

Minimum Wage: Does it Improve Welfare in Thailand?¹

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Abstract

We study the causal impact of the minimum wage on labor market outcomes and welfare in Thailand using a difference-in-difference approach that relies on exogenous policy variation in minimum wages across provinces. We find that minimum-wage increases have negligible impacts on informality in general, the only sizable effects being found among workers with elementary education. In contrast, the minimum wage has large positive effects on the wages of low-earning workers, such as the young, elderly and low educated. As a consequence, increases in the minimum wage are associated with reductions in household poverty and inequality at the bottom half of the distribution.

JEL Codes: J31, D31

Keywords: minimum wage, household consumption, poverty, employment, uncovered sector, inequality

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1. Introduction

The minimum wage constitutes a key labor market policy instrument in both developed and developing countries. In developing countries, where tax bases are limited and hence resources for other labor market policies (e.g., active labor market policies) are scarce, minimum wages are used even more often with an objective of lifting the fortunes of low-skilled workers and poor individuals. But do minimum-wage increases actually help them escape poverty? The answer to this question largely depends on the labor market impacts of the minimum wage across different types of workers.

In developed countries the academic debate has focused on the employment effects of the minimum wage. Although there is broad consensus on the positive impact of the minimum wage on average wages, its effects on employment are still heatedly debated.² In developing countries, the study of the employment effects of the minimum wage is complicated by those countries' large informal sectors and frequent noncompliance with labor policy.³

Considerable evidence gathered in Latin America yields nonuniform conclusions (as surveyed by Cunningham 2007). Large negative effects of the minimum wage increases on formal employment are found in Honduras (Gindling and Terrell 2009), while effects are small in Costa Rica (Gindling and Terrell 2007) and Colombia (Maloney and Núñez 2003) and not statistically significant in Mexico (Bell 1997) and Brazil (Lemos 2009). Much less is known about other developing regions such as Southeast Asia, with the notable exception there of Indonesia, for which various studies have found small negative employment effects after minimum-wage spikes (Rama 2001; Alatas and Cameron 2008; Del Carpio, Nguyen, and Wang 2011). However, despite decreases in formal employment, average employment rates did not change in either Indonesia (Comolla and Mello 2011) or Vietnam (Nguyen 2010). More recently, Magruder (2013) has argued that previous empirical studies evaluating the role of the minimum wage in Indonesia may have been contaminated by methodological (namely, endogeneity) biases, thus making the results less valid. He uses a difference in spatial differences estimator, which arguably reduces the likelihood of endogeneity biases, and

² Some authors argue that the standard textbook analysis of the minimum wage, which predicts disemployment effects, is at odds with the evidence, which shows few signs of increased joblessness after minimum-wage increases in developed countries (see for instance Card and Krueger 1997; Dickens, Machin, and Manning 1999; Dolton, Bondibene and Stops 2015). Other authors, including Neumark and Wascher (2010), argue that the literature tilts in favor of those studies that find a negative employment effect.

³ The paper uses informal and uncovered sectors interchangeably to denote sectors in which workers are either not legally subject to the minimum wage law, or, despite being legally subject to the minimum wage legislation, the law is not enforced.

finds that minimum-wage increases boosted employment and wages in the economic sectors covered by the policy.

The academic focus on how minimum-wage increases affect employment contrasts with policy makers' emphasis on how minimum-wage legislation would affect poverty and the inequality.⁴ In fact, the literature studying the impact of the minimum wage on poverty or on household income or consumption inequality is much scarcer than the literature studying its impact on employment,⁵ and most of it focuses on developed economies (Terrell and Almeida, 2008). Interestingly, most studies find that disemployment effects tend to concentrate among the low-skilled, thereby casting doubt on the effectiveness of using minimum-wage policy as a lever to reduce poverty.⁶ Moreover, minimum-wage workers are often not the most disadvantaged in developing countries; on the contrary, formal minimum-wage workers are protected by labor policy, while workers in the informal sector often earn below the minimum wage. Thus, the minimum wage may not be an effective tool to reduce inequality or poverty in this context.

This paper conducts a fairly comprehensive examination of the impact of changes to the minimum-wage level in Thailand from 2001 through 2010. It focuses on the heterogeneity of the estimated effect of minimum-wage changes on various labor-related and social outcomes, including wages, wage inequality, informality, poverty and consumption inequality. The analysis distinguishes between different skill and age groups. The detailed analysis offers insights into the impact of the minimum wage on welfare, and enables an examination of the mechanisms through which it operates.

Thailand constitutes an excellent case study to analyze the impact of the minimum wage on labor market outcomes because of the way the country implements and administers its policy and because of the nature of its dual labor market (formal and informal). During the period of analysis, the minimum wage in Thailand was set by province, introducing a great variability of minimum wages across the country and over time. These various provincial minimum wages were set following a complex, two-tiered system that involved near-continual negotiations between tripartite committees at the provincial and national levels.

⁴ The popular press is full of these examples. U.S. President Barack Obama, in his 2013 State of the Union address, said, "Tonight, let's declare that in the wealthiest nation on Earth, no one who works full-time should have to live in poverty, and raise the federal minimum wage to \$9.00 an hour" (*New York Times* 2013)

⁵ A simple online search in Google Scholar for articles with the words "minimum wage" and "employment" in the title yielded 273 hits. Replacing "employment" with "poverty" or "inequality" yielded 39 and 43 hits, respectively.

⁶ Evidence for the US suggests that the minimum wage has no impact on poverty (Neumark, Schweitzer and Washer, 2005) or small poverty-reducing effects concentrated in specific labor market groups (Addison, Blackburn and McKinley, 1999). In developing countries, Gindling and Terrell (2010) report poverty-reducing impacts among formal sector workers in Honduras, while Neumark, Cunningham and Siga (2006) find non-significant effects in Brazil.

As the next section shows, such a complex negotiation process introduced a great deal of arbitrariness in the minimum wages set. Decision making responded more to imbalances in bargaining power between employers' and employees' representatives and to the central government's desire to maintain provincial status quo than to a careful process of planning and targeting. As a result, variation of the minimum wage over time and within provinces was, to a large extent, exogenous to changes in the local labor market. Several pieces of evidence discussed in the paper suggest this to be the case. Hence, we use a difference-in-difference strategy to identify the causal impact of minimum-wage changes on labor market and household outcomes—a strategy that, given the Thai institutional set up, is not likely to suffer from the common endogeneity biases found in many previous studies. This paper also contributes to the literature by shedding light on the impact of minimum-wage increases on labor and social outcomes in a middle-income country where large segments of the workforce are employed in the informal (uncovered) economy, where labor law is not binding. Indeed, as in most developing countries, the vast majority of Thai households have at least one member employed in the informal economy.⁷

The remainder of the paper is organized as follows. The next section discusses the institutional features of the Thai minimum-wage system and describes the recent evolution of minimum wages in Thailand. Section 3 introduces the main datasets used for the analyses and describes the characteristics of minimum-wage workers. Section 4 discusses the methodology used to estimate the impact of the minimum wage on labor market outcomes and presents the main results, organized around three interrelated questions: How has the minimum wage affected wages on average and across distinct labor market demographic groups? How has the minimum wage affected formal and informal employment (especially among potentially vulnerable groups such as young, elderly, and low-skilled workers)? Has the minimum wage been an effective tool for tackling poverty and reducing inequality? Section 5 concludes with a summary of the paper's findings and a discussion of their implications.

2. Thai Minimum Wages: Institutional Background and Recent Evolution

The minimum wage has been a key component in the development of Thai labor policy over the past four decades.⁸ In 1972, the first minimum-wage legislation passed in Thailand,⁹ and the Ministry of Interior

⁷ In 2011, about 63 percent of the country's working-age population (15–60 years old) worked in the informal economy, (NSO 2011).

⁸ This section draws from three main sources: (a) Peetz (1996), a comprehensive analysis of Thailand's minimum-wage-setting system (up to the promulgation of the Labor Protection Act of 1998). This study was sponsored by the International Labour Organization after the Thai government requested its technical assistance; (b) Paitoonpong, Akkarakul, and Sukaruji (2005), a study that updates knowledge on the minimum-wage-setting system following the passage of the Labor Protection Act; and (c) our own conversations with Ministry of Labor officials and members of the National Wage Committee.

appointed a tripartite National Wage Committee (NWC) of government, employer, and employee representatives to recommend labor policy to the government and fix the minimum wage, which was defined as “a wage rate which an employee deserves and is sufficient for an employee’s living.” The first minimum wage was set at 12 baht per day in April 1973 in Bangkok and three surrounding provinces (Samut Prakan, Nonthaburi, and Pathum Thani). The criteria reportedly used in wage negotiations were the cost of living; the rate of inflation as reflected by the consumer price index (CPI); and, since 1990, economic growth.¹⁰ After 1973, minimum wages continued to be set by geographic zone, and, by 1998, three different minimum wages covered all 76 Thai provinces.¹¹

The 1997–98 Asian financial crisis led to a reform of Thailand’s labor policy, and the Labor Protection Act of 1998 (LPA 2541) transformed the previous minimum-wage-setting system into a two-tiered system intended to differentiate minimum-wage levels by province and industry. The main objective of having province-specific levels was to take into account provincial differences in the cost of living and other socioeconomic conditions. The new system fully adopted the provincial differentiation, but the industry-level differentiation was not implemented, largely because it was too complex to administer.

One of the LPA 2541’s primary mandates was the creation of a new minimum-wage-setting machinery, which included three key institutions: the NWC, the Provincial Subcommittees on Minimum Wages (PSMWs), and the Subcommittee on Technical Affairs and Review (STAR). Despite the introduction of the new system in 1998, no adjustments to minimum-wage levels were made until 2001. In 2008, a new reform (the Labor Protection Act of 2008 [LPA 2551]) further detailed the criteria established for wage adjustments, but in practice made no major changes to the wage-setting process. Finally, in 2011, the newly elected government announced a unified nationwide policy that, by January 2013, had set minimum wages at 300 baht per day (about 9.5 US\$ at the time) in all provinces. This drastic increase, however, does not affect our results because it became effective after 2011.

During the period under study, the rounds of negotiations to review the minimum-wage level were typically triggered by trade union demands, NWC or PSMW recommendations, or government order. It is the duty of the PSMWs (tripartite subcommittees composed of government, employer, and employee representatives) to recommend minimum-wage adjustments at the provincial level to the NWC, which then

⁹ The legislation, Revolutionary Party Decree No. 103, was promulgated on March 16, 1972.

¹⁰ In particular, the formula proposed was the following: rate of economic growth divided by two plus the inflation rate (Peetz 1996). Note, however, that these criteria were used as a reference, and the final outcome was determined by negotiations between the government, employer, and employee representatives on the NWC.

¹¹ In 1998, before the passage of the Labor Protection Act, minimum wages were 162 baht per day in Bangkok, Nakhon Pathom, Nonthaburi, Pathum Thani, Samut Sakhon, Samut Prakan, and Phuket; 140 baht per day in Chon Buri, Chiang Mai, Nakhon Ratchasima, Phangnga, Ranong, and Saraburi; and 130 baht per day in the remaining provinces.

sends these recommendations to STAR for technical review. After STAR submits its review, the NWC issues a final recommendation at the central level, which the Ministry of Labor (the final deciding authority) then announces in the *Royal Gazette*. Although the Ministry of Labor may ask the NWC to revise its recommendations, it rarely interferes with the review process beyond its influence on the different committees through its official representatives.

The frequency of minimum-wage adjustments is generally not fixed by law in East Asian countries, but they usually revise them annually. Thailand was no exception to this pattern during the 2000s: minimum-wage adjustments were generally decided by the NWC after the review process in November and became effective on January 1 of the following year. However, there were two adjustments in some years (2005 and 2008) and none in 2009. As a result of these adjustments, Thailand had 28 different minimum wages by the end of 2010—ranging from 151 baht per day (about US\$4.80 of 2010) in Phrae, Phayao, Mae Hong Son, and Phichit (in the North region) to 206 baht per day (about US\$6.50) in Bangkok and Samut Prakan (in the Central region). As for coverage, Thai minimum wages apply to all full-time private employees regardless of nationality, although they do not apply to government employees, employees in households, employees in the agricultural sector, and part-time or student employees.

In 1998, the LPA 2541 (article 87) also stipulated three main groups of indicators on which to base minimum-wage adjustments: cost of living, employers' capacity to pay, and economic conditions.¹² On paper, the reliance on these criteria would introduce some degree of endogeneity in the determination of the minimum wage, a problem that is fairly common in most of the related literature. In practice, however, minimum-wage negotiations often differed widely from the text of the legislation for various reasons. First, the precise weight assigned to each criterion by the members of the committees was not pre-established. During our conversations, stakeholders suggested that cost-of-living considerations and regional gross domestic product (GDP) per capita were given priority, possibly because of data availability, but negotiations took place rather informally, and the criteria used may well have varied across provinces and over time.

Second, the low rate of unionization and the large share of informal employment severely limit Thai workers' capacity to coordinate efforts, which results in a review process dominated by the employer representatives and the government. The virtual absence of unions at the provincial level complicates the selection and appointment of employee representatives for the PSMWs, which often lacks transparency. The appointed employee representatives are sometimes not even known among the workers (Paitoonpong, Akkarakul, and Sukaruji 2005). During interviews with union and employer representatives at the NWC, it was often told to us that in some PSMWs, employer and employee representatives work in the same firm, the

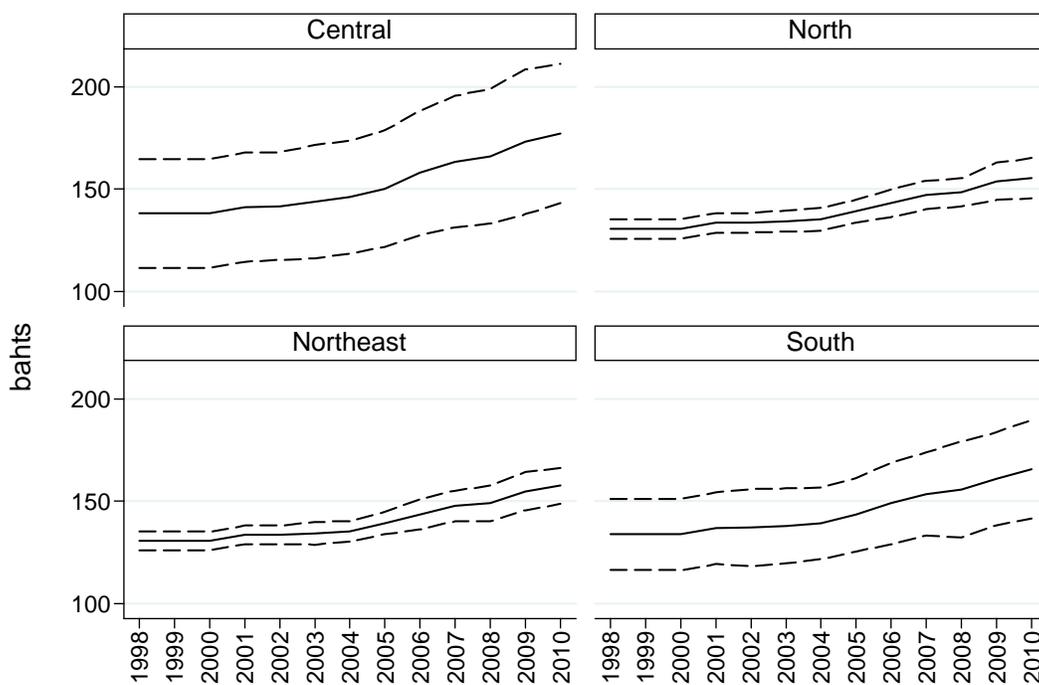
¹² The differences between the set of criteria established in the LPA 2541 (1998) and the LPA 2551 (2008) were minimal. The latter further detailed the three broad criteria established by the former, and it added the following ones: inflation rate, subsistence standard, production costs, goods and service price, labor productivity, and GDP.

former having personally handpicked the latter. Even if employee representatives are present, they are often not prepared enough to contribute to the technical discussion. Hence, it is not surprising that the growth in nominal minimum wages during the 2000s (Figure 1) was not enough to keep up with inflation, and real minimum wages fell steadily in the four regions of the country as a result (Figure 2).¹³

Finally, the unavailability of suitable data, especially but not exclusively at the provincial level, turns the minimum-wage review process into an excessively political one, further reducing the probability that its outcome is tightly linked to the actual evolution of the economic indicators outlined in the LPA 2541. Although the NWC gives the PSMWs written suggestions on data sources for the indicators to be considered for minimum-wage adjustments, it neither provides them with the actual data nor establishes a national minimum-wage guideline.

In sum, the wage negotiations carried out by the PSMWs are unlikely to have responded to supply and demand conditions in a systematic manner.

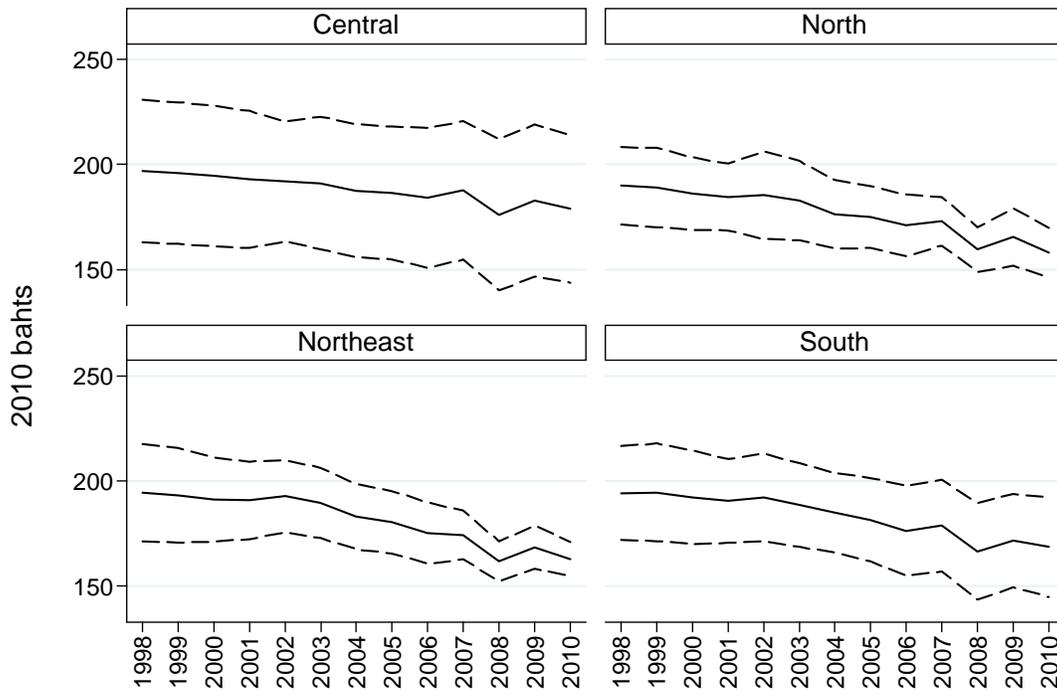
Figure 1. Growth of the Nominal Minimum Wage in Thailand, by Region, 1998–2010



¹³ The interviews were held during a World Bank field mission that took place on February 13-17, 2012. All interviews were conducted in confidentiality, and the names of interviewees are withheld by mutual agreement.

Note: The solid line depicts the average minimum wage (measured in current bahts) per region, and the dashed lines represent one standard deviation above and below it.

Figure 2. Growth of the Real Minimum Wage in Thailand, by Region, 1998–2010



Note: The solid line depicts the average real minimum wage (measured in constant bahts) per region, and the dashed lines represent one standard deviation above and below it. Minimum wages are deflated using yearly CPI at the province level.

More importantly, another source of exogenous variation affects minimum-wage outcomes from the negotiations. NWC members told us that they often considered another criterion (not stipulated by the LPA 2541) before reaching a final recommendation: the extent of cross-provincial disparities. In particular, the NWC generally tried to avoid exacerbating cross-provincial differences in the minimum wage (which indeed remained fairly stable along our period of analysis, as the standard deviations across provinces in Figure 1 indicate) or, at the minimum, attempted to maintain the status quo in terms of provincial rankings (within regions). To this purpose, the NWC used to compensate provinces that had lagged behind within the region in terms of their previous (nominal) minimum-wage adjustment, while it set relatively smaller minimum-wage increases in provinces that had previously fared better than the regional average.

We present evidence supportive of these trend reversals within regions in Table 1, which displays estimates of the determinants of two alternative measures of relative within-region minimum-wage

adjustments: The first one (columns 1–3) is an indicator variable that takes the value one if the province’s percentage increase in the minimum wage is above the regional average; otherwise, it takes the value zero. The second measure (columns 4–6) is the provincial ranking (within-region) in terms of the minimum-wage percentage increases received. We regress these two indicators on their lagged values, seeking evidence of trend reversals. In the first specification (columns 1 and 4), we include region dummies on top of the lag of the dependent variable. Next (columns 2 and 5), we control for provincial inflation and the growth rate of real per capita provincial GDP (that is, the main indicators on which data are systematically collected that should be considered in fixing minimum wages according to article 87 of the LPA 2541). Finally (columns 3 and 6), we include the lag of the latter two variables as additional controls.

Our results from column 1 show that the likelihood of getting a minimum-wage increase above the regional average is significantly smaller in provinces where the previous minimum-wage raise was above the regional average. Along these lines, we also find that the provincial ranking (within the region) in terms of minimum-wage percentage increases (column 4) was significantly higher the lower the province had ranked at the previous minimum-wage change date. It is also worth highlighting that the impact of inflation and GDP growth on the growth of the minimum wage is far from significant at standard levels of testing, and the results are virtually unchanged when adding these variables (and their lags) as further controls (columns 2, 3, 5, and 6).

Additionally, we estimated an analogous model to investigate the determinants of the percentage increase in minimum wages at the province level and reached similar conclusions: current increases in minimum wages were significantly smaller the higher the previous increases had been, and they were not significantly affected by inflation or GDP growth, the inclusion of which did not significantly change the other relevant coefficient estimates.¹⁴

This process of ex-post compensation of the provincial minimum wages that was put in place to guarantee a regional balance introduced exogenous variation in the changes over time of the minimum wage within provinces. Importantly, these changes appear to be driven by institutional factors rather than by supply and demand in the local labor markets. To be sure, wages, employment, and minimum wages are jointly determined at the aggregate level, and the entrenched minimum-wage differences across provinces through 2011 reflected different levels of development. Hence, the identification in the analyses below will rely on time variation of the minimum-wage within provinces, abstracting from permanent differences across provinces and common macroeconomic shocks by introducing year, month, and province dummy variables into the regression. We argue that, in light of the evidence on trend reversals presented here, and given the great deal of arbitrariness in the complex, two-tiered, tripartite system of minimum-wage negotiations, the

¹⁴ These results are available upon request from the authors.

remaining variation within-province in minimum wages is exogenous to local labor market conditions, and therefore exogenous to employment, poverty, and wage setting at the provincial level.

Table 1. Determinants of Relative (Within-Region) Minimum-Wage Changes in Thailand

	Minimum-wage growth higher than regional average			Minimum-wage growth ranking		
	(1)	(2)	(3)	(4)	(5)	(6)
Lag minimum-wage growth higher than regional average	-0.1524*** (0.03207)	-0.1513*** (0.03222)	-0.1585*** (0.03148)	-	-	-
Lag minimum-wage growth ranking	-	-	-	-0.1419** (0.04266)	-0.1418** (0.04273)	-0.1430** (0.04340)
Inflation	No	0.01152 (0.01360)	0.01479 (0.01413)	No	-0.006203 (0.1581)	-0.002394 (0.1607)
Real per capita GDP growth	No	0.1395 (0.3288)	0.1670 (0.3294)	No	-0.3541 (4.1674)	-0.2887 (4.1975)
Lag inflation	No	No	-0.01308 (0.01299)	No	No	-0.005877 (0.1480)
Lag real per capita GDP growth	No	No	0.3002 (0.2922)	No	No	1.6228 (3.2588)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	684	684	684	684	684	684

Note: In columns (1)–(3), the dependent variable takes the value one if the province's percentage change in the minimum wage is above the regional average, and the value zero otherwise. In columns (4)–(6), the dependent variable ranks each province's minimum-wage percentage increase within the region. Reported estimates are probit average partial effects in columns (1)–(3) and OLS coefficient estimates in columns (4)–(6). Clustered standard errors are displayed in parentheses. The analysis considers Thailand's 76 provinces in nine minimum-wage change dates (January 2003, January 2004, January 2005, August 2005, January 2006, January 2007, January 2008, June 2008, and January 2010), which yields a sample of 684 observations.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

One final issue that requires consideration is compliance. Although the LPA 2541 and the LPA 2551 establish penalties that include fines and in some cases imprisonment, the resources allocated to monitoring are limited in Thailand, and recent data from the Department of Labor Protection and Welfare indicate that employers are seldom penalized over minimum-wage breaches (Leackcivilize 2013). Weak enforcement may in turn reduce compliance and hence hamper the potential effectiveness of minimum-wage legislation.¹⁵ In the

¹⁵ See, for instance, ILO (2010).

next section, we describe our main data sources and empirically assess the extent of noncompliance with Thai minimum wages in the covered sector.

3. Data and Descriptive Evidence

3.1. Data sources

This paper relies on two main data sources: the Labor Force Survey (LFS), on which we base our individual-level analyses of labor market outcomes, and the Household Socio-Economic Survey (SES), which we use to study the impact of the minimum wage on household consumption and poverty.

The National Statistical Office of Thailand (NSO) undertakes the LFS to collect data on the economic activities of the population, including detailed information on employment and unemployment as well as on characteristics of the labor force and economically inactive individuals. The LFS relies on a two-stage stratified sampling design (Thailand's 76 provinces constituted the strata),¹⁶ and it covers the civilian noninstitutional population living in private households and special households (which include group households or quarters within a factory compound). LFS data, which are collected monthly and released quarterly, also include information on relevant socioeconomic characteristics such as age, gender, marital status, and education.

To study the impact of the minimum wage on the Thai labor market, we focus on the period 1998–2010 and adapt our sample selection criteria to the specific outcome under study: the wages and hours¹⁷ worked by 15- to 60-year-old full-time employees covered by minimum wages.¹⁸ Two samples—those of all working-age (15–60) individuals and of working-age private sector workers—serve as the bases for our analyses of the probability of employment and the probability of working in the covered or uncovered sector, respectively. Regarding wage measurement, since Thai minimum wages are set per day, the wage variable we use is also a daily rate,¹⁹ which we deflate when necessary by provincial CPI.

Our analyses of poverty and household consumption rely on the SES, a stratified two-stage sampling survey that the NSO typically carries out every two years. The goal of the SES is to collect socioeconomic information on Thai households, such as consumption, characteristics of household members and housing,

¹⁶ Primary and secondary sample units are blocks (for municipal areas) or villages (for non-municipal areas) and households, respectively.

¹⁷ Wages and hours worked are considered only for the worker's main job.

¹⁸ The retirement age is 60 in Thailand.

¹⁹ For employees paid by the month, monthly wages were converted to a daily rate by dividing by 30.

ownership of selected durable goods, and so forth. We use data from all years available within our period of analysis: that is, 2000, 2002, 2004, 2006, 2007, 2008, 2009, and 2010.

3.2. Who pays and who receives the minimum wage? How binding are Thai minimum wages?

Data on labor inspections conducted by the Department of Labor Protection and Welfare reveal that, on average, 12–13 percent of establishments were inspected every year during 2006–10, but more than 94 percent of the establishments violating any labor law received only a warning, and less than 0.3 percent were actually penalized or prosecuted (Leckcivilize 2013). Therefore, noncompliance with Thai minimum wages may be relevant even for formal employees, and the following questions are warranted: Are Thai covered employees actually paid at or above the minimum wage? Who are and who aren't?

To answer these questions, we depart from the sample of workers covered by minimum-wage legislation to characterize those who are paid above and below the minimum wage. Because few workers earn exactly the minimum wage, we define minimum-wage workers (labeled as “At the minimum” in table 2) as those for whom the difference between the actual daily wage received and the daily minimum wage in the province where they work does not exceed (in absolute terms) 5 percent. The other two categories, “Below” and “Above”, identify workers whose wage is more than 5 percent lower and higher than the minimum wage, respectively.

Table 2 presents summary statistics for these three groups and uncovers a significant degree of noncompliance: around 20 percent of Thai employees are paid less than the minimum wage, according to our characterization—a remarkable feature considering that these summary statistics are based on the sample of workers who, in principle, are covered by minimum wages as stipulated by the legislation. This result is broadly consistent with other compliance indicators based on alternative data sources.²⁰

Regarding worker characteristics, younger workers (aged 15–24) are more likely than prime-aged workers (aged 25–49) to be below or at the minimum wage. Because female wages are lower, compliance also varies by gender: 25.9 percent of females earn less than the minimum, against only 17.8 percent of males. As for firm size, large firms are more likely to pay at or above minimum wages, while small firms are more prone to noncompliance. For example, 41.8 percent of individuals working in firms with 1 to 5 employees earn below the minimum wage, against only 5.3 percent of their counterparts working in firms with more than 200 employees. The incidence of and noncompliance with minimum wages also decreases as education increases and is more prevalent among blue-collar workers.²¹

²⁰ See, for instance, Paitoonpong, Akkarakul, and Sukaraji (2005); DLPW (2002); and Peetz (1996).

²¹ Chandoevrit (2010) reports similar patterns of noncompliance across workers and firms based on LFS data.

Table 2. Summary Statistics on Private Sector Wages Relative to Minimum Wage in Thailand

	Percentage of workers		
	Below the minimum	At the minimum	Above the minimum
<i>By worker characteristic</i>			
Female	25.88	23.85	50.28
Male	17.79	15.73	66.48
Less than elementary education	35.15	18.83	46.02
Elementary education	27.62	24.48	47.91
Lower secondary education	21.15	26.25	52.59
Upper secondary education	12.85	20.41	66.74
Tertiary education	2.80	4.36	92.84
Age 15–24	29.72	27.11	43.18
Age 25–44	17.54	17.84	64.62
Age 45–60	24.72	13.93	61.35
<i>By occupation</i>			
Legislators, senior officials	1.00	0.94	98.06
Technicians and associates	4.13	6.94	88.93
Clerks	7.23	11.33	81.44
Service workers, shop, and related	31.45	15.50	53.05
Skilled agriculture and fisheries	56.41	17.97	25.62
Craft and related trades	13.40	17.13	69.47
Plant and machine operators	11.25	32.10	56.65
Elementary occupation	41.89	24.02	34.10
<i>By industry</i>			
Agriculture, hunting, forestry, fisheries	59.65	15.81	24.54
Manufacturing, electricity, gas, and water	11.49	30.09	58.43
Construction	12.94	13.04	74.02
Wholesale and retail trade	20.62	13.93	65.45
Hotels and restaurants	37.67	15.22	47.11
Transport, storage, and related	14.93	8.44	76.62
Financial inter. and real estate	8.57	10.53	80.90
Education	11.13	7.41	81.46
Health, social, and household services	39.03	13.58	47.39
<i>By firm size</i>			
1–4 employees	41.84	14.66	43.49
5–9 employees	32.01	14.56	53.43
10–19 employees	25.02	16.53	58.45
20–199 employees	14.09	18.62	67.29
200+ employees	5.31	28.00	66.69
Total	21.30	19.26	59.44

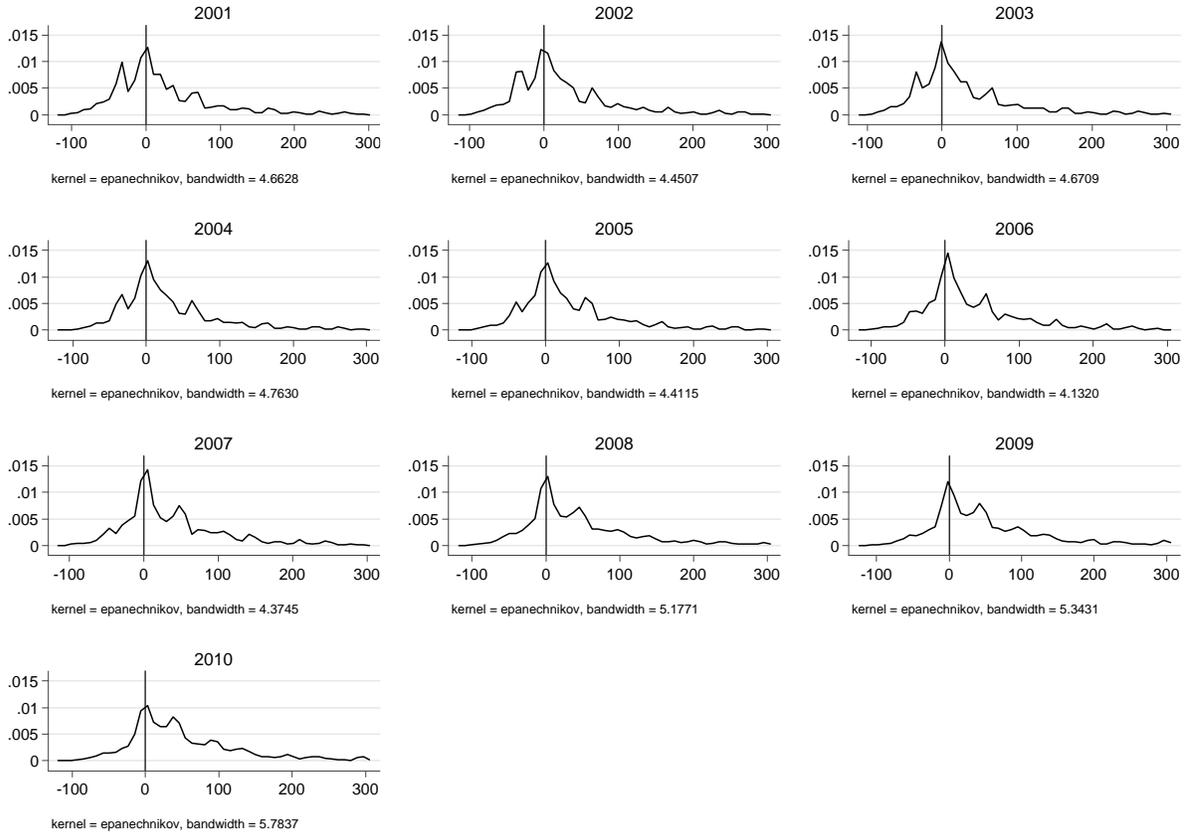
Note: Sample drawn from 1998–2010 LFS data on working-age (15–60 years old) full-time private employees paid by the day or by the month. Workers “at the minimum” wage are defined as those actual daily wage received is within 5 percent

above or below the minimum wage in their province. For workers “below the minimum” and “above the minimum,” wages are more than 5 percent lower or higher than the minimum wage, respectively.

An alternative way of assessing noncompliance and how binding minimum wages are is to look for spikes in the wage distribution at or around the minimum wage. Because Thai minimum wages during the period analyzed differed across provinces and over time, we define a new variable that measures the difference between the wage of each employee and the minimum wage in the province where he or she works, and we then pool all Thai covered employees by year. Figure 3 displays kernel density estimates of the distribution of the difference between actual daily wages and the minimum wage for each year of our sample period. Two main features are worth noting: First, there is a visible spike at or very close to zero, which is the mode of the wage distribution in all years. Hence, minimum wages are clearly binding. Second, as table 2 revealed, there is also a significant fraction of workers who are paid below the minimum wage in the covered sector.

In sum, our evidence indicates that, although compliance is far from perfect, Thai minimum wages are clearly binding. Importantly, the extent of noncompliance appears to vary substantially by socioeconomic characteristics. Hence, the impact of the minimum-wage legislation is likely to vary across groups of employees, a feature we take into account in our subsequent analyses.

Figure 3. Kernel Density Functions of the Difference between Actual Wages and Minimum Wage in Thailand, 2001–10



Note: Kernel densities display the log of real daily wages of full-time (35+ hours per week) private salaried workers. The sample includes employees who are paid by the day as well as employees who are paid by the month.

4. Estimation and Results

4.1. Empirical model and identification

We estimate the impact of the minimum wage on various outcomes by relying on a difference-in-differences identification strategy. In particular, we estimate equations of the following form:

$$y_{it} = \beta_0 + \ln MW_{pt} \beta_1 + X_{it} \beta_2 + \delta_t + \gamma_p + (time_t * \gamma_p) \beta_3 + CPI_{pt} \beta_4 + \varepsilon_{it},$$

where y_{it} denotes the outcome of interest (we start by looking at individual real daily wages and then we move to employment, informality, and poverty) and $\ln MW_{pt}$ the log of the minimum wage; i stands for individuals (in the labor market outcomes analyses) and for households (in the poverty analyses); t stands for time and p stands for province. The model includes, depending on the outcome, a vector of worker or household-

specific characteristics (X_{it}) that control for observable compositional changes in the labor market. Explanatory variables in vector X_{it} change with the specification, but in general include individual specific human capital (a gender dummy, a quadratic term in age, and dummies for the highest level of education obtained), a dummy for married, and a dummy for living in urban areas. When we analyze employed individuals, we further include industry and occupation categories and dummy variables for firm size.

All specifications include a full set of year (δ_t) and provincial dummies (γ_p) as well as province-specific annual trends ($time_t * \gamma_p$). This is important because the presence of secular trends correlated with trends in minimum wages and employment outcomes would invalidate the difference-in-differences identification strategy (Dube, Lester and Reich, 2010). Along these lines, the inclusion of province-specific trends in all our estimations is also aimed at making sure that our analyses allow for the presence of potentially relevant trends at the province level. Additionally, we control for yearly provincial CPI and provincial real GDP per capita, two of the main aspects that wage setters should have taken into account during wage negotiations according to the legislation. Hence, these two variables are meant to capture secular trends at the provincial level potentially correlated with the minimum wage.

4.2 The impact of the minimum wage on average wages

We start by assessing the effect of the minimum wage on average wages. Table 3 displays the results of estimating the model previously outlined and focuses on the parameter of interest, that is, the estimated elasticity of wages to the minimum wage. We proceed parsimoniously. Column 1 includes province dummies, year dummies and province annual trends in the regression. The estimated elasticity of wages to the minimum wage is 0.61 and highly significant. The elasticity is markedly reduced to 0.36 when individual controls (a male dummy, age, age squared/100, married and municipal area indicators, as well as education and occupation categories) are included (column 2). Controlling for industry of employment (column 3) and firm size (column 4) does not substantially alter the results (0.39 and 0.40, respectively).

Our preferred specification is in column 5 of table 3, which adds to the set of controls two province-level indicators: GDP per capita and the CPI. Interestingly, and in spite of these two indicators being the key ingredients in wage negotiations according to the law, adding these macro variables does not alter the estimated impact of the minimum wage on wage levels. This lends further support to the idea that minimum wage changes are not related to local labor market developments. With this specification, the elasticity of individual wages to the provincial minimum wage amounts to 0.40, and is highly significant at the 1 percent level.

Hence, the regression analysis confirms what previous summary statistics and visual inspection suggested: in spite of substantial noncompliance, the minimum wage in Thailand is binding, and it has a bearing on actual wages. In particular, a 1% increase in the minimum wage is associated with a 0.40% increase

in average wages. Considering that only 20% of formal workers earn the minimum wage (see Table 2), our estimated elasticity implicitly suggests that various lighthouse effects affect wages throughout the distribution. Next, we investigate this issue in two ways: by inspecting heterogeneous impacts across different types of workers and by looking directly at the impact of the minimum wage at different points of the wage distribution.

Table 3. Effect of Thai Minimum Wage on Average Wages (OLS Estimates)

	(1)	(2)	(3)	(4)	(5)
Minimum wage	0.609*** (0.070)	0.356*** (0.104)	0.391*** (0.106)	0.396*** (0.102)	0.405*** (0.102)
Province dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Province annual trends	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes
Education	No	Yes	Yes	Yes	Yes
Occupation	No	Yes	Yes	Yes	Yes
Industry	No	No	Yes	Yes	Yes
Establishment size	No	No	No	Yes	Yes
Province GDP and CPI	No	No	No	No	Yes

Note: The dependent variable (individual daily wages) is measured in logs. Individual controls include a male dummy, age, age squared/100, married, and municipal area indicators. Sampling weights are used, and standard errors, displayed in round brackets, are clustered at the province level. Analyses are based on working-age (15–60 years old), full-time (35+ hours per week), private sector employees. Number of observations: 1,069,134. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4 moves to the analysis of the heterogeneous impact of the minimum wage on different labor market groups. We follow the Mincerian tradition and differentiate the effects across the two key dimensions of human capital: education and labor market experience (in our case approximated by age). In all cases we allow for a flexible specification by splitting the sample across groups. In panel 1 of Table 4, we show the differential impact of the minimum wage across age groups. Not surprisingly, the wages of young and elderly workers (15–24 and 50–60 years old, respectively) are more affected than the wages of prime-aged employees (25–49 years old), who earn higher wages. Along these lines, panel 3 of Table 4 shows that the impact of the minimum wage steadily decreases with education. The elasticity of wages to minimum wage changes ranges from 0.25 (and not statistically significant) in the case of workers with university education to 0.61 (and statistically significant at the 1 percent level) for workers with less than elementary education.

In order to investigate directly the presence of lighthouse effects, and whether the minimum wage indeed has a stronger impact on the wages of low-earning workers, we estimate its impact along the wage distribution using unconditional quantile regression methods as proposed by Firpo, Fortin and Lemieux (2009). Unconditional quantile regression methods differ from conditional quantile techniques in that they directly estimate the impact of a marginal change in the minimum wage level throughout the overall wage distribution, without changing the distribution of other (observable) characteristics. This approach is more appropriate in our setting, inasmuch as workers with very different characteristics are located at different points of the distribution, possibly confounding the impact of the minimum wage in traditional quantile regression settings.

Table 4: Effect of Thai Minimum Wage on Average Wages, by Socioeconomic Group.

OLS Estimates		
	Elasticities and standard errors	Sample size
<hr/> (1) By age group <hr/>		
15–23 years	0.5893*** (0.1024)	170691
24–49 years	0.3506*** (0.1018)	803033
50–60 years	0.5758* (0.2566)	95410
<hr/> (2) By education <hr/>		
Less than elementary	0.6123*** (0.1385)	277569
Elementary	0.5475*** (0.09368)	247075
Lower secondary	0.3814*** (0.1066)	190983
Upper secondary	0.2807* (0.1287)	171032
Tertiary	0.2447 (0.2408)	182475

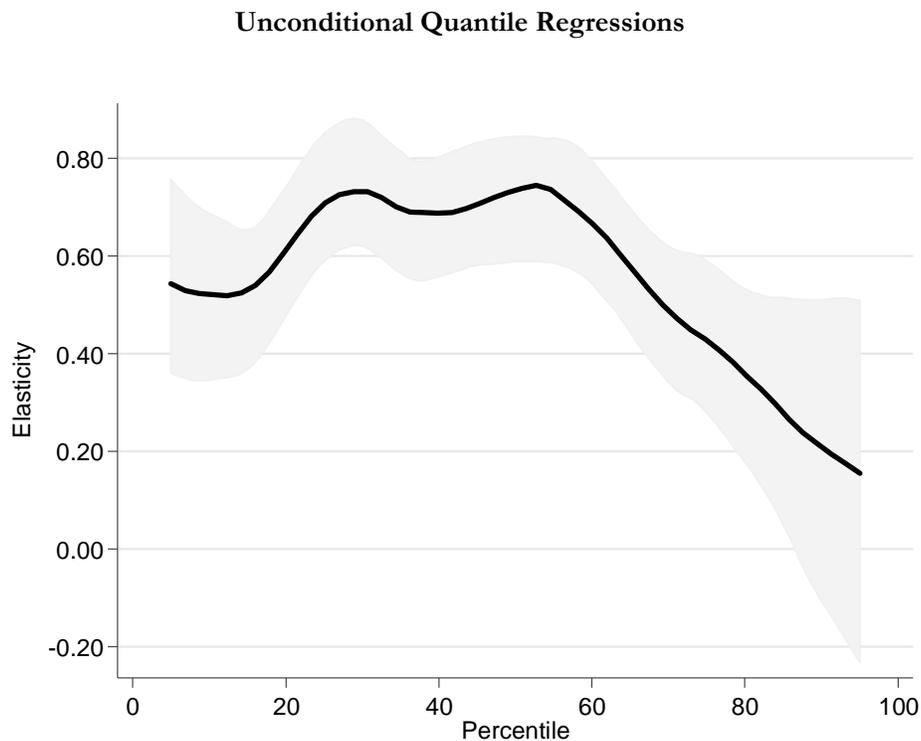
Note: Both the dependent variable (individual daily real wages) and the daily minimum wage are measured in logs. Control variables in all panels include province and year-month dummies, a province linear trend, age, age²/100, married, and municipal area dummies, occupation, establishment size, and industry indicators as well as the log of real per capita GDP and the yearly provincial CPI. Estimations by gender (panel 1) also include education indicators, while estimations by age group (panel 2) include a male dummy as well as education indicators, and estimations by education (panel 3) also include a male dummy. Sampling weights are used and standard errors, displayed in round brackets, are clustered at the province level. Analyses based on working-age (15–60 years old), full-time (35+ hours per week) private employees.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Our results, summarized in Figure 4, indicate that the strongest impact does not correspond to those at the very bottom of the distribution (which illustrates the importance on noncompliance), although the effect of the minimum wage along the low centiles is nonetheless statistically significant and sizeable. Figure 4 also reveals that the effect of the minimum wage varies considerably along the wage distribution: it peaks between centiles 30 and 55 and declines steadily thereafter, but it only becomes non-significant after centile 85. These large lighthouse effects are in line with the idea that, in a context of weak unions, the minimum wage is a relevant price in the labour market which is often used as a reference in wage negotiations among workers who earn well above the minimum wage (Messina and Sanz-de-Galdeano, 2014).

We conclude that the minimum wage in Thailand has a large impact on average wages that declines with the level of education, concentrates among the young and the elderly, and fades away for higher earning workers. Minimum wages reduced overall levels of inequality because the estimated impacts on the wage distribution are higher at the bottom than at the top of the wage distribution. However, substantial non-compliance reduces the impact of the minimum wage for the lowest earning workers. Indeed, inequality actually increased at the bottom half of the wage distribution due to the presence of minimum wages, as their impact peaks around the median wage.

Figure 4. The impact of the minimum wage on the distribution of wages.



Note: The dependent variable (individual daily wages) is measured in logs. The set of controls included in the regression are the same as those of column 5 in table 3. The point estimate and 95% confidence bands are built using nonparametric smoothing of all the centiles.

4.3 Minimum wages and informality

Our previous analyses confirmed that the minimum wage in Thailand is binding and showed that it shapes the wage distribution with differential impacts across different categories of workers. The next natural question, on which most of the literature has focused, would be whether the minimum wage generates unemployment. In the case of Thailand, however, unemployment is extremely low—an average of 1.2 percent during the period we are analyzing—, suggesting that the effect of the minimum wage, if any, should be marginal. However, another important mechanism may be at play: in the presence of binding minimum wages, some workers may be forced to move to the uncovered sector, which in Thailand and most other Southeast Asian economies is large. In particular, about 61 percent of private workers in Thailand are in the uncovered sector; that is, they are either self-employed or working in a family business for no pay. Are changes across provinces in the Thai minimum wage associated with changes in the probability of working in the uncovered sector? Our next set of regressions investigates this question.

We focus on private sector workers and define a dummy variable that takes the value one if the worker is an employee, and the value of zero if he or she is self-employed or an unpaid family worker. As before, our benchmark specification controls for province and year dummies, province-specific trends, yearly province CPI and the log of real per capita GDP as well as a quadratic term in age, married and municipal area dummies, and occupation and industry indicators. Because the dependent variable is the probability of working in the covered sector, we estimate logit models and report average partial effects (APEs). Table 5 contains the results on the full sample (panel 1), and also includes separate regressions by age group and education, (panels 2 and 3).

In spite of the strong impact of the minimum wage on average wages and along the wage distribution, our results show little signs that minimum wage increases are pushing workers into the uncovered sector in Thailand. The estimated average partial effects for all groups are generally small in magnitude and do not achieve statistical significance at standard levels of testing. There is, however, an interesting exception to this pattern: according to the estimates in panel 3 of Table 5, a 10% increase in the minimum wage would decrease the probability of working in the covered sector by 2.2 percentage points for low skilled workers, in particular, for workers with elementary education. Considering that only 37 percent of these workers are employed in the covered sector, the estimated effect is relatively large: a 10% increase in the minimum wage reduces the probability of being formal by 6% for workers with elementary education.

Interestingly, the impact of the minimum wage is non-significant and much smaller in magnitude for workers with less than elementary education, possibly due to the fact that non-compliance is highest among this group (35.5 percent of workers in this group are paid below the minimum, see Table 2).

Table 5. Effect of Thai Minimum Wage on the Probability of Working in the Covered Sector (Logit Estimates)

	APEs and standard errors	Sample size
(1) All	-0.04422 (0.05703)	3,620,959
(2) By age group		
15–23 years	0.0009928 (0.1271)	376,462
24–49 years	-0.07190 (0.06725)	2,531,539
50–60 years	0.01658 (0.08133)	712,958
(3) By education		
Less than elementary	0.05233 (0.07076)	1,429,761
Elementary	-0.2246* (0.1025)	798,673
Lower secondary	0.008650 (0.07644)	537,740
Upper secondary	-0.01509 (0.1137)	451,126
Tertiary	0.02475 (0.1079)	403,659

Note: The dependent variable takes the value 1 if the individual is working in the covered sector (that is, if he or she is a salaried employee in the private sector) and 0 if he or she is self-employed or an unpaid family worker. The daily minimum wage is measured in logs. Analyses are based on 15- to 60-year-old individuals working in the private sector (public employees and unemployed individuals are therefore excluded from the sample). Average partial effects (APEs) are displayed, sampling weights are used, and standard errors, displayed in round brackets, are clustered at the provincial level. Control variables in all panels include province and year dummies, a linear province trend, age, age²/100, married and municipal area dummies, and occupation and industry indicators as well as the log of real per capita GDP per province and year and the yearly province CPI. Estimations by gender (panel 2) also include education indicators, while estimations for all working-age individuals and by age group (panels 1 and 3) include a male dummy as well as education indicators, and estimations by education (panel 4) also include a male dummy.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

4.4 Minimum wages, poverty, and household consumption inequality

So far we have learned that Thai minimum-wages have a positive impact on the average wages of covered employees, and even workers with secondary education and workers who earn a wage well above the

median of the wage distribution benefit from increases in the minimum wage. This suggests that minimum wages represent a social norm that sets the stage for wage negotiations, even among workers who earn wages well above the minimum. We did not find strong effects of the minimum wage on informality, with the exception of a relatively large positive effect for workers with elementary education. These two set of facts suggests that inter-provincial minimum wage increases in Thailand are likely to be beneficial for workers' welfare. However, low compliance with the minimum wage casts doubts on their effectiveness as a poverty alleviating tool.

In this section, we address the overall impact of the minimum wage on welfare from two different angles: the effect of the minimum wage on the probability of being poor and its impact on household per capita consumption. To these purposes we rely on a different data set, the Thai Household Socio-Economic Surveys (SES), which was collected in the following years: 2000, 2002, 2004, 2006, 2007, 2008, 2009, and 2010. The incidence of poverty is obtained using a consumption approach, and follows official definitions. As such, poor households are those that are not able to fulfill minimum calorie requirements for their members. Adjustments are made to take into account the gender and age composition of the household and differences in food prices across regions (see Jitsuchon, Kakwani, and Plangraphan, 2006). The average poverty line in 2002 was 1,190 Baht per person per month (27 US\$ of 2002), leaving some 15% of the Thai population in poverty at the time. It is worth stressing that the official poverty line has been constructed using a base year of 2002 (that is, after the 1997 economic crisis, which led to relevant changes in consumption patterns).

Table 6 presents logit estimates of the probability of the household being poor as a function of the minimum wage. In column 1 we only control for province and year dummies, province fixed effects and province annual trends. Column 2 adds household head's characteristics (a male dummy, age and its squared term, a married dummy, education, and labor market status indicators), household-level information (a municipal area dummy, household size, and indicators for the presence of household members younger than 15 and older than 59 years old); and the two provincial indicators we used in previous regressions: the log of per capita GDP and CPI per province and year.

According to the estimates in Table 6, the estimated average partial effects of the minimum wage on poverty are negative and significant at the 5 percent level. According to the estimates in column 1, a 10 percent increase in the minimum wage is associated with a 2.4 percentage point reduction in the probability of a household being poor. Controlling for household characteristics, household's head demographics provincial CPI and GDP per capita does substantially alter the results: the estimated APE is -0.211 and statistically significant at the 5 percent level.

**Table 6. Effect of Thai Minimum Wage on Probability of Household Poverty
(Logit APEs)**

	(1)	(2)
Log daily minimum wage	-0.237* (0.095)	-0.211* (0.0916)
Province dummies	Yes	Yes
Year dummies	Yes	Yes
Province annual trends	Yes	Yes
Household head's characteristics	No	Yes
Household characteristics	No	Yes
Province yearly CPI	No	Yes
Log yearly province per capita GDP	No	Yes
<i>N</i>	312,985	312,872

Note: The dependent variable takes the value 1 for poor households and 0 otherwise, and the daily minimum wage is measured in logs. Average partial effects (APEs) are displayed, and standard errors, displayed in round brackets, are clustered at the provincial level. Specification 1 includes only province and year-month dummies. Specification 2 adds the household head's characteristics (male dummy, age, age²/10, married dummy, education, and labor market status indicators); household information (municipal area dummy, household size, and indicators for the presence of household members younger than 15 and older than 59 years old); the log of real per capita GDP per province and year and yearly province CPI.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

To gain a better understanding of the impact of the minimum wage on the welfare of the population, we now extend the analysis beyond the poor and focus on the responses to minimum-wage changes of household consumption per capita. In developed countries, income per capita at the household level is commonly used as a measure of welfare. In developing countries, consumption per capita is commonly believed to be a better measure to approximate the permanent income of the household. Income in household surveys tends to be severely understated, a problem that is much less common in the case of

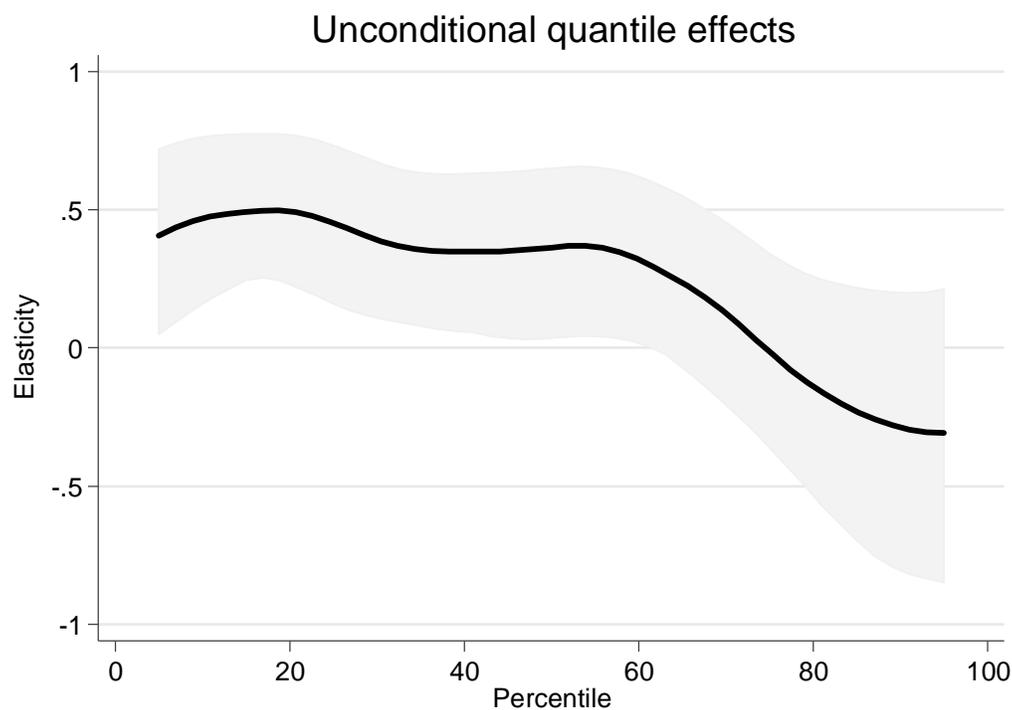
consumption.²² Consumption data are expected to be smoother and less prone to underreporting than income data. Moreover, consumption captures household welfare better than income, as utility depends on consumption. Even if household consumption may not be a perfect proxy for welfare (especially among high-earning households with some saving capacity), the analysis has the potential of capturing some of the general equilibrium effects of the minimum wage.

In particular, we look into the effect of the minimum wage along the per capita household consumption distribution. While LFS wage data are available only for employees, per capita household consumption is available for all households in the SES, which allows us to provide a broader picture of the welfare effects of minimum-wage changes. The analysis mimics the wage analysis before, and is conducted using unconditional quantile regressions. The dependent variable is the log of per capita real household consumption, and explanatory variables are the (log of) the real daily minimum wage; household heads' characteristics (male and married dummy, age and its quadratic term, education, and labor market status indicators); a municipal area dummy; indicators of household composition (household size and indicators for the presence of household members younger than 15 and older than 59 years old); and the log of real per capita GDP per province and year.

Figure 5 reports the results for the impact of the minimum wage along the distribution of household consumption per capita. The minimum wage has a positive impact on per capita household consumption that is statistically significant at all percentiles below the 55th. This effect is fairly uniform along the bottom half of the distribution, with an estimated elasticity that reaches a maximum around the 20th percentile, at 0.5, and slowly declines thereafter until the 55-60th percentile, after which the estimated elasticity declines rapidly, crossing zero at 70th. Hence, we conclude that the minimum wage in Thailand does not only have a role in poverty alleviation, it also helps reducing inequality by lifting consumption per capita at the bottom.

²² We do not use equivalence scales to adjust household consumption per capita levels. We prefer instead to control for the number of children and elderly individuals in the household to account for potential economies of scale.

Figure 5: Impact of Thai Minimum Wage along Distribution of Real Per Capita Household Consumption



Note: Unconditional quantile regression estimates (solid lines) and their associated confidence intervals (grey area) are plotted. The line is a nonparametric smoothing of all the centiles while the confidence intervals express the intervals of the actual estimates. The dependent variable (per capita real household consumption) is measured in logs, and so is the daily minimum wage. Control variables include household heads' characteristics (male dummy, age, age²/10, married dummy, education, and labor market status indicators); a municipal area dummy; information on household composition (size and indicators for the presence of household members younger than 15 and older than 59 years old); and the log of real per capita GDP per province and year.

5. Concluding Remarks

The minimum wage in developing countries is often seen as a fundamental tool for lifting the labor market fortunes of the less favored. However, such a tool may not be effective in the presence of informality. Large fractions of the labor force are employed through informal arrangements in developing countries, and hence not covered by minimum-wage laws. Even among formally registered firms, where one would expect greater enforcement, minimum-wage laws are associated with considerably high levels of noncompliance. Naturally, higher levels of non-compliance and informality are found among those workers who are less productive and more vulnerable, such as the young, the elderly, and the less-educated in general. Hence, it is in principle unclear whether the minimum wage constitutes the right tool for reducing inequality and, ultimately, for alleviating poverty.

This paper examined the impact of the minimum wage on key labor market variables including informality and wages, but it also extended the analysis to study the impact on household poverty and consumption inequality during the past decade in Thailand. We find that minimum wage increases actual wages generally, and they do so more for young workers and older workers than for prime-aged employees, and for less educated workers than for highly educated workers. The estimated elasticities are in the range of 0.24–0.59, depending on the subgroup analyzed, and the average elasticity for the general population of full-time formal sector employees is 0.40. The message conveyed by the subgroups analysis is confirmed by unconditional quantile regressions, which show an inverted U-shape in the impact of the minimum wage along the wage distribution, peaking around the 25th to 55th percentile of wages. This is illustrative of the importance of various lighthouse effects in the Thai labor market, where changes in the minimum wage determine wage negotiations for workers who are well above the minimum (and to some extent, also for those who are paid below the minimum wage). Importantly, with the exception of workers who have elementary education, we find little evidence of minimum wage increases pushing workers into the uncovered sector (comprising self-employed and unpaid family workers).

Thus, the labor market analysis suggests that the minimum wage law in Thailand is likely to have a positive effect on individuals' welfare at the bottom of the distribution. This conclusion is confirmed by our analysis of the impact of the minimum wage on consumption per capita at the household level and on household poverty. In particular, a 10 percent increase in the minimum wage is associated with a non-negligible poverty reduction of 2.1 percentage points. As for household consumption, minimum wage increases reduce inequality at the bottom-half of the distribution significantly, although the impact of the minimum wage is sizeable up to the 6th decile of the consumption per capita distribution, and declines rapidly thereafter.

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