

Regional Structure of Wage Inequality in Post-reform China

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중국의 경제개혁 후 임금격차의 지역구조

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Abstract : This study examines patterns of wage inequality across ownership types and its regional structure in post-reform China in order to understand an emerging process of inequality. Using industrial wage data, I explored historical changes of cross-ownership wage inequality and its spatial differentiation during the reform period. This study found that patterns of wage inequality need to be understood in the context of changing redistributive economy which shapes state-enterprise relations in China's industrial sector. This relationship in turn determines labor market outcomes during the reform period including wage inequality. Regional structure of cross-ownership wage inequality also needs to be understood in terms of the differentiated process in which regional wage levels are related to different wage factors. The findings have significant implications for understanding new patterns of social and spatial inequalities in post-reform China.

Key Words : industrial reform, marketization, ownership structure, wage inequality, redistributive economy

요약 : 본 연구는 중국의 경제개혁 후 새로이 등장하는 격차의 문제를 이해하기 위하여 소유권형태별 임금의 격차와 그 지역구조를 고찰한다. 공업부문의 임금자료를 이용하여, 소유권유형간 임금격차의 역사적 변화와 그 공간적 차별성을 조사하였다. 이 논문은 중국의 공업부문에서 국가-기업의 관계를 결정하는, 변화하는 재분배경제체제라는 맥락 안에서 임금격차의 패턴이 이해되어야 한다고 본다. 왜냐하면 그러한 관계가 아울러 임금격차를 포함한 제 노동시장의 결과에 영향을 미치기 때문이다. 소유형태별 임금격차의 지역구조 또한 지역내 임금수준과 임금결정 요인간의 차별화된 관계속에서 파악되어야 한다고 본다. 이 연구의 논의는 중국의 경제개혁 후 새로이 나타나는 사회적, 공간적 불평등의 문제를 이해하는데 중요한 단초를 제공한다.

주요어 : 공업개혁, 시장화, 소유권구조, 임금격차, 재분배경제

1. Introduction

After the three decades of socialist development, in 1978 People's Republic of China(PRC) once again launched a revolutionary economic reform experiment with a goal of developing its economy and improving living standards. Since then, China has undergone fundamental socioeconomic changes including increasing market's roles in production and consumption spheres, intensifying competition between economic actors, *de facto* labor market creation, new institution building, and an ideological shift. The economic reform has

generated and sustained remarkable economic growth and an unprecedented rise in people's well-being, and transformed what was once one of the world's most insular economies into a major trading partner in the world(Jefferson and Singh, 1999; Naughton, 1995).

However, the unprecedented success of the economic reform has also been accompanied by various costs such as rising income inequality, environmental devastation, political corruption, etc. The inequality issue, especially, has been paid great attention because it is considered a significant threat to the socialist social order. In fact, the two decades

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of economic reform have witnessed a growing disparity in personal income levels as well as between regions and sectors (Bian, 1994; Chan, 1996; Fan, 1997; Nee, 1991).

In academic circles, a growing number of studies have been carried out on various inequality aspects including wage and occupational segmentation, inter- and intra-provincial inequality, and urban-rural disparity (Lyons, 1998, 1991; Meng and Perkins, 1998; Tsui, 1996; Yang and Zhou, 1999). Despite many studies on inequality, few have paid sufficient attention to the underlying causal mechanisms behind the changing inequality patterns in post-reform Chinese society. I contend that in order to account for the causal mechanism, it is essential to understand redistributive characteristics and their changes in the socialist Chinese economy during the reform period. Studies also need to explore how the process in which economic transformation and institutional changes influence inequality patterns is spatially differentiated and how the process is related to regional socio-economic characteristics and certain regional development paths.

As an effort to examine changing inequality in post-reform China, I am interested in understanding how the process of economic reform has shaped patterns of wage inequality¹⁾ in China's industrial sector and how wage inequality is spatially differentiated. I investigate if there are any regional dimensions to the patterns of wage inequality and explain the spatial differences with specific regional characteristics. I also explore the implication of divergent wage inequality experiences for understanding regional uneven development in China.

2. Industrial Reform and Labor Market Outcomes: Implication for Inequality

The industrial sector in China has been

considered the most important sector for generating the nation's wealth and achieving the socialist goals of economic modernization and political independence after the revolution. By the late 1970s, China had built up a comprehensive modern industrial system that was primarily state-owned and was able to provide a wide range of producer and consumer goods domestically. China's long-run industrial growth rate has been one of the highest in the world (Field, 1992; Chen, Jefferson and Singh, 1992). On the eve of reform, the industrial sector accounted for about 44 percent of gross domestic product, 15 percent of total employment, and 64 percent of total urban employment. But prevalent inefficiency and the need to shift from a Soviet-style extensive growth strategy to an intensive growth strategy based on improved resource allocation efficiency increasingly became the underlying economic factors giving impetus to economic reform in general and industrial reform in particular (Byrd, 1991). Economic reform has been carried out with an emphasis on marketization of the economy as a whole while at the same time maintaining socialist state power.

Industrial enterprises in China are both an economic and social 'basic unit' in that they provide employment as well as social welfare services such as housing, daycare, education, and so forth. For all practical purposes, they were agencies owned by the government at various levels in the pre-reform period and functioned as agents of the regulatory planning system in socialist China. Traditionally, the industrial sector consisted of two types of firms: state-owned enterprises (hereafter SOEs) and collective enterprises. The division between state sector and collective sector in the ownership structure was actually created by, and also contributed to, certain goals of the Chinese government in the pre-reform period. In other words, the ownership structure was institutionalized in such a way that it could serve as a regulation

mechanism to coordinate the industrial production process and meet the goals of the Chinese socialist regime (Lockett, 1988). The consequence of the institutionalized and divided ownership structure in the industrial sector was a segmented labor 'market' along with an ownership division (Jackson, 1992). The formal workers in the state enterprises, mostly located in the urban areas, were paid higher wages and given a range of benefits whereas those in the collective enterprises received relatively low compensation. In most cases, Chinese people did not consider the employment in the collective sector as an appropriate career.

Starting in the rural sector in 1978 and the urban sector in 1985, industrial development and reform itself is a process of institutional change in that the Chinese economy had to build a new coordinating mechanism market coordination to replace the governmental planning system for industrial production. Industrial reform as a process of institutional change in China, however, is unique in that China has tried to marketize industrial production through the introduction of new marketized ownership type without full privatization of the state sector. The industrial reform process has dramatically changed the formerly dualist ownership structure into a more diversified one. Along with the diversified ownership structure, reform has also created a situation where enterprises need to respond to market considerations for better economic performance. As a result, marketization of the industrial sector has basically changed the role of the ownership structure in industrial production. The share of non-state ownership enterprises in industrial output has increased rapidly and currently accounts for about 71 percent of total industrial output.³⁾ As for the labor market outcome, changes in ownership structure are remarkable as well. Clearly, the changing role of ownership structure in industrial sector has escalated in a dramatic manner and has had

significant impacts on the production process and on labor market outcomes.

The impact of the reform process on the labor market in the industrial sector has been profound. Labor market processes such as recruiting, wage determination, promotion, and job training have changed during the reform period and especially the changes have been expedited in the 1990s. These new processes result from the interactions between enterprises and workers that themselves are conditioned in the context of institutional changes. The new environment ultimately conditions and determines the ability as well as the choices of enterprises to deal with labor management in a situation where the new marketized labor allocation coexists with older forms of state allocation. Thus, the process has created different labor market outcomes across the ownership types. China has not only maintained the segmented labor market that characterized the dualist division of the past, but it has evolved a multi-faceted segmented labor market that consists of both a more market-oriented labor market for rural industry and small collective and private industry and a structure for state-owned industry that emphasizes secure employment, higher wages and various benefits.

Among various labor market outcomes, there is one aspect that has significant implications for inequality between workers in and between sectors: wage segmentation.³⁾ Wage segmentation is significant for understanding inequality as wage structures are attached to jobs, not workers, and difference, therefore, reflects workers' unequal access to jobs (Villa, 1986). Unequal job accessibility has been institutionally determined in China and has changed with new industrial and labor policy implementation. Different wage determination processes in each separate ownership type exist despite the absence of the key product and labor market processes which are thought to explain such differences in market economies.

In the following, I first examine patterns of wage inequality across different ownership types in the reform period. I then explore regional structure of the wage inequality and relate it with specific regional characteristics and regional development patterns.

3. Industrial Reform and Changing Wage Inequality

Industrial reform and ownership structure change have transformed the way that the post-reform labor market is structured. Using major published statistical sources from Chinese governments and their agencies and other materials, this section examines changing patterns of wage inequality across ownership types in the industrial sector. Many studies have confirmed that there have been increasing segmentation trends according to the ownership types (Jackson, 1992; Hebel and Schucher, 1996; Ip, 1995; Walder, 1996). However, little is known about the way in which

segmentation has proceeded and about how different labor market structures correspond with different ownership types. Here I carry out an investigation on this topic.

During the 1978~1996 period of economic reform, labor market composition by ownership has fundamentally changed. A clear pattern has been that the state and the urban collective enterprises (hereafter UCEs) have lost their share, whereas township and village enterprises (hereafter TVEs) and private enterprises experienced explosive employment growth (Figure 1). State employment that used to account for a little more than half of industrial workers in 1978 declined to 29.5 percent in 1996. Interestingly, employment in the urban collective sector during the same period also declined significantly and reached at about 10 percent of the total employment in 1996, half of its share in 1978.⁴⁾ Employment in TVEs, in the meantime, increased remarkably and accounted for more than half of total industrial workers in 1996. Employment more than quadrupled during the 18 years of reform and absorbed 61.3 million workers;

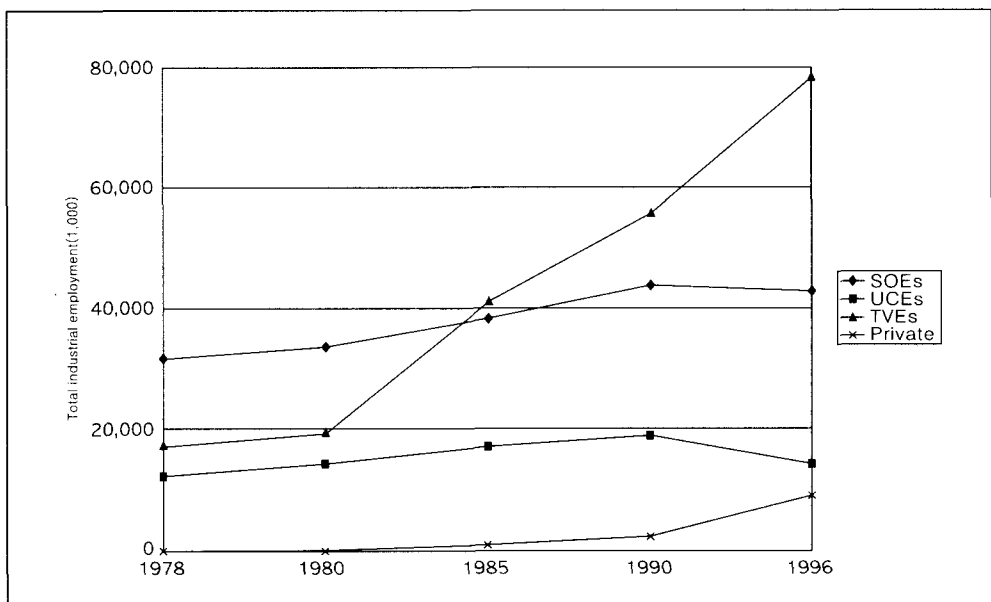


Figure 1. Industrial Employment by Ownership Type(1978-1996)

the sector certainly is a symbol of success of the economic reforms. The private sector also grew fast and its share in industrial employment reached 6.3 percent or 9.1 million workers.⁵⁾

The swift change of ownership structure has altered the way in which labor is allocated and how wage levels and employment conditions are determined. A mix of the old planning system and a market mechanism has functioned in the employment allocation process and has resulted in differentiated patterns across ownership types. Wage policy in the reform period increasingly allowed material incentives for workers and also made wage level more related to performance at enterprise level. Greater enterprise autonomy allows management to set the wage level independently, which in turn depends on available resources and enterprise performance. But the differences in the degree of autonomy and operational objectives that enterprises pursue are likely to differentiate wage levels and their determination process at the enterprise level. One result of this changing wage regime is a different structure of total wage bill. The wage structure during the reform period accordingly shows that

the share of bonus and incentive-related remuneration in total wage has increased (Table 1). In 1995, the state sectors total wage bill amounted at 246.2 billion yuan, of which traditional standard wage accounted for 56 percent, whereas the share of bonus and above-normal piece rate wage increased from 2.4 in 1978 to 20.4 percent. Private enterprises paid 18.6 percent of total wage as bonus to their workers, second largest after the state sector. Urban and rural collective enterprises then paid 14 and 9 percent of total wage as bonuses respectively. The wage structures of the state enterprises and UCEs are similar in that they both use considerable portion of subsidies and allowance as well as bonuses. The private sector also provides bonuses for improving worker incentives and relatively less resorts to subsidies and allowance. The wage structure of TVEs is similar to one of the state sector before the reform in that the majority of wage for the workers consists of the time and piece rate standard wage. The difference in wage structures across ownership types is related to the changing wage regime in the reform period and different wage determination processes at the enterprise level.

Table 1. Wage Structure of Industrial Formal Employees by Ownership Type, 1995

Ownership	Formal employees				Non-formal employees (RMB millions)
	(RMB millions)	Time & piece rate standard wage	Bonuses & above-normal piece rate wage	Subsidies and allowances	
SOEs	246,234	138,240	50,215	47,207	1,384
UCEs	57,695	38,758	8,266	8,028	1,119
TVEs	58,536	48,764	5,237	1,989	381
Private	67,557	43,716	12,566	6,873	3,211
Share of Total					
SOEs	100.0%	56.1%	20.4%	19.2%	-
UCEs	100.0%	67.2%	14.3%	13.9%	-
TVEs	100.0%	83.3%	8.9%	3.4%	-
Private	100.0%	64.7%	18.6%	10.2%	-

Source: *The Data of the Third National Industrial Census of the Peoples Republic of China in 1995, 1997.*

Note: Wage figures refer to total wage bills in 1995 and are in million yuan. Formal employee refers to staff and workers and non-formal workers include service-providing and temporary workers.

To understand wage inequality, I contend that different ownership enterprises have different wage determination processes based upon their property rights relations as well as their positions and roles in a broader institutional system of industrial production. The difference in wage determination in turn conditions wage differential patterns across ownership types. I now examine the wage gap at an aggregate level.⁶⁾ It is known that during the pre-reform 1970s the wage gap between the state and collective sectors was reduced due to the development of the latter. The wage differentials among ownership types in the reform period are now presented in Table 2.⁷⁾

The money wage for all ownership types increased remarkably. Even considering skyrocketing inflation rates, real wages for workers also significantly increased.⁸⁾ We can see that the once decreasing wage gap between the state and the urban collective sectors in the 1970s continued in the early 1980s and since then began to reverse. Workers in TVEs and the private sector, however, have been better off compared to those in the state

sector. Between 1985 and 1996, the money wage level in the two sectors grew about six times, while the state wage increased a little less than five times.⁹⁾ In order to examine the trend in wage differences I use a coefficient of variation.¹⁰⁾ According to the change in the coefficient in the previous table, the wage gap between ownership types has increased during the 1985~1992 period and began to fall after 1992. It is likely that the rapid increase of the private sector wage during the 1985~1992 contributed to widening wage gap, whereas tapering wage increase in the private sector compounded with rising TVE wages after 1992 contributed to declining cross-ownership wage differentials.

Considering money wage differences at the aggregate level (Table 2), the marketization policy, especially since 1985, aggravated wage disparity between ownership types. The pre-reform divide of the labor market between the state and the collective sector was replaced by a new polarization led by both still-favored state enterprises and rapidly growing private enterprises.¹¹⁾ The new segmentation patterns were reinforced by the ever-

Table 2. Average Industrial Wage and Wage Differentials across Ownership Types in the Reform Period

Year	SOEs (RMB yuan)	UCEs (RMB yuan)	TVEs (RMB yuan)	Private (RMB yuan)	CV*
1978	663 (100)	503 (76)	-	-	-
1980	854 (100)	622 (73)	-	-	-
1985	1,190 (100)	963 (81)	576 (48)	1,328 (112)	0.324
1990	2,289 (100)	1,622 (71)	1,202 (53)	3,055 (133)	0.397
1992	2,889 (100)	2,017 (70)	1,644 (60)	4,154 (144)	0.417
1994	4,508 (100)	3,076 (68)	2,672 (59)	6,096 (135)	0.380
1996	5,798 (100)	4,007 (69)	3,617 (62)	7,945 (137)	0.370

Source: *Zhongguo Laodong Gongzi Tongji Ziliao, 1949-1985* (Statistical Materials on Labor and Wage in China, 1949-1985), 1987; *Zhongguo Laodong Tongji Nianjian* (China Labor Statistical Yearbook), 1997; *Zhongguo Nongchun Tongji Nianjian* (Rural Statistical Yearbook of China), 1993, 1995 & 1997.

Note: Wage figures are based upon the wage in manufacturing sector except for TVEs. Figures in parentheses are wage index of relative level when the state wage equals 100.

* CV stands for coefficient of variation and was calculated after 1985.

deteriorating position of the urban collective sector. Marketization aimed to reform the industrial sector by introducing competition. But the less-protected urban collective sector suffered considerably, whereas TVEs and private enterprises enjoyed new internal or external market opportunities. Wage increase in the private sector, especially, has been remarkable and in 1992 its levels is expected to be 44 percent more than the state wage. Therefore, based on the wage level alone, it is likely that the private sector wage has played a decisive role in patterns of wage gap across ownership types.

4. Regional Structure of Wage Inequality: Effects of TVE Development

The discussion in the previous section mainly seeks to find an explanation for wage inequality without considering its spatial variations. It is, in fact, increasingly evident that transformation processes vary significantly within a single transitional economy as they do across transitional economies. China is no exception, with spatial variation in terms of both regional economic changes in general, and labor market development in particular. Consequently, the wage inequality patterns across ownership types are further differentiated across regions.

Considering TVE wage changes here, I examine regional structure of wage gaps between ownership types measured by relative wage index of TVEs for each province during the reform period. It is because changing relative levels of TVE wages can clearly show the effects of economic reform and its marketization policy to wage gaps. I calculate wage index of TVEs based on the state wage level. Using these indexes, I then examine different experiences of each province in terms of wage gaps during the 1985~1996 period in order to see how the previously discussed processes of wage inequality at the national level have unfolded spatially. Spatial

patterns of wage gaps between ownership types, therefore, are delineated. The following analysis answers questions such as how different are the provincial experiences in wage gap changes? What are the implications of these different experiences for understanding new process of social inequality at the province level during the reform period?

1) Regional dimension of state-TVE wage inequality

The year 1985 is significant because the Chinese government initiated a wide range of industrial reform policies primarily in order to transform the urban industrial sector following what had been successful programs in the rural sector. Along the course of industrial reform after 1985, different provinces experienced quite divergent trajectories in industrial development and ownership structure changes. Consequently, cross-ownership wage gaps show differentiated patterns across the provinces. This implies that wage gaps between ownership types and resultant inequality between industrial workers are not uniform phenomena. It also suggests the importance of considering spatial variations when analyzing changing social inequality in China.

During the economic reform period, rural industrial development has been an important engine of economic growth. The industrial development known as the explosive growth of TVEs has contributed to industrial output and income growth in rural areas and absorbed much of the rural surplus labor released from rural decollectivization. However, the data shows that the success was not shared by the provinces equally. According to Table 3, during the second half of the 1980s, average rural industrial wage relative to the state wage dropped and became about 56 percent of the state wage in 1990. However, this national-level average index fails to reveal quite different changes in the wage gap

Table 3. Wage Gaps between TVEs and State Enterprises by Province(1985-1996)

Province	1985	1988	1990	1993	1996	Changes*	
						1985-1990	1990-1996
Beijing	72.9	68.8	62.6	56.5	57.9	↓	↘
Tianjin	74.7	57.4	52.3	48.3	66.0	↓	↗
Hebei	59.6	61.8	71.5	57.4	77.0	↑	↗
Shanxi	67.9	58.3	68.7	74.5	76.3	↗	↗
I.Mongolia	63.1	58.7	68.7	74.8	88.2	↑	↑
Liaoning	76.4	61.2	60.8	63.5	71.1	↓	↗
Jilin	71.0	62.8	66.0	61.2	49.9	↘	↓
Heilongjiang	68.7	70.8	72.7	81.7	62.0	↗	↘
Shanghai	66.6	63.0	50.6	53.0	57.5	↓	↗
Jiangsu	57.0	53.7	45.6	61.5	74.2	↓	↑
Zhejiang	60.1	62.8	62.1	73.4	88.4	↗	↑
Anhui	53.7	48.4	50.1	54.9	91.6	↘	↑
Fujian	69.9	68.9	70.1	90.6	82.4	↗	↗
Jiangxi	60.3	57.0	59.5	70.1	73.4	↘	↗
Shandong	55.4	51.7	52.8	60.0	67.5	↘	↗
Henan	49.6	50.0	53.7	65.2	74.1	↗	↑
Hubei	53.1	50.5	46.5	51.0	77.7	↘	↑
Hunan	56.2	52.3	51.0	56.7	75.9	↘	↑
Guangdong	67.8	71.9	77.6	72.6	64.6	↑	↓
Guangxi	51.9	45.7	50.8	64.5	69.6	↘	↑
Sichuan	46.5	44.9	43.5	50.6	56.8	↘	↗
Guizhou	58.0	58.9	55.4	55.5	38.7	↘	↓
Yunnan	56.3	44.7	48.6	59.3	37.6	↓	↘
Shaanxi	47.5	45.1	47.9	47.7	56.6	↗	↗
Gansu	52.1	41.3	41.0	40.1	44.6	↓	↗
Qinghai	43.8	35.9	42.9	49.1	43.4	↘	↗
Ningxia	52.7	45.5	45.0	48.9	52.6	↓	↗
Xinjiang	60.0	51.1	56.7	72.7	70.4	↘	↗
Mean	59.7	55.1	56.2	61.3	65.9		
CV	0.150	0.171	0.183	0.190	0.225		

Source: Authors own calculations.

Note: * Calculated as an annual average change of TVE wage indexes.

↑ Increased above the annual average of index increase; ↗ Increased below the annual average of index increase; ↓ Decreased above the annual average of index decrease; ↘ Decreased below the annual average of index decrease.

across provinces.

During the 1985~1990 period, the TVE wage level increased relative to the state wage in the coastal regions and their adjacent provinces such as Guangdong, Zhejiang, Fujian, Hebei, Henan and Shanxi. On the contrary, relative TVE wage levels declined substantially in most of traditional industrial core provinces and remote interior provinces including Beijing, Tianjin, Shanghai,

Liaoning, Jilin, Yunnan, Ningxia and Gansu. I believe that the increasing wage gap between TVEs and the state sector in those provinces contributed to the increase in cross-ownership wage segmentation during the second half of the 1980s. Therefore, development of rural industry and the declining wage gap between TVEs and the state sector seem to be limited to southeastern coastal provinces and their neighboring provinces. The

average wage index of those provinces is about 70 compared to national average index of 56.2. Based on the coefficient of variation, we can also see that the wage gap became more spatially differentiated. The coefficient suggests that rural industrial workers in one of coastal provinces were better off than their counterparts in other provinces that experienced sharp declines in the relative wage levels.

During the 1990s, in the meantime, relative wage levels of TVEs substantially improved in most of the provinces, even though the wage gap between TVEs and state enterprises became continuously more uneven across the provinces. I believe that this increasing wage index of TVEs during this period resulted in the downturn of wage segmentation across ownership types at the national level. For spatial patterns, the wage index of TVEs or the wage gaps between TVEs and the state sector improved, especially in those provinces in the central macro-region such as Anhui, Hubei, Hebei, Shanxi, and Hunan. This seems to indicate that the rural industrial development that first led to coastal economic success is now spreading to the inner provinces and causing the wage gaps in those provinces to decrease in the 1990s. The decreasing wage gaps also appear to be related to China's new reform policy in the 1990s that focuses on reforming the state sector and consequently tends to reduce state sector privileges including high wage levels. Despite the general reduction of the wage gap in the 1990s, the regional divide between the coastal region and its neighboring provinces vs. traditional industrial core region and interior provinces became reinforced. This regional divide also reflects newly emerging space economy of Chinese industrial production that is characterized as a shift of production toward the southeastern part of China. Therefore, this examination of TVE wage index shows that in addition to its changes at the national level, the spatial patterns of the wage gap between TVEs and the state sector developed a new

regional divide which corresponds to a newly developed space economy of industrial production in China. This regional divide or spatial unevenness in wage gaps has reinforced social inequality that was already influenced by the changing ownership structure in the industrial sector.

The findings suggest that the segmentation has been spatially differentiated during the 1985~96 period. Different progress in marketization of the economy across provinces conditions different wage levels. In addition, the rural collective-state wage gap seems to have converged in the 1990s. The results also indicate that even though the state wage used to lead wage gaps against the collective sector, it seems to have become less important in increasing wage gaps in the 1990s due to relative increase of TVE wage level. Spatial patterns of the rural collective-state gap also became increasingly uneven across the provinces. Therefore, I contend that without considering these spatial patterns of wage gaps, any studies on wage segmentation and inequality likely fail to understand the true picture of wage gap changes and inequality among Chinese industrial workers.

2) Understanding wage inequality

It is evident in the TVE wage index that newly developed coastal provinces tend to have higher wage levels in the collective sector and consequently have transformed the traditional wage segmentation pattern which was characterized as a dualism between a high privileged state wage and a low collective wage. However, current studies on wage inequality among workers or across different regions tend to ignore the wage dynamics in which different ownership wage levels are determined in differentiated manners. I am interested in how the more market-oriented provinces have patterns of wage gaps that are different from those in other provinces led by still high state wages. In order to

investigate this difference in the spatial pattern of wage segmentation, I focus on wage dynamics in which different ownership wage levels at the provincial level are determined by various regional wage factors. In other words, I examine why state or private wages are kept high in certain provinces, while not in others. Further, do different degrees of marketization influence wage setting and wage profiles across ownership types at the provincial level?

It is evident that wage regimes among different ownership types have undergone different development paths for individual provinces. The regional structure of industrial wage segmentation, therefore, not only reflects the different processes of wage setting mechanisms, but also is an outcome of the interplay between various regional economic and institutional factors in setting regional wage levels. I expect that higher wage levels in TVEs and in the private sector in the coastal provinces are the outcome of growing labor demand and profitability to which their wage levels are increasingly responsive. I also expect that sustained high state wages in other provinces reflect the role that redistributive system still plays in wage setting at the provincial level and thereby in redistributing income among industrial workers. In the following, I explain spatial patterns of wage gaps through

investigating how different ownership wage levels are determined and how regional wage factors are related to the wage levels at the provincial level.

To examine processes of wage setting at the provincial level, I first carry out an analysis of variation using a regional wage equation.¹²⁾ The results are presented in Table 4. The results first suggest average regional wage levels are increasingly related with regional wage factors. Total variance of regional average wage explained by labor market factors increased from 46.1 percent in 1985~1988 to 73.1 percent in 1992~1996. Across ownership types at the provincial level, the state wage variance is better explained by labor insurance and welfare funds, whereas variances in TVE and the private sector wages are better explained by labor demand and supply and per capita foreign trade.

In order to understand how those wage factors affect wage levels across ownership types, I use a regression analysis. The results are presented in Table 5. Share of industrial workers for total population as a labor supply factor turned out to be only statistically significant for TVEs. The coefficient suggests that one percent increase in the share of industrial worker in TVEs will reduce their wage level by 1.5 percent. Industrial output as a labor demand factor is significant for SOEs and

Table 4. Real Average Wage Variations(1985-1996)

Source of variation	Total			SOEs	TVEs	Private
	1985-88	1989-91	1992-96			
Total sum of square	1.606	1.665	6.183	10.126	19.289	29.855
Main effects						
Share of industrial workers	0.000	0.004	0.022	0.052 ^{**}	0.576 [*]	0.070
Per capita provincial industrial output	0.006	0.010	0.176 [*]	0.371 [*]	0.005	1.030 [*]
Per capita labor and welfare funds	0.504 [*]	0.218 [*]	0.594 [*]	1.338 [*]	0.047	0.684 [*]
Per capita foreign trade	0.011	0.038 [*]	0.245 [*]	0.231 [*]	2.929 [*]	1.093 [*]
Total explained	0.741	0.781	4.873	6.741	12.536	17.005
Residual	0.864	0.884	1.310	3.385	6.753	12.850

Note: All variables in the wage equation are measured in a logarithmic form and all share values are percentage.
^{*} significant at one percent level, ^{**} significant at five percent level, ^{***} significant at ten percent level.

Table 5. Estimates of Regional Wage Equations

	SOEs	TVEs	Private
Constant	4.453*	5.160*	3.303*
Share of industrial workers	-0.420	-1.585*	-0.405
Per capita provincial industrial output	0.163*	0.063	0.285*
Per capita labor insurance funds	0.133*	0.015	0.084*
Per capita foreign trade	0.063*	0.212*	0.136*
Dummy for coastal region	-0.066*	-0.092*	-0.137*
Number of observations	274	274	274
Adjusted R ²	0.672	0.656	0.579

Note: All absolute values are measured in a logarithmic form and all share values are percentage.

* significant at one percent level.

private enterprises, the coefficient suggesting that one percent per capita output increase will cause the state and private wages by 0.16 and 0.28 percent. As expected, per capita labor insurance and welfare funds turn out to be most significant for the state wage. The coefficient indicates that the state wage is expected to increase by 0.13 percent by one percent increase in per capita insurance and welfare funds. The effect of provincial engagement on the external sector was also examined through foreign trade volume. Per capita foreign trade is statistically significant for all wage levels. Since the rural collective sector has been significantly engaged in the international market, the level of provincial foreign trade appears to be most significant in determining the TVE wage and next most significant in determining the private sector wage. The coefficients suggest that one percent of growth in per capita foreign trade is likely to increase wages in TVEs and private sector by 0.21 and 0.14 percent respectively. Finally, after considering the previous regional wage factors, wage levels in the coastal region are expected to be lower than those in non-coastal provinces. Especially the private sector wage in the coastal region is expected to be lower than its counterpart by 13.7 percent.

In sum, the regression analysis has revealed the relative significance of wage factors (share of industrial workers, industrial output, labor insurance and welfare funds, foreign trade) for each

of different ownership wage levels. The results also suggest that across all provinces these factors help explain different wage levels in SOEs, TVEs and private enterprises. Higher labor supply measured by the share of industrial workers appears to depress the wage level in TVEs under market mechanism, whereas industrial output growth also seems to have a positive impact on both the private and the state sector wage levels. Governmental funds for workers insurance and welfare are mainly targeted for urban state industrial workers and accordingly the funds are significant for the state wage. On the contrary, foreign trade turned out to be more significant for wage levels of the two non-state sectors, TVEs and private sector. This indicates that economic reform disproportionately influences the development of non-state sectors and their wage levels such that the sectors are highly engaged with foreign trade. Overall, this analysis has revealed that distinct forces operate with regard to wage levels in SOEs, TVEs and private sector. Therefore, by understanding the distinct processes of wage setting across different ownership types at the provincial level, we can explain spatial patterns of wage gaps and their changes over time. This will further our understanding of wage segmentation and new mechanism of social stratification in post-reform China.

5. Conclusion

This study has examined historical changes of cross-ownership wage inequality and its regional structure during the reform period. It also aimed to explain the regional dimension of wage segmentation across ownership types with wage setting factors and processes. Research interest in wage inequality is based upon the notion that inequality needs to be understood through examining the structural processes of social stratification. This is because inequality should be

studied as both a manifestation of underlying mechanisms of socioeconomic stratification and regional dimensions of the very stratification process due to the features of regional political economy. Labor market segmentation across ownership types has been an important mechanism of social stratification in both the socialist and reform periods in China. Wage gaps between different ownership types cannot be explained only by consideration of industry types and human capital characteristics because the wage gaps result from structural processes of segmentation which are embedded in the very features of a traditional redistributive economy and its changes by the reform.

By putting the ownership structure in the context of a redistributive economy at the center of analysis, this study also examined how cross-ownership wage segmentation is spatially differentiated and how this spatial differentiation is related to various wage factors at the provincial level. I believe that in regional wage setting, labor demand factors are more important than labor supply factors in a labor surplus economy like China. However, as shown before, the individual wage setting processes of different ownership types are related to labor demand, supply and other regional wage factors in an uneven manner. It is this unevenness that determines spatial patterns of wage segmentation. This study, therefore, focused on understanding the unevenness. Even though there is a certain difference in regional wage setting for various ownership types, the study did not attempt to provide a uniform framework of explanation of spatial patterns of wage segmentation. Rather it focused on the link at the provincial level among marketization, spatial patterns of wage segmentation and regional economic and redistributive characteristics.

Findings in this study on spatial patterns of wage inequality across provinces have profound implications for understanding changing inequality during the reform period. First, this study

demonstrated the need to take into account spatial differentiation of wage segmentation. The Chinese society during the reform has been transformed into one in which people are increasingly working in various types of enterprises such as private, collective and state enterprises. This transformation changes the long lasting process of social stratification, yet it is still controversial whether market forces will become a dominant force in determining patterns of social inequality. However, any explanation of social inequality without considering its spatial variations fails to bring a rich understanding of inequality experienced by Chinese people during the reform period.

Second, since this study focuses on the experiences of social inequality in terms of industrial workers welfare during the reform period, the key issue of this research is to address the impacts of marketization on social inequality. By examining the issue in the context of wage inequality in the industrial sector, I contend that marketization has generally reduced traditional wage gaps led by a high state wage through the rapid development of the rural collective sector in the 1980s and the private sector in the 1990s. Even though some of the interior provinces still sustain high state wages throughout the reform period, the rapid development of the private sector already began to diminish the wage premium of the state wage even in those provinces in the 1990s. Rural collective enterprises also significantly contributed to increasing income levels of rural workers and the influences seem to spread toward the provinces adjacent to the coastal region. It is, in the meantime, premature to determine whether the development of the private sector will increase overall wage inequality as it already has in some parts of China. Since Deng Xiaoping issued praising words, "To get rich first is glorious", Chinese people have been encouraged to search for economic opportunities for their own benefits, while beginning to accept growing disparity as an indispensable

phenomenon. Certain aspects of the states policies during the reform period also tend to reinforce inequality between workers. But considering the Chinese state still in power and the legacies of the socialist redistributive system, consequences of economic reform in terms of social inequality are not easy to determine.

Third, research regarding spatial differentiation also contributes to current studies on regional inequality in China. Regional inequality has been a widely addressed field of China studies and many geographical studies have contributed to understanding the issue in both theoretical and empirical terms. Geographical studies contributed to the study of regional inequality by indicating the need to examine regional inequality within provinces. As many studies already demonstrated, regional inequality within provinces is also as significant as inter-provincial inequality. Important as the scale issue may be, all these studies deal with inter-regional inequality, e.g. inter-provincial or inter-country inequality. As my study illustrates, inequality mechanisms can affect the people at any spatial scale. Within provinces or counties, my research can be used to understand mechanisms of changing social inequality that people are experiencing. Therefore, this study provides an additional and essential dimension through which regional inequality studies can be enriched.

Notes

- 1) I prefer using a term of wage inequality to wage gap. In fact, wage inequality across ownership types in this study is measured by the cross-ownership wage gap. But this study is fundamentally interested in a new terrain of social inequality that is embedded in the transitional process of the Chinese redistributive economy. Since wage gap only refers to the difference in the compensation level, this study prefer wage inequality that refers to the inequality that not just reflects workers different characteristics, but also is closely related to the structural process of wage determination in the Chinese context.
- 2) In terms of industrial output, the state sector accounted for 77.6 percents of total output whereas the collective sector produced only less than a quarter in 1978. However, in 1996, the share of state sector dropped to 28.8 percent whereas the share of the collective sector increased to 40.4 percent of total industrial output. The marketized sectors such as private and joint enterprises which had less than one percent of industrial output in 1980 produced as much as 30.8 percent of total output in 1996(SSB, 1997).
- 3) It is because in each segmented labor market of the ownership types, compensation and job conditions are determined under different considerations. Above all, wage segmentation is one key aspect of LMS that is fundamentally dissimilar in the separate labor market segments.
- 4) Despite its relative decline, the state sector in fact created about 11.4 million jobs during the 1978~1996 period. The urban collective sector, in the meantime, created 6.6 million jobs during the 1978~1990 period and its total employment reached 18.8 million in 1990. However, since then the employment began to decline and finally reached 14.3 million in 1996, same level as in 1980. Thus the significance of its role as an employment provider to urban surplus labor during the beginning of the reform has been diminishing during the late reform period. It is also expected that the less-protected urban collective sector has been losing its employment to either more stable jobs in the state sector or the fast developing private sector. It is also clear from the fact that the decline of jobs in the urban collective sector is prominent in most developed coastal regions.
- 5) Considering the fact that the data does not include employment in the rural private and individual enterprises(that was twice as many as those in

urban private and individual enterprises in 1996), the private sector is the fastest growing sector for employment, especially in the 1990s.

- 6) Here it is noted that wage segmentation was only measured by nominal wage levels. But the wages in Chinese statistics include broader types of compensations such as money wages, bonus, subsidies and allowance, and special compensations for workers. The wage then does not include non-wage compensation such as housing and insurance funds that are considerably high in the state sector.
- 7) Wage data for the private sector in the table only include wage information for formal employees due to the lack of wage information for urban and rural private and individual enterprises. Thus the wage level is much inflated because the wage level pertains to workers in joint and foreign-funded sectors that tend to pay far higher compensation than any other ownership types.
- 8) Considering 430 percent increase of overall consumer price index during the 1978~1996 period, we can see that real wage levels across ownership types improved substantially during the period.
- 9) Wage levels in TVEs became 62 percent of that in the state sector in 1996 from only 48 percent in 1985. Wage level in the private sector has been always higher than the state sector and was 37 percent higher in 1996.
- 10) The coefficient is calculated as standard deviation divided by the average and used to compare two datasets with different orders of magnitude or different measurement unit.
- 11) In other words, the traditional dualism in which the division between the state and collective sector before the reform was equivalent to the division between primary and secondary sector, became more complicated by the expansion of rural collective sector and growth of the private sector. But the division of labor market is rather noticeable in that both the state enterprise and

joint venture and foreign enterprises within private sector provide higher compensation with stable jobs and recruit more educated and productive workers, while collective enterprises and small private and individual enterprises often provide lower wage and limited benefits to their workers.

- 12) Regional wage equations for different ownership types are specified to examine the relationship between each ownership wage level and wage setting factors. It is well known that regional wage levels are related to various regional wage factors. Under the condition of a partially reformed industrial sector in China, wage levels across different ownership types at the provincial level are subject to both market and non-market regional wage factors. According to neo-classical economics, regional wage levels in market economies are first determined by levels of regional labor demand and supply based on an assumption of perfect factor mobility. Since this assumption is far from reality, economic studies increasingly turn to various relatively immobile regional characteristics such as differences in technology, taxes, market share, agglomeration economics, unionization, environmental amenity, and living expense in order to explain different regional wage levels (Eberts and Stone, 1992). In the context of post-reform China, however, an understanding of regional wage levels must also consider the redistributive process in a socialist system which still plays a determining role in enterprises performances as well as peoples livelihoods. For this analysis I use province-level data for wage levels and economic and institutional wage factors during the 1985~1996 period. Regional factors for setting wages at the provincial level include factors such as labor supply and demand, redistributive policy for labor welfare and foreign trade. Labor supply and demand are measured by share of industrial workers for total population as well as amounts of

industrial production. Per capita labor insurance and welfare funds is used to measure the degree of redistributive policy of local government. The degree of development of the external sector is also measured by per capita foreign trade. Lastly, I include a dummy variable for a coastal region.

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