

The Impact of Sectoral Minimum Wage Laws on Employment, Wages, and Hours of Work in South Africa

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Abstract

This paper attempts to investigate the impact of sectoral wage laws in South Africa. Specifically, we examine the impact of minimum wage laws promulgated in the Retail, Domestic work, Forestry, Security, and Taxi sectors using 15 waves of biannual Labour Force Survey data for the 2000-2007 period. Using a quasi-experimental approach, we apply two alternative specifications of a difference-in-differences model to estimate the impact of multiple minimum wage laws in South Africa. In order to assess whether the changes experienced by workers in the sectors analysed were unique to those sectors, an exogenous control group is identified for each sector. The impact on wages, employment and hours of work of affected workers is considered. Real hourly wages do not appear to have risen significantly more than control group comparisons in the treatment period. Our results also suggest that whilst there was no significant impact of the laws at the extensive margin, there was some evidence of an adjustment at the intensive margin.

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I. Introduction

The aim of this chapter is to investigate how employers in a low wage sector of the labour market respond to the introduction of a minimum wage. The standard textbook model of minimum wages predicts that in a competitive equilibrium, there is a negative relationship between minimum wages and employment. However, a growing number of studies indicate that the relationship between the minimum wage and employment is not necessarily always negative (Katz and Krueger, 1992; Card 1992 a, b).

The international debate on minimum wages began even before minimum wages were first introduced in the United States at 25 cents per hour in 1938.² The relationship between minimum wages and labour market outcomes is a relatively recent debate in South Africa by international standards. Whilst the international literature on minimum wages dates as far back as the theoretical works of economists such as Stigler (1946) and Lester (1947), leading into the new minimum wage research (Card, 1992; Card and Krueger 1994, 1995; Neumark and Wascher, 1992), the literature on minimum wages in South Africa is relatively recent. This may be explained by the fact that minimum wages in South Africa have a fairly short history compared with other comparator countries³. Minimum wages were first introduced in South Africa in the post-Apartheid period in 1999 in the Contract Cleaning sector, followed by sectoral minima for the Civil Engineering and Private Security sectors in 2001. Since then, a few studies have been conducted in South Africa which explore the effects of the minimum wage on employment, hours worked and other labour market outcomes, as well as the impact of minimum wages on household poverty (Hertz, 2001, 2002, 2005; Bhorat, 2000, Dinkelman and Ranchhod, 2010). These studies tend to focus on a single sector, such as the Farm or the Domestic worker sectors, which are of course traditionally low-wage employee sectors. Hertz (2005) concludes that employment changes experienced by Domestic workers since the introduction of the sectoral minimum wage were no different to workers in other sectors. A more recent study by Dinkelman and Ranchhod (2010) found that the probability of employment of a typical Domestic worker is unchanged after the introduction of minimum wage laws. No empirical attempt has been made this far however, to investigate the impact of minimum wages on the other covered sectors in South Africa. This is perhaps due to the complex nature of the minimum wage laws in South Africa, with multiple minimum wages that differ by sector, occupation and often by location of employment that make it difficult to allocate wages to individual workers in the household survey data.

This paper attempts to address this gap in the literature by providing an analysis of the impact of these multiple minimum wages on the wages, employment and hours worked of affected workers. In doing so, this study constitutes the first attempt to investigate the impact of minimum wages in South Africa in sectors other than the Farm and Domestic worker sectors, and provides a more complete picture of the labour market impact of the countries multiple minimum wage laws.

² Minimum wages were first introduced under the Fair Labour Standards Act (1938).

³ New Zealand was the first country to introduce minimum wage legislation in 1894 (Starr, 1981); Minimum wages first came into effect in the United States as part of the Fair Labour Standards Act in 1938.

2. Evidence on the Impact of Minimum Wages

Early studies on the effect of the minimum wage on employment, dating as far back as the work of Stigler (1946), predict that in a competitive labour market, the relationship between minimum wages and employment is a negative one. A number of studies on the effects of the minimum wage on teenage employment also confirmed this result (Brown et al. 1982, 1983), although later evidence suggested that whilst the employment impact was negative, the effect was small, with a 10 % increase in the minimum resulting in a reduction in teenage employment of less than 1 %. On the other hand, earlier studies such as Lester (1960, 1964) found no negative employment effect associated with the legislated minimum. The 1990's saw the beginning of a new stream of literature on minimum wages, known as the 'new minimum wage' literature. The results from this literature suggest that the textbook argument of a trade-off between minimum wages and employment does not necessarily hold (Katz and Krueger, 1992; Card, 1992a, b; Machin and Manning, 1994). In their seminal work, Card and Krueger (1994) presented new evidence on the effect of minimum wages on employment, finding no disemployment effects from the mandated minima. Neumark and Wascher (2007) in their review of the recent minimum wage literature conclude that whilst a few studies do find positive effects associated with the minimum wage, the majority of studies suggest a negative impact, particularly when the effects of minimum wages are analysed in the aggregate as opposed to within a specific sector.

As a counterpoint to the literature on the impact of minimum wages using US data, studies on the effects of minimum wages using non-US data are sparse⁴. This is particularly the case for studies on the effects of minimum wages in developing countries. This is somewhat surprising, given that developing countries provide an interesting context for the analysis of minimum wage effects due to the often larger exogenous variation in the minimum wage in these countries (Hammermesh, 1993; 2002). A recent study by Terrell and Gindling (2006) investigated the employment effects of an increase in minimum wages in Costa Rica over the 1988 to 2000 period. Their results suggest that a 10% increase in the minimum wage results in a decline in employment and hours worked in the covered sector of around 1.09 % and 0.6 % respectively. They find that the impact of the minimum wage in Costa Rica is the largest for unskilled workers, and conclude that those individuals rendered unemployed in the covered sector enter the uncovered sector. However, their results do not show any significant impact at the intensive margin in the uncovered sector.

Since the introduction of the first sectoral minimum wage (Contract Cleaners in 1999⁵) in South Africa, there have been a few studies in South Africa that have considered the impact of minimum wage laws. However, these studies have mostly focused on the effects of the law in a specific sector. The sectoral minima in the Farm and Domestic worker sectors have

⁴ Terrell and Gindling (2006) note that a search of articles published on minimum wages using popular search engines reveals that for the 1985-2000 period, only 22 studies were on countries other than the US, compared with 120 using US data.

⁵ Department of Labour (1999) Government Notice No. 622. Sectoral Determination I: Contract Cleaning Sector, South Africa. Available from: < <http://www.labour.gov.za/legislation/sectoral-determinations/sectoral-determination-I-contract-cleaning-sector>>.

in particular received attention in this respect. Borat (2000) showed that minimum wage hikes in South Africa are associated with a decline in employment among low-paid Farm and Domestic workers. Hertz (2005) analysed the impact of minimum wages on employment and earnings of Domestic workers in South Africa. The results in the study suggested that the changes in employment experienced by Domestic workers Murray and Van Walbeek (2007) conducted using case study approach examined the impact of sectoral minima on Farm workers in the sugar industry. There has however been very little research on the overall impact of sectoral minima on workers in South Africa. Evidence on the impact of minimum wages and compliance in South Africa is limited perhaps due to the difficulty of mapping the statutory minima of workers to the respective sectors, occupations, and locations.

A more recent study by Dinkelman and Rancchod (2010) uses a difference-in-differences approach to investigate the impact of minimum wages in the Domestic worker sector. They condition their sample on urban Domestic workers employed over the 2001-2004 period, finding no significant changes in employment on the intensive or the extensive margins for Domestic workers. Borat, Kanbur and Stanwix (2011) used a similar approach to analyse the impact of introducing a minimum wage in the Agricultural sector for South Africa. Using data for the 2000-2007 period, they showed whilst there were significant negative effects associated with the minimum on the extensive margin, the effects on the intensive margin were insignificant.

3. Data and Econometric Approach

3.1. The South African Labour Force Survey

The dataset used is a pooled dataset consisting of 15 waves of the Labour Force Survey (LFS) from September 2000 to September 2007. The LFS is a nationally representative household survey that was conducted biannually on the basis of a rotating panel by Statistics South Africa (StatsSA) in February/March and September between 2000 and 2007. The survey includes around 30,000 households in both urban and rural areas in South Africa. Information in the LFS is self-reported. In 2008, the LFS was replaced with the Quarterly Labour Force Survey (QLFS). However, the QLFS does not provide wage information and the September 2007 LFS remains the last nationally representative survey that contains wage information. All 15 waves were pooled and are treated as repeated cross-sections over time.

The South African Department of Labour minimum wage laws specifically identify the groups of individuals to whom the law applies. In each wave of the LFS, minimum wage workers were therefore identified using the overlap of both the four digit SASCO occupation codes and the three digit ISIC industry codes. Any workers to whom the law does not apply,

notably the self-employed who pay their own wages, were excluded from the analysis. We also limited the sample to non-government employees. Estimates presented are weighted⁶.

3.2. Sample Selection and Key Variables

The Department of Labour has introduced minimum wage laws in 11 sectors. However, it is only possible to identify 9 of these sectors using the Labour Force Survey data⁷. The following 5 sectors were included in the analysis: Retail, Domestic workers, Forestry, Taxi workers, and Security. For the Contract Cleaning (introduced in 1999) and the Hospitality sectors (introduced in 2007) no dataset for the pre and post law periods was available respectively⁸. Moreover, the Civil Engineering sector was not included since use of the four-digit occupation codes in the LFS yield a very small number of Civil Engineers for the datasets in the pre-law period (between 12 and 24 observations in each wave, which is less than 1 % of the sample of minimum wage workers), which is the only dataset for the period prior to the introduction of the law (the law was introduced in March 2001)⁹. (Note that the impact of minimum wages on the Farm worker sector has been conducted in a separate paper by Borat, Kanbur, and Stanwix, 2011 and is therefore not re-estimated here). The sectors represented in this analysis accounted for 17.2 percent of non-agricultural employment in September 2007 (around 2.2 individuals). Taken together with the Agricultural sector then, therefore, the sectors covered here accounted for around 76 percent of the sample of minimum wage workers in the September 2007 Labour Force Survey.

In order to analyse whether the changes in each sector were unique, it was necessary to specify a control group for each of the sectors. For each sector, we identified an exogenous control group consisting of workers with similar characteristics to the affected sector, and who are not expected to be affected by the minimum wage. All control groups were restricted to low-income earning individuals (individuals earning less than 10,000 Rands per month) aged between 15 and 65 years and who had no more than 12 years of schooling. Furthermore, union members, self-employed workers, government workers and part-time workers were not included in the control groups, as well as workers covered by another

⁶ In terms of the construction of our weights, the earlier LFS surveys up till 2002 are benchmarked to the 1996 Census whereas the later surveys for the post-2002 period are benchmarked to the 2001 Census. Therefore, the use of the LFS weights in analysing cross-sectional data across time raises concerns around the consistency of results (Hertz, 2005; Hertz 2006; Dinkelman and Ranchhod, 2010). Hertz (2006) discusses how the inconsistencies arising from the weights used can affect any analysis of the impact of minimum wage laws. We use a set of individual weights developed by Branson (2009) on the basis of entropy estimation, which we believe to be more reliable than the StatsSA weights. The weights are available from Data First at the University of Cape Town (See <<http://www.datafirst.uct.ac.za>>).

⁷Of the remaining sectors affected by minimum wage laws two are not identifiable using the Labour Force Survey data, namely Learnerships and Children in the Performance of Advertising, Artistic and Cultural Activities. Employment information in the Labour Force Survey is only provided for individuals in the working age population, that is, individual aged between 15 and 65 years.

⁸ Given that the earliest dataset available is the September 2000 Labour Force Survey and the September 2007 Labour Force Survey remains the most recent dataset with useable wage data in South Africa (The biannual Labour Force Survey was replaced in 2008 with the Quarterly Labour Force Survey. However, this dataset does not provide any wage information.

⁹ This created a problem particularly when generating the Wage Gap variable that is used in the model, which is constructed as the gap between the minimum and the mean wage in the pre-law in a district. Due to the small number of Civil Engineers we are able to identify in the dataset, there are some districts where no Civil Engineers are found and a Wage gap cannot be specified for these districts.

minimum wage law. Furthermore, for each individual sector, the individual characteristics of workers in that sector as well as the four-digit occupational codes in the survey data were used in order to identify a control group with similar characteristics to the sector affected by the minimum wage law. The control group for Domestic workers was restricted to African and Coloured females who were employed in unskilled occupations (mainly elementary workers for whom no minimum wage is set). The control group for the Forestry sector included only African and Coloured individuals in unskilled employment. The control group for the Retail sector included individuals in semi-skilled occupations. Finally, for the Security and Taxi sectors, the same control group was used, specifically African and Coloured males employed in similar occupations. These included workers in semi-skilled occupations such as types of machine and plant operators who were not affected by any minimum wage laws. The characteristics of the different control groups are presented in Table 3 and are discussed in the following section. For the analysis of the impact of minimum wages on employment, we used a broader control group consisting of individuals of working age who were employed or seeking work (narrow labour force) and who had no more than 12 years of schooling. This specification of a broader control group allows for individuals whom may have been rendered unemployed, or who switched jobs between waves to be accounted for. The control group in the employment equations therefore does not differ across sectors.

Individuals in each wave of the LFS were mapped to the relevant published minima. This was done using a detailed mapping of individuals to the respective minimum wage sector using the four-digit occupational and the three digit industrial coding provided with the LFS¹⁰. Since the minimum wages are set according to area in for some of the sectors, the geographical units in the LFS (magisterial districts before 2004 and district councils from 2005 onwards) were matched to area types A, B, C etc. specified by the sectoral minima¹¹. Hourly minima were used. Minima were then assigned to the individuals in the LFS data to whom the sectoral laws applied. The relevant sample of minimum wage workers was assumed to be non-self-employed and non-governmental workers for the purposes of this study.

Workers may provide wage information in the LFS as either point estimates or in monthly brackets. Estimates provided as brackets were converted to point estimates by random allocation within their respective brackets using a uniform distribution. On average, the percentage of workers covered by minimum wage laws who reported their income in bands fluctuates between 12 and 16 % from one wave to another¹². Monthly wages were then combined and converted into hourly wages using the average number of weekly hours worked by an individual. To obtain real wages, wages were deflated to constant 2000 prices using the Consumer Price Index (CPIX) provided by Statistics South Africa.

¹⁰ The Labour Force Survey provides four-digit occupational codes based on the South African Classification of Occupations (SASCO) and three-digit industrial codes (International Standard Industrial Classification of all Economic Activities).

¹¹ This mapping was previously done in Bhorat, Kanbur and Mayet (2011) for the 2007 LFS.

¹² An exception is the September 2000 LFS, which yields only 6 % of the sample reporting their income in bands).

Only working-age individuals were included in the sample, that is, individuals between 15 and 65 years of age. Any individuals who reported working more than 15 hours per day were not included in the sample of workers in the analysis. In addition, any individuals reporting zero or missing wages are excluded from the sample, as well as individuals who reported earning very high wages that would not be affected by the wage laws¹³. The sample included workers in all district councils, that is, both rural and urban areas. Full-time individuals were defined as those who work at least 27 hours per week.

It is worth noting that one of the limitations of the wage data in the LFS is that no information is provided about payment in kind. The legislation specifies that the total remuneration due to an employee is the total of the money paid and the payment in kind. For the case of Domestic workers, it is specified that this cannot exceed 10% of the wage for accommodation provided. Since we were only able to measure wage income paid by an employer, the possibility that increases in wages observed in the post-law period may simply be a reflection of the reallocation of non-wage benefits provided by employers in order to pay higher wages.

3.3. Estimation strategy

We apply the classic Card and Krueger model (1995) to the data. Two alternate specifications are used:

$$Y_{ikt} = \beta_0 + \beta_1 Post_t + \beta_2 Sector_k + \beta_3 Post_t * Sector_k + \varepsilon_{ikt} \quad (1)$$

$$Y_{ijkt} = \alpha_0 + a_1 Post_t + a_2 Gap_{jk} + a_3 Post_t * Gap_{jk} + \chi_{ijkt} + \gamma_{ijkt} \quad (2)$$

In equation (1) Y_{ikt} is the outcome of interest (e.g. wages, contracts, hours worked) for individual i in group k , and period t . $Post_t$ is a time dummy measuring pre-law and post-law effects¹⁴. $Sector_k$ is a dummy variable equal to 1 if the individual is in the sector affected by the minimum wage law (treatment group) and 0 if the individual is in the control group, and $Post_t * Sector_k$ is the difference-in-differences term capturing the average treatment effect. This term tests for whether or not the observed changes were shared by similar groups of workers to whom the law did not apply, confirming that the results observed were not the result of economy wide shocks. The coefficient α_1 on the $Post_t$ variable measures the average change in the post-law period in the outcome variable for both the treatment and the control groups. The coefficient β_2 on the $Sector_k$ variable measures the average difference in the outcome variable Y_{ikt} between the treatment and the control group in the full period. The coefficient β_3 on the difference-in differences term is the key measure in this

¹³ The October 2007 thresholds for eligibility for UIF were R12, 478. Around 0.6 % of the sample reported earning wages above this amount, the majority of whom were Managers in the Retail sector, and they were excluded from the sample of workers in the analysis of the effect of minimum wages employed here.

¹⁴ Note that given the differences in the time of introduction of the various sectoral minimum wage laws, the $Post_t$ variable is not uniform across sectors. Hence, the impact of the law on each sector is assessed separately.

specification, showing the change in the measured outcome for the treatment sector in the post-law period relative to the control group. It is worth noting that the specification in equation (I) includes the control and the treatment group only. Since the control group selected has similar characteristics to the treatment group, no individual level controls are included. Under the hypothesis of a natural experiment where we have two similar groups and a clear distinction between treated and non-treated, we assume that in the absence of a minimum wage law the same general trend would be observed for both groups of workers.

Equation (II) is run only on the individuals employed in that particular sector, that is, the treatment group. χ_{ijkt} are controls for various worker characteristics such as years of schooling, age, race and gender. We also include a *Gap* measure in equation (2), which attempts to capture the intensity of the impact of the minimum wage in a sector at the district council level. The *Gap* variable is constructed as follows:

$$Gap_{jk} = (w_{mjk}^t - w_{jk}^{t-1})/w_{jk}^{t-1} \quad \text{where } Gap_{jk} \geq 0$$

where w_{mkj}^t is the original minimum wage in sector k and district council j at time t , the first year when the minimum wage was introduced in the respective sector, w_{kj}^{t-1} is the initial average wage in sector k in district council j in the year prior to the introduction of the law. The *Gap* measure is set at 0 for districts where the average wage in the sector is greater than the minimum introduced. We construct the *Gap* measure using real, full-time wages.

The *Gap* variable provides a measure of the proportional increase in the initial wage that is necessary to meet the minimum wage and provides a measure of the spatial variation in the intensity of the law's impact. The variation in the *Gap* measure captures the regional differences based on the reported wages of workers in the pre-law period. The parameter a_2 measures the average difference in outcomes of workers in low *Gap* versus high *Gap* district councils in the post-law period. The difference-in-differences parameter a_3 measures the change in Y_{ikt} attributable to the minimum wage in the post-law period in district councils where the *Gap* measure was the largest, that is, where the intensity of the minimum wage was higher. Lastly, a_1 is also of interest as it tells us how the variable of interest changed on average in the post-law period.

4. Descriptive Statistics

The minimum wage legislation for the Retail and Wholesale sector came into effect in February 2003. The minimum wages for this sector are the most complex, with several different minima specified according to occupation, hours worked, and area. Using the LFS sector and occupation codes, it was possible to identify the following groups of workers within the sector: Managers, clerks, shop assistants, sales assistants, cashiers, drivers, security guards, and fork-lift operators. Within each of these occupational categories,

different minima are specified for areas A, B, and C,¹⁵ as well as by firm size, resulting in over 24 different categories of minima for the workers in this sector.

The sectoral minima for Domestic workers were introduced in August 2002. Within this determination, there are two area types, A and B. The prescribed minima are different on the basis of whether the number of hours worked is below or above 27 hours per week.

The sectoral minimum for the Forestry sector was introduced in March 2006. Therefore, three waves of the LFS (September 2006, March 2007, and September 2007) are available for analysis of the post-law period for this sector. The legislation sets a fixed minimum rate of remuneration for those working in all areas within the forestry sector, with no locational differential.

The sectoral minima for the Taxi sector were introduced in July 2005 and apply to all workers in the transport sector involved in the operation of informal minibus taxis. Within this determination a distinction is made between drivers and fare collectors.

The minimum wage laws for the Private Security sector were introduced in November 2001 and apply to all employers and employees involved in guarding or protecting fixed property, premises, goods, persons or employee (Note that Security workers in the Retail sector are covered by the sectoral minima for Retail sector workers). There are five different area types specified within this sector (Areas A, B, C, D and E respectively).

Table 3 presents the mean sample characteristics for the sectors included in the analysis across all waves, along with their exogenously defined control groups. Standard deviations are indicated in brackets. Each sector is characterized by unique sample characteristics, which made it necessary to specify a unique control group of similar workers for each sector. Workers covered by the sectoral minima are generally non-unionized with the majority possessing no higher than a Matric education (12 years of schooling). Therefore, as described earlier, during the construction of the control groups, the sample was restricted to non-unionized employees with less than 12 years of schooling. In each of the sectors, the majority of workers are located in Areas classified as A or metro areas (over 70 percent), with the exception of the Forestry sector. Relative to the other sectors examined here, workers within the Retail sector possess higher skills on average and higher levels of education. The majority of workers within the Retail sector are semi-skilled (85 percent), followed by skilled individuals such as Managers (12 percent). The average worker in this sector has completed almost 11 years of schooling, which is high relative to the other

¹⁵ Areas are demarcated by the Department of Labour for the purpose of setting minima on the basis of the average household income recorded for the municipal area on the basis of the 1996 Census. Generally, areas are categorized as follows:

A – Average income greater than R24, 000 per annum

B – Average income between R12, 000 and R24, 000 per annum

C – Average income less than R12, 000 per annum

sectors presented here. The Domestic worker sector is comprised almost entirely of African and Coloured unskilled females with low levels of schooling. This sector is generally non-unionized and located in urban households (78 percent). Within the Forestry sector, the dominant share of workers is African and male (97 percent and 66 percent respectively). These individuals generally have low levels of schooling (less than 6 years of schooling for the average worker), and are unskilled (74 percent). Workers in the Security and Taxi sectors are most likely to be African and male with less than 12 years of schooling. The dominant share of workers in these two sectors were located in areas classified as A or metro areas. Note that the same control group was identified for the Taxi and the Security sectors, namely African and Coloured males in semi-skilled occupations and less than 12 years of schooling.

Table 2 presents the changes in the number of individuals employed between 2000 and 2007 for the five sectors and their control groups. Overall, we observe that the descriptive evidence here does not indicate a significant decline in employment in the post-law period for most sectors. In the Security sector, employment continued to grow in the post-law period. The only sector where we see a significant drop in employment is the Forestry sector. The remaining sectors do not indicate a statistically significant change in employment in the post-law period. Whilst we observe a decline in the number of Domestic workers employed between 2001 and 2002 of around 30,000 workers, this change is not statistically significant at the 5 percent level. For the control groups, employment generally increased or remained stable in the post-law period. Overall then, the early evidence presented here does not suggest a significant negative impact on employment if minimum wage laws on the five sectors.

Table 4 presents the mean characteristics of employed workers for the five sectors and their respective controls. The majority of workers are full-time workers for all cohorts. Examining the changes in the share of full-time workers across time, a significant increase is observed for the Retail, Domestic worker and Security sectors in the post-law period. All sectors and control groups experienced a significant increase in nominal hourly wages in the 2000-2007 period, with the exception of the Taxi sector. The changes in real wages were in the main, not significant. Examining the number of usual weekly hours worked, we find a significant decline in weekly hours for the Retail, Domestic, and Security sectors. The control groups do not indicate any significant changes over the period in the number of hours worked, with the exception of the control group for the Forestry sector (unskilled workers), which yields a slight decline in usual weekly hours.

Kernel density plots of nominal hourly wages (logged) indicate a rightward shift in the post-law wage distribution for the sectors examined (Figure 1). Kolmogorov-Smirnov tests performed to test for distributional differences indicate that the post-law distribution for each of the sectors is significantly different from that of the pre-law period. Figure 2 presents Kernel density plots for real hourly wages for the sectors and their control groups. The shift in distributions is less apparent for real wages and we are unable to reject the null

hypothesis of the equality of distributions for all sectors at the 10 percent level. Finally, Figure 3 examines the distribution of hours worked per week in the pre-law and post-law periods. The plots indicate that the distribution shifted leftwards for most of the sectors in the period after the introduction of the law. We fail to reject the null hypothesis for the equality of distributions using the Kolmogorov-Smirnov test for the Retail, Domestic, Forestry and Security sectors at the 10 percent level. This suggests a significant shift in hours worked over the post-law period.

Overall then the descriptive results suggest that whilst a significant decline in employment is not observed for most sectors in the post-law period, there is some indication that minimum wage sectors experienced an increase in wages and a reduction in hours worked after the law was introduced. We now turn to an econometric analysis of the impact of the sectoral minimum wage laws below.

5. Econometric results

As outlined above, two alternative specifications of a difference-in-differences approach are used in order to investigate the effects of the introduction of the minimum wage laws on the applicable sectors. The effects of the legislated minima on employment, wage levels and at the intensive margin are investigated for affected workers. An analysis of the results may be used to indicate whether the changes observed within a sector were unique to the specific group of workers, as well as whether the impact of the law was larger in district councils where pre-law wages were lower relative to the introduced minima. The results are presented in Tables 5 through 8.

Table 5 shows the results from the difference-in-differences estimation on the impact of the sectoral minima on the probability of employment. For each of the five sectors examined, the first specification shown estimates the employment equation without controls whilst the second specification includes controls for age, education, gender and race. The dependent variable is a binary variable equal to 1 if the individual is employed in the respective sector covered by the minimum wage law, and equal to 0 otherwise¹⁶. As stated earlier, the sample in the equations for employment includes employed individuals and demographically similar unemployed working age individuals searching for work.

Contrary to the predicted result under a standard competitive model, however, the results presented here for the employment equations do not yield a significant effect of the minimum wage on employment for the sectors analysed here. The coefficient on the *Post* variable for the Domestic¹⁷, Retail and the Security sectors is positive and significant,

¹⁶ As noted earlier, the sample in the employment analysis is all individuals of working age who are employed or searching for work, and who have no more than 12 years of schooling. This yields just under 500,000 observations across all 15 waves for the Retail, Domestic, Taxi, and Security sectors. For the Forestry sector, the sample is smaller (around 267,000 observations) due to the smaller size of the sample for these workers in the dataset

¹⁷ Note that Dinkelman and Ranchhod (2010) found no significant change in the probability of employment in the post-law period for Domestic workers. However, their sample is restricted to female African and Coloured Domestic workers in urban areas over the 2001 to 2004 period only. Including the full sample of Domestic workers for the 2000 to 2007 period in this analysis yields a different result.

suggesting that the probability of employment in these sectors was higher in the post-law period. The results show no significant change in the probability of employment for the Forestry sector in the period after the introduction of the law in 2005. Only the Taxi sector yields a negative and significant coefficient for the *Post* variable, suggesting that the probability of employment in that sector dropped slightly in the period after the introduction of the law.

The coefficients for the pre-law *Gap* variable were negative and significant at the 1, 5 or 10 percent level for the Retail (Specification I), Domestic worker (Specification II), and Security sectors. The negative results suggest a lower probability of employment for those sectors in areas where the pre-law wages were farther below the minima. For the Taxi worker sector, this result is positive, indicating a higher probability of employment in the Taxi sector in district councils where wages were the lowest relative to the minima. This result may be explained by the low wages in the Taxi sector relative to other sectors, and may simply be capturing districts with more Taxi workers and therefore lower wages. The Forestry sector yields an insignificant result for the pre-law wage gap variable. The interaction variable between the *Gap* and *Post* variables measures the effect of the law in the post-law period in district councils where the minimum wage was most binding. However, this variable does not yield a significant result in any of the equations. Overall, we conclude then that the evidence here does not indicate a significant effect from the introduction of minimum wages in the respective sectors at the extensive margin.

The second outcome examined here is wage levels. The descriptive evidence presented above indicates that all minimum wage sectors experienced a significant increase in nominal wages in the post-law period. The density plots in particular suggest a significant increase in nominal wages. While real wages also increased in some of the sectors, the increase is less evident. Furthermore, the observed increase in wages in the respective minimum wage sectors may have been due to factors external to the introduction of the sectoral laws. A difference-in-differences approach as outlined above is therefore used to firstly, test whether or not the introduced minima had an effect on the wages of covered workers relative to a similar group of workers who were not affected by the law and secondly, to measure the differential effect of the introduced minima in areas where the pre-law wages of the respective sector were lower. The effects of the minima on both nominal and real wages are investigated, and the results are shown in Table 6 and Table 7. The dependent variable was the log of nominal and real wages (2000 prices) respectively. For each of the sectors, the sample in the first specification includes workers in the relevant sector who are covered by the minimum wage and workers in a control group comprised of similar workers who were not covered by the law. The results from this specification compare the wages of workers in the specific sector against wages of the control group. The second specification includes only workers in the particular minimum wage sector and measures whether wages increased more in areas where the pre-law wage gap was largest.

The results from specification (I) suggest that nominal wages rose significantly in the post-law period for all sectors and their control groups (between 16 and 32 percent). For the

Retail sector, the coefficient on the sector dummy variable significant and positive, indicating that relative to individuals in the control group identified for Retail sector workers¹⁸ earned higher wages (around 9.1 percent) on average for the entire period. For the other four sectors, the sector dummy yields a significant and negative coefficient, indicating that individuals in these sectors earned significantly lower wages than the control group in the overall period. The results from the difference-in-difference estimator, notably the $Sector * Post_t$ variable, are mostly insignificant. Only in the case of the Domestic worker sector does the result indicate a positive impact of the law on nominal wages of these workers in the post-law period relative to the control group.

Equation (II) is estimated on only those individuals employed in the respective sector and includes controls for age, gender, education and race. This specification tests whether wage increases were larger in district councils where the pre-law wage gap was larger¹⁹. The significant and positive coefficient on the $Post_t$ variable indicates that in the post-law period, nominal wages increased in four of the five sectors, namely the Retail, Domestic work, Forestry and Security sectors. The negative and significant result on the pre-law wage gap variable for the Retail, Domestic, Taxi and Security sectors indicates that in districts where the pre-law wage gap was larger, hourly wages were lower. This result is as expected, given that district councils with larger wage gaps are reflective of a larger number of workers with lower wages. The $Gap * Post_t$ variable yields a significant and positive coefficient, suggesting that Retail and Security sector workers in district councils where the wage gap was larger experienced larger increase earnings in district councils with a lower wage gap. Therefore, we conclude that not only have wages for these two sectors risen in the post-law period, they have also risen more in district councils where the wage gap was larger.

Considering the results for real wages (Table 7), our difference-in-differences estimates for both specifications suggest that in four of the five minimum wage schedules (Retail, Forestry, Taxi, and Security) either no significant change occurred in average wages in the post-law period relative to the control group, or in some cases, a significant decline. Only in the case of the Domestic worker sector do we observe a real wage increase in both specifications. The positive and significant coefficient for the $Gap * Post_t$ variable for the Retail, Domestic, and Security worker sectors however, does suggest that district councils with larger wage gaps were associated with larger increases in real earnings during the post-law period.

The final outcome analysed was the number of usual hours worked per week. Employers may reduce the number of hours worked in order to pay the higher wages, or to comply with the maximum number of weekly hours set out by the respective sectoral law. Hammermesh (1993) argues that employers may be quicker to adjust the number of hours worked by employees than to adjust employment. Table 8 presents the results from the regression analysis on the changes in the number of usual hours worked per week for each

¹⁸ As was stated earlier, the control group identified for Retail sector workers individuals engaged in semi-skilled occupations who possessed no higher than a Matric education and who reported earnings of no higher than 10,000 Rands per month. All control groups were further restricted to non-government employees who were non-unionized and not expected to be covered by any sectoral minimum wage laws.

¹⁹ Note that a larger pre-law wage gap denotes lower wages in the pre-law period in the respective sector relative to the minimum introduced.

of the sectors between 2000 and 2007. The results indicate that whilst the estimates for employment do not yield significant adjustments, there is some evidence that employers adjusted at the intensive margin. The results suggest that in two of the five schedules, notably the Retail and the Security worker sector, employers adjusted significantly at the intensive margin to accommodate the increase in the wage bill. The significant results for the sectoral dummies in the first specification for Retail and Security workers indicate that workers in these sectors work a higher number of hours relative to the control group in the overall period. The difference-in-difference estimator is negative and significant in both these sectors, suggesting that there was a significant decline in the number of hours worked in the post-law period.

6. Conclusion

The standard competitive model predicts that firms will reduce employment in response to the minimum wage, in turn causing a negative employment effect to be observed for an industry. However, our analysis above of the effect of the introduction of a minimum wage in a low wage sector shows no clear evidence that the minimum wage laws had a significant on employment in the five sectors analysed. Although the results here appear to be at odds with the standard prediction from many earlier studies that find a negative employment impact of minimum wages (Brown et al. 1982, 1983), they are consistent with some of the more recent international studies on minimum wages that do not always find a negative employment effect associated with the minimum wage (Katz and Krueger, 1992; Card and Krueger, 1995).

However, whilst there is no strong evidence for negative employment adjustments at the extensive margin of labour demand, the results do suggest that the sectoral minima did have some effect at the intensive margin. There is some indication that for sectors where employment continued to rise in the post-law period, notably Retail and Security, the introduction of the minimum wage may have resulted in a reduction in the usual number of weekly hours worked. This may be indicative of employers adjusting at the intensive margin in order to pay higher wages.

We also find some evidence of a significant increase in real hourly wages in the post-law period as a result of the introduction of a minimum wage in three out of the five sectors examined (notably the Retail, Domestic worker and Security sectors). These results are consistent with other South African studies on the impact of minimum wages in the Domestic worker sector that suggest that whilst minimum wages did not have a significant impact on employment, they are associated with a significant increase in wages within the sector (Dinkelman and Ranchhod, 2010; Hertz, 2005).

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Table 1: Sectoral minima and date of introduction

Sector	Year and month
Domestic Workers	August 2002
Private Security	November 2001
Taxi	July 2005
Retail	February 2003
Forestry	March 2006

Source: Government Gazettes available from <<http://www.labour.gov.za>>.

Table 2: Weighted number of workers by sector (LFS September 2000 to 2007)

LFS	2000	2001	2002	2003	2004	2005	2006	2007
Retail	606,154	659,351	595,172	662,349	684,106	731,153	746,422*	750,259
Control	1,752,289	1,667,277	1,639,528	1,493,577	1,482,235	1,752,920	1,832,803	1,737,970
Domestic work	933,728	918,025	885,008	920,301	901,919	882,188	910,689	1,035,557*
Control	134,254	99,870	124,505	154,489	136,322	138,624	164,491	155,703
Forestry	37,115	61,761	48,826	65,291	35,164	37,596	39,610	33,482
Control	440,331	348,346	390,600	642,950*	718192*	747165*	799375*	772355*
Security	183,742	214,093	215,417	235,872	281,824*	292,071*	308,763*	348,158*
Control	99,143	104,874	109,975	99,874	115,396	101,479	87,134	100,849
Taxi	85,613	80,321	70,281	84,404	64,479	42,152*	27,912*	19,652*
Control	99,143	104,874	109,975	99,874	115,396	101,479	87,134	100,849

Source: Data are from September waves of South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Notes: Weighted estimates shown. Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample of covered workers includes non-government employment only. The shaded area indicates the period post-introduction of the law in the respective sector. * indicates significant difference with base year (2000) at the 5 % level.

Table 3: Mean sample characteristics of sector and control groups, all waves

Minimum wage sector	Retail	Domestic Workers	Forestry	Security	Taxi
African	0.58 (0.47)	0.90 (0.31)	0.97 (0.20)	0.86 (0.31)	0.95 (0.20)
Male	0.53 (0.48)	0.05 (0.22)	0.66 (0.54)	0.89 (0.28)	0.97 (0.15)
Years of schooling	10.76 (2.84)	6.56 (3.88)	5.63 (4.43)	10.46 (2.43)	9.02 (2.85)
Age	34.2 (10.0)	40.1 (10.9)	35.3 (11.7)	32.9 (7.6)	34.4 (8.1)
Area A	0.82 (0.37)	0.78 (0.44)	0.50 (0.57)	0.83 (0.34)	0.78 (0.39)
Control groups	Retail	Domestic Workers	Forestry	Security	Taxi
African	0.67 (0.47)	0.80 (0.41)	0.86 (0.34)	88.9 (31.3)	88.9 (31.3)
Male	0.70 (0.46)	...	0.77 (0.42)	1.00 0	1.00 0
Years of schooling	8.9 (3.27)	6.56 (3.67)	7.66 (3.58)	8.53 (3.23)	8.53 (3.23)
Age	35.7 (10.5)	34.5 (10.4)	34.4 (10.5)	35.4 (9.79)	35.4 (9.79)
Area A	0.83 (0.38)	0.77 (0.43)	0.78 (0.41)	80.7 (39.3)	80.7 (39.3)

Source: Data are from South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Note: Estimates are for the pooled dataset that includes all waves. Sample includes non-self employed, non-government workers only aged between 15 and 65 years inclusive. Standard deviations are shown in parentheses. All control groups were restricted to non-self employed, non-government and non-unionized workers who were not expected to be affected by minimum wage laws.

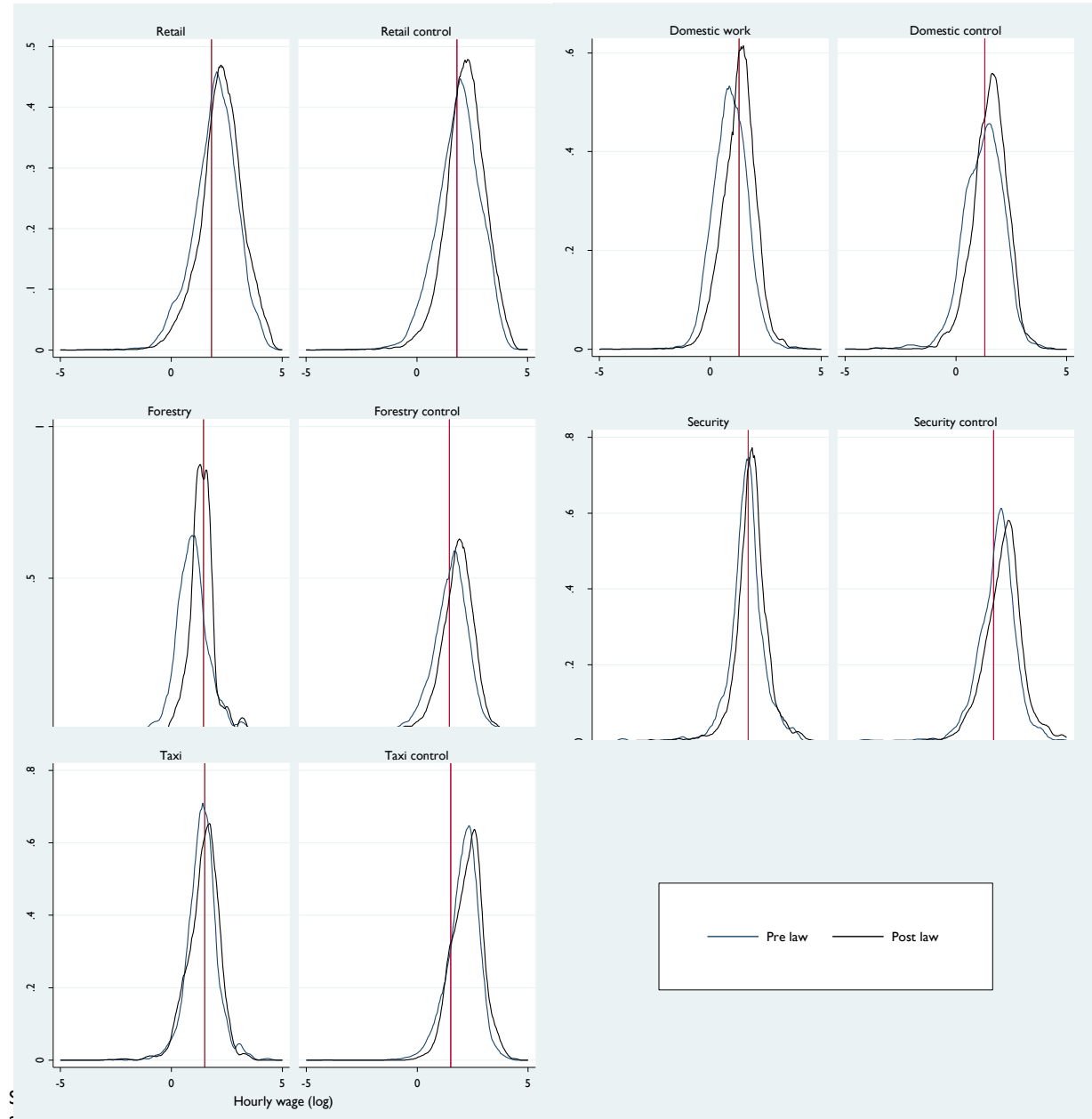
Table 4: Mean characteristics of employed sample (2000 to 2007)

	2000	2001	2002	2003	2004	2005	2006	2007	Mean Pre-law	Mean Post-law
Retail	Fulltime	0.92	0.94	0.95*	0.94*	0.96*	0.96*	0.96*	0.94	0.96*
	Hours per Week	47.3	48.5	48.5	47.7	47.5	48.5	46.8	48.3	47.3*
	Nominal Hourly Wage	10.8	10.4	11.1	12.6	13.9*	14.0*	15.1*	10.8	14.3*
	Real hourly wage	10.7	9.9	9.6	10.0	10.9	10.7	11.0	9.9	10.7*
Control	Fulltime	0.92	0.95*	0.94*	0.96*	0.97*	0.96*	0.96*	0.94	0.97*
	Hours per Week	45.5	46.3	45.9	45.7	45.9	47.5*	46.3	46.0	46.3
	Nominal Hourly Wage	9.5	9.8	10.6*	12.0*	12.4*	12.0*	13.1*	10.0	12.8*
	Real hourly wage	9.3	9.3	9.1	9.6	9.7	9.2	9.6	9.2	9.6
Domestic work	Fulltime	0.81	0.84	0.83	0.82	0.82	0.79	0.79	0.83	0.81*
	Hours per Week	41.3	42.3	42.5	40.8	40.4	41.8	39.1	42.2	40.4*
	Nominal Hourly Wage	2.8	2.9	2.7	3.3*	4.0*	4.0*	4.8*	2.8	4.2*
	Real hourly wage	2.7	2.7	2.3	2.6	3.1*	3.1*	3.5*	2.7	3.1
Control	Fulltime	0.87	0.95*	0.93	0.87	0.93	0.88	0.92	0.92	0.90
	Hours per Week	42.56	46.87	46.70	42.96	45.68	44.51	45.25	45.3	44.7
	Nominal Hourly Wage	4.69	5.04	5.29	5.20	5.37	5.98*	6.70*	5.0	6.1*
	Real hourly wage	4.61	4.79	4.53	4.13	4.21	4.58	4.90	4.7	4.6
Forestry	Fulltime	0.98	0.97	1.00	0.98	0.99	1.00	0.99	0.99	0.99
	Hours per Week	50.0	50.9	51.6	50.8	49.5	50.9	49.0	50.7	49.0
	Nominal Hourly Wage	2.9	2.9	2.8	3.4	3.3	5.0*	4.8*	3.5	4.5*
	Real hourly wage	2.8	2.8	2.4	2.7	2.6	3.8	3.6	2.9	3.1
Control	Fulltime	0.91	0.95*	0.94	0.89	0.91	0.88	0.89	0.90	0.91
	Hours per Week	45.5	47.3	47.0	44.0	44.6	44.5	43.7	44.9	43.9*
	Nominal Hourly Wage	5.5	5.6	5.9	5.5	5.8	6.3	7.5*	6.0	7.9*
	Real hourly wage	5.5	5.3	5.1	4.4	4.6	4.9	5.5	4.9	5.5*
Security	Fulltime	0.96	0.98	0.99*	1.00*	0.99	0.98	0.99*	0.98	0.99*
	Hours per Week	60.2	58.5	59.4	55.3	55.0	57.6	57.3	59.0	57.0*
	Nominal Hourly Wage	6.4	6.8	7.0	7.9*	7.9*	8.2*	8.7*	6.7	8.3*
	Real hourly wage	6.3	6.4	6.0	6.3	6.2	6.3	6.3	6.4	6.3
Control	Fulltime	0.96	0.98	0.98	0.99	0.98	0.98	1.00	0.97	0.99
	Hours per Week	48.5	48.2	47.2	46.9	46.7	47.8	46.5	48.3	47.4
	Nominal Hourly Wage	9.3	8.3	11.5	9.8	10.9	11.5	12.2*	8.6	11.3*
	Real hourly wage	9.1	7.9	9.9	7.8	8.5	8.8	8.9	8.3	8.7
Taxi	Fulltime	0.96	0.97	0.97	0.99*	0.95	0.98	0.96	0.97	0.98
	Hours per Week	68.4	67.4	66.3	67.0	63.1	68.6	66.9	66.6	67.0
	Nominal Hourly Wage	4.8	4.4	4.4	4.7	5.5	4.7	5.3	4.74	5.09
	Real hourly wage	4.7	4.2	3.8	3.7*	4.3	3.6*	3.9	4.04	3.69
Control	Fulltime	0.96	0.98	0.98	0.99*	0.98	0.98	1.00	0.98	0.99
	Hours per Week	48.5	48.2	47.2	46.9	46.7	47.8	46.5	47.3	48.1
	Nominal Hourly Wage	9.3	8.3	11.5	9.8	10.9	11.5	12.2*	10.2	12.0*
	Real hourly wage	9.1	7.9	9.9	7.8	8.5	8.8	8.9	8.6	8.6

Source: Data are from South African Labour Force Surveys conducted by Statistics South Africa (LFS 2000 to 2007).

Notes: An asterisk indicates significant difference with base year at 5 %. All statistics are self-reported by workers and statistics are weighted. Sample includes non self-employed workers aged between 15 and 65 years inclusive. The wage variables are means for full-time workers. A fulltime worker is someone who reported at least 27 hours of work per week. The sample of covered workers includes non-government employment only. The red line indicates the timing of the law in the respective sector.

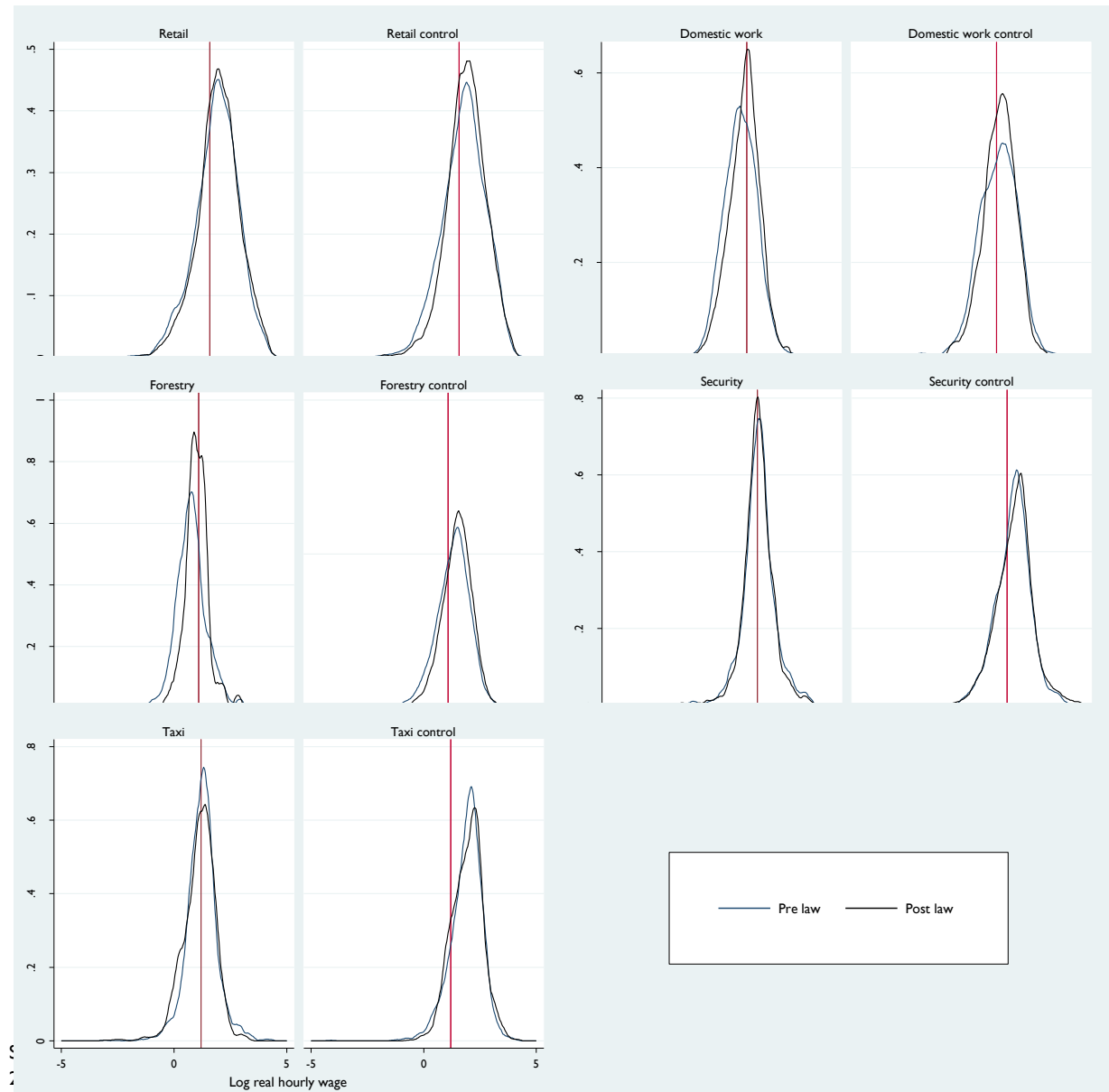
Figure 1: Kernel density estimation of log of nominal hourly wages



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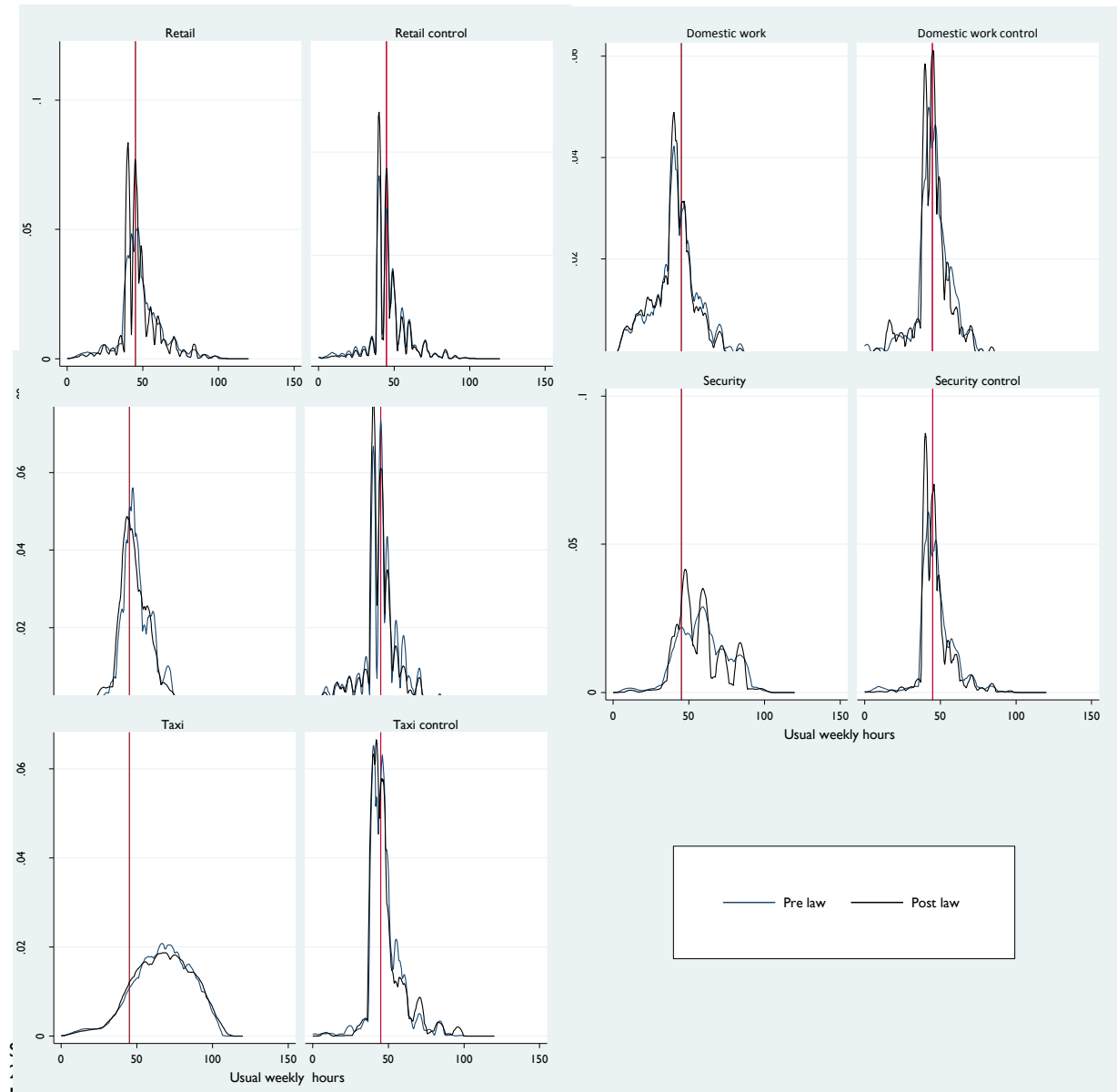
Notes: The vertical line represents log of the first hourly minimum introduced in the sector. Wages shown are for fulltime workers, that is, those individuals who work at least 27 hours per week. Estimates used are self-reported by workers and are for the weighted sample. Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. The vertical line indicates the log of the initial mean hourly minimum introduced in the sector. Using the Kolmogorov-Smirnov test, the null hypothesis of the equality of distributions at the 1 % level is rejected for each pair-wise comparison of the before and after periods for all sectors and their control groups.

Figure 2: Kernel density estimation of log of real hourly wages (2000 prices)



Notes: The vertical line represents log of the first real hourly minimum introduced in the sector (2000 prices). Wages shown are for fulltime workers, that is, those individuals who work at least 27 hours per week. Estimates used are self-reported by workers and are for the weighted sample. Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. The vertical line indicates the timing of the law in the respective sector. Using the Kolmogorov-Smirnov test, the null hypothesis of the equality of distributions at the 1, 5 or 10 % level is rejected for each pair-wise comparison of the before and after periods, with the exception of within the Taxi sector. For the control groups, we reject the null hypothesis of the equality of distributions for all groups, with the exception of the control for the Security sector.

Figure 3: Kernel density estimation of usual hours worked per week



Notes: Figures include both full-time and part-time workers. Usual hours worked per week are self-reported by workers and estimates shown are for the weighted sample. Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. The vertical line is drawn at 45 hours per week. Using the Kolmogorov-Smirnov test, the null hypothesis of the equality of distributions at the 1 or 5 % level is rejected for each pair-wise comparison of the before and after periods for the Retail, Domestic, Forestry and Security sectors only. The null hypothesis of the equality of distributions is also rejected for the control groups at the 1 % level.

Table 5: Probability of employment by sector (Dependent variable=Pr (Employment))

Sector	Retail		Domestics		Forestry		Taxi		Security	
	I	II	I	II	I	II	I	II	I	II
Post	0.005** (0.002)	0.004** (0.002)	0.003** (0.002)	0.007*** (0.002)	-0.0004 (0.008)	-0.0001 (0.008)	-0.003*** (0.004)	-0.003*** (0.004)	0.004*** (0.001)	0.003** (0.001)
Wage gap	-0.007*** (0.002)	-0.0001 (0.002)	0.006 (0.005)	-0.014*** (0.005)	0.006** (0.003)	0.005** (0.002)	-0.000004 (0.00001)	-0.00001 (0.00001)	-0.003* (0.002)	-0.002* (0.001)
Wage gap*Post	0.0005 (0.002)	-0.0001 (0.002)	-0.002 (0.002)	-0.0011 (0.002)	-0.0002 (0.0008)	-0.00004 (0.0008)	0.00001 (0.00001)	0.00001 (0.00001)	-0.00004 (0.0009)	0.0001 (0.0009)
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Constant	0.045*** (0.003)	0.023*** (0.007)	0.056*** (0.003)	0.019** (0.009)	0.004** (0.002)	0.020*** (0.006)	0.005*** (0.0005)	0.003*** (0.0009)	0.014*** (0.002)	-0.003 (0.003)
Observations	493,811	493,809	496,061	493,809	267,110	267,108	449,869	449,869	464,048	464,046
R-squared	0.001	0.014	0.0001	0.099	0.002	0.007	0.001	0.005	0.000	0.014
F-statistic	10.73***	187.55***	1.37	135.78***	1.78*	2.56**	35.36**	37.60***	8.03***	58.24***

Source: Data are from South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Notes: Dependent variable is a dummy variable equal to 1 if the individual is employed in the respective sector, and equal to 0 otherwise. The sample includes individuals of working age who are employed or seeking work, and who have completed no more than 12 years of schooling (Matric). Robust standard errors clustered by district council are shown in parentheses. ***p<0.01, **p<0.05, *p<0.1. Individual controls include controls for race, years of schooling and gender. The wage gap measures the proportional increase in the real wages of workers in district council i at time t-1 necessary to meet the minimum wage at time t.

Table 6: Log of nominal hourly wages, difference-in-differences

	Retail		Domestics		Forestry		Taxi		Security	
	I	II	I	II	I	II	I	II	I	II
Post	0.318** (0.031)	0.203** (0.020)	0.282** (0.050)	0.320** (0.024)	0.315** (0.025)	0.304** (0.120)	0.216** (0.043)	0.073 (0.055)	0.311** (0.037)	0.159** (0.046)
Sector	0.091** (0.029)		-0.429** (0.065)		-0.532** (0.105)		-0.693** (0.040)		-0.179** (0.056)	
Sector*Post	-0.020 (0.030)		0.125* (0.056)		0.097 (0.075)		-0.148* (0.075)		-0.079 (0.054)	
Wage gap		-0.286** (0.057)		-0.554** (0.039)		-0.033 (0.063)		-0.002** (0.001)		-0.362** (0.103)
Wage gap*Post		0.0669** (0.023)		0.036 (0.025)		0.041 (0.061)		0.001 (0.002)		0.220** (0.072)
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Constant	1.862** (0.090)	0.744** (0.090)	1.218** (0.103)	0.902** (0.096)	1.484** (0.070)	1.085** (0.267)	2.053** (0.058)	1.263** (0.187)	1.822** (0.069)	1.127** (0.129)
Observations	65,259	19,054	31,240	26,301	19,578	1,882	4,700	1,696	12,207	6,401
R-squared	0.03	0.38	0.08	0.31	0.07	0.16	0.23	0.06	0.04	0.18
F-statistic	51.76**	205.08**	166.55**	425.69**	57.59**	50.18**	141.28**	14.67**	40.61**	69.58**

Source: Data are from South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Notes: Dependent variable is log of hourly wage (nominal) for full-time workers (those individuals who report working a minimum of 27 hours per week). Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. In the first specification the sample includes the treatment and the control group only, whilst in the second specification, the sample is restricted to the sector of interest only. Robust standard errors clustered by district council are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Individual controls include controls for race, years of schooling and gender. The wage gap measures the proportional increase in the real wages of workers in district council i at time t-1 necessary to meet the minimum wage at time t.

Table 7: Log of real hourly wages, difference-in-differences (Dependent variable = log real hourly wage in 2000 prices)

	Retail		Domestics		Forestry		Taxi		Security	
	I	II	I	II	I	II	I	II	I	II
Post	0.110** (0.032)	-0.004 (0.020)	0.053 (0.050)	0.086** (0.023)	0.155** (0.025)	0.132 (0.121)	0.049 (0.043)	-0.086 (0.056)	0.088** (0.036)	-0.076 (0.046)
Sector	0.091** (0.029)		-0.431** (0.065)		-0.504** (0.105)		-0.686** (0.039)		-0.179** (0.056)	
Sector*Post	-0.020 (0.030)		0.129** (0.055)		0.0717 (0.076)		-0.142* (0.077)		-0.0925* (0.054)	
Wage gap		-0.286** (0.057)		-0.558** (0.038)		-0.021 (0.065)		-0.002* (0.001)		-0.362** (0.102)
Wage gap*Post		0.067** (0.022)		0.048* (0.024)		0.029 (0.062)		0.0003 (0.002)		0.222** (0.070)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Constant	1.778** (0.090)	0.671** (0.090)	1.163** (0.103)	0.856** (0.092)	1.278** (0.070)	0.889** (0.264)	1.885** (0.056)	1.137** (0.18)	1.782** (0.069)	1.129** (0.127)
Observations	65,259	19,054	31,240	26,301	19,578	1,882	4,700	1,696	12,207	6,401
R-squared	0.004	0.376	0.037	0.278	0.04	0.12	0.21	0.057	0.027	0.163
F-statistic	9.77**	179.14**	45.05**	185.21**	19.24**	31.68**	121.67**	6.10**	8.81**	58.52**

Source: Data are from South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Notes: Dependent variable is log of hourly wage (nominal) for full-time workers (those individuals who report working a minimum of 27 hours per week). Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. In the first specification the sample includes the treatment and the control group only, whilst in the second specification, the sample is restricted to the sector of interest only. Robust standard errors clustered by district council are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Individual controls include controls for race, years of schooling and gender. The wage gap measures the proportional increase in the real wages of workers in district council i at time t-1 necessary to meet the minimum wage at time t.

Table 8: Usual hours worked per week, difference-in-differences

Sector	Retail		Domestics		Forestry		Taxi		Security	
	I	II	I	II	I	II	I	II	I	II
Post	-0.545** (0.150)	-1.453*** (0.354)	-0.610 (0.672)	-1.166 (0.866)	-1.389** (0.278)	-1.148 (1.378)	0.358 (0.792)	0.686 (2.417)	-1.329** (0.371)	-2.051*** (0.658)
Sector	2.374** (0.324)		-0.953 (0.994)		3.033** (0.591)		20.13** (0.669)		11.63** (0.757)	
Sector*Post	-1.146** (0.263)		-0.789 (0.788)		-0.431 (1.062)		-0.286 (2.192)		-1.323** (0.623)	
Wage gap		2.726*** (0.582)		-0.344*** (0.166)		-0.344** (0.166)		0.012 (0.024)		3.542* (2.066)
Wage gap*Post		-0.142 (0.349)		-1.226 (0.814)		-1.226 (0.814)		0.012 (0.055)		-2.591 (1.878)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Constant	47.92** (0.448)	52.60** (1.032)	48.42** (0.896)	44.26** (1.115)	48.05** (0.371)	50.29** (1.811)	47.98** (0.542)	59.20** (3.130)	48.49** (0.542)	61.25** (2.384)
Observations	65,259	19,054	31,240	26,301	19,578	1,859	4,700	1,696	12,488	6,401
R-squared	0.006	0.089	0.004	0.047	0.010	0.016	0.353	0.011	0.148	0.026
F-statistic	23.28*	60.02**	6.41**	12.76**	15.58**	4.68**	310.19**	4.68**	364.20**	28.16**

Source: Data are from South African Labour Force Surveys (LFS) conducted by Statistics South Africa (September 2000 to September 2007).

Notes: Dependent variable is log of hourly wage (nominal) for full-time workers (those individuals who report working a minimum of 27 hours per week). Sample includes non self-employed workers aged between 15 and 65 years inclusive. The sample includes non-government employment only. In the first specification the sample includes the treatment and the control group only, whilst in the second specification, the sample is restricted to the sector of interest only. Robust standard errors clustered by district council are shown in parentheses. ***p<0.01, ** p<0.05, *p<0.1. Individual controls include controls for race, years of schooling and gender. The wage gap measures the proportional increase in the real wages of workers in district council i at time t-1 necessary to meet the minimum wage at time t.