rate crises have negative effects while capital controls have positive effects on labor's share. Guscina (2006) examines the effect of globalization with a variety of measures (the trade-GDP ratio, the FDI-GDP ratio, the capital flows-GDP ratio, and trade shares with developing countries) for 18 OECD countries over the period 1960-2000 and finds a negative effect on labor's share. Jayadev (2007) finds a

negative effect of capital account openness on labor's share with a dataset covering over 100 countries for the period 1972-1995, where the openness is measured by the ratio of trade taxes to trade, and the residual derived from the regression of the trade-GDP ratio on the log of per capita GDP and the log of population. In addition, Berthold et al. (2002) emphasizes the role of globalization on firms' substitution of capital for labor. Oyvat (2010), Schneider (2011), Hutchinson and Persyn (2012), Hogrefe and Kappler (2013) and Elsby et al. (2013) confirms the negative effect of globalization with different datasets.

On the other hand, Buch et al. (2008) examine the effect of trade openness and labor's share for German and Italian regions and find mixed results. For German regions, import openness and export openness has positive and negative impact, respectively, while trade openness does not have a significant impact for Italian regions. Decreuse and Maarek (2008) find a U-shaped relationship between labor's share in the manufacturing sector and the FDI stock-GDP ratio for developing countries. Ahsan and Mitra (2014) find that trade liberalization led to an increase in labor's share for small, labor-intensive firms but a reduction for large, less labor-intensive firms in India.

The second factor is technology. Studies following the neoclassical approach suggest that technology is a basic determinant of labor's share because it determines the factor ratio (the capital-labor ratio in most cases) and the marginal productivity of factors in a theoretically optimal environment. Bentolila and Saint-paul (2003) establish a model on the basis of the neoclassical production theory and suggest that the capital-output ratio and the total factor productivity (TFP hereafter) are determinants of labor's share. Their empirical analysis with a panel for 13 industries of 12 OECD countries over the period 1972-1993 finds that these two variables have negative effects on labor's share. In Hogrefe and Kappler (2013), both the capital-output ratio and the TFP are used as explanatory variables. They also find these variables have negative effects on labor's share for 19 OECD countries over

the period 1960-2008. Karabarbounis and Neiman (2013) establish the relationship between the elasticity of substitution, the distribution parameter in a CES production function, the capital-augmenting technology, markups of intermediate input producers, the rental rate of capital paid by the intermediate input producers, and labor's share with a general equilibrium model. Their empirical analysis with a panel for 59 countries over the period 1975-2012 finds that the lower rental rate of capital explains roughly half of the decline in labor's share. Nevertheless, they did not explore why the rental rate of capital (i.e. the relative price of investments) declined. Elsby et al. (2013) suggests that there is limited support for neoclassical explanations based on the substitution of capital for labor in the case of the US.

The neoclassical approach to the labor share question is a kind of "technological determinism" and meanwhile circular reasoning. First of all, labor's share under this approach is determined by a production function that reveals certain technology; however, this approach never examines whether changes in technology do happen through observing the production process before it explains labor's share with technology. Secondly, all the parameters of the production function that intend to reveal the characteristics of the technology are derived from the same data by which labor's share is calculated.[68] If there are factors other than technology that determines labor's share, how can one use this data to calculate the parameters of the production function? To put it in another way, if one assumes that only technology determines labor's share, there is no way to actually prove that technology determines labor's share because it is assumed!

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[68] Taking Bentolila and Saint-paul (2003) as an example. Their empirical analysis uses TFP derived from the Cobb-Douglas production function as an explanatory variable for labor's share. However, the Cobb-Douglas function assumes a constant labor's share. Adopting TFP means that the authors on one hand give up the Cobb-Douglas production function, but on the other hand recycle it in another way with the purpose to capture some unknown components of technical change.

Studies not following the neoclassical approach may also consider technology as a determinant without imposing a neoclassical production function. For instance, Harrison (2002) finds a negative effect of the labor-capital ratio on labor's share. Similarly, Guscina (2006) finds labor productivity has a negative effect on labor's share. Kristal (2010) finds that labor's share in the U.S. is largely explained by the working-class organizational power in the economic and political spheres and structural power in the global sphere. Another article by Kristal (2013) suggests that the decline of labor's share in the U.S. was led by the erosion in workers' positional power partly as the outcome of class-biased technological change.

The third factor is labor market institutions. Wallace et al. (1999) examine the relationship between union membership and strike activity on changes in labor's share during different stages of the post-World War II U.S. economy and find that they were more instrumental for impacting labor's share during the capital-labor accord period but less in later periods. Bentolila and Saint-paul (2003) find that the frequency of labor conflicts has a negative effect on labor's share. Guscina (2006) uses union density and a variable measuring the strictness of employment protection in the regressions and finds positive effects on labor's share. Bental and Demougin (2010) establish a model with moral hazard and irreversible investment that affect the bargaining power of labor and suggest that the improvements in ICT technologies weaken the bargaining power of labor thus has a negative effect on labor's share. Agnese and Sala (2010) finds that deunionization accounts for 8 percentage points of the decline in Japan's labor share since 1990. Maarek (2010) suggests that labor's share in developing countries are lower than that in developed countries because the larger informal sector in developing countries determines workers' outside opportunities in wage setting. Fichtenbaum (2011) finds that over the period 1997-2006 the fall in the union density can explain 29 percent decline of labor's share in the US.

Deakin et al. (2014) find that worker-protective labor laws are positively correlated with labor's share in six OECD countries over the period 1970-2010. On the other hand, Elsby et al. (2013) suggest that the relationship between unionization and labor's share in the U.S. is inconclusive.

In addition to globalization, technology, and labor market institutions, relevant studies have also examined the effects of government expenditure (Harrison, 2002), sectoral structure (Young, 2006; Elsby et al., 2013), privatization (Torrini, 2005), financial crises (Diwan, 2001; Van Arnum and Naples 2013), and economic freedom (Young and Lawson, 2014).

4.2.3   Studies on China's Labor Share

Studies on China's labor share appeared only in recent years, starting with Bai et al. (2008), which analyzes the determinants of distributive shares on the enterprise level, and Bai and Qian (2010b), which documents that China's labor share on the macro level has experienced a major decline since the mid-1990s.

Studies on the determinants of China's labor share use data of national, reginal, or enterprise levels. The determinants discussed in these studies concentrate on sectoral structure (Bai and Qian, 2009; 2010a; 2010b; Qian and Chi, 2011), technology (Huang and Xu, 2009; Bai and Qian, 2009; 2010a; 2010b), ownership (Bai and Qian, 2010a; Luo and Zhang, 2010; Chang and Wang, 2011), globalization (Bai and Qian 2010a; C. Luo and Zhang 2010; Shao and Huang 2010; J. Zhang, Chen, and Zhou 2012), and the dual structure of the economy (Gong and Yang, 2010; Weng, 2011; Jiang et al., 2014). Table 4-1 summaries the main empirical studies.

The main findings of these studies are: sectoral structure is an important cause for the decline of labor's share on the macro level; privatization is another cause for this decline,

which surported by both macro and micro evidences; results of technology, trade openness and FDI are mixed; the dual structure of the economy has not been well anayzed empirically.

In terms of the findings, although the effect of privatization is clear, some studies attribute the decline in labor's share after the reform of the state-owned sector to the rise in the "monopoly power" of state-owned enterprises (Bai and Qian 2010b; Chen et al., 2013), where the monopoly power is usually measured by markups, defined as profits devided by sales costs, the Herfindahl index, or the concentration ratio. However, these studies have not provided any evidence that the monopoly power belongs to state-owned enterprises rather than private enteprises, neither have they show that only the monopoly power of state-owned enterprises represses labor's share. On the contrary, the empirical results of these studies even show that both state-owned and private enterprises experienced similar rise in the monopoly power (Chen et al., 2013).

In terms of theroies, most of these studies follow the neoclasscial approach while others follow the Lewis approach. For the latter, Gong and Yang (2010) suggest that the unlimited supply of labor makes wages grow much slower than labor productivity, but they have not examined it empirically. Weng (2011) finds that the labor transfer from rural to urban areas has a negative effect on labor's share, but the regression method (OLS with national time series data) is problematic. Jiang et al. (2014) find that there is a U-shaped relationship between the dual structure, measured by the employment share of the non-agricultural sector, and labor's share, but their results suffer from the spurious regression problem since the adjusted R-square is over 0.8.

In terms of data, the region panel is most widely used in these studies. However, due to the limited number of regions (31 at most, depending on how to combine the data of some regions) and the length of the panel, the spurious regression problem is likely to happen, such as Jiang et al. (2014). Moreover, regressions with region panel do not control the time

trend, such as Wei et al. (2012). Wrong instruments are used to resolve the endogeneity problem, such as Zhao and Zhang (2013), who use the lag of explantory variables as instruments that cannot be used as instruments in a fixed-effect model (Cameron and Trivedi, 2005). Another problem is related to the widely application of the system GMM on the region panel since Bai and Qian (2009), as shown in Table 4-1. Such applications are likely to be suffered from the problem of too many instruments (Roodman, 2009; Bazzi and Clemens, 2013) that jeopardizes the effectiveness of the Hansen test.

In addtion to the studies that follow the Lewis approach, a few studies discuss the bargaining power of labor or related labor market institutions, all of which uses data on the micro level. Chang and Wang (2011) find that the rate of return on total assets has a significant negative effect on labor's share, which they suggest that this is evidence for "profits squeeze wages". Zhang et al. (2012) examine the effect of export on labor's share with a large dataset that covers all above-scale industrial enterprises over the period 2000-2007. Their results show that the number of labor dispute arbitration has a significant negative effect on labor's share. they also show that regions where labor flows out has lower labor's share. Ning (2013) uses the World Bank enterprise survey data over the period 2002-2004 and provides some results about labor shortage and labor surplus, but those results are hard to interprete. In addition, this study finds that the bonus-wage ratio has a significant negative effect on labor's share. Wei et al. (2013) find a surprising result that enterprises with unions have lower labor's share, which might indicate that unionization cannot well proxy the bargaining power of labor. Besides, Xie et al. (2013) discuss how the bargaining power of labor causes labor's share to fall but have not analyzed it with econometric methods.

Table 4-1 Summary of the Empirical Studies on China's Labor Share

Articles	Period	Data	Methods	Independent Variable	Key Explanatory Variables
Bai et al. (2008)	1998-2005	Industrial enterprise panel	System GMM	(Profits + depreciation) / value added	Markup (+) Herfindahl index (+) Concentration ratio (+) Capital-output ratio (0) State ownership (-)
Bai and Qian (2009)	1997-2003	Region panel	System GMM	(Profits + depreciation) / value added	Capital-output ratio (-) State ownership (0) Income level (+) Fiscal expenditure on education (-)
Bai and Qian (2010a)	1985-1995 and 1996-2003	Region panel	System GMM	CE / (GDP - taxes)	Agricultural share (+) State ownership (1985-1995, -; 1995-2003, +) Taxation (-)
Bai and Qian (2010b)	1998-2005	Industrial enterprise panel	System GMM	Wages / (value added – taxes)	Markup (-) Herfindahl index (-) Concentration ratio (-) Capital-output ratio (0) State ownership (+) FDI (-)
Shao and Huang (2010)	1998-2003	Region panel	FE	CE/GDP	Trade openness (+) Capital-output ratio (+) State ownership (-)
Luo and Zhang (2010)	1987-2004	Region panel	3SLS	CE/GDP	Income level (-) Square of income level (+) FDI (-) Private ownership (-)
Weng (2011)	1993-2009	National time series	OLS	CE/GDP	Labor transfer from rural to urban areas (-)
Fang (2011)	2001-2008	Listed company panel	FE	Cashes paid to employees / (value added – taxes)	Assets (-) Return of assets (-) Leverage (-) Private ownership (-) Share of independent boarding members (-) Compensation committee (-)

Table 4-1 Summary of the Empirical Studies on China's Labor Share (cont.)

Articles	Period	Data	Methods	Independent Variable	Key Explanatory Variables
Huang et al. (2011)	1987-2006	Region panel	FE	CE/GDP	Trade openness (+)
Qi (2011)	1995-2007	Region panel	FE	CE/GDP	Employment share of the informal sector (-)
Qian and Chi (2011)	1997-2007	Region panel	Spatial panel	CE/GDP	Agricultural share (+) Industrial share (-) State ownership (0)
Chang and Wang (2011)	1998-2009	Listed company panel	System GMM	Cashes paid to employees / (value added – taxes)	Return of assets (-) Capital-output ratio (-) State ownership (+) Monopoly dummy (-) Marketization index (+) Growth of revenue (-)
Wei et al. (2012)	1990-2007	Region panel	FE and RE	CE/GDP	Child dependency ratio (+) Age dependency ratio (-)
Zhang et al. (2012)	2000-2007	Industrial enterprise panel	Two-step GMM	(Wages + benefits + social securities + insurances) / value added	Export dummy (+) Joint effect of export dummy and K/L (-) Labor outflow (-) Number of labor dispute arbitration (-)
Luo and Chen (2012)	1999-2002	Industrial enterprise panel	System GMM	Wages / (value added – taxes)	Leverage (-)
Piovani (2013)	1980-2007	National time series	Conintegration	Wages of the formal industrial sector / value added of the industrial sector	State industrial formal employment / total formal industrial employment (+) Non-industrial formal employment / total non-industrial employment (-) Ratio of state industrial formal wage to non-state industrial formal wage (-) GDP share of social security (-) Ratio of formal industrial average wage to informal wage (+)

Table 4-1 Summary of the Empirical Studies on China's Labor Share (cont.)

Articles	Period	Data	Methods	Independent Variable	Key Explanatory Variables
Kamal et al. (2013)	1998-2007	Industrial enterprise panel	FE	Wages / value added	Tariff (-)
Ning (2013)	2002-2004	Industrial enterprise panel	FE	Wages / (value added - depreciation)	Financial constraints (-) Bonus-wage ratio (-) Overtime work (-)
Wei et al. (2013)	2004, 2006, and 2008	Private enterprise panel	OLS, treatment-effect model, and 2SLS	Wages / (value added - depreciation)	Having political relationships with the government (-)
Wei et al. (2013)	2010	Private enterprises	OLS and treatment-effect model	Wages / (value added - depreciation)	Unionization (-)
Zhao and Zhang (2013)	1997-2007	Region panel	FE, RE, LIML and system GMM	CE/GDP	Joint effect of minimum wages and foreign trade (-)
Xing and Li (2013)	1998 and 2004	Industrial enterprise panel	OLS and FE	(Wages + benefits) / value added	Computer use (-) Export (+) Capital-labor ratio (-)
Jiang et al. (2014)	1993-2010	Region panel	FE	CE/GDP	Dual structure (-) Square of dual structure (+)

Piovani (2013) explains the wage share of China's industrial sector from the class power perspective with the conintegration method. In addition to the problem with measuring the wage share that I mentioned in Chapter 2, the variables used to depict the reserve army of labor are also well-founded, which include state share of total formal industrial employment and the share of staff and workers in total non-industrial employment. These variables can depict the structure of employment but cannot depict the relative size of the reserve army.

4.2.4   Summary of the Literature Review

In the current literature on China's labor share, there is a lack of empirical exploration on the effect of the power relation following the Marxian approach. Some studies do have discussed the effect of the bargaining power of labor; however, I suggest that the bargaining power of labor in non-Marxian approaches is a different category than the power of labor in the sphere of production. In the labor market, from the neoclassical approach, labor supply, labor demand, and labor market institutions all have effects on the equilibrium wage; from the Lewis approach, since labor supply is assumed to be unlimited, the average earnings in the subsistence (non-capitalist) sector determines the wage level in the capitalist sector (Lewis, 1954). Thus, the bargaining power in the neoclassical approach and in the Lewis approach is constrained within the labor market. In contrast, a key insight of Marx in terms of distribution (including the determination of wages) is that distribution is not determined in the labor market (which Marx depicts as the place where "right against right") but determined in the sphere of production (which Marx depicts as the place where "between equal rights, force decides") (Marx, 1976, p.344). This does not mean that Marx omits the labor market. In fact, Marx has discussed a lot about labor supply, labor demand, as well as

labor market institutions.[69] What Marx means is that the labor market does not independently determines distribution; on the contrary, the labor market affects the power relation in the sphere of production where distribution is finally determined, and there are other factors from the labor process that also affect the power relation. Therefore, I suggest that in the Marxian approach there is no difference between the bargaining power of labor and the power of workers in the sphere of production. However, given that the bargaining power in the non-Marxian approaches has different meanings, I use the power relation in the sphere of production to distinguish the Marxian approach from others. Based on this distinction, the current studies on China's labor share have the following deficiencies.

First, in terms of theories, a few studies have applied the Lewis approach to discuss the bargaining power of labor, but no study applies the power in the sphere of production from the Marxian approach. Important aspects of the power in the sphere of production thus have not been explored.

Second, the selection of variables for the bargaining power is not well grounded, as is discussed in Section 4.2.3. Variables such as unionization, labor shortage, labor surplus have led to strange results that hard to interpret. Variables such as the number of labor dispute arbitration have not reflected the bargaining power straightforwardly.[70] This chapter chooses variables to reflect the power relation in the sphere of production based on the well-developed labor discipline model built on Marx's theories (Bowles, 1985; Schor and Bowles, 1987) and the historical analysis in Chapter 3.

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[69] Rigorously, the labor market in the Marxian approach should be the market of labor power. Marx discusses the supply of labor power in the theory of primitive capital accumulation and the theory of the reserve army of labor, and also discusses how the supply and demand of labor power are determined in the cycles of capital accumulation. In terms of labor market institutions, proletarianization and the existence of a reserve army of labor are among the basic institutions of the capitalist market of labor power, as argued by Marx (Marx, 1976).

[70] In principle, more labor dispute arbitration can imply either greater or smaller bargaining power of workers.

Third, in terms of econometric methods, the current studies associated to the bargaining power of labor have not apply panel regression methods to region panel data (except Jiang et al., 2014). Panel regressions are useful in showing the relationship between variables by purging out fixed effects, which answers different questions than the cointegration method in Chapter 2 of this study. This chapter will apply the panel data methods to both macro-level (region) and micro-level data.

Lastly, in terms of period selection, the current studies seem to be overly arbitrary. The historical analysis in Chapter 3 suggests that the determination mechanism of labor's share in the first stage of the reform era is not the same as that in the second stage. There is no doubt that period selection affects the conclusions one may reach. Thus, the following regressions of this chapter will analyze the two stages of the reform era separately. However, the period selection has to consider data availability as well. Therefore, for the region data, I will choose the period 1980-1991 for the first stage and the period 1999-2010 for the second stage of the reform era. Periods that the enterprise data covers are all in the second stage of the reform era, thus I will use all the available enterprise data for the analysis.

4.3   Empirical Models, Variable Selection and Data Sources

4.3.1   Empirical Models

I start with the empirical models for the region panel. The empirical models attempt to rigorously follow the Marxian approach. Thus, as I did in Chapter 2, the first step is to consider the difference between labor's shares measured by the conventional approach and the Marxian approach, and the second step is to consider what determines labor's share measured by the Marxian approach.

In the first step, the difference between labor's share measured by the two approaches is determined by two factors: first, the share of the non-dominant part in the economy; second, the share of surplus value distributed to unproductive labor as wages (hereafter, unproductive labor). Thus, I take the shares of agriculture, self-employment, and non-profit institutions in the economy as well as unproductive labor as explanatory variables in the empirical models. Furthermore, since self-employment emerged and developed only in the second stage of the reform era, the empirical model for the first stage will consider all these variables except self-employment.

In the second step, according to the analysis in Chapter 2 and 3, one should take into account the effects of the value of labor power, realization conditions, labor productivity, and the power relation that reflects class struggle.

The value of labor power in a given period is initially a constant. The power relation may lead to changes to the constant. Therefore, the value of labor power of any time can be expressed as a function of the power relation plus a constant. The fixed-effect model can purge out the constant in this expression, leaving a function of the power relation. Given that there have been variables for the power relation in the empirical model, there is no need to take the value of labor power as an explanatory variable. Next, I use real GDP growth and real GDP per capita to capture realization conditions and labor productivity, respectively. Variables that reflect the power relation in the sphere of production should be selected separately for different stages of the reform era.

In the first stage, under the factory regime, as cadres increasingly used material incentives, wages tended to squeeze profits since cadres had only the carrot strategy but no stick of unemployment. Thus, when material incentives were small, they were useful to raise the profit share by raising labor productivity higher; however, with material incentives being abused, they tended to raise labor's share. Therefore, there should be a U-

shaped relationship between the relative size of material incentives and labor's share. This U-shaped relationship depicts the power relation in the first stage.

There is some dialectics in the relationship between material incentives and the power of workers. In the early period of the first stage, given that there were still some legacies of the Maoist factory regime, workers were still willing to contribute more efforts if they were provided with small amounts of material incentives. As these legacies being destroyed, the still powerful workers would require more material incentives, whereas material incentives might become the only way for cadres to make workers contribute more efforts. Since the increase of the effort contribution could be less than that of material incentives, distribution turned to be favorable to workers. As the game proceeded, cadres would provide workers more and more material incentives; however, as the game ended (i.e. workers were defeated by the laying-off policy), the large share of material incentives in workers' wage bill turned from the success of their power into the reliance on the management who mastered the distribution of material incentives—in contrast to the cadres who tried their best to satisfy workers' requirements on material incentives. Therefore, I suggest that the U-shaped relationship between the bonus-wage ratio and labor's share only existed before the game ended, i.e. in the first stage of the reform era, while in the second stage, this relationship did not exist. [71]

In the second stage, my analysis in Chapter 3 emphasizes two aspects of the power relation: class division and the commodification of labor power. Class division here refers to the division between cadres and workers, which greatly shifted the power on the shop floor. Commodification of labor power refers to the fact that workers turned to be disciplined by a reserve army of labor, thus workers have to sell their labor power in order to get access to

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[71] Ning (2013) uses the bonus-wage ratio in the empirical model for the period 2002-2004. As I suggest in the following paragraphs, the bonus-wage ratio in the second stage resulted from the decline in the power of workers, but other variables can fully depict this decline.

consumption goods. These two aspects correspond to the two groups of factors for the power relation in the sphere of production: factors in the production process and factors in the labor market.

Such a major change in the power relation has brought changes in many aspects of the economy, thus there is no doubt that many aspects can reflect the change in the power relation. However, I argue that some of these aspects are more fundamental to the power relation, while other aspects are merely results of the power relation. Capturing these fundamental aspects allows us safely ignoring the resultant aspects. Further, I argue that class division and the commodification of labor power are the two fundamental aspects.

In terms of class division, the relationship between cadres and workers changed, reflected by the wage inequality between cadres and workers. Cadres pursued raising wages for all workers in the first stage, while they became much more self-interested in the second stage. Thus, the management-worker wage inequality is a key variable that reflects the power relation in the second stage.

In terms of commodification of labor power, after millions of workers in state-owned enterprises were laid off, the power relation tended to be capitalist. Unemployment became an instrument to discipline workers. Thus, I use the two key variables in the labor discipline model to reflect the power relation: the relative size of the reserve army and the fallback position of workers. The first variable depicts the possibility for a fired worker to find a new job, and the second depicts the income-replacing social benefits that a fired worker can receive.

Furthermore, I also consider the ownership structure and globalization as explanatory variables. The ownership structure may affect labor's share because state-owned enterprises and private enterprises have different labor practices. A simple fact is that the average working hours in private enterprises are much longer than those in state-owned

enterprises.[72] Also, state-owned enterprises are different from their private counterparts in promoting labor productivity growth (Lo and Zhang, 2010; Lo and Li, 2011). Globalization may lead to more intense competition between workers across countries, which in theory may also cause labor's share to change. These variables are related to the power relation to different extents; however, as I argued, they are not fundamental aspects of the power relation. Thus, they do not necessarily have significant effects on labor's share if the fundamental aspects are controlled in the empirical models.

To sum up, I establish the model in Equation (4.1) for the first stage of the reform era and the model in Equation (4.2) for the second stage of the reform era.

$$LS_{it} = \alpha_1 BONUS_{it} + \alpha_2 BONUSQ_{it} + \alpha_3 LP_{it} + \alpha_4 GROWTH_{it} + \alpha_5 AGR_{it} + \alpha_6 NP_{it}$$

$$+\alpha_7 UP_{it} + \alpha_8 SOE_{it} + \alpha_9 TRADE_{it} + \gamma_i + \mu_t + \varepsilon_{it} \tag{4.1}$$

$$LS_{it} = \beta_1 INEQ_{it} + \beta_2 RAL_{it} + \beta_3 FB_{it} + \beta_4 LP_{it} + \beta_5 GROWTH_{it} + \beta_6 AGR_{it} + \beta_7 GETI_{it}$$

$$+\beta_8 NP_{it} + \beta_9 UP_{it} + \beta_{10} SOE_{it} + \beta_{11} TRADE_{it} + \theta_i + \pi_t + \eta_{it} \tag{4.2}$$

Table 4-2 lists the definitions of all the variables. In Equation (4.1) and (4.2), the subscripts i and t represent a region (29 provinces, autonomous regions, and municipalities; Chongqing and Sichuan are combined; Tibet is excluded due to data availability) and a year, respectively. γ_i and θ_i are region fixed effects. μ_t and π_t are time fixed effects. ε_{it} and η_{it} are error terms. The next section discusses in detail variable selection issues and data sources.

For enterprise panels, there are two data sources. One is an enterprise survey conducted in the city of Nanjing covering the period 1995-2001. The other is the public data

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[72] According to a 2006 survey conducted by the ACFTU, the average of weekly working hours was 46.14 in state-owned enterprises and state-holding companies and 53.16 in private enterprises and self-employed units (ACFTU, 2010).

of listed companies covering the period 1999-2011. I use subscript "NJ" and "LC" to label the variables for the Nanjing enterprise panel and the listed company panel, respectively.

To sum up, the empirical models for enterprise panels are as follows.

$$LS_{NJit} = \delta_1 INEQ_{NJit} + \delta_2 GROWTH_{NJit} + \delta_3 SOE_{NJit} + \delta_4 KY_{NJit}$$

$$\sum \lambda_s Ds_i + \sum \lambda_p Dp_i + \omega_i + \tau_t + \varphi_{it} \tag{4.3}$$

$$LS_{LCit} = \rho_1 INEQ_{LCit} + \rho_2 GROWTH_{LCit} + \rho_3 SOE_{LCit} + \rho_4 KY_{LCit} + \rho_5 ASSET_{LCit}$$

$$\sum \lambda_r Dr_i + \sum \lambda_q Dq_i + v_i + \vartheta_t + \sigma_{it} \tag{4.4}$$

The definitions of variables in Equation (4.3) and (4.4) are also listed in Table 4-2, 4-3, and 4-4. Subscripts i and t represent an enterprise and a year, respectively. The Σ signs are used to express region, industry, or scale dummies. ω_i and v_i are enterprise fixed effects. τ_t and ϑ_t are time fixed effects. φ_{it} and σ_{it} are error terms.

The building of the micro models is in general the same as that of the macro models. The micro models use the capital-output ratio, total assets/scale dummies, industry dummies, and region dummies to control enterprise characteristics. Some variables are not necessary for micro models: variables of the non-dominant part and unproductive labor do not appear in micro models because these models are going to explain distribution within enterprises. On the other hand, some variables are missing in the micro models: labor productivity, the reserve army effect, fallback position, and trade openness. Labor productivity affects labor's share by repressing the unit value of consumption goods, thus it refers to the general level of labor productivity rather than the labor productivity of a particular enterprise. The effect of labor productivity is fixed for the enterprises of a given region at a given year. Similarly, effects of the reserve army, fallback position, and trade openness are all fixed in this sense.

For the Nanjing Survey, since all enterprises were located in the same city, one can purge out the missing fixed effects with a fixed-effect model; however, for the listed companies, since enterprises were located in different places, the fixed-effect model cannot resolve the missing variable problem, thus one should find an instrumental variable, which I will discuss in more detail in Section 4.4.1.

Table 4-2 Definitions and Data Sources of Variables for the Region Panel

Variable	Definition	Notes	Data Sources
LS	Labor's share	CE / (GDP - depreciation)	Hsueh and Li (1999)
BONUS	Bonus-wage ratio	Bonuses / wages	China Statistical Yearbook
BONUSQ	Square of BONUS		
INEQ	Management-worker wage inequality	Management average wage / average wage of all employees	CCER and CSMAR
RAL	Reserve army of labor	(Adjusted agricultural employment + urban registered unemployment + not-on-post workers) / urban employment	China Statistical Yearbook, China Labor Statistical Yearbook, Baidu Migration
FB	Fallback position	Average subsidy for lowest living conditions * (formal employment in enterprises / urban employment in enterprises)	China Statistical Yearbook China Civil Affairs' Statistical Yearbook
LP	Labor productivity	Real GDP per capita	China Statistical Yearbook
GROWTH	GDP growth	Real growth rate of GDP per capita	China Statistical Yearbook
AGR	Share of agriculture	Value added of agriculture / GDP	China Statistical Yearbook
GETI	Share of self-employment	Urban self-employment / urban employment	China Statistical Yearbook
NP	Share of scientific research, education, culture, and medical services	Value added of scientific research, education, culture, and medical services / GDP	China Statistical Yearbook
UP	Share of unproductive labor	Wage bill of commerce, finance, and the state sector / wage bill of formal employment	China Statistical Yearbook
SOE	Share of state-owned enterprises	Industrial output of state-owned and state-holding enterprises / total industrial output	China Statistical Yearbook
TRADE	Trade openness	(Export + import) / GDP	China Statistical Yearbook

Table 4-3 Definitions and Data Sources of Variables for the Nanjing Enterprise Panel

Variable	Definition	Notes	Data Sources
LS_{NJ}	Labor's share	Wages / (wages + profits + taxes)	Nanjing Industrial Enterprise Survey
$INEQ_{NJ}$	Management-worker wage inequality	Average earnings of the top 10 employees / average earnings of production workers	
$GROWTH_N$	Growth of industrial output		
SOE_{NJ}	Share of state-owned equity	State-owned equity / total equity	
KY_{NJ}	Capital-output ratio	Total assets / industrial output	
Ds	Scale dummy		
Dp	Industry dummy		

Table 4-4 Definitions and Data Sources of Variables for the Listed Company Panel

Variable	Definition	Notes	Data Sources
LS_{LC}	Labor's share	Wages / (wages + profits + taxes)	CCER and CSMAR
$INEQ_{LC}$	Management-worker wage inequality	Management average wage / average wage of all employees	
$GROWTH_L$	Growth of revenue		
SOE_{LC}	State control dummy	1 for state control, 0 for non-state control	
KY_{LC}	Capital-output ratio	Total assets / (wages + profits + taxes)	
$ASSET_{LC}$	Total asset		
Dr	Region dummy		
Dq	Industry dummy		

4.3.2   Variable Selection and Data Sources

In what follows I will discuss key variables and their expected signs in this section. Table 4-2, 4-3, and 4-4 list the data sources for each variable. I will discuss some of the data sources in more detail. Table 4-5, 4-6, 4-7, and 4-8 give the descriptive statistics of all the variables.

4.3.2.1   Labor's share

In Equation (4.1) and (4.2), the dependent variable, LS, is labor's share measured by the conventional approach, i.e. the compensation of employees divided by GDP subtracting the depreciation of fixed capital, same as the measure LS1 in Chapter 2. The depreciation of fixed capital is subtracted from the denominator because it is a transfer of value, rather than a part of newly created value. In Equation (4.3) and (4.4), the dependent variables, LS_{NJ} and LS_{LC}, are measured similarly. The data from the Nanjing enterprise survey and from the listed companies are Winsorized (5%).

4.3.2.2   Management-Worker Inequality

For Equation (4.2), since there is no data of management wages for the region level, I use micro data of listed companies to construct management-worker inequality, using CCER and CSMAR datasets.[73] This constructed measure equals the average wage of all directors, supervisors, and executives divided by the average wage of all employees in the region of the year.

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[73] The micro data is Winsorized (5%).

For Equation (4.3), I use the average earnings of the top 10 employees to proxy the management wages in the calculation of management-worker inequality because the Nanjing Survey does not provide data on management wages.

For Equation (4.4), I measure management-worker inequality with the ratio of the average wage of directors, supervisors, and executives (excluding those who are not paid by their companies) to the average wage of all employees.

Higher management-worker inequality means that the power relation in the sphere of production is less favorable to workers; thus, the sign of the management-worker inequality is expected to be negative.

4.3.2.3 Reserve Army of Labor

The most intuitive way to measure the reserve army effect is the unemployment rate; however, the unemployment data in China only covers urban registered unemployment but not includes unemployed migrant workers or unregistered urban unemployment. Meanwhile, the reserve army should also take the underemployed in the rural areas into account, which has composed the main source of workers in urban areas. Thus, the relative size of the reserve army is measured as follows.

$$RAL = \frac{adjusted\ agricultural\ employment + urban\ registered\ unemployment + not-on-post\ workers}{urban\ employment} \tag{4.5}$$

The numerator of Equation (4.5) means that the reserve army also includes not-on-post workers and agricultural employment, in addition to the urban registered unemployment. Not-on-post workers are mainly laid-off workers who have not been registered as unemployment.

I adjust agricultural employment because the reserve army of a region should include agricultural employment from neighbor regions. Peasants in a region may work out of their home regions, which can be seen from the fact that over 60 percent of migrant workers

from rural areas worked out of their home regions in 2013. The question is how to define neighbor regions. Geographical neighbor regions might be different from the regional sources of migrant workers for a region. Thus, I define the neighbor regions of a region as the top three destination regions for the travelers from the region in question during the Chinese New Year period. Baidu migration provides the destination regions for travelers during the last 10 days before the Chinese New Year of 2015 when the vast majority of travelers were traveling from their work regions to home regions, using the data of a popular smartphone application that can locate millions of their users. Although the quality of the data is questionable, what I need from it is only the top three destination regions rather than more detailed data; thus the quality issue should not impact the adjustment. To sum up, the adjusted agricultural employment is the sum of the agricultural employment from the local region and that from the selected three neighbor regions.

The reserve army of labor represses the power of workers, thus it is expected to have a negative effect on labor's share.

4.3.2.4 Fallback Position

The fallback position should consider the difference between the two parts that compose the urban working class: migrant workers and formal workers. The latter refers to workers of the urban unit sector. Thus, the overall fallback position is a weighted average of the fallback positions for migrant workers and formal workers, as shown in Equation (4.6).

$$FB = FB \ of \ formal \ workers * \frac{formal \ employment}{urban \ employment}$$

$$+FB \ of \ migrant \ workers * \left(1 - \frac{formal \ employment}{urban \ employment}\right) \qquad (4.6)$$

In the labor discipline model, the fallback position is the income-replacing social subsidies that a worker can receive after being fired. This definition means that a worker should not receive the income-replacing subsidies when he/she keeps the job. This reminds us to scrutinize whether agricultural income is the fallback position of migrant workers from rural areas. I argue that it is not their fallback position because migrant workers can receive agricultural income even when they have a job in urban areas. This results from the fact that agricultural production is organized by households and the majority of migrant workers' households have to maintain agricultural production since their wages from urban jobs cannot afford the living costs for their households to live in urban areas. A 2009 investigation shows that 80 percent of migrant workers live in urban areas without their family members.[74] For a typical rural family, some of the family members (especially aging parents and young children) still need to engage in agricultural production and live in the rural areas, since the living cost in these areas is much lower.

Considering the definition of the fallback position and the fact that less than 5 percent of migrant workers have access to unemployment insurances,[75] I suggest that the fallback position of migrant workers is zero.

For formal workers, I use the average subsidy for lowest living conditions as their fallback position. This subsidy is distributed to urban residents (migrant workers are not included) whose family income per capita is lower than the standard for lowest living conditions stipulated by the government. Most of the urban residents who receive this subsidy have experienced a long period of unemployment.

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[74] Sources: National Statistical Bureau, "Investigation Report on Migrant Workers 2009," (in Chinese) http://www.stats.gov.cn/tjfx/fxbg/t20100319_402628281.htm.

[75] Sources: National Statistical Bureau, "Investigation Report on Migrant Workers 2009," (in Chinese) http://www.stats.gov.cn/tjfx/fxbg/t20100319_402628281.htm.

Given that the fallback position of migrant workers is zero and the fallback position of formal workers is measured the average subsidy for lowest living conditions, Equation (4.6) is rewritten as follows.

$$FB = average\ subsidy\ for\ lowest\ living\ conditions * \frac{formal\ employment}{urban\ employment} \quad (4.7)$$

A higher fallback position will strengthen the power of workers, thus the fallback position should have a positive effect on labor's share.

For the signs of other explanatory variables, I leave the discussion to Section 4.4.2.

Table 4-5 Descriptive Statistics of the Region Panel, 1980-1991

Period			1980-1991		
Variable	Obs	Mean	Std. Dev.	Min	Max
LS	338	0.603	0.109	0.249	0.758
BONUS	291	0.154	0.047	0.051	0.286
LP	343	0.150	0.085	0.049	0.470
GROWTH	348	7.811	5.111	-9.680	23.700
AGR	348	0.305	0.117	0.032	0.598
NP	338	0.065	0.022	0.022	0.139
UP	228	0.179	0.024	0.112	0.240
SOE	347	0.708	0.131	0.295	0.938
TRADE	323	0.200	0.517	0.006	3.824

Data sources: author's calculation.

Table 4-6 Descriptive Statistics of the Region Panel, 1999-2010

Period			1999-2010		
Variable	Obs	Mean	Std. Dev.	Min	Max
LS	348	0.570	0.079	0.382	0.797
RAL	348	12.815	11.992	2.342	72.217
INEQ	348	2.230	0.592	0.816	3.950
FB	348	0.122	0.078	0.006	0.456
LP	348	0.633	0.457	0.113	3.275
GROWTH	348	10.785	2.754	4.571	23.600
AGR	348	0.142	0.072	0.007	0.364
SELF	348	0.131	0.051	0.015	0.279
NP	348	0.154	0.039	0.091	0.363
UP	348	0.222	0.026	0.164	0.302
SOE	348	0.505	0.205	0.107	0.899
TRADE	348	0.330	0.417	0.000	1.799

Data sources: author's calculation.

Table 4-7 Descriptive Statistics of the Nanjing Enterprise Panel, 1995-2001

Variables	Obs	Mean	Std. Dev.	Min	Max
LS_{NJ}	874	0.594	0.253	0.166	1.380
$INEQ_{NJ}$	874	1.482	0.392	1.043	3.185
$GROWTH_{NJ}$	868	0.268	1.269	-0.958	19.800
SOE_{NJ}	872	0.259	0.410	0.000	1.000
KY_{NJ}	874	1.178	1.813	0.023	26.426

Data sources: author's calculation.

Table 4-8 Descriptive Statistics of the Listed Company Panel, 1999-2011

Variable	Obs	Mean	Std. Dev.	Min	Max
LS_{LC}	12980	0.494	0.230	0.107	1.202
$INEQ_{LC}$	12980	2.719	1.731	0.374	8.306
$GROWTH_{LC}$	11695	1.534	14.462	0.022	1498.156
SOE_{LC}	12980	0.616	0.486	0.000	1.000
KY_{LC}	12980	13.622	28.107	0.524	2888.490
$ASSET_{LC}$	12980	0.592	4.113	0.001	283.529

Data sources: author's calculation.

4.4   Econometric Strategy and Results

4.4.1   Econometric Strategy

Equation (4.1) and (4.2) are estimated with the fixed effect model. To control the cyclical characteristics of the variables, Equation (4.1) and (4.2) are also estimated with 3-year averages of variables. The estimation with 3-year averages reduces the length of the panel, making the estimation closer to the large-N and small-T hypothesis of the fixed effect model.

Equation (4.3) is estimated with the fixed effect model. Since the number of enterprises in the Nanjing survey is much larger than the number of years, there is no need to estimate with 3-year averages of variables. In this data, only one variable that reflects the power relation is available. However, since the Nanjing survey was conducted in the same place where the reserve army of labor and fallback position should be the same for all enterprises, we can ignore these missing variables as the fixed-effect model can purge out them.

Equation (4.4) is also estimated with the fixed effect model. The number of enterprises in the listed company panel is also much larger than the number of years. The problem of missing variables cannot be resolved with fixed effects because the listed companies are located in different places and one company may have branches in different places. Therefore, I will deal with the missing variable problem with instrumental variables.

One instrumental variable is the share of directors, supervisors, and executives who are not paid by their companies in all directors, supervisors, and executives. If they are not paid, they are very likely to be shareholders of the companies, and thus they are more likely to repress the wages of management. Thus, this instrumental variable is negatively related with management-worker inequality but it is not directly affect labor's share.

The other two instrumental variables are the stock share of the second largest shareholder and the stock share of the third largest shareholder. If these two variables are larger, shareholders of the company are more decentralized, thus it is easier for the management to raise their wages. These two variables are positively related with management-worker inequality but they do not have direct impacts on labor's share.

4.4.2   Econometric Results

4.4.2.1   Results of the Region Panel

Table 4-9 gives the regression results of the region panel.

Model (1) is the result of Equation (4.1), which shows that there is a U-shaped relationship between the bonus-wage ratio and labor's share. When the bonus-wage ratio is greater than 0.19, it began to raise labor's share. The share of agriculture has a significantly positive effect on labor's share. Since most of agricultural new value accrues to labor's share, this result is expected. Labor productivity has a significantly negative effect on labor's share. The other explanatory variables have no significant effect.

Model (2) is the regression result of Equation (4.1), using 3-year averages of variables. This result confirms the U-shaped relationship between the bonus-wage ratio and labor's share. The share of agriculture still has a significantly positive effect. Labor productivity, however, shows no significant effect. The effect of unproductive labor becomes significant, which implies that unproductive labor was also squeezing profit's share in the first stage of the reform era, which brings interesting questions about the relationship between economic systems and the possibility of unproductive labor to repress capital accumulation. The other variables have no significant effect.

Model (3) gives the results of Equation (4.2). The management-worker inequality and the reserve army have significantly negative effects. The fallback position has significantly

positive effects. Signs of these variables that reflect the power relation are expected. The share of self-employment has a significantly positive effect. Given that most of self-employment new value accrues to labor's income, this result is reasonable. This result shows that, the share of agriculture has no significant effect over the period 1999-2010, which contradicts with the studies that attribute the decline in labor's share to sectoral changes. Labor productivity and the share of unproductive labor have no significant effect. Other variables also have no significant effect.

Model (4) shows the result of Equation (4.2), using 3-year averages of variables. This result is similar to the result of Model (3). All the variables that reflect the power relation have expected signs.

Table 4-9 Regression Results of the Region Panel

	(1)	(2)	(3)	(4)
Independent variable		LS		
Period	1980-1991	1980-1991 3-year averages	1999-2010	1999-2010 3-year averages
BONUS	-0.963**	-0.968*		
	(-2.431)	(-1.783)		
BONUSQ	2.568**	2.820**		
	(2.332)	(2.178)		
INEQ			-0.021**	-0.032**
			(-2.498)	(-2.475)
RAL			-0.004**	-0.004**
			(-2.251)	(-2.523)
FB			0.189**	0.343**
			(2.325)	(2.433)
LP	-0.477*	-0.340	-0.014	-0.017
	(-1.788)	(-1.367)	(-0.662)	(-0.591)
GROWTH	0.000	-0.001	-0.002	-0.003
	(0.229)	(-0.747)	(-0.746)	(-0.767)
AGR	0.547***	0.958***	0.248	0.083
	(2.971)	(4.608)	(0.764)	(0.190)
SELF			0.412***	0.550***
			(3.479)	(3.515)
NP	0.574	1.338**	0.352	0.132
	(1.232)	(2.618)	(1.027)	(0.298)
UP	0.920	0.684	0.155	0.277
	(1.172)	(1.095)	(0.500)	(0.596)
SOE	-0.216	-0.216	0.069	0.049
	(-1.344)	(-1.380)	(0.699)	(0.417)
TRADE	0.008	0.015	0.006	0.007
	(0.540)	(0.945)	(0.414)	(0.285)
Method	FE	FE	FE	FE
N	207	100	348	116

Notes: t statistics are reported in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$. All standard errors are heteroskedasticity-robust. All specifications include year dummies.

4.4.2.2　Results of the Nanjing Enterprise Panel

Table 4-10 gives the regression results of the Nanjing enterprise panel. The management-worker inequality has a significantly negative effect, which again confirms that the power relation is a crucial factor of labor's share. The share of state-owned equity has a significantly positive effect. The capital-output ratio has a significantly positive effect. The growth rate of industrial output has a significantly negative effect, which means that labor's share is counter-cyclical.

Table 4-10 Regression Results of the Nanjing Enterprise Panel

Independent variable	LS
Period	1995-2001
$INEQ_{NJ}$	-0.077**
	(-2.388)
$GROWTH_{NJ}$	-0.012***
	(-2.751)
SOE_{NJ}	0.125***
	(2.839)
KY_{NJ}	0.022**
	(2.090)
Method	FE
N	866

Notes: t statistics are reported in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$. All standard errors are heteroskedasticity-robust. The specification includes year dummies, industry dummies, and scale dummies.

4.4.2.3　Results of the Listed Company Panel

Table 4-11 shows the regression results of the listed company panel. Model (1) is the fixed effect estimation. Model (2) uses instrumental variables for the management-worker inequality because missing variables that reflect the power relation are related with the

management-worker inequality. The 2SLS result has passed the underidentification test, weak instrument test, and overidentification test. The coefficients of Model (2) are close to those of Model (1). The management-worker inequality has a significantly negative effect, same as the results in Table 4-9 and Table 4-10. State ownership has a significantly positive effect. Capital-output ratio has a significantly positive effect. The growth rate of revenue has a negative effect, which again means that labor's share is counter-cyclical. The scale of enterprises measured by total assets has a significantly negative effect.

Table 4-11 Regression Results of the Listed Company Panel

	(1)	(2)
Independent variable	LS	
Period	1999-2011	
INEQ$_{LC}$	-0.018***	-0.026*
	(-10.504)	(-1.829)
GROWTH$_{LC}$	-0.000**	-0.000**
	(-2.136)	(-2.072)
SOE$_{LC}$	0.032***	0.047***
	-3.597	-5.493
KY$_{LC}$	0.004***	0.004***
	-4.228	-7.926
ASSET$_{LC}$	-0.034***	-0.041***
	(-3.429)	(-6.879)
Method	FE	2SLS
N	11693	9867
Underidentification test, p-value		0
Kleibergen-Paap Wald stat.		23.09
Overidentification test, p-value		0.21

Notes: t statistics are reported in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$. All standard errors are heteroskedasticity-robust. All specifications include year dummies, industry dummies, and region dummies.

Lastly, note that the results in Table 4-9 suggest that, controlling variables that reflect the power relation, state ownership has no significant effect on labor's share, but results in

Table 4-10 and 4-11 show that state ownership has a significant positive effect on labor's share. One possible reason for this contradiction might be that factors that reflect the power relation are not all controlled on the micro level due to data availability; as the result, state ownership which is mostly related to the power relation becomes significant on the micro data. Another possible reason might be the growth of labor productivity caused by the state-owned investments. Lo and Zhang (2010) and Lo and Li (2011) argue that investments led by state-owned enterprises can greatly promote the growth of labor productivity for the entire economy through the Kaldor-Verdoorn effect. Given this effect, although state-owned enterprises have higher labor's share on the micro level, they tend to promote the growth of labor productivity on the macro level, which may offset their positive effect on macro-level labor's share. Therefore, the effect of state ownership on the macro level becomes statistically insignificant.

4.5   Conclusion

This chapter provides macro and micro empirical evidences for the effect of the power relation in the sphere of production on labor's share. Following the Marxian approach and based on the historical analysis of the changes in the power relation, I establish empirical models and select variables to reflect the power relation. The results have shown that factors that reflect the power relation have significant effects on labor's share. Macro and micro evidences have shown similar results. Sectoral structure does not have significant effect on labor's share over the period 1999-2010.

CHAPTER 5

CONCLUSION

China's fast economic growth over the past three decades has been one of the major events in the neoliberal era of capitalism. This event was unlikely to happen without China's particular institutional advantages; on the other hand, this event has resulted from one of the typical driving forces for capital accumulation—the decline in labor's share. This study suggests that the decline in labor's share has resulted from a typical reason for a capitalist economy—the decline in the power of the working class.

This study highlights the Marxian approach in addressing the labor share question, thus in methodology it differs from the orthodox literature, most of which follows the neoclassical approach, and also differs from the majority of heterodox literature, which considers labor's share measured by the conventional approach as a proxy for the power relation. This study follows the Marxian approach in two aspects: first, it measures labor's share with the Marxian approach; second, it emphasizes the Marxian proposition that the power relation in the sphere of production plays a crucial role in the determination of distribution.

The Marxian measure of labor's share is the transformation of the rate of surplus value. I find that labor's share measured by the Marxian approach experienced changes following an inverse-U shape, which might depict the trends of the power relation over China's reform era. According to these trends, I divide the reform era into two stages: the first stage is from 1978 to the early 1990s, and the second stage is from the mid-1990s to the outbreak of the global financial and economic crisis. The historical analysis in Chapter 3 suggests that the factory regime in the first stage was built on material incentives and featured by the still powerful workers and the limited inequality between cadres and workers. The power

relation between the state, cadres, and workers led to problems that threatened the sustainability of capital accumulation. Only after a series of reforms weakened the power of the working class were these problems resolved. Labor's share declined and Capital accumulation was revitalized in the second stage as a result.

In addition to the historical analysis, this study has also examined how the power relation has affected labor's share with econometric methods. The econometric analysis of this study is composed of three parts. The first part uses national time series data to examine the relationship between labor's shares measured by the Marxian approach and the conventional approach in a cointegration analysis. The cointegration analysis confirms that there is a long-run relationship between the two measures. The second part uses region panel data to examine how determinants of the power relation affects labor's share. These determinants include the bonus-wage ratio, management-worker inequality, the reserve army effect, and the fallback position. The results confirm the role of the power relation in determining labor's share, but also show that sectoral structure has no significant effect on labor's share in the second stage of the reform era. The third part uses enterprise panel data to examine the effect of the management-worker inequality on labor's share. These micro evidences also support that the power relation has a significant effect on distribution.

Corresponding to the neoclassical approach and the Marxian approach, policies aimed at raising the labor share follow two distinct approaches, respectively: the modernization approach and the power approach.

The modernization approach suggests that the decline in labor's share was mainly caused by sectoral changes, and since sectoral changes are inevitable for economic "modernization", policies should promote sectoral changes and wait for the Kuznets turning point. Meanwhile, the modernization approach suggests that distribution is distorted

because there is still a lack of marketization in China; thus, proponents of the modernization approach propose that China needs more reform for marketization.

The neoclassical approach to the labor share question is built on the marginal productivity theory, which attributes distribution to technology and market behaviors but leaves no room for the power relation that takes place in the daily capitalist production. From the neoclassical perspective, low labor's share is no less acceptable than a high labor' share, as long as it is the market that "determines" distribution. However, low labor's share and high labor's share make great differences in capital accumulation. If labor's share is too low, the economy has to face the crisis tendency of under consumption; the resultant reliance on investments may lead to the crisis of over accumulation.

My analysis following the Marxian approach draws conclusions that are opposite to the neoclassical ones. I argue that the decline in labor's share in recent years was caused by power changes instead of sectoral changes, by the excess of marketization instead of the lack of marketization. To raise labor's share in order to resolve the problems with China's capital accumulation, policies must be aimed at strengthening the power of the working class.

In the Report to the Eighteenth National Congress of the Chinese Communist Party in 2012, raising labor's share of the national income was set as a goal for the reform on income distribution; however, policies proposed later for this goal were merely focused on enhancing the skills of workers and creating more jobs for workers by promoting the development of the service sector and labor-intensive, small-scale enterprises. No policy was proposed to strengthen the power of the working class.

It is unlikely for the state to rebalance the power of capital and labor. How to sustain capital accumulation and economic growth (rather than how to raise labor's share) has been the main concern of the state after the outbreak of the crisis. If this situation continues,

more uncertainty would arise in the near future of the Chinese economy. On one hand, the Chinese working class was distributed an increasingly smaller share of the value they created, had to work long hours to reach a decent living standard, and began to struggle against low wages and poor working conditions in many cases; on the other hand, the Chinese capitalist class met with major problems with capital accumulation and economic slowdown while they refused to rebalance the power relation that has already begun to change. There is a turning point, but where this turning point leads to again depends on class struggle.

APPENDICES

APPENDIX A

DATA SOURCES

A.1 Agriculture

NV_1: Net value of agriculture. For the period 1956-1977, NV_1 is from China Statistic Yearbook 1994. For the period 1978-2003, NV_1 is calculated by subtracting depreciation of fixed assets from value added with the data from Hsueh and Li (1999) and NBS (2007). Since the definition of "net value" in China Statistic Yearbook 1994 slightly differs from that in Hsueh and Li (1999) and NBS (2007), all the data for the period 1956-1977 is adjusted by multiplying the ratio of "net value" in 1978 from Hsueh and Li (1999) to that from China Statistic Yearbook 1994. For the period 2004-2012, NV_1 is calculated by subtracting an estimated depreciation of fixed assets from value added. Since the value added data in China Statistic Yearbook 2013 slightly differs from that in NBS (2007), it is also adjusted by multiplying the ratio of "value added" in 2003 from NBS (2007) to that from China Statistic Yearbook 2013. The estimated depreciation rate equals the sum of the depreciation of fixed assets divided by the sum of value added over the period 1990-2003. The adjustments above make the data from different sources consistent despite slight changes from the original data and they are applied to other sectors as well.

W_1: Labor income of agriculture. Rural collectives organized the majority of agricultural production in the Maoist era and were replaced by households in the reform era. State-owned farms accounted for a negligible share in agricultural production, so I do not distinguish state-owned farms from production units in accordance with the differences in the relations of production. For the period 1956-1977, I assume that the consumption rate of rural residents (consumption of rural residents divided by labor income of agriculture) is a constant that equals to the consumption rate in 1978. With this assumption, I estimate W_1

for the period 1956-1977. The consumption data is from China Statistic Yearbook 1989. For the period 1978-2003, W_1 is the agricultural compensation of employees from Hsueh and Li (1999) and NBS (2007). For the period 2004-2012, W_1 is calculated by subtracting agricultural taxes from NV_1. The agricultural tax data is from various issues of China Statistic Yearbook.

A.2 Industry (mining, manufacturing, and utilities)

NV_2: Net value of industry. The industry sector is composed of three sub-sectors: mining, manufacturing, and utilities. The data of NV_2 is from various issues of China Statistic Yearbook and Hsueh and Li (1999), adjusted in the same way as NV_1.

W_2: Labor income of industry. For the period 1956-1977, I assume that the ratio of the labor income of industry to the sum of wages, salaries, and benefits of industry is a constant that equals to this ratio in 1978. With this assumption, I estimate W_2 for the period 1956-1977. Data of wages, salaries, and benefits is from NBS (1985). I also use this method to estimate the labor income of construction, transportation, post and telecommunications, food services, and social services over the period 1956-1977. For the period 1978-2003, W_2 is the compensation of employees in the industry sector from Hsueh and Li (1999) and NBS (2007). For the period 2004-2012, W_2 is derived from the predictions of the following regression with the observations over the period 1990-2003.

$$W_{2,t} = \alpha_0 + \alpha_1 W_{2,t-1} + \alpha_2 emp_2 + \alpha_3 meanw_2 + \varepsilon_2 \qquad \text{(A.1)}$$

In this equation, $W_{2,t}$ is the labor income of industry in year t, $W_{2,t-1}$ is the labor income of industry in year $t - 1$, emp_2 is the employment of industry, and $meanw_2$ is the average wage of industry. In addition, α_0 is a constant, α_1, α_2, and α_3 are coefficients, and ε_2 is the

error term. Data of employment and average wages is from various issues of China Statistic Yearbook. I also use this method to estimate the labor income of construction, transportation, post and telecommunications, food services, and social services over the period 2004-2012.

A.3 Construction

NV_3: Net value of construction. The data of NV_3 is from NBS (1985), various issues of China Statistic Yearbook, and Hsueh and Li (1999), adjusted in the same way as NV_1.

W_3: Labor income of construction. The data for W_3 is from various issues of China Statistic Yearbook and Hsueh and Li (1999). The method used to obtain W_3 is the same as that used to obtain W_2.

A.4 Transportation, post and telecommunications

NV_4: Net value of transportation, post and telecommunications. The data of NV_4 is from various issues of China Statistic Yearbook and Hsueh and Li (1999), adjusted in the same way as NV_1.

W_4: Labor income of transportation, post and telecommunications. The data for W_4 is from NBS (1985), various issues of China Statistic Yearbook, and Hsueh and Li (1999),. The method used to obtain W_4 is the same as that used to obtain W_2.

A.5 Food and hotel services

NV_5: Net value of food and hotel services. Since commerce, food, and hotel services are treated as a single sector in the data, we need to split the sector into the commerce part and the food and hotel service part. I use the retail sale data to split the sector over the period 1956-1977 and the value added data over the period 1978-2012. The retail sale data is from

various issues of China Statistic Yearbook, and the value added data is from China Statistic Yearbook 2013. With the data of net value from China Statistic Yearbook 1994, value added, depreciation, compensation of employees from NBS (2007), we can exclude commerce and then obtain the data for food and hotel services only. Then I apply the same procedure used in the calculation of NV_1 to obtain NV_5.

W_5: Labor income of food services. With the data for food and hotel services, I apply the same procedure used in the calculation of W_2 to obtain W_5.

A.6 Social services

NV_6: Net value of social services. NBS (1997) provides the value added of social services over the period 1956-1978. Hsueh and Li (1999) provide data of value added, compensation of employees, and depreciation of fixed assets of social services over the period 1978-1995. For the period 1978-1995, NV_6 is calculated with the data from Hsueh and Li (1999) by subtracting depreciation of fixed assets from value added. I assume that the ratio of the net value to the value added of social services is a constant that equals this ratio in 1978, with which I estimate NV_6 over the period 1956-1977. NBS (2007) and China Statistic Yearbook 2013 do not provide data of social services but provides data of "other services" which includes social services. Thus, I assume that the share of social services in "other services" is constant and that the share of depreciation in the value added of social services is the same as the share of depreciation in the value added of "other services", with which I estimate NV_6 over the period 1996-2012.

W_6: Labor income of social services. I estimate W_6 over the period 1956-1977 with data of wages, salaries, and benefits from NBS (1985), using the same method for estimating W_2 over the period 1956-1977. For the period 1978-1995, W_6 is the compensation of employees of social services from Hsueh and Li (1999). I assume that the share of

compensation in the value added of social services is the same as the share of compensation in the value added of "other services", with which I estimate W_6 over the period 1996-2003. I use the regression method used for estimating W_2 to estimate W_6 over the period 2004-2012.

A.7 Commerce

$NV_c + CI_c$: Sum of labor income, profits, taxes, and costs of inputs of commerce. This sum coincides with the "social total value" of commerce. China Statistic Yearbook only provides the social total value of commerce, food and hotel services over the period 1952-1992. In order to estimate the social total value of commerce, food and hotel services over the period 1993-2012, I estimate the following regression.

$$STV = \gamma_0 + \gamma_1 RS_c + \gamma_2 RS_{fh} + \varepsilon_c \qquad (A.2)$$

In this equation, STV is the social total value of commerce, food and hotel services, RS_c is the retail sale of commerce, and RS_{fh} is the retail sale of food and hotel services. In addition, γ_0 is a constant, γ_1 and γ_2 are coefficients, and ε_c is the error term. I use the estimated coefficients and the data of retail sale to estimate the social total value over the period 1993-2012. Furthermore, I use the retail sale data to split the data of social total value into the commerce part and the food and hotel service part, then we obtain $NV_c + CI_c$.

A.8 Self-employment

NV_s: Net value of self-employment units. SAIC (1992) and Cheng (2010) provide the data of operating revenue of self-employment units over the period 1981-2008. I assume that operating surplus and the depreciation of fixed assets account twenty-five percent and

one percent of the operating revenue, respectively. Further, I assume that the ratio of operating surplus to compensation of employees is the same as the ratio calculated with the data of rural self-employment units from MOA (2009). Data of taxes of self-employment units is from SAIC (1992) and Cheng (2010). With these data and assumptions, I estimate NV_s over the period 1981-2008.

APPENDIX B

KEY MARXIAN VARIABLES

Table B-1 Marxian Variables of the Chinese Economy, 1956-2012

Year	CE	GDP	D	W_p	NV_p	TO_c	VC	SV	LS1	LS2	LS3	LS4	DS	UP
1956	573	971	97	185	343	78			0.66	0.44				
1957	631	1009	101	215	377	84			0.69	0.47				
1958	676	1235	124	246	572	107			0.61	0.36				
1959	673	1360	136	329	727	134			0.55	0.38				
1960	726	1376	138	364	772	139			0.59	0.40				
1961	758	1152	115	318	448	92			0.73	0.59				
1962	754	1087	109	270	404	71			0.77	0.57				
1963	774	1167	117	260	446	71			0.74	0.50				
1964	832	1374	138	270	545	76			0.67	0.43				
1965	894	1621	162	290	646	92			0.61	0.39				
1966	960	1768	177	306	761	116			0.60	0.35				
1967	1013	1680	168	323	645	105			0.67	0.43				
1968	1010	1633	164	325	572	95			0.69	0.49				
1969	1055	1837	184	342	742	123			0.64	0.40				
1970	1125	2135	214	363	976	148			0.59	0.32				
1971	1197	2299	230	399	1097	157			0.58	0.32				
1972	1280	2388	239	452	1149	169			0.60	0.34				
1973	1369	2580	259	477	1236	186			0.59	0.34				
1974	1401	2647	265	486	1238	186			0.59	0.34				
1975	1458	2844	285	514	1398	182			0.57	0.33				
1976	1512	2795	280	543	1358	176			0.60	0.35				

Table B-1 Marxian Variables of the Chinese Economy, 1956-2012 (cont.)

Year	CE	GDP	D	W_p	NV_p	TO_c	VC	SV	LS1	LS2	LS3	LS4	DS	UP
1977	1561	3040	305	571	1537	233			0.57	0.32				
1978	1708	3441	334	638	1775	273	568	1610	0.55	0.31	0.29	0.26	0.64	0.09
1979	2013	3918	377	718	1954	244	640	1703	0.57	0.33	0.31	0.27	0.62	0.10
1980	2234	4368	429	819	2198	267	731	1899	0.57	0.33	0.31	0.28	0.63	0.10
1981	2507	4759	475	847	2264	284	756	1965	0.59	0.33	0.31	0.28	0.60	0.11
1982	2835	5292	530	930	2434	265	831	2057	0.60	0.34	0.32	0.29	0.58	0.12
1983	3180	5939	601	1025	2697	305	917	2297	0.60	0.34	0.32	0.29	0.58	0.12
1984	3798	7075	708	1249	3220	385	1119	2744	0.60	0.35	0.32	0.29	0.58	0.13
1985	4537	8578	853	1550	3964	632	1390	3531	0.59	0.34	0.31	0.28	0.60	0.13
1986	5076	9610	1008	1702	4306	679	1518	3832	0.59	0.34	0.32	0.28	0.60	0.15
1987	5930	11399	1225	2068	5120	808	1833	4531	0.58	0.35	0.32	0.29	0.61	0.15
1988	7440	14387	1537	2650	6422	1111	2335	5758	0.58	0.35	0.33	0.29	0.61	0.17
1989	8392	16297	1846	2994	7071	1235	2657	6271	0.58	0.36	0.34	0.30	0.61	0.18
1990	9801	18357	2146	3249	7453	1017	2902	6240	0.60	0.38	0.36	0.32	0.58	0.23
1991	11028	21145	2612	3822	8769	1381	3406	7696	0.60	0.38	0.34	0.31	0.61	0.23
1992	12974	25892	3332	4848	11252	1617	4343	9934	0.58	0.38	0.34	0.30	0.65	0.21
1993	16935	34220	3996	6857	15935	2132	6097	13653	0.56	0.38	0.35	0.31	0.67	0.20
1994	22829	45345	5442	9057	20703	3081	8065	17490	0.57	0.38	0.35	0.32	0.66	0.21
1995	29597	57535	7057	11623	25553	3980	10317	20903	0.59	0.39	0.37	0.33	0.64	0.23
1996	34704	67764	8737	13700	29872	4884	12122	24629	0.59	0.39	0.37	0.33	0.65	0.23
1997	38954	76339	10420	16313	34198	5806	14387	27902	0.59	0.41	0.39	0.34	0.66	0.24
1998	41960	82559	11769	17354	36373	6411	15282	30101	0.59	0.41	0.38	0.34	0.66	0.25
1999	44082	88216	13136	18322	38924	7303	16112	33045	0.59	0.40	0.37	0.33	0.68	0.25
2000	47978	98504	15079	19473	43545	8670	17099	38597	0.58	0.37	0.35	0.31	0.68	0.25

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Table B-1 Marxian Variables of the Chinese Economy, 1956-2012 (cont.)

Year	CE	GDP	D	W_p	NV_p	TO_c	VC	SV	LS1	LS2	LS3	LS4	DS	UP
2001	52351	108546	16968	20972	47613	9989	18389	44878	0.57	0.36	0.33	0.29	0.69	0.25
2002	57577	120571	18794	23400	53518	13682	20489	55120	0.57	0.35	0.31	0.27	0.71	0.23
2003	64272	139250	21962	27262	63959	15008	23780	65307	0.55	0.35	0.31	0.27	0.73	0.21
2004	80101	167587	23569	31548	77044	18551	27414	80431	0.56	0.33	0.29	0.25	0.72	0.24
2005	91698	197789	29522	37821	92166	23766	32740	97914	0.54	0.33	0.29	0.25	0.74	0.23
2006	104676	231053	33642	44800	108741	27315	38633	114602	0.53	0.33	0.29	0.25	0.76	0.23
2007	123208	275625	39019	52424	131264	32421	45033	139335	0.52	0.32	0.28	0.24	0.76	0.21
2008	146999	322076	45255	60033	153132	40044	51745	166990	0.53	0.31	0.27	0.24	0.75	0.22
2009	170300	365304	49370	70656	164251	38698	61107	170174	0.54	0.35	0.31	0.26	0.76	0.28
2010	196714	437042	56228	80486	192462	52641	69843	210188	0.52	0.33	0.29	0.25	0.76	0.26
2011	234310	521441	67345	95113	226545	64653	82813	251164	0.52	0.33	0.28	0.25	0.76	0.27
2012	262864	576552	74133	108787	242373	69594	95036	265162	0.52	0.35	0.30	0.26	0.75	0.28

Sources: author's calculation.

APPENDIX C

A COMPARISON OF NEOCLASSCAL, POST-KEYNESIAN, AND MARXIAN APPROACHES

In this appendix, I make a comparison of neoclassical, post-Keynesian, and Marxian approaches. Simple models are used only for the sake of comparison.

C.1 Neoclassical approach

For neoclassical economics, the labor share question is not an independent question of theoretical interests. This question is addressed by answering two questions: first, the technology question, asking what kind of technology can produce certain movements of labor's share; second, the "efficiency" question, asking whether the movements of labor's share are consistent with the theoretically "efficient" allocation of resources by the market. Hence, the neoclassical approach addresses the labor share question with a single production function. The form of the production function is determined by the technology in use. The prices of production factors are determined by marginal productivities, as the result of the "efficient" allocation of resources. Following Bentolila and Saint-paul (2003), the following equations illustrate the neoclassical approach.

$$Q = F(L, K) \tag{C.1}$$

$$w = Q_L \tag{C.2}$$

$$z = \frac{wL}{Q} \tag{C.3}$$

All the variables in Equation (C.1)-(C.3) are measured in real terms. Q is the net output. L and K is hired labor and capital inputs. w is the real wage, which is equal to Q_L, the marginal productivity of labor. z is the labor share. The model can be either simple or

complex, depending on the form of the production function. Given the constant elasticity of substitution (CES) production function—a general form of neoclassical production functions—we can rewrite Equation (C.1)-(C.3) as follows.

$$Q = [\alpha(AK)^\varepsilon + (1 - \alpha)(BL)^\varepsilon]^{1/\varepsilon} \tag{C.4}$$

$$w = (1 - \alpha)B^\varepsilon \left(\frac{Q}{L}\right)^{1-\varepsilon} \tag{C.5}$$

$$z = (1 - \alpha)\left(\frac{BL}{Q}\right)^\varepsilon = (1 - \alpha)\left[\alpha\left(\frac{Ak}{B}\right)^\varepsilon + (1 - \alpha)\right]^{-1} = 1 - \alpha(A\delta)^\varepsilon \tag{C.6}$$

A and B are the coefficients for capital-augmenting and labor-augmenting technical progress, respectively. ε is the constant elasticity of substitution. α is the capital share when the CES function is reduced to the Cobb-Douglas function. k and δ are the capital-labor ratio and capital-output ratio, respectively. Thus, labor's share is determined by a bundle of technical parameters and the capital-labor ratio (or the capital-output ratio). Based on this framework, Bentolila and Saint-paul (2003) suggest that there is a one-to-one relationship between labor's share and the capital-output ratio. A lot of empirical studies take this one-to-one relationship as the basis for the empirical models. In these studies, some institutional factors would make labor's share deviate from the relationship in different ways, thus those factors are also included as explanatory variables. In a log-linear form, the estimated coefficient for the capital-output ratio is viewed by these studies as an estimation of the constant elasticity of substitution, whose sign matters for the trend of labor's share as capital intensity increases over time.

This approach is theoretically problematic in general. First of all, "technical changes" that the approach claims is actually unverified *ex post* speculations. The approach takes no account on how capitalists in the labor process substitute capital for labor and why the

substitution of factors happens. Second, the approach does not distinguish the difference between hired labor and labor input, or labor power and labor using Marx's terms. Third, the approach assumes that labor in the neoclassical approach is efficiently allocated so that no involuntary unemployment exists; thus there is no effect imposed by the unemployed labor forces on the power of workers.

C.2 Post-Keynesian approach

In contrast to the neoclassical approach, the post-Keynesian approach explicitly underscores the role of distribution in capital accumulation. The simplest post-Keynesian growth model is composed of the Cambridge saving equation, an investment equation, and the equilibrium condition of savings and investment.

$$\frac{S}{K} = s(z)u\sigma \tag{C.7}$$

$$\frac{I}{K} = i(z, u) \tag{C.8}$$

$$\frac{S}{K} = \frac{I}{K} \tag{C.9}$$

In Equation (C.7)-(C.9), S and I is savings and investment, respectively. u is the rate of capacity utilization. According to the Cambridge saving equation, total saving (normalized by capital stock) is determined by distribution, measured by labor's share (the profit share, the profit rate, or the mark-up) and the output, $u\sigma$ (here σ is a constant ratio of the potential output to capital). Investment (normalized by capital stock) is determined by distribution and the rate of capacity utilization.

Different post-Keynesian models may have different viewpoints in regard to the variability of the rate of capacity utilization in the short run and in the long run. In Kaleckian models, distribution measured by the mark-up is externally determined by institutions

associated with the monopoly power of firms while the rate of capacity utilization changes to accommodate the equilibrium condition of savings and investment (Dutt, 1984; Bhaduri and Marglin, 1990; Hein, 2013). In some other post-Keynesian models, the rate of capacity utilization is fixed on a desired level of firms while distribution changes to accommodate the equilibrium condition (Skott, 1989). The post-Keynesian approach can also be extended to a dual economy in which the real wage of workers is pinned down by the real income of the agricultural sector (Skott and Larudee, 1998).

In general, according to the post-Keynesian approach, there are two ways to find the determinants of labor's share. One way is to follow Kaleckian models to look for the institutional factors determining the monopoly power of firms and then reinterprets these factors as determinants for labor's share. The other way is to fix the rate of capacity utilization on a desired level and then look for the dynamic relationship between the accumulation rate and labor's share. Also, this dynamic relationship can be put in a dual economy in order to add the industrialization dimension into analysis.

The post-Keynesian approach provides a relatively autonomous role to labor's share in capital accumulation, with which one can generate a variety of models to explain the changes of labor's share considering the characteristics of an economy. The only concern here, however, is that this approach does not put the power relation in its analysis. The production function for the post-Keynesian approach is usually Leontief with a constant potential-output-capital ratio. The rate of capacity utilization can change in accordance to the equilibrium condition of the product market but not to the power relation. In contrast, the Marxian approach incorporates the power relation in its core analysis.

C.3 Marxian approach

The Marxian approach for analyzing the determinants of the labor share is built on two key propositions. The first proposition is that the actual labor input can deviate from the amount of hired labor due to factors in the labor market and in the labor process. This proposition is traditionally derived from Marx's argument on the difference between labor and labor power. Capitalists take advantage of the reserve army of labor and various management practices to discipline workers in order to extract the surplus value from the labor process. The relative size of the reserve army of labor and the effectiveness of management practices would affect the power of workers and thus the actual labor input in production.

The second proposition is that the value of labor power is socially and historically determined, which shares the same spirit with the Lewis model while contrasts with the neoclassical marginal productivity theory.

In the literature, there are different versions of Marxian models for growth and distribution (Goodwin, 1967; Marglin, 1984; Bowles and Boyer, 1988). The Goodwin model is focused on the relationship between the growth rate of the real wage and employment over business cycles; thus it is not straightforward to explain long-run changes of labor's share with the Goodwin model. In Marglin (1984), institutions exogenously determine the real wage, as the second proposition of the Marxian approach suggests. In Bowles and Boyer (1988), the real wage and the labor productivity (the effort level) are jointly determined by a labor discipline model.

The Marxian approach also considers technology as a factor to determine the labor productivity and thus labor's share. The Marxian approach suggests that capitalists tend to use the technology that enhances the productivity of labor but reduces the productivity of capital—the so-called Marx-biased technical progress (Foley, 1986; Basu and Vasudevan, 2011). The intrinsic motivation for this kind of technical progress lies in capitalists' purpose

to more effectively control the labor process. To avoid the overdetermination problem, here I employ the classical assumption that all savings are invested; thus the Marxian approach can be expressed as,

$$w = w(\theta_1) \tag{C.10}$$

$$q = q(\theta_2, k) \tag{C.11}$$

$$z = w/q \tag{C.12}$$

$$\frac{S}{K} = \frac{I}{K} = s(z)\, q/k \tag{C.13}$$

In Equation (C.10)-(C.13), w is the real wage. q is the labor productivity. θ_1 and θ_2 are both specific sets of social factors. Labor's share, the labor productivity, and the capital-labor ratio k determine the amount of savings. All the savings are invested, which increases the capital-labor ratio of the next period.

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