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MINIMUM WAGES AND LABOR SUPPLY IN AN EMERGING MARKET

THE CASE OF MAURITIUS

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ABSTRACT

This paper investigates the effect of multiple minimum wages, known as remuneration orders, on employment and working hours in Mauritius. Using data between 2004 and 2014, the analysis indicates that a 10 percent increase in the minimum wages brings about a slightly positive effect on employment in the covered sector, with an estimated employment elasticity of 0.113, which is within the range of elasticities found in previous studies of employment effects of minimum wages in low- and middle-income countries. The positive employment effect of minimum wages is also associated with a 2.3 percent increase in average working hours for men but a 1.8 percent decline in average working hours for women in the covered sector. In the uncovered sector, the significant positive effect along the intensive margin, estimated at 4.2 percent, is driven by changes in labor supply among men.

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Minimum Wages and Labor Supply in an Emerging Market: The Case of Mauritius

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The findings, interpretations and conclusions expressed in this paper are entirely those of the authors, and do not necessarily represent the views of the World Bank, its Executive Directors, or the governments of the countries they represent.

Introduction

Minimum wage systems exist in about 90 percent of the International Labour Organization's (ILO) 193 member states (Benassi, 2011). These minimum wage regulations aim to protect low-paid workers and typically take one of two broad forms: A single base minimum wage rate for a country or region, or a more complex system of multiple minimum wage rates by sector and/or occupation. In Mauritius, minimum wages have been legislated in the latter form, with specified wage rates for varying occupations across 30 industry-specific remuneration orders. There has, however, been little work on the nature and impact of these stipulated wage rates in the country. In this paper, we thus consider the effects of these minimum wages on employment and hours worked in Mauritius.

The standard textbook theoretical model of minimum wages predicts that in a competitive equilibrium, there is a negative relationship between minimum wages and employment. Early studies on the effect of the minimum wage on employment, dating as far back as the work of Stigler (1946), predicted that in a competitive labor market, the relationship between minimum wages and employment is a negative one. A growing number of later studies however suggested that the relationship between the minimum wage and employment is not necessarily always negative (Katz and Krueger, 1992; Card, 1992 a, b).

Based on the work of Neumark and Wascher (2007) and 17 more recent studies focusing on low- and middle-income (LMI) countries, DPRU (2016) presents the employment effects of minimum wage increases across various developed and developing countries derived from a review of 115 studies. The results include aggregate impacts for all workers coupled with the employment impacts for specific demographic groups, regions and sectors. Overall, employment elasticities in the studies reviewed a range from 2.17 (Katz and Krueger, 1992) to -4.6 (Abowd, Kramarz, and Margolis, 1999). The mean and median of all the cumulative elasticities are -0.22 and -0.11, respectively, suggesting that on average the impacts of various minimum wage hikes in the countries under review have been marginally negative.

For LMI countries specifically, DPRU (2016) notes 32 statistically significant minimum wage-employment elasticity estimates from 11 countries. The elasticities range from a negative value of -1.3 to a positive value of 1, with a median elasticity of -0.08 and a mean elasticity of -0.11. Empirical studies on the effect of increased minimum wages on employment in LMI countries thus suggest that increases in wages will have either benign or only slightly negative employment effects.

This is the first study to consider the effect of minimum wages on employment in Mauritius specifically. Using data between 2004 and 2014, we find that a 10 percent increase in the minimum wages brings about a slightly positive effect on employment in the covered sector, with an estimated employment elasticity of 0.113. This is within the range of elasticities found in previous studies of employment effects of minimum wages in LMI countries.

We also find that the positive employment effect of minimum wages in Mauritius is associated with a 2.3 percent increase in average working hours for men but a 1.8 percent decline in average working hours for women in the covered sector, for a 10 percent increase in the minimum wage. In the uncovered sector, a significant hours of work effect, driven by an increase in average male work hours, is found for the sector overall with a 10 percent increase in the minimum wage being associated with an increase in average number of hours worked of 4.2 percent.

Overall, the results suggest the presence of monopsony power in the low-wage labor market in Mauritius with increases in minimum wages being associated with a slightly positive effect on employment in the covered sectors. In addition, it seems that increases in the minimum wage have the effect of increasing average work hours for males in both the covered and uncovered sectors. However, for women, there is a decline in average working hours for women in the covered sector, suggesting that industries in which females are more likely to be represented may be responding to increased minimum wages by decreasing the number of hours worked by female employees rather than firing workers, despite the overall positive employment effect.

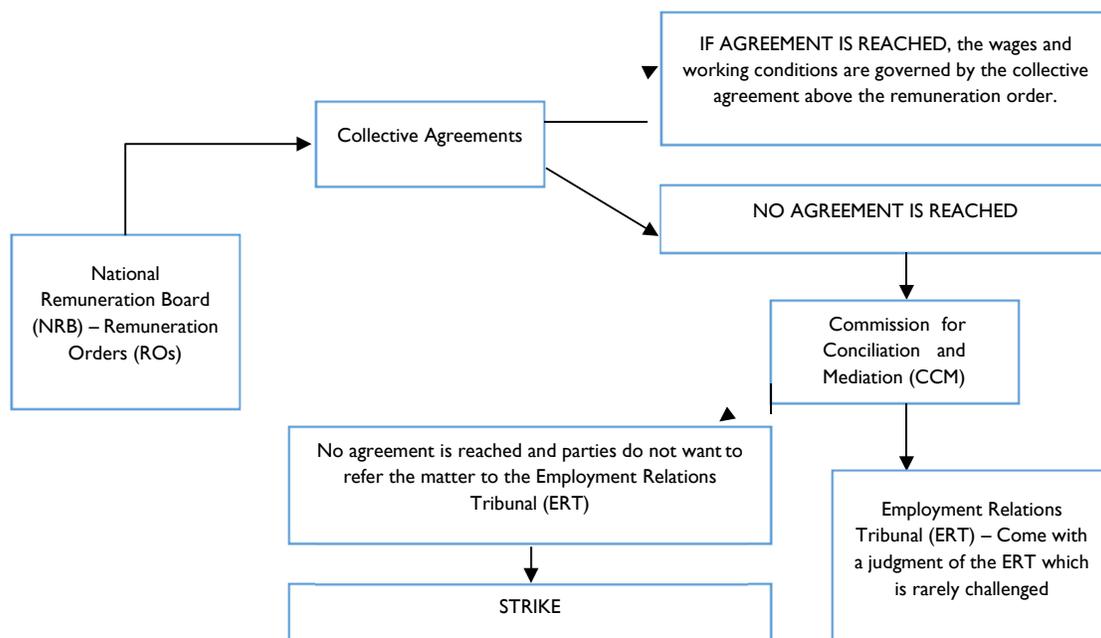
The rest of the paper is organized as follows. We start with a brief consideration of how minimum wages are set in Mauritius within the complex remuneration order wage system. Thereafter, we introduce the data source used throughout the analysis and consider how legislated minimum wages have changed over the period under review. We then outline our methodology and present our findings. We also briefly note the limitations of our study and take note of minimum wage compliance which may affect our estimation of effects.

I Wage Fixing in the Private Sector

The framework for establishing minimum wages and conditions of employment in the private sector is set either by the remuneration regulations by the National Remuneration Board (NRB), Collective Agreement or an award of the Employment Relations Tribunal (Figure 1).²

² The NRB is a quasi-judicial body formerly set up under Section 45 of the Repealed Industrial Relations Act which is now deemed to have been set up under Section 90 of the Employment Relations Act 2008.

Figure 1: Framework for establishing minimum wages in the private sector



The NRB acts as a specialized wage committee or advisory body on wages. Minimum wages are determined based on the Consumer Price Index (CPI). The CPI of the last reviewed base year is chosen and then compared to the wages in the specific sector in order to determine the level of loss in terms of real wage. The percentage for compensation is calculated and is applied to the last minimum wage of the worker. The NRB is also guided by the principles set out in Section 97 of the Employment Rights Act. The other important factors taken into consideration by the NRB are the need to promote decent work and decent living; the need to promote gender equality and to fix wages on the basis of job content; the need to ensure the continued ability of the government to finance development programs and recurrent expenditure in the public sector; the capacity to pay of enterprises; the need to develop schemes for payment by results and, as far as possible, to relate increased remuneration to increased labor productivity.

Minimum wage rates and working conditions for private sector employees are set by the NRB through Remuneration Orders (ROs). There is no systematic and established time interval for reviewing ROs. For example, of the 30 ROs, only seven have been updated in the last five years. Others such as the export-oriented industries and private secondary school teacher ROs have not been updated in over 30 years.

The minimum wage rates specified in the ROs are, however, automatically adjusted every year in line with the salary compensation paid to employees following tripartite negotiations and enacted in the Additional Remuneration Act.³

³ The Salary Compensation System in Mauritius is a cost of living adjustment mechanism. The quantum for salary compensation takes into account the rate of inflation. Every year, the government issues a decree fixing minimum wage

The 30 ROs are currently applied both at the sectoral and occupational levels, stipulating different wages to workers covered by each order.⁴ This complexity is further compounded by the fact that some ROs are set at an industry or sector level with occupational variation, while others are set at the occupational level with sub-occupational variation. Therefore, an office messenger in the sugar industry could potentially be covered by the sectoral RO or the general RO for office attendants. Under the current minimum wage architecture, the likelihood of multiple coverage for workers therefore increases considerably.

A further layer of complexity is added by the fact that for many occupations or occupational categories wages are stipulated by number of years of work experience.

A vertical division has been established between organized sectors in which wages are regulated by collective bargaining and sectors in which the government considers that workers do not have real bargaining power necessary to fix minimum wages. The fixing of minimum wages by collective bargaining can be provided for by law or result from national practice. Further to a collective bargaining process, a collective agreement is reached.⁵ However, the Collective Agreement cannot contain a provision reducing the wage below that provided in the ROs. Workers covered by the ROs can also be covered by collective agreements. When a collective agreement is not reached, the matter is referred to the Commission for Conciliation and Mediation. The sectors covered by a collective agreement in Mauritius are the sugar industry, bus transport, construction, port services, hotels and catering services.

Table I below and Table 6 in the Appendix clearly illustrate the sectoral and occupational variation in legislated wages that underlies this complex wage system. Table I illustrates the complexity of the system by showing the number of job title categories and the total number of wage rates specified within each RO in the year 2016. Overall, over 2,000 individual wage rates were specified in that year.

Table I: Numbers of Wage Rates specified within Remuneration Orders in Mauritius (2016)

RO (MW) category	Corresponding broad industry sector/s	Number of job title categories	Years of experience categories per job title	Total number of wage rates specified
Attorney and Notary Employees	Finance and professional	2	15 years (clerk) 20 years (secretary)	35

increases which applies to all workers – even those who are not covered by ROs. The increase in wages is higher for those in the lower wage brackets and lower for those at the upper end. The Salary Compensation System focuses on supporting low wages and caters for the vulnerable segment of the society by increasing their purchasing power. Further, the quantum for the salary compensation is fixed after various tripartite consultations.

⁴ Wages for public sector workers (namely, those working in parastatals and local authorities) and those in the finance and banking sector are excluded from these ROs. Furthermore, managerial positions in all sectors are excluded.

⁵ The Collective Agreement can be drawn where a recognized trade union/a group of recognized trade unions/a joint negotiating panel and an employer reach an agreement on the terms and conditions of employment.

RO (MW) category	Corresponding broad industry sector/s	Number of job title categories	Years of experience categories per job title	Total number of wage rates specified
	services (admin and support)			
Baking industry	Manufacturing	24	3 job titles specified by years of experience; up to 8 years	39
Banks fisherman and frigo-workers	Agriculture, forestry and fishing	2	NA	2
Block-making and Construction	Construction (Possibly, mining and quarrying)	26	Most job titles specified by year; up to 8 years	100
Catering and Tourism	Transport, food, accommodation and ICT (food and accommodation); CSP (Arts, entertainment and recreation)	52	Most job titles specified by year: up to 7 years; 4 years for most	196
Cinema Employees	CSP (Arts, entertainment and recreation)	12	NA; rates for some by number of shows per month	19
Cleaning Enterprises	Across all sectors	13	8 years for all	104
Retail Trades	Wholesale and retail	34	8 years for all	272
Domestic Workers	Private households	8	NA	8
Electrical, Engineering, Mechanical	Manufacturing	11	Most job titles specified by year; up to 7 years	63
Export enterprises	Manufacturing	11	Most job titles specified by year; up to 9 years	47
Factory employees	Manufacturing	10	Most job titles specified by year; up to 8 years	70
Field crop and orchard workers	Agriculture, forestry and fishing	6	NA	6
Light metal and wooden furniture	Manufacturing	11	All job titles specified by year; up to 8 years	64
Livestock workers	Agriculture, forestry and fishing	4	Supervisor specified by year (5 years)	8
Newspapers and periodicals	Manufacturing	10	All job titles specified by year; up to 15 years	90
Nursing Homes	CSP (Health)	16	Most job titles specified by year; up to 10 years	74
Office Attendants	Finance and professional services (admin and support); CSP (admin)	2	Both job titles specified by year (10 years)	20
Pre-primary School Employees	CSP (Education)	7	Most job titles specified by year; up to 10 years	26
Printing industry	Manufacturing	16	Most job titles specified by year; up to 10 years	85

RO (MW) category	Corresponding broad industry sector/s	Number of job title categories	Years of experience categories per job title	Total number of wage rates specified
Private Secondary School	CSP (Education)	13	Most job titles specified by year; up to 15 years	111
Public Transport (Buses)	Transport, food, accommodation and ICT (transport and storage)	35	Most job titles specified by year; up to 10 years	322
Road Haulage Industry	Transport, food, accommodation and ICT (transport and storage)	6	All job titles specified by year; 8 years	48
Salt Manufacturing Industry	Manufacturing	7	NA	7
Security Guards	Across all sectors	1	8 years	8
Sugar Industry (Agricultural)	Agriculture, forestry and fishing	18	NA	18
Sugar Industry (Non-agricultural)	Manufacturing	35	Many job titles specified by year; up to 6 years. Some job titles further categorized according to grade	58
Tailoring Trade	Manufacturing	5	Learner specified by year; 5 years	9
Tea Industry	Agriculture, forestry and fishing Manufacturing	32	NA	32
Travel Agents and Tour Operators	Finance and professional services (admin and support)	17	All except Trainee and Watchman specified by year; 4 years	62
Total		446		2003

2 Data and Legislated Wages' Trends

We use a series of repeated cross-section data from the Mauritian labor force survey, known as the Continuous Multi-Purpose Household Survey (CMPHS), conducted between 2004 and 2014. The CMPHS was launched by Statistics Mauritius in April 1999. Since then it has been conducted monthly with the exception of 2000 when the survey was suspended to avoid overlapping with the Housing and Population Census.

We restrict our sample to include only employed individuals and those with non-zero reported earnings. Self-employed, own account and unemployed workers who have worked before are included in our analysis as the uncovered sector in our estimation of minimum wage effects. For this estimation, only workers who are in the covered RO sectors and the self-employed, employers and unemployed in or last employed in the RO covered sectors are considered.

We assign minimum wages to workers covered by 30 categories of remuneration orders and estimate employment and hours of work effects through the use of data related to two groups

of workers: Those in the covered and uncovered sectors.⁶ The covered sector is defined as the sector wherein wage-earning workers are covered by remuneration orders and thus have a minimum wage that is applicable to them. The uncovered sector includes self-employed workers in those remuneration order covered categories of workers and unemployed workers who have previously worked as wage-earning employees in the covered sector.

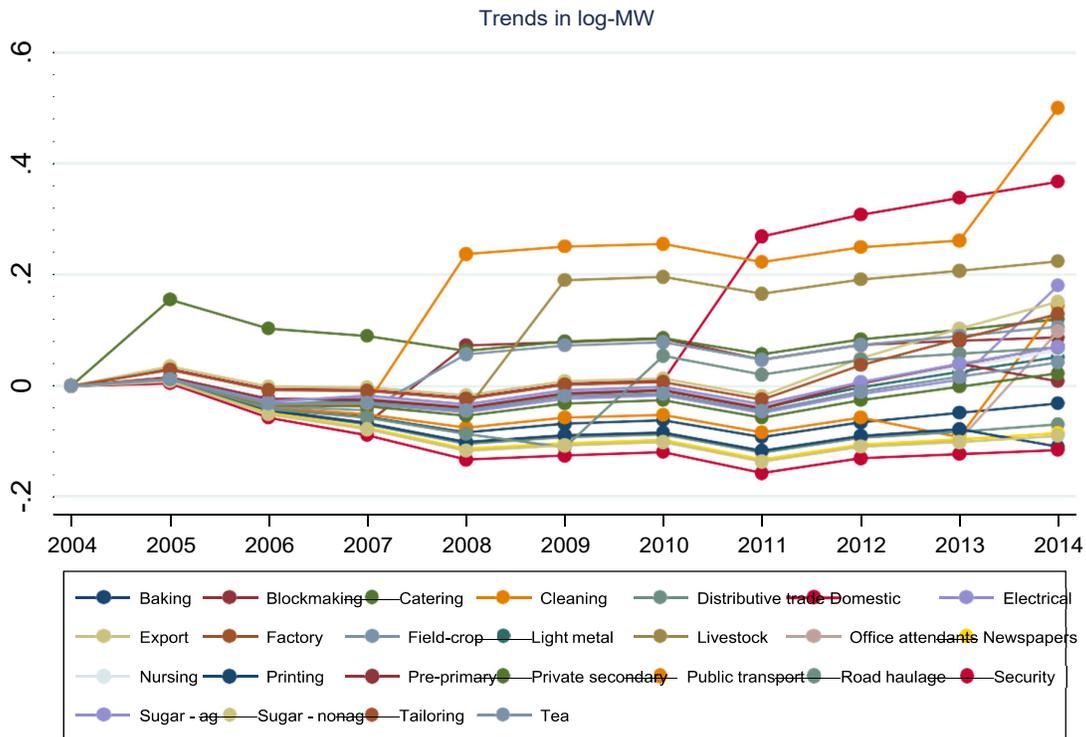
In real terms, legislated minimum wages have fallen over time for most of the ROs. Table 5 in the Appendix shows the real hourly legislated minimum wage for each of the 30 ROs over the 2004 – 2014 period. The log of the real minimum wage for each RO, defined as the lowest stipulated wage rate for each particular RO, is shown relative to its value in 2004 for the 2004 – 2014 period in Figure 2.⁷

It is clear that for most of the ROs, the real minimum wage was lower in 2014 than in 2004. For those that have higher real minimum wages in 2014, only two of the minimum wages are more than 20 percent higher than their level in 2004. However, of the three key RO categories in terms of numbers of covered workers employed (distributive trades, construction and manufacturing), both distributive trades and the manufacturing ROs (comprising both the factory and export enterprises ROs) have seen legislated minimum wages increase over the period.

⁶ Additional details concerning the assignment of workers to specific RO categories are presented in Appendix Two.

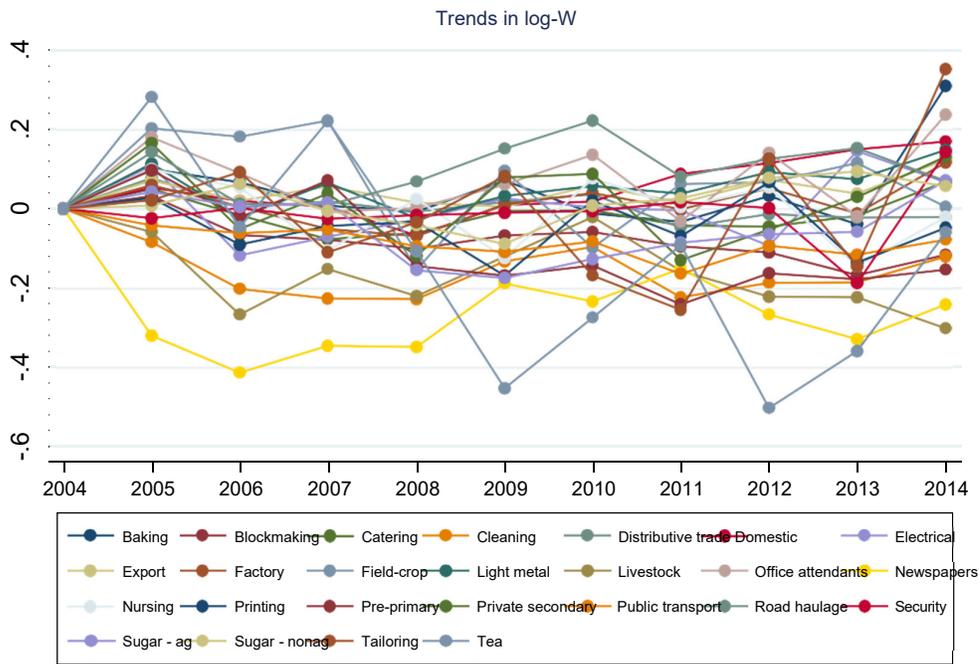
⁷ Note four ROs with a small number of identified workers are omitted from this figure. These ROs are: banks fishermen, cinema employees, salt workers and travel agent employees.

Figure 2: Changes in real hourly minimum wages (in 2012 prices) by RO (2004 - 2014)



Trends for the actual mean wages earned by workers in these RO groups are more varied. The log mean wage earned by workers employed in these remuneration order sectors relative to their level in 2004 is shown in Figure 3 below. Changes in average earned wages are more erratic and do not seem to be consistent with the trends in legislated minimum wages. More than half of the RO covered sector's worker average wages increased over the period (18 out of the 30 RO categories). Of the three key RO categories in terms of number of covered workers, average wages have declined in real terms for two of these, distributive trade and construction. The third, manufacturing, which comprises both the factory and export enterprise ROs, is the only major RO employing sector to have seen both average earned and legislated minimum wages increase in real terms over the period.

Figure 3: Changes in average real earned hourly wages (in 2012 prices) by RO (2004 – 2014)



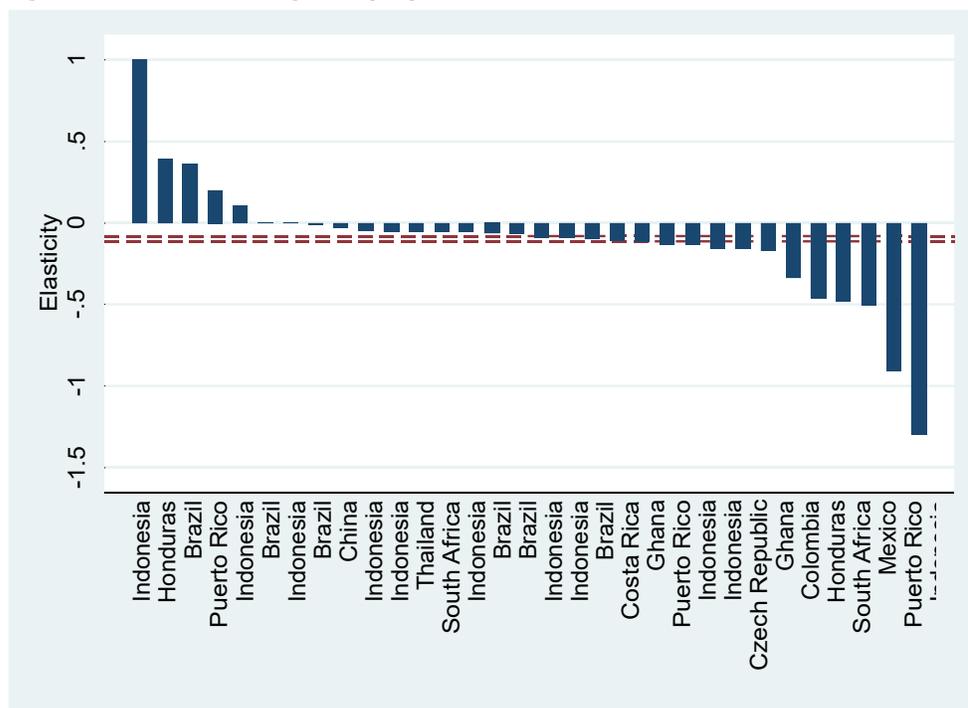
3 International Evidence

DPRU (2016) presented a number of employment effects, typically presented as elasticities, derived from international literature. This was based on a review of 98 studies covered in Neumark and Wascher’s (2007) work and 17 more recent studies focused on LMI countries. The results include aggregate impacts for all workers coupled with the employment impacts for specific demographic groups, regions and sectors.⁸ Overall, employment elasticities in the studies reviewed range from 2.17 (Katz and Krueger, 1992) to -4.6 (Abowd, Kramarz, & Margolis, 1999). The mean and median of all the cumulative elasticities are -0.22 and -0.11, respectively, suggesting that on average the impacts of various minimum wage hikes in the countries under review have been marginally negative.

Figure 4 presents 32 statistically significant minimum wage-employment elasticity estimates from 11 LMI countries provided in DPRU (2016). The elasticities presented in the figure range from a negative value of -1.3 to a positive value of 1. The median elasticity is -0.08 (the upper dashed line) and the mean elasticity is -0.11 (the lower dashed line).

⁸ Where a given study produced elasticity estimates for more than one cohort of workers, the authors included each estimate separately.

Figure 4: Minimum wage-employment elasticities for low and middle income countries



Source: Neumark and Wascher (2007) and DPRU (2014) calculations

Note: The upper dotted line is the median elasticity (-0.08); the lower dotted line is the mean elasticity (-0.11).

Based on the sample of 59 developed and 32 developing country estimates reviewed by DPRU (2016), 81 percent of the elasticities were negative while 19 percent were positive. Further, the absolute value of these coefficients is on average small. This suggests that, in general, increases in wages will have either benign or only slightly negative employment effects.

With respect to the impact on hours worked, Gindling and Terrell (2007) note that the expected sign of this impact is ambiguous both in theory and in the literature. Higher costs of employment could result in cost-minimizing employers reducing the number of workers employed at a fixed monthly or weekly rate and increasing the hours of the fewer workers that they do employ. However, employers may also respond to increases in wage rates by either reducing employment at the extensive (reducing the number of employees) or intensive margin (reducing the total hours worked). The regulatory-induced costs of firing workers would be one reason for example, where employers may choose to keep the wage bill and headcount of employees constant – but reduce the number of hours required.

4 Effect of Changes in Minimum Wages on Labor Supply

4.1 Identification strategy

The methodology we employ here is to use individual-level pooled cross-sectional data (for the years 2004 to 2014), to estimate how changes in minimum wages have affected the employment of workers and number of hours worked holding constant other factors that might affect wages. The approach is similar to a number of approaches in the literature including most notably that of Gindling and Terrell (2007), who estimated employment effects for a similarly complex system of minimum wages in Costa Rica.

We estimate an equation of the following form:

$$EE_{it} = \alpha + \beta \ln(MW_{it}) + \gamma X_{it} + \delta V_{zt} + D_{ss} + D_{it} + \epsilon_{it} \quad \dots (1)$$

Where

$EE_{it} = 1$ if individual i is employed in the covered sector at time t

$EE_{it} = 0$ if individual i is an own-account worker, an employer or unemployed worker who has worked before at time t .

X_{it} = individual characteristics (gender, experience, education, and interactions).

$\ln(MW_{it})$ = logarithm of real hourly minimum wage that applies to individual i at time t .⁹

D_{ss}, D_{it} = sets of dummies for industry/occupation and year

V_{zt} = value added of sector z at time t .

The coefficient β is an estimate of the impact on employment in the covered sector of changes in the minimum wage.¹⁰ The minimum wage is assigned to each worker based on their RO category. We were unable to assign specific wages based on job title and years of experience. We have taken the minimum wage for each RO category to be the lowest stipulated wage in each RO for that category of RO workers.

⁹ Minimum wages are set in either hourly, daily or monthly terms. Where they are not in hourly terms, they have been standardized to a real hourly minimum wage using 8 hours as the reference number of hours for a workday and 168 hours as the reference number of hours for a work month. All real wages are in 2012 prices.

¹⁰ Note that this specification including self-employed and unemployed workers who have worked before in the covered sectors assumes that workers who lose their jobs in the covered sectors either become unemployed or self-employed in those covered sectors they left.

The dummy variables for each RO category are included to control for RO category specific fixed effects and for the endogenous correlation of employment and minimum wages across RO categories. Value added for each broad industry category is included to control for changes in demand over time. To control for endogenous changes in yearly average minimum wages as well as other year-specific factors, a dummy variable is included for each year.

We estimate equation (1) with OLS and test for an employment effect of legal minimum wages in the covered sector. We then proceed to use equation (1) to consider the effect of minimum wages on the number of hours worked per week in the covered and uncovered sectors by substituting the log of hours worked for the EMP variable.

Further, to test the exogeneity of the minimum wage variable, we use one-year lagged minimum wages as an instrumental variable and obtain two-stage least squares estimates for the employment and hours worked regressions.

4.2 Challenges and limitations

One of limitations in our estimation strategy is that we are unable, due to data limitations, to assign the exact minimum wage schedule, within the broader RO category to each worker in the sample. We have thus taken the minimum wage for each RO category to be the lowest stipulated wage in each RO for that category of RO workers. We have not assigned specific minimum wages for specific job titles and years of experience.¹¹ Further, we do need to be partially concerned with the problem of endogeneity with respect to the minimum wage variable in our analysis. The variation in minimum wage shifts over time in our sample is not as significant and we also do not observe structural changes in the minimum wage system for Mauritius. This may mean that endogeneity may remain a problem. We take account of this however, by obtaining two-stage least squares estimates which use lagged minimum wages as an instrument for minimum wages in addition to our OLS estimates.

With respect to the unemployed workers included as part of the uncovered sector in our analysis, we are limited in that we do not have complete occupation data for all years in the period. We have the required industry data for all individuals used in the analysis. However, for the unemployed who have worked before, we have occupational data about their last job for only eight of the eleven years we consider.¹² These workers however do not constitute a large number of individuals in the sample and are more likely than not to be workers in the occupational classes covered by ROs. The implication of this minor data limitation is thus that, in the years 2004, 2006 and 2007, for which we do not have occupational data for the

¹¹ See Table 1 above which shows the number of wage rates there were in 2016. Ideally, we would want to assign each worker their very specific wage rate to fully exploit the variation in minimum wages in the complex remuneration orders system to obtain estimates that do not raise any endogeneity concerns with regard to the minimum wage variable.

¹² In Appendix Two we explain how we have used occupational and industry codes to assign workers and unemployed workers who have worked before to remuneration order categories.

unemployed, the number of unemployed who had worked before is possibly slightly overstated.¹³

We also excluded a number of RO categories for which we identified only a very small number of covered workers (that is, fewer than 50 covered workers identified in any year). These categories are banks fishermen, cinema employees, salt workers and travel agent employees.

5 Results

For our OLS regressions, we present three results for both the employment and hours of work regressions. These include an overall result for all workers in the sample, and individual results for males and females within the sample.

We find a negative employment effect arising from the minimum wage for all three of these groups. All are significant, with the coefficient on the log minimum wage variable being significant at the 1 percent level for females, the 10 percent level for males and the 5 percent level for all workers.

¹³ Essentially, we are assuming that, for those three years, all of the unemployed, as identified by their industry only, were in occupational classes that are covered by the remuneration orders, and not in the higher occupational classes not covered by remuneration orders in those industries. Where remuneration order categorization was based on occupation and not industry, we were however unfortunately not able to assign unemployed workers for those remuneration order categories at all for these three years. This was true for only two remuneration order categories: tailors and office attendants. These are however not categories with a significant number of identified remuneration order covered workers.

Table 2: Estimates of the Effects of Minimum Wages on Employment

VARIABLES	All	Males	Females
Log-MW	-0.0572** (0.0251)	-0.0766* (0.0400)	-0.106*** (0.0353)
Constant	0.889*** (0.130)	1.039*** (0.192)	0.699*** (0.226)
Observations	92,871	58,070	34,801
R-squared	0.163	0.163	0.182

Notes:

1. *** p<0.01, ** p<0.05, * p<0.1
2. Data in all regressions are weighted using sample weights.
3. Explanatory variables in the regressions also include: years of education, age, age squared, age cubed, gender, dummies for remuneration order categories, dummies for years, and value added by broad industry.
4. The covered sector is wage-earning workers in the private sector. The uncovered sector are employers and own-account workers in the RO sectors wage-earning employees are covered in, as well as the unemployed who have worked before in those sectors.
5. Reported significance levels are based on robust standard errors.

The results suggest that a 10 percent increase in the minimum wage is associated with a decline in employment in the covered sector by 0.57 percent. For males, the effect associated with a 10 percent increase is a decline of employment of 0.77 percent, while for females the effect associated with a 10 percent increase is a decline of female employment in the covered sector of 1.06 percent. The overall effect is driven by the female effect, which is significant at the 1 percent level.

For the hours of work OLS regressions, in the covered sector, significant effects are found for both males and females. The results indicate that a 10 percent increase in minimum wages is associated with a 2.3 percent increase in average work hours for males in the covered sector but a 1.8 percent decline in average work hours for females in the covered sector.

Table 3: Estimates of the Effects of Minimum Wages on Hours Worked

VARIABLES	Covered – All Log-hours	Covered - Males Log-hours	Covered - Females Log-hours	Uncovered - All Log-hours	Uncovered - Males Log-hours	Uncovered - Females Log-hours
Log-MW	-0.0429	0.232***	-0.181***	0.419***	0.414***	-0.0631
	-0.0376	-0.0389	-0.0575	-0.0953	-0.0989	-0.343
Constant	3.647***	2.232***	5.138***	0.454	1.049**	1.648
	-0.165	-0.167	-0.334	-0.453	-0.466	-1.972
Observations	67,548	41,345	26,203	17,719	13,436	4,283
R-squared	0.333	0.157	0.358	0.16	0.077	0.191

Notes:

1. *** p<0.01, ** p<0.05, * p<0.1
2. Data in all regressions are weighted using sample weights.
3. Explanatory variables in the regressions also include: years of education, age, age squared, age cubed, gender, dummies for remuneration order categories, dummies for years, and value added by broad industry.
4. The covered sector is wage-earning workers in the private sector. The uncovered sector are employers and own-account workers in the RO sectors wage-earning employees are covered in, as well as the unemployed who have worked before in those sectors.
5. Reported significance levels are based on robust standard errors.

In the uncovered sector, a significant overall effect is found for the sector with a 10 percent increase in the minimum wage being associated with an increase in average number of hours worked of 4.2 percent. The effect is driven by an increase in average work hours among male workers in the uncovered sector.

As we have noted, we test for endogeneity in our OLS regressions and obtain two-stage least squares estimates making use of lagged minimum wages as an instrument for minimum wages as well. The results of the second stage regressions are shown in Table 4 below.

Table 4: Two Stage Least Square Estimates of the Effects of Minimum Wages on Employment and Hours Worked

VARIABLES	Employment	Working Hours	Working hours
	All	Covered	Uncovered
	Employment	Log-hours	Log-hours
Log-MW	0.113*** (0.0317)	-0.0632 (0.0558)	0.471*** (0.149)
Constant	0.383*** (0.147)	3.718*** (0.224)	1.070* (0.566)
Observations	85,876	62,442	16,438
R-squared	0.163	0.340	0.167

Notes:

1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
2. Data in all regressions are weighted using sample weights.
3. Explanatory variables in the regressions also include: years of education, age, age squared, age cubed, gender, dummies for remuneration order categories, dummies for years, and value added by broad industry.
4. The covered sector is wage-earning workers in the private sector. The uncovered sector are employers and own-account workers in the RO sectors wage-earning employees are covered in, as well as the unemployed who have worked before in those sectors.
5. Reported significance levels are based on robust standard errors.

In all the first-stage regressions, lagged minimum wages were positively correlated with actual minimum wages. Using a standard Hausman test for the endogeneity of the minimum wage variable in the hours equations, we find that endogeneity of the minimum wage variable is not a problem. However, for the employment equation, endogeneity remains a problem.¹⁴ Thus, while we are reasonably confident that our hours results do not suffer from endogeneity bias, it is this 2SLS estimate which must be considered for reporting the impact of minimum wages on employment.

The result suggests that changes in employment in the covered sector are in fact significantly positively associated with changes in minimum wages, with a 10 percent increase in minimum wages being associated with a 1.13 percent increase in employment in the covered sector.

The elasticity of 0.113 is within the range we presented in Figure 4 above which showed a number of elasticities found for LMI countries. The elasticities presented in the figure range from a negative value of -1.3 to a positive value of 1. The result is thus in line with the existing literature which has found that increases in minimum wages have either benign or only slight employment effects.

¹⁴ The chi-square Hausman endogeneity test statistics are 29.95, 1.07 and 0.0046 respectively for the employment, hours worked (covered sector) and hours worked (uncovered sector) regressions. The test statistic for the employment regression suggests endogeneity at the 1 percent level of significance.

6 A Note on Compliance

Enforcement of, and compliance with, minimum wage legislation is a substantial contributing factor that must be considered in discussions of minimum wage effects. The international literature on minimum wages implicitly assumes that wage laws are adequately or perfectly enforced. However, high rates of non-compliance with minimum wages have been found in many developing countries. Concerns over the economic effects of minimum wage laws on employment are understandably prominent in the active labor market policy agenda, but the enforcement of these laws should not be ignored. Preliminary research in this area provides unambiguous evidence that a significant proportion of covered workers continue to earn sub-minimum wages and that factors such as levels of unemployment, firm size, informality, intensity of inspection and the level of fines for non-compliance all influence compliance rates to varying degrees.¹⁵

A recent study by Rani, Belser, and Oelz (2013) explores issues of minimum wage coverage and the gaps in minimum wage compliance in 11 LMI countries.^{16,17} The work shows that of the 746 million workers identified in all countries, 51.8 percent were wage earners, 43.6 percent were covered by wage legislation, and 8.1 percent were excluded or unprotected. Of the 326 million covered workers, an average of 33.3 percent were being paid less than what was stipulated by legislation, and the extent to which these workers were being underpaid averaged 40 percent less than the legislated minimum wage (Rani, Belser, & Oelz, 2013).

Bhorat *et al.* (2013) suggest that there are four sets of variables that are important in understanding the factors influencing minimum wage violation in the developing world. There are, firstly, institutional factors such as the penalty structure for non-compliance, the complexity of the wage schedule and the resources allocated to enforcement services. All play a role in shaping the levels of violation to some extent, but their importance will vary based on the specific country and labor market context. Secondly, the individual characteristics of inspectors, including their level of education, can influence the extent to which they are effective at achieving compliance. Thirdly, firm characteristics such as size, distance from the enforcement agency, the number of previous violations, and the level of foreign ownership will impact the levels of enforcement and violation. Finally, local labor market characteristics such as the unemployment rate, the average wage rate relative to the minimum wage, and the levels of unionization also play a role.

In the context of estimating an employment effect of minimum wages, we thus emphasize that, to accurately measure the impact of imposed minimum wages on employment and work

¹⁵ See for example Bhorat *et al.* (2012), Rani, Belser and Oelz. (2013) and Almeida *et al.* (2009 and 2012).

¹⁶ Coverage gaps represent the proportion of wage earners that not are covered by minimum wage legislation in the labor market. Compliance gaps represent the proportion of wage earners who are covered by minimum wage legislation but still make sub-minimum wages.

¹⁷ Brazil, Costa Rica, India, Indonesia, Mali, Mexico, Peru, the Philippines, South Africa, Turkey, Vietnam.

hours, minimum wages must be binding on all workers in the covered sectors in the private sector.

To ascertain whether this is the case for Mauritius, in the first instance we look for spikes in the wage distribution at or around the minimum wage. We thus plot the kernel density estimate of the log wage less the log minimum wage for each worker for the covered and uncovered sector workers separately below.¹⁸ A zero indicates that a worker is earning the legal minimum wage. These densities are shown below for both the covered (that is, waged workers covered by ROs) and the uncovered (that is, employers and self-employed workers in the RO covered sectors) sectors for the period 2004 – 2014. They are shown for 2004 and 2014 separately in the Appendix.

In both 2004 and 2014, and over all years, clear upward spikes can be seen at the level of zero for wage-minimum wage differential for the covered sector. This cannot be seen clearly for the uncovered sector. Thus, there is evidence that there is considerable compliance with minimum wages in the covered sector but also that such compliance is imperfect.¹⁹ This should be borne in mind in interpretation of the results of our estimation of employment effects of Mauritius minimum wages.

¹⁸ It should be noted that this is a broad indication of compliance as we have only assigned one possible minimum wage per remuneration order (that is, the lowest stipulated wage for that remuneration order). In actuality, there are multiple specified wage rates by occupation and years of work experience as shown in the table above. We have been unable to allocate these specific wage rates to workers due to inadequate occupational data and no years of work experience variable, and thus provide no indication of compliance with these very specific wage rates.

¹⁹ We emphasize again here that we have been unable to check the specific compliance of individual wage rates, but that this refers to compliance with the lowest wage specified for each remuneration order category.

Figure 5: Wage-minimum wage differential kernel density estimate for the covered sector (2004 – 2014)

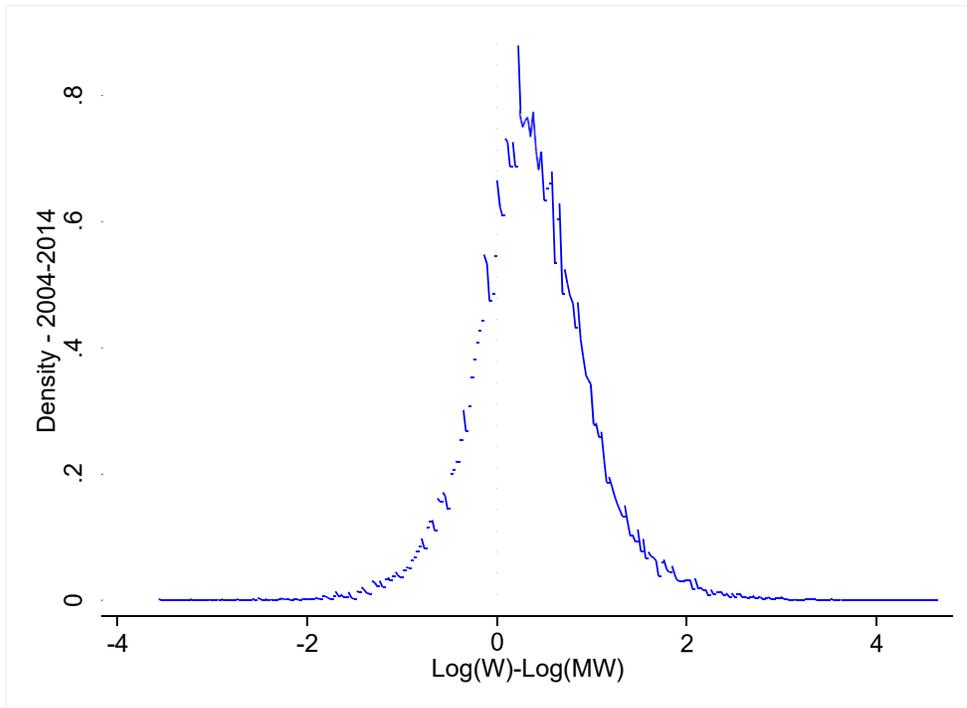
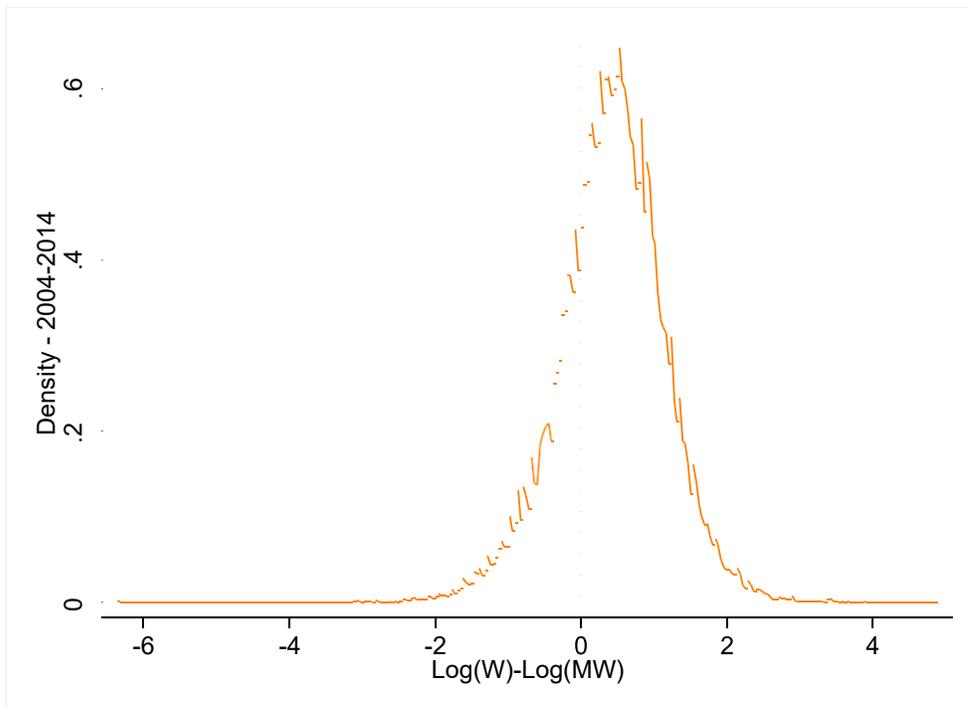


Figure 6: Wage-minimum wage differential kernel density estimate for the uncovered sector (2004 – 2014)



7 Conclusion

In this paper, we have considered the effects of minimum wages on employment and hours worked in Mauritius. Using data from labor force surveys conducted between 2004 and 2014, we assigned minimum wages to workers covered by 30 categories of remuneration orders and estimated how changes in these minimum wages affected employment and hours of work over the period 2004 – 2014.

Our 2SLS estimates suggest a slightly positive effect of minimum wages on employment in the covered sector where remuneration order specified minimum wages are applicable. The employment elasticity of 0.113 is within the range of elasticities found in previous studies of employment effects of minimum wages in LMI countries and confirms the findings of those studies that increases in minimum wages have benign effects on employment.

We also find that a 10 percent increase in minimum wages was associated with a 2.3 percent increase in average work hours for males in the covered sector but a 1.8 percent decline in average work hours for females in the covered sector. This suggests that industries in which females are more likely to be represented, such as domestic work and services, may be responding to increased minimum wages by decreasing the number of hours worked by female employees rather than firing workers, despite the overall positive employment effect.

In the uncovered sector, a significant hours of work effect, driven by an increase in average male work hours, is found for the sector overall with a 10 percent increase in the minimum wage being associated with an increase in average number of hours worked of 4.2 percent. It seems then that increases in the minimum wage have the effect of increasing average work hours for males in both the covered and uncovered sectors.

We caution, however, that while the overall estimated employment effects seem to be benign, as noted by Borat, Kanbur and Stanwix (2015), this may be the result of context-specific factors which interact with the minimum wage to ensure that the effects are on average very small. Ultimately, the impact of any enforced change in wage levels on any particular sector depends on a range of factors. These include: the level of the minimum wage relative to average wages, the size of the wage increase, the sector under consideration, the timing of wage changes, the change post-law in worker productivity levels, and finally, enforcement and compliance.

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Appendix One: Legislated Minimum Wages over Time

Table 5: Real Hourly Minimum Wage by Remuneration Order (2012 Rupees), 2004 – 2014

Remuneration order	Job title of minimum wage stipulated in RO	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Attorneys' and Notaries' Employees	Clerk / secretary	46.14	46.40	43.73	42.47	40.79	41.14	41.37	43.92	45.03	45.36	45.62
Baking Industry	Handpacker	29.13	29.48	27.97	27.55	26.79	27.23	27.39	26.58	27.29	27.75	28.23
Banks Fisherman and Frigo-workers	Frigo-worker	38.41	38.65	36.39	35.29	33.84	33.01	32.07	30.11	28.99	28.00	27.13
Block-making, construction, stone crushing and related industries	Learner	40.59	41.08	38.84	37.98	43.64	43.92	44.16	42.54	43.67	43.99	44.29
Catering and Tourism Industries	Trainee	30.43	35.51	33.73	33.28	32.41	32.97	33.16	32.21	33.07	33.66	34.28
Cinema Employees	Cleaner (04) / Café Assistant (05-14)	26.01	21.10	20.34	20.33	20.03	20.53	20.65	20.01	21.23	22.23	23.21
Cleaning Enterprises	Vehicle attendant	34.19	34.60	32.89	32.51	31.71	32.29	32.47	31.46	32.29	31.19	39.46
Distributive Trades	Attendant / Cleaner	41.35	41.84	39.54	38.62	37.28	37.72	37.93	36.69	37.66	38.10	38.58
Domestic Workers	Household helper (04-10) / Household worker (11-14)	19.65	20.26	19.54	19.52	19.23	19.72	19.83	25.68	26.69	27.50	28.32
Electrical, Engineering and Mechanical Workshops	Apprentice	28.98	29.33	28.05	28.07	27.66	28.34	28.50	27.61	28.55	29.30	34.69
Export Enterprises	Unskilled worker	17.18	17.79	17.15	17.13	16.88	17.31	17.41	16.87	18.06	19.03	19.98
Factory Employees	Unskilled worker	22.95	23.29	22.42	22.40	22.06	22.62	22.75	22.04	23.04	23.84	24.64
Field-Crop and Orchard Workers	Female worker	32.02	32.42	30.88	30.67	33.91	34.43	34.62	33.59	34.48	35.02	35.60
Light Metal and Wooden Furniture Workshops	Apprentice	22.40	22.68	21.73	21.81	21.56	22.13	22.25	21.56	22.35	22.97	23.61
Livestock Workers	Young worker (04-08) / Grade II (09-14)	28.48	28.83	27.59	27.64	27.27	34.43	34.62	33.59	34.48	35.02	35.60
Office Attendants	Office attendant	43.72	44.10	41.61	40.52	39.02	39.41	39.63	38.29	39.30	39.68	48.19
Newspapers and Periodicals Employees	Receptionist	43.43	43.83	41.36	40.30	38.81	39.21	39.43	38.10	39.11	39.49	39.93
Nursing Homes	Attendant / Kitchen help	26.33	26.66	25.60	25.81	25.43	26.07	26.22	25.41	26.43	27.25	28.07
Printing Industry	Unskilled worker	40.54	41.04	38.80	37.94	36.66	37.12	37.32	36.12	37.08	37.53	36.36
Pre-Primary School Employees	Handyman	24.63	25.01	24.08	24.06	23.70	24.30	24.44	23.68	24.76	25.64	24.84
Private Secondary School Employees	Caretaker	30.14	30.51	29.14	29.06	28.57	29.22	29.39	28.47	29.38	30.10	30.83

Remuneration order	Job title of minimum wage stipulated in RO	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Public Transport (Buses) Workers	Apprentice	28.75	29.10	27.84	27.87	36.44	36.91	37.11	35.92	36.88	37.34	47.34
Road Haulage Industry	Lorry attendant (04-08) / tanker assistant (10-)	36.45	36.90	35.00	34.45	33.48	32.66	38.48	37.20	38.19	38.61	39.08
Salt-Manufacturing Industry	Female worker	23.37	23.66	22.63	22.64	22.32	22.86	22.99	22.28	23.04	23.64	24.26
Security Guards	Security Guard	48.87	49.10	46.21	44.75	42.86	43.17	43.41	41.83	42.94	43.26	43.58
Sugar Industry (Agricultural)	Fieldworker (special)	25.80	26.13	25.11	25.36	24.99	25.62	25.77	24.97	26.01	26.84	27.68
Sugar Industry (Non-agricultural)	Messenger / Weighbridge	44.25	44.60	42.07	40.95	39.40	39.79	40.01	38.65	39.67	40.04	40.46
Tailoring Trade	Learner	20.06	20.65	19.91	19.89	19.60	20.10	20.21	19.58	20.82	21.83	22.82
Tea Industry Workers	Young person	28.48	28.83	27.59	27.64	27.27	27.96	28.12	27.24	28.20	28.96	29.72
Travel Agents and Tour Operators Workers	Cleaner / vehicle attendant						39.35	39.57	38.23	39.24	39.63	40.06

Appendix Two: Estimation of RO workers and sectors using CMPHS data

Remuneration Orders (ROs) cover individuals in the private sector excluding individuals in the banking and financial sector and employees at managerial level.

Excluding public sector, financial and managerial employees limits the employees to which ROs are applicable to roughly 70 percent of all employees across the 2004 to 2014 period for which we consider the CMPHS data. To this pool of employees, we applied the criteria described below to estimate which occupations and thus workers were covered by remuneration orders for the years under consideration. For purposes of our estimation of employment effects, we also applied these criteria to self-employed workers and unemployed workers who had worked before to assign such workers to remuneration order categories.

Occupations and industries were used to allocate workers to remuneration orders. We were provided with a list of the relevant industry codes for each of the remuneration orders by Statistics Mauritius. For 28 of the 30 remuneration orders, we estimated which workers were covered by the specific RO using a combination of these relevant industry codes and the relevant occupation codes for each remuneration order. In terms of matching workers to remuneration orders for these 28 remuneration orders, we applied the following broad principles:

1. We matched broad occupation types alongside the appropriate NSIC Rev activity code or sector for all ROs apart from those described in 2 below. This approach is based on an assumption that a remuneration order for a particular group of workers includes all relevant specific occupations within those broad occupation categories. For example, if a particular remuneration order contained a large number of job titles which fell within the elementary, operator and clerk broad occupation categories, we estimated that all elementary, operator and clerk workers within that activity were covered by that remuneration order. Using the data to illustrate, this would be all workers who have occupation codes starting with the numbers 4, 8 and 9 (which represent clerks, operators and elementary occupations) AND a particular activity code like 01140 (which represents Sugarcane, for example).
2. Where a single job occupation (or very specific categories of job occupations, such as entertainers in the case of the Catering and Tourism RO) within a broader occupation category was listed in an RO, we only matched on that particular code or category of codes (for instance 54142 for Watchman) and not the entire broad occupation level (so not all occupation codes starting with a 5 in the case of Watchman being the only Services worker listed in an RO but only the specific Watchman code).

For the remaining two remuneration orders (office attendants and tailors²⁰) we matched only using an occupation code and not an activity as the specific occupation code was specific enough to isolate all workers covered by those particular remuneration orders.

²⁰ Note that although we were provided with an industry code to estimate workers covered by the tailoring remuneration order by Statistics Mauritius, these industry codes overlapped with those provided for export enterprise workers. We felt

The table below lists all the remuneration orders and the approach taken to estimate workers covered by that particular RO based on the CMPHS data for 2004 to 2014. We have estimated coverage for all of the 30 remuneration orders and have arrived at an RO coverage figure of between 42 and 52 percent of all employees across the years under consideration. We ensured that important activity sectors in Mauritius, such as sugar, tea, fish and clothing and textiles, were represented in our consideration of workers covered by remuneration orders.

Table 6: Estimation Approach to Determine RO Worker Coverage using CMPHS data

Remuneration order	Relevant occupations and/or broad occupation groups*	Relevant activity, industry or sector**
Attorneys' and Notaries' Employees (Remuneration Regulations) (Last revised 2010)	Specific occupations: Various legal clerk and legal secretary related occupations	Attorney Notary
Baking Industry (Remuneration Order) Regulations (Last revised 2003)	Craft Operators/Assemblers	Bread (with or without Pastry) Pastries and cakes Biscuits Other bakery products
Banks Fisherman and Frigo-workers (Remuneration Order) Regulation (Last revised 1997)	Craft Operators/Assemblers Elementary	Banks fishers
Block-making, Construction, Stone Crushing and Related Industries (Remuneration Order) Regulations (Last revised 2008)	Technicians Clerks Craft Operators/Assemblers	Construction (industry) Stone, stone-crushing Manufacture of articles of cement Cutting, shaping and finishing of stone
Catering and Tourism Industries (Remuneration Order) Regulations (Last revised 2004)	Clerks Services/Sales Craft Operators/Assemblers Elementary Specific occupations: Chefs, Skippers, Masseurs, Gardeners, Entertainers	Various hotel, accommodation, restaurant and food related activities
Cinema Employees (Remuneration Order) Regulations	Technicians Service/Sales	Motion picture projection

that the overlapping code was better suited to estimate workers covered by the export enterprise remuneration order and thus used occupation codes which we felt adequately captured tailoring workers to estimate this remuneration order's coverage.

Remuneration order	Relevant occupations and/or broad occupation groups*	Relevant activity, industry or sector**
(Last revised 2005)	Operators/Assemblers Elementary	
Cleaning Enterprises (Remuneration Order) Regulations (Last revised 2013)	Clerks Operators/Assemblers Elementary	Refuse disposal Building-cleaning activities Cleaning services Care and maintenance activities
Distributive Trades (Remuneration Order) Regulations (Last revised 2007)	Clerks Service/Sales Operators/Assemblers Elementary	Wholesale and Retail (industry)
Domestic Workers (Remuneration Order) Regulations (Last revised 2010)	Service/Sales Operator/Assembler Elementary Specific occupations: Gardener	Private households
Electrical, Engineering and Mechanical Workshops (Remuneration Order) Regulations (Last revised 2013)	Clerks Craft Operators/Assemblers Elementary	Various maintenance and repair related activities
Export Enterprises (Remuneration Order) Regulations (Last revised 2003)	Clerks Operators/Assemblers Specific occupation: Cashier Watchman	A number of activities that are export oriented. These include activities which fall under the general scope of the following: yarn and thread spinning, weaving and dyeing, knitting, fabrics, textiles and garments
Factory Employees (Remuneration Order) Regulations (Last revised 2001)	Clerks Operators/Assemblers Elementary Specific occupation: Watchman	A number of activities which have a substantial amount of factory workers (apart from those covered by the export enterprises remuneration order above). These include activities which fall under the general scope of the following: clothing, jewellery, fish processing, and chemical manufacturing
Field-Crop and Orchard Workers (Remuneration Order) Regulations	Elementary	Various crop, flower and fruit related activities

Remuneration order	Relevant occupations and/or broad occupation groups*	Relevant activity, industry or sector**
(Last revised 2008)		
Light Metal and Wooden Furniture Workshops (Remuneration Order) Regulations (Last revised 2002)	Clerks Craft Operators/Assemblers Specific occupation: Watchman	Manufacture of bodies for motor vehicles Manufacture of furniture - wooden Manufacture of furniture – metal Manufacture of furniture – other (not plastic)
Livestock Workers (Remuneration Order) Regulations (Last revised 2008)	Elementary Specific occupations: Livestock farmer	Various livestock related activities
Newspapers and Periodicals Employees (Remuneration Order) Regulations (Last revised 2001)	Professionals Clerks Operators/Assemblers Specific occupation: Cashier	Various publishing related activities
Nursing Homes (Remuneration Order) Regulations (Last revised 1990)	Technicians Service/Sales Operators/Assemblers Elementary Specific occupations: Receptionist Gardener	Hospital activities – private hospitals Residential nursing care activities
Office Attendants (Remuneration Order) Regulations (Last revised 2013)	Specific occupation: Office attendant	
Pre-Primary School Employees (Remuneration Order) Regulations (Last revised 2000)	Specific occupations: Teacher, Cook, Gardener, Handyman, Caretaker	Pre-primary education

Remuneration order	Relevant occupations and/or broad occupation groups*	Relevant activity, industry or sector**
Printing Industry (Remuneration Order) Regulations (Last revised 2003)	Clerks Craft Operators/Assemblers Elementary Specific occupation: Watchman	Printing Service activities related to printing Printing of labels Printing on metals
Private Secondary School Employees (Remuneration Order) Regulations (Last revised 1984)	Specific occupations: Education officer (teacher), Typist, Secretary, Librarian, Gardener, Cleaner, Caretaker	General secondary education
Public Transport (Buses) Workers (Remuneration Order) Regulations (Last revised 2008)	Clerks Service/Sales Craft Operators/Assemblers Elementary	Bus transport
Road Haulage Industry (Remuneration Order) Regulations (Last revised 2009)	Operators/Assemblers	Freight transport by road - Lorry Freight transport by road - Van Freight transport by road - other (e.g. handcarts)
Salt-Manufacturing Industry (Remuneration Order) Regulations (Last revised 1994)	Craft Operators/Assemblers Elementary	Salt extraction
Security Guards (Remuneration Order) Regulations (Last revised 1997)	Specific occupations: Various security guard and watchman related occupations	Investigation and security activities - Private security activities
Sugar Industry (Agricultural Workers) (Remuneration Order) Regulations (Last revised 2010)	Elementary Specific occupations: Watchman Gardener	Sugarcane
Sugar Industry (Non-agricultural Workers) (Remuneration Order) Regulations (Last revised 2010)	Clerks Craft Operators/Assemblers	Manufacture of sugar

Remuneration order	Relevant occupations and/or broad occupation groups*	Relevant activity, industry or sector**
Tailoring Trade (Remuneration Order) Regulations (Last revised 2002)	Specific occupations: Various tailoring-specific occupations	
Tea Industry Workers (Remuneration Order) Regulations (Last revised 1992)	Clerks Operators/Assemblers Elementary Specific occupations: Watchman	Tea
Travel Agents and Tour Operators Workers (Remuneration Order) Regulations (Last revised 2009) ^μ	Clerks Service/Sales Operators/Assemblers Elementary	Activities of travel agencies Tour operators, tourist assistance activities – tour operator activities

Notes:

1. * Note the following NASCO occupation codes are associated with the broad occupation categories listed in the table above: Codes starting with 1 denote managers, codes starting with 2 denote professionals, codes starting with 3 denote technicians, codes starting with 4 denote clerks, codes starting with 5 denote sales/service workers, codes starting with 6 denote skilled agricultural workers, codes starting with 7 denote craft workers, codes starting with 8 denote operators/assemblers and 1 codes starting with 9 denote elementary workers.
2. ** For some ROs the occupation matched code was sufficient to identify the group of workers (for example, “office attendants”). In these cases, we only matched on that code and not an activity or sector code as well. In the cases where we could not just match on the occupation code because the code was still too broad, we matched on an activity, industry or sector/establishment type as well. So if, for example, the job title to be matched was “Accounting Clerk” in the export oriented enterprise (EOE) RO, we would first match on the occupation code for Accounting Clerk and then on the activity codes for EOE to capture accounting clerks working within EOE. We also used an activity, industry or sector to isolate workers where we more broadly estimated the workers covered by ROs by broad occupation types.
3. ^μ The Travel Agents and Tour Operators RO regulation first came into effect in 2009. We thus only include the relevant occupations as being covered by a RO in the years 2009 to 2014. All other remuneration orders have been in effect for the full 2004 to 2014 period for which we have access to CMPHS data.

Appendix Three: Indicators of Compliance

Wage-minimum wage differential kernel density estimates (2004)

Figure 7: Wage-minimum wage differential kernel density estimate for the covered sector (2004)

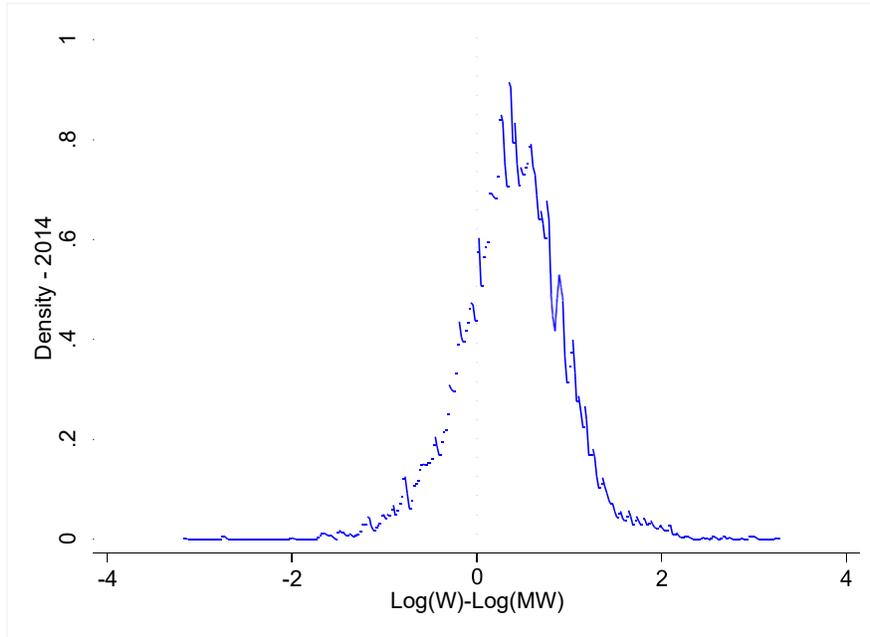
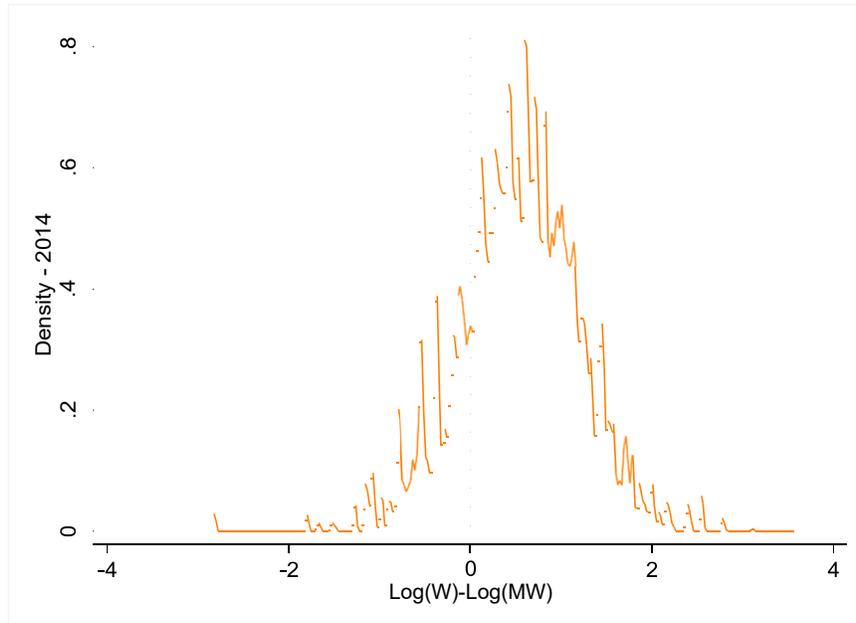


Figure 8: Wage-minimum wage differential kernel density estimate for the uncovered sector (2004)



Wage-minimum wage differential kernel density estimates (2014)

Figure 9: Wage-minimum wage differential kernel density estimate for the covered sector (2014)

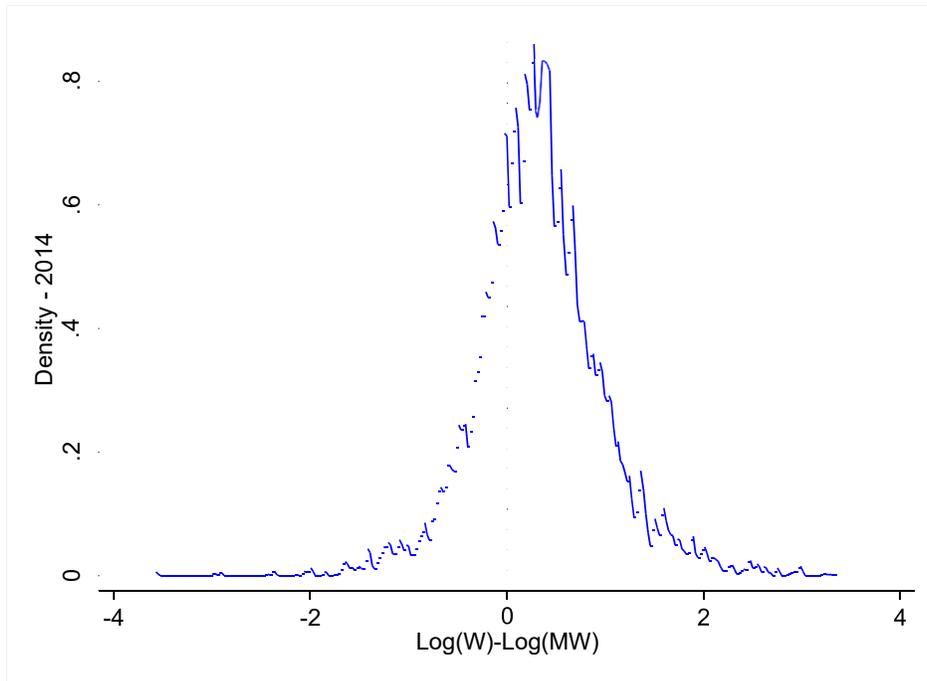
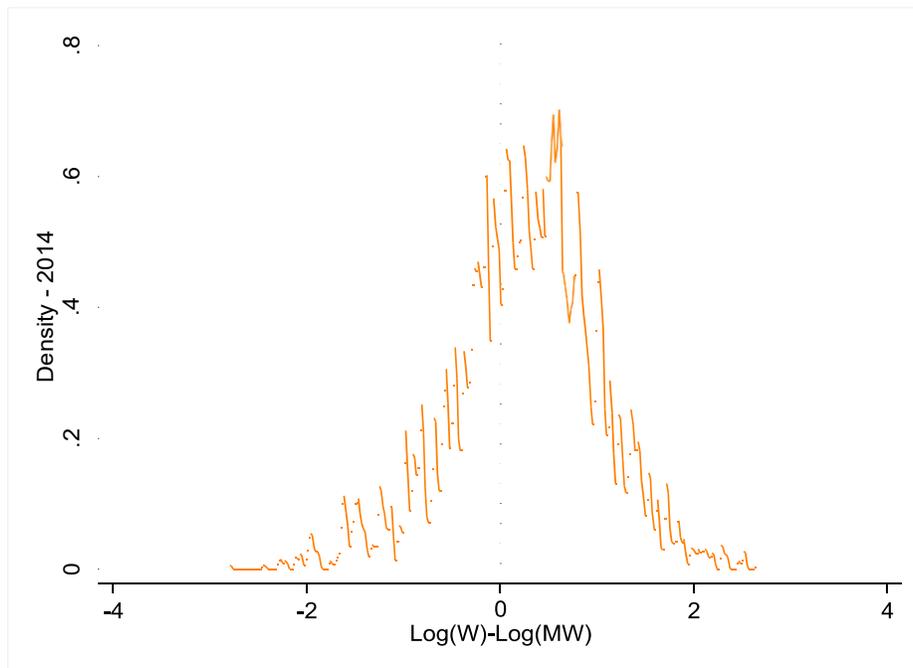


Figure 10: Wage-minimum wage differential kernel density estimate for the uncovered sector (2014)



Wage-minimum wage differential cumulative density estimates (2004 and 2014)

Figure 11: Cumulative density of wage-minimum wage differential (2004)

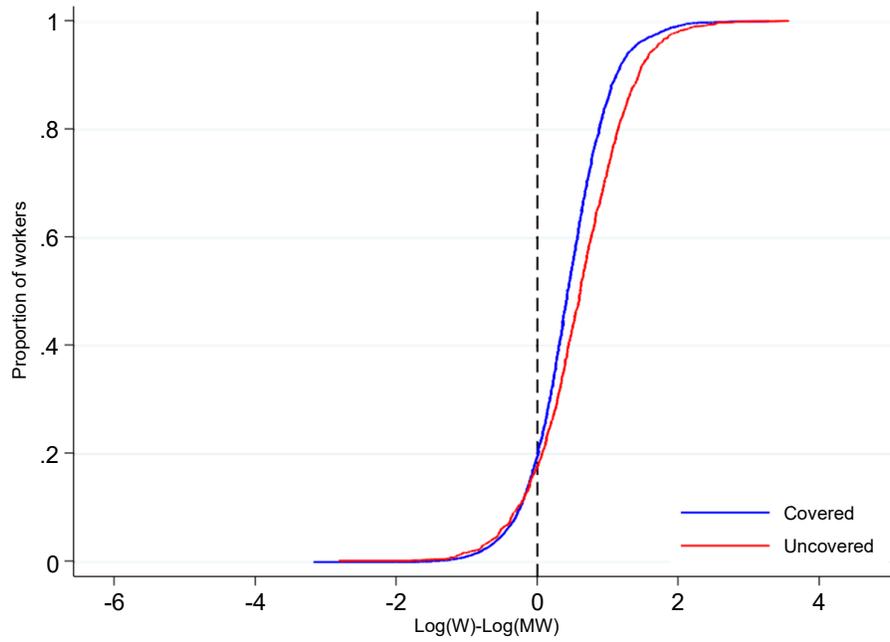
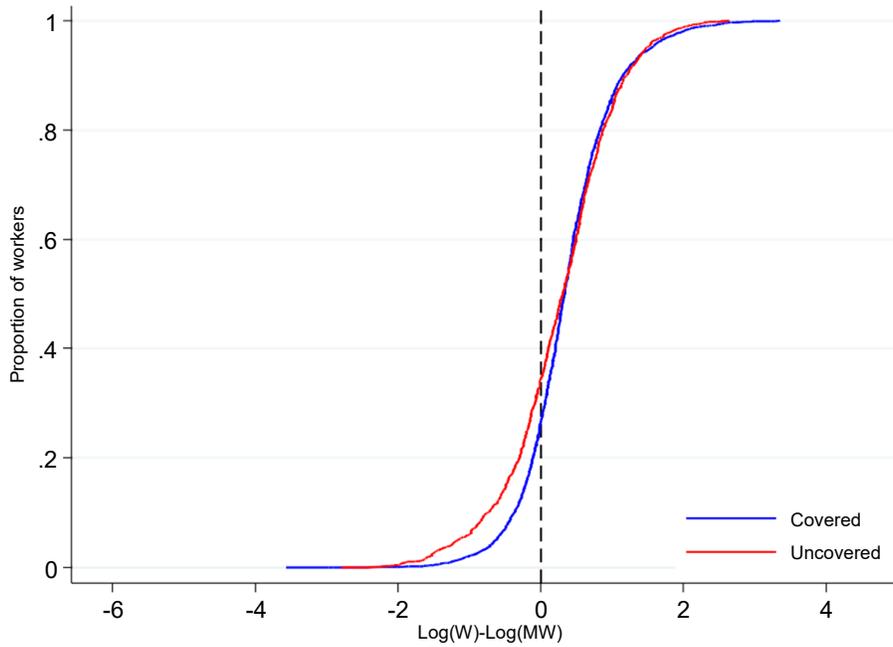


Figure 12: Cumulative density of wage-minimum wage differential (2014)



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