Semi-Proletarianization in a Two-Sector Economy: The Case of China

Hao Qi*

Renmin University of China

Abstract

This paper establishes a model to explain the stylized facts about the wage growth for migrant workers in China since the mid-1990s. The model uses a Marxian method to analyze the interactions between different modes of production, as well as the labor extraction in the capitalist production process, which has the following features. First, similar to the Lewis model, it has a two-sector structure, consisting of a capitalist sector and a non-capitalist sector. Second, households are semi-proletarianized, meaning that a household receives income from both wage employment and household production. Third, capitalist firms determine the wage level in order to extract labor. This model demonstrates that semi-proletarianization is one of the three stages of a two-sector economy like China; in so doing, it provides an alternative to the Lewis Turning Point literature.

JEL Classification: B51; O53; P2

Keywords: semi-proletarianization, two-sector economy, Chinese economy

*hq@ruc.edu.cn

1 Introduction

The economic reform in the past four decades has substantially changed the composition of Chinese workers. By 2017, migrant workers from rural areas have amounted to 40 percent of total urban employment.[1] They are the crucial labor force that powers the world factory. The wage level for migrant workers was stagnant for a long period; however, as shown in Figure 1, it has been rising since the early 2000s. The average wage level for migrant workers grew by 2.3 percent between 1995 and 2002, compared to 9.6 percent between 2003 to 2017.

[Insert Figure 1 here.]

This pattern of wage growth has triggered a series of studies on the hypothesis that the Chinese economy has passed the Lewis turning point (hereafter LTP) (Cai, 2010; Cai and Du, 2011; Zhang et al., 2011; Knight et al., 2011). This literature is mostly empirical, focusing on whether demographic changes in China (such as population aging, slower population growth, lower fertility rate, and so forth) have constrained labor supply. It pre-assumes that an oversimplified version of the Lewis dual-economy model can be applied to China without substantial modification. In that view, the massive rural population in China corresponds to the unlimited supply of labor in the Lewis model, which will be gradually absorbed by the urban sector; the wage level for migrant workers is stagnant until the urban sector exhausts all of the surplus labor. Thus, the wage growth for migrant workers is deemed by this literature as a sign for a turning point. This interpretation of the wage rise has generated policy recommendations centering on promoting population growth and releasing controls over rural-urban migration.

However, the LTP literature has omitted the semi-proletarianization of migrant workers' households, which we argue is a crucial feature of the two-sector economy in China. Semi-proletarianization means migrant workers' households participate in both household farming and wage labor. Both farming income and wages are necessary for the reproduction of labor power. Typically within a household, the older generation works as cultivators in the countryside and the younger generation works as migrant workers in cities. This has been well-documented in the literature (Huang, 2006; Wen and Yang, 2016; He et al., 2010; Zhan and Huang, 2013). As Arrighi (1970) argues, semi-proletarianization allows capitalists not to pay a living wage to workers; put differently, household

[1] Sources: Annual surveys on migrant workers conducted by the National Bureau of Statistics.

farming has subsidized capital accumulation by providing workers with a non-wage income source. In this view, semi-proletarianization plays a crucial role in wage determination; the wage rise should be understood by considering the role of semi-proletarianization.

This paper establishes a model to explicitly take into account the role of semi-proletarianization in wage determination. The model has three features. First, it has a two-sector structure, consisting of a capitalist sector and a non-capitalist sector. Second, households participate in both household farming and wage labor. Third, capitalist firms determine the wage level in order to extract labor. As an alternative to the LTP literature, this analysis is more consistent with the stylized facts about wage growth as well as the labor process and labor reproduction.

In what follows, this paper is organized into three sections. Section 2 presents the stylized facts and discuss how the LTP literature is inconsistent with those facts. Section 3 establishes the model, analyzes its long-term implications and provides empirical evidence. Section 4 concludes the paper by discussing policy implications.

2 Stylized Facts and Problems with the LTP Literature

First of all, it is worthwhile to note that the LTP literature is not equal to the Lewis model, i.e. Arthur W. Lewis' original theory (Lewis, 1954; 1958; 1979). The implicit model in the LTP literature is an oversimplified version of the Lewis model and heavily influenced by Ranis and Fei's (1961) interpretation. The LTP literature stresses exogenous demographic factors and the particular institutions that may affect population growth in China's context (such as the household registration system, the one-child policy, and so forth). It uses a series of indicators (such as wage growth, the skilled-unskilled wage gap, marginal labor productivity, and so forth) to examine the hypothesis that China has passed the turning point. In general, the LTP literature the following three problems.

The first problem is that the LTP literature has a narrow category of surplus labor, which usually refers to the rural labor forces that are not needed by agricultural production. This category of surplus labor has omitted various forms of potential labor supply to capital accumulation. By contrast, the Lewis model has a much larger category of surplus labor. As Lewis argues, labor forces consist of workers from the subsistence agriculture, casual labor, petty trade, and domestic

service, wives and daughters in the household, and lastly the increase of population; thus in Lewis's view, the sources of labor forces include those working in the informal sector as well as those initially not belonging to the active working force. Lewis's category of the sources of labor forces largely echoes Marx's conception of "reserve army"; however, the LTP hypothesis almost exclusively focuses on the increase of population.

The reserve army in China is still massive. The employment share of agriculture in the whole economy substantially declined from 52 percent in 1995 to 27 percent in 2017; however, that means there were still over 200 million people working in agriculture. More importantly, China in the past two decades witnessed a substantial expansion of informal employment, the majority of which are the jobs of migrant workers. As shown in Figure 2, the employment share of the urban formal sector in the whole urban sector declined from 80 percent in 1995 to 42 percent in 2017. Current studies have estimated that informal workers amounted to a significant proportion of urban employment, ranging from a third to 60 percent due to the difference in data sources and definitions (Peng, 2009; Zhou, 2012; Huang, 2013). Migrant workers are still facing precarious working and living conditions (Lee, 2016; Huang, 2017). They have to work overtime and rely on farming income, given that their wages are lower than a living wage(Li and Qi, 2014).[2] 79 percent of migrant workers are unable to bring their families to cities and live together,[3] causing negative effects on the left-behind children, elderly, and women (Ye et al., 2013). More than 60 percent of migrant workers do not have labor contracts.[4] The informal status implies that migrant workers tend to take precarious jobs and face underemployment. In recent years, a new trend has emerged that combines the advantage of internet platforms with China's massive stock of informal workers. Thanks to this combination, China's platform-based titans Taobao, Meituan and Didi have achieved spectacular expansion. Given that there is still a massive reserve army that exist in various forms, the wage rise cannot be explained by the reduction of surplus labor or the reserve army.

[Insert Figure 2 here.]

The second problem with the LTP literature is that it lacks a wage determination theory that is

[2]The Chinese General Social Survey showed that the working week in private-owned enterprises, where migrant workers concentrate, varied between 49 to 54 hours over the period 2003-2013.

[3]Sources: Annual surveys on migrant workers conducted by the National Bureau of Statistics.

[4]The share of migrant workers with labor contracts declined from 42.8 percent in 2009 to 38.2 percent in 2016. Sources: Annual surveys on migrant workers conducted by the National Bureau of Statistics.

consistent with the stylized facts. In general, some studies assume that the wage is an institutional wage but fail to explain how institutions determine the wage level. Other studies suggest the wage is determined by the level of farming income; however, wages of migrant workers were always significantly higher than farming income. The annual wage level was on average 5.6 times of the farming income per capita between 1995 and 2017.[5] In this aspect, the Lewis model contains much flexibility and historical concreteness. As Lewis argued, the wage level in the capitalist sector can increase with the growth of the average product in the subsistence sector, the improvement of the terms of trade of the subsistence sector, and the advance of agricultural technologies; more importantly, the wage level is not necessarily equal to farming income because there may be the upgrading of workers' needs. The latter is largely consistent with Marx's theory of labor power. According to Marx, the value of labor power is affected by moral and historical factors.

The requirements for labor reproduction may change as the household moves from semi-proletarianization towards full proletarianization. As more labor forces of a household participate in wage labor, more reproduction activities take place in urban areas; thus the household obtains fewer benefits from the lower living costs in rural areas and has to bear the commodification of housing, education, and medical services in urban areas. Semi-proletarianization may gradually change the self-identity of migrant workers from peasants to workers, given that their households are less reliance on farming income for reproduction; as a result, reproduction will be escalated to higher levels. For instance, migrant workers tend to expect their children to become skilled workers or mental workers, thus they have to expend more on education and training. Lastly, the change in self-identity is associated with the rising consciousness of the working class. As stressed by Smith and Pun (2018) and Pun and Lu Huilin (2010), this rising class consciousness may play a role in promoting the bargaining power of workers, which may lead to wage growth. Therefore, there are various reasons that can explain the relationship between semi-proletarianization and wage growth.

The third problem with the LTP literature is that it lacks an analysis of the capitalist sector and replaces capital accumulation with demand in the labor market. The Lewis model is also different in this aspect. Lewis explicitly argues that the two sectors of the economy refer to a capitalist sector and a non-capitalist sector. In the Lewis model, capital accumulation is determined by the wage level and labor productivity; thus in nature, it is a model of growth and distribution. Capital

[5]Sources: Various issues of *China Statistical Yearbook*.

accumulation is the driving force in the Lewis model, and capitalist employment is endogenous to capital accumulation; comparatively, the LTP literature stresses the exogenous shocks to the potential labor supply, failing to see how capital accumulation interacts with labor supply. In this sense, the Lewis model is again similar to Marx's theory on the relationship between capital accumulation and the reserve army. The dynamics of capital accumulation produces capitalist demographic changes.

It is noteworthy that the Lewis model implies that the shift in the trend of the wage share from declining to rising marks the turning point of the economy. Even if the Lewis model can be applied to China, the turning point should appear in 2008. As shown in Figure 3, the wage share in the national income of China has shown a U-shape over the past two decades: measured by the compensation of employees in total GDP, the wage share fell from 51.4 percent in 1995 to 43.6 percent in 2008, then slowly increased to 47.5 percent in 2017. The wage level began to rise as early as 2003, which means one cannot explain the wage growth by the turning point.

[Insert Figure 3 here.]

However, both the Lewis model and the LTP literature have ignored the production process. Labor supply is not equivalent to the number of workers; it is the total labor effort of workers. Thus, the labor effort that a worker expends in the production process also affects labor supply. One of Marx's insights is that labor effort is not predetermined but endogenous to capitalist production. A series of social and economic factors may affect labor effort on the shop floor. Semi-proletarianization is one of those factors. If the worker has a stronger reliance on wages for household reproduction, he/she tends to expend more labor effort in production, which in turn may affect the wage offer of firms.

To sum up, the LTP literature cannot explain why the wage level for migrant workers continuously grew despite a relatively massive reserve army that exists in various forms; it lacks a well-founded wage determination theory as well as sufficient analysis of the capitalist sector. Comparatively, Arthur W. Lewis's original model has more explanatory power and similarities with Marx's theory. In China's context, a two-sector model should consider the role of semi-proletarianization, which may affect wage determination through changing the requirements for labor reproduction as well as through changing the labor effort.

3 The Model

3.1 Semi-proletarianized households

Suppose b is an exogenous level of income that is necessary for the reproduction of labor power within a migrant worker's household. The household is semi-proletarianized, which means it participates in both household farming and wage labor, relying on both farming income and wage income for reproduction. Note that the household does not necessarily acquire an income which is equal to or larger than b, although it is trying to realize that goal. Assume the farming income of a household is a constant, a. This assumption means land is limited for a household and surplus labor exists in the household, thus participating in wage employment has no impact on farming income. This assumption is realistic since a rural household in China has only a small plot of land since the establishment of the Household Responsibility System in the early 1980s. Assume every working-class household has l wage workers. Suppose the wage level for a worker in the capitalist sector is w, which is determined by capitalists. We define the degree of proletarianization as

$$\rho = \frac{wl}{b-a} \tag{1}$$

In the above equation, ρreflects the ratio of the actual wage income to the necessary wage income for reproduction. If $\rho = 0$, the household has no participation in wage labor, and the labor forces are not proletarianized in any sense. If $0 < \rho < 1$, the household participates in wage labor; however, since $wl < b - a$, the household is relying on both income sources for reproduction. If $\rho > 1$, there are two scenarios. If $\rho > 1$ but $wl < b$, then the household is less relying on farming, although it could not entirely quit farming; thus, the household is still semi-proletarianized. If $\rho > 1$ but $wl \geq b$, then the household could quit farming and become fully proletarianized.

3.2 Labor extraction

Let e be the labor effort of a worker. In a capitalist firm, the effort is a function of the cost of job loss for the worker (c).(Bowles, 2004) We define the cost of job loss as the difference between the wage level and the expected income in the status of unemployment. Since the farming income is assumed to be a constant, the worker can not increase the farming income of the household after

being fired. Thus, the replacement income of the worker is zero. However, the worker can find another job in the capitalist sector with the probability of $(1-v)$, where $v$is the size of the reserve army relative to total labor forces. As discussed earlier, the reserve army exists in various forms, thus v is not necessarily associated with l. Denote the wage of an alternative job as $\bar{w}$. The cost of job loss for the worker is

$$c = w - (1-v)\,\bar{w} \tag{2}$$

The labor effort is also a decreasing function of the degree of proletarianization, which is the first key assumption of the model. We provide two reasons to justify this assumption. First, given that the objective of a household is to meet the necessary income for labor reproduction, it tends to take every means to avoid income loss and increase the wage income. Being obedient to supervision can reduce the probability of being fired; also, in reality, it tends to bring workers with relatively more bonuses and overtime payments. As revealed in Eq. (1), a lower degree of proletarianization means stronger living pressures, making the worker more obedient and the supervision less costly. Thus, given the same cost of job loss, a lower degree of proletarianization is associated with a higher level of effort. Second, the degree of proletarianization is associated with the self-identity of workers. If the household could not quit farming, the workers would tend to define themselves as peasants rather than workers; as a result, they tend to be less solidary. This also means a lower degree of proletarianization means cheaper supervision activities for the capitalist. Write the labor effort as

$$e = e\,(c, \rho)\,, e_c > 0, e_\rho < 0 \tag{3}$$

The second key assumption of the model is that the adverse impact of the degree of proletarianization on labor effort exists only when it exceeds a particular level. Suppose θ is the particular level. The assumption means e_ρ is negative when $\rho \geq \theta$ and zero when $\rho < \theta$. For example, suppose $\theta = 0.9$. As revealed in Eq.(1), ρ reflects the living pressures of the household. $\theta = 0.9$ means 90 percent of the living costs that are not covered by the farming income $(b-a)$ can be covered by the wage income. If ρ is greater than 0.9, i.e. the living pressures are relatively small, then an increase in ρ would have an impact on labor effort since workers are not faced by significant living pressures that force them to be obedient. On the contrary, if ρ is smaller than 0.9, then there would

be significant living pressures; given the effect of living pressures on workers, an increase in ρ would have no impact on labor effort.

To maximize profits, the capitalist needs to maximize the ratio of labor effort to the wage level. The first order condition is

$$\frac{e}{w} = \begin{cases} e_c + \frac{l}{b-a} e_\rho & if\ \rho \geq \theta, \\ e_c & otherwise. \end{cases} \tag{4}$$

3.3 An example

We use an explicit function of labor extraction to analyze the effects of key parameters on the wage level. Suppose Eq.(3) has the following form:

$$e = \begin{cases} \alpha_0 - \alpha_1 (c-\beta)^2 - \alpha_2 (\rho - \theta) & if\ \rho \geq \theta, \\ \alpha_0 - \alpha_1 (c-\beta)^2 & otherwise. \end{cases} \tag{5}$$

In Eq.(5), α_0, α_1, α_2 and β are all positive parameters. With Eq.(1) and Eq.(2), the labor extraction function can be written as a function of the wage level.[6] In this example, labor effort is a quadratic piecewise function of the wage level. To ensure $e_w > 0$ (otherwise, the function is inconsistent with the labor extraction theory), the wage should be smaller than particular levels.[7] It is easy to see that the function satisfies the second order condition of the maximization problem. [8] Figure 4 presents the possible shapes of the function.

[Figure 4 inserts here.]

Let w' be the wage level that makes $\rho = \theta$, thus

$$w' = \frac{\theta (b-a)}{l} \tag{6}$$

[6] Rewrite the function under the condition $\rho \geq \theta$ as $e = -\alpha_1 w^2 + \Omega_1 w + \Omega_2$, where $\Omega_1 = 2\alpha_1 [(1-v)\bar{w} + \beta] - \frac{\alpha_2 l}{b-a}$, and $\Omega_2 = \alpha_0 - \alpha_1 [(1-v)\bar{w} + \beta]^2 + \alpha_2 \theta$.

[7] If $\rho < \theta$, then the wage would have to be smaller than $(1-v)\bar{w} + \beta$ in order to ensure $e_w > 0$. Note that β is necessary for the function because it is impossible for the wage to be smaller than $(1-v)\bar{w}$. If $\rho \geq \theta$, then $e_w > 0$ requires $2\alpha_1 [(1-v)\bar{w} + \beta - w] - \frac{\alpha_2 l}{b-a} > 0$.

[8] The second order condition is $e_{ww} < 0$. In both cases of $\rho < \theta$ and $\rho \geq \theta$, $e_{ww} = -2\alpha_1$.

Let w^* be the optimal wage for the capitalist when the labor extraction function is $e = \alpha_0 - \alpha_1 (c-\beta)^2 - \alpha_2 (\rho - \theta)$ and w^{**} the optimal wage when the function is $e = \alpha_0 - \alpha_1 (c-\beta)^2$. It is easy to see that w^{**} is always greater than w^*. In principle, there are three scenarios for the shapes of the labor extraction function. In Scenario 1, there is $w' < w^* < w^{**}$. The capitalist chooses w^* as the wage level since it gives the largest effort-wage ratio for Eq.(5). In this scenario, the wage level chosen by the capitalist makes the degree of proletarianization higher than θ, meaning that households have almost no difficulty in reproduction. Furthermore, w^* is positively associated with $\bar{w}$ and negatively associated with v, which is consistent with expectation.[9] In Scenario 2, there is $w^* < w' < w^{**}$. The optimal wage is w', which as shown in Figure 4 is a corner solution. This wage level implies households can meet the majority of living costs. Besides, w' increases with b and decreases with a and l. In Scenario 3, there is $w^* < w^{**} < w'$. The optimal wage w^{**}. This wage level does not satisfy the demands of household reproduction, thus it is unsustainable in reality. w^{**} is also positively associated with $\bar{w}$ and negatively associated with v. [10]

3.4 Long-term implications

In Scenario 2, the optimal wage is w'. With capital accumulation and the expansion of the capitalist sector, more activities of reproduction tend to take place in urban areas. Since urban life implies higher standards of reproduction, the necessary income for reproduction will increase as the capitalist sector expands. Thus, in the long run, the difference between the necessary income and the farming income will be larger. Furthermore, the number of wage workers within a household will increase as the capitalist sector expands; however, it cannot exceed the size of the household. Thus according to Eq.(6), w' tends to increase with the expansion of the capitalist sector.

The optimal wages in Scenario 1 and 3 are w^* and w^{**}, respectively, both of which are associated with capital accumulation in the long run. As the expansion of the capitalist sector, more rural households will participate in wage labor and become semi-proletarianized; thus, the reserve army will shrink and w^* as well as w^{**} will increase.

Now we analyze the dynamic trajectory of a two-sector economy. The trajectory might consist of three stages. In Stage 1, there are only a few semi-proletarianized households, thus there is a

[9] The optimal wage is $w^* = \left(-\frac{\Omega_2}{\alpha_1}\right)^{1/2}$, where $\Omega_2 = \alpha_0 - \alpha_1 \left[(1-v)\bar{w} + \beta\right]^2 + \alpha_2 \theta$.

[10] The optimal wage is $w^{**} = \left\{-\frac{\alpha_0}{\alpha_1} + \left[(1-v)\bar{w} + \beta\right]^2\right\}^{1/2}$.

massive reserve army which imposes considerable pressures on w^*. Although the necessary income for labor reproduction is small, it makes w' higher than w^*; thus this stage corresponds to Scenario 2. The wage level in this stage is determined by Eq.(6). In this stage, most activities of labor reproduction take place in rural areas, thus the necessary income for reproduction is stagnant. As a result, w' is also stagnant.

In Stage 2, as the capitalist sector expands, more semi-proletarianized households emerge and more labor forces within those households participated in wage labor; however, the size of the reserve army is still large. As increasingly more activities of labor reproduction take place in urban areas, the necessary income begins to rise. As a result, w' increases more rapidly than w^* does; thus, the wage level is still determined by Eq.(6). Different from Stage 1, the second stage witnesses relatively fast wage growth, which is largely driven by the rise in the necessary income. Besides, it is noteworthy that w' will not exceed w^{**} in the long run because $w' > w^{**}$ means the optimal wage level for the capitalist cannot make the worker's household meet the necessary income. This situation is impossible to exist in the long run, since households will reduce the standards of labor reproduction, making w' fall below w^{**}.

In Stage 3, the reserve army becomes smaller as increasingly more households participate in wage labor. As a result, w^* grows more rapidly than w' does. This stage corresponds to Scenario 1 where the optimal wage is w^*. Workers' households meet the necessary income for reproduction and reduce their reliance on farming income; thus they are moving to fully proletarianized households. Throughout the last two stages, the wage level is continuously increasing but driven by different factors: the wage growth in Stage 2 is largely driven by the growth of the necessary income, whereas the wage growth in Stage 3 is largely driven by the shrink of the reserve army. It is noteworthy that in Stage 1 and 2, the reserve army also plays a crucial role since it is the massive reserve army that makes w^* smaller than w'; otherwise w' cannot be the optimal wage.

3.5 Empirical evidence

China is currently in the semi-proletarianized stage, given both a relatively large reserve army and a significant rise in wages. According to the analysis above, we expect the wage level of migrant workers is positively associated with the difference between the necessary income and the farming income. We adopt an econometric method to examine this hypothesis.

The National Bureau of Statistics in China has not published region-level wage data for migrant workers; however, it began to publish the region-level wage data for urban private-owned enterprises since 2009. Migrant workers amount to the majority of the employees in those enterprises. Thus, we establish a panel dataset with the region-level wage data for urban private-owned enterprises. There are only two variables, as shown in Eq.(7). w_{it} denotes the average wage level for the urban private-owned enterprises of region i in year t. gap_{it} denotes the difference between the necessary income and the farming income of region i in year t. We use the regional disposable income per capita for urban households as a proxy for the necessary income of a region since the wage level has to reach the average income level in urban areas in order to satisfy the needs for reproduction. We use the regional non-wage income per capita for rural households to measure farming income. The non-wage income for rural households is mostly farming income but also includes government subsidies and property income, which play the same role as farming income in the provision of necessary income. All nominal variables are transformed into real ones with the consumers' price index. γ_i and δ_t denotes region- and year-fixed effects, respectively. ε_{it} is the error term. The number of observations is 270 (9 years from 2009 to 2017 and 30 regions; Tibet is excluded due to data availability). The data sources are various issues of *China Statistical Yearbook*.

$$w_{it} = \beta_0 + \beta_1 gap_{it} + \gamma_i + \delta_t + \varepsilon_{it} \tag{7}$$

The estimated β_1 is 0.507, which is statistically significant at the p-value of 0.05.[11] This result shows that there is a statistically significant correlation between the wage level and the necessary income that is not covered by the farming income.

4 Conclusion and Policy Implications

In the previous sections, we have discussed the inconsistencies between the LTP literature and the stylized facts about the two-sector economy in China. We have established a model that takes into account the role of semi-proletarianization on wage determination. In the model, the two sectors interact each other, since in the short run the degree of proletarianization may affect the wage level in the capitalist sector, and in the long run capital accumulation may affect the necessary income for

[11] The standard error is heteroskedasticity-robust.

reproduction. Our analysis demonstrates that there are three stages in the development of a two-sector economy, rather than two stages in both of the Lewis model and the LTP literature. China is currently in the second stage, faced by both a relatively massive reserve army and a significant wage rise.

The analysis suggests that policies that aim at promoting population growth are useless in repressing wage growth since the optimal wage in the current stage is largely determined by the necessary income. Moreover, if some policies have successfully promoted population growth, they would expand the reserve army and prevent the transition towards the next stage. Also, given that the Chinese economy has a profit-led growth regime (Molero-Simarro, 2015), the wage growth driven by the necessary income might cause a slowdown of capital accumulation, which may also prevent the transition towards the next stage. Therefore, in the current stage, policies should focus on how to subsidize the reproduction of labor power in order to reduce its reliance on wages and thus the wage pressures on firms.

References

Arrighi, G. (1970). Labor Supplies in Historical Perspective: A Study of Proletarianziation of the African Peasantry in Rhodesia. *The Journal of Development Studies 6*(3), 197–234.

Bowles, S. (2004). *Microeconomics: Behavior, Institutions, and Evolution.* Princeton University Press.

Cai, F. (2010). Demographic Transition, Demographic Dividend, and Lewis Turning Point in China. *China Economic Journal 3*(2), 107–119.

Cai, F. and Y. Du (2011). Wage increases, wage convergence, and the Lewis turning point in China. *China Economic Review 22*(4), 601–610.

He, X., S. Yuan, and L. Song (2010). *Nongmingong Fanxiang Yanjiu (A Study on Migrant Workers Returning to the Countryside).* Shandong People's Press.

Huang, P. C. C. (2006). Zhiduhua le de "Bangong Bannong" Guomixing Nongye (Institutionalized "Half Worker, Half Cultivator" Involuted Agriculture). *Dushu*.

Huang, P. C. C. (2013). Misleading Chinese Legal and Statistical Categories. *Modern China 39*(4), 347–379.

Huang, P. C. C. (2017). China ' s Informal Economy , Reconsidered : An Introduction in Light of Social-Economic and Legal History. *Rural China 14*, 1–17.

Knight, J., Q. Deng, and S. Li (2011). The puzzle of migrant labour shortage and rural labour surplus in China. *China Economic Review 22*(4), 585–600.

Lee, C. K. (2016). Precarization or Empowerment? Reflections on Recent Labor Unrest in China. *The Journal of Asian Studies 75*(2), 317–333.

Lewis, W. A. (1954). Economic Development with Unlimited Supplies of Labour. *Manchester School of Economic and Social Studies 22*, 139–191.

Lewis, W. A. (1958). Unlimited Labour: Further Notes. *Manchester School 26*(1), 1–32.

Lewis, W. A. (1979). The Dual Economy Revisited. *Manchester School 47*(3), 211–229.

Li, Z. and H. Qi (2014, dec). Labor Process and the Social Structure of Accumulation in China. *Review of Radical Political Economics 46*(4), 481–488.

Lu, F. (2012). Wage Trends among Chinese Migrant Workers: 1979-2010 (in Chinese). *Zhongguo Shehui Kexue (Social Sciences in China)* (7), 47–68.

Molero-Simarro, R. (2015). Functional distribution of income, aggregate demand, and economic growth in the Chinese economy, 1978-2007. *International Review of Applied Economics 29*(4), 435–454.

Peng, X. (2009). *Report on China's Informal employment development: A survey on the labor-force market*. Chongqing: Chongqing Press.

Pun, N. and Lu Huilin (2010). Unfinished Proletarianization: Self, Anger, and Class Action among the Second Generation of Peasant-Workers in Present-Day China. *Modern China 36*(5), 493–519.

Ranis, G. and J. C. H. Fei (1961). A Theory of Economic Development. *American Econmic Review 51*(4), 533–565.

Smith, C. and N. Pun (2018). Class and Precarity: An Unhappy Coupling in China's Working Class Formation. *Work, Employment and Society 32*(3), 599–615.

Wen, T. and S. Yang (2016). *Sannong yu Sanzhi (Three Rural Issues and Rural Governance)*. Renmin University Press.

Ye, J., C. Wang, H. Wu, C. He, and J. Liu (2013). Internal migration and left-behind populations in China. *Journal of Peasant Studies 40*(6), 1119–1146.

Zhan, S. and L. Huang (2013). Rural Roots of Current Migrant Labor Shortage in China: Development and Labor Empowerment in a Situation of Incomplete Proletarianization. *Studies in Comparative International Development 48*(1), 81–111.

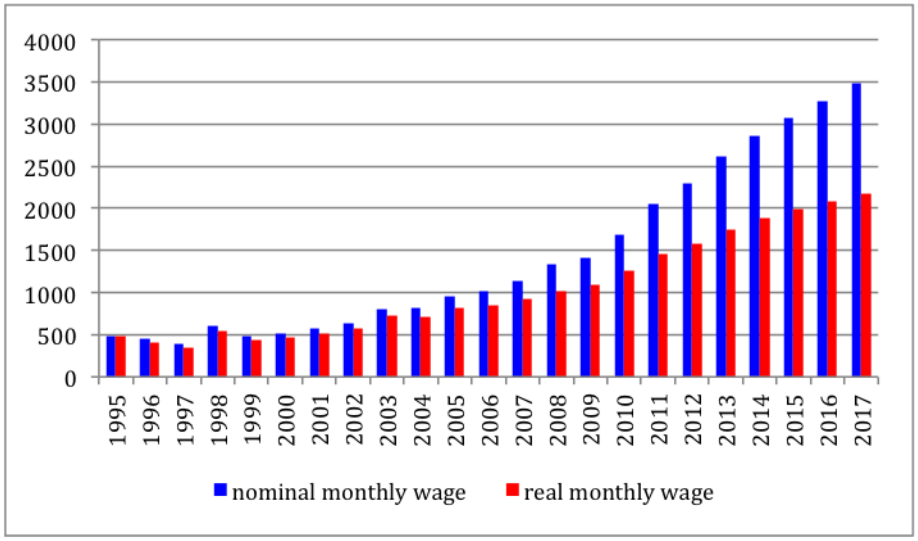
Zhang, X., J. Yang, and S. Wang (2011, dec). China has reached the Lewis turning point. *China Economic Review 22*(4), 542–554.

Zhou, Y. (2012). The State of Precarious Work in China. *American Behavioral Scientist 57*(3), 354–372.

Table 1: Three stages of the trajectory of a two-sector economy

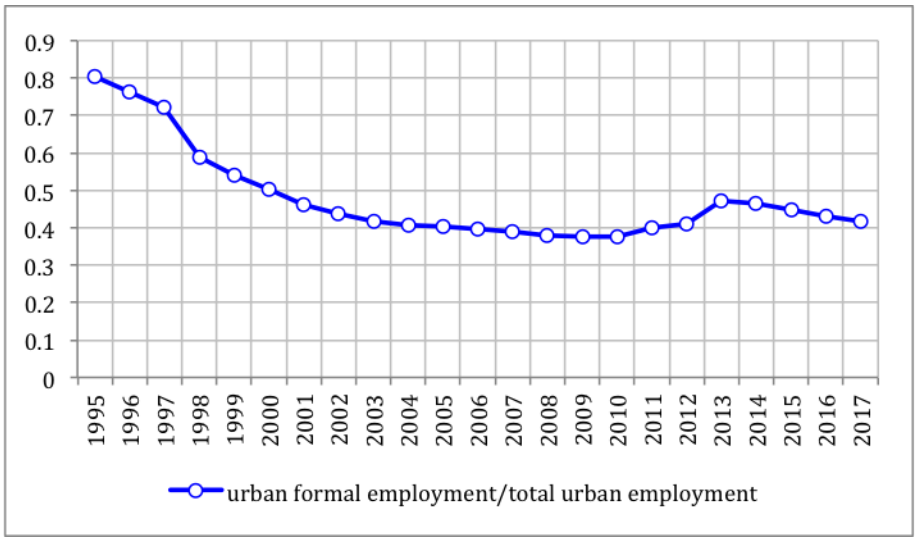
	Locations of household reproduction	Size of the reserve army	Necessary income for labor reproduction	Main determinant of the wage level	Wage growth
Stage 1: Peasant households	mostly in rural areas	large	low and stagnant	necessary income, reserve army	stagnant
Stage 2: Semi-proletarianized households	increasingly more in urban areas	relatively large	increasing	necessary income, reserve army	rise
Stage 3: Fully proletarianized households	mostly in urban areas	small	increasing	reserve army	rise

Figure 1: Wage growth for migrant workers



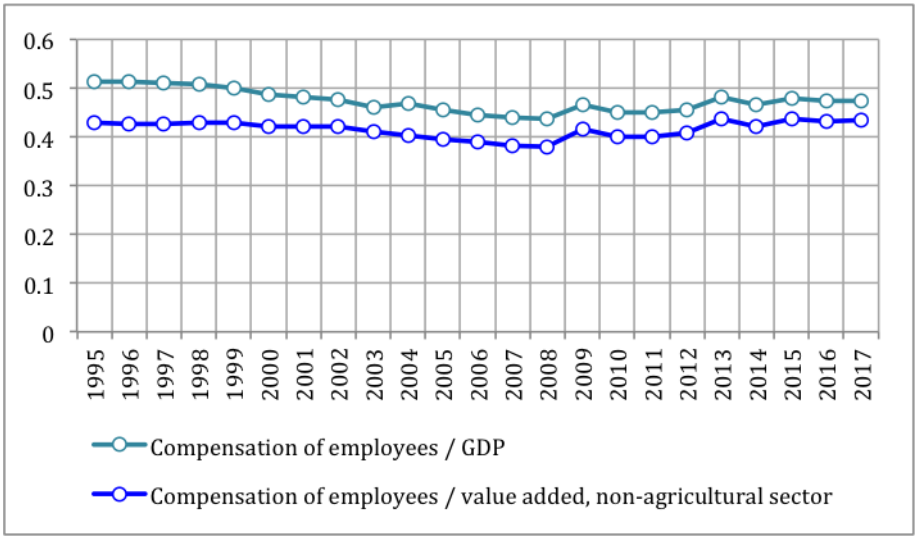
Notes: Real monthly wages are deflated with the urban consumers' price index.
Sources: Wages between 1995 and 2007 are from Lu (2012). Other wages are from the annual surveys on migrant workers conducted by the National Bureau of Statistics. The price index is from *China Statistical Yearbook 2018*.

Figure 2: Employment share of the urban formal sector



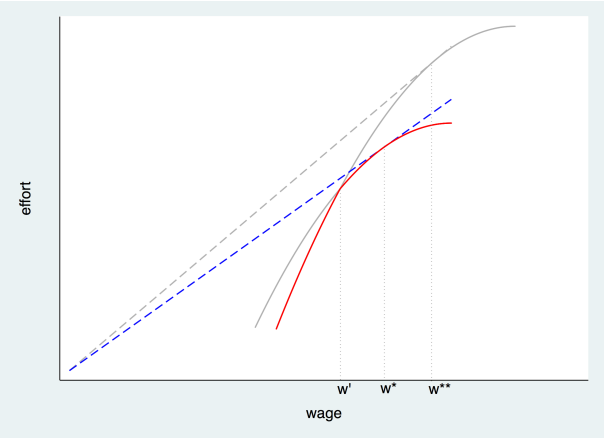
Notes: The urban formal employment is measured by "urban unit employment".
Sources: Various issues of *China Statistical Yearbook*.

Figure 3: Wage shares

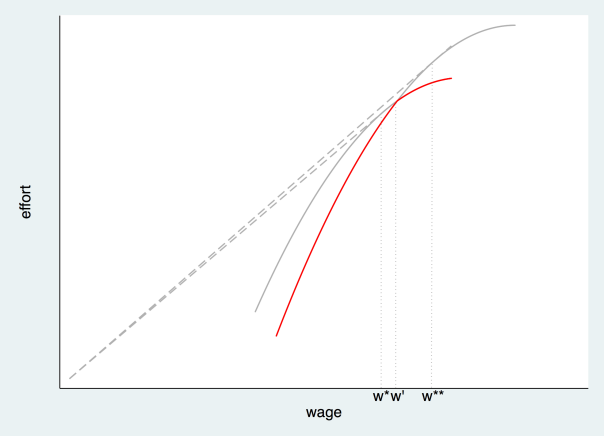


Sources: *Data of Gross Domestic Product of China 1952-2004*, various issues of *China Statistic Yearbook*.

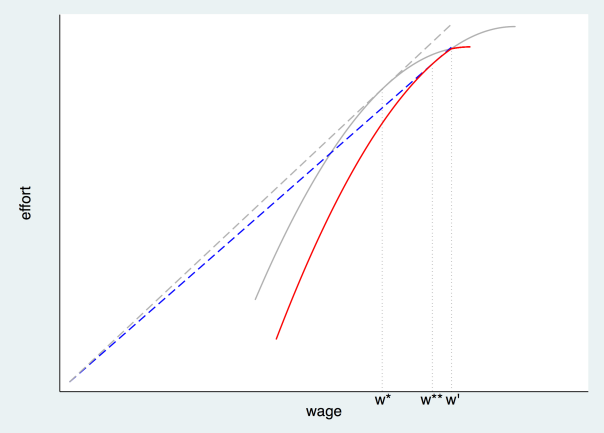
Figure 4: Shapes of the labor extraction function



(1) Senario 1: $w' < w^* < w^{**}$



(2) Senario 2: $w^* < w' < w^{**}$



(3) Senario 3: $w^* < w^{**} < w'$