Routledge
Taylor & Francis Group

Economic Research-Ekonomska Istraživanja

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

The influence of minimum wage regulation on labor income share and overwork: evidence from China

Qilin Zhan, Xiaohui Zeng, Zhan-ao Wang & Xiuzhen Mu

To cite this article: Qilin Zhan, Xiaohui Zeng, Zhan-ao Wang & Xiuzhen Mu (2020) The influence of minimum wage regulation on labor income share and overwork: evidence from China, Economic Research-Ekonomska Istraživanja, 33:1, 1729-1749, DOI: 10.1080/1331677X.2020.1762104

To link to this article: https://doi.org/10.1080/1331677X.2020.1762104

Published online: 13 May 2020.

ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
2020, VOL. 33, NO. 1, 1729–1749
https://doi.org/10.1080/1331677X.2020.1762104

The influence of minimum wage regulation on labor income share and overwork: evidence from China

Qilin Zhan[a,b], Xiaohui Zeng[a,b], Zhan-ao Wang[c] and Xiuzhen Mu[a]

[a]School of Economics, Shandong Technology and Business University, Yantai, China; [b]School of Arts and Sciences, National University of Defense Technology, Changsha, China; [c]School of Finance and Trade, Wenzhou Business College, Wenzhou, China

ABSTRACT

Minimum Wage Regulation (MWR) can raise wage rate, but its relation with labor income share is in controversy. We explore the influence of raising wage rate on labor income share and overwork in China. Panel data regressions are taken mainly based on China's Industrial Enterprise Database and the International Labor Organization Database. Our findings show that raising wage rate can increase labor income share without leading to overwork. Factors that may significantly increase overwork are a higher proportion of male workers, a larger income gap and a lower per-capita income. We point out that the neoclassical explanation for labor income share is not persuasive. We support policies of raising wage rate and believe MWR is an effective measure to increase labor income share.

ARTICLE HISTORY
Received 17 June 2019
Accepted 20 April 2020

KEYWORDS
MWR; raising wage rate; labor income share; overwork

JEL CLASSIFICATIONS
E25; J08; J38; J80; O15

1. Introduction

There has been a worldwide decline in labor income share since the 1980s (Blanchard et al., 1997; Hofman, 2001; Li et al., 2009). As the second-largest economy and the most successful developing country, China has a seriously low labor income share, only 55% of the U.S., 68% of Japan and even 10% less than that of emerging countries (Zhang & Zhang, 2011). Labor income share in China has experienced a 12-year decline, from 51% in 1995 to 40% in 2007, and then gradually increases and exceeds 50% again in 2014 (Bai & Yang, 2019). Relatively large and high-quality domestic demand will help developing countries to resist external economic risks, promote economic growth and overcome the middle-income trap (Zhang et al., 2011). A seriously low labor income share will lead to insufficient domestic demand and may lead China, or other developing countries learning from China's experience, into the middle-income trap. From the huge response of 'Capital in the Twenty-first Century' (Piketty, 2014), we can see that the issue of income distribution is currently a global concern.

CONTACT Xiaohui Zeng 201613572@sdtbu.edu.cn

The existing literature generally believes that MWR can raise wage rate (Sen et al., 2011). But it is controversial whether MWR is effective to increase labor income share. Neoclassical economics does not believe that raising wage rate can increase labor income share because its positive effect will be offset by the decline of employment. The implementation of MWR in China has always been accompanied by opposition from employers. Employers believe wage rate is too high and call for market-oriented reforms, such as abolishing MWR. Labor protection is slackened as an option to implement the policy of reducing costs in 2016. Xinhua Net (2018) indicates that 'reducing labor costs will be an important measure to support the real economy.' People's Daily Online (2018) also points out that the soaring cost of labor is one of the reasons that companies reduce production capacity and employees.

Opponents also argue that MWR will trigger overwork. Golden and Altman (2008) believe that a higher wage rate will prolong employees' working time under the performance-related wage system. Marx (1844) asserts that employers would ask longer working hours as compensation after the wage increase brought by MWR. Unfortunately, overwork is indeed widespread in China. Back in 2013, People's Daily Online publishes an article 'Death-by-Overwork: How to Balance between Making Money and Keeping Healthy?' (People's Daily Online, 2013). Another article also reports that 'more than 600,000 employees die from overwork each year in China' (ifeng, 2016). On April 11th 2019, Jack Ma, the co-founder and executive chairman of the Alibaba Group tells his employees that the 996 work schedule (from 9 a.m. to 9 p.m., six days per week) is a 'blessing' (Baijiahao, 2019). Overwork can threaten individuals' health at a micro level (Sparks et al., 1997) and crowd out employment at a macro level (Geurts & Sonnentag, 2006).

We put forward a scientific hypothesis that raising wage rate will increase labor income share without leading to overwork. Two empirical analyses are carried out based on China's Industrial Enterprise Database and the International Labor Organization Database. The findings show that raising wage rate can increase labor income share, but not lead to overwork. Factors that may significantly increase overwork are a higher proportion of male workers, a larger income gap and a lower per-capita income.

Our work contributes to the literature in five ways. First, we prove that MWR is a good measure to increase labor income share: MWR can increase labor income share without leading to overwork. We investigate the controversy surrounding MWR comprehensively and reach a definite conclusion, which is a supplement and an advancement to the existing research. Second, we point out that the neoclassical interpretation of labor income share is not persuasive and MWR is an effective solution both in theory and practice. Third, we also find that China's marketing reforms may have been excessive rather than insufficient in the labor market. Developed countries are constantly criticizing China's lack of marketization, and even think it has caused the economic imbalance of the world economy (Navarro & Autry, 2011). Forth, neoclassical economics cannot give effective countermeasures for declining labor income share. While MWR already has extensive practical experience worldwide, and steady progress may be achieved by strengthening its implementation. Five,

the implementation of MWR will increase China's imports by boosting domestic demand and reduce China's exports by raising wage rate. This may contribute to the re-balance of the world economy.

The rest of our study is organised as follows. Section 2 discusses the literature review. Section 3 presents the model and the data for the influence of raising wage rate on labor income share. Section 4 reports and discusses the results. Section 5 focuses on the influence of raising wage rate on overwork. In the last section, we conclude the study.

2. Literature review

2.1. Theories of the relation between MWR and labor income share

2.1.1. Theoretical bases of neoclassical economics not supporting MWR

Clark (1899) states that wage rate is determined by the marginal product of labor, which depends on technology. According to his theory, if the mandatory wage is higher than the equilibrium one decided by the labor market, the employment will reduce. The increase of labor income share depends on two effects: the reduction of employment (the substitution effect) and the rise of wage rate (the income effect). The relationship between the two effects is determined by technology, which is measured by the elasticity of substitution (ε). If ε equals to 1, the two effects can be offset, and any policy intervention has no effect on labor income share. If ε is greater than 1, the effect of reducing employment will be greater, and the overall effect of MWR on labor income share will be negative. Many neoclassical economists believe that ε equals to 1 or is greater than 1.

For the fact that labor income share has generally declined in European countries since the 1980s, neoclassical economists interpret the reason as biased technological progress. The biased technology progress theory (Acemoglu, 2002) deduces ε from the decrease of labor income share and then explains labor income share by ε. The production function is set to be the Constant Elasticity of Substitution (CES), as shown in formula (1). i is for the industry. y, l and k are for output, labor and capital. N and M are technology coefficients of two factors, and ε is for the elasticity of substitution. The prices of labor and capital are w and r, and the first-order condition of profit maximization is formula (2). In formula (3), LS refers to labor income share. The first equation represents the definition of LS with w as the explaining variable, but the second equation replaces w by formula (2) with technical parameter (φ) as the explaining variable. If biased technological progress dominates in reality, φ as the explaining variable is also reasonable and more exogenous. However, there may exist biased technological progress in reality, but it is difficult to identify, and φ is always inferred through w. In fact, w may decrease due to the decline of negotiation ability of labor union (Wei et al., 2013), then we may mistake the decline of labor union's negotiating ability as capital-biased technological progress.

$$Y_i = \left[(1-\alpha_i)(N_i L_i)^{\frac{\varepsilon_i-1}{\varepsilon_i}} + \alpha_i (M_i K_i)^{\frac{\varepsilon_i-1}{\varepsilon_i}}\right]^{\frac{\varepsilon_i}{\varepsilon_i-1}} \quad (1)$$

$$w_i = (1-\alpha_i)\left(\frac{Y_i}{L_i}\right)^{\frac{1}{\varepsilon_i}} N_i^{\frac{\varepsilon_i-1}{\varepsilon_i}} = (1-\alpha_i)\left(\frac{Y_i}{L_i}\right)^{\frac{1}{\varepsilon_i}} [(1-\varphi_i)A_i]^{\frac{\varepsilon_i-1}{\varepsilon_i}} \tag{2}$$

$$LS_i = \frac{w_i L_i}{Y_i} = \left[1 + \left(\frac{\alpha_i}{1-\alpha_i}\right)\left(\frac{\varphi_i}{1-\varphi_i}\cdot\frac{K_i}{L_i}\right)^{\frac{\varepsilon_i-1}{\varepsilon_i}}\right]^{-1} \tag{3}$$

2.1.2. Theories supporting MWR

Supporters don't believe the substitution effect can offset the income effect. Robinson (1933) puts forward a monopoly model that if there is only one buyer in the labor market, the enterprise's marginal cost curve will be higher than its average one. Wage rates and the numbers of workers determined by the intersections of the two cost curves and the marginal revenue curve are set as (W_0, L_0) and (W_1, L_1), then $W_0 > W_1$, and $L_0 < L_1$. Thanks to MWR, the marginal cost of hiring one more worker will not be the wage rate of all workers. Therefore, if the mandatory minimum wage is between W_0 and W_1, both the average wage rate and the employment will increase. Rebitzer and Taylor (1995) also propose an 'efficient wage' model and believe the minimum wage slightly above the equilibrium one will raise the cost of laying off. Enterprises prefer to reduce monitoring costs and hire more workers instead. Ahn et al. (2005) develop an endogenous search model, in which the minimum wage raises employment by increasing the number of workers searching for jobs. Flinn (2006) presents a matching model of the labor market, in which the minimum wage enhances the bargaining power of workers and induces more of them to enter the labor market, thus boosting the employment.

2.2. Theories of the relation between MWR and overwork

Will MWR lead to overwork? If so, even if it can increase labor income share by raising wage rate, we can hardly reach a conclusion on policy recommendations. Many studies conclude that the income effect of MWR is greater and raising wage rate will lead to overwork (Ehrenberg & Smith, 2003; Golden & Altman, 2008). The marginal theory believes that wage rate should equal the marginal output of labor and be decided by existing production technology. Raising wage rate though MWR will force the employer to prolong working time (Golden & Altman, 2008). Marx (1844) also points out that with a given profit target, raising wage rate will extend working time. Wang (2018) points out that hidden enforced overwork is widespread in China. Staffs will prefer overwork when the proportion of basic salary is small or a working atmosphere is too competitive due to the knock-out system.

2.3. Empirical studies on the relation between MWR and labor income share

2.3.1. Empirical evidence of neoclassical economics not supporting MWR

Based on historical data, neoclassical economists establish the law that labor income share can not be changed and deny the possibility of increasing it. Bowley (1920)

discovers that labor income shares of British and the U.S. have been constant around 40% and 60% respectively from 1880 to 1913. This is named as the 'Bowley's Law' (Samuelson, 1948). Later, Klein and Kosobud (1961) list the constancy of labor income share as one of the 'five great ratios' in economics and set it as a constant when framing a growth model. Kuznets (1955) find that labor income share is not a constant, but first falls and then rises, which is called the 'Kuznets Law'. According to the former theoretical analysis and combining with the 'Bowley's law' or the 'Kuznets Law', ε will equal to 1, which negates the possibility of MWR increasing labor income share.

2.3.2. Empirical evidence against neoclassical economics' conclusion

Blanchard et al. (1997) finds that labor income share has declined in European countries, such as France, Germany, Italy and Spain since the 1980s. The same conclusion is generally confirmed by subsequent research (Hofman, 2001; Li et al., 2009). Moreover, some empirical studies do not believe that raising wage rate will reduce employment and support MWR (Katz & Krueger, 1992; Blažević, 2013). The estimates of ε in China are generally less than 1 (Li & Li, 2018).

2.4. Empirical studies on the relation between MWR and overwork

It is generally believed MWR may lead to overwork in theory. Some empirical evidence also supports this conclusion and believes MWR will increase working hours (Yang & Li, 2016). But wage rate may reduce overwork. Dessing (2002) analyzes the income and substitution effects of raising wage rate. He believes that raising wage rate will let workers spend more leisure time in working, but also increase their demand for leisure time due to more income. A higher wage rate will reduce overwork as the income effect exceeds the substitution effect. Schor (2008) discovers that working hours will be longer when the standard deviation of the Gini coefficient increases. In other words, overwork is widely common with a greater income gap. Wage rate has a significant positive influence on labor income share, thus a higher wage rate will reduce overwork by narrowing the income gap. Mazzetti et al. (2014) indicate that with the given spending expectation and revenue target, raising wage rate can reduce overwork.

2.5. Literature summary

MWR can raise wage rate. However, on the issue of labor income share, mainstream studies follow the neoclassical theoretical framework, regard wage rate as an endogenous variable and substitute it with technical parameter φ. They explain the decline of labor income share as the result of biased technological progress, which theoretically denies the possibility of MWR increasing labor income share. It is also controversial both theoretically and empirically that MWR may cause overwork. The purpose of our study is to verify whether MWR is a good solution by studying the influence of raising wage rate on labor income share and overwork in China. We theoretically

demonstrate the feasibility of wage rate as the explaining variable and analyze the effectiveness of MWR through empirical tests.

3. Modelling and data explanation

3.1. The theoretical framework of the determinants of labor income share

Formula (3) is the theoretical framework of determining labor income share without wage rate (w). Formula (4) is derived from formula (2). Formula (5) is obtained by putting formula (4) into formula (3), which is our theoretical framework of determining labor income share including w and parameters (A, α, φ and ε). A, α and φ are entirely determined by technology, while ε is influenced by both technology and social factors.

$$L_i = (1-\alpha_i)^{\varepsilon_i} \cdot w_i^{-\varepsilon_i} \cdot [(1-\varphi_i) \cdot A_i]^{\varepsilon_i - 1} \cdot Y_i \tag{4}$$

$$LS_i = \frac{w_i L_i}{Y_i} = (1-\alpha_i)^{\varepsilon_i} \cdot w_i^{1-\varepsilon_i} \cdot [(1-\varphi_i) \cdot A_i]^{\varepsilon_i - 1} \tag{5}$$

We can also get formula (6) from formula (2) and obtain formula (7) by putting formula (6) into formula (3). ε is shown in formula (8). ε is constant in formula (1) only if both technology and factor price are constant. In other words, once technology or factor price changes, ε will change too. Formula (8) implies that ε is not constant and determined by four factors: technology ($(1\text{-}\alpha)/\alpha$), technological progress ($(1\text{-}\varphi)/\varphi$), factor intensity ($L/K$) and relative price ($r/w$). Taking technology for example, industries obviously use different technologies, and aggregate elasticities of substitution between two regions are different due to different industrial structures; different companies in the same industry may adopt different technologies; enterprises may adopt different technologies at different periods.

$$K_i = \alpha_i^{\varepsilon_i} \cdot r_i^{-\varepsilon_i} \cdot (\varphi_i \cdot A_i)^{\varepsilon_i - 1} \cdot Y_i \tag{6}$$

$$\frac{w_i L_i}{r_i K_i} = \left(\frac{1-\alpha_i}{\alpha_i}\right)^{\varepsilon_i} \cdot \left(\frac{w_i}{r_i}\right)^{1-\varepsilon_i} \cdot \left(\frac{1-\varphi_i}{\varphi_i}\right)^{\varepsilon_i - 1} \tag{7}$$

$$\varepsilon_i = \frac{ln\left(\frac{1-\varphi_i}{\varphi_i} \cdot \frac{L_i}{K_i}\right)}{ln\left(\frac{1-\alpha_i}{\alpha_i} \cdot \frac{1-\varphi_i}{\varphi_i} \cdot \frac{r_i}{w_i}\right)} \tag{8}$$

Formula (8) is only a simple deduction under a partial equilibrium model. In fact, the complexity of the determinants of ε has been systematically studied. Hicks (1963) points out three different ways in which ε can take place: as inter-sectoral substitution of production, as intra-sectoral substitution of the known methods of production or as substitution by innovations. Jones (1965) builds a formal general equilibrium model and finds that aggregate elasticity is a weighted average of three elasticities

Table 1. Definition of variables and statistical description of sample 1: inter-provincial data of all industries.

Variable	Variable Name	Formula	Sample Size	Mean	Std. Dev.	Min	Max
Labor income share	*ls*	LI/GDP	771	0.492	0.074	0.314	0.816
Wage rate	*w*	ASUE	771	1.759	2.255	0.051	13.499
The proportion of the first industry	*gdp1r*	AVFI/GDP	771	0.149	0.083	0.004	0.460
The proportion of the second industry	*gdp2r*	AVSI/GDP	771	0.442	0.083	0.171	0.594
GDP per capita	*gdppc*	GDPPC	771	2.362	2.341	0.123	12.899
Indirect tax	*tr*	NPT/GDP	771	0.141	0.032	−0.003	0.266
The proportion of foreign capital	*fcr*	RCFE/GDP	770	3.875	4.951	0.077	57.387
Foreign trade dependency	*ftdpd*	TIE/GDP	771	0.386	0.450	0.000	2.327
Sex ratio	*sr*	SR	465	104.099	3.774	92.250	120.430
Dependency ratio	*dpdr*	TDR	465	37.348	6.763	19.300	57.600

Source: China Statistical Yearbook.
Notes: 1. LI-labor income (100 million yuan per year); GDP-gross domestic product (100 million yuan per year); ASUE-average salary of urban employees (10 thousand yuan per year); AVFI-added value of the first industry (100 million yuan per year); AVSI-added value of the second industry (100 million yuan per year); GDPPC-GDP Per capita (10 thousand yuan per year); NPT-net production tax (100 million yuan per year); RCFE-registered capital of foreign enterprises (million dollars per year); TIE-total import and export (10 million dollars per year); SR-sex ratio (the female population = 100); TDR-total dependency ratio (Population = 100).
2. The principle of data processing is to make the numeric value of each variable as close as possible through the unit adjustment, and the coefficient results after regressions would be relatively close. Some uncommon units of measurement are used, such as 100 million, 10 thousand and million yuan, et al.

under the two-sector hypothesis: the elasticity of substitution in the manufacturing industry, the elasticity of substitution in the food industry and the elasticity of substitution between the two industries. So, it is evident that factor reallocation, as well as the application of new methods of production in one sector, are not only technically determined, but are strongly influenced by the institutional framework (Klump & de La Grandville, 2000). Klump also explains how trade unions affect ε and believes that it is the experience of trade unions that causes the Harrod-Domar Growth Model to be based on the assumption of very limited substitution between capital and labor. In conclusion, according to formula (8) and the existing literature, we believe that, besides w, there are a number of factors influencing labor income share through ε.

3.2. The empirical analysis of the determinants of labor income share

Many existing empirical studies (Wei et al., 2017; Wen & Lu, 2018) have used factors influencing labor income share through ε for research and our empirical model is built on them for reference. Factors include industrial structure, bargaining power, total factor productivity, enterprise size, market structure, export intensity, ownership and the rate of change of wage rate. w has always been overlooked in former studies, which is the difference and perhaps the contribution of our study. A regression model is built as formula (9), in which w is the explaining variable, X are controlled variables, u_i is the individual feature and ε_{it} is an error term.

$$ls_{it} = \theta_0 + \theta_1 \cdot w_{it} + \beta \cdot X + u_i + \varepsilon_{it} \tag{9}$$

Formula (9) does not take technology-biased progress as a controlled variable, which is the most obvious difference from previous studies. Other controlled variables are ascertained according to theory and empirical evidence of existing literature and data availability. In order to achieve sound results, three samples are adopted: inter-

Table 2. Definition of variables and statistical description of sample 2: inter-provincial data of industry only.

Variable	Variable Name	Formula	Sample Size	Mean	Std. Dev.	Min	Max
Labor income share	*ls*	LI/VAI	372	0.108	0.045	0.043	0.268
Wage rate	*w*	ASUEI	372	4.431	1.789	1.485	11.170
Indirect tax	*tr*	VATI/VAI	279	0.117	0.021	0.073	0.173
The proportion of foreign capital	*fcr*	FCI/PICI	341	0.095	0.089	0.002	0.401
The proportion of state-owned capital	*stater*	SCI/PICI	341	0.257	0.133	0.036	0.739
Export dependency	*exdpd*	EX/TOI	341	0.293	0.347	0.000	1.499
Capital-labor ratio	*kl*	FA/EN	279	67.259	33.774	18.857	248.761
Sex ratio	*sr*	SR	341	104.315	3.831	94.650	120.430
Dependency ratio	*dpdr*	TDR	341	36.321	6.460	19.300	55.100

Source: China Statistical Yearbook.
Notes: 1. China statistical yearbook includes three sub-sectors of industry, which are 'mining', 'manufacturing' and 'electric power, steam and water industry'.
2. LI-total labor income of industry (100 million yuan per year); VAI-added value of industry (100 million yuan per year); ASUEI-the weighted average wage rate of industry. Wage rate is the average wage of urban employees (10 thousand yuan per year), and the weight is labor income share from each sub-sector; VATI-value added tax of industry (100 million yuan per year); FCI-foreign capital of industry (100 million yuan per year); PICI-paid-in capital of industry (100 million yuan per year); SCI-state owned capital of industry (100 million yuan per year); EX-export volume (100 million yuan per year); TOI-total output of industry (100 million yuan per year); FA-fixed assets (100 million yuan per year); EN-the employment of mining, manufacturing and electric power, steam and water industry together (10 thousand persons); SR-sex ratio (the female population = 100); TDR-total dependency ratio (the population = 100).

provincial data of all industries (sample 1, described in Table 1), inter-provincial data of industry only (sample 2, described in Table 2) and China's industrial enterprise data (sample 3, described in Table 3). The former two samples are from the website of the National Bureau of Statistics, and the last comes from China's Industrial Enterprise Database. Data sources limit the selection of controlled variables to some extent.

Industrial structure must be taken into consideration in sample 1. There is a natural difference in factor intensity between industries. If the proportion of the labor-intensive industry is greater, labor income share will increase. Back in 1954, Levinson (1954) distinguishes the different effects of inter-industry and intra-industry on changes in labor income share, and later Solow (1958) puts forward a formal definition of this phenomenon. Fan and Zang (2012) explain the change of labor income share in China from the perspective of industrial structure development. Therefore, we introduce the variable of industrial structure in sample 1, including the proportions of the first (*gdp1r*) and second (*gdp2r*) industries. But they are not included in samples 2 and 3. GDP per capita (*gdppc*), sex ratio (*sr*) and dependency ratio (*dpdr*) will affect the supply of labor, which then affects L/K. They are included both in sample 1 and 2, but not in sample 3 due to the lack of data. While capital-labor ratio (*kl*), monopoly pricing power(*markup*) and financial constraints (*loanrate*) are related to capital price and applied in sample 3, but not in sample 1 and 2 due to the lack of data. Sample 1 includes data from 31 provinces in mainland China. The data of former eight variables are from 1993 to 2017 and the latter two are from 2002 to 2017 with data in 2010 missing. The data of sample 2 are from the website of the National Bureau of Statistics from 2006 to 2017.

Sample 3 covers 12 years from 1998 to 2013 with labor income share data between 2008 and 2010 missing. The number of enterprises varies from year to year, and the

Table 3. Definition of variables and statistical description of sample 3: industrial enterprise data.

Variable	Variable Name	Formula	Sample Size	Mean	Std. Dev.	Min	Max
Labor income share	*ls*	TW/VAI	2435670	0.316	0.226	0	1
Wage rate	*w*	TW/EN	2733774	19.554	56.122	0	2034
Production tax	*tr*	TAX/VAI	2435670	0.183	0.170	−3.067	4.715
The proportion of foreign capital	*fcr*	FC/PIC	2374755	0.073	0.242	0	1
The proportion of capital from Hong Kong, Macau and Taiwan investment	*hmtr*	CHMT/PIC	2371745	0.075	0.246	0	1
The proportion of state-owned capital	*stater*	SC/PIC	2374717	0.110	0.300	0	1
Export dependency	*exdpd*	EX/VAI	2170793	0.143	0.307	0	1.300
Capital-labor ratio	*kl*	FA/EN	2724113	126.662	429.402	0	11254
Monopoly pricing power	*markup*	RCMB/CMB	2750613	0.160	0.130	−0.875	0.975
Financing constraints	*Loanrate*	IE/LIA	2654771	0.041	0.155	−0.100	4.51

Source: China's Industrial Enterprise Database.
Notes: TW-total wage (million yuan per year); VAI-added value of industry (million yuan per year); EN-the number of employees (thousand persons); TAX-'taxes and extra charges of main business' + VAT + 'taxes in management expenses' (million yuan per year); FC-foreign capital (million yuan per year); PIC-paid-in capital (million yuan per year); CHMT-capital from Hong Kong, Macau and Taiwan (million yuan per year); SC-state owned capital (million yuan per year); EX-export volume (million yuan per year); FA-fixed assets (million yuan per year); EN-the number of employees (thousand persons); RCMB-revenue and cost of main business (million yuan per year); CMB-cost of main business (million yuan per year); IE-interest expenditure (million yuan per year); LIA-liability (million yuan per year).

total of records are 3,032,559. But outliers and repeated ones must be deleted. Specifically, there are two types of outliers: extremes and records beyond theoretical scopes. We delete records belonging to one thousandth of the maximums and minimums of 10 variables. The theoretical range of labor income share (*ls*), the proportion of foreign capital (*fcr*), the proportion of capital from Hong Kong, Macau and Taiwan (*hmtr*), the proportion of state-owned capital (*stater*), as well as export dependency (*exdpd*) should be between 0 and 1. Records would be considered as outliers beyond this range. The other kind of records should be deleted are repeated ones. Theoretically, enterprises with the same code should only have one record in a year, but there are more. Basically, repeated records are deleted as follows: (a) If sales revenue of two enterprises is the same, one must be deleted. (b) If the name or legal representative of an enterprise is different in adjacent two years, one should be deleted. (c) Records with the data of capital stock, the employment, indirect tax and labor income share greater than twice or smaller than half of which in adjacent years, should be deleted. (d) After the above three steps, there are still 20 repeated records to be deleted. Finally, 2,792,111 useful records are left.

As can be seen in Tables 1–3, labor income share is the biggest in sample 1 and the smallest in sample 2, which demonstrates that industrial structure has a significant influence on labor income share. Meanwhile, compared with other countries, each industry in China has a low labor income share (Zhan & Zeng, 2017). Internal factors account for 70% of the results, and it is essential to study labor income share in an industry (Hu, 2016). The significant difference between the three samples also indicates the necessity of cross-reference among samples. In addition, if the same conclusions are achieved, they will have better robustness.

4. Regression results analysis and robust tests

All three samples are panel data. After the uni-variate fixed effect regression analysis, multi-variate fixed and random effect regressions are carried out for each sample. As is seen in Table 4, the results of fixed and random effect regressions come to be highly consistent, and the Hausman test is not applied. The results of robust tests are recorded in Table 5. As Wei et al. (2017) point out that both sex ratio and dependency ratio are important variables to influence labor income share, and the empirical results are affirmative, we add sex ratio and dependency ratio in regression 1. But owing to different data, the regression results are not significant. Besides, sex ratio and dependency ratio in sample 1 have fewer data from the year 2002 to 2017, with 2010 missing. Because of the two reasons, regression 4 is conducted after deleting them and the results are still robust.

Given the large capacity of sample 3, although a lot of extremes have been deleted in the preprocessing stage, there is still a strong degree of dispersion. In order to alleviate the impact of heteroscedasticity, regression 5 is made after taking the logarithm, and the results are as follows in Table 5. There are only 687 records left in regression 5 because of the loss of data during the logarithm process. Firstly, one of the three variables, including the proportion of foreign capital, the proportion of capital from Hong Kong, Macao and Taiwan, as well as the proportion of state-owned capital, or even all of them can be zero, and in this case, lots of data disappear. Secondly, enterprise export can be zero too. Finally, Wen and Lu (2018) delete all negative results of the three variables, including production tax, monopoly pricing power and financial constraints. But they are preserved in our study. VAT would be negative when input tax is greater than output tax, and monopoly pricing ability would be negative when the cost of main business is greater than the corresponding income. Financial constraints would be negative if interest revenue exceeds expense. Finally, there are much fewer data left, but the regression results are still robust.

Regression 6 is for a sub-sample of sample 3 selected by year. After removing the three vacant years from 2008 to 2010, we try to evenly disperse the selection and choose three sets of data with an interval of six years. The results are robust. In fact, the regression result is robust for any given year, but it is not listed due to limited space.

The findings show that raising wage rate has a significantly positive influence on labor income share. But as long as the two are highly correlated, a significant regression result would be drawn regardless of which one is the explaining variable. Therefore, it is necessary to verify the possibility of reverse causality. But we believe reverse causality is highly impossible. As for the decision-making of enterprise owners, wage rate is defined at the beginning of the year before the actual operation, and labor income share is the result after one-year's operation. In this case, wage rate is more likely to determine labor income share in time sequence. Also, enterprise owners would find it is difficult to determine wage rate according to the prediction of labor income share at the beginning of the year. A wage rate lower than the market price will lead to difficulties in recruiting employees. Moreover, as is mentioned above, various factors can determine wage rate, including directly related (MWR) or indirect ones, for instance, land policies and highly exogenous variables outside the

Table 4. Regression results.

	Regression 1: sample1			Regression 2: sample 2			Regression 3: sample 3		
Variable	Uni-variate	Fixed	Random	Uni-variate	Fixed	Random	Uni-variate	Fixed	Random
W	0.005*** (0.001)	0.012*** (0.003)	0.013*** (0.002)	0.010*** (0.001)	0.023*** (0.003)	0.022*** (0.003)	0.00033*** (0.00000)	0.00062*** (0.00000)	0.00067*** (0.00000)
gdp1r		0.237* (0.138)	0.238** (0.094)						
gdp2r		−0.179*** (0.060)	−0.188*** (0.045)						
gdppc		−0.007** (0.003)	−0.008*** (0.002)		−0.007*** (0.003)	−0.005** (0.002)			
tr		−0.556*** (0.116)	−0.572*** (0.101)		0.123 (0.081)	0.141** (0.077)		0.26832*** (0.00099)	0.23402*** (0.00086)
fcr		−0.003 (0.002)	−0.003** (0.001)		−0.064 (0.069)	−0.002 (0.051)		−0.00368*** (0.00141)	0.04616*** (0.00086)
hmtr								−0.00628*** (0.00136)	0.06356*** (0.00084)
stater					0.055*** (0.017)	0.069*** (0.016)		0.02495*** (0.00098)	0.08909*** (0.00066)
ftdpd		−0.029* (0.016)	0.0005 (0.011)						
exdpd					0.002 (0.015)	0.016 (0.013)		0.02003*** (0.00095)	0.09160*** (0.00066)
sr		0.0005 (0.001)	0.001 (0.001)		0.000 (0.000)	0.000 (0.000)			
dpdr		−0.0009 (0.001)	0.0002 (0.001)		0.000 (0.000)	0.000 (0.000)			
kl					−0.001*** (0.000)	−0.001*** (0.000)		−0.00007*** (0.00000)	−0.00008*** (0.00000)
markup								−0.16584*** (0.00163)	−0.14712*** (0.00127)
loan rate								−0.02612*** (0.00128)	−0.07060*** (0.00108)
cons.	0.505*** (0.003)	0.591*** (0.097)	0.488*** (0.076)	0.064*** (0.003)	0.024 (0.030)	0.002 (0.028)	0.30979*** (0.00012)	0.27761*** (0.00042)	0.26408*** (0.00037)
sample size	771	465	465	372	197	197	2412377	1980611	1980611
R^2	0.0385	0.5774	0.7230	0.5346	0.3626	0.5852	0.0053	0.0443	0.1174

Notes: ***, ** and * refer to statistically significance at the levels of 1%, 5% and 10%. The data in brackets indicate robust standard errors of heteroscedasticity.

Table 5. Robust test results.

	Regression 4: Reducing variables of sample 1		Regression 5: Taking the logarithm of sample 3			Regression 6: Selecting a sub-sample of sample 3 by year		
Variable	Fixed	Random	Uni-variate	Fixed	Random	2001	2007	2013
W	0.016*** (0.002)	0.014*** (0.002)	0.245*** (0.001)	0.313*** (0.063)	0.278*** (0.040)	0.00137*** (0.00004)	0.00202*** (0.00002)	0.00038*** (0.00001)
gdp1r	0.724*** (0.054)	0.645*** (0.048)						
gdp2r	−0.120*** (0.041)	−0.142*** (0.037)						
Gdppc	−0.009*** (0.002)	−0.008*** (0.002)						
Tr	−0.435*** (0.087)	−0.487*** (0.080)		0.171*** (0.027)	0.163*** (0.021)	−0.16554*** (0.00277)	0.27643*** (0.00235)	−0.38104*** (0.00491)
fcr	−0.001*** (0.000)	−0.001** (0.000)		0.028*** (0.034)	−0.016*** (0.020)	−0.04097*** (0.00283)	0.01938*** (0.00150)	0.04825*** (0.00306)
hmtr				−0.006*** (0.034)	−0.026*** (0.019)	0.01544*** (0.00250)	0.08956*** (0.00150)	0.10418*** (0.00331)
stater				0.040*** (0.036)	0.053*** (0.022)	0.13818*** (0.00156)	0.08840*** (0.00202)	0.10145*** (0.00469)
ftdpd	−0.007 (0.009)	0.006 (0.008)						
exdpd				−0.002*** (0.027)	0.051*** (0.016)	0.09962*** (0.00197)	0.15174*** (0.00125)	0.16037*** (0.00296)
sr								
dpdr								
kl				−0.196*** (0.072)	−0.299*** (0.031)	−0.00016*** (0.00000)	−0.00009*** (0.00000)	−0.00010*** (0.00000)
markup				−0.150*** (0.055)	−0.154*** (0.037)	−0.34064*** (0.00422)	−0.11751*** (0.00276)	−0.42281*** (0.00656)
loan rate				−0.002*** (0.030)	0.009*** (0.022)	−0.20047*** (0.00485)	−0.10591*** (0.00255)	−0.14652*** (0.00413)
cons.	0.482*** (0.027)	0.509*** (0.025)	−2.055*** (0.002)	−1.250*** (0.367)	−0.644*** (0.201)	0.47057*** (0.00131)	0.18720*** (0.00076)	0.51157*** (0.00168)
Sample size	770	770	2386941	687	687	140858	311704	80106
R^2	0.6958	0.7183	0.0349	0.1811	0.2908	0.1665	0.1556	0.2501

Notes: ***, ** and * refer to statistically significance at the levels of 1%, 5% and 10%. The data in brackets indicate robust standard errors of heteroscedasticity.

economic system (such as household registration and labor unions). However, exogenous variables that do not determine labor income share through wage rate are relatively rare.

Regarding the regression results of controlled variables, first of all, capital intensity has a significant negative influence on labor income share. The coefficients of capital-labor ratio, GDP per capita and the proportion of the second industry are all significantly negative. Given the economic development stage of China, industrialization and capital deepening are two main ways to promote the economy, and regions with higher levels of the two can achieve higher GDP per capita. Therefore, all of the three have significantly negative correlations with labor income share. Compared with the second industry, the capital intensity of China's agriculture is still relatively low, and the influence of the first industry on labor income share is significantly positive. Secondly, the employer's revenue and labor income share are in conflict. The coefficients of monopoly pricing power and financial constraints used to estimate the return of capital are significantly negative in six regressions. Moreover, the results of tax and the proportion of foreign capital are different in samples. Roughly speaking, the results are negative in macro samples and positive in micro ones. We cannot conclude proper explanations for such differences here.

5. The influence of raising wage rate on overwork

The level of employment cannot indicate working hours. MWR will be futile for employees and even offset its positive effect if raising wage rate leads to longer working hours. Therefore, it is important to investigate whether raising wage rate results in longer working hours.

We build a new model as formula (10) (*ow* represents overwork, *w* is wage rate and *X* is controlled variables). According to the previous literature, overwork results from complicated factors. Wang (2018) divides them into six categories, including physical, psychological, economic, social, management and cultural aspects. With a reference to the research of Mazzetti et al. (2014), we select variables as follows in Table 6:

$$ow_{it} = \theta_0 + \theta_1 \cdot w_{it} + \beta \cdot X + u_i + \varepsilon_{it} \tag{10}$$

Controlled variables are described as follows: (a) Gender (*sex*). Mazzetti et al. (2014) point out that women are more likely responsible for housework while men take charge of earning money, so male workers have a stronger motivation for overwork. This is consistent with the theory of family labor supply, and other scholars like Jacobs and Gerson (2004) also hold this viewpoint. (b) The employment rate (*empl*). Employers will have greater bargaining power when there is a sufficient labor supply, and employees will show a higher degree of compliance and tolerance (Wang, 2018). (c) Mandatory minimum wage (*mwr*). This variable also affects wage rate and bargaining power as mentioned above. (d) The Gini coefficient (*gini*). Schor (2008) points out that the income gap will aggravate overwork. (e) GDP per capita (*gdppc*). Golden and Altman (2008) believe that overwork will be reduced when the economy develops to a certain level. This is consistent with the discussion of Mazzetti et al.

Table 6. Definition of variables and statistical description of sample 4.

Variable	Variable Name	Formula	Sample Size	Mean	Std. Dev	Min	Max
Weekly working hours	*hourwk*	Weekly working hours	1286	40.078	4.016	24	63
Overwork ratio	*hour48shr*	The proportion of workers working over 48 hours per week	1074	14.717	12.339	0.79	94.44
Wage rate	*w*	Wage (thousand USD per month)	750	2.391	17.981	0.00004	359.1
Male worker ratio	*sex*	Male workers divided by the total employment	1274	0.578	0.07	0.47346	0.93
Employment rate	*empl*	The quantity of employment divided by population	1274	60.816	9.732	33.45	93.32
Mandatory minimum wage	*mwr*	Minimum wage according to law or labor union (USD)	632	648.757	619.97	2.32	2721
The Gini coefficient	*gini*	The Gini coefficient times 100	895	41.683	9.34	22	77
GDP per capita	*gdppc*	GDP per capita (USD)	910	26.387	17.3	0.594	98.95
Income groups	*incgrp*	Income is divided into four groups, from low to high	913	3.507	0.736	1	4
Labor dependency ratio	*depend*	(the quantity of unemployed above the age of 15 + children under the age of 14) / the quantity of employment	1274	1.381	0.502	0.33	4.5
Chinese culture or not	culture	The dummy variable, Chinese culture is marked as 1, otherwise is 0	1286	0.033	0.18	0	1
The proportion of professional positions	*prof*	The proportion of professional positions	1274	13.93	6.62	0.35	41.3
The proportion of operational positions	*mach*	The proportion of machine operational positions	1274	10.873	5.037	0.25	23.28

Source: www.ilo.org. The Gini coefficients are from the World Income Inequality Database (www.wider.unu.edu/project/wild-world- income- inequality-database).

(2014) from the perspective of social responsibility. (f) Income groups (*incgrp*). Boeri and Garibaldi (2009) indicate that overwork is reduced in countries belonging to higher income groups, the mechanism of which is similar to GDP per capita. (g) labor dependency ratio (*depend*). It refers to the ratio of the employed to the unemployed. Golden (2009) asserts that *depend* has a significant influence on overwork, which is also supported by Mazzetti et al. (2014). (h) Chinese culture (*culture*). Wang (2018) states that Chinese employees, influenced by the tradition of Confucian culture, have a stronger tendency to overwork. We use it as the dummy variable and set to 1 for mainland China, Hong Kong, Macao, Taiwan, Japan, South Korea, North Korea and Singapore. (i) Position. Mazzetti et al. (2014) also study the impact of position on overwork. Position is also an important factor in China's research on overwork. Chen and Chen (2015) investigate overwork among university teachers. Zhang and Zhang (2018) study the overwork of assembly-line workers in the manufacture industry. Professional (*prof*) and machine operational (*mach*) positions are selected in Table 6. The former requires higher technical skills, while the latter needs lower work skills.

The data of sample 4 (described in Table 6) are mainly from the website of the International Labor Organization. The Gini Coefficients are from the World Income Inequality Database (WIID) covering almost all countries in the world. The data of MWR include 71 countries. The time period is from the year of 2000 to 2018, but many countries do not cover the entire period. When working hours (*hourwk*) is the explained variable, 48 countries are included. When overwork ratio (*hour48shr*) is taken as the explained variable, there are 44 countries in total. Because variables are already applicable, the main task of this part is to delete outliers. (a) For GDP per-capita, some data of Brazil and Russia are extremely high and even more than 100 times of those in adjacent years. Therefore, 21 records are deleted. (b) In terms of wage rate, it can be seen from the density function that the dispersion degree of the highest data is huge, and 24 records are deleted with 400,000 as the limit. (c) Mandatory minimum wage. Similar methods are applied to delete 19 records above 3,000 dollars. (d) Labor dependency ratio. Similar methods are applied to delete 4 records with labor dependency ratios above 5.

Figure 1 is plotted according to weekly working hours by country and year. The black thick line represents China, and countries with the highest and lowest data are specially marked. At the top, the asterisk refers to Turkey, the hollow triangle is Qatar, the hollow circle is Saudi Arabia, the hollow square is Mongolia, and the hollow diamond is Pakistan. At the bottom, the solid square represents Australia, the solid diamond is the Netherlands, the solid circle is the United States, and the solid triangle is New Zealand. In the middle, the cross marked line represents Croatia. As is seen in Figure 1, weekly working hours are quite high in China, which is consistent with the widespread social concern caused by the 996 speech and the results of China's Population Census in 2010. According to the census, weekly working hours are 50.25 in cities, 48.62 in urban areas and 49.68 in rural areas respectively.[1] Compared with economics having the highest and lowest data, weekly working hours are fewer in developed countries.

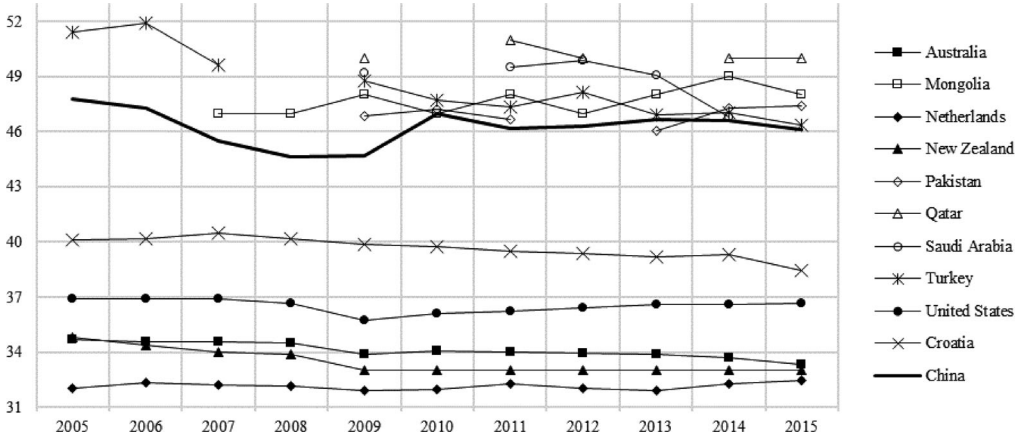

Figure 1. Weekly working hours among different countries.
Note: The data of other economies are generally in the middle area of Figure 1.[2]

The findings show that raising wage rate will not necessarily result in overwork. The analysis method is the same as section 3. After the uni-variate fixed effect regression, multi-variate fixed effect and random effect regressions are carried out. The results are shown in Table 7 and no coefficient is significant. Therefore, the influence of raising wage rate on overwork is insignificant and factors influencing overwork is complicated.

Gender is an important factor for overwork. A higher proportion of male workers results in more overwork, which is consistent with the conclusion of previous theoretical literature and indicates that the social responsibility theory has evidence in reality. However, neither the coefficient of employment rate nor mandatory minimum wage is significant, indicating that bargaining power has no significant influence on overwork (*hour48sh*). Wang (2018) divides overwork into two major categories: active and passive. It is obvious from the results that weak bargaining power has no relation with active overwork, and passive overwork is not dominant as neither the coefficient of employment rate nor mandatory minimum wage is significant. The Gini coefficient and GDP per capita are insignificant to weekly working hours but significant to overwork. According to the social responsibility theory (Mazzetti et al., 2014), workers with the lowest and highest income are prone to overwork. Income groups (*incgrp*) and Chinese culture or not are deleted in fixed effect regressions. Because *incgrp* is represented by *gdppc* already. The insignificant influence of Chinese culture or not shows that although overwork in Japan, Korea and China is common, the rule is not suitable for other countries. Labor dependency ratio is significant to weekly working hours but insignificant to overwork, which indicates that though a higher labor dependency ratio will lead to longer working hours, the influence is limited. Both the proportion of professional position and the proportion of operational position have significant influences on overwork, but the former is positive, and the latter is negative, which is inconsistent with previous literature conclusions.

Table 7. Regression results of sample 4.

	Regression 7: sample 4, *hourwk* as the explained variable			Regression 8: sample 4, *hour48shr* as the explained variable		
Variable	Uni-variate	Fixed	Random	Uni-variate	Fixed	Random
w	0.0014(0.00405)	−0.166(0.318)	−0.193(0.306)	0.014(0.009)	0.595(0.639)	0.345(0.642)
sex		17.298***(7.747)	21.962***(5.29)		28.993*(15.68)	30.022**(12.776)
empl		0.161(0.085)	0.059(0.061)		−0.329(0.200)	0.443***(0.150)
mwr		0.001(0.001)	−0.001(0.001)		−0.002(0.002)	−0.001(0.002)
gini		0.005(0.009)	0.006(0.008)		−0.052***(0.018)	−0.035*(0.018)
gdppc		−0.020(0.028)	−0.025(0.025)		−0.126**(0.056)	−0.090*(0.052)
incgrp		(omitted)	2.407***(0.717)		(omitted)	−3.166*(1.749)
depend		3.702**(1.64)	2.141*(1.146)		−4.846(3.678)	8.454***(2.755)
culture		(omitted)	5.944*(3.261)		(omitted)	(omitted)
prof		−0.103**(0.050)	−0.096**(0.047)		−0.265**(0.103)	−0.213**(0.101)
mach		0.202***(0.058)	0.217***(0.055)		0.265**(0.126)	0.126(0.121)
Constant term	40.34***(0.059)	15.475*(9.086)	11.938(7.720)	16***(0.138)	25.976(19.973)	−24.280(19.545)
Sample size	750	332	332	647	304	304
R^2	0.0002	0.3715	0.3658	0.0044	0.3320	0.2900

Notes: ***, ** and * refer to significant influence at the statistical levels of 1%, 5% and 10%. The data in brackets indicate robust standard errors of heteroscedasticity.

6. Conclusions and prospects

It is widely believed that MWR can raise wage rate. We use twenty-three regressions to verify the influence of raising wage rate on labor income share and overwork. Through nine regressions of three samples and supplemented by the robustness tests, we confirm that raising wage rate has a significant positive influence on labor income share. Based on the International Labor Organization Database, six regressions are taken and the results demonstrate that raising wage rate has no significant influence on overwork. It comes to four specific conclusions as bellow:

Firstly, we support MWR. According to the definition of the International Labor Organization, the purpose of MWR is to improve workers' welfare. Given that income and working hours are two factors to influence workers' welfare, our two empirical studies indicate that raising wage rate has a significantly positive influence on income, but is insignificant to overwork. So, MWR can improve workers' welfare.

Secondly, according to the results of our calculating, overwork is serious in China with the average working hours per week ranking among the top five of 82 countries in the world. Factors that may significantly increase overwork are a higher proportion of male workers, a larger income gap, a lower per-capita income and a higher labor dependency ratio. Although professionals may be the high-incidence group of overwork in China, the proportion is significantly negatively correlated with overwork worldwide.

Thirdly, we offer a counterexample that cannot be explained nor predicted by neo-classical economics. There would be no significant positive relation between raising wage rate and labor income share if the Chinese practice conforms to the prediction of neoclassical economics. The results of our study are robust, which indicates that raising wage rate has a significant positive effect on labor income share.

Finally, we find that China's marketing reform may have been excessive rather than insufficient in the labor market against the background that many countries deny China as a market economy. The 18th national congress of the CPC announces that 'the market should play a decisive role in the allocation of resources' and the mainstream of China's reform is market-oriented. From the social discussion on the issue of 996, it can be seen that the division between market and non-market fields is still controversial in China, and excess marketization may exist in other fields.

There may be two areas for further research. Dessing (2008) asserts that workers with different income will act differently as wage rate rises. The existing literature has already investigated the relationship between wage rate and labor supply or overwork, but there are few studies about the different influence of raising wage rate on labor income share of different groups. Moreover, wage rate is exogenous in our work and a much more reasonable explanation is given for the changes of labor income share, which can be regarded as a success of non-neoclassical theory in the labor market and provides a possibility of non-neoclassical theory to succeed in other fields.

Notes

1. <Tabulation on the 2010 population census>, China Statistics Press, 2012 edition.
2. Other economies include Albania, Argentina, Armenia, Austria, Azerbaijan, Belgium, Bosnia & Herzegovina, Bulgaria, Cambodia, Canada, Chile, Colombia, Costa Rica, Cyprus,

Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Honduras, Hungary, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Korea Republic, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Mauritius, Mexico, Moldova Republic, Montenegro, Namibia, North Macedonia, Norway, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Ukraine, United Kingdom, Venezuela, Bolivarian Republic and Vietnam.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This study was supported by the National Social Science Found of China (Grant No. 17CJL035).

References

Acemoglu, D. (2002). Technical change, inequality, and the labor market. *Journal of Economic Literature*, *40*(1), 7–72. https://doi.org/10.1257/jel.40.1.7

Ahn, T., Arcidiacono, P., & Wessels, W. (2005). *Minimum wages and positive employment effects in general equilibrium*. Duke University.

Bai, P. W., & Yang, Z. C. (2019). Labor bargaining power and labor income share-analysis of the impact after the financial crisis. *Management of the World*, (5), 78–91.

Baijiahao. (2019). https://baijiahao.baidu.com/s?id=1630689728783536517&wfr=spider&for=pc.

Blanchard, O. J., Nordhaus, W. D., & Phelps, E. S. (1997). The medium run. *Brookings Papers on Economic Activity*, *1997*(2), 89–158. https://doi.org/10.2307/2534687

Blažević, S. (2013). Is employment decreasing due to the minimum wage increase? *Economic Research-Ekonomska Istraživanja*, *26*(1), 69–100. https://doi.org/10.1080/1331677X.2013.11517591

Boeri, T., & Garibaldi, P. (2009). Beyond eurosclerosis. *Economic Policy*, *24*(59), 409–461. https://doi.org/10.1111/j.1468-0327.2009.00225.x

Bowley, A. L. (1920). *The change in the distribution of the national income, 1880–1913*. Clarendon Press.

Chen, R. S., & Chen, T. X. (2015). Research on the influence mechanism of overwork and job satisfaction of university teachers-based on the mediating variable of job burnout. *Higher Education Review*, (2), 116–127.

Clark, J. B. (1899). *The distribution of wealth: a theory of wages, interest and profits*. Macmillan.

Dessing, M. (2002). labor supply, the family and poverty: the S-shaped labor supply curve. *Journal of Economic Behavior & Organization*, *49*(4), 433–458. https://doi.org/10.1016/s0167-2681(02)00011-2

Dessing, M. (2008). The S-shaped labor supply schedule: evidence from industrialized countries. *Journal of Economic Studies*, *35*(6), 444–485. https://doi.org/10.1108/01443580810916505

Ehrenberg, R. G., & Smith, R. S. (2003). *Modern labor economics: theory and public policy*. Pearson Education Company.

Fan, C. L., & Zang, J. (2012). Research on structural optimization in the steady improvement of labor income share - based on the perspective of industry and sector. *China Industrial Economics*, (1), 1–11. https://doi.org/10.19581/j.cnki.ciejournal.2012.01.001

Flinn, C. J. (2006). Minimum wage effects on labor market outcomes under search, matching, and endogenous contact rates. *Econometrica*, *74*(4), 1013–1062. https://doi.org/10.1111/j.1468-0262.2006.00693.x

Geurts, S. A., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work, Environment & Health*, *32*(6), 482–492. https://doi.org/10.5271/sjweh.1053

Golden, L. (2009). Working to live or living to work? A brief history of long work time and the contemporary sources of overwork. *Journal of Business Ethics*, *84*(S2), 217–227. https://doi.org/10.2307/40294786

Golden, L., & Altman, M. (2008). Why do people overwork? Over-supply of hours of Labor, labor market forces and adaptive preferences. *Social Science Electronic Publishing*, (3), 62–83.

Hicks, J. R. (1963). *The theory of wages*. 2nd ed. Macmillan.

Hofman, A. (2001). *Economic growth, factor shares and income distribution in Latin America in the twentieth century*. CEPAL, mimeo.

Hu, Q. Y. (2016). Division of labor among different industries and the aggregate share of labor reward. *Economic Research*, (2), 82–96.

ifeng. (2016). http://tech.ifeng.com/a/20161211/44512414_0.shtml.

International Labor Organization. (2006). Minimum wage fixing convention, 1970. http://www.ilo.org/ilolex/cgi-lex/convde.pl?C131.

Jacobs, J. A., & Gerson, K. (2004). *The time divide: Work, family and gender inequality*. Harvard University Press.

Jones, R. W. (1965). The structure of simple general equilibrium models. *Journal of Political Economy*, *73*(6), 557–572. https://doi.org/10.1086/259084

Katz, L. F., & Krueger, A. B. (1992). The effect of the minimum wage on the fast food industry. *Industrial and Labor Relations Review*, *46*(1), 6–21. https://doi.org/10.1177/001979399204600102

Klein, L. R., & Kosobud, R. F. (1961). Some econometrics of growth: great ratios of economics. *The Quarterly Journal of Economics*, *75*(2), 173–198. https://doi.org/10.2307/1884198

Klump, R., & de La Grandville, O. (2000). Economic growth and the elasticity of substitution: two theorems and some suggestions. *American Economic Review*, *90*(1), 282–291. https://doi.org/10.1257/aer.90.1.282

Kuznets, S. (1955). Economic growth and income equality. *American Economic Review*, (1), 1–28. https://doi.org/10.1086/257662

Levinson, H. M. (1954). Collective bargaining and income distribution. *American Economic Review*, (5), 26–48. https://doi.org/10.2307/1818344

Li, X. P., & Li, X. K. (2018). Biased technological change and the total factor productivity growth of China's industry. *Economic Research Journal*, (10), 82–96.

Li, D. K., Liu, L. L., & Wang, H. L. (2009). The U curve of labor share in GDP during economic development. *Economic Research Journal*, (1), 70–82.

Marx, K. (1844). *Economic and philosophic manuscripts of 1844*. International Publishers.

Mazzetti, G., Schaufeli, W. B., & Guglielmi, D. (2014). Are workaholics born or made? Relations of workaholism with personal characteristics and overwork climate. *International Journal of Stress Management*, *21*(3), 227–254. https://doi.org/10.1037/a0035700

Navarro, P., & Autry, G. (2011). *Death by China: confronting the dragon – a global call to action*. Pearson Education.

Net, X. (2018). http://www.xinhuanet.com/finance/2018-10/12/c_1123547814.html.

People's Daily Online. (2013). http://opinion.people.com.cn/GB/363551/366797.

People's Daily Online. (2018). http://finance.people.com.cn/n1/2018/1106/c1004-30383952.html.

Piketty, T. (2014). *Capital in the Twenty-First Century*. Harvard University Press.

Rebitzer, J. B., & Taylor, L. J. (1995). The consequence of minimum wage laws: some new theoretical ideas. *Journal of Public Economics*, (2), 251–255. https://doi.org/10.1016/0047-2727(93)01411-3

Robinson, J. (1933). *The economics of imperfect competition*. Macmillan.

Samuelson, P. A. (1948). *Economics: An introductory analysis*. 1st ed. McGraw-Hill.

Schor, J. (2008). Sustainable consumption and work-time reduction. *Journal of Industrial Ecology*, *9*(1–2), 37–50. https://doi.org/10.1162/1088198054084581

Sen, A., Rybczynski, K., & Waal, C. V. D. (2011). Teen employment, poverty, and the minimum wage: evidence from Canada. *Labour Economics*, *18*(1), 36–47. https://doi.org/10.1016/j.labeco.2010.06.003

Solow, R. M. (1958). A sceptical note on the constancy of relative shares. *American Economic Review*, (4), 618–631. https://doi.org/10.2307/1808271

Sparks, K., Cooper, C., Fried, Y., & Shirom, A. (1997). The effects of hours of work on health: a meta-analytic review. *Journal of Occupational and Organizational Psychology*, *70*(4), 391–408. https://doi.org/10.1111/j.2044-8325.1997.tb00656.x

Wang, X. (2018). A study on the definition of 'overwork' and its classifications. *Journal of China Institute of Labor Relations*, *32*(6), 53–59.

Wei, X. H., Dong, Z. Q., & Huang, J. L. (2013). Does labor Union improve labor share? Theoretical analysis and evidence from private firms in China. *Economic Research*, (8), 16–28.

Wei, X. H., Dong, Z. Q., & Lan, J. J. (2017). Does regional gender imbalance affect the labor share of income? Theoretical analysis and evidence from China. *World Economy*, (4), 129–146.

Wen, Y. B., & Lu, X. Q. (2018). The determination mechanism of changes in China's labor income share: based on the double perspectives of market competition and institutional quality. *Economic Research*, (9), 83–98.

Yang, J., & Li, S. (2016). Will the increase of MWS improve rural migrants' income? *China Economic Quarterly*, *15*(4), 1–18. https://doi.org/10.13821/j.cnki.ceq.2016.03.12

Zhan, Q. L., & Zeng, X. H. (2017). Is it a reasonable and effective way for cost reduction to reduce the compensation of labor? *Modern Finance and Economics*, (12), 97–109.

Zhang, X., Yang, J., & Wang, S. (2011). China has reached the Lewis turning point. *China Economic Review*, *22*(4), 542–554. https://doi.org/10.1016/j.chieco.2011.07.002

Zhang, C. W., & Zhang, S. B. (2011). A study on labor share in GDP in China. *Labor Economic Review*, (1), 1–33.

Zhang, T. Q., & Zhang, Y. J. (2018). Research on the influencing factors of overwork of front-line employees in China's manufacturing industry. *Labor Economics Review*, *11*(1), 101–111.