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ABSTRACT

Falling into Poverty or Escaping from It? The Effect of the Minimum Wage in Urban China*

Minimum wages are found to have an inconclusive impact on poverty. Using China's individual-level panel dataset combined with county-level minimum wages, our paper shows that minimum wages have a moderate yet sustained effect on poverty reduction. The results show a two-sided effect: higher minimum wages help pull some workers out of poverty, while simultaneously pushing others in. This dynamic of larger "pulling" effects being counterbalanced by smaller "pushing" effects explains why existing studies often find that minimum wages have a negligible or minimal impact on poverty reduction. Notably, the poverty reduction effect is most pronounced for female workers.

JEL Classification: I32, J3, J88
Keywords: minimum wages, poverty, China

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* The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations or those of the Executive Directors of the World Bank or the governments they represent.

1. Introduction

While extensive research has been conducted on the impact of minimum wages on employment,[1] there remains a lack of definitive evidence and consensus on their effectiveness in alleviating poverty.[2] In developed nations, the introduction of a minimum wage appears to have little to no significant effect on poverty reduction, with noticeable impacts only among specific demographics and during particular periods.[3] Predominantly U.S.-based findings suggest that the root of this issue may lie in the fact that many individuals earning the minimum wage are not necessarily members of impoverished households. Moreover, increases in the minimum wage can result in both winners and losers, as outlined by Neumark and Wascher (2008), depending on whether workers retain their employment following such changes. The evidence from developing countries, on the other hand, is sparse and inconclusive. The World Bank (2006) asserts that the impact of the minimum wage on poverty rates in Latin America and the Caribbean is likely negligible. Gindling (2024), however, in his comprehensive literature review, presents a contrasting perspective, indicating that raising the minimum wage in developing economies (primarily in Latin America) appears to result in a decrease in poverty, though the effect is generally modest.[4]

Why does the minimum wage often exert negligible or modest impacts in alleviating poverty in developing countries? Our research delves into this question by investigating the effect of China's minimum wage policies on its poverty levels.[5] China presents a compelling case study for two primary reasons. First, during the period of our investigation, the country experienced a notable upsurge in its minimum wage. This rise directly influenced the earnings of the world's largest labor force, providing a unique opportunity to analyze the effect of such policies on a grand scale.[6] Second, the issue of poverty reduction in China is of paramount importance.

Achieving substantial progress in this area would significantly enhance the quality of life for a vast population. Consequently, understanding the role and effectiveness of minimum wage policies in this context carries profound implications.

Our work makes several contributions to the existing literature. First, evidence on the causal effect of minimum wages on poverty in developing countries is limited, and this relationship remains largely unexplored in the context of China. Second, we study this uncharted area by using Chinese nationally representative individual-level panel data and county-level minimum wage data. As emphasized by Gindling (2024), such data is essential to address the challenge of determining whether the minimum wage affects each household member differently in terms of wages and employment opportunities. While the minimum wage may lift some workers or households out of poverty, it could also push others into it. Third, most studies examine the minimum wage's effect on poverty as a single, aggregated outcome, often due to data constraints. To assess whether the minimum wage has a lasting or a short-lived effect on poverty, we examine transitions between three distinct poverty states: 1) the chronically poor, who persistently grapple with poverty; 2) the transiently poor, who fluctuate between poverty and non-poverty from year to year; and 3) the never-poor, who consistently remain above the poverty threshold.

Our framework allows us to control for a wide variety of potential confounding factors (such as prefecture-level GDP, gross FDI, and unemployment rates) that are correlated with the minimum wage and also determine poverty status. To further address endogeneity concerns, we exploit the panel structure of the data by estimating first-differenced equations in multinomial logit forms, which control for individual unobserved characteristics and a variety of unobserved factors captured by prefecture and year fixed effects. The minimum wage data, collected from

more than 2,000 counties across China, provide substantial spatial and inter-temporal variations to identify the causal effect of the minimum wage on poverty. In our preferred specification, the effects of the minimum wage on poverty are identified using within entity, within prefecture, and within region-year variations.

In the minimum wage literature, one concern is that many minimum wage workers may not live in poor households, causing the minimum wage to have little or no effect on poverty. Our data reduce this concern by showing that most Chinese minimum wage workers live in poor households. Another concern is low compliance and weak enforcement, which could weaken the effect of the minimum wage. We address this concern by demonstrating that the revision of the Chinese minimum wage law in 2004—which required all local authorities to raise the minimum wage nearly every year, extended the coverage to all workers, and quintupled the penalty for violations—has led to high compliance and strong enforcement.

Our results show that while the minimum wage helped lift some Chinese workers and households out of poverty, it also pushed others into poverty, creating both winners and losers. The larger pulling effects (helping people escape poverty) were partially offset by smaller pushing effects (causing them to fall into poverty), which may explain why existing studies often find little to no impact or only a modest reduction in poverty. For all workers, the pulling effect outweighs the pushing effect by 4.5 percentage points, while the net poverty reduction effect across subgroups ranges from 2.4 to 7.0 percentage points. Further disaggregating our results, for workers who persistently stay in poverty (the chronically poor) or those who fluctuate in and out of poverty from year to year (the transiently poor), we find that the minimum wage can help lift Chinese workers out of both chronic and transient poverty. These findings remain robust across various sensitivity tests, including alternative poverty measures, multiple household

equivalent scales, and a natural experiment analysis examining the impact of the 2004 introduction of the Minimum Wage Regulations on poverty.

The rest of the paper proceeds as follows. Section 2 provides background on Chinese minimum wage regulations. Section 3 describes the data and presents descriptive statistics for key variables. Section 4 outlines empirical methodologies, followed by Section 5, which presents our main results. Section 6 shows the robustness checks, and Section 7 concludes.

2. Historical Evolution of Poverty and The Minimum Wage Policy in China

When China initiated economic reforms in the late 1970s, extreme poverty was pervasive in rural areas and widespread in urban centers. In 1981, the poverty headcount rate stood at 65% in rural areas and 6% in urban areas (Ravallion & Chen, 2007).[7] Since then, China's unprecedented economic growth—averaging 9.4% annually between 1978 and 2019—has driven a dramatic reduction in poverty. According to The World Bank's estimates, based on China's 2010 official poverty standard, an average of 18.7 million people escaped poverty each year during this period (The World Bank & Development Research Center of the State Council of the People's Republic of China, 2022). Never before in history had so many people been lifted out of poverty in such a short time (Naughton, 2018).

To combat poverty, the Chinese government has relied not only on economic growth but also on implementing a series of specific anti-poverty policies starting in the early 1980s (Chen & Démurger, 2014), most of which have targeted rural areas.[8] In urban areas, one of the main policies specifically aimed at poverty reduction has been the minimum income guarantee program (*Dibao*), introduced in the early 1990s and expanded nationwide in 1999. Administered by the Ministry of Civil Affairs, the program aimed to mitigate the fallout from the restructuring

of state-owned enterprises by guaranteeing a minimum income to households earning below a locally determined threshold (Solinger, 2017).

Following its nationwide rollout, *Dibao*'s coverage grew rapidly, increasing from 2.7 million recipients in 1999 to 22.5 million by 2003. The number of urban beneficiaries remained stable until 2011 before gradually declining to 12.6 million by 2017 (Pan, 2020). Empirical research has demonstrated *Dibao*'s effectiveness in alleviating poverty, though limitations persist. Using data from the China Household Income Project (CHIP), Gao, Yang, and Li (2015) find that *Dibao* reduced poverty rates in both 2002 and 2007. However, the program faced challenges in targeting efficiency. While it significantly reduced poverty depth and severity, it fell short of fully eliminating poverty among its target population. Since *Dibao* is funded and managed by local governments, significant regional disparities in coverage and benefit levels have been observed, potentially resulting in differences in its effectiveness. For instance, Wu and Ramesh (2014) find that provinces with higher *Dibao* expenditure experienced faster reductions in poverty rates.

Before transitioning to a market economy, China had no minimum wage policy. Although the country acknowledged the 1928 Minimum Wage-Fixing Machinery Convention of the International Labour Organization in 1984, this acknowledgment carried no binding requirements.[9] In the late 1980s, a few localities introduced minimum wage regulations, but it was not until the Regulations Covering Minimum Wages in Enterprises of 1993 were incorporated into China's new Labor Law in 1994 that a national minimum wage policy was formally established. However, this policy had limited coverage, applying only to full-time workers and urban enterprises.

Under the policy, provincial governments were responsible for setting and adjusting minimum wages annually. Local governments were granted considerable flexibility in determining minimum wage levels, leading to relatively weak enforcement provisions. As a result, many provinces—particularly in central and western China—rarely adjusted their minimum wages, keeping them persistently low and poorly enforced. Consequently, minimum wages often functioned as a nonbinding constraint in practice. During the policy's first decade, weak enforcement and low compliance significantly undermined its effectiveness as a poverty reduction tool, further fueling concerns about its potential adverse effects on employment.

In 2004, China's minimum wage regime became significantly more structured and stringent with the introduction of the Minimum Wage Regulations. These reforms expanded minimum wage coverage to include part-time workers, employees in towns and villages, private non-enterprise units, and workers in small businesses operated by the self-employed. Under the new regulations, provincial governments were mandated to set and adjust local (county-level) minimum wages at least once every two years, considering factors such as local economic development, employment conditions, average wages, consumer prices, minimum living standards, and workers' contributions to social insurance and housing provident funds. Enforcement mechanisms were also significantly strengthened, with penalties for violations increasing from 20–100% to 100–500% of the wages owed (Wang & Gunderson, 2011).

The Minimum Wage Regulations led to substantial increases in minimum wage levels, particularly in the central and western regions, as well as more frequent adjustments (Yang & Zhu, 2012). These regional and temporal variations provide a crucial identification framework for analyzing the impact of minimum wages on economic outcomes. In our 16-province sample,

we recorded 124 minimum wage increases between 2004 and 2009. Over just five years, the average real monthly minimum wage (adjusted to 2009 prices) rose from 346 *yuan* to 563 *yuan*.

Depending on the time and jurisdiction, China's minimum wage levels can either exceed or fall below the poverty line. Our data on minimum wage levels across more than 2,800 counties between 2002 and 2009 indicate that in 8.6% of counties, the minimum wage fell below the poverty line, using the international poverty threshold of PPP US$1.9 per day.[10] In Online Appendix A, we extend the theoretical model of Fields and Kanbur (2007) and demonstrate that, under such conditions, the theoretical impact of the minimum wage on poverty remains indeterminate. In the following sections, we empirically examine this relationship.

3. Data and Summary Statistics

3.1 The Source of Data and Data Editing

Our empirical analysis uses individual-level longitudinal survey data from the China Urban Household Survey (UHS) spanning 2002 to 2009, merged with county-level minimum wage data.[11] This eight-year window covers the period immediately before and after the implementation of the 2004 Minimum Wage Regulations. The use of individual-level UHS data allows us to capture wage and employment decisions at the relevant level of aggregation in response to minimum wage changes while controlling for observed individual-level omitted factors. Additionally, the longitudinal nature of the data enables us to track the same individuals over time, thereby controlling for unobserved time-invariant heterogeneity at the individual level.

A key advantage of the UHS for our study is its longitudinal nature. Although the panel is unbalanced, we carefully match individuals across survey waves using gender, age, educational attainment, work-start year, and length of city residence, along with household identifiers. This

process ensures that we follow the same individuals over multiple years, allowing for a robust control of unobserved individual-level heterogeneity in our regressions.

The UHS is structured as a rolling panel, where sampled households are typically followed for three years before being partially replaced. Local authorities, however, have some flexibility in retaining or replacing households. As a result, individuals in our sample appear for varying numbers of years. Appendix Table 1 shows that most individuals have two or three consecutive observations (approximately 60% and 24% of the sample, respectively), while 7% and 8% have four and five observations, respectively. This relatively short time dimension (T)—a result of the rolling-panel design—shapes our analysis of poverty persistence and transient poverty, as a longer panel would likely yield higher measured rates of persistent poverty.

We provide additional details on the UHS and report individual-level descriptive statistics, including various measures of urban poverty, in Appendix Table 1. Depending on the poverty threshold adopted—such as the World Bank's 2011 PPP standards of US$1.9 or US$3.1 per day, or 50% of the median income—the poverty rate in our sample ranges from 11% to 19%. Using the commonly referenced US$1.9 per day threshold, we estimate a poverty rate of approximately 13%.[12] [13]

To construct our minimum wage database, we collected minimum wage information from local government websites of around 2,800 counties annually from 2002 to 2009.[14] We use county-level minimum wage data rather than province-level data, which is more commonly used in studies covering China (Ni, et al., 2011; Wang & Gunderson, 2011, 2012), for several reasons. First, it allows for a more accurate measure of the minimum wage at the level where it effectively varies. Indeed, the minimum wage frequently varies by county within the same province, even between geographically contiguous neighbors. Second, it enables us to control

for local labor market conditions. Third, the large number of minimum wage changes at the county level provides more variation in the "treatment", aiding in identifying the impact of the minimum wage more accurately. Since counties adjust their minimum wages at different times within a given year, we apply a weighting method to compute an annualized minimum wage measure.[15]

3.2 Poverty and the Minimum Wage

Panel A of Figure 1 presents trends in poverty rate and the ratio of minimum wage to average wage throughout our investigative period from 2002 to 2009. Urban poverty in China steadily declined throughout this period, except for a brief uptick in 2008, likely driven by the global financial crisis. In contrast, the minimum wage-to-average wage ratio rose consistently between 2004 and 2008—the first five years following the implementation of the 2004 Minimum Wage Regulations—before dropping sharply in 2009. This decline coincided with an almost nationwide suspension of minimum wage increases in response to the global financial crisis.

Panel B of Figure 1 depicts the time series of average nominal and real monthly minimum wages spanning 2002 to 2009. The figure also highlights the number of provinces that raised minimum wage levels each year, along with a moving average over the same period. During this time, the national average nominal minimum wage rose from 292 *yuan* to 563 *yuan*. In contrast, the average real minimum wage grew more slowly, particularly before 2004. Between 1996 and 2004, regions that had implemented a minimum wage by 1996 experienced a 90% increase in the average nominal minimum wage, followed by a 178% rise over the subsequent eight years (2004–2012). Additionally, the moving average of provinces adjusting their minimum wages each year indicates more frequent increases starting in 2004.

3.3 Summary Statistics

Table 1 presents summary statistics of individual characteristics by poverty status (poor vs. non-poor) in Panel A and the distribution of educational attainment, number of household members, and working members at the household level in Panel B. The table highlights that within the poor category, there is a disproportionately higher number of minimum wage workers and female household heads compared to the non-poor category. Furthermore, individuals whose highest educational attainment is high school or lower are predominantly seen in the poor category. Poor households typically comprise more than two members, with a larger fraction having only one employed individual compared to non-poor households.

[Insert Table 1 here]

Applying the PPP US$1.9 per day poverty line, Panel A of Table 1 shows that 33% of minimum wage workers fall under the poor category, contrasted with 7% in the non-poor group. On average, the poor are roughly three years younger than the non-poor. Females are notably overrepresented among the poor, constituting approximately 70% of the poor group compared to 44% in the non-poor group. Individuals in poverty tend to have about two years less education than the non-poor and are less likely to be married (74% versus 89%). Among all individual-level characteristics, work experience emerges as the most significant distinguishing factor between the two groups—on average, the poor have nine years of work experience compared to 19 years for the non-poor. The lower section of Panel A suggests that households headed by females are more common among the poor (26%) than the non-poor (17%).

Corroborating the data on years of schooling in Panel A, Panel B illustrates that a higher proportion of individuals with a high school certificate (28% versus 26%) or lower education (38% versus 23% for junior high; 10% versus 3% for elementary or no schooling) are found

among the poor. Conversely, a greater proportion of individuals completing vocational education (12% versus 11%), a two- to three-year vocational college course (23% versus 10%), or a four-year college or graduate degree (13% versus 3%) are seen among the non-poor.

Regarding household size, single-member households (.15% versus .91%) or households with two members (6% versus 22%) are considerably fewer among the poor. Contrarily, non-poor households are less likely to have more than two members; for instance, 77% of non-poor households have at least three members compared to 94% of the poor. Table 1 concludes by indicating that households with only one working member are more prevalent among the poor (38% for the poor and 28% for the non-poor)—a ten-percentage-point disparity. A nine-percentage-point gap is observed for households with two or three working members (71% for non-poor and 62% for poor households).

Thus, the summary statistics in Table 1 support the hypothesis that minimum wage workers are overrepresented among the poor. The poor also tend to have fewer years of schooling and are more likely to live in households that are female-headed, have more members, and have fewer working members.

4. Empirical Strategy

Our empirical strategy exploits the panel structure of the data to examine the impact of minimum wage changes on poverty transitions. Specifically, we estimate a first-differenced multinomial logit model to assess the probability that workers and households move into or out of poverty in the post-2004 period. This framework allows us to capture both the "pushing" and "pulling" effects of the minimum wage on poverty dynamics.

Let $Poor_{i,t}$ be a binary variable equal to 1 if worker *i* is poor at time t, and 0 otherwise. The change in poverty status between $t-1$ and t is denoted by $\Delta Poor_{i,t}$, from which we distinguish three possible scenarios:

$$\begin{aligned}\Delta Poor_{i,t} = Poor_{i,t} - Poor_{i,t-1} &= 1 \quad \text{if non-poor to poor } (\text{pushing into poverty}) \\ &= -1 \quad \text{if poor to non-poor } (\text{pulling out of poverty}) \\ &= 0 \quad \text{if stays poor or non-poor} \quad .\end{aligned}$$

Our baseline poverty line is set at PPP US$1.9 per person per day. To assess sensitivity, we also employ three alternative thresholds: PPP US$1.25 per day, PPP US$3.1 per day, and 50% of the median income.

A worker is defined as "treated"—affected by the minimum wage, denoted as *TREAT*—if their wage at time $t-1$ is below the minimum wage level at time t:[16]

$$\begin{aligned}TREAT_i = 1 \quad &\text{if } W_{t-1} < MW_t \\ = 0 \quad &\text{otherwise} \quad .\end{aligned}$$

Equations (1) and (2) represent the probability of being poor at times $t-1$ and t, respectively:

$$Poor_{i,t-1} = \beta_1 (MW^c_{i,t-1} \times TREAT_i) + \mathbf{X}'_{i,t-1}\gamma + \mathbf{Z}'_{r,t-1}\varphi + f_i + r_{t-1} + \varepsilon_{i,t-1} \tag{1}$$

$$Poor_{i,t} = \beta_1 (MW^c_{i,t} \times TREAT_i) + \mathbf{X}'_{i,t}\gamma + \mathbf{Z}'_{r,t}\varphi + f_i + r_t + \varepsilon_{i,t}, \tag{2}$$

Subtracting (1) from (2) eliminates unobserved time-invariant individual heterogeneity, f_i, and yields the first-differenced specification, estimated in a multinomial logit framework:

$$\Delta Poor_{i,t} = \beta_1 (\Delta MW^c_{i,t} \times TREAT_i) + \Delta\mathbf{X}'_{i,t}\gamma + \Delta\mathbf{Z}'_{r,t}\varphi + \Delta r_t + \Delta\varepsilon_{i,t}. \tag{3}$$

where $\Delta MW^c_{i,t} = MW^c_{i,t} - MW^c_{i,t-1}$ denotes the change in the minimum wage that worker *i* experiences in county *c* between $t-1$ and *t*. The vector $\mathbf{X}_i$ includes individual-level controls (years of schooling, experience and its square, marital status, Han ethnicity, local *hukou* status, years of local residence, and occupation and industry dummies).[17] $\mathbf{Z}_r$ includes prefecture-level characteristics (per capita GDP and unemployment rates),[18]and we further control for city-level

foreign direct investment (FDI), which may correlate with minimum wage setting and labor market or household outcomes affecting poverty status. Finally, r denotes time fixed effects and ε the idiosyncratic error term. This identification strategy offers two main advantages. First, first-differencing removes unobserved time-invariant heterogeneity at the individual level. Second, by conditioning on the full set of lagged information at $t-1$, the multinomial logit specification mitigates concerns about selection bias.

A key feature of our specification is the interaction term $TREAT \times MW$, which captures variation in treatment intensity, and enables us to distinguish the baseline difference between treated and non-treated workers while also identifying the incremental effect of minimum wage increases on treated workers. Such an approach captures how the magnitude of a minimum wage increase affects poverty transitions.[19] Consequently, the coefficient β_1 in Equation (3) represents the "pushing" or "pulling" effect on poverty resulting from the increase in the minimum wage.

Larger minimum wage increases may influence poverty transitions through three potential channels, although their relative importance is ultimately an empirical question beyond the scope of this paper. Our results should therefore be interpreted with this caveat in mind. First, and most plausibly, larger increases may induce nonlinear labor-supply responses through interactions between the formal and informal sectors (Gindling, 2024), thereby affecting household poverty dynamics. Second, they may prompt upward wage adjustments due to wage rigidity, a mechanism most relevant when the pre-reform minimum wage lies below the equilibrium wage. Third, compliance incentives may matter: while larger minimum wage increases can enhance policy visibility and the perceived credibility of enforcement, they may simultaneously reduce employers' willingness to comply.

Of these channels, nonlinear labor supply responses are the most plausible in the Chinese context. By contrast, wage rigidity matters only when the minimum wage lies below equilibrium wages, while compliance incentives are more speculative and context-dependent, since larger increases may either strengthen enforcement or discourage compliance. Accordingly, our empirical specification does not assume any particular mechanism but instead tests their net effects in the data.

Importantly, our specification does not assume that larger minimum wage hikes necessarily translate into stronger poverty-reduction effects. Instead, the interaction term allows the data to reveal whether the magnitude of wage increases alters poverty transitions for treated workers. This approach complements prior research: Dube (2019) finds that U.S. minimum wage increases primarily reduced poverty among those at the very bottom of the income distribution, while Giupponi, et al. (2024) show that in the U.K., the largest gains accrued to middle-income households, reflecting tax–benefit interactions and limited working hours among the lowest earners. Both studies highlight heterogeneous distributional effects of minimum wages, reinforcing our approach to let treatment intensity vary in the Chinese context. By distinguishing the baseline difference between treated and non-treated workers and capturing the incremental effect of minimum wage increases on treated workers, the interaction term provides key insight into how the magnitude of minimum wage increases shapes poverty transitions.[20]

One concern in the minimum wage literature is spillovers— the possibility that wage floors affect workers beyond the statutory threshold, such as those earning slightly above the minimum or those indirectly influenced through firm-level adjustments or local labor market dynamics. This raises the risk that our model could misattribute some minimum wage effects if non-treated individuals are assumed to be an entirely unaffected control group. Addressing this concern, we

report the spillover results in Appendix Table 10 and find that small effects occur in the immediate range above the new minimum wage. For workers earning within 10% above the threshold, we detect a very small but statistically significant positive effect, while the estimates for those 10–20% and 20–30% above are positive but statistically insignificant, and they disappear entirely beyond 30%. This pattern suggests that wage floors can influence workers just above the statutory minimum, but that the effects dissipate quickly as one moves further up the wage distribution.

Beyond the baseline specification, we examine heterogeneity by worker groups defined by gender and household head status, and we test robustness across alternative equivalence scales and by gender at the household level. We also investigate whether the minimum wage enables a permanent or temporary escape from poverty by distinguishing between its effects on chronic and transient poverty.[21] Finally, we examine regional disparities in outcomes across China's primary geographic areas and assess whether they align with the underlying effects of the minimum wage on wages and employment.

5. The Impact of Minimum Wages on Poverty

5.1 Effects on Transitions Into and Out of Poverty

Our empirical methodology examines the impact of minimum wages on the likelihood of transitioning into and out of poverty between 2004 and 2009. We estimate a series of first-differenced multinomial logit models using Equation (3). The estimation results, which account for clustering at the county level, reflect the variations in minimum wage that occur at this geographic level.

Table 2 illustrates the average marginal effects of changes in the minimum wage on various groups, separately considering transitions into and out of poverty. Each estimation uses a

poverty line benchmark of PPP US$1.9 per day. Our findings show that, across all three model specifications and five groups, the impact of minimum wage increases in elevating individuals out of poverty is both positive and statistically significant. This suggests that higher minimum wages have helped some workers escape poverty. However, it is noteworthy that the effects of pushing individuals into poverty are also positive and significant, indicating that some workers have been pushed into poverty due to these wage increases.[22] Nonetheless, the pulling effects consistently outweigh the pushing effects, affirming the modest net poverty reduction impact of minimum wages reported in prior research. As part of our robustness checks, we employ three additional poverty lines and confirm that the results remain consistent across all poverty measures and affected groups.[23]

[Insert Table 2 here]

Column 1 of Table 2 shows that, on average, the likelihood of workers transitioning out of poverty, as opposed to maintaining their status quo, is 7.3 percentage points higher following a minimum wage increase, with other factors held constant. However, the chances of workers slipping into poverty rather than remaining in the same economic status also increased by 2.8 percentage points if the minimum wage went up. The pulling effect outweighs the pushing effect by a margin of 4.5 percentage points.

Across different subgroups, the pulling effects fluctuate between 4.3 and 9.7 percentage points, while the pushing effects vary from 1.6 to 4.1 percentage points. Female workers experience the largest net effect at 6.1 percentage points, while household heads with two or more working members experience the smallest effect at 2.7 percentage points.

Columns 2 and 3 indicate that the general pattern holds even after controlling for prefecture and year fixed effects or province-specific time trends, with the net poverty reduction effect

ranging between 2.4 and 7.0 percentage points. These findings support the conclusion that the minimum wage has a modest impact on poverty reduction.

5.2 Effects on Poverty at the Household Level

Our analysis thus far has been based on empirical evidence from individual-level estimates. However, poverty is fundamentally a household-level phenomenon. To account for this, we reexamine our findings from a household perspective using four equivalence scales: (1) per capita income, which augments the individual-level findings; (2) the "Oxford" or "OECD" scale, which assigns a value of 1 to the initial household member, 0.7 to each additional adult, and 0.5 to each child; (3) the "OECD-modified" scale, which assigns a value of 1 to the household head, 0.5 to each additional adult member, and 0.3 to each child; and (4) the "square root" scale, which adjusts household income by dividing it by the square root of household size (OECD, 2013).

[Insert Figure 2 here]

Figure 2 visually depicts the results of multinomial logit regressions of minimum wage changes on poverty transitions across the four equivalence scales, highlighting the 32 average marginal effects at the household level. All models include a full set of individual characteristics, macroeconomic controls, and prefecture and year fixed effects, except for province-specific time trends.

Figure 2 illustrates the dual impact of minimum wage increases—lifting some households out of poverty while pushing others into it. Notably, the “pulling” effect consistently outweighs the “pushing” effect. These findings align with the individual-level outcomes. For instance, using the baseline PPP US$1.9 a day poverty line, the per capita income result in the first row indicates that, on average, households are 3.7 percentage points more likely to escape poverty rather than remain in their current status following a minimum wage increase. At the same time, they are

1.4 percentage points more likely to fall into poverty. Overall, the pulling effect exceeds the pushing effect by 2.3 percentage points.

Under the Oxford (OECD) scale, the "pulling" effect exceeds the "pushing" effect by 1.2 percentage points. The OECD-modified scale shows an even greater net poverty reduction effect of 3.1 percentage points. The most pronounced difference appears under the square root scale, where the pulling effect surpasses the pushing effect by 6.8 percentage points.

Subgraphs using alternative poverty thresholds—PPP US$1.25 a day, PPP US$3.1 a day, and 50% of the median income—show a similar pattern. These household-level findings in Figure 2 reinforce the conclusion drawn from individual-level regressions, confirming that minimum wage increases have a modest impact on poverty alleviation in China.

5.3 Effects on Chronic and Transient Poverty

Over time, certain workers or households may experience enduring poverty, known as the chronically poor, while others may oscillate in and out of poverty from year to year, known as the transiently poor. As highlighted by Jalan and Ravallion (1998) and Duclos, Araar, and Giles (2010), differentiating chronic poverty from transient poverty is crucial, not just for descriptive purposes but also for implementing effective policies related to short-term relief, long-term investment, and targeted poverty alleviation (Yue & Li, 2015). To enhance our analysis from Section 5.1, we investigate whether minimum wages are effective in facilitating a permanent escape from poverty or merely provide temporary relief.

Following Jalan and Ravallion (1998), we categorize poverty into four distinct groups:

1. The "persistently poor" refers to individuals whose annual income y_t consistently falls at or below the poverty line z in all years ($y_t \leq z \ \forall \ t$).

2. The "not persistently poor" comprises individuals whose average income $\bar{y}$ is at or below the poverty threshold, yet their annual income surpasses the poverty line in certain years ($\bar{y} \leq z$ and $y_t > z$ for some t). These first two categories collectively denote the chronically poor.
3. The "transiently poor" are those whose average income exceeds the poverty line, but their annual income falls at or below the poverty line in some years ($\bar{y} > z$ and $y_t \leq z$ for some t).
4. The "never poor" are those who maintain an annual income above the poverty line in all years ($y_t > z \ \forall \ t$).

Table 3 presents the percentages of individuals in each of the four poverty categories, disaggregated by gender, household head's gender, region, and a dummy variable for household heads in households with two or more workers. Using the PPP US$1.9 per day poverty line over the 2002–09 period, the table indicates that, on average, 12% of all workers are persistently poor, less than 1% are not persistently poor, 1.3% experience transient poverty, and the vast majority—86%—are never poor. These figures suggest that chronic poverty is far more prevalent than transient poverty in urban China.[24]

Furthermore, the gender comparison highlights a significant disparity: approximately 20% of female workers experience either chronic or transient poverty, compared to less than 9% of men. The share of persistently poor workers is 10 percentage points higher among women than men. However, among persistently poor household heads, the gender gap narrows to 3.5 percentage points.

In households with two or more working members, the proportion of persistently poor heads dwindles to a mere 1%. As expected, regional disparity also plays a role; the more prosperous

eastern region has the lowest percentage of persistently poor workers (10%), while the less developed west records the highest (14%).

[Insert Table 3 here]

To explore the effects of the minimum wage on alleviating chronic or transient poverty, we estimate an ordered logit model. We define an ordered dependent variable that equals 1 for the chronically poor, 2 for the transiently poor, and 3 for the never-poor.[25] The dependent variable is regressed on the ratio of the minimum wage to the average wage (the predictor variable) and our standard set of control variables.

Figure 3 displays the ordered logit outcomes for various groups. The figure shows that a higher predictor variable significantly increases the log odds of being in a higher poverty category for both all workers and female workers. Specifically, if the predictor increases by one unit, the log odds of being in a higher category will increase by 0.4 for both all workers and female workers, holding other variables constant. The log odds for household heads and female household heads are also positive, while they are negative for household heads with two or more workers. However, these estimates are imprecise and thus not statistically significant.

The right-hand side of Figure 3 depicts the proportional odds ratios. With a one-unit increase in the predictor variable, the odds of being in the never-poor category versus being in the combined chronically poor and transiently poor categories are 1.5 times greater for both all workers and female workers, given that other variables remain constant in the model. Similarly, with a one-unit increase in the predictor variable, the odds of being in the combined never-poor and transiently poor categories versus being chronically poor are 1.5 times greater for all workers and female workers, with other variables kept constant. Thus, the results in Figure 3 suggest that

the minimum wage can assist Chinese workers—including female workers—in escaping both chronic and transient poverty.

6. Robustness

6.1 Sensitivity Tests: Other Poverty Lines

To ascertain the robustness of our baseline results, we estimate Equation (3) using three alternative poverty lines: PPP US$1.25 a day, PPP US$3.1 a day, and 50% of the median income. The corresponding marginal effects are presented in Table 4. The model in Table 4 includes a full set of individual-level characteristics, macroeconomic controls, and year fixed effects, but excludes province-specific time trends.

The results consistently align with the findings from the baseline regression using the PPP US$1.9 per day poverty line. While some pushing effects are statistically indistinguishable from zero, pulling effects generally outweigh pushing effects across all poverty measures and affected groups. This reinforces the conclusion that, during our investigation period, the minimum wage had a modest impact on poverty reduction.

[Insert Table 4 here]

6.2 Wages and Employment

With a substantial proportion of Chinese workers covered by the minimum wage and the policy's strong enforcement during the period of our analysis,[26] one might have anticipated a substantial impact of the minimum wage on poverty. However, our empirical findings show a modest effect. Why might this be the case? One plausible explanation is the duality of the minimum wage effects—it simultaneously creates winners and losers. The pulling effect lifts

some workers out of poverty, while the pushing effect pushes others into it. This duality may dilute the overall impact, resulting in the observed modest effect on poverty reduction.

To understand the mechanisms driving the minimum wage's effect on poverty, this section examines its effects on wages and employment. A minimum wage imposition is expected to alter the wages of affected workers. If these workers see no change in their wages, it could indicate lax compliance with the law, weak enforcement, or both. Consequently, the minimum wage does not serve as a binding constraint and does not significantly impact the wage distribution.

Another consideration is that increments in the minimum wage may precipitate job losses for some workers, subsequently affecting their income. Therefore, examining the effects of wage and employment offers potential insights into why the minimum wage can either alleviate or exacerbate poverty.

We estimate the wage and employment effects using Equation (4), replacing the dependent variable with the log of the real monthly wage for the wage equation and a binary employment indicator (1 if employed, 0 otherwise) for the employment equation.[27] Table 5 presents the estimates of wage effects in the first row and employment effects in the second row, with a full set of control variables, using PPP U$1.9 per day as the poverty line. Column 1 reports the differences-in-differences (DD) estimates, while Columns 2 to 5 present the differences-in-differences-in-differences (DDD) estimates. Results are shown separately for the full sample and for China's three major regions.

[Insert Table 5 here]

Table 5 demonstrates that, generally, the minimum wage policy had positive impacts on wages and negative (but statistically insignificant) effects on employment probabilities, which

aligns with the existing literature on China[28] for the entire sample. Column 1 suggests that the minimum wage increased wages by 26.4%, but it diminished the employment probability by .2 percentage points. The wage effect is statistically significant at the 1% level, while the employment effect is insignificant. Columns 3 and 4 show this pattern recurring for female household heads and household heads in households with two or more working household members, respectively. Conversely, Columns 2 and 5 reveal only small and statistically insignificant positive effects on wages for household heads and female workers.

Table 5 also examines heterogeneous effects across regions. The eastern region exhibits the largest wage effect at 42.8%, along with a statistically significant 1.9 percentage-point decline in employment probability for all treated workers. The region also shows strong positive wage effects for female household heads and household heads with two or more workers, though employment effects for these groups are insignificant. In contrast, the western region shows a smaller wage effect of 11.5%, which is only marginally significant, alongside an insignificant employment effect (3.3 percentage-point decrease). Nearly all subgroup estimates in western China are insignificant, reinforcing existing evidence of weaker minimum wage enforcement and compliance in the region. The central region exhibits a small, insignificant positive wage effect and a 4.1 percentage-point increase in employment probability. This pattern is consistent with monopsony behavior among state-owned enterprises in Central China during the mid-2000s (Dong & Putterman, 2000, 2002), as these firms gradually adjusted to the market economy while competition remained imperfect.

In summary, Table 5 suggests that the minimum wage acts as a binding constraint in China, particularly in the eastern and central regions, where it effectively raises workers' wages. However, the policy also leads to disemployment, especially in East China, where compliance

and enforcement are stronger. These findings indicate that while some workers escape poverty when minimum wage increases push low-wage earnings above the poverty line, others may fall into poverty if job losses result from the same policy.

6.3 Compliance and Enforcement

Quantitative evidence suggests that the introduction of the Minimum Wage Regulations significantly improved compliance and enforcement, particularly in urban areas with more formal labor markets, which are the focal point of our study. Compliance with minimum wage regulations and government enforcement are crucial factors when assessing the impact of the minimum wage on wage increases and poverty reduction.

Ye, Gindling, and Li (2015) provide evidence of widespread compliance with China's minimum wage law in 2009, reporting that fewer than 3.5% of full-time workers earned below the official monthly minimum wage. Similarly, using a nationally representative survey of internal migrants from 2011 to 2012, Yang and Gunderson (2019) estimate that the non-compliance rate among employers of migrant workers was only around 5%. The study by Fang and Lin (2015) is the most directly comparable to ours. Using UHS data from 2002 to 2009, they find that the 2004 Minimum Wage Regulations significantly reduced non-compliance, with the non-compliance rate falling from 7.28% before 2004 to 5.62% after 2004.

While lax enforcement of the minimum wage is common in developing countries (Khamis, 2013), this issue is less prominent in China. Fang and Lin (2015) calculate an enforcement index—the ratio of the number of workers earning almost exactly the ongoing minimum wage to the number of workers earning less than the minimum wage—and find that minimum wage enforcement in China generally improved from 2002 to 2009, particularly after 2004. They also apply violation measures developed by Bhorat, Kanbur, and Mayet (2013) and show that

minimum wage violations significantly declined after 2004 in East and Central China. These findings suggest that high compliance and strong enforcement have enabled the minimum wage to effectively function as a wage floor for workers in China.

6.4 Using the 2004 Minimum Wage Regulations as a Natural Experiment

To ensure the robustness of our results, we treat the implementation of Minimum Wage Regulations in 2004 as a natural experiment and estimate a Difference-in-Differences model to assess the impact of the minimum wage on poverty. To verify the reliability of our DD results, we conduct three placebo tests: (1) evaluating the common trend assumption, (2) substituting the dependent variable with variables unlikely to be affected (e.g., non-labor income), and (3) analyzing a matched sample to detect potential bias from compositional changes. All placebo tests, detailed in Online Appendix E, confirm the robustness of our main DD results.

The equation for our DD estimation is as follows:

$$Y_{i,t} = \alpha TREAT_i + \beta\left(TREAT_i \times POST_t\right) + \mathbf{X}'_{i,t}\eta + \mathbf{Z}'_{r,t}\varphi + \sigma_r + \gamma_t + P_1 t + P_2 t^2 + R_j \cdot t + \varepsilon_{i,t} \quad (4)$$

where $Y_{i,t}$ is a binary variable that equals 1 if an individual *i* is poor at year t and 0 otherwise. We use a baseline poverty line of PPP US$1.9 per person per day and also consider other measures like PPP US$1.25 a day, PPP US$3.1 a day, and 50% of the median income. Alongside the poverty headcount indices, we employ the poverty gap index (FGT1) and the poverty severity index (FGT2) proposed by Foster, Greer, and Thorbecke (1984) as dependent variables. Incorporating these additional poverty measures facilitates our exploration of minimum wage effects on poverty using a continuous dependent variable context, thereby highlighting more intricate facets of poverty.

TREAT is a dummy that equals 1 if the worker's wage at time $t-1$ is lower than the minimum wage level at time t and 0 otherwise; $POST_t$ is defined as a binary indicator that

equals 0 if $t < 2004$ and 1 for $t \geq 2004$. Our coefficient of interest, the interaction term β, measures the effect of the minimum wage on poverty. The coefficient α captures the average difference in Y between treated and untreated groups that is common to both pre- and post-2004 periods. $\boldsymbol{X}_i$ is a vector of control variables for characteristics of worker *i*, including educational attainment, age, age squared, marital status, Han ethnicity, *hukou* residency permit status, years of local residence, occupations, and industrial sectors. $\boldsymbol{Z}_r$ controls for city-level variables including per capita GDP and unemployment rates. As in the multinomial logit models, we again incorporate city-level gross FDI inflows as they are likely intertwined with minimum wage, labor market, and household outcomes that influence poverty status.

We also include city fixed effects σ_r to capture time-invariant unobserved heterogeneity at the city level and year fixed effects γ_t to control for unobserved factors that are time-varying but constant across individuals. The province-specific time trend $P_1 t$, its quadratic term $P_2 t^2$, and region-specific time-variant fixed effects $R_j \cdot t$ are introduced to relax the common time trend assumption of the baseline DD model. Lastly, $\varepsilon_{i,t}$ represents the error term.

Difference-in-Differences Estimates

Table 6 presents the DD estimates based on Equation (4), using the poverty line of PPP US$1.9 a day and including a full set of control variables. The findings suggest that the introduction of the 2004 Minimum Wage Regulations contributed to poverty reduction. The first column presents our baseline estimates for all wage workers, while Columns 2 to 5 delineate the results of DDD models, considering whether the minimum wage worker is a household head (Column 2), a female household head (Column 3), a household head in households with two or more working family members (Column 4), or a female worker (Column 5).

The key parameter of interest is the estimated coefficient $\hat{\beta}$—the interaction term between the *TREAT* and the *POST* dummies—which quantifies the effect of the minimum wage on poverty.[29] As highlighted in Section 6.3, compliance with statutory minimum wages has been high, and enforcement has intensified since 2004. Moreover, the policy has successfully increased workers' wages (see Section 6.2). The introduction of the 2004 Minimum Wage Regulations, therefore, likely impacted poverty. Indeed, the first row in Column 1 of Table 6 demonstrates that the 2004 Minimum Wage Regulations reduced the likelihood of poverty by 2.6 percentage points for treated workers.[30]

[Insert Table 6 here]

Estimates from Columns 2 to 5 indicate that the effect of the minimum wage on poverty is negative and statistically significant at the 1% level, ranging between 1.9 and 2.8 percentage points. For household heads, the minimum wage reduced the likelihood of poverty by 1.9 percentage points (Column 2). The largest reduction, 2.8 percentage points, was observed among female household heads (Column 3). For households with two or more working members, the minimum wage decreased the likelihood of poverty by 2.4 percentage points (Column 4). Regarding female workers, the minimum wage reduced their likelihood of poverty by 1.5 percentage points (Column 5).[31] Thus, the DD and DDD results in Table 6 corroborate the finding that the minimum wage can alleviate poverty, albeit modestly.[32]

Table 6 also shows the effect of the minimum wage policy on the poverty gap (FGT1) and poverty severity (FGT2). Column 1 indicates that the minimum wage reduced the poverty gap by 1.5 percentage points and poverty severity by 0.9 percentage points for the entire sample. The DDD estimates suggest that the largest reductions in both the poverty gap and severity occurred among female household heads (1.7 and 1.1 percentage points, respectively, Column 3)

and household heads with two or more working members (1 and 0.5 percentage points, respectively, Column 4). In contrast, the reductions were much smaller for other subgroups (household heads in Column 2 and female workers in Column 5). These additional findings suggest that the minimum wage not only helped decrease poverty rates but also reduced the poverty gap and poverty severity. However, the effects, while positive, tend to be modest.[33]

In accordance with our theoretical model detailed in Online Appendix A, the effect of the minimum wage on poverty may also depend on where the poverty line is set relative to the minimum wage and the poverty index used. To check the sensitivity of our results, we re-estimate the DD and DDD models with the same full set of controls, using two alternative absolute poverty lines, PPP US$1.25 a day and PPP US$3.1 a day, and a relative poverty line, 50% of median income. For each poverty line measure, we separately assess the effects on poverty incidence, poverty gap, and poverty severity.

Appendix Table 4 presents the DD and DDD estimates, demonstrating that across all alternative poverty lines and poverty measures, the minimum wage contributed to poverty reduction for all worker groups. It lowered poverty incidence, narrowed the poverty gap, and reduced poverty severity. Using the PPP US$1.25 per day threshold, the minimum wage reduced the likelihood of poverty for all workers by 2.4 percentage points. As expected, this effect is smaller (0.9 percentage points) when using the higher poverty line of PPP US$3.10 per day. With the relative poverty measure, the reduction amounts to 1.6 percentage points. The estimates for subgroups are predominantly negative and statistically significant, except for the insignificant effect on poverty incidence among female workers under the PPP US$3.10 per day threshold. These findings confirm that the introduction of the minimum wage helped reduce the likelihood of poverty by 0.8 to 3 percentage points, depending on the worker group and poverty

measure. Among absolute poverty lines, the largest poverty reduction effect is observed for female household heads, with a decrease of 2.5 to 3 percentage points.

Effects on Poverty by Region

Considering China's vastness and regional diversity, the impact of the minimum wage on poverty may vary across different regions. We estimate these heterogeneous effects using Equation (4) for the more prosperous east, the developing center, and the less developed west. Specifically, East China includes more advanced provinces and megacities such as Beijing, Shanghai, Guangzhou, and Shenzhen, where the minimum wage was a significant policy tool as China underwent its vital transition to a market economy—particularly during the second phase of economic reform post-1993 (Naughton, 2018). Since minimum wage adjustments in East and Central China were more frequent and enforcement stricter during our study period, the effects should be more pronounced in these areas compared to the less developed west.

Appendix Table 5 presents estimates using a poverty line of PPP US$1.9 a day and a full set of individual controls, city-level macroeconomic variables, city and year fixed effects, province-specific time trends, and region-year fixed effects. The results underline considerable regional disparities. While the minimum wage led to poverty reductions in the eastern and central regions, the impact in western China appears indeterminate and dependent on household composition.

Generally, the estimates for all workers in the three regions are negative (Column 1). They are statistically significant in the eastern and the central regions but insignificant in the west, suggesting the policy was more effective in China's more prosperous areas. Column 1 shows that the minimum wage significantly reduced poverty incidence, with a 5.3 percentage-point decline in the east. In contrast, the reduction in the center was only one percentage point, while

the 4.9 percentage-point decline in the west was statistically insignificant. Similar regional differences are observable for the effects on both the poverty gap and poverty severity. The minimum wage introduction reduced the poverty gap by 2.9 percentage points in the east, 0.5 percentage points in the center, and 0.9 percentage points (insignificant) in the west. The reduction in the severity of poverty was 1.7 percentage points in the east, 0.4 percentage points in the center, and 0.2 percentage points (insignificant) in the west.

Consistent with the results in Table 6, in the more prosperous eastern China, we find the greatest reduction in poverty incidence, poverty gap, and poverty severity for female household heads. Household heads with two or more workers experience the second-largest reductions, though their effects are approximately half the size of those for female household heads. While household heads and female workers also experience reduced poverty in the east, the effects are small and mostly insignificant. In contrast, in the western region, we find evidence of increased poverty for household heads and female workers, and very slight poverty reduction for household heads with two or more workers in their household and all workers. This finding—that minimum wages intensified poverty for household heads and females—aligns with evidence that minimum wage policies have negatively impacted employment for these groups in the western region, particularly for female workers (as discussed in Section 6.2).

7. Conclusion

Over the past two decades, China has implemented a series of reforms to its minimum wage system. These reforms have led to significant increases in both the size and frequency of minimum wage adjustments, particularly after the introduction of the Minimum Wage Regulations in 2004. In theory, raising the minimum wage can increase the earnings of low-wage workers, potentially lifting them out of poverty—if they remain employed. However,

higher labor costs due to higher minimum wages may reduce labor demand, resulting in job losses that could push some individuals into poverty.

Our findings indicate that both the introduction of the Minimum Wage Regulations in 2004 and subsequent minimum wage increases during the 2004-2009 period contributed to poverty reduction in urban areas, though the overall effects remained modest. While the minimum wage lifted some individuals out of poverty, it also pushed others into it. The larger "pulling" effects were partially offset by smaller "pushing" effects, resulting in a limited net impact on poverty.

Our study has several limitations, and some areas warrant future investigation. First, we acknowledge that our dataset is restricted to urban residents and excludes rural-to-urban migrants. While this strengthens the precision of our analysis due to the low mobility of urban residents, minimum wage increases may impact urban and migrant workers differently. Second, while we focus on the formal sector, the minimum wage could also indirectly affect the informal sector. Third, our study focuses on the period from 2002 to 2009. Although the minimum wage increased rapidly during this period, the average wage also rose significantly. More recently, the minimum wage has continued to rise rapidly despite a general slowdown in wage growth—until the COVID-19 crisis brought an almost complete halt to minimum wage increases in 2020. This suggests that the balance between the "pushing" and "pulling" effects documented in our paper may have shifted over time, and that the initial net poverty reduction effect of minimum wage increases might no longer hold.

While the documented effect of China's minimum wage on poverty may seem modest in percentage terms, its impact is significant given the country's large population—even a small percentage change lifts millions out of poverty. However, raising the minimum wage can also lead to job losses, potentially pushing some households into poverty. Can the minimum wage be

an effective tool for poverty reduction? Our findings suggest that, when combined with targeted anti-poverty and social assistance policies, the minimum wage can help reduce poverty—but it is neither the sole nor the primary solution. Its role should be thoughtfully considered. After all, there is no such thing as a free lunch.

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Table 1. Summary Statistics by Poverty Status, 2002–09

Panel A: Summary statistics, by poverty status				
	Poor		Non-poor	
	Mean	Std. Dev.	Mean	Std. Dev.
Individual-level characteristics				
Minimum wage worker	.33	.47	.07	.25
Age	37.67	10.77	40.92	8.96
Men	.30	.46	.56	.50
Years of schooling	10.80	3.02	12.65	2.78
Han ethnicity	.97	.17	.97	.17
Married, spouse present	.74	.44	.89	.31
Local *hukou*	.97	.17	.98	.13
Years of residence	28.26	14.35	31.15	14.64
Income (annual, *yuan*)	886	1,276	22,639	18,229
Work experience (years)	8.73	11.42	19.38	10.20
Household-level characteristics				
Female household head	.26	.44	.17	.38

Panel B: Frequency distribution (percent), by poverty status		
	Poor	Non-poor
Individual-level characteristics		
Educational attainment		
Elem. school or no schooling	10.08	2.55
Junior high school	38.26	22.73
High school	28.08	25.96
Vocational school	10.60	12.24
Two-year college	9.59	23.44
Four-year college or grad. degree	3.39	13.08
Household-level characteristics		
No. of household members		
1	.15	.91
2	6.33	21.89
3	60.85	55.41
4	19.89	12.80
5	10.28	7.63
≥ 6	2.50	1.35
No. of working members		
1	37.50	28.10
2	58.84	62.45
3	3.18	8.50
4	.42	.88
5	.04	.06
≥ 6	.01	.01

Notes: Individuals aged 16–60 over the 2002–09 period. The number of observations is 56,234 for the poor and 379,597 for the non-poor. Income is adjusted for inflation and the differing living costs among provinces by applying the PPP-adjusted deflator developed by Brandt and Holz (2006) and updated from Carsten Holz's website. Poverty line: PPP US$1.9 a day.

Table 2. Pulling and Pushing Effects of the Minimum Wage on Poverty, 2004–09

Poverty line: PPP US$1.9 a day	*Average marginal effects of changes in the minimum wage*					
	(1)		(2)		(3)	
	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty
All workers	.073***	.028***	.068***	.024***	.064***	.023***
	(.003)	(.003)	(.003)	(.003)	(.002)	(.003)
Household heads	.097***	.041***	.089***	.034***	.083***	.032***
	(.004)	(.005)	(.004)	(.005)	(.004)	(.004)
Female household heads	.051***	.019***	.056***	.019***	.045***	.017***
	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)
Household heads with two or more workers	.043***	.016***	.043***	.014**	.039***	.015***
	(.003)	(.006)	(.003)	(.006)	(.003)	(.005)
Female workers	.097***	.036***	.089***	.029***	.083***	.029***
	(.004)	(.005)	(.004)	(.005)	(.004)	(.005)
Δ Individual controls	Yes		Yes		Yes	
Δ Macroeconomic controls	Yes		Yes		Yes	
Prefecture and year fixed effects	No		Yes		No	
Province-specific time trends	No		No		Yes	
Pseudo R^2 (all workers)	.492		.509		.523	
Pseudo R^2 (household heads)	.497		.517		.533	
Pseudo R^2 (female household heads)	.489		.502		.527	
Pseudo R^2 (household heads with two or more workers)	.541		.556		.570	
Pseudo R^2 (female workers)	.471		.490		.505	

Notes: Estimates are average marginal effects of multinomial logit estimations. The reference category is $\Delta Poor_{i,t} = 0$ (no change of poverty status for worker i between $t-1$ and t). Clustered robust standard errors at the county level are in parentheses. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesales and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. Prefecture-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Observations of Column 1 are 115,910 for all workers, 50,817 for female workers, 60,261 for household heads, 14,334 for female household heads, and 38,066 for household heads with two or more workers. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 3. Chronic and Transient Poverty, 2002–09

Poverty line: PPP US$1.9 a day	N	Chronically poor		Transiently poor ($\bar{y} > z, y_t \leq z$ for some t)	Never poor ($y_t > z, \forall\, t$)
		Persistently poor ($y_t \leq z, \forall\, t$)	Not persistently poor ($\bar{y} \leq z, y_t > z$ for some t)		
All workers	251,164	11.88	.57	1.31	86.24
Female workers	120,095	17.21	.85	1.67	80.27
Male workers	131,069	6.99	.31	.98	91.72
Household heads	105,851	3.12	.15	.82	95.90
Female household heads	29,644	5.62	.24	1.25	92.88
Male household heads	76,207	2.15	.12	.65	97.08
Household heads with two or more workers	69,972	1.14	.10	.52	98.24
Region					
East	129,962	10.15	.49	1.48	87.89
Central	83,768	13.42	.69	1.03	84.85
West	37,434	14.44	.55	1.36	83.65

Source: China Urban Household Survey 2002–09, authors' calculation.

Notes: y_t is the worker's income in year t, z is the poverty line, and $\bar{y}$ is the average income of the worker over the years in the sample. We use the panel of the UHS data to distinguish four categories of poverty (from 1 to 4) as in Jalan and Ravallion (1998): 1. Persistently poor (in all years the worker's income (y) is at or below the poverty line (z); 2. Not persistently poor (the worker's average income ($\bar{y}$) is at or below the poverty line (z) and whose income (y) is above the poverty line (z) for some years); 3. Transiently poor (the worker's average income ($\bar{y}$) is above the poverty line (z) and whose income (y) is at or below the poverty line (z) for some years); 4. Never poor (in all years the worker's income (y) is above the poverty line (z). Chronic poverty is defined as the persistently poor (category 1) and the not persistently poor (category 2).

The unit for the chronically poor, the transiently poor, and the never poor is %.

Table 4. Pulling and Pushing Effects of the Minimum Wage on Poverty: Alternative Poverty Lines

Poverty line	(1) PPP US$1.25 a day		(2) PPP US$3.1 a day		(3) 50% of median income	
Marginal effects of changes in the minimum wage	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty
All workers	.024***	.017***	.126***	.013**	.081***	.062***
	(.002)	(.002)	(.005)	(.006)	(.003)	(.004)
Female workers	.032***	.023***	.135***	.005	.102***	.080***
	(.003)	(.003)	(.009)	(.011)	(.005)	(.007)
Household head	.034***	.025***	.141***	-.009	.104***	.077***
	(.003)	(.003)	(.008)	(.012)	(.005)	(.007)
Female household head	.016***	.005	.123***	.041***	.067***	.062***
	(.004)	(.004)	(.012)	(.011)	(.007)	(.010)
Household head with two or more workers	.008***	.004*	.137***	.029**	.055***	.063***
	(.002)	(.002)	(.008)	(.013)	(.004)	(.007)
Δ Individual controls	Yes		Yes		Yes	
Δ Macroeconomic controls	Yes		Yes		Yes	
Prefecture and year fixed effects	Yes		Yes		Yes	

Notes: Estimates are average marginal effects of multinomial logit estimations. The reference category is $\Delta Poor_{i,t} = 0$ (no change of poverty status for worker *i* between $t-1$ and t). Clustered robust standard errors at the county level are in parentheses. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables and do not include province-specific time trends. Prefecture-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Observations of Column 1 are 115,910 for all workers, 50,817 for female workers, 60,261 for household heads, 14,334 for female household heads, and 38,066 for household heads with two or more workers. * $p < .10$, ** $p < .05$, *** $p < .01$.

Table 5. Estimates of Wage and Employment Effects of the Minimum Wage, 2002–09

Dependent variable: wage(log) for the wage equation employed = 1 for the employment probability equation	(1) All workers	(2) Household heads	(3) Female household heads	(4) Household heads with two or more workers	(5) Female workers
			Entire sample		
Effect on wages	.265***	-.039	.223***	.204**	.058
	(.022)	(.042)	(.080)	(.090)	(.036)
Effect on employment probability	.002	-.011	.002	-.029	-.008
	(.006)	(.014)	(.025)	(.028)	(.011)
			East		
Effect on wages	.428***	.017	.328***	.386***	.099**
	(.030)	(.055)	(.104)	(.115)	(.048)
Effect on employment probability	-.019***	.018	.030	-.010	.016
	(.006)	(.014)	(.027)	(.036)	(.012)
			Central		
Effect on wages	.038	-.067	-.036	-.216	.034
	(.033)	(.076)	(.133)	(.170)	(.063)
Effect on employment probability	.041***	-.076**	-.085	-.078	-.049**
	(.011)	(.032)	(.058)	(.057)	(.024)
			West		
Effect on wages	.115*	-.055	.169	.017	.056
	(.067)	(.119)	(.211)	(.198)	(.117)
Effect on employment probability	-.033	-.004	.144*	.021	-.016
	(.024)	(.046)	(.086)	(.063)	(.045)
Individual controls	Yes	Yes	Yes	Yes	Yes
Prefecture-level controls	Yes	Yes	Yes	Yes	Yes
Prefecture and year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	Yes	Yes	Yes	Yes	Yes
No. of obs.	140,083	140,083	67,594	67,407	140,083
adj. R^2 (wage equation)	.620	.629	.595	.585	.634
adj. R^2 (employment equation)	.046	.056	.090	.089	.053

Notes: Robust standard errors clustered at the county level in parentheses. * p < .10, ** p < .05, *** p < .01. Column (1) is the DD model and columns (2) to (5) are DDD models. In Column (1) the minimum wage effect on poverty is the estimated coefficient of the interaction term β in Equation (4); in columns (2) to (5), the minimum wage effects on poverty are the estimated coefficients of triple interaction terms in the DDD model. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local hukou, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. Prefecture-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Columns (2) to (5) also include relevant interaction terms for TREAT and POST with the corresponding dummy (household heads in Model (2), female household heads in Model (3), household heads with two or more workers in Model (4), and female workers in Model (5)).

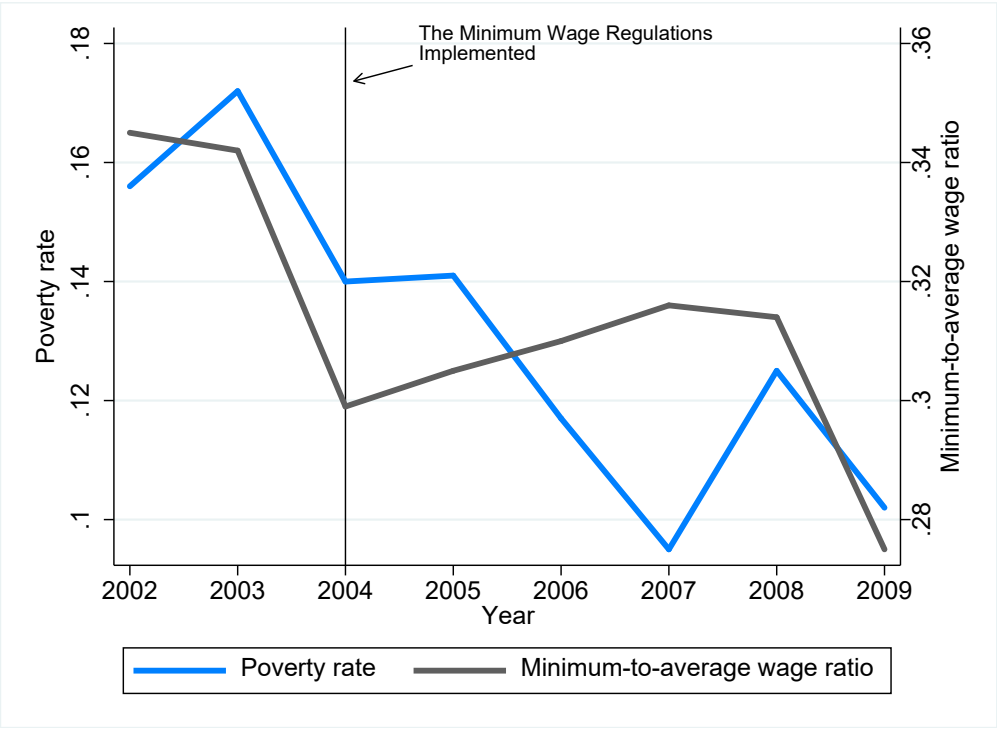
Table 6 Difference-in-Differences Estimates of the Effect of the Minimum Wage Policy on Poverty

Dependent variable: Poverty incidence = 1 if poor = 0 if non-poor Poverty gap = poverty line – income Poverty severity = poverty gap squared	(1)	(2)	(3)	(4)	(5)
	All workers	Household heads	Female household heads	Household heads with two or more workers	Female workers
Effect on poverty incidence	-0.026***	-0.019***	-0.028***	-0.024***	-0.015***
	(0.003)	(0.005)	(0.007)	(0.006)	(0.005)
Adj. R^2 (poverty incidence)	0.260	0.263	0.189	0.189	0.263
Effect on poverty gap	-0.015***	-0.005**	-0.017***	-0.010***	-0.006***
	(0.002)	(0.002)	(0.004)	(0.007)	(0.002)
Adj. R^2 (poverty gap)	0.265	0.268	0.201	0.200	0.268
Effect on poverty severity	-0.009***	-0.003*	-0.011***	-0.005**	-0.003**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Adj. R^2 (poverty severity)	0.216	0.219	0.167	0.166	0.219
No. of obs.	140,083	140,083	67,585	67,398	140,083
Individual controls	Yes	Yes	Yes	Yes	Yes
City-level macroeconomic controls	Yes	Yes	Yes	Yes	Yes
City and year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	Yes	Yes	Yes	Yes	Yes

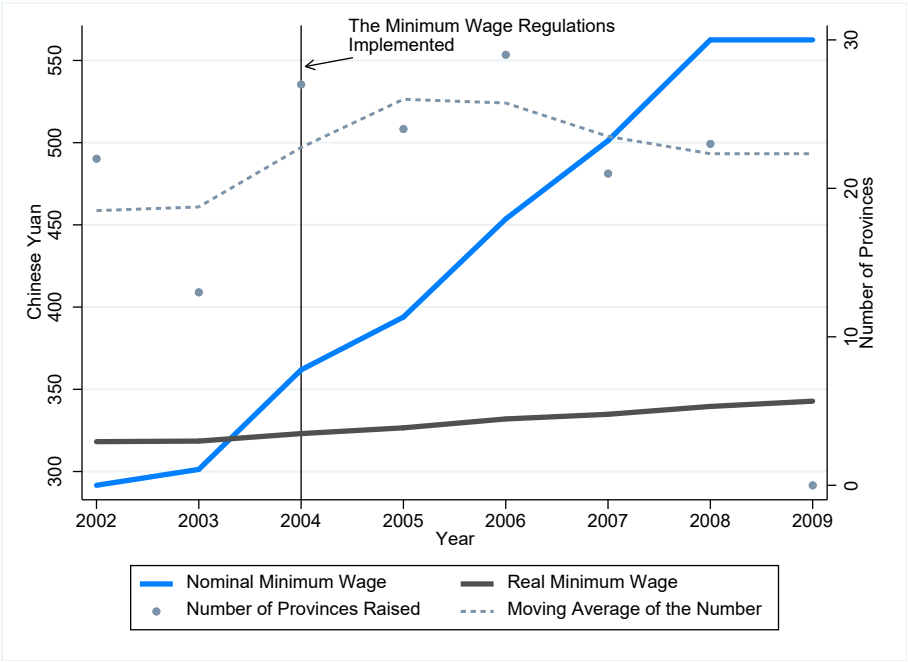
Notes: Poverty line: PPP US$1.9 a day. Robust standard errors clustered at the county level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Column (1) is the DD model and columns (2) to (5) are DDD models. In Column (1) the minimum wage effect on poverty is the estimated coefficient of the interaction term β in Equation (4); in columns (2) to (5), the minimum wage effects on poverty are the estimated coefficients of triple interaction terms in the DDD model. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. City-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Columns (2) to (5) also include relevant interaction terms for *TREAT* and *POST* with the corresponding dummy (household heads in Model (2), female household heads in Model (3), household heads with two or more workers in Model (4), and female workers in Model (5)).

Figure 1. Poverty and the Minimum Wage, 2002–09

Panel A

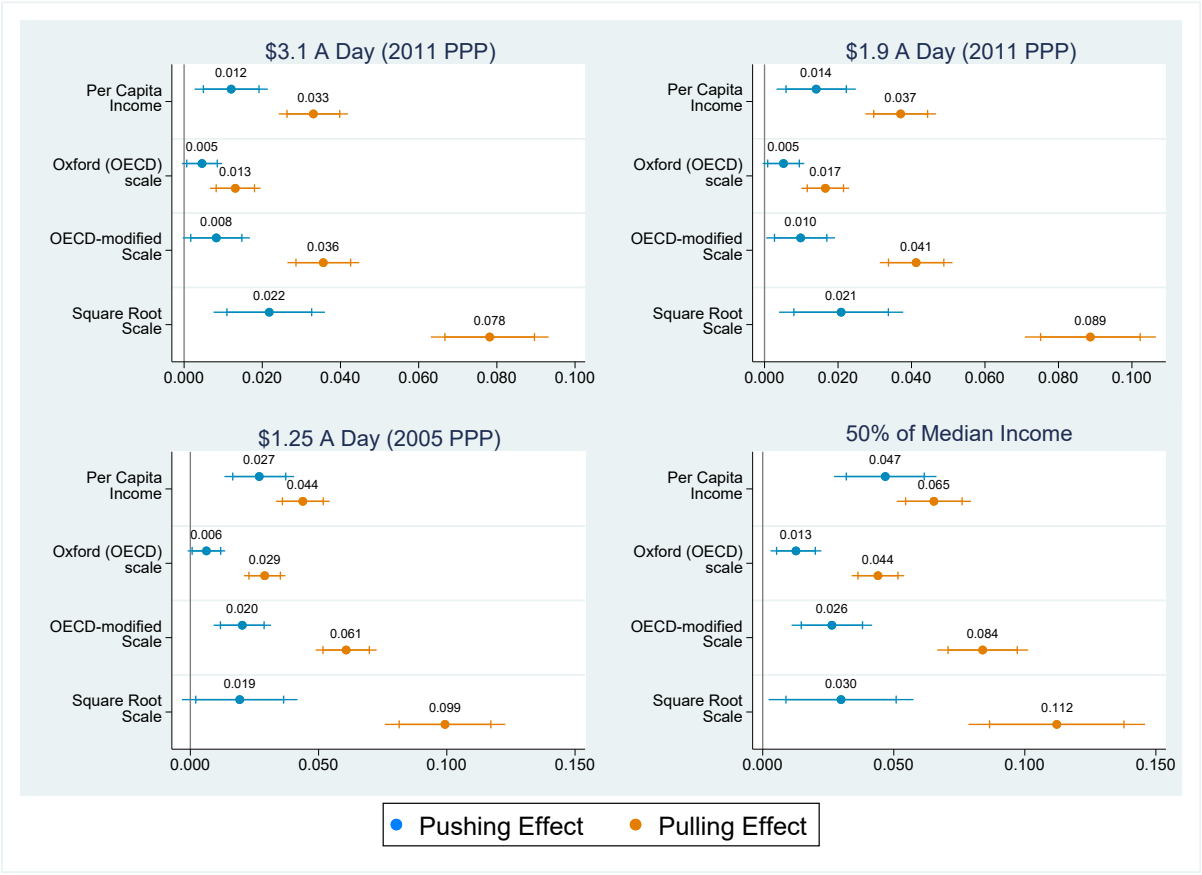


Panel B



Source: China Urban Household Survey 2002–09, authors' calculation.
Notes: Data have been adjusted for inflation and the differing living costs among provinces by applying the PPP-adjusted deflator developed by Brandt and Holz (2006). Poverty rates are calculated using PPP US$1.9 a day as the poverty line. Nominal and real minimum wages are averages at the provincial level using county minimum wage data. No minimum wage increases in 2009 due to the global financial crisis.

Figure 2. Pulling and Pushing Effects of the Minimum Wage on Poverty at the Household Level, by Equivalent Scale and Poverty Measure



Source: China Urban Household Survey 2002–09, authors' calculation.
Notes: Range bars are 90% confidence intervals and horizontal lines are 95% confidence intervals.

Figure 3. Chronic and Transient Poverty, Ordered Logit Estimates
Poverty line: PPP US$1.9 a day

Source: China Urban Household Survey 2004–09, authors' calculation.
Notes: The ordered logit model uses the panel of the UHS data to distinguish three categories of poverty (from 1 to 3) as in Jalan and Ravallion (1998): 1. The "chronically poor": grouping persistently poor (in all years the worker's income y is at or below the poverty line z), and not persistently poor (the worker's average income $\bar{y}$ is at or below the poverty line z and the income y is above the poverty line z for some years); 2. The "transiently poor": the worker's average income $\bar{y}$ is above the poverty line z and the income y is at or below the poverty line z for some years; 3. Never poor: in all years the worker's income y is above the poverty line z. The ordered log-odds estimate shows a one-unit increase in the minimum wage-to-average wage ratio on the expected level of poverty, given other variables are held constant in the model. The odds ratio represents a one-unit increase in the minimum wage-to-average wage ratio on the expected level of poverty, given other variables are held constant in the model. All models include individual, occupation, industry controls, prefecture and year fixed effects, province linear and quadratic time trends, and region-year fixed effects. All estimations omit the last category of the occupation and industry variables. Range bars in the graph are 95% confidence intervals.

Online Appendix

A. Urban Household Survey Data

The UHS is a continuous, large-scale socio-economic survey conducted by the National Bureau of Statistics of China aimed at studying the conditions and standards of living of urban households, in principle, defined as households with both urban and rural residency permits (*hukou*) as long as they have been living in a city for at least six months. Following this definition, the UHS contains some rural-to-urban migrant households with local residency permits. In practice, however, most migrants from rural parts of China working in urban areas without a (local) urban household residency permit are not included in the surveys. Consequently, our analysis focuses on workers with *hukou* only and our results should not be interpreted as being representative of the whole population working in cities.

The survey adopts stratified random sampling that involves dividing the population into homogeneous subgroups (strata) and selecting random samples from each stratum. The procedure comprises three steps. First, the UHS determines three strata according to the size of cities: large and medium-sized cities (prefecture-level and above), counties, and townships. Second, it determines the sample size of each stratum based on the proportion of the stratum population to the provincial population. Third, it sorts employed individuals' annual average wages in descending order and successively calculates the cumulative population for each city. Then, according to the sample size obtained from the second step, it randomly and systematically draws samples from the survey cities.

Over the 2004 to 2009 period, 65,400 representative households participated in the UHS across China. The National Bureau of Statistics of China assigns these households to cities and townships based on the proportion of the population. The procedure for selecting survey households contains two steps. The first step is a one-time large sample survey while the second step draws a small sample from the large sample that belongs to regularly surveyed households to collect their daily consumption data. The large sample survey is conducted every three years to obtain individual/household information such as age, education, employment and income, and its serves as the foundation for sampling schemes and evaluations for a regular household survey. In the large-sample survey, each city or county employs stratified, multi-stage, and probability proportional to size (PPS) sampling to draw sample households in a random and

systematic manner. Based on the Statistics Act of the People's Republic of China, the UHS indicates that the sampling task should be carried out under strictly random sampling procedures, and selected households cannot be easily changed except for force-majeure circumstances (such as moving out of the city). If some selected households are missing or refuse to participate in the following years, they can be replaced by drawing other households rigorously following the aforementioned procedure.

While the UHS is not publicly available, the National Bureau of Statistics of China allows limited access for academic research to the microdata for up to 16 provinces. We rely on this 16-province sample which includes most of the economically significant provinces in China. Overall the sample represents 65% of the total population and covers 60% of the counties in the country. A comparison of the descriptive statistics on some key variables from the UHS with 2005 1% Census data for the 15 provinces not in the sample indicates that the UHS sample is representative of urban China as a whole (results are available on request). Note that the individual-level data is an unbalanced panel. The UHS handbook (Wei 2006) indicates that the sampled households are followed and replaced after three years; in practice, however, local authorities have the flexibility to retain some households above the term and others less than the indicated three years. We use several individual characteristics (gender, age, educational attainment, year when an individual began to work, and length of stay in the current city) along with household ID numbers, to carefully match the same individuals over time, and then create a longitudinal identifier for all observations.

We report the panel structure of the data in Appendix Table 1, which displays the frequency distribution of the number of observations per individual (Panel B). According to the general survey guidelines discussed above, the UHS is a rolling panel in the sense that one-third of surveyed households should usually be replaced by new ones each year but with some flexibility at the local level to keep some households in the panel for more than three years. The numbers in Panel B are consistent with these general guidelines. For most individuals, we have two or three consecutive observations (60% and 24%, respectively) while for 7% and 8% of individuals, we have four and five observations, respectively. The UHS panel feature is useful for our estimations as it allows us to remove unobserved time-invariant individual-level heterogeneity.

Appendix Table 1 Summary Statistics of Individuals Aged 16–60

Panel A – Summary statistics	*Mean*	*Std. Dev.*	*Min.*	*Max.*
Individual-level characteristics				
Age	40.50	9.29	16	60
Men	0.52	0.50	0	1
Income (annual, *yuan*)	19,831	18,515	0	302,654
Years of schooling	12.41	2.88	0	19
Han ethnicity	0.97	0.17	0	1
Married with spouse present	0.88	0.33	0	1
Local *hukou*	0.98	0.14	0	1
Work experience (years)	18	10.96	0	45
Years of residence	30.77	14.64	0	60
Minimum wage worker	0.10	0.30	0	1
Poverty rate (by measure)				
PPP US$1.25 a day	0.11	0.31	0	1
PPP US$1.9 a day	0.13	0.34	0	1
PPP US$3.1 a day	0.19	0.39	0	1
50% of median income	0.15	0.35	0	1
Household-level characteristics				
Female household head	0.18	0.38	0	1

Panel B – Frequency distributions	*Percent*		*Percent*
Individual-level characteristics			
Education level		Perc. of individuals with	
Elementary school or no schooling	3.52	7 obs.	0.06
Junior high school	24.74	6 obs.	1.68
High school	26.23	5 obs.	7.68
Vocational school	12.03	4 obs.	7.12
2-year college (associate degree)	21.65	3 obs.	23.85
4-year college and grad. degrees	11.83	2 obs.	59.60
Household-level characteristics			
No. of household members		No. of working members	
1	0.67	1	31.05
2	17.07	2	61.32
3	57.10	3	6.83
4	15.00	4	0.74
5	8.45	5	0.06
≥ 6	1.72	≥ 6	0.01

Source: China Urban Household Survey 2002–09, authors' calculation.

Note: Our sample comprises the working-age population aged 16 to 60 and all years between 2002 and 2009. The number of observations is 435,831. The income has been adjusted for inflation and the differing living costs among provinces by applying the PPP-adjusted deflator developed by Brandt and Holz (2006). Similar to Li *et al.* (2013), we convert the international PPP poverty threshold of $1.25 per day per person into *yuan* using the PPP exchange rate of 3.46 *yuan* to the US dollar in 2005 (Ravallion & Chen 2007), and we treat this PPP US$1.25 a day poverty line as the rural poverty line by converting it to 2002–09 prices using the rural consumer price index from the National Bureau of Statistics of China. Then urban absolute poverty lines are equal to the rural poverty lines adjusted by the urban-rural-urban cost-of-living differential of 1.3876 in 2002, 1.3780 in 2003, 1.3583 in 2004, 1.3503 in 2005, 1.3506 in 2006, 1.3393 in 2007, 1.3278 in 2008, and 1.3206 in 2009 taken from Brandt and Holz (2006) and updated from Carsten Holz's website. For the PPP poverty threshold of $1.9 and $3.1, we use the PPP exchange rate of 3.493 *yuan* to the US dollar in 2011 (The World Bank 2011).

Theoretical Predictions of the Minimum Wage on Poverty

As discussed in Fields and Kanbur (2007) and Gindling and Terrell (2010), the effect of minimum wage increases on poverty is theoretically indeterminate. The effect depends on a range of factors—the effects of minimum wages on wages and employment, the degree of income sharing in society (in the form of unemployment insurance or otherwise) and within households, the household context of low-income workers, and the level of the minimum wage as compared to the poverty line.

Against this backdrop and with reference to the seminal work of Fields and Kanbur (2007), we theoretically explore how the minimum wage may affect poverty. To simplify matters, we abstract from a range of possible confounding factors considered by Fields and Kanbur (2007), and assume in particular no income sharing either within society or within households. At the same time, in contrast to Fields and Kanbur (2007), we relax the competitive market assumption and allow for a more general setting in which a higher minimum wage will not necessarily result in increased unemployment.[1] In the context of this more general setting and under certain circumstances, raising the minimum wage can increase poverty, have no effect on it, or reduce it, irrespective of the degree of poverty aversion. Apart from the degree of poverty aversion, the effect of minimum wage increases on poverty may depend on where the minimum wage is set relative to the poverty line and on the wage elasticity to the minimum wage increase.

Let mw be the minimum wage and assume that the minimum wage applies equally to all sectors and occupations of a country and that a single homogenous type of labor is supplied by workers and demanded by firms. Denote $L(mw)$ as the labor demand function. Thus the total wage payment associated with the minimum wage is $W = mw \cdot L(mw)$. We further assume no entry into or exit from the labor force, and no income sharing in the society, and normalize the working population at size one. Let the number of employed workers be $L = L(mw)$ and $1 - L$ be the number of unemployed. Following the introduction of a binding minimum wage, all workers who are employed receive wage mw and the unemployed receive nothing.[2] The effect of a minimum wage increase on total wage payment W can be shown as follows:

[1] For example, under a monopsonistic labor market, a higher minimum wage can increase both wages and employment in the short run (Bhaskar *et al.* 2002; Manning 2011). A modified version of the monopsony mechanism that may be particularly relevant for China has been advanced by Dong and Putterman (2000, 2002).

[2] For simplification purposes we further assume that there is no non-labor income and only look at low-wage workers instead of workers across the entire distribution of labor earnings.

$$\frac{dW}{dmw} = L + mw\frac{dL}{dmw} = L(1+\varepsilon).$$

That is, whether the total wage payment W rises or falls following a minimum wage increase depends on the elasticity of demand for labor ε.[3]

To measure poverty, Foster *et al.* (1984) propose a class of well-known poverty indices evaluated relative to a fixed poverty line z. More precisely the FGT poverty index P_α calculates the difference between the poverty line z and income y_i of each poor individual i as a percentage of z, raises it to a power α, and averages it over the entire population. With q the number of the poor and n the size of the total population, the FGT poverty index is

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z-y_i}{z}\right)^\alpha.$$

For $\alpha = 0$, the index collapses to the poverty headcount ratio (FGT0), which measures the proportion of people under the poverty line. For $\alpha = 1$, the index gives the poverty gap index (FGT1), which is a measure of the intensity of poverty. For $\alpha = 2$, the index measures the square of the poverty gap (FGT2) and is a parameter that weighs income inequality along with poverty. The parameter α is viewed as a measure of "poverty aversion" because a larger α gives greater emphasis to the poorest of the poor. The higher the value of α is, the greater the sensitivity of the poverty index is to changes in the income of the poorest as compared to the income of the not-so-poor (Fields & Kanbur 2007).

Together with α, another important factor to consider is whether the minimum wage is set below the poverty line z (Case A) or above it (Case B):

Case A: $0 < mw < z$

The poverty measure is

$$P_\alpha = L\left(\frac{z-mw}{z}\right)^\alpha + (1-L)\left(\frac{z-0}{z}\right)^\alpha = L\left(\frac{z-mw}{z}\right)^\alpha + (1-L) \qquad \text{(A.1)}$$

When the minimum wage is below the poverty line, the effect of minimum wage increases on poverty depends on the poverty aversion measure. It is then helpful to distinguish between three sub-cases, as follows.

[3] We provide a detailed derivation of this and other equations in Online Appendix.

Case A1: $\alpha = 0$

When $\alpha = 0$, the poverty measure is the poverty headcount ratio.

$$P_\alpha = P_0 = 1$$
$$\Rightarrow \frac{dP_0}{dmw} = 0.$$

Since the minimum wage is below the poverty line, all workers are poor— whether they are employed or whether they have been made unemployed because the higher minimum wage has depressed the demand for labor. In this case, raising the minimum wage does not affect poverty.

Case A2: $\alpha = 1$

In this case, the effect of raising the minimum wage on poverty is obtained by differentiating Equation (A.1) with respect to mw. After rearranging, we get:

$$\frac{dP_1}{dmw} > 0 \Leftrightarrow \varepsilon_a > \frac{\frac{mw}{z}}{1-\left(1-\frac{mw}{z}\right)} = 1$$
$$\frac{dP_1}{dmw} < 0 \Leftrightarrow \varepsilon_a < 1,$$

where ε_a is the absolute value of the elasticity of the demand for labor ε. Assuming poverty aversion $\alpha = 1$ and that the demand for labor is elastic, poverty thus increases with an increase in the minimum wage. By contrast, a higher minimum wage has a poverty-reducing effect if labor demand is inelastic. Intuitively P_1 measures the sum of the "poverty deficits" of the poor. Following an increase in the minimum wage, the income of the unemployed stays unchanged at zero while the total income of the employed decreases if the demand for labor is elastic and increases if it is inelastic.

Case A3: $\alpha = 2$

In this case,

$$\frac{dP_2}{dmw} > 0 \Leftrightarrow \varepsilon_a > \frac{2\left(1-\frac{mw}{z}\right)}{2-\frac{mw}{z}}$$
$$\frac{dP_2}{dmw} < 0 \Leftrightarrow \varepsilon_a < \frac{2\left(1-\frac{mw}{z}\right)}{2-\frac{mw}{z}}. \qquad \text{(A.2)}$$

Equation (A.2) implies that for a given elasticity ε_a, a higher minimum wage to poverty line ratio $\frac{mw}{z}$ is more likely to exacerbate the severity of poverty, such that $\frac{dP_2}{dmw} > 0$; and vice versa.

Case B: $0 < z \leq mw$

When the minimum wage is above the poverty line, no employed workers are poor whereas all unemployed workers are poor. The poverty measure can be written as:

$$P_\alpha = L\left(\frac{z-mw}{z}\right)^\alpha + (1-L)\left(\frac{z-0}{z}\right)^\alpha = 1-L. \tag{A.3}$$

Using the condition in Equation (A.3), the effect of raising minimum wages on poverty is obtained by differentiating P_α with respect to mw:

$$\frac{dP_\alpha}{dmw} = -\frac{dL}{dmw} = -\left(\eta - \frac{L\cdot mw}{W}\right)\frac{W}{mw^2},$$

where $\eta = \frac{dW}{dmw}\frac{mw}{W}$ is the wage elasticity. Thus, we can obtain three possible effects of the minimum wage on poverty:

$$\frac{dP_\alpha}{dmw}\begin{cases} > & 0 \text{ if } \eta < \dfrac{L\cdot mw}{W} \\ = & 0 \text{ if } \eta = \dfrac{L\cdot mw}{W} \\ < & 0 \text{ if } \eta > \dfrac{L\cdot mw}{W} \end{cases}$$

That is, if the minimum wage is set above the poverty line, a rise in the minimum wage can increase poverty, reduce it, or have no effect on it. The direction of the effect is not dependent on the poverty aversion parameter α but depends on whether the wage elasticity η is smaller, larger, or equal to the ratio of minimum wage payments to total wage payments.

In sum, the theoretical model shows that whether poverty rises or falls with a higher minimum wage is indeterminate. The effect depends on where the minimum wage is set relative to the poverty line and on several other factors. As in Fields and Kanbur (2007), the poverty aversion parameter α is one of these factors. But in contrast to their model, our more general approach can also demonstrate that an increase in the minimum wage has the effect of reducing poverty if

$\alpha = 1$. Specifically, our model suggests that if the minimum wage is set above the poverty line, raising the minimum wage could increase poverty, reduce it, or have no effect on it, irrespective of α. In such a case the outcome depends on whether the wage elasticity is smaller, larger, or equal to the ratio of minimum wage payment to total wage payment. If the minimum wage, however, is set below the poverty line, a higher minimum wage increases poverty when the labor demand elasticity is high but reduces poverty when the elasticity of demand for labor is low. In this case, the effect also depends on the poverty aversion measure.[4]

[4] An increase in the minimum wage could impact not only low-wage workers, but workers with wages above the minimum wage level. Our model does not consider such wage spillover effects, motivated by findings in Fang *et al.* (2021). They find that in China wage spillovers from minimum wage increases are very small for those whose wages are just above the new minimum wage level, and essentially zero for those higher up in the wage distribution.

B. Supplementary Results of IV Regressions

Appendix Table 2 Instrumental Variable Regression Results, 2004–09

Poverty line: PPP US$1.9 a day Dependent variable: Poverty incidence = 1 if poor = 0 if non-poor Poverty gap = poverty line – income Poverty severity = poverty gap squared	(1)	(2)	(3)	(4)	(5)
	All workers	Household heads	Female household heads	Household heads with two or more workers	Female workers
Effect on poverty incidence	-0.174***	-0.200***	-0.083***	-0.100***	-0.215***
	(0.042)	(0.049)	(0.032)	(0.034)	(0.061)
Effect on poverty gap	-0.082***	-0.092***	-0.039***	-0.047***	-0.101***
	(0.020)	(0.022)	(0.015)	(0.016)	(0.029)
Effect on poverty severity	-0.053***	-0.060***	-0.025***	-0.031***	-0.066***
	(0.013)	(0.015)	(0.010)	(0.011)	(0.019)
First-stage results					
Instrumental variable[a]	0.029***	0.026***	0.053***	0.046***	0.025***
	(0.006)	(0.005)	(0.013)	(0.011)	(0.006)
F statistics[b]	27.259	25.149	17.459	18.580	18.008
Individual controls	Yes	Yes	Yes	Yes	Yes
City-level macroeconomic controls	Yes	Yes	Yes	Yes	Yes
City and year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	Yes	Yes	Yes	Yes	Yes
N	110,236	57,060	10,456	19,429	48,674

Notes: Robust standard errors clustered at the county level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The independent variable is the "effective" minimum wage variable of city *c* in year *t*, which is defined as the minimum wage relative to some level of local earnings that is unaffected by the minimum wage and its proxies for local living standards. The same effective minimum wage variable has been used in Lee (1999) and Autor et al. (2016). Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesales and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. City-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows.

a The instrumental variable is the interaction between the log minimum wage and the average log median real wage for the city over the sample period.

b Kleibergen-Paap rk Wald F statistic reported. The critical value of the Stock-Yogo (2005) weak ID test at 10% maximal IV size is 16.38 and is 8.96 at 15% maximal IV size.

C. Supplementary Results for Chronic and Transient Poverty

Appendix Table 3 Summary Statistics of Individuals Aged 16–60, by Poverty Status

Poverty line: PPP US$1.9 a day	Chronically poor		Transiently poor ($\bar{y} > z, y_t \leq z$ for some t)	Never poor ($y_t > z, \forall\, t$)
	Persistently poor ($y_t \leq z, \forall\, t$)	Not persistently poor ($\bar{y} \leq z, y_t > z$ for some t)		
Age (years)	37.39	37.56	39.94	41.15
	(11.05)	(9.85)	(10.06)	(9.11)
Men	0.31	0.29	0.39	0.55
	(0.46)	(0.45)	(0.49)	(0.50)
Income (annual, *yuan*)	754.83	5747.26	1703.29	24348.59
	(1203.68)	(1777.32)	(1359.79)	(19364.28)
Years of schooling	10.87	11.12	11.39	12.72
	(3.04)	(2.68)	(3.00)	(2.79)
Han ethnicity	0.97	0.97	0.97	0.97
	(0.18)	(0.16)	(0.17)	(0.17)
Married with spouse present	0.72	0.76	0.80	0.89
	(0.45)	(0.42)	(0.40)	(0.32)
Local *hukou*	0.97	0.98	0.97	0.98
	(0.18)	(0.13)	(0.16)	(0.13)
Work experience (years)	8.30	12.00	14.84	19.51
	(11.37)	(11.19)	(12.35)	(10.39)
Years of residence	28.14	29.07	31.39	31.46
	(14.37)	(13.57)	(14.58)	(14.69)
Minimum wage worker	0.34	0.53	0.25	0.06
	(0.47)	(0.50)	(0.43)	(0.24)
N	29,840	1,421	3,290	216,613

Source: China Urban Household Survey 2002–09, authors' calculation.

Notes: y_t is the worker's income in year t, z is the poverty line, and $\bar{y}$ is the average income of the worker over the years in the sample. We use the panel of the UHS data to distinguish four categories of poverty (from 1 to 4) as in Jalan and Ravallion (1998): 1. Persistently poor (in all years the worker's income (y) is at or below the poverty line (z); 2. Not persistently poor (the worker's average income ($\bar{y}$) is at or below the poverty line (z) and the income (y) is above the poverty line (z) for some years); 3. Transiently poor (the worker's average income ($\bar{y}$) is above the poverty line (z) and the income (y) is at or below the poverty line (z) for some years); 4. Never poor (in all years the worker's income (y) is above the poverty line (z). Chronic poverty is defined as the persistently poor (category 1) and the not persistently poor (category 2).

Placebo Tests: Using the 2004 Minimum Wage Regulations as a Natural Experiment

Placebo Test 1: Anticipatory and Post-treatment Effects

The key identifying assumption in a DD model is that, in the absence of treatment, the difference between the treatment and the control groups would be constant over time. Our first placebo test follows the approach taken by Granger (1969) for testing for causality to assess the common trend assumption by estimating the following equation used in Autor (2003):

$$Y_{i,t} = \underbrace{\sum_{\tau=1}^{m} \beta_{-\tau} D_{i,t-\tau}}_{\text{Post-treatment effects}} + \beta_0 D_{i,t} + \underbrace{\sum_{\tau=1}^{q} \beta_{+\tau} D_{i,t+\tau}}_{\text{Anticipatory effects}} + \mathbf{X}'_{i,t}\eta + \mathbf{Z}'_{r,t}\varphi + \sigma_r + \gamma_t + \varepsilon_{i,t}, \quad \text{(A.4)}$$

where $D_{i,t}$ is the product of the time and treatment dummies and τ denotes time. Equation (A.4) is an outcome equation of the contemporaneous treatment with leads and lags. The coefficients $\beta_{-\tau}$ measure the impact of the treatment delivered at time *t* that affects the outcome at time $t + \tau$. If $\beta_{-\tau} \neq 0$, the treatment at time *t* has a lagged impact at time $t + \tau$ (the post-treatment effect). Likewise $\beta_{+\tau}$ measures the impact of the treatment delivered at time *t* that affects the outcome at time $t - \tau$. If $\beta_{+\tau} \neq 0$, the treatment at time *t* foretells the outcome at time $t - \tau$ (the anticipatory effect).[5] Granger causality test examines whether past $D_{i,t}$ predicts $Y_{i,t}$ while future $D_{i,t}$ does not (Angrist & Pischke 2009). Under the assumption of no anticipatory effects, $D_{i,t}$ causes $Y_{i,t}$ and $\beta_{+j} = 0$ for $j = 1, \ldots, J$, we can test the joint hypothesis $H_0 : \beta_{+1} = \beta_{+2} = \ldots = \beta_{+J} = 0$. Rejecting H_0 invalidates the causal interpretation of the estimates.[6]

Appendix Table 6 presents the results of estimating Equation (A.4) for the four poverty headcount measures. It shows that the common trend assumption of our DD and DDD models holds by the Granger causality tests. For each poverty measure, the first specification includes the full set of individual-level characteristics, occupation and industry controls, and both city and year fixed effects, and the second specification additionally controls for province-specific linear time trends. The estimated coefficients of all leads in Row 1 of Appendix Table 6 are statistically insignificant—showing no anticipatory effects. By contrast, Row 2 highlights a sharp contemporaneous effect in the year of the policy change *t* when China implemented the

[5] If $\beta_0 \neq 0$, the current treatment at time *t* affects the current outcome at time *t* (the contemporaneous effects).
[6] Note that Granger causality test checks on whether causes happen before consequences and not vice versa. Not rejecting H_0 implies only a necessary condition for the parallel trend assumption to hold.

Minimum Wage Regulations (in 2004). The estimates of lags in Row 3 are all negative and in general statistically significant, implying the minimum wage policy had post-treatment effects that reduced poverty. Joint hypothesis tests at the lower half of Appendix Table 6 show that we do not reject the null H_0 of no anticipatory effects, which validates the causal interpretation of the DD and DDD models.

Appendix Figure 1 illustrates the trend of poverty incidence separately for minimum wage workers and non-minimum wage workers in the period surrounding the implementation of the 2004 Minimum Wage Regulations. The graph indicates that the trends for these two groups appeared to be in parallel before 2004, and diverged subsequently, providing indirect support for the common pre-trend assumption in the DD model.

Placebo Test 2: Effects on Non-labor Income

To ensure the validity of our identification strategy, minimum wages should primarily affect workers with wages at or near the minimum wage level, rather than the entire wage distribution. Furthermore, they should only influence labor income, not non-labor income. With regard to effects across the wage distribution, Fang et al. (2021) use the UHS over the 2004–09 period and find that the increases in China's minimum wage exerted a very minor effect on workers earning just above the new minimum wage level, and essentially no effect on those higher up in the wage distribution. Furthermore, we implement a second placebo test to assess whether the minimum wage policy affected non-labor income.

In addition to labor (wage) income, the UHS contains three categories of non-labor income: operational income, property income, and transfer income. For each worker, these three incomes are combined to form total non-labor income. We then employ this non-labor income as the dependent variable and estimate both DD and DDD models. Given a substantial number of workers have zero non-labor income, we apply the inverse hyperbolic sine (arcsinh) transformation and alternatively, cube-root transformations to address this issue. These transformations function similarly to a logarithm and permit zero-valued observations to be retained. For a sensitivity check, we also employ a dummy variable that equals 1 if the worker has a positive non-labor income.

Appendix Figure 2 indicates that for all five groups, all estimates for the three transformations of the non-labor income dependent variables are statistically insignificant. This

implies that the minimum wage policy had no effects on workers' non-labor income. In conjunction with Fang et al.'s (2021) finding of no effects of minimum wages on high-wage workers' wages, this evidence further supports the validity of the DD model.

Placebo Test 3: Using Matched Samples to Assess the Bias from Compositional Changes

The literature has voiced concerns about the comparability between the treatment and control groups and the selection of unobservable factors in a standard DD setting, which would lead to inconsistent and biased results. To address the issue, we conduct a third placebo test following the approach in Heckman *et al.* (1997) and Blundell and Dias (2009), using matching techniques to create treatment and control groups with comparable observed individual characteristics. After removing the potential selection bias, we use the matched sample to estimate the effect of the minimum wage on poverty using DD and DDD models.

In line with Caliendo and Kopeinig (2008), we adopt a range of matching algorithms covering both parametric and nonparametric estimators, including (1) kernel matching, (2) radius matching (Dehejia & Wahba 2002), (3) k:1 nearest neighbor matching, and (4) Mahalanobis metric matching. To evaluate the quality of matching, we compute the standardized bias, which measures the distance in the marginal distribution of covariates and the distribution of propensity scores of treated and untreated individuals within the common support range.[7]

Appendix Figure 3 presents the DD and DDD estimates of the minimum wage's effect on poverty across four matching methods and four poverty measures. The graphs showcase the estimated coefficients on common support from 3:1 nearest neighbor matching with replacement, kernel matching with a bandwidth of 0.2 standard deviations, and radius and Mahalanobis metric matchings with a caliper of 0.2 standard deviations. The range bars in the figure represent 95% confidence intervals, and all estimates incorporate a full set of worker controls, fixed effects, and province-specific time trends.[8] The results in Appendix Figure 3 consistently demonstrate that the minimum wage had a poverty-reducing effect. All estimates from the nearest neighbor,

[7] Rosenbaum and Rubin (1985) propose this approach and it has been used in studies such as Lechner (1999), Sianesi (2004), and Caliendo *et al.* (2008).

[8] To check the robustness of the result, we re-estimate the model with a range of bandwidths and calipers and find similar outcomes. The results from 1:1, 2:1, 4:1, and 5:1 nearest neighbor matchings with replacement are consistent with the reported 3:1 matching. For radius and Mahalanobis metric matchings we use calipers (propensity range) from 0.01 to 0.5 standard deviations and report the results using 0.2 standard deviations as suggested in Wang *et al.* (2013). For kernel matching we use the algorithm with a full range of bandwidths and report the outcome of 0.2 bandwidths in the paper since other results are qualitatively similar. We include a selected set of results from such additional tests. Complete results are available upon request.

kernel, and radius matching algorithms are negative and statistically distinct from zero. The point estimates from Mahalanobis metric matching are generally similar but not statistically significant.[9]

For our preferred poverty measure of PPP US$1.9 a day, the poverty reduction effect varies from 2.3 to 6.4 percentage points for all workers, 5.5 to 7.7 percentage points for females, 2.6 to 3.8 percentage points for household heads (excluding the insignificant estimate of 0.4 from Mahalanobis metric matching), 3.4 to 5 percentage points for household heads with two or more working members in their household, and the largest effect of 4.8 to 7.9 percentage points for female household heads. For other poverty measures, the results from the matched sample exhibit the same pattern. After evaluating the quality of matching, the results in Appendix Figure 3 thus align with the finding that the minimum wage helped reduce poverty.[10]

[9] This could be because Mahalanobis metric matching does not perform well when covariates are not normally distributed or when there are many covariates (Gu & Rosenbaum 1993) as in our paper. Rubin (1979) and Zhao (2004) show that Mahalanobis distance can work quite well when there are relatively few covariates, for example less than eight.

[10] We assess the matching quality by depicting standardized biases and distributions of untreated and treated individuals on and off the common support. The graphs consistently indicates that biases are substantially reduced after matching and distributions of propensity scores in treated and untreated groups overlap considerably within the range of common support. Since treated and untreated individuals are much more similar after matching, matched-sample DD and DDD estimates appear appropriate for removing potential selection bias and reassuringly confirm our findings. The complete results are available upon request.

Appendix Table 4 Difference-in-Differences Estimates of the Effect of the Minimum Wage Policy on Poverty: Alternative Poverty Measures

Dependent variable: Poverty incidence = 1 if poor = 0 if non-poor Poverty gap = poverty line – income Poverty severity = poverty gap squared	(1) All workers	(2) Household heads	(3) Female household heads	(4) Household heads with two or more workers	(5) Female workers
PPP US$1.25 a day					
Effect on poverty incidence	-0.024***	-0.008**	-0.030***	-0.015***	-0.009**
	(0.003)	(0.004)	(0.006)	(0.005)	(0.004)
Effect on poverty gap	-0.009***	-0.002	-0.011***	-0.004**	-0.003*
	(0.001)	(0.002)	(0.004)	(0.002)	(0.002)
Effect on poverty severity	-0.004***	-0.001	-0.005***	-0.002	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
PPP US$3.1 a day					
Effect on poverty incidence	-0.009**	-0.013*	-0.025**	-0.020*	0.002
	(0.004)	(0.007)	(0.011)	(0.011)	(0.007)
Effect on poverty gap	-0.016***	-0.009***	-0.022***	-0.017***	-0.007**
	(0.002)	(0.003)	(0.005)	(0.004)	(0.003)
Effect on poverty severity	-0.014***	-0.006***	-0.017***	-0.011***	-0.006***
	(0.001)	(0.002)	(0.003)	(0.003)	(0.002)
50% of median income					
Effect on poverty incidence	-0.016***	-0.028***	-0.023***	-0.025***	-0.023***
	(0.004)	(0.005)	(0.007)	(0.007)	(0.005)
Effect on poverty gap	-0.013***	-0.008***	-0.016***	-0.011***	-0.007**
	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)
Effect on poverty severity	-0.009***	-0.004**	-0.011***	-0.006***	-0.004***
	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)
Individual controls	Yes	Yes	Yes	Yes	Yes
City-level macroeconomic controls	Yes	Yes	Yes	Yes	Yes
City and year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	Yes	Yes	Yes	Yes	Yes
N	140,083	140,083	67,594	67,407	140,083

Notes: Robust standard errors clustered at the county level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Column (1) is the DD model and columns (2) to (5) are DDD models. In Column (1) the minimum wage effect on poverty is the estimated coefficient of the interaction term β in Equation (1); in columns (2) to (5), the minimum wage effects on poverty are the estimated coefficients of triple interaction terms in the DDD model. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesales and retail sales, hotel and

restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. City-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Columns (2) to (5) also include relevant interaction terms for *TREAT* and *POST* with the corresponding dummy (household heads in Model (2), female household heads in Model (3), household heads with two or more workers in Model (4), and female workers in Model (5)). The adjusted R^2 of each regression is not reported but is available upon request.

Appendix Table 5 Difference-in-Differences Estimates of the Effect of the Minimum Wage Policy on Poverty by Region, Poverty line: PPP US$1.9 a day

Dependent variable: Poverty incidence = 1 if poor = 0 if non-poor Poverty gap = poverty line – income Poverty severity = poverty gap squared	(1) All workers	(2) Household heads	(3) Female household heads	(4) HH heads with two or more workers	(5) Female workers
			East		
Effect on poverty incidence	-0.053***	-0.014*	-0.050***	-0.033***	-0.003
	(0.005)	(0.007)	(0.013)	(0.011)	(0.007)
Effect on poverty gap	-0.029***	-0.005	-0.039***	-0.016***	-0.009**
	(0.002)	(0.004)	(0.008)	(0.006)	(0.004)
Effect on poverty severity	-0.017***	-0.002	-0.026***	-0.008**	-0.006**
	(0.002)	(0.003)	(0.006)	(0.004)	(0.003)
No. of obs.	78,500	78,500	37,417	37,336	78,500
adj. R^2	0.266	0.263	0.221	0.221	0.269
			Central		
Effect on poverty incidence	-0.010**	-0.012	-0.009	-0.011	-0.026***
	(0.005)	(0.008)	(0.009)	(0.009)	(0.008)
Effect on poverty gap	-0.005**	-0.002	-0.001	-0.001	-0.003
	(0.002)	(0.003)	(0.004)	(0.004)	(0.003)
Effect on poverty severity	-0.004**	-0.002	0.000	-0.000	-0.000
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
No. of obs.	48,673	48,673	23,760	23,673	48,673
adj. R^2	0.278	0.280	0.151	0.151	0.280
			West		
Effect on poverty incidence	-0.049	0.012	-0.002	-0.018	0.021*
	(0.030)	(0.012)	(0.016)	(0.018)	(0.011)
Effect on poverty gap	-0.009	0.009**	-0.000	-0.012*	0.013***
	(0.013)	(0.005)	(0.006)	(0.007)	(0.005)
Effect on poverty severity	-0.002	0.007**	-0.000	-0.008*	0.009**
	(0.009)	(0.003)	(0.004)	(0.005)	(0.003)
No. of obs.	12,910	12,910	6,417	6,398	12,910
adj. R^2	0.245	0.246	0.214	0.189	0.247
Individual controls	Yes	Yes	Yes	Yes	Yes
City-level macroeconomic controls	Yes	Yes	Yes	Yes	Yes
City and year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	Yes	Yes	Yes	Yes	Yes

Notes: The East includes Beijing, Shanghai, and four economically important provinces—Guangdong, Jiangsu, Shandong, and Liaoning. The Central includes six developing provinces—Henan, Anhui, Hubei, Jiangxi, and Shanxi. The West consists of Chongqing and three less-developed provinces Gansu, Sichuan, and Yunnan. Robust standard errors clustered at the county level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Column (1) is the DD model and columns (2) to (5) are DDD models. In Column (1) the minimum wage effect on poverty is the estimated coefficient of the interaction term β in Equation (4); in columns (2) to (5), the minimum wage effects on poverty are the estimated coefficients of triple interaction terms in the DDD model. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital

status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesales and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. City-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Columns (2) to (5) also include relevant interaction terms for *TREAT* and *POST* with the corresponding dummy (household heads in Model (2), female household heads in Model (3), household heads with two or more workers in Model (4), and female workers in Model (5)).

Appendix Table 6 Dynamics of the Minimum Wage Policy Effect on Poverty

Dependent variable: Poor = 1 Non-poor = 0	PPP US$1.9 a day		PPP US$1.25 a day		PPP US$3.1 a day		50% of median income	
Leads (anticipatory effects)								
Policy change$_{t+2}$	0.002	0.001	-0.001	-0.001	0.009	0.010	0.001	0.002
	(0.002)	(0.002)	(0.001)	(0.001)	(0.009)	(0.009)	(0.003)	(0.003)
Policy change$_{t+1}$	-0.002	-0.003	-0.002	-0.002	0.005	0.003	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.002)	(0.002)
Contemporaneous effect								
Policy change$_{t}$	-0.009***	-0.007***	-0.005***	-0.004***	-0.015**	-0.016**	-0.006*	-0.006*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.006)	(0.006)	(0.004)	(0.004)
Lags (post-treatment effects)								
Policy change$_{t-1}$	-0.008***	-0.008***	-0.002	-0.003*	-0.015*	-0.010	-0.007**	-0.007**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.008)	(0.008)	(0.003)	(0.003)
Policy change$_{t-2}$	-0.015***	-0.015***	-0.006***	-0.007***	-0.026***	-0.026***	-0.004*	-0.006**
	(0.003)	(0.003)	(0.002)	(0.002)	(0.008)	(0.008)	(0.003)	(0.003)
H_0 : Policy change$_{(t+1,t+2)}$ = 0	1.24	0.72	1.15	1.70	1.12	1.09	0.41	0.45
	[0.289]	[0.485]	[0.315]	[0.184]	[0.302]	[0.338]	[0.662]	[0.635]
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City & year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region-year fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
No. of obs.	347,472	347,472	347,472	347,472	347,472	347,472	347,472	347,472
Adj. R^2	0.047	0.047	0.025	0.025	0.124	0.124	0.067	0.067

Notes: Robust standard errors clustered at the county level in parentheses. F statistics for the joint hypothesis H_0: *Policy change*$_{(t+1,t+2)}$ = 0 and p-values are given in brackets. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table 7 Pulling and Pushing Effects of the Minimum Wage on Poverty, 2004–2009 (Excluding Unemployment Rate as a Control Variable)

Poverty line: PPP US$1.9 a day	*Average marginal effects of changes in the minimum wage*					
	(1)		(2)		(3)	
	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty
All workers	.072***	.028***	.068***	.024***	.064***	.023***
	(.003)	(.003)	(.003)	(.003)	(.002)	(.003)
Household heads	.097***	.041***	.089***	.034***	.083***	.032***
	(.004)	(.005)	(.004)	(.005)	(.004)	(.005)
Female household heads	.051***	.019***	.056***	.020***	.045***	.018***
	(.005)	(.006)	(.006)	(.006)	(.006)	(.006)
Household heads with two or more workers	.043***	.016***	.043***	.014**	.039***	.014***
	(.003)	(.006)	(.003)	(.006)	(.003)	(.005)
Female workers	.096***	.036***	.089***	.029***	.082***	.029***
	(.004)	(.005)	(.004)	(.005)	(.004)	(.005)
Δ Individual controls	Yes		Yes		Yes	
Δ Macroeconomic controls	Yes		Yes		Yes	
Prefecture and year fixed effects	No		Yes		No	
Province-specific time trends	No		No		Yes	
Pseudo R^2 (all workers)	.491		.508		.522	
Pseudo R^2 (household heads)	.496		.516		.532	
Pseudo R^2 (female household heads)	.487		.500		.525	
Pseudo R^2 (household heads with two or more workers)	.541		.555		.569	
Pseudo R^2 (female workers)	.470		.489		.504	

Notes: Estimates are average marginal effects of multinomial logit estimations. The reference category is $\Delta Poor_{i,t} = 0$ (no change of poverty status for worker i between $t-1$ and t). Clustered robust standard errors at the county level are in parentheses. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesales and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. Prefecture-level macroeconomic controls include per capita GDP, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Observations of Column 1 are 115,910 for all workers, 50,817 for female workers, 60,261 for household heads, 14,334 for female household heads, and 38,066 for household heads with two or more workers. * $p < .10$, ** $p < .05$, *** $p < .01$.

Appendix Table 8 Results of Using Treat as a Standalone Explanatory Variable

Poverty line: PPP US$1.9 a day	*Average marginal effects of exposure to the minimum wage*					
	(1)		(2)		(3)	
	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty
All workers	.023***	.007***	.024***	.008***	.024***	.008***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Household heads	.030***	.008***	.031***	.010***	.031***	.009***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Female household heads	.017***	.010***	.018***	.011***	.018***	.011***
	(.002)	(.001)	(.002)	(.002)	(.002)	(.001)
Household heads with two or more workers	.014***	.005***	.013***	.005***	.013***	.006***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Female workers	.030***	.009**	.031***	.010***	.031***	.010***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Δ Individual controls	Yes		Yes		Yes	
Δ Macroeconomic controls	Yes		Yes		Yes	
Prefecture and year fixed effects	No		Yes		No	
Province-specific time trends	No		No		Yes	
Pseudo R^2 (all workers)	.510		.540		.557	
Pseudo R^2 (household heads)	.511		.544		.562	
Pseudo R^2 (female household heads)	.489		.502		.527	
Pseudo R^2 (household heads with two or more workers)	.576		.601		.623	
Pseudo R^2 (female workers)	.536		.558		.591	

Notes: Estimates are average marginal effects of multinomial logit estimations. The reference category is $\Delta Poor_{i,t} = 0$ (no change of poverty status for worker i between $t-1$ and t). Clustered robust standard errors at the county level are in parentheses. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. Prefecture-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Observations of Column 1 are 115,910 for all workers, 50,817 for female workers, 60,261 for household heads, 14,334 for female household heads, and 38,066 for household heads with two or more workers. $^{*}\ p < .10$, $^{**}\ p < .05$, $^{***}\ p < .01$.

Appendix Table 9 Results of Including the Minimum Wage as a Separate Control Variable

Poverty line: PPP US$1.9 a day	*Average marginal effects of changes in the minimum wage*					
	(1)		(2)		(3)	
	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty	Pulling out of poverty	Pushing into poverty
All workers	.018***	.006***	.007***	-.003	.004**	-.002
	(.002)	(.002)	(.003)	(.002)	(.002)	(.002)
Household heads	.024***	.010***	.009**	-.004	.006	-.002
	(.004)	(.003)	(.004)	(.004)	(.004)	(.003)
Female household heads	.016***	.002	.015**	.000	.004	-.002
	(.005)	(.004)	(.006)	(.005)	(.005)	(.005)
Household heads with two or more workers	.012***	.000	.009***	-.003	.004*	-.002
	(.002)	(.002)	(.003)	(.003)	(.002)	(.003)
Female workers	.026***	.007**	.011**	-.005	.007*	-.003
	(.004)	(.003)	(.004)	(.004)	(.004)	(.004)
Δ Individual controls	Yes		Yes		Yes	
Δ Macroeconomic controls	Yes		Yes		Yes	
Prefecture and year fixed effects	No		Yes		No	
Province-specific time trends	No		No		Yes	
Pseudo R^2 (all workers)	.565		.588		.603	
Pseudo R^2 (household heads)	.569		.593		.608	
Pseudo R^2 (female household heads)	.574		.589		.623	
Pseudo R^2 (household heads with two or more workers)	.626		.645		.668	
Pseudo R^2 (female workers)	.545		.569		.584	

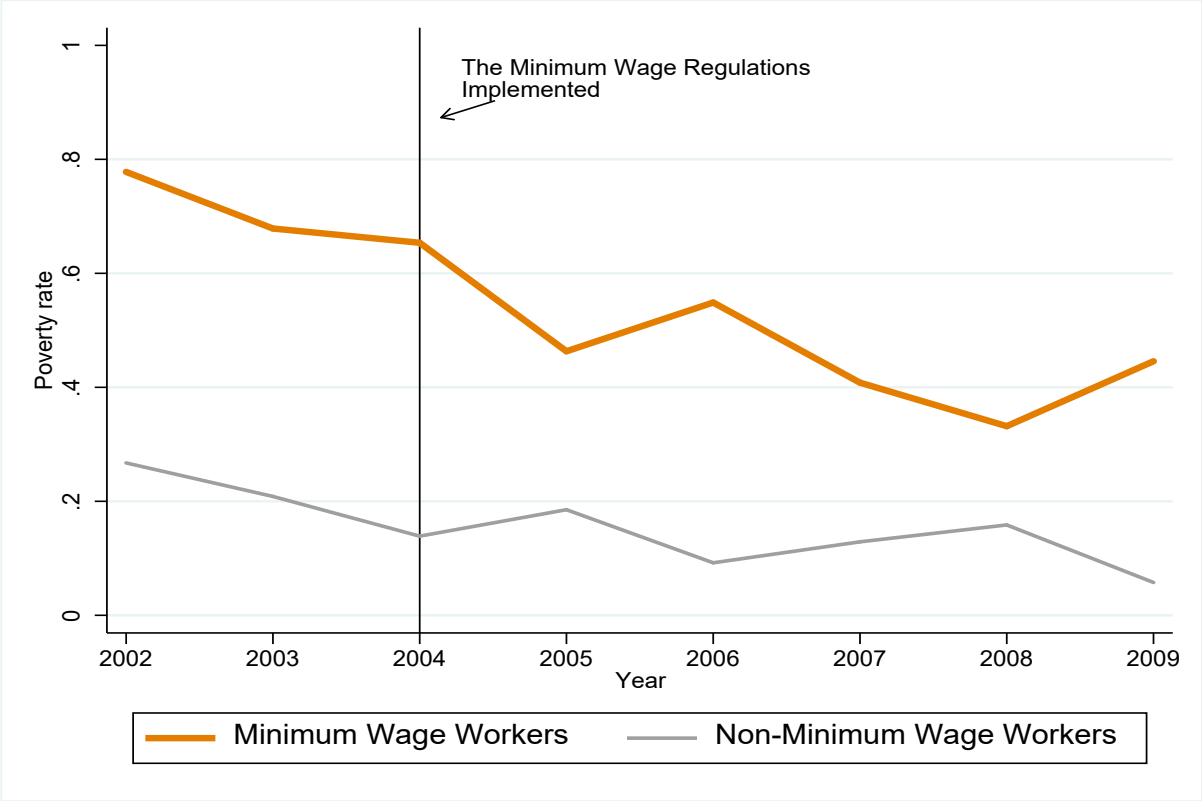
Notes: Estimates are average marginal effects of multinomial logit estimations. The reference category is $\Delta Poor_{i,t} = 0$ (no change of poverty status for worker i between $t-1$ and t). Clustered robust standard errors at the county level are in parentheses. Individual controls include educational attainment dummies (junior high school, high school, vocational school, 2-year college, 4-year college or graduate degrees, and elementary school or no schooling as the reference category), age, age squared, marital status, Han ethnicity, local *hukou*, years of residence, occupation, and industry. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, and production and transportation operators and others. Industry controls consist of dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables. Prefecture-level macroeconomic controls include per capita GDP, the unemployment rate, and gross FDI inflows. Province-specific time trends include both linear and quadratic trends. Observations of Column 1 are 115,910 for all workers, 50,817 for female workers, 60,261 for household heads, 14,334 for female household heads, and 38,066 for household heads with two or more workers. * $p < .10$, ** $p < .05$, *** $p < .01$.

Appendix Table 10 Wage Spillover Effects by Wage Category, 2004–2009

Dependent variable: log wage Wage category (relative to new minimum wage)	Coefficient	(Std. Error)
New MW < Wage ≤ 1.1×New MW	0.011*	(0.004)
1.1×New MW < Wage ≤ 1.2×New MW	0.007	(0.003)
1.2×New MW < Wage ≤ ×1.3New MW	0.009	(0.003)
1.3×New MW < Wage ≤ ×1.4New MW	0.006	(0.010)
1.4×New MW < Wage ≤ 1.5×New MW	-0.001	(0.005)

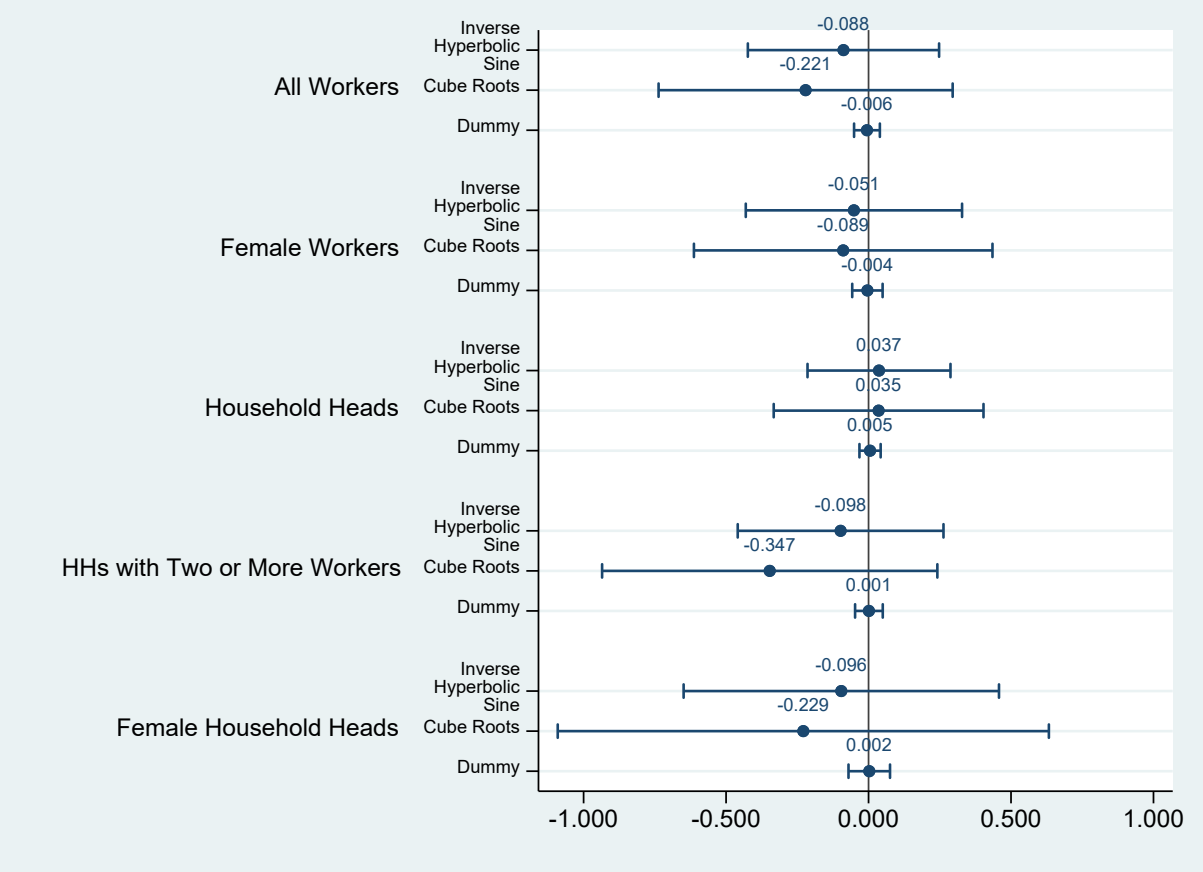
Note: * indicates statistical significance at the 10% level. Cluster-robust standard errors at the county level are reported in parentheses. All regressions control for individual characteristics and fixed effects (individual, year, and province), as well as city-level macroeconomic factors (GDP per capita and FDI). The number of observations is 4,754 for the first category, and 5,524, 5,546, 5,891, and 5,840 for the subsequent categories.

Appendix Figure 1 Common Trend of the Poverty Incidence by Minimum Wage vs. Non-Minimum Wage Workers, 2002–09



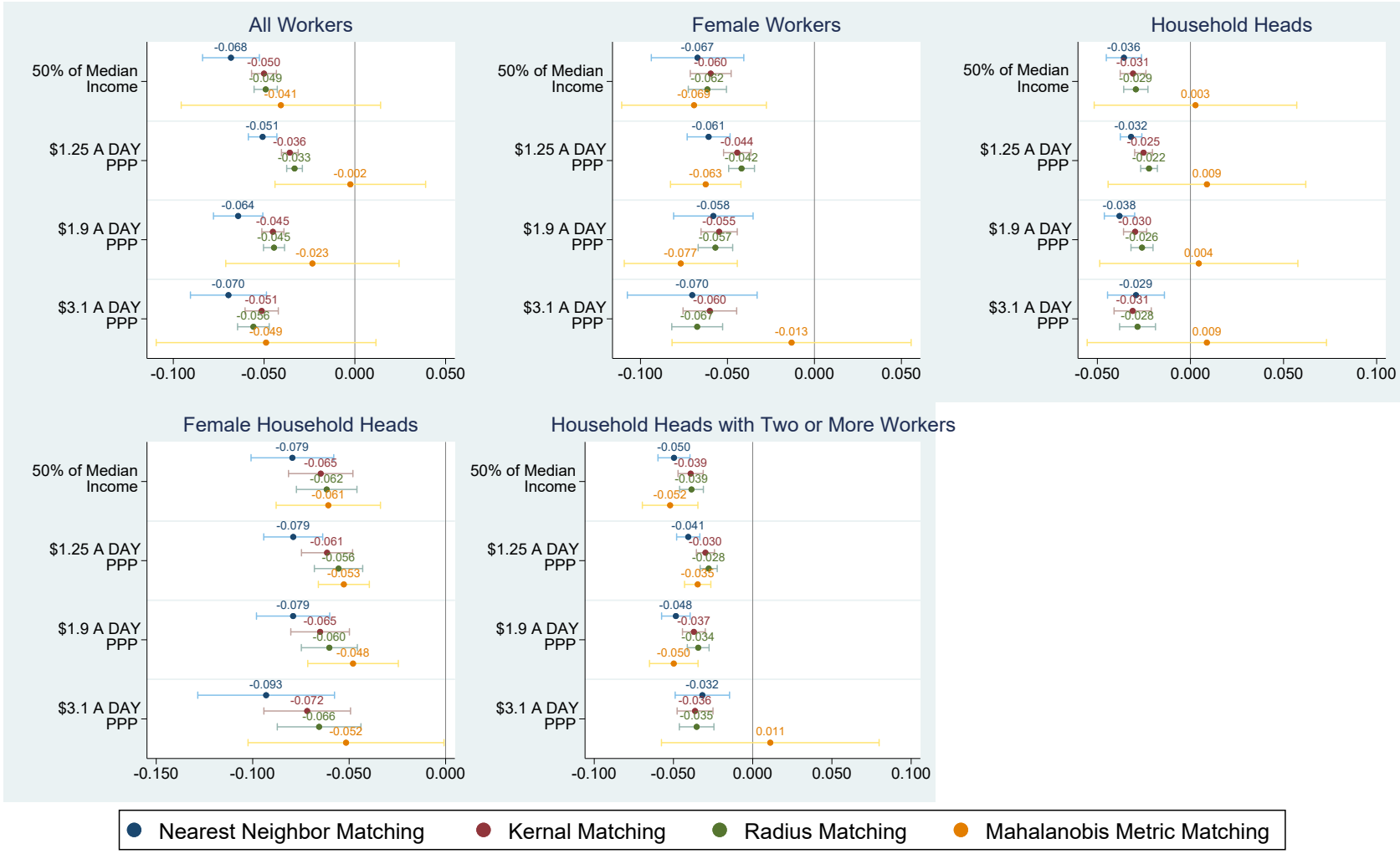
Source: China Urban Household Survey 2002–09, authors' calculation.

Appendix Figure 2 Placebo Test 2: The Effect of the Minimum Wage Policy on Non-Labor Income



Source: China Urban Household Survey 2002–09, authors' calculation.
Notes: Range bars in the graphs are 95% confidence intervals. Non-labor income includes operational income, property income, and transfer income.

Appendix Figure 3 Placebo Test 3: The Effect of the Minimum Wage Policy on Poverty using Matched Samples, by Matching Algorithm



Source: China Urban Household Survey 2002–09, authors' calculation.
Notes: Range bars in the graphs are 95% confidence intervals. Nearest neighbor matching uses 3:1 matching with replacement. Kernel matching uses a bandwidth of 0.2. Radius and Mahalanobis metric matchings use a caliper of 0.2 standard deviations.

Endnote

[1] The early empirical research into the effect of minimum wage laws predominantly use disaggregated macro cross-sectional and panel data for the U.S., as evidenced by studies conducted by Brown, Gilroy, and Kohen (1982) and Neumark and Wascher (1992). Noteworthy additions to this body of literature include the works of Neumark (2001) and Neumark and Wascher (2008). Notable contributions on the effects of minimum wages on wages and employment in developing countries include Neumark and Munguía Corella (2021) for conducting a meta-analysis of a large set of studies, Rama (2001) for Indonesia, Strobl and Walsh (2003) for Trinidad and Tobago, Neumark, Cunningham, and Siga (2006) and Lemos (2009) for Brazil, Gindling and Terrell (2007) for Costa Rica, Gindling and Terrell (2009) for Honduras, Alaniz, Gindling, and Terrell (2011) for Nicaragua, Del Carpio, Messina, and Sanz-de-Galdeano (2019) for Thailand, and Ma, Zhang, and Zhu (2012), Huang, Loungani, and Wang (2014), Mayneris, Poncet, and Zhang (2018), Fang and Lin (2015), and Fang, Gunderson, and Lin (2021) for China.

[2] In the context of developed nations, Card and Krueger (1995), Addison and Blackburn (1999) and Burkhauser and Sabia (2007) provide the first set of estimates of such effects.

[3] See Sabia (2008), Burkhauser and Sabia (2007), Gundersen and Ziliak (2004), Neumark and Wascher (2002), MaCurdy (2015), Dube (2019), and Burkhauser, McNichols, and Sabia (2023) for the U.S. studies.

[4] Relevant research on the effects of minimum wage increases on poverty in developing countries includes Gindling and Terrell (2010) on Honduras, Alaniz, et al. (2011) on Nicaragua,

Arango and Pachón (2004) on Colombia, Sotomayor (2021) on Brazil, and Campos-Vazquez and Esquivel (2023) on Mexico.

[5] Empirical studies on the effects of China's minimum wages remain relatively rare and have mostly relied on aggregate or semi-aggregate data (Ni, Wang, & Yao, 2011; Wang & Gunderson, 2011, 2012). In recent years, a small number of pioneering studies have used firm-level or individual-level microdata and quasi-experimental empirical methods. See Huang, et al. (2014), Mayneris, et al. (2018), Ma, et al. (2012) Fang and Lin (2015), Lin and Yun (2016), and Fang, et al. (2021).

[6] The average nominal minimum wage grew more than 200% with the level being 2.5 to 4.8 times higher than the international poverty line of PPP$1.25 a day between 2002 and 2009. The increase was also significant relative to the minimum income guarantee program (*Dibao*) for urban residents. For instance, the *Dibao* line in Shanghai rose from 280 *yuan* to 350 *yuan*, while the minimum wage rose from 435 *yuan* to 840 *yuan* over the same period.

[7] Headcounts are based on an inflation-adjusted poverty line of 850 *yuan* (US$103) per person per year in 2002 for rural areas and 1,200 *yuan* (US$145) per person per year for urban areas.

[8] These policies include subsidized loans for investments in agricultural production, relief from taxes related to agriculture, and various social protection programs, such as food-for-work and cash-for-work programs, pension schemes, basic medical insurance programs, and the *Dibao* program (The World Bank & Development Research Center of the State Council of the People's Republic of China, 2022)

[9] Changes in the minimum wage policy in China have been extensively documented in several recent studies. See Wang and Gunderson (2011, 2012, 2015), Fang and Lin (2015), Long and Yang (2016), and Xing and Xu (2016).

[10] The minimum wages of about 0.4% of the counties are below the poverty line when using PPP US$1.25 per day, those of about 5.2% are below the poverty line when using 50% of median income, and those of 53.4% are below the poverty line when using PPP US$3.1 per day.

[11] For any given year, we match individuals to their county-level minimum wage levels.

[12] Between 2008 and 2015 the World Bank used PPP US$1.25 a day at 2005 prices as the international poverty line. In October 2015, the international poverty line was updated to PPP US$1.90 a day using 2011 prices, and the World Bank also started publishing data on a second, higher international poverty line at PPP US$3.10 a day at 2011 prices. For the consistency reason, we use all three absolute poverty lines at 2011 prices.

[13] Using the method in Li, Luo, and Sicular (2013), we convert the international PPP poverty threshold of $1.90 per day per person to *yuan* using the PPP exchange rate of 3.493 *yuan* to the US dollar in 2011 (The World Bank, 2011). We treat the PPP US$1.90 poverty line as the rural poverty line and convert it to 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009 prices using the rural consumer price index from the NBS of China. Then the urban absolute poverty line is equal to the rural poverty line adjusted by the urban–rural cost-of-living differential of 1.3876 in 2002, 1.3780 in 2003, 1.3583 in 2004, 1.3503 in 2005, 1.3506 in 2006, 1.3393 in 2007, 1.3278 in 2008, and 1.3206 in 2009. The same process is applied to the PPP US$3.1 poverty line. The US$1.25 poverty line uses the PPP exchange rate of 3.46 *yuan* to the US dollar in 2005 provided by Chen and Ravallion (2010).

[14] The enforcement of minimum wage provisions and labor laws in China is commonly perceived as weak in China (Deng & Li, 2012; Rawski, 2006). Nevertheless, Fang and Lin (2015) provide evidence that enforcement has increased over time, especially after the 2004

reforms. Consequently, we anticipate that minimum wages have significant economic effects within our analysis period of 2004–2009.

[15] For instance, suppose a minimum wage adjustment in a specific county happens on June 1st of a given year. In this scenario, the weighted minimum wage for that year and county is computed as the average of the previous minimum wage (assigned a weight of 5/12, corresponding to its applicability for five months of the year) and the new minimum wage (assigned a weight of 7/12, reflecting its applicability for the remaining seven months of the year).

[16] We define individuals with $TREAT = 0$ as those unaffected by minimum wage changes. While the literature on minimum wage spillovers—such as Autor, Manning, and Smith (2016) for the U.S.— shows that wage floors can influence not only directly affected workers but also those earning slightly above the minimum through firm-level adjustments and broader labor market dynamics, evidence from China suggests a more limited scope. Using the same dataset and study period as our analysis, Fang, et al. (2021) find that spillover effects in China, though statistically significant, are economically negligible and largely confined to workers earning within approximately 10% above the minimum wage. This shared empirical context supports our assumption that $TREAT = 0$ individuals constitute a suitable counterfactual group, with only minimal risk of contamination from spillover effects.

[17] Marital status is a dummy that equals one if the person is married, spouse present. Han ethnicity is also a dummy that equals one if the person is Han Chinese. We define local *hukou* status as a dummy that equals one if the person has a local residency permit. Occupation controls include dummies of persons in charge at the state and party organs, and state-owned enterprises, professional and technical personnel, clerks, administrative staff, business and service workers, production and transportation operators, and others. Industry controls consist of

dummies of mining, manufacturing, power production and supply, construction, transportation and postal service, information technology, wholesale and retail sales, hotel and restaurant, banking and finance, real estate, leasing and commercial service, scientific research, environment and public facility, housekeeping, education, health care, sports and entertainment, and public service. All estimations omit the last category of the occupation and industry variables.

[18] Since the unemployment rate may itself be influenced by minimum wage changes, it potentially lies on the causal path from policy to poverty. In this case, controlling for unemployment could block part of the policy effect, leading to an underestimation of the true impact of the minimum wage. Moreover, during our study period, only registered unemployment rates in China are available. These rates are typically low, stable, and exhibit limited variation across provinces and over time. Appendix Table 7 in the Online Appendix presents regression results that exclude unemployment as a control variable and shows estimates that are nearly identical to the main results reported in Table 2. Accordingly, the inclusion or exclusion of registered unemployment rates does not materially affect our findings.

[19] To assess the robustness of our modeling strategy, we present a set of supplementary analyses in Appendix Table 8 that further support our empirical approach. First, we estimate a specification in which *TREAT* is included as a standalone regressor without interaction. The results remain statistically significant and directionally consistent with our main findings (Table 2), although the effect sizes are smaller—as expected— since this specification does not account for variation in the magnitude of minimum wage increases. Second, we conduct additional robustness checks, including subgroup analyses (by gender and household type), models with prefecture and year fixed effects, and specifications incorporating province-specific linear trends.

Across all these alternative specifications, the standalone regressor *TREAT* consistently produces statistically significant and stable estimates, reinforcing the robustness of our empirical strategy.

[20] To address concerns about excluding a separate minimum wage (*MW*) term, we conducted a robustness check by adding *MW* as an additional regressor alongside the interaction term *TREAT* × *MW*. The results, presented in Appendix Table 9 of the Online Appendix, show that the core findings remain substantively unchanged, although standard errors increase and several coefficients lose significance—consistent with concerns about imperfect multicollinearity. Our preferred specification focuses on the interaction term to capture the differential impact of minimum wage changes on workers directly bound by the policy. This approach aligns with our analytical objective and is further supported by Fang, et al. (2021), who find that minimum wage spillovers in China are economically negligible and largely confined to workers earning just above the wage floor.

[21] In addition, we conducted an instrumental variable regression model as a sensitivity check for the period from 2004 to 2009. The results remained robust even after implementing this additional analysis. For detailed findings, please refer to Appendix Table 2 in Online Appendix C.

[22] While examining the impact of minimum wage changes on labor supply at both the extensive and intensive margins would offer deeper insights, the UHS data lack information on weekly or monthly hours worked and do not provide suitable proxy variables. Consequently, our analysis is confined to the extensive margin, focusing on employment status rather than adjustments in hours worked.

[23] We provide the results of the robustness check in Section 6.1.

[24] We present summary statistics detailing individual characteristics across the four poverty categories in Appendix Table 3. The table reveals notable differences among the chronically poor, the transiently poor, and the never poor. Specifically, the chronically poor tend to be younger, predominantly female, have fewer years of education and work experience, and are more likely to be engaged in minimum wage occupations compared to their transient and never poor counterparts.

[25] Due to the small proportion of individuals classified as not persistently poor, we combine the persistently poor and the not persistently poor categories into a single "chronically poor" category. By using these four categories, we arrive at similar findings.

[26] Appendix Table 1 shows that about 90% of workers earned wages above minimum wage levels between 2002 and 2009.

[27] Consistent with the minimum wage literature, an employed person is a person who works in the civilian labor force, reports positive monthly wages, is not self-employed, and is not enrolled in school. The estimations exclude workers in the agricultural production or services, farming, forestry, fishing, and ranching sectors.

[28] See for example, the studies by Wang and Gunderson (2011), Fang and Lin (2015), Huang, et al. (2014), , Mayneris, et al. (2018), and Fang, et al. (2021).

[29] Table 6, as well as subsequent tables, reports only this estimated coefficient for the sake of visibility. Full estimation results are available upon request.

[30] The estimated coefficient of the *TREAT* variable $\hat{\alpha}$, not reported in Table 6, is positive and statistically different from zero. It suggests that workers who earned less than the minimum wage were 2 percentage points more likely to be poor than those who earned the minimum wage or above the level. Other individual characteristics, such as educational attainment, also have a

statistically and economically significant effect in poverty reduction, while other personal traits including age, marital status, and ethnicity are statistically indistinguishable from zero. The results are available upon request.

[31] The estimated coefficient of the *TREAT* variable $\hat{\alpha}$ for this subgroup suggests that female workers who earned less than the minimum wage were 1.4 percentage points more likely to be poor.

[32] There could be occupational and sectoral shifts on both sides of the labor market in response to increased enforcement following the introduction of the 2004 Minimum Wage Regulations. To account for the concern, we re-estimate Equation (4) without occupation and industry controls. The estimates are similar to those of Table 6 and available upon request.

[33] As highlighted by Gindling (2024), whether a higher minimum wage impacts the poorest of poor households depends on the country studied. Findings in line with our results of a (modestly) reduction in the poverty gap include Cunningham (2007) for Mexico and Del Carpio, et al. (2019) for Thailand. Opposite effects are found in the case of Brazil (Neumark, et al., 2006) or Honduras (Ham, 2018).