The Consequences of Legal Minimum Wages in Honduras*

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Abstract

Minimum wage policies are implemented in most developing countries, so understanding their consequences is critical to determine their effectiveness. This paper studies the impact of minimum wages in Honduras from 2005-2012. In this period, there were annual reforms to multiple minimum wages, a 60% increase, and changes in the number of minimum wages. Using 13 household surveys as repeated cross-sections, I estimate the net effects of minimum wage hikes on compliance, labor market outcomes, and poverty. Results indicate that large employers partially comply with minimum wages but small businesses do not comply. Overall employment rates fall slightly, but labor force composition changes significantly. Higher minimum wages reduce covered (formal) employment and increase uncovered (informal) employment. Formal sector wages increase but rising labor supply in the informal sector leads to a negative net effect on wages. Estimates also show that minimum wages are ineffective to reduce poverty.

Key words: minimum wages, dual labor markets, compliance, employment, wages, poverty
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1 Introduction

There is an extensive literature in developed countries, particularly the US, that studies the consequences of minimum wage hikes. Research in the US has found higher minimum wages can lead to job losses, no effect on jobs, or even job growth.[1] In developing countries, minimum wages tend to be set higher (Maloney and Mendez, 2004), are less likely to be rigorously enforced (Kanbur and Ronconi, 2016), and labor markets are often segmented into formal and informal sectors with minimum wage policy only covering formal workers (Fields, 1990). Given these differences and that minimum wage policies are widespread in developing countries, understanding how minimum wages affect labor markets and welfare is critical for economic growth, developing effective labor policy, and poverty alleviation.

This paper evaluates recent minimum wage policy in Honduras. Similar to other developing countries, Honduras sets high minimum wages that are weakly enforced in a segmented labor market. Assessments of minimum wage policy often rely on variation in the structure of minimum wages (Gindling and Terrell, 2009, Lemos, 2009, Alaniz et al., 2011, Comola and Mello, 2011, Khamis, 2013), large increases (Castillo-Freeman and Freeman, 1992, Harasztosi and Lindner, 2015, Muravyev and Oshchepkov, 2016), or institutional reforms to wage floor systems (Gindling and Terrell, 2007). Here, I exploit category-level variation from all three sources to quantify the consequences of minimum wages on compliance, labor market outcomes, and poverty. Estimates are drawn from 13 household surveys assembled into repeated cross-sections. These data cover eight wage floor hikes from 2005-2012 and provide information on almost 330,000 individuals in the Honduran labor force (≈41,000 per year).

Theoretically, the effectiveness of a country's minimum wage policy depends on whether it is able to redistribute earnings to low-paid workers without generating employment loss. Empirical work in developing countries often disagrees on which of these effects prevails.[2] Evaluating the consequences of higher minimum wages is thus an empirical question. To

[1] See Card (1992), Card and Krueger (1994), Neumark and Wascher (2008), and Dube et al. (2010).
[2] See Lemos (2007) and Neumark and Wascher (2008) for literature surveys.

accurately estimate the impact of minimum wage hikes requires finding a source of exogenous variation in wage floors. Minimum wages are usually updated to account for inflation or aggregate economic conditions. Changing commodity prices cause shifts in labor supply and demand. Thus wage floors, wages, and employment are simultaneously determined, so regressing minimum wages on socioeconomic outcomes suffers from endogeneity bias.

Recent events in Honduras created natural experiments that generate plausibly exogenous minimum wage shocks. Honduras sets multiple minima that have differed across regional, industrial, and firm-size categories. This category-level structure is my main source of variation. From 2005-2012, this variation was affected by annual minimum wage reforms, a large increase, and changes in the number of minimum wages. The largest shocks are due to the latter two events. First, President Manuel Zelaya authorized a 60% average increase in real minimum wages aiming to equalize floors across categories in 2009. Second, the number of minimum wages changed from industry firm-size minimum wages (23 categories) to regional floors (2 categories) in 2009, to region and firm-size minima (6 categories) in 2010, and returned permanently to a modified version of industry firm-size minimum wages in 2011 (37 categories). On average, Honduran minimum wages increased 10.8% over this period. Differential changes across categories encompass declines of -11.1 to hikes of 204.5%.

While minimum wage increases are the most visible component of this policy, enforcement and compliance are also key elements. Increasing legal minimum wages that are imperfectly enforced often results in non-compliance (Ashenfelter and Smith, 1979, Bhorat et al., 2015). About one of every three covered workers earns sub-minimum wages in Honduras (Gindling and Terrell, 2009), with some paid much less than their legally entitled wage (Ham, 2015). I take advantage of relatively constant enforcement levels over this period to test for partial compliance and approximate the effect of minimum wage hikes on non-compliance in the covered sector. The resulting evidence indicates that large employers partially comply with the regulation but small businesses do not comply. Moreover, large covered employers increase their level of non-compliance in response to higher minimum wages by 36%.

Because the Honduran labor market is segmented, I test the predictions of the dual-sector minimum wage model (Harris and Todaro, 1970, Boeri et al., 2011). In this framework, rising wage floors should lead to employment losses and higher average wages in the covered sector, and viceversa for the uncovered sector. Following the legislation, I define these sectors using occupational categories. Results provide strong and robust evidence in support of this model. A 10% increase in minimum wages lowers the likelihood of covered employment by about 8% and increases the probability of uncovered sector employment just over 5%. The data indicates that individuals substitute wage earning jobs for self-employment as a direct consequence of minimum wage hikes. Consequently, covered sector wages increase but rising labor supply in the uncovered sector leads to a negative net effect on informal wages.

Therefore, minimum wage increases contribute to the growth of the informal sector, consistent with findings in Comola and Mello (2011) and Muravyev and Oshchepkov (2016). Unlike these two studies, I do find evidence of negative effects on wages in the uncovered sector. This result is driven by the large influx of wage earners into self-employment, suggesting that Hondurans would rather work in uncovered jobs than remain unemployed.

Since uncovered jobs in Honduras tend to be lower-paid part-time positions, average earnings in this sector often lie below covered sector incomes. Hence, there is a potentially adverse effect on individual well-being from a larger informal sector. I test whether minimum wages affect the likelihood of falling below national poverty lines, finding that increases in poverty for the uncovered labor force outweigh potential reductions for the covered labor force. This result indicates that higher wages for the covered workforce are unable to compensate for the income losses associated with minimum wage effects on labor force composition.

The remainder of this paper is organized as follows. Section 2 outlines the dual-sector model and reviews the empirical evidence. Section 3 describes minimum wage policy in Honduras and my identification strategy. Section 4 presents the data. Section 5 studies enforcement and compliance with minimum wages and Section 6 estimates the net effects of minimum wage increases on labor market outcomes and poverty. Section 7 concludes.

2 Minimum Wages in Developing Countries

2.1 Theory

Minimum wages in developing countries are commonly studied using a competitive dual-sector model that classifies workers as covered (formal) or uncovered (informal) proposed by Harris and Todaro (1970).[3] The former are entitled to wage floors, while the latter are not. Each sector $s = \{c, u\}$ has its own labor demand and supply, so that equilibrium wages (w_s) and employment (E_s) are determined by the intersection of these curves. The key assumption is that wages in the uncovered sector, w_u, are more flexible than in the covered sector, w_c. This implies that mobility between sectors is possible, but limited. Individuals can migrate from covered to uncovered jobs freely, but moving from uncovered to covered employment is more difficult because wage rigidity causes segmentation between sectors (Mazumdar, 1989).

Figure 1 details the expected consequences of a binding minimum wage hike. Wages in the covered sector increase but some individuals lose their jobs. Displaced workers may either seek uncovered employment or choose to remain unemployed. If some decide to migrate, uncovered labor supply shifts from L_s to $L_s^{'}$. Since wages in the uncovered sector are flexible, this market clears with higher employment but a lower wage. In summary, the covered (uncovered) sector will have employment losses (gains) and higher (lower) average wages.

These are not the only potential consequences of minimum wage increases. Higher minima may also affect intensive margin employment by changing the amount of hours worked. A priori, effects could go either way. Differences in firm technology may lead to a rise or fall in hours (Strobl and Walsh, 2011). Effects on hours worked may also respond to different firing costs (Gindling and Terrell, 2007). If layoffs are costly, we may see a reduction in hours rather than employment, or a decline in both. But if termination costs are low, employers may downsize part-time staff while increasing hours worked by remaining employees.

Minimum wage increases may also have consequences that extend beyond the labor mar-

[3] Alternative minimum wage models may be found in Card and Krueger (1995), Manning (2003), and Boeri and van Ours (2008).

ket. Since many workers rely on earnings as their main source of income, changing wage floors could indirectly affect poverty. If the predictions of the dual-sector model are borne out, the risk of income deprivation is expected to increase. This result is driven by covered employment loss and migration towards the lower-paid uncovered sector. However, poverty responses will also depend on whether minimum wage workers are in low income families, the level of wage floors relative to the poverty line, and intra-household factors.[4]

An unspoken assumption in this framework is that covered sector employers comply with minimum wage laws because governments effectively enforce them. However, regulation tends to be lax in most developing countries, which often leads to non-compliance (Ronconi, 2012). Enforcement affects firm-level compliance decisions, which play a key role in determining minimum wage impact. In fact, Basu et al. (2010) show that "a simple deviation from perfect to imperfect enforcement is sufficient for theoretical predictions to be overturned".

Ashenfelter and Smith (1979) first modeled firm-level compliance decisions, with subsequent papers modifying and extending their approach.[5] Employers decide whether to comply with minimum wage laws based on their expected profits. Profits depend on revenue, costs, and the probability of getting caught non-complying ($\lambda \in [0, 1]$), which rises as enforcement becomes more strict. After a minimum wage hike, total profits decrease because labor costs rise. Under perfect enforcement, employers adjust their behavior according to theory. However, when enforcement is imperfect, firms may employ workers at wages below the minimum as long as they remain undetected. In practice, there is likely to be partial minimum wage compliance, with both compliant and non-compliant employers (Bhorat et al., 2015).

2.2 Evidence

Most developing country studies find that minimum wages increase covered sector wages but have ambiguous employment effects. A few studies find no job losses (Lemos, 2009,

[4]See Lustig and McLeod (1997), Saget (2001), Neumark and Wascher (2002), Fields and Kanbur (2005), and Gindling and Terrell (2010) for a more in-depth discussion of these factors.
[5]Bhorat et al. (2015) provide an excellent description of this literature.

Dinkelman and Ranchhod, 2012, Bhorat et al., 2013b), although many find evidence of modest declines in covered jobs (Bell, 1997, Fajnzylber, 2001, Maloney and Mendez, 2004, Gindling and Terrell, 2007, Alaniz et al., 2011, Comola and Mello, 2011, Bhorat et al., 2014).

Wage floor effects on the uncovered sector are unclear. Two studies find evidence of migration towards the informal sector (Comola and Mello, 2011, Muravyev and Oshchepkov, 2016). However, many authors find no effect on uncovered employment or wages. Perhaps the most striking result in the empirical literature is that minimum wage increases sometimes raise uncovered sector wages.[6] This finding has been labeled the "lighthouse effect", since the primary explanation is that wage floors act as a numeraire in the uncovered labor market.[7]

Available evidence has differing assessments of minimum wage impact on poverty. Most studies, usually those that find null or small employment losses, report that minimum wage hikes lower deprivation (De Janvry and Sadoulet, 1995, Lustig and McLeod, 1997, de Barros et al., 2001, Saget, 2001, Devereux, 2005, Bird and Manning, 2008, Gindling and Terrell, 2010, Alaniz et al., 2011). However, these authors do not advocate wage floor policies because the potential costs of employment loss outweigh their possible distributional gains. Morley (1995) adds that poverty responses will vary depending on whether wage floor increases occur during growth or recession. Poverty will fall under the former and grow during the latter. Other papers have found that minimum wages increase poverty (Neumark et al., 2006, Arango and Pachón, 2007), often in cases when wage floors lead to adverse labor market effects.

Most research estimates minimum wage effects under weak enforcement and partial compliance. Average non-compliance in developing countries ranges between 10-70% (Rani et al., 2013). However, only a handful of studies recognize how this may affect their results and conclusions. Two countries that increase wage floors by the same amount but have different compliance rates may thus experience distinct consequences. Therefore, measuring enforcement and its subsequent impact on compliance is arguably as important to evaluate

[6]Such effects have been found in Brazil (Neri et al., 2000, Lemos, 2009), Argentina (Khamis, 2013), Costa Rica (Gindling and Terrell, 2005), and other Latin American countries (Maloney and Mendez, 2004).
[7]Alternative explanations are explored in Boeri et al. (2011).

minimum wage policies than estimating its labor market and welfare effects.

Two studies analyze the effect of minimum wages in Honduras. Both define sectors using minimum wage laws, where wage earners are covered and the self-employed are uncovered. The first, Gindling and Terrell (2009), finds a negative employment elasticity of -0.46 that dominates a positive wage effect of 0.29 for covered workers in large firms using industry-level panel data for 1990-2004. No wage or employment effects are found for wage earners in small firms and the uncovered sector. The second was carried out by the same authors on individual data from 2001-2004, and studies whether minimum wages reduce poverty (Gindling and Terrell, 2010). They find a 10% increase in mandated minima lowers the probability of extreme poverty by 2.2% but no effect on overall poverty (extreme plus moderate).

This study contributes to the empirical minimum wage literature in several ways. First, it provides a comprehensive evaluation of the net labor market and welfare consequences of minimum wage policy in a developing country. Unlike previous work that often uses a single shock to quantify minimum wage effects, I exploit several sources of cross-sectional and temporal variation in multiple minimum wages. Second, it updates previous results for Honduras. Last, I also focus on enforcement and compliance with legal minimum wages. This broad approach allows us to better understand the linkages between setting minimum wages, regulating these policies, and identifying its labor market and welfare consequences.

3 Minimum Wage Policy in Honduras

3.1 History and attributes

Legal minimum wages in Honduras were first implemented in 1974 and are regulated by the General Directorate of Wages (DGS, in Spanish), which belongs to the Ministry of Labor. There have been about 30 updates since then, most of them during the past two decades. Annual adjustments are negotiated by a committee of Government, employer, and worker representatives. Discussions generally stall because the parties cannot agree on the amount

of the increase. If this impasse cannot be resolved, a final decision is taken by the president. The resulting wage floors are published as decrees in the Senate's Newspaper, *La Gaceta*. Upon careful inspection of this legislation, several distinctive characteristics stand out.

First, multiple minimum wages exist at the same time, which vary by region, industry, and firm-size. Floors have usually been set for 23 categories, following the ISIC industrial classification: agriculture, non-metallic mining, metallic mining, manufacturing, utilities, construction, retail, transport, real estate, business services, financial services, communal and personal services, and the export (or *maquila*) sector.[8] Except for metallic mining, utilities, and the export sector, different minimum wages were set for small (1-15 employees) and large (16+ employees) firms until 2008. This structure has experienced several reforms. It changed to regional minima (2 categories) in 2009, to region and firm-size floors (6 categories) in 2010, and returned permanently to industry firm-size minimum wages in 2011 (37 categories).

Second, Honduras frequently sets daily wage floors. According to the DGS, full-time employees should be paid 30 daily minimum wages per month. Third, minima directly cover wage earners in private firms. Public employees are indirectly covered, since some are paid in multiples of the minimum wage (Gindling and Terrell, 2009). However, the public sector is not subject to labor inspections nor required to make collateral payments for mandated benefits.[9] Domestic work is considered a salaried occupation and thus protected by the Labor Code. Nevertheless, employers are not required to pay wage floors, so compliance is voluntary. This means that legally, employers, the self-employed, and unpaid family workers are the uncovered sector in Honduras. Fourth, covered employers can pay less than the legal minimum wage if they grant certain forms of in-kind compensation. Workers who receive food or housing may be paid 80% of the minimum wage, and 70% if provided both.

Last, similar to most countries, average minimum wage changes are indexed to inflation.

[8]The export industry in Honduras produces textiles and apparel, electric components for automobiles, imports and sells spare parts for machinery, and provides data processing services (de Hoyos et al., 2008).
[9]Employers must contribute a percentage of the worker's wage to a Christmas bonus, mid-year bonus, severance, social security payments, paid leave, contributions to the national training center (INFOP), housing contributions (RAP), and an educational transfer (COHEP, 2016).

Historically, the inflation rate served as a guide but was not always employed in negotiations. In 2013, a new mechanism incorporated productivity measures into minimum wage setting (García, 2011).[10] The correlation between changes in real floors and previous-year inflation is 0.594 and statistically significant. This implies that a regression of minimum wages on labor market outcomes and poverty is endogenous because wage floors, wages, and employment are simultaneously determined. To isolate the effects of changing wage minima requires finding exogenous variation unrelated to the economic cycle. Using the attributes of Honduran minima and some unique policy circumstances, I propose several exogenous shocks.

3.2 Identifying exogenous variation in Honduran minimum wages

Exogenous variation in Honduran minimum wages may be obtained by exploiting category-level variation. From 2005-2012, this variation was affected by annual minimum wage updates, a large increase, and changes in the number of minimum wages. The DGS usually set 23 different industry firm-size minimum wages in this period. For comparability, I maintain these categories in the analysis and convert decreed values into real hourly minimum wages.[11]

Table 1 shows yearly changes in real minimum wages for each industry firm-size category. Trends are plotted in Appendix Figure A.1. The average increase in real minimum wages was 10.8%. There is substantial variation across categories (the standard deviation is 26.4%), ranging from declines of -11.1% to increases of 204.5%. Hence, even if the average increase may depend on previous inflation, each category experiences different rates of change. After controlling for cross-sectional variation across categories (using industry firm-size and region effects) and the average change in the minimum wage (using time dummies), all remaining

[10]The new mechanism is based on two equations: 1) $MW = \mathbb{E}\pi_{t+1} + P$ and 2) $MW > \pi_t$, where π denotes inflation (measured by the Central Bank) and P denotes productivity (measured by the Ministry of Labor). The first equation calculates the minimum wage increase as the sum of expected price changes and actual productivity gains or losses. The second equation requires that the calculated value is higher than actual inflation. For example, if the inflation forecast is 7% and productivity fell by 1.5%, the corresponding increase is 5.5%. If actual inflation is above this value (say 6%), then the mandated increase changes to six percent.

[11]The procedure follows Gindling and Terrell (2009). I homogenize daily floors into monthly values and compute: Hourly MW = Monthly MW / (44 × 4.3). Calculated values for each industry firm-size category over time are shown in Appendix Table A.1.

variation is arguably driven by the structure of minima and not the economic cycle.

Much of the observed variation was generated by a large increase in minimum wages. In 2009, during the last year of his elected term, minima were set unilaterally by President Manuel Zelaya. He raised average real minimum wages by about 60 percent with redistributive purposes.[12] The measure was unexpected. It was announced on December 23, decreed on the 27th, and took effect four days later. More importantly, it was unrelated to aggregate economic conditions. If endogenous, this update would respond to continuous growth and inflation, which is not supported by the data (see Appendix Table A.2). In fact, the increase was approved in spite of an anticipated economic downturn due to the global financial crisis (Cordero, 2009). An additional concern is that Zelaya operated under political motives, benefiting loyal districts who voted for his presidency four years earlier. Appendix Table A.3 shows that this is not the case, as minimum wage increases in districts that voted for Zelaya were not significantly higher compared to communities who voted for the opposition.

In addition, I also employ variation due to reforms to the number of minimum wages. In 2009, the system went from 23 minima set by industry firm-size categories to 2 regional floors, urban and rural. In 2010, the number of categories rose to six, urban and rural floors for 1-20, 21-50, 51+ employees. In 2011, setting returned to industry firm-size but was expanded to encompass four firm sizes, 1-10, 11-50, 51-150, 151+ employees, for a total of 37 minima.[13] These changes were due to concern with how to deliver minimum wages more efficiently and not in response to labor market conditions.

Jointly, these events provide variation within categories and over time in legal wage floors that is plausibly exogenous. Compared to previous studies, there is greater variation across multiple minimum wages, which presents a singular opportunity to evaluate their labor market and welfare consequences.

[12]Appendix Figure A.2 shows this by plotting the percent change for each industry firm-size category and its pre-policy minimum wage. Categories with lower wage floors experienced the largest hikes from the policy.
[13]Ten industries were considered since 2011: agriculture, mining, manufacturing, utilities, construction, retail, transport, financial/real estate/business services, communal and personal services, and export. Mining was unified into a single category and business services, real estate, and financial services were also aggregated.

4 Data

I construct repeated cross-section data from Honduran household surveys, the *Encuesta Permanente de Hogares de Propósitos Múltiples* (EPHPM). The EPHPM is nationally representative and conducted twice a year —May and September— by the National Statistics Institute (INE). It gathers detailed information on demographics, education, employment, earnings, and household poverty status. Thirteen waves collected between 2005-2012 are joined for this study. All variables are identically defined to ensure comparability over time. Unfortunately, panel data on labor market and welfare outcomes are unavailable.

Survey data are augmented with information from two sources. The first are minimum wage tables published in *La Gaceta*.[14] Using the decrees, I assign the corresponding wage floor to each individual based on their self-reported industry and firm-size. Since the surveys identify whether individuals receive food or housing from their employer, minimum wages are adjusted to account for this compensation. The second source is the Honduran Central Bank (BCH), which provides aggregate and industry-level information. Following standard practice, consumer price indexes are used to deflate minimum wages and actual wages. Industry-level variables are used to control for changing market conditions over time in each sector of production.[15] On one hand, I use the monthly production index for each industry (IMAE) since there is more than one survey per year. On the other, I employ the BCH's estimates of value added (VA) to account for differential yearly growth in production.

My population of interest are Hondurans in the labor force, classified into covered (formal) and uncovered (informal) sectors. Following the legislation, I define the covered sector as occupations directly and indirectly covered by minimum wages: privately employed wage earners –in large and small firms–, public sector employees, and domestic workers. The

[14] Appendix Table A.4 lists the selected EPHPM surveys and valid decrees at the time of data recollection. During the period, most minimum wage changes became effective on January 1st of the respective calendar year. The exception was 2010, when the update applied on September 1st. Hence, in the data, the 2009 scheme was still applicable at the time when fieldwork for the May 2010 survey was undertaken.

[15] The BCH's classification of industries does not coincide with the minimum wage decrees. However, all wage floor categories are nested within the BCH's nine aggregate groupings.

uncovered sector comprises the self-employed, unpaid family workers, and employers. To consider differences within these defined sectors, some results are presented by occupation.

The data provide complete information for the employed but not the unemployed. Surveys ask the latter their occupation and industry of previous employment, but do not inquire about firm size. Labor force entrants into unemployment have no information on previous occupation or industry, so are excluded from the analysis. Employed individuals are assigned their category-specific minimum wage while the unemployed are imputed the large firm wage floor for the industry of their last reported job.[16] Therefore, estimates for the entire labor force will require aggregating industry firm-size categories at the industry-level. Nevertheless, variation and trends are unchanged when using fewer categories (see Appendix Table A.5). Following the literature, the analysis focuses on adults 15 years or older. I further restrict the employed sample to individuals who report working less than 84 hours per week and earn below the 99th percentile of real wages. This leaves 327,764 valid observations, about 41,000 per year (or 25,200 per wave).

Table 2 provides descriptive statistics by sector.[17] About 95% of the covered labor force is employed and 5% is unemployed. Employed individuals are paid an average of 13.06 Lempiras an hour (≈US$1.31) and work full-time jobs, 44 hours per week. Slightly over 27% dwell in extremely poor households using the official poverty classification in Honduras.[18] Over half live in a poor household. Just under two thirds are male and less than half are married. On average, the covered workforce has 7.5 years of education, equivalent to incomplete secondary schooling. Most live in urban areas, with large families, and are not the heads of their household. Individuals in the covered sector work or have worked mostly in services, agriculture, retail, manufacturing, construction, and the export sector.

The uncovered labor force is almost entirely employed (99% vs 1%) in part-time jobs

[16]Since large firm minimum wages increased less than small firms in this period (see Table 1), this represents a conservative choice. My results are unchanged when imputing minimum wages for small firms or the average between the two. These estimates are not reported due to space restrictions but are available upon request.
[17]Appendix Table A.6 shows descriptive statistics by occupation.
[18]See Sobrado and Clavijo (2008) for a description of poverty measurement in Honduras.

(34 hours per week) and earns approximately 10.91 Lempiras an hour (US$1.09). Compared to the covered sector, almost twice as many workers live in extremely poor households. This sector has marginally fewer men but more married individuals. Uncovered workers accumulate 5 years of formal education, less than complete primary. These individuals are usually located in rural areas and are often the household heads of large families. Hondurans in the uncovered sector are mainly attached to agriculture, retail, and manufacturing.

Table 3 presents annual trends in labor market outcomes and poverty. Given that average minimum wages increased throughout the period, overall employment rates change slightly in response. Figure 2 shows trends in labor force composition. The share of employed individuals in the covered sector falls while uncovered employment and overall unemployment rise. Covered sector wages increase after minimum wage hikes while uncovered wages decrease. These trends suggest that the raw data are consistent with the dual-sector model.

5 Enforcement and Compliance

5.1 Patterns and trends

Honduran minima may affect many workers because they are set high relative to average wages. To show this, I plot a widely used measure of the minimum wage's "bite" in Figure 3, its ratio to the mean covered sector wage: $\bar{MW}/\bar{w}_c$. This indicator grew from 0.66 in 2005 to 1.13 in 2012. ILO (2008) estimates from for over 50 countries indicate that this estimated minimum to mean wage ratio lies within range of other developing labor markets such as Argentina, El Salvador, Guatemala, Nepal, Paraguay, and Venezuela.

Labor regulation in developing countries is often imperfectly enforced, mostly due to budget constraints (Gindling et al., 2015). Honduras is no exception, with only 139 inspectors in 20 regional offices available to monitor labor code violations (UPEG, 2016). Among other duties, inspectors visit firms to assess compliance with minimum wages. Gindling and Terrell (2009) point out that large firms are more likely to be inspected than small businesses. Figure

4 plots the number of inspections from 2005-2012. Enforcement changed slightly throughout the period. In fact, fewer inspections were performed after the 2009 increase. Lax regulation is also reflected in low fines. If an employer commits an infraction, lump-sum penalties range between 1000-5000 Lempiras (US$50-250) and occasionally require reinstating back pay.

Given the complexity of wage floors in Honduras, I examine compliance by analyzing the distribution of wages in covered versus uncovered occupations. Figure 5 plots kernel densities for the distribution of log hourly wages minus log minimum wages for occupations with valid earnings. This re-centers the distribution so that $0 = MW$. If covered firms comply with mandated minima, we should see censoring from below at zero and a higher spike at this value. I find differing levels of compliance across occupations. Minimum wages are mostly complied with in large firms and the public sector but small businesses and domestic employers do not comply. In all covered jobs, there is evidence of non-compliance. Densities for the self-employed and employers show no indication of compliance.

Table 4 presents non-compliance indicators for the sample. It begins with the fraction of workers earning below, at, and above the hourly minimum wage. About 47% of directly covered employees earn below mandated minima, consistent with rates in other countries (Rani et al., 2013) and previous estimates for Honduras (Gindling and Terrell, 2009). Non-compliance also varies across industries and regions (Ham, 2015), and as shown here, by occupation. On one hand, it is 31.9% and 62.4% for large and small firm wage earners, respectively. On the other, 9.5% of public employees and 66% of domestic workers earn sub-minimum wages. In the uncovered sector, almost 63% of the self-employed earn below minimum wages while just one in four employers earns lower wages than the minimum.

While compliance rates are informative, they do not tell the entire story. Recent research argues that the depth of non-compliance is also relevant (Bhorat et al., 2013a). Similar to poverty measures, these papers report the incidence, gap, and severity of minimum wage violations. They propose computing average shortfalls, the ratio between the gap and incidence of non-compliance, to measure how far actual wages are from minimum wages. These

estimates are shown in Table 4. Underpaid wage earners in large firms earn 36% less than their corresponding wage floor and 50% less in small firms. This shows that in addition to being paid below the legally entitled wage, some workers earn much less.

The remainder of Table 4 compares compliance before and after 2009. I conduct t-tests for the null hypothesis that estimated indicators were unchanged over time. Non-compliance rates increased significantly for all occupations. The fraction of underpaid large firm wage earners rose by 12 percentage points and small firm non-compliance increased by 23 percentage points. Changes are smaller for public employees. Differences in the average shortfall of wages from minimum wages reflect similar patterns. This evidence suggests that employers adjust both the level and depth of non-compliance after minimum wage increases.

These estimates may potentially suffer from measurement error. Perhaps transforming minimum wages into hourly values generates noise because the surveys ask respondents for their monthly labor income. To check this, I re-estimate densities and shares using monthly minimum wages and earnings for full-time workers in Figure A.3 and Table A.7 in the Appendix. Overall, the resulting conclusions are unchanged. Inability to measure some forms of non-monetary payments may also affect compliance estimates (Gindling and Terrell, 2009). For instance, apprentices may be paid below the minimum during their first six months on the job. Similarly, some industries compensate workers by piece rate (manufacturing), commissions (retail), and tips (services). Errors in these cases could go either way. However, there is no possibility to assess these factors from the available data.

This analysis reveals some patterns of the relationship between enforcement and compliance with minimum wages in Honduras. First, enforcement is weak and remained relatively stable during 2005-2012, despite multiple policy changes. Second, there are varying levels of compliance within the covered sector. Minimum wages are complied with by large firms but not small businesses, although legal wage floors apply to both employers. Interestingly, the public sector is largely compliant despite not being subject to regulation. Last, the depth of non-compliance matters, since some covered workers are substantially underpaid.

5.2 Testing for partial compliance with minimum wages

Obtaining estimates of minimum wage impact on employers' incentives to comply is challenging for several reasons. First, appropriate data are not always available (Hamermesh, 1991). Firm-level records can mislead researchers because employers are expected to misreport labor violations. Second, compliance decisions depend on wage floors and enforcement (Ashenfelter and Smith, 1979, Bhorat et al., 2015). Although minimum wages are readily measurable, data on enforcement tend to be scarce. Moreover, it is hard to isolate the impact of each channel. Last, clearly identifying treatment and control groups is an arduous task.

The Honduran case helps overcome some of these issues. Following the literature, I use employee data since it measures non-compliance more precisely than firm-level records. Since enforcement remained relatively stable over this period, compliance adjustments may be mostly attributed to changing wage floors. Coverage definitions and recent reforms generate a policy experiment. On the one hand, treated employers include large and small firms, since they must pay minimum wages and are actively regulated. A suitable comparison would comprise firms not required to pay legal wage floors nor subject to inspections, but which still comply. As shown beforehand, the public sector is such an employer. On the other hand, comparing non-compliance before and after 2009 provides variation over time.

Figure 6 plots non-compliance rates for large firm, small firm, and public employees. The public sector has the lowest non-compliance rate, followed by large and small employers, respectively. Before 2009, trends behave similarly across occupations. After 2009, non-compliance slightly increases in the public sector. Observed changes are higher for large employers and more striking for small firms. This suggests that directly affected employers are actively choosing to pay more workers below the minimum wage after a large hike.

These conditions allow using a difference-in-differences strategy to test for partial compliance with minimum wages.[19] This method assumes that in absence of changes to Honduran

[19]Two studies have tested partial compliance with minimum wage laws. Dinkelman and Ranchhod (2012) employ a method that is informative as long as minimum wages have no employment effects. Bhorat et al. (2015) use a difference-in-differences strategy that compares covered and uncovered groups. My strategy is

minimum wage policy, compliance in large and small firms would have behaved similarly to the public sector. Any significant differences between covered occupations and the public sector indicate that some regulated firms decide not to comply with the minimum wage increase, denoting partial compliance. I estimate the following equation by OLS:

$$NC_{ijt} = \alpha Post + \beta(Post \times T) + \gamma T + \theta X_{ijt} + \eta Z_{jt} + \mu_j + \delta_t + u_{ijt} \quad (1)$$

where NC_{ijt} is a binary variable that identifies if worker i in industry firm-size category j at time t is paid below the minimum wage. $Post$ is an indicator variable equal to unity after 2009 and T identifies whether the worker is a wage earner. I also consider wage earners in large or small firms separately. The coefficient on the interaction term captures the average difference in non-compliance across treatment and control groups before and after the recent changes in Honduran minimum wage policy. An expanded version of Equation (1) is also estimated where the treatment identifier is interacted with dummy variables for each year. This allows testing the parallel trends assumption of difference-in-differences since several years of pre-policy data are available. It also permits identifying any heterogeneous effects over time. Given limitations with the data and other potential confounders, these estimates should not be interpreted as the causal effects of wage floor hikes on non-compliance.

Since workers across occupations are different, I control for observable characteristics in X_{ijt}, including a constant, gender, marital status, years of education, potential experience and its square, and a dummy for urban residence. I also condition on time-varying industry-level attributes (Z_{jt}): the log of the monthly production index (IMAE) for each wave and the log of yearly value added (VA), which control for changes in industry-level demand conditions. Finally, I include industry firm-size fixed effects (μ_j) to capture cross-sectional variation across minimum wage categories and time dummies for each wave to account for secular trends (δ_t). Standard errors are clustered by industry firm-size categories.

Results in Table 5 reveal that non-compliance rates in covered occupations increase after

similar to the latter, which imposes fewer restrictions on expected labor market effects.

a large minimum hike. Panel A denotes that relative to the public sector, the share of wage earners who are paid sub-minimum wages increases by 32% on average. Separating wage earners into large and small firms shows that non-compliance increases about 36% for the former and 26% for the latter. Panel B shows results by year. There are no differential trends when comparing wage earners and large firms to the public sector, but one significant pre-policy difference for small firms (in 2006). For both firm sizes, there is an increase in 2009. However, non-compliance continues to rise in large firms but not small firms.

These findings indicate that large employers partially comply with minimum wages but small businesses do not comply. After a 60% increase, some large employers comply and others avoid the regulation. Small firms do not change their practices. These results are depicted in Appendix Figure A.4, which plots the distribution of log wages minus log minimum wages before and after 2009. The distribution for large firms compresses around the minimum wage but the lower tail increases, denoting partial compliance. The distribution shifts to the left for small firms, with no indication of bunching at the minimum wage.

6 The Net Consequences of Minimum Wages

6.1 Estimation strategy

I estimate the net effects of legal minimum wages on labor market outcomes and poverty using a specification commonly found in the literature (Neumark and Wascher, 2008):

$$y_{ijt} = \alpha + \beta MW_{jt} + \theta X_{ijt} + \eta Z_{jt} + \mu_j + \delta_t + u_{ijt} \tag{2}$$

Here, y_{ijt} is the outcome for individual i in minimum wage category j at time t. MW_{jt} is the log real hourly minimum wage corresponding to their self-reported category. This specification controls for the same individual and industry-level covariates, category, and survey wave effects in Equation (1). A second specification adds linear time trends to account

for heterogeneous time effects across minimum wage categories (Allegretto et al., 2013).

I present estimates of minimum wage impact on employment, labor force composition, hours, wages, and poverty. Employment, composition, and poverty estimates use within industry variation in minimum wages over time since they include all Hondurans in the labor force. Hours and wage equations use within industry firm-size variation over time in minimum wages since these outcomes are available for employed individuals. The selected estimation methods are Probit for employment and poverty, Multinomial Logit for labor force composition, and OLS for hours and wages. I also consider alternative specifications, which are discussed in the next sub-section. Standard errors are clustered by industry (or industry firm-size) depending on the variation used to identify each equation.[20]

The coefficient of interest in all relationships is β. Once controlling for covariates and fixed effects, this parameter captures the net effect of deviations from the average change in minimum wages within categories over time. We may interpret employment, composition, hours, and poverty estimates as elasticities, i.e. the net effect of a 1% increase in legal minimum wages. This interpretation is not possible for wages. Statistically significant wage estimates may be due to changing wage floors and/or composition effects. In the covered sector, average wages may be affected because: i) some workers are paid the new minimum wage, ii) some accept higher sub-minimum wages to keep their jobs, and iii) some lose their jobs and are no longer included in the sample to compute average wages (Gindling and Terrell, 2009). In the uncovered sector, significant wage effects could be due to "lighthouse" effects or market adjustment if there is evidence of changing labor supply in this sector.

The dual-sector model predicts that minimum wage increases should lead to employment losses and higher average wages in the covered sector, and viceversa for the uncovered sector. The effect on hours worked depends on firing costs. Honduras requires employers to pay high severance, so we should also expect a reduction in hours, at least for the covered

[20]Given the changes in minimum wage categories over time, multiple clustering options were tested. For comparability, I selected the 13 aggregate categories for estimates that include Hondurans in the labor force and 23 categories for employed individuals. Results are unchanged when using a different number of clusters.

sector.[21] Poverty impact is conditional on labor market results. If the predictions of the dual-sector model are borne out, the probability of income deprivation is expected to increase. Otherwise, poverty may decrease or remain unaffected.

6.2 Labor Market Outcomes

Table 6 reports the estimated net effects of minimum wages on the Honduran labor market. Employment results are presented for the full sample, regardless of sector or occupation. These coefficients report the change in the probability that an average individual is employed relative to being unemployed. A 10% increase in legal minimum wages reduces overall employment by 0.9% for the basic specification and by 1.1% when including linear category time trends.[22] Negative coefficients may arise because wage floors reduce employment or increase unemployment by attracting more individuals into the labor force. Since the sample does not include new entrants into unemployment, employment loss is more likely. Moreover, an analysis from the raw surveys reveals that most labor market entrants have ensured jobs (93%) while very few are unemployed (7%). Therefore, minimum wages cause modest employment declines in Honduras, of similar magnitude to estimates in other studies.

While wage floors slightly reduce the probability of employment relative to unemployment, this does not rule out migration among sectors. To test for evidence of such movements, I estimate a Multinomial Logit model. The dependent variable identifies three categories: unemployed (0), employed in the covered sector (1), and employed in the uncovered sector (2). For comparability with the employment results, the base category is unemployment. The coefficients on the minimum wage variable identify the change in the probability that an average individual is employed in the covered or uncovered sector relative to being unem-

[21] Severance depends on whether layoff is justified or not. If justified, employees are compensated for any remaining vacation days, as well as their accumulated mid-year and Christmas bonuses. If unjustified, they also receive two months compensation as notice and one monthly salary per year of employment.

[22] Given that these coefficients are estimated from a Probit, they indicate that a 10% increase in the real minimum wage reduces the probability of being employed by 0.0085 and 0.0108. Relative to the mean employment rate, this indicates that a 10% increase in minimum wages reduces employment between $(0.0085/0.971) \times 100 = 0.9\%$. and $(0.0108/0.971) \times 100 = 1.1\%$.

ployed. Results indicate that labor force composition changes as minimum wages increase. A 10% hike in minimum wages lowers the probability of covered employment between 8 and 10 percent and increases the likelihood of employment in the uncovered sector by 5 to 7 percent. These findings suggest that the estimated employment effect for the full sample is averaging significant declines in covered jobs and gains in uncovered employment.

To further investigate this change in labor force composition, I estimate a Multinomial Logit where occupation is the dependent variable. Marginal effects are shown in Panel B, columns 4-9. The decline in covered sector employment is mainly driven by a loss of wage earning jobs, since effects on public sector and domestic workers are close to zero and precisely estimated. Rising labor supply in the uncovered sector is mainly due to a higher likelihood of self-employment and a small rise in the probability of carrying out unpaid work.

Results for intensive margin employment indicate that minimum wages lower the amount of hours worked for the full sample. This result is driven by reductions in the covered sector, where a 10% increase in minimum wages lowers hours worked by about 2%. Estimates by occupation reveal that some adjustment takes place for wage earners, but larger declines are observed for public sector employees and domestic workers. There is no evidence that minimum wages affect the number of hours worked in the uncovered sector.

Table 6 concludes with the wage equations. Minimum wages have no effect on wages for the full sample. Once again, this masks differences across sectors. Higher minimum wages increase covered sector wages, with coefficients ranging between 0.24 and 0.29. Since legal wage floors do not apply in the uncovered sector, parameter estimates reflect indirect consequences. Wage coefficients for the uncovered sector are negative, between -0.52 and -0.69, and statistically significant. Estimates by occupation show that an increase in mandated minima increases hourly pay for wage earners, public sector employees, and domestic workers. The negative net effect on the uncovered sector is driven by downward pressure on wages for self-employed workers since employer wages are unaffected. Unreported results for monthly earnings that control for hours worked and their square provide similar findings.

These findings are robust to alternative estimation methods, as shown in Appendix Table A.8. For overall employment, results are fairly similar when estimating OLS or IV regressions that use minimum wages lagged one year as an instrument (the latter approach follows Gindling and Terrell (2007)). Estimating labor force composition effects using Multinomial Probit, which relaxes the assumptions of Multinomial Logit, also presents similar results.[23] Alternative specifications for hours and wages in the covered sector are robust to specification choice. Uncovered sector results are noisier, due in part to lagged minimum wages being a weak instrument with a small first stage coefficient and larger standard error.

Since minimum wages vary by industry firm-size categories, another robustness exercise involves aggregating the data to this level and taking advantage of the panel structure, a method used in a previous study for Honduras (Gindling and Terrell, 2009). Results are shown in Appendix Table A.9.[24] Aggregate results are in line with my reported findings, but are mostly insignificant. Only wage effects for the covered sector are different from zero. Aggregating heterogeneous individuals is known to cause a loss of information and statistical power (Bertrand et al., 2004). Not surprisingly, confidence intervals for many coefficients on the minimum wage variable include the estimates obtained from individual-level data.

These results provide strong evidence in support of the dual-sector minimum wage model. Findings are consistent with previous evidence for Honduras, with estimates for the covered sector within the confidence intervals reported in Gindling and Terrell (2009). Although they find no effects on the uncovered sector, I do find evidence of higher employment and lower wages in that sector. Higher uncovered sector employment is consistent with findings in Comola and Mello (2011) for Indonesia and Muravyev and Oshchepkov (2016) in Russia.

[23] Multinomial Logit assumes independence of irrelevant alternatives (IIA). Multinomial Probit is more flexible since it allows arbitrary correlation across alternatives. However, it has practical limitations with five or more alternatives and thus cannot be estimated by occupation. See page 649 in Wooldridge (2010) for details.

[24] I report three specifications: the within estimator (FE), the within estimator including a lag of the dependent variable (FE-LDV), and Arellano-Bond dynamic panel estimates that use lags of the dependent variable as instruments (GMM-DIF). First differences and system-GMM were estimated but not reported. Standard errors are robust to heteroscedasticity and clustering, and were estimated by block bootstrap with 200 replications when possible. Since there are 23 industry firm-size categories, block bootstrap results in less precision as forewarned by Bertrand et al. (2004).

However, unlike these two studies, I find evidence of negative net effects on wages in the uncovered sector. This result seems to be driven by a substitution from formal to informal employment, mostly wage earners becoming self-employed. In line with the theory, the uncovered labor market in Honduras adjusts to this influx by lowering average wages.

6.3 Poverty

Given the net labor market effects of minimum wage policy in Honduras, we should expect a higher risk of deprivation, especially for the uncovered workforce. Since informal jobs are mostly lower-paid part-time positions, uncovered sector earnings often lie below covered sector income (see Appendix Figure A.5). Therefore, a growing informal sector generates income losses that may push some individuals into poverty. However, if income gains for the covered sector outweighs such losses, minimum wages may actually reduce poverty.

Income deprivation in Honduras is measured by the poverty line method, which yields two classifications of poverty: extreme and moderate. The former includes households whose per capita income impedes affording a basic food basket and the latter identifies families who are able to purchase food but cannot cover additional expenses (housing, education, health, transport, etc.). Honduras is one of the poorest countries in Latin America, with extreme poverty levels close to 50% and moderate poverty around 18%, so overall poverty is 68%.

We would like to approximate the effect of wage floors on household poverty, since deprivation is measured at this level. I follow Gindling and Terrell (2010) and multiply the survey weights by the ratio of household size and the number of workers ($\omega \times \frac{N}{N_w}$) to obtain an estimate of minimum wage effects on the average household, not just the labor force. Estimates that use unadjusted weights are not reported but provide largely similar results.

Table 7 presents Probit estimates of the net effects of minimum wages on extreme and overall poverty (extreme plus moderate). Relative to being non-poor, minimum wage increases have a small positive effect on extreme and overall poverty for the full sample. This result averages opposing impact across sectors. A 10% increase in minimum wages has a

negative but insignificant effect on the probability of extreme poverty for the covered labor force. The same minimum wage hike significantly raises the odds of extreme deprivation for uncovered individuals between 1.6-4%. There are no effects on overall poverty for the covered workforce but positive and significant impact for the uncovered labor force.

These results hold when considering alternative specifications (see Appendix Table A.10). I also estimate separate regressions by occupation to determine whether some workers are more vulnerable to fall into poverty. Wage earners have a lower likelihood of deprivation but the effect is insignificant. Public sector workers and domestic workers are more vulnerable. Hondurans in self-employed jobs are the most adversely affected. A 10% hike in minimum wages increases the probability of extreme poverty by 2-4% and the likelihood of overall poverty between 1-2% for this uncovered occupation. Employers are mostly unaffected.

My findings oppose those in Gindling and Terrell (2010), who find that minimum wage increases modestly reduce extreme poverty. Given the findings in the previous sub-section, the scenarios are different. Hondurans obtain 90.4% of their total income from earnings, so the observed growth in lower-paid informal employment is pushing some households below poverty thresholds. From 2005-2012, increases in poverty for the uncovered labor force outweigh reductions for the covered labor force. The inability of minimum wages to reduce poverty implies that this policy does not provide any net welfare gains in Honduras.

7 Conclusion

This paper evaluates recent Honduran minimum wage policy. Using repeated cross-section data and exploiting large category-level variation in wage floors, I estimate their net effects on labor market outcomes and poverty. Results provide credible evidence in support of the dual-sector minimum wage model. While employment losses are small, I find changes in labor force composition. A 10% increase in minimum wages lowers the likelihood of covered employment by 8% and increases the probability of uncovered sector employment

by 5%. Specifically, wage earning employment falls while self-employment rises. Covered wages increase but rising labor supply in the uncovered sector leads to a negative net effect on wages and earnings. These labor market effects result in a higher risk of poverty for the uncovered labor force that is not compensated by poverty reduction in the covered sector.

The negative impact of minimum wages occurs in an institutional context with weak enforcement of labor regulation. This setting leads to partial compliance with mandated minima, where compliant and non-compliant employers co-exist. In Honduras, large employers are mostly compliant while small businesses do not comply. After a large minimum wage hike, large firms increase their average non-compliance rate by 36%. This result suggests that compliant employers seek to mitigate the adverse effects of minimum wage increases by avoiding the regulation. Without credible enforcement from governments, labor violations are likely to continue rising. These findings raise questions about the political economy of minimum wages in developing countries, a topic that may be explored in future work.

While the estimated net effects of minimum wages in Honduras are seemingly robust, they are by no means definitive. The most important limitation in this study is the absence of panel data. Inability to track the same individuals over time does not allow observing transitions across or within sectors to estimate a structural model that captures the dynamics behind the estimated net effects. Such results would lead to a better understanding of how the adverse consequences of minimum wages come to pass. Despite these and other potential limitations, this study updates and improves upon previous work for Honduras, while also overcoming common empirical issues in the broader minimum wage literature.

The policy implication of these results is that setting high minimum wages has detrimental effects on labor markets, well-being, and compliance. While Honduran minimum wage policy is unlikely to offer a template for other nations, it provides a cautionary tale. To fully understand how minimum wage policies ultimately fare and how that differs from what we would like them to accomplish we need to better understand the informal economy, why people enter this sector, and the long-term consequences of participating in such activities.

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Table 1. Yearly changes in real hourly minimum wages by industry firm-size categories

Category	Firm size	2006	2007	2008	2009	2010	2011	2012
Agriculture	1-15	6.9	4.2	-2.2	59.3	-3.2	-3.3	1.1
	16+	4.4	2.3	-1.3	33.8	1.1	-7.3	2.0
Non-metallic mining	1-15	6.9	4.1	-1.3	67.6	-8.3	19.7	1.1
	16+	4.4	2.3	-0.4	42.1	-6.6	21.0	0.6
Metallic mining	All	4.4	-0.5	-4.0	16.0	-7.1	15.2	-1.9
Manufacturing	1-15	6.9	4.1	-1.3	71.9	-4.8	15.2	6.7
	16+	4.4	2.3	-0.4	44.3	2.3	9.4	-0.1
Utilities	All	4.4	-0.5	-0.4	22.9	-0.8	19.5	2.1
Construction	1-15	6.9	4.1	-1.3	69.4	-4.6	20.5	6.9
	16+	4.4	2.3	-0.4	45.8	-1.6	11.2	0.4
Retail	1-15	6.9	4.1	-1.3	77.2	-3.8	13.2	5.9
	16+	4.4	2.3	-0.4	50.0	-0.1	7.4	1.0
Transport	1-15	6.9	4.1	-2.2	52.8	-6.2	19.9	5.6
	16+	4.4	2.3	-0.4	53.4	1.4	7.3	1.2
Real Estate	1-15	6.9	4.1	-2.2	58.4	0.7	9.2	5.2
	16+	4.4	2.3	-0.4	51.0	5.7	8.0	-0.8
Business Services	1-15	-3.7	-6.2	-11.1	204.5	-3.5	12.9	4.8
	16+	-3.7	-6.2	-11.1	164.7	-0.3	10.6	0.6
Financial Services	1-15	5.5	5.1	0.0	24.3	-6.1	14.8	5.2
	16+	5.5	4.1	0.0	27.3	1.5	8.4	1.6
Communal and Personal Services	1-15	6.9	4.1	-1.3	74.0	-4.0	16.1	7.8
	16+	4.4	2.3	-0.4	49.8	-2.6	7.4	0.7
Export	All	4.4	-0.5	-4.0	-5.7	2.6	6.0	1.4
Average		**4.7**	**2.0**	**-2.1**	**58.9**	**-2.1**	**11.4**	**2.6**

Source: Own calculations from real hourly minimum wage values in Appendix Table A.1.
Notes: The table shows percentage changes in legal minimum wages relative to the previous year.

Table 2. Descriptive statistics by sector, averages for 2005-2012

	Full sample		Covered		Uncovered	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Employment, hours, and wages						
Employment rate	0.971	(0.168)	0.947	(0.223)	0.993	(0.083)
Hours per week	38.99	(17.351)	44.12	(14.433)	34.26	(18.435)
Share full-time (≥44 hpw)	0.432	(0.495)	0.577	(0.494)	0.299	(0.458)
Real Hourly Wages	12.11	(14.017)	13.06	(13.450)	10.91	(14.614)
Household poverty status						
Extremely Poor	0.376	(0.484)	0.276	(0.447)	0.477	(0.499)
Poor	0.594	(0.491)	0.519	(0.500)	0.669	(0.471)
Individual & household characteristics						
Males	0.644	(0.479)	0.653	(0.476)	0.634	(0.482)
Married	0.550	(0.497)	0.483	(0.500)	0.614	(0.487)
Years of education	6.23	(4.425)	7.51	(4.592)	5.02	(3.890)
Potential experience	24.1	(17.234)	18.5	(13.922)	29.4	(18.369)
Household size	5.44	(2.472)	5.41	(2.453)	5.47	(2.489)
Is household head	0.451	(0.498)	0.390	(0.488)	0.509	(0.500)
Lives in urban area	0.490	(0.500)	0.604	(0.489)	0.381	(0.486)
Composition across industries						
Agriculture	0.343	(0.475)	0.222	(0.415)	0.458	(0.498)
Non-metallic mining	0.002	(0.045)	0.002	(0.046)	0.002	(0.043)
Metallic mining	0.001	(0.024)	0.001	(0.032)	0.000	(0.014)
Manufacturing	0.097	(0.296)	0.099	(0.299)	0.095	(0.293)
Utilities	0.004	(0.066)	0.009	(0.092)	0.000	(0.019)
Construction	0.063	(0.243)	0.085	(0.279)	0.042	(0.201)
Retail	0.222	(0.415)	0.163	(0.369)	0.277	(0.448)
Transport	0.035	(0.185)	0.039	(0.194)	0.032	(0.175)
Real Estate	0.002	(0.041)	0.003	(0.051)	0.001	(0.029)
Business Services	0.021	(0.143)	0.030	(0.171)	0.012	(0.108)
Financial Services	0.011	(0.106)	0.023	(0.148)	0.001	(0.028)
Communal and Personal Services	0.151	(0.358)	0.251	(0.433)	0.057	(0.232)
Export	0.048	(0.214)	0.075	(0.263)	0.023	(0.149)
N	327,764		166,976		160,788	

Source: Own calculations from EPHPM surveys.
Notes: All statistics are weighted. Wages are expressed in real Lempiras. The average real exchange rate for the period is 10 Lempiras per $1 USD.

Table 3. Labor market and poverty trends by sector

	2005	2006	2007	2008	2009	2010	2011	2012	Average
Average Hourly MW	7.07	7.47	7.66	7.52	11.55	11.00	11.95	12.62	8.71
Employment rate									
Covered	0.946	0.952	0.960	0.957	0.949	0.934	0.939	0.943	0.947
Uncovered	0.993	0.995	0.994	0.992	0.995	0.990	0.993	0.994	0.993
Employment composition									
Covered employed	0.496	0.470	0.479	0.483	0.465	0.438	0.451	0.421	0.462
Uncovered employed	0.473	0.504	0.498	0.491	0.508	0.526	0.516	0.550	0.509
Unemployed	0.031	0.026	0.023	0.026	0.027	0.036	0.033	0.029	0.029
Hours per week									
Covered	45.93	45.44	44.49	44.26	42.66	42.78	43.67	44.32	44.12
Uncovered	37.14	35.89	35.53	34.63	31.97	31.29	34.46	34.64	34.26
Real wages									
Covered	12.07	12.48	12.90	13.13	13.74	13.46	13.38	13.04	13.06
Uncovered	10.23	10.70	12.48	11.08	11.81	10.49	10.98	9.22	10.91
Extreme Poverty									
Covered	0.304	0.273	0.278	0.251	0.261	0.289	0.276	0.286	0.276
Uncovered	0.549	0.526	0.453	0.428	0.423	0.485	0.472	0.524	0.477
Poverty									
Covered	0.529	0.500	0.535	0.499	0.500	0.532	0.525	0.535	0.519
Uncovered	0.716	0.692	0.670	0.631	0.619	0.673	0.667	0.713	0.669

Source: Own calculations from EPHPM surveys.
Notes: All statistics are weighted. Wages are expressed in real Lempiras. The average real exchange rate for the period is 10 Lempiras per $1 USD.

Table 4. Compliance with legal minimum wages

	Large firm wage earners	Small firm wage earners	Public sector workers	Domestic workers	Self-employed	Employers
A. Incidence measures						
Below MW	0.319	0.624	0.095	0.657	0.629	0.265
At MW	0.179	0.108	0.076	0.089	0.064	0.055
Above MW	0.502	0.269	0.830	0.254	0.307	0.680
B. Depth measures						
Shortfall from MW	0.360	0.504	0.408	0.512	0.661	0.544
C. Changes over time						
(i) Share below MW						
Pre (2005-2008)	0.264	0.509	0.072	0.518	0.524	0.148
Post (2009-2012)	0.386	0.739	0.119	0.799	0.717	0.380
Difference	0.122	0.230	0.046	0.281	0.194	0.232
H_0 : Pre = Post	0.015	0.001	0.000	0.000	0.001	0.000
(ii) Shortfall from MW						
Pre (2005-2008)	0.263	0.411	0.309	0.395	0.607	0.467
Post (2009-2012)	0.291	0.498	0.308	0.533	0.642	0.505
Difference	0.028	0.088	-0.002	0.138	0.034	0.037
H_0 : Pre = Post	0.004	0.000	0.962	0.006	0.227	0.085

Source: Own calculations from EPHPM surveys.

Notes: Incidence measures expressed in shares of workers. *Below* includes individuals with wages less than 0.90 of the hourly MW; *at* counts those earning between [0.90,1.10] of the hourly MW, and *above* refers to those earning more than 1.10 times the hourly MW. The depth of non-compliance is calculated as the shortfall indicator (Bhorat et al., 2013a), which measures how far actual wages are from minimum wages. Changes in Share Below MW over time are calculated by regression. Differences in the Shortfall from MW are estimated by block bootstrap with 100 replications. Reported p-values are drawn from t-tests where the null hypothesis is that non-compliance rates and depth are unchanged over time.

Table 5. Tests for partial compliance with legal minimum wages

	Wage earners (T) and Public sector (C)	Large firms (T) and Public sector (C)	Small firms (T) and Public sector (C)
Panel A: Pre/Post			
Post × T	0.123	0.096	0.132
	(0.031)***	(0.025)***	(0.066)*
R^2	0.293	0.186	0.354
N	143,095	82,029	82,492
Panel B: By year			
2006×T	0.027	0.016	0.050
	(0.018)	(0.028)	(0.011)***
2007×T	0.022	0.029	0.015
	(0.032)	(0.046)	(0.027)
2008×T	-0.019	0.000	-0.042
	(0.043)	(0.053)	(0.046)
2009×T	0.101	0.068	0.119
	(0.033)***	(0.034)*	(0.068)*
2010×T	0.099	0.084	0.101
	(0.044)**	(0.046)*	(0.080)
2011×T	0.148	0.144	0.134
	(0.058)**	(0.051)**	(0.109)
2012×T	0.177	0.146	0.174
	(0.068)**	(0.060)**	(0.116)
R^2	0.293	0.186	0.355
N	143,095	82,029	82,492
Mean non-compliance (2005-2008)	0.387	0.264	0.509

Source: Own calculations from EPHPM surveys.

Notes: Each panel and column presents a separate regression. Clustered standard errors by industry firm-size categories in parentheses. Covariates include a constant, a dummy for males, married, years of education, potential experience and its square (in years), a dummy variable for urban residence, the logarithm of industry-level IMAE index (by month) and value added (by year). All regressions are weighted.

*** Significant at 1 percent, ** 5 percent, * 10 percent.

Table 6. Net effects of legal minimum wages on labor market outcomes

		Sector		Occupation					
	Full Sample	Covered	Uncovered	Wage earners	Public sector	Domestic workers	Self-employed	Unpaid workers	Employers
A. Overall employment									
(1) Probit	-0.085								
	(0.023)***								
(2) Probit	-0.108								
	(0.008)***								
Mean employment rate	0.971								
Observations	327,764								
B. Labor force composition									
(1) Multinomial Logit		-0.363	0.274	-0.272	0.002	0.000	0.259	0.026	0.000
		(0.102)***	(0.092)***	(0.109)**	(0.000)***	(0.000)***	(0.076)***	(0.012)**	(0.004)
(2) Multinomial Logit		-0.446	0.338	-0.311	0.000	0.000	0.368	0.029	0.004
		(0.094)***	(0.098)***	(0.098)***	(0.000)***	(0.000)	(0.103)***	(0.014)**	(0.005)
Mean employment share		0.462	0.509	0.371	0.064	0.026	0.392	0.093	0.024
Observations		327,764				327,764			
C. Log Hours per week									
(1) OLS	-0.411	-0.173	-0.053	-0.088	-0.259	-0.410	-0.040	0.019	-0.232
	(0.166)**	(0.067)**	(0.088)	(0.026)***	(0.012)***	(0.003)***	(0.093)	(0.108)	(0.108)**
(2) OLS	-0.480	-0.194	0.008	-0.100	-0.267	-0.412	0.004	0.116	-0.181
	(0.177)**	(0.072)**	(0.096)	(0.028)***	(0.005)***	(0.002)***	(0.093)	(0.129)	(0.153)
Observations	305,441	153,695	151,746	123,173	21,797	8,725	116,955	26,930	7,861
D. Log Hourly Wages									
(1) OLS	0.136	0.244	-0.691	0.142	0.148	0.073	-0.717		0.113
	(0.161)	(0.087)**	(0.324)**	(0.040)***	(0.032)***	(0.004)***	(0.335)**		(0.188)
(2) OLS	0.205	0.286	-0.518	0.170	0.157	0.074	-0.548		0.044
	(0.175)	(0.097)***	(0.172)***	(0.048)***	(0.021)***	(0.005)***	(0.170)***		(0.243)
Observations	261,004	151,769	109,235	121,669	21,426	8,674	102,172		7,063

Source: Own calculations from EPHPM surveys.

Notes: Clustered standard errors by industry (Panels A and B) and industry firm-size categories (Panels C and D) in parentheses. Panels A, C, and D present separate regressions. Estimates in columns 2-3 and 4-10 of Panel B are from two separate Multinomial Logit regressions where the base category is unemployment. Covariates include a constant, a dummy for males, married, years of education, potential experience and its square (in years), a dummy variable for urban residence, the logarithm of industry-level IMAE index (by month) and value added (by year). Specification (1) controls for industry (or industry firm-size) and survey wave fixed effects. Specification (2) also includes linear category time trends. Coefficients for Probit and Multinomial Logit are marginal effects with all other covariates at their mean. All regressions are weighted.

*** Significant at 1 percent, ** 5 percent, * 10 percent.

Table 7. Net effects of legal minimum wages on poverty

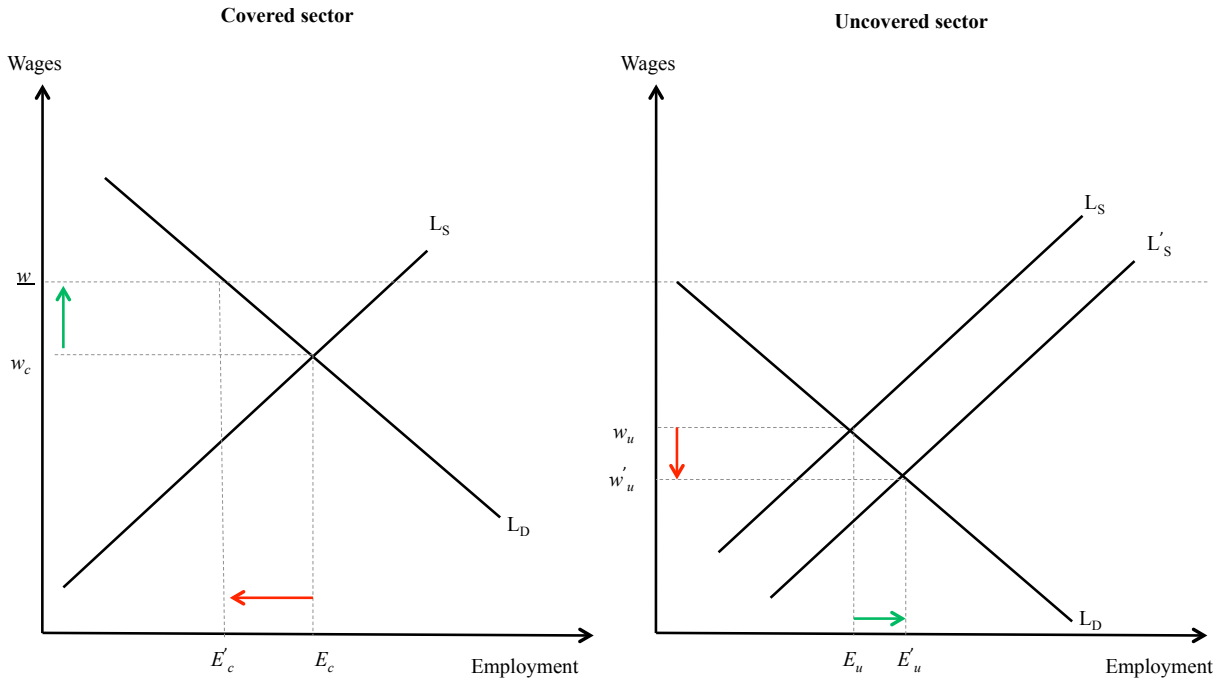
		Sector		Occupation					
	Full Sample	Covered	Uncovered	Wage earners	Public sector	Domestic workers	Self-employed	Unpaid workers	Employers
A. Extreme Poverty									
(1) Probit	0.051	-0.014	0.229	-0.015	0.062	0.307	0.227	0.159	0.201
	(0.025)**	(0.021)	(0.041)***	(0.023)	(0.003)***	(0.003)***	(0.051)***	(0.044)***	(0.042)***
(2) Probit	0.042	-0.013	0.089	-0.015	0.064	0.307	0.093	0.039	0.129
	(0.038)	(0.027)	(0.037)**	(0.033)	(0.003)***	(0.002)***	(0.039)**	(0.022)*	(0.080)
Mean poverty rate	0.459	0.368	0.554	0.404	0.115	0.424	0.561	0.628	0.202
Observations	313,852	165,035	148,817	133,156	23,137	9,354	115,674	24,643	7,817
B. Poverty									
(1) Probit	0.057	0.026	0.147	-0.002	0.106	0.383	0.151	0.078	0.086
	(0.031)*	(0.032)	(0.035)***	(0.015)	(0.005)***	(0.001)***	(0.039)***	(0.057)	(0.037)**
(2) Probit	0.058	0.035	0.044	0.007	0.111	0.384	0.060	-0.013	-0.037
	(0.037)	(0.033)	(0.023)*	(0.021)	(0.003)***	(0.001)***	(0.027)**	(0.028)	(0.071)
Mean poverty rate	0.680	0.624	0.738	0.667	0.337	0.663	0.750	0.778	0.392
Observations	313,852	165,035	148,817	133,156	23,137	9,360	115,674	24,651	7,866

Source: Own calculations from EPHPM surveys.

Notes: Each column corresponds to a separate regression. Clustered standard errors by industry categories in parentheses. Covariates include a constant, a dummy for males, married, years of education, potential experience and its square (in years), a dummy variable for urban residence, the logarithm of industry-level IMAE index (by month) and value added (by year). Specification (1) controls for industry (or industry firm-size) and survey wave fixed effects. Specification (2) also includes linear category time trends. Coefficients for Probit and Multinomial Logit are marginal effects with all other covariates at their mean. All regressions are weighted.

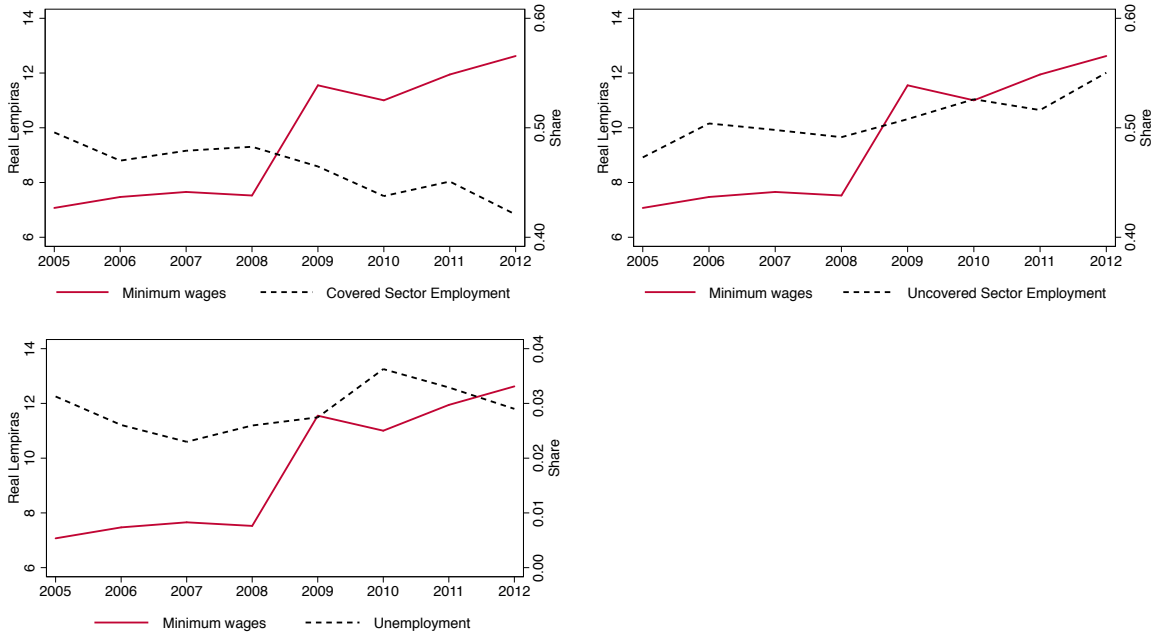
*** Significant at 1 percent, ** 5 percent, * 10 percent.

Figure 1. Predicted effects of a minimum wage increase in a dual labor market



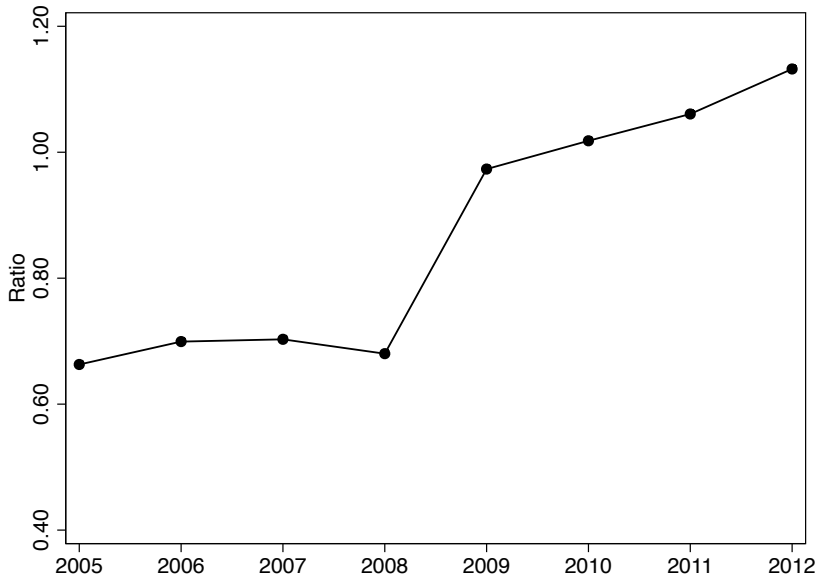
Source: Own elaboration.

Figure 2. Minimum wage and labor force composition trends, 2005-2012



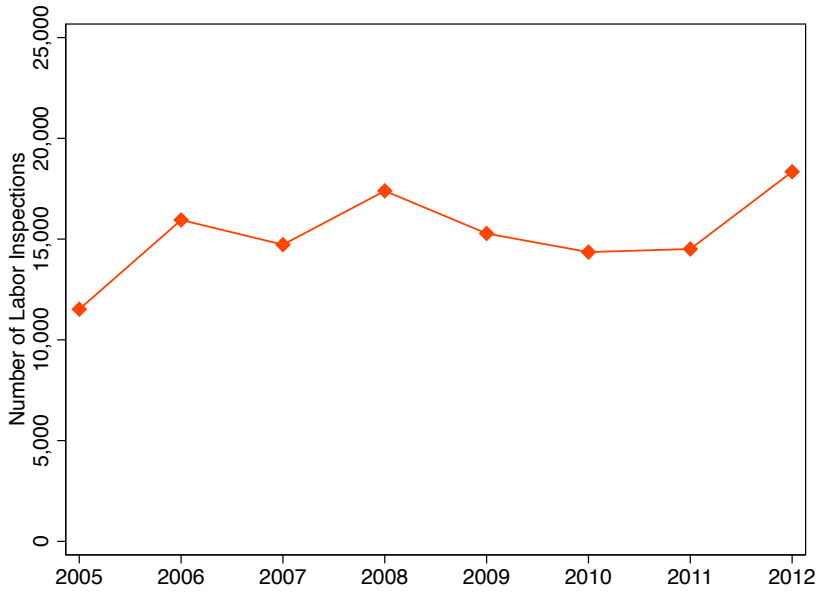
Source: Own calculations from EPHPM surveys.

Figure 3. Ratio of minimum wages to mean covered sector wages, 2005-2012



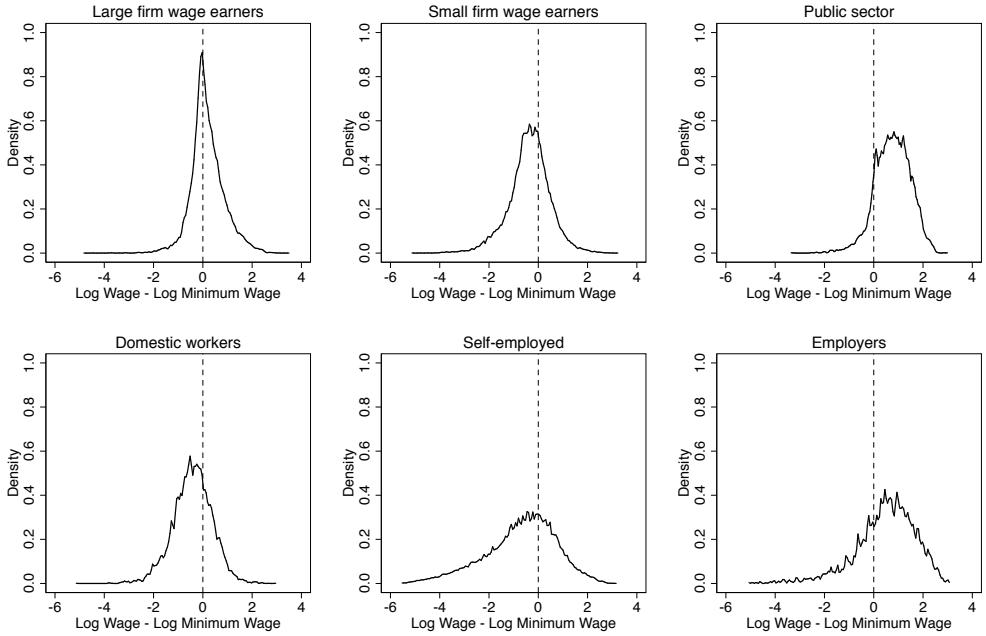
Source: Own calculations from EPHPM surveys.

Figure 4. Number of labor inspections, 2005-2012



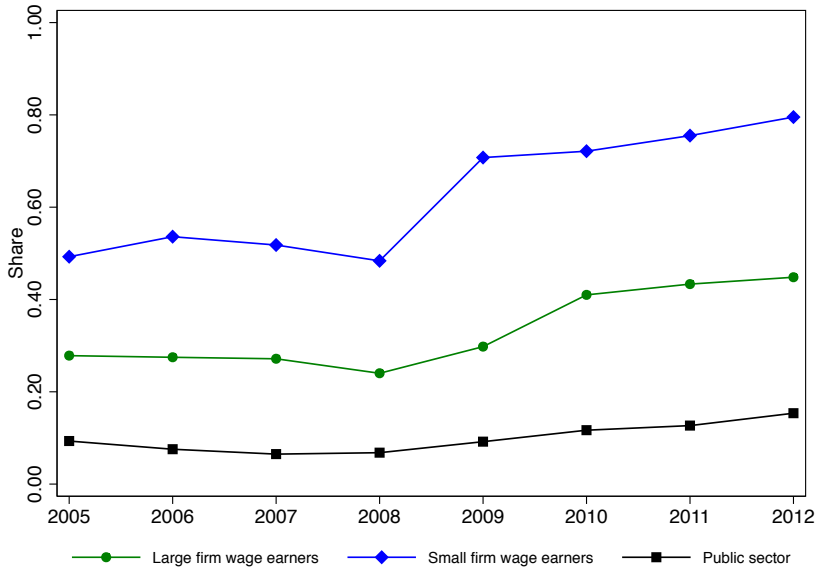
Source: Honduran Ministry of Labor (UPEG, 2016).

Figure 5. Kernel densities of log wages minus log minimum wages



Source: Own calculations from EPHPM surveys.
Notes: These densities are average distributions from 2005-2012 and are centered so that $MW = 0$.

Figure 6. Non-compliance rates for large, small, and public workers, 2005-2012



Source: Own calculations from EPHPM surveys.

Appendix

Table A.1. Real hourly minimum wages by industry firm-size categories

Category	Firm size	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	1-15	6.01	6.43	6.69	6.55	10.43	10.10	9.77	9.88
	16+	7.78	8.12	8.31	8.20	10.97	11.10	10.28	10.48
Non-metallic mining	1-15	6.60	7.06	7.35	7.26	12.16	11.15	13.35	13.49
	16+	8.28	8.64	8.84	8.80	12.51	11.68	14.13	14.21
Metallic mining	All	9.59	10.01	9.96	9.57	11.09	10.30	14.26	13.99
Manufacturing	1-15	6.60	7.06	7.35	7.26	12.48	11.88	13.69	14.61
	16+	8.28	8.64	8.84	8.80	12.70	13.00	14.23	14.21
Utilities	All	9.59	10.01	9.96	9.92	12.19	12.09	14.45	14.75
Construction	1-15	6.60	7.06	7.35	7.26	12.29	11.73	14.14	15.11
	16+	8.28	8.64	8.84	8.80	12.83	12.63	14.05	14.11
Retail	1-15	6.60	7.06	7.35	7.26	12.86	12.37	14.00	14.83
	16+	8.28	8.64	8.84	8.80	13.21	13.19	14.17	14.31
Transport	1-15	7.52	8.04	8.37	8.19	12.51	11.73	14.07	14.86
	16+	8.03	8.38	8.57	8.54	13.09	13.27	14.24	14.41
Real Estate	1-15	7.52	8.04	8.37	8.19	12.97	13.06	14.26	15.00
	16+	8.03	8.38	8.57	8.54	12.89	13.63	14.72	14.61
Business Services	1-15	5.35	5.15	4.83	4.30	13.09	12.63	14.26	14.94
	16+	6.20	5.97	5.60	4.98	13.19	13.15	14.54	14.63
Financial Services	1-15	9.59	10.12	10.63	10.64	13.22	12.42	14.26	15.00
	16+	9.59	10.12	10.54	10.54	13.41	13.61	14.75	14.99
Communal and Personal Services	1-15	6.60	7.06	7.35	7.26	12.63	12.12	14.08	15.18
	16+	8.28	8.64	8.84	8.80	13.19	12.84	13.79	13.88
Export	All	9.59	10.01	9.96	9.57	9.02	9.25	9.80	9.94

Source: Honduran minimum wage decrees.

Notes: Real minimum wages are calculated from monthly values as Hourly MW=(Monthly MW/44 x 4.3) following Gindling and Terrell (2009). Values are expressed in real Lempiras. The average real exchange rate for the period is 10 Lempiras per $1 USD.

Table A.2. Macroeconomic and labor market indicators, 2005-2012

Year	GDP growth (real)	Inflation rate (%)	Labor force participation	Employment rate	Unemployment rate
2005	6.1	8.8	61.7	58.7	4.9
2006	6.6	5.6	59.9	57.7	3.6
2007	6.2	6.9	58.9	57.1	3.1
2008	4.2	11.4	59.0	57.2	3.1
2009	-2.4	5.5	61.3	59.3	3.3
2010	3.7	4.7	61.9	59.4	4.1
2011	3.8	6.8	59.9	57.2	4.4
2012	4.1	5.2	58.4	56.2	3.7

Source: Honduran Central Bank and EPHPM surveys.
Notes: Growth is calculated using constant GDP levels at December 1999 prices, the inflation rate denotes percentage changes in prices (inter-annual variation in December), and labor market indicators are weighted averages computed from individual-level EPHPM survey data for adults (≥15 years old).

Table A.3. Changes in legal minimum wages by electoral preferences (municipal-level data)

	(1)	(2)	(3)
2006×Voted for Zelaya in 2005 election	-0.009	-0.005	0.000
	(0.008)	(0.006)	(0.006)
2007×Voted for Zelaya in 2005 election	-0.002	-0.005	-0.001
	(0.009)	(0.006)	(0.006)
2008×Voted for Zelaya in 2005 election	-0.003	-0.003	-0.001
	(0.009)	(0.006)	(0.006)
2009×Voted for Zelaya in 2005 election	0.007	0.007	0.009
	(0.011)	(0.008)	(0.008)
2010×Voted for Zelaya in 2005 election	-0.013	-0.000	-0.002
	(0.015)	(0.010)	(0.010)
2011×Voted for Zelaya in 2005 election	0.003	0.003	0.005
	(0.011)	(0.009)	(0.007)
2012×Voted for Zelaya in 2005 election	0.022	0.022	0.011
	(0.014)	(0.010)**	(0.007)
Municipality effects	Yes	Yes	Yes
Survey wave effects	Yes	Yes	Yes
Share of workers in each MW category	No	Yes	Yes
Linear time trend in Share of Workers per Category	No	No	Yes
R^2	0.946	0.968	0.974
N	3,514	3,514	3,514

Source: Own calculations from EPHPM surveys aggregated to the municipal-level and electoral results.
Notes: Each column is a separate regression. Clustered standard errors by municipality in parentheses. Estimates correspond to $\hat{\beta}$ from the following regression: $\log MW_{dt} = \alpha + \beta_t(Zelaya_d \times \delta_t) + \phi_d + \bar{\mu}_j + \delta_t + u_{dt}$. Covariates include the share of males, average age, mean years of education, mean potential experience and its square, fraction of urban residents, and the share of workers in each industry firm-size category.
*** Significant at 1 percent, ** 5 percent, * 10 percent.

Table A.4. Valid minimum wage decrees at each survey wave

Year	Wave	Decree Number	Setting	Effective date
2005	September	STSS-029-05	Negotiated	January 1, 2005
2006	May September	027-STSS-06	Negotiated	January 1, 2006
2007	May September	STSS-041-07	Set unilaterally	January 1, 2007
2008	May September	STSS-258-07	Set unilaterally	January 1, 2008
2009	May	STSS-374-08	Set unilaterally	January 1, 2009
2010	May September	STSS-342-2010	Set unilaterally	September 1, 2010
2011	May September	STSS-223-2011	Set unilaterally	January 1, 2011
2012	May	STSS-001-2012	Negotiated	January 1, 2012

Source: National Statistics Institute (INE) and General Directorate of Wages (DGS).
Notes: Minimum wage decrees are available at http://www.trabajo.gob.hn/?page_id=921.

Table A.5. Yearly changes in real hourly minimum wages by industry categories

Category	2006	2007	2008	2009	2010	2011	2012
Agriculture	5.5	3.1	-1.7	45.2	-1.0	-5.4	1.5
Non-metallic mining	5.5	3.1	-0.8	53.6	-7.4	20.3	0.8
Metallic mining	4.4	-0.5	-4.0	16.0	-7.1	38.4	-1.9
Manufacturing	5.5	3.1	-0.8	56.8	-1.2	12.2	3.2
Utilities	4.4	-0.5	-0.4	22.9	-0.8	19.5	2.1
Construction	5.5	3.1	-0.8	56.4	-3.0	15.7	3.7
Retail	5.5	3.1	-0.8	62.3	-1.9	10.2	3.4
Transport	5.6	3.2	-1.3	53.1	-2.3	13.2	3.4
Real Estate	5.6	3.2	-1.3	54.7	3.2	8.6	2.2
Business Services	-3.7	-6.2	-11.1	183.1	-1.9	11.7	2.7
Financial Services	5.5	4.6	0.0	25.8	-2.3	11.4	3.4
Communal and Personal Services	5.5	3.1	-0.8	60.7	-3.3	11.6	4.3
Export	4.4	-0.5	-4.0	-5.7	2.6	6.0	1.4
Average	**4.4**	**1.5**	**-2.3**	**60.4**	**-2.3**	**14.4**	**2.1**

Source: Own calculations from real hourly minimum wages aggregated at the industry-level.
Notes: The table shows percentage changes in legal minimum wages relative to the previous year.

Table A.6. Descriptive statistics by occupation, averages for 2005-2012

	Wage earners	Public sector	Domestic workers	Self-employed	Unpaid workers	Employers
Employment, hours, and wages						
Share of sample	0.393	0.067	0.028	0.396	0.093	0.024
Hours per week	44.62	39.13	49.16	34.52	30.66	44.54
Share full-time (≥44 hpw)	0.622	0.277	0.670	0.310	0.191	0.558
Real Hourly Wages	11.08	28.03	4.91	10.06		24.71
Household poverty status						
Extremely Poor	0.307	0.075	0.319	0.478	0.562	0.158
Poor	0.562	0.247	0.562	0.676	0.730	0.320
Individual & household characteristics						
Males	0.729	0.450	0.071	0.626	0.649	0.722
Married	0.483	0.595	0.216	0.700	0.215	0.756
Years of education	6.92	11.85	5.38	4.53	6.23	8.50
Potential experience	18.1	21.0	19.5	33.5	12.1	29.3
Household size	5.47	5.00	5.54	5.26	6.45	4.95
Is household head	0.392	0.451	0.200	0.612	0.032	0.671
Lives in urban area	0.569	0.794	0.656	0.386	0.286	0.681
Composition across industries						
Agriculture	0.275	0.001	0.001	0.441	0.589	0.238
Non-metallic mining	0.003	0.000	0.000	0.002	0.001	0.003
Metallic mining	0.001	0.000	0.000	0.000	0.000	0.000
Manufacturing	0.122	0.002	0.001	0.094	0.086	0.135
Utilities	0.005	0.036	0.000	0.000	0.000	0.001
Construction	0.105	0.004	0.001	0.051	0.010	0.028
Retail	0.202	0.001	0.002	0.271	0.269	0.413
Transport	0.042	0.036	0.000	0.037	0.005	0.041
Real Estate	0.003	0.000	0.000	0.001	0.000	0.005
Business Services	0.036	0.005	0.002	0.011	0.004	0.055
Financial Services	0.026	0.010	0.000	0.001	0.000	0.003
Communal and Personal Services	0.088	0.904	0.992	0.065	0.025	0.061
Export	0.093	0.001	0.000	0.026	0.010	0.015
N	134,190	23,375	9,411	124,829	27,680	8,279

Source: Own calculations from EPHPM surveys.
Notes: All statistics are weighted. Wages are expressed in real Lempiras. The average real exchange rate for the period is 10 Lempiras per $1 USD.

Table A.7. Compliance with legal minimum wages (Monthly values)

	Covered sector				Uncovered sector	
	Large firm wage earners	Small firm wage earners	Public sector workers	Domestic workers	Self-employed	Employers
A. Incidence measures						
Below MW	0.237	0.661	0.104	0.628	0.731	0.284
At MW	0.221	0.101	0.095	0.097	0.055	0.068
Above MW	0.542	0.238	0.801	0.275	0.214	0.648
B. Depth measures						
Shortfall from MW	0.368	0.550	0.443	0.506	0.715	0.582
C. Changes over time						
(i) Share below MW						
Pre (2005-2008)	0.195	0.546	0.075	0.465	0.620	0.173
Post (2009-2012)	0.290	0.778	0.134	0.796	0.824	0.393
Difference	0.095	0.232	0.059	0.331	0.204	0.220
H_0 : Pre = Post	0.007	0.005	0.000	0.000	0.001	0.000
(ii) Shortfall from MW						
Pre (2005-2008)	0.253	0.466	0.365	0.366	0.665	0.490
Post (2009-2012)	0.258	0.543	0.303	0.531	0.705	0.531
Difference	0.005	0.077	-0.062	0.165	0.040	0.041
H_0 : Pre = Post	0.801	0.000	0.010	0.000	0.135	0.035

Source: Own calculations from individual EPHPM surveys.

Notes: Incidence measures denote shares of full-time workers. *Below* includes individuals with earnings less than 0.90 of the monthly MW; *at* counts those earning between [0.90,1.10] of the monthly MW, and *above* refers to those earning more than 1.10 times the monthly MW. The depth of non-compliance is calculated as the shortfall indicator (Bhorat et al., 2013a), which measures how far actual earnings are from monthly minimum wages. Changes in Share Below MW over time are calculated by regression. Differences in the Shortfall from MW are estimated by block bootstrap with 100 replications. Reported p-values are drawn from t-tests where the null hypothesis is that non-compliance rates and depth are unchanged over time.

Table A.8. Alternative specifications for labor market outcomes

		Sector		Occupation					
	Full Sample	Covered	Uncovered	Wage earners	Public sector	Domestic workers	Self-employed	Unpaid workers	Employers
A. Employment rate									
(1) OLS	-0.099								
	(0.018)***								
(2) OLS	-0.111								
	(0.018)***								
(1) IV	-0.132								
	(0.027)***								
F-statistic	1,788.1								
(2) IV	-0.148								
	(0.031)***								
F-statistic	485.9								
Observations	327,764								
B. Labor force composition									
(1) Multinomial Probit		-0.350	0.254						
		(0.094)***	(0.085)***						
(2) Multinomial Probit		-0.431	0.307						
		(0.087)***	(0.091)***						
Observations		327,764							
C. Log Hours per week									
(1) IV	-0.512	-0.205	-0.226	-0.111	-0.319	-0.441	-0.165	-0.682	-0.252
	(0.174)***	(0.072)***	(0.185)	(0.032)***	(0.011)***	(0.003)***	(0.204)	(0.149)***	(0.183)
F-statistic	1,634.5	4,525.8	31.7	4,250.8	1,178.9	913,810.3	33.0	8.7	61.5
(2) IV	-0.591	-0.225	-0.675	-0.121	-0.328	-0.443	-0.563	-2.220	0.097
	(0.179)***	(0.075)***	(0.259)***	(0.032)***	(0.006)***	(0.002)***	(0.337)*	(0.667)***	(0.671)
F-statistic	494.6	1,234.2	66.2	891.0	641.1	1,603,362.0	54.1	23.6	35.5
Observations	305,441	153,695	151,746	123,173	21,797	8,725	116,955	26,930	7,861
D. Log Hourly Wages									
(1) IV	0.220	0.272	-0.360	0.153	0.155	0.084	-0.352		1.252
	(0.158)	(0.098)***	(0.341)	(0.043)***	(0.041)***	(0.005)***	(0.353)		(0.569)**
F-statistic	1,934.1	4,485.3	28.9	4,213.2	1,229.3	1,103,095.3	27.1		51.6
(2) IV	0.275	0.306	0.295	0.172	0.168	0.085	0.335		4.449
	(0.179)	(0.108)***	(0.370)	(0.056)***	(0.028)***	(0.006)***	(0.376)		(1.533)***
F-statistic	554.6	1,221.8	61.8	885.0	682.8	1,743,636.0	56.5		32.3
Observations	261,004	151,769	109,235	121,669	21,426	8,674	102,172		7,063

Source: Own calculations from EPHPM surveys.

Notes: See notes for Table 6. (1) controls for industry (or industry firm-size) and survey wave fixed effects and (2) includes linear category time trends. IV specifications use minimum wages lagged one year as an instrument. The table reports first-stage F-statistics. All coefficients are marginal effects.

*** Significant at 1 percent, ** 5 percent, * 10 percent.

Table A.9. Effects of legal minimum wages on labor market outcomes (industry firm-size panel data)

		Sector		Occupation				
	Full Sample	Covered	Uncovered	Wage earners	Public sector	Self-employed	Unpaid workers	Employers
A. Log Employment								
FE	-0.065	-0.225	0.110	-0.170	0.877	0.171	-0.771	0.256
	(0.157)	(0.222)	(0.223)	(0.207)	(0.589)	(0.333)	(0.434)	(0.226)
	299	299	257	299	128	232	129	226
FE-LDV	-0.080	-0.254	0.190	-0.212	0.085	0.066	-0.490	0.272
	(0.198)	(0.243)	(0.228)	(0.238)	(1.012)	(0.235)	(0.469)	(0.248)
	276	276	225	276	98	199	108	188
GMM-DIF	-0.064	-0.258	0.194	-0.210	0.114	0.077	-0.549	0.221
	(0.220)	(0.259)	(0.218)	(0.255)	(1.124)	(0.246)	(0.545)	(0.237)
	253	253	203	253	85	178	96	167
B. Log Hours per week								
FE	-0.041	-0.064	-0.259	-0.059	-0.013	-0.086	0.118	-0.180
	(0.039)	(0.071)	(0.199)	(0.070)	(0.083)	(0.160)	(0.206)	(0.099)*
	299	299	257	299	128	231	129	226
FE-LDV	-0.026	-0.054	-0.284	-0.049	0.060	0.038	0.036	-0.302
	(0.045)	(0.077)	(0.293)	(0.078)	(0.111)	(0.146)	(0.206)	(0.145)**
	276	276	225	276	98	198	108	188
GMM-DIF	-0.027	-0.052	-0.310	-0.046	0.048	0.047	0.047	-0.264
	(0.045)	(0.077)	(0.342)	(0.078)	(0.152)	(0.131)	(0.247)	(0.144)*
	253	253	203	253	85	178	96	167
C. Log Hourly Wages								
FE	0.198	0.215	-0.159	0.204	0.199	0.263		0.050
	(0.068)***	(0.113)*	(0.265)	(0.115)*	(0.236)	(0.392)		(0.392)
	299	299	256	299	128	231		222
FE-LDV	0.233	0.256	0.051	0.249	-0.115	0.355		-0.165
	(0.071)***	(0.117)**	(0.270)	(0.120)**	(0.298)	(0.398)		(0.399)
	276	276	224	276	98	198		183
GMM-DIF	0.245	0.262	0.063	0.253	-0.064	0.365		-0.270
	(0.066)***	(0.117)**	(0.288)	(0.120)**	(0.370)	(0.422)		(0.366)
	253	253	202	253	85	178		163

Source: Own calculations from EPHPM surveys aggregated to the industry firm-size level.

Notes: Clustered standard errors by industry firm-size categories in parentheses. Panel A uses the log of weighted employment for each industry firm-size category. Panels B and C use weighted means of hours and wages. The specifications are: the within estimator (FE), the within estimator including a lag of the dependent variable (FE-LDV), and Arellano-Bond dynamic panel estimator that uses lags of the dependent variable as instruments (GMM-DIF). All regressions control for the share of males, average years of education, mean potential experience and its square, share of urban workers, the logarithm of industry-level IMAE index (by month) and value added (by year), industry-firm size effects, survey wave effects, and linear category-specific time trends.

*** Significant at 1 percent, ** 5 percent, * 10 percent.

Table A.10. Alternative specifications for poverty

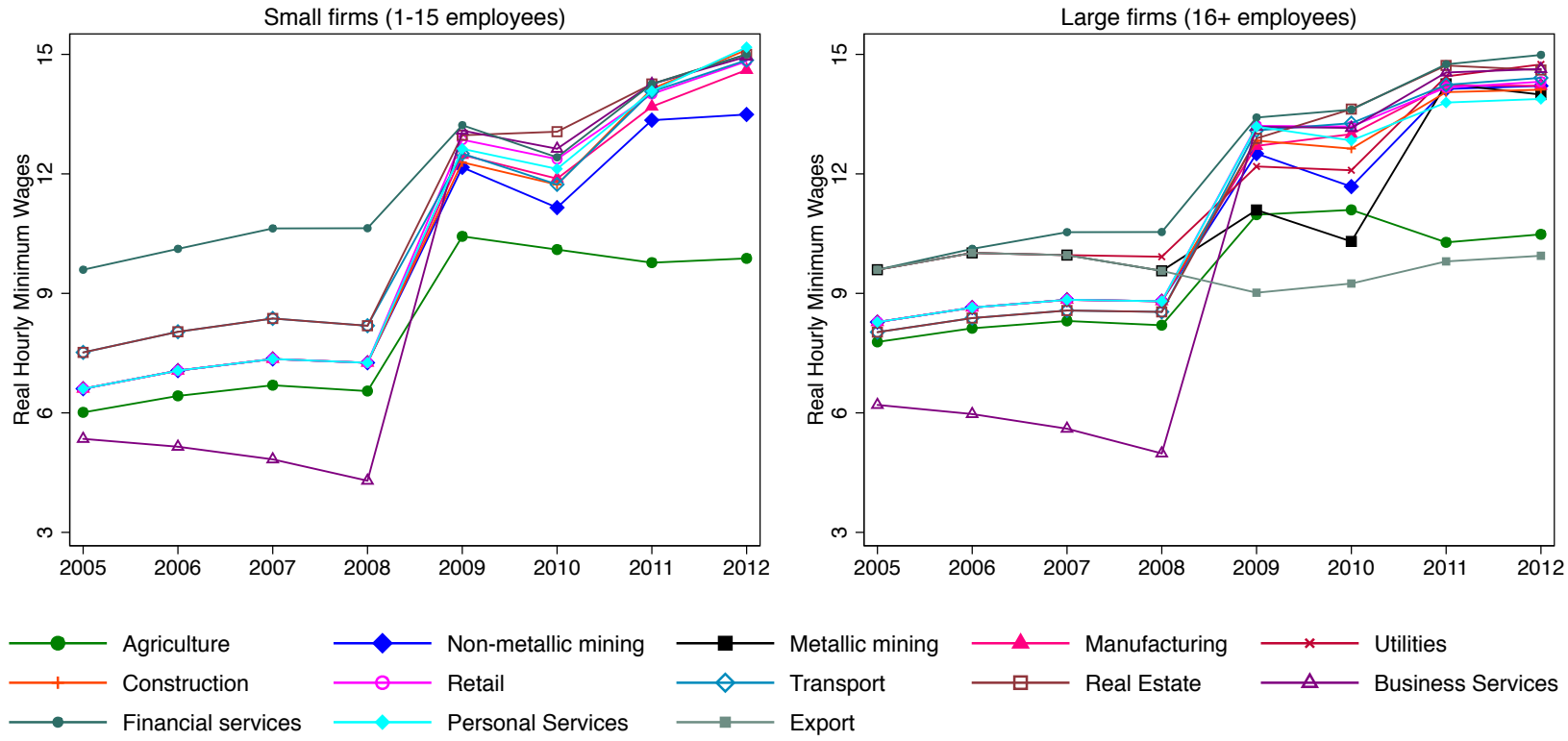
		Sector		Occupation					
	Full Sample	Covered	Uncovered	Wage earners	Public sector	Domestic workers	Self-employed	Unpaid workers	Employers
A. Extreme poverty									
(1) OLS	0.044	-0.008	0.176	-0.012	0.090	0.277	0.179	0.136	0.185
	(0.021)*	(0.017)	(0.026)***	(0.019)	(0.007)***	(0.003)***	(0.033)***	(0.032)***	(0.034)***
(2) OLS	0.039	-0.007	0.082	-0.012	0.096	0.277	0.087	0.056	0.104
	(0.030)	(0.021)	(0.034)**	(0.026)	(0.004)***	(0.003)***	(0.035)**	(0.020)**	(0.064)
(1) IV	0.027	-0.024	0.305	-0.033	0.108	0.293	0.333	0.329	-0.133
	(0.035)	(0.028)	(0.085)***	(0.034)	(0.004)***	(0.002)***	(0.111)***	(0.093)***	(0.147)
F-statistic	2,067.5	5,789.6	40.4	3,405.1	2,014.9	15,527,689.2	39.0	9.5	80.1
(2) IV	0.027	-0.022	0.494	-0.032	0.111	0.293	0.651	0.542	-0.581
	(0.043)	(0.032)	(0.191)***	(0.041)	(0.003)***	(0.002)***	(0.201)***	(0.327)*	(0.264)**
F-statistic	537.8	1,363.6	71.1	784.2	1,255.7	11,493,050.9	61.2	29.9	40.8
Observations	313,852	165,035	148,817	133,156	23,137	9,364	115,674	24,653	7,868
B. Poverty									
(1) OLS	0.044	0.015	0.141	-0.003	0.081	0.339	0.147	0.075	0.076
	(0.026)	(0.026)	(0.026)***	(0.013)	(0.007)***	(0.001)***	(0.031)***	(0.051)	(0.025)**
(2) OLS	0.047	0.024	0.067	0.006	0.085	0.339	0.081	0.022	-0.021
	(0.032)	(0.027)	(0.024)**	(0.017)	(0.005)***	(0.001)***	(0.029)**	(0.027)	(0.058)
(1) IV	0.037	0.009	0.253	-0.015	0.117	0.361	0.261	0.188	-0.082
	(0.034)	(0.032)	(0.085)***	(0.022)	(0.011)***	(0.002)***	(0.094)***	(0.113)*	(0.086)
F-statistic	2,067.5	5,789.6	40.4	3,405.1	2,014.9	15,527,689.2	39.0	9.5	80.1
(2) IV	0.044	0.018	0.419	-0.005	0.119	0.362	0.499	0.282	-0.339
	(0.040)	(0.034)	(0.257)	(0.028)	(0.014)***	(0.002)***	(0.292)*	(0.252)	(0.274)
F-statistic	537.8	1,363.6	71.1	784.2	1,255.7	11,493,050.9	61.2	29.9	40.8
Observations	313,852	165,035	148,817	133,156	23,137	9,364	115,674	24,653	7,868

Source: Own calculations from EPHPM surveys.

Notes: See notes for Table 7. (1) controls for industry (or industry firm-size) and survey wave fixed effects and (2) includes linear category time trends. IV specifications use minimum wages lagged one year as an instrument. The table reports first-stage F-statistics. All coefficients are marginal effects.

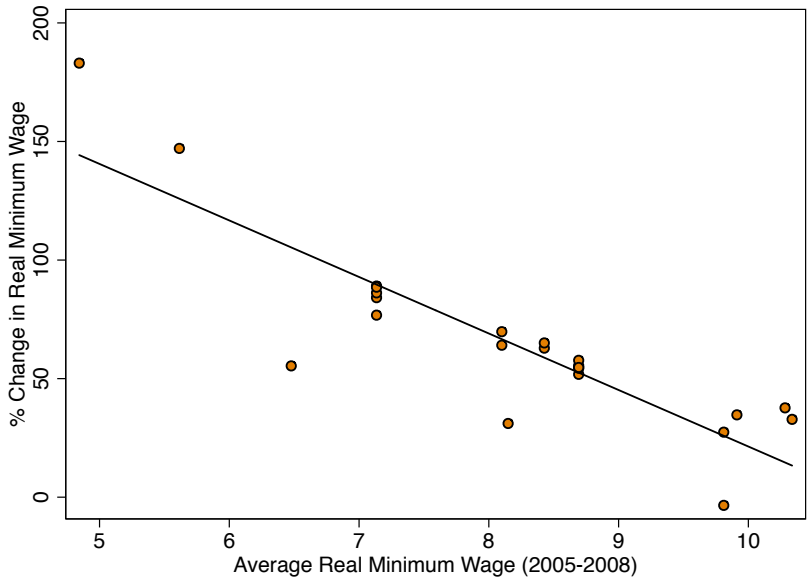
*** Significant at 1 percent, ** 5 percent, * 10 percent.

Figure A.1. Trends in minimum wages by industry firm-size categories



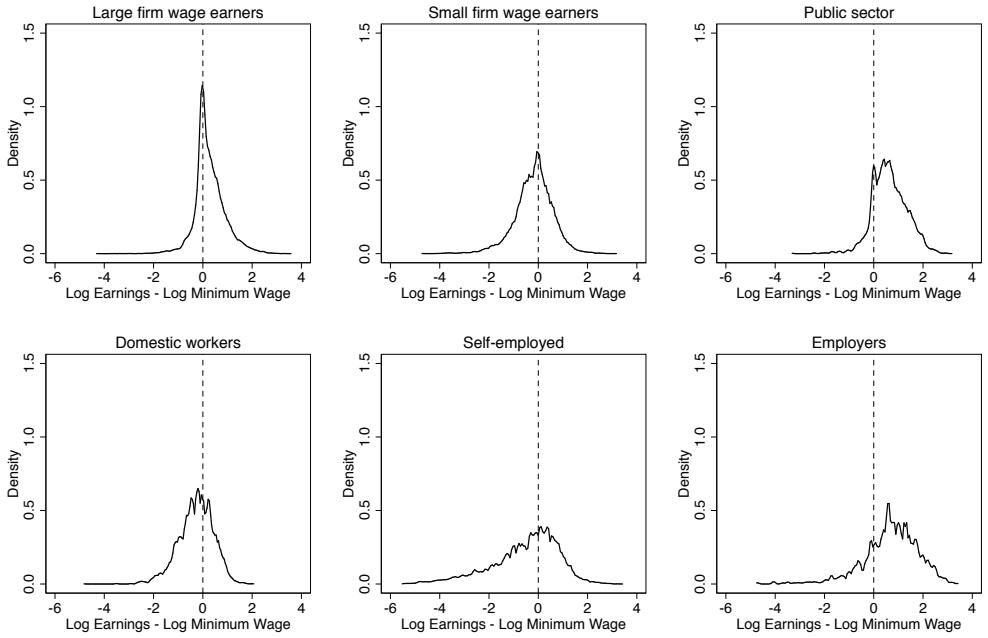
Source: Own elaboration from Honduran minimum wage decrees.

Figure A.2. Minimum wage changes by industry firm-size category before and after 2009



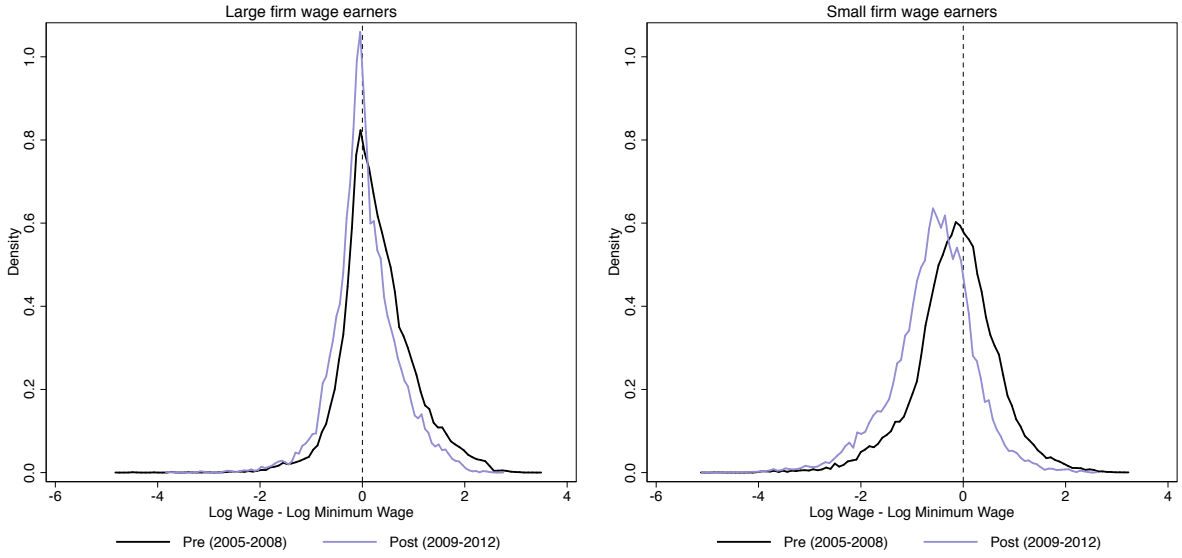
Source: Own calculations from EPHPM surveys aggregated to the industry firm-size level.

Figure A.3. Kernel densities of log earnings minus log monthly minimum wages



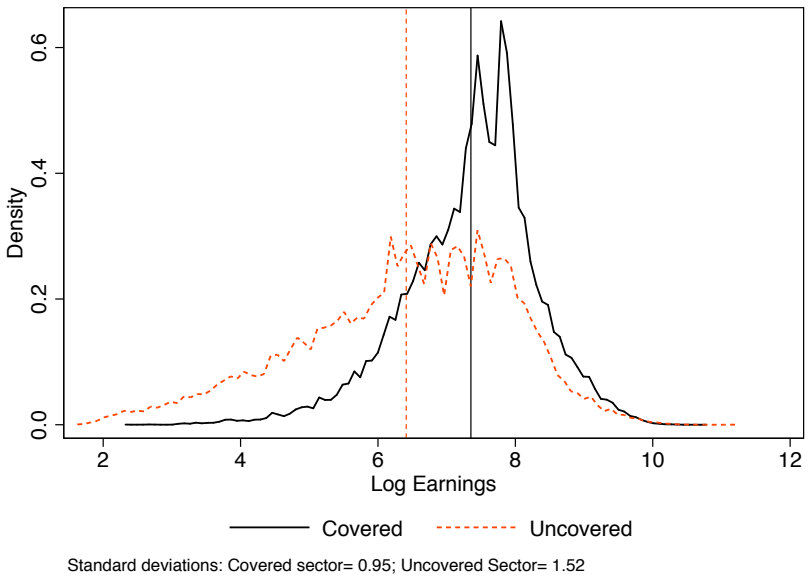
Source: Own calculations from EPHPM surveys.
Notes: These densities are average distributions from 2005-2012 and are centered so that $MW = 0$.

Figure A.4. Kernel densities of log wages minus log minimum wages, before and after 2009



Source: Own calculations from EPHPM surveys.
These densities are centered so that $MW = 0$.

Figure A.5. Kernel densities of log earnings by sector



Source: Own calculations from EPHPM surveys.
Notes: These densities are average distributions from 2005-2012.