



The Impact of the National Minimum Wage in South Africa: Early Quantitative Evidence

A Report for the National Minimum Wage Commission

By Haroon Bhorat, Adaiah Lilenstein and Ben Stanwix
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1. Introduction²

Minimum wage laws are an important instrument in support of economic justice and have now become a standard feature of labour market policy in almost all countries around the world (ILO, 2015; Belser et al., 2016). However, despite a vast academic literature on the topic, the impact of minimum wage increases on employment and other important labour market variables remains contested. If there is a key conclusion from the literature to date, it is that contextual factors and local labour market conditions are often decisive determinants of the effects that a minimum wage increase will have (Belman & Wolfson, 2014). This is particularly relevant in low and middle-income country settings, where in many cases the proportion of low-skilled workers, and rates of unemployment, are higher. In addition, compliance with labour laws in these same countries is often imperfect, and as a result even the direct impact of minimum wage legislation on the earnings of covered workers is uncertain.

This report provides a basic quantitative assessment of the recent introduction of a National Minimum Wage (NMW) in South Africa, with a specific focus on the short-term labour market impacts. Of primary interest are the effects of the policy on wages, employment, and hours of work, over a 12-month period following 1 January 2019 when the legislation came into force. In order to examine these impacts the report is divided into three main sections. Section 2 begins by providing a brief overview of the NMW, placing it in the South African labour market context, and noting how the NMW differs from the previous sectoral minimum wage regime. Section 3 describes two separate analytical approaches that are used to test the impact of the NMW, and introduces the relevant data. Section 4 then presents and discusses the key findings,

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² Sections 1 and 2 of this paper are drawn from a forthcoming book chapter by Bhorat, Kanbur and Stanwix entitled, "An Empirical Assessment of the National Minimum Wage in South Africa: Key Considerations and Debates", due to be published by the Human Sciences Research Council in 2021.

which are based on both descriptive trends and regression analysis. The report ends with a reflection on the main results and a short conclusion.

2. Introducing a National Minimum Wage in South Africa

South Africa is an upper middle-income country facing serious structural economic challenges, borne in large part from an apartheid history that continues to define its socio-economic landscape. Within this broader context, the NMW has been positioned as an active policy response to some of the country's most pressing concerns. Income inequality has risen since 1994, household poverty levels remain stubbornly high, low wages pervade the labour market, and private sector union membership has plummeted (DPRU, 2018). The NMW Act, which was drafted based on several years of research and deliberation at the National Economic Development and Labour Council (NEDLAC), opens by noting the 'huge disparities in income in the national labour market' and the need to tackle both poverty and inequality (Republic of South Africa 2018: 2). The existing literature suggests that introducing a national wage floor can have a range of positive direct and indirect labour market impacts. It should raise the wages of those previously earning below the set level, and in most cases it has a benign impact on both employment and hours of work. Indirectly, a minimum wage can have a wide variety of knock-on effects that include influencing when people choose to enter the labour market, a shift in labour demand and supply between sectors, as well as having an impact on rates of poverty and inequality in certain settings.

However, there are several reasons why the ability of a NMW in South Africa to engender these labour market effects, and in particular to measurably reduce poverty and inequality, is limited. Firstly, levels of non-compliance with pre-existing sectoral minimum wages have always been high, and there is no clear evidence to suggest that this will change in the short term given the government's current enforcement capabilities. High levels of non-compliance with the NMW will mute the positive wage effects of the policy for covered workers, thus dampening other direct and indirect impacts. Secondly, the NMW is set relatively high (at close to the median wage in South Africa) and places almost half of all workers below it, requiring an unprecedented increase in pay for many employers. If there was to be widespread compliance, the risk of adverse employment effects in certain sectors is a concern, and could offset some of the positive welfare effects of higher wages. Clearly, a delicate balance is required to ensure that a NMW produces overall welfare gains. In South Africa the option of additional policies to protect employment in high-risk sectors may be necessary to achieve this. Finally, there are broader structural issues that currently shape the labour market which could potentially moderate the possible poverty- and inequality-reducing effects of a higher wage floor. A narrow unemployment rate approaching 30 percent in 2019 means that for the poorest households, who have the highest proportion unemployed members, rising wages are unlikely to significantly boost per capita household incomes (StatsSA, 2019). Thus without a substantial redistributive shift in

pay structures, or broader economic reforms, the NMW is a relatively blunt instrument for poverty and inequality reduction in South Africa.

Keeping these concerns in mind, the introduction of a single minimum wage covering all workers is an important new development that builds on, and brings together, a pre-existing, segmented set of minimum wage laws. Institutionalized bargaining between workers and employers in sectors such as mining and manufacturing, where unions are strong, has a long history in South Africa. Wage-setting in these sectors takes place within a system of Bargaining Councils where a detailed set of wage schedules are drawn up to cover all employees. In most cases Bargaining Council minimum wages are set far above the level of the NMW. Alongside this system, but focused on lower-wage sectors with limited union coverage, there is a national wage-setting mechanism that was introduced by the government for the first time in 1999. This system was gradually extended over time, and by 2007 covered workers in sectors that include agriculture, domestic work, wholesale and retail trade, hospitality and private security, among others, representing over 40 percent of low-paid employees in South Africa (DPRU, 2016). These Sectoral Determinations (SDs) are set by the Minister of Labour and updated annually.

A useful point of departure for thinking more directly about the potential impacts of the NMW in this context is to examine the historical effects of the sectoral minimum wage system. Fortunately, the effects of these SDs have been relatively well studied, and to provide a picture of their measurable impacts we summarise the relevant results from the existing economics literature in, Table 1, below. Overall, the literature suggests that the impact of sectoral minimum wages has been positive for almost every sector that has been assessed. The new laws resulted in higher average wages for covered workers, with no substantial negative impacts on employment, and no large changes in hours of work that may have offset the increased rates of hourly pay.³ In five of the six sectors that have been studied, these broad results hold, aligning with conclusions from international evidence, where, “moderate increases in the minimum wage are a useful means of raising wages in the lower part of the wage distribution that has little or no effect of employment or hours” (Belman & Wolfson 2014: 401).

An exception to the positive employment effects of the SD system in South Africa is the agricultural sector, where the introduction of a minimum wage in 2003, and a subsequent 50 percent increase in 2013, both led to decreases in employment (Bhorat et al. 2014; van der Zee 2017; Piek & von Vintel 2020). In 2003, it appears that employment losses were concentrated among part-time workers, while in 2013 there is evidence to suggest that small farming enterprises shed more jobs than larger operations, and that much of the negative impact was in fact a reduction in job creation over the medium term rather than an abrupt shedding of jobs (Piek & von Vintel 2020).

³ See Bhorat, Kanbur and Stanwix (2017) and Piek and von Vintel (2020) for a more detailed review of this literature.

The research suggests that one of the elements that makes agriculture vulnerable to negative effects from large wage increases is because it is a tradeable, labour-intensive sector, where there remains scope to replace labour with machinery. Certainly minimum wage hikes are inherently more risky in sectors with these characteristics.⁴

Table 1. The Impact of Sectoral Minimum Wages in South Africa

| Study | Sector | Impact On: | | |
|----------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|-----------------------|-----------------------|
| | | Employment | Wages | Hours of Work |
| Dinkelman & Ranchhod (2012); Bhorat et al. (2013); Hertz (2005) | Domestic Work | No significant impact | Increase | No significant impact |
| Bhorat et al. (2013) | Forestry | No significant impact | No significant impact | No significant impact |
| Bhorat et al. (2013) | Wholesale & Retail | No significant impact | Increase | Decrease |
| Bhorat et al. (2013) | Private Security | No significant impact | Increase | Decrease |
| Bhorat et al. (2013) | Taxi | No significant impact | Increase | Decrease |
| Bhorat et al. (2014); Garbers et al. (2015); Van der Zee (2017); Ranchhod & Bassier (2017); Piek & von Vintel (2018, 2020) | Agriculture | Decrease | Increase | Mixed |

Source: Hertz (2005), Dinkelman & Ranchhod (2012), Bhorat, Kanbur and Mayet. (2013), Bhorat et al. (2014), Garbers et al. (2015); Van der Zee (2017); Ranchhod & Bassier (2017); Piek & von Vintel (2018, 2020).

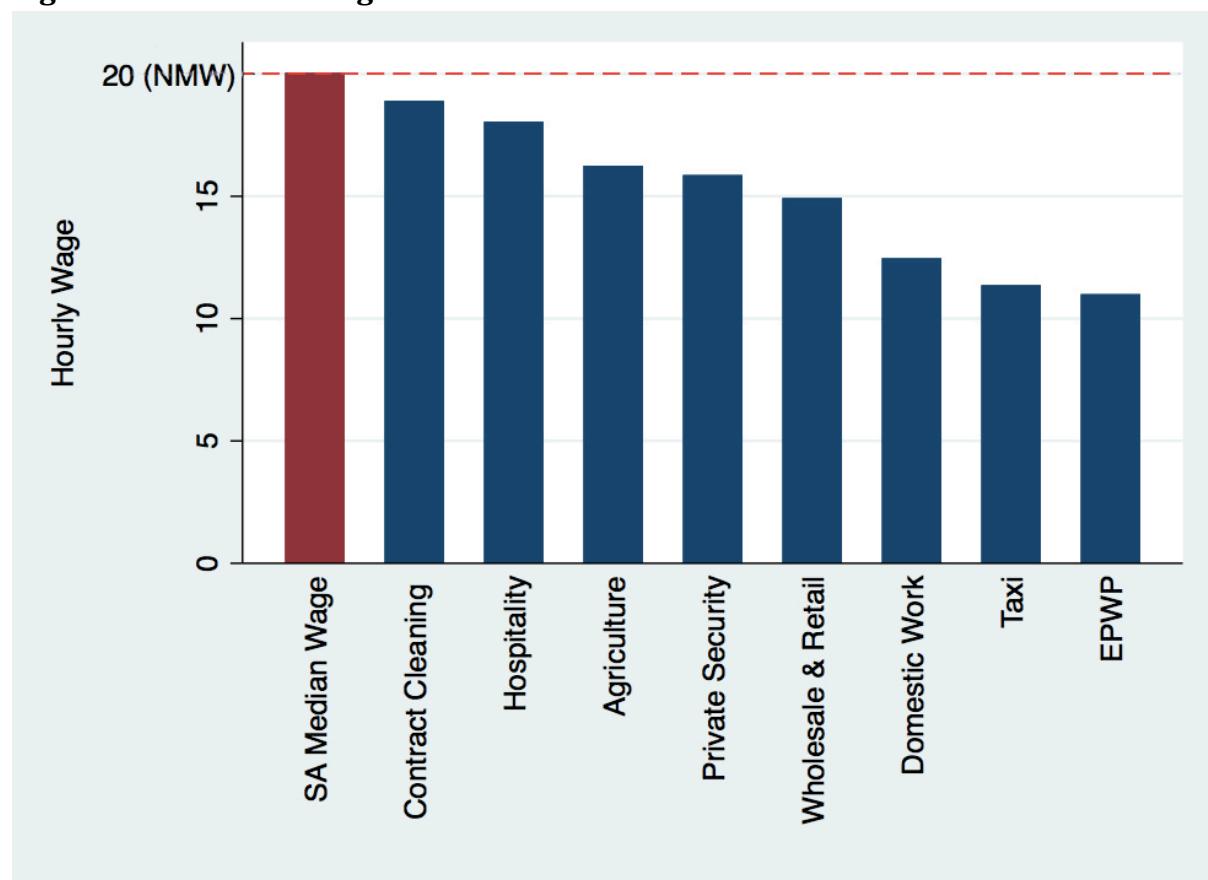
To summarise the South African minimum wage literature then – with a view towards thinking about the impacts of a NMW – there are three key points to note: Firstly, evidence suggests that sectoral minimum wages led to measurable wage increases in all sectors, while there was one large disemployment effect (in agriculture) and then moderate reductions in hours of work in selected sectors. Secondly, and this is crucial, when the employment impact is negative, the absolute value of this response is usually small on average. Put differently, and in agreement with the international literature, minimum wage adjustments in South Africa have not had large negative disemployment effects in general. Thirdly, in sensitive sectors where minimum wage increases have been sizeable, such as agriculture, employment losses have resulted, and larger losses appear to have occurred in particularly vulnerable subsets within the sector.

⁴ All other SDs were in non-tradable sectors, thus possibly muting negative employment effects, and raising concerns that the new NMW may have a deleterious impact on employment in tradeable sectors with low wages.

The NMW Bill, which was signed on the 28th of November 2018, became effective on the 1st of January 2019 (Republic of South Africa, 2018a). A minimum wage of R20/hour was set as the national wage floor, with lower rates for three groups of workers: those employed through the government's public works programmes (R11/hr), domestic workers (R15/hr) and farmworkers (R18/hr) (*Ibid.*). These lower rates were selected primarily because pre-existing legislated wages for workers in agriculture, domestic work and those in public works employment were seen to be too far below the R20/hr level. However, at R20/hr the NMW does require substantial increases for many other employees outside of these groups.

As Figure 1 shows, at R20/hr the general NMW is roughly equivalent to the median wage for employees in South Africa, meaning that approximately 50 percent of all workers earned below the NMW when it was promulgated. The figure also plots the legislated minimum wage levels for each SD, as well as the Expanded Public Works Programme (EPWP), in 2018.

Figure 1. SA Median Wage and Sectoral Determination Rates: 2018



Source: DEL (2020), QLFS 2018Q4, own calculations.

Notes: The figure plots the lowest minimum wage for each Sectoral Determination in 2018. The horizontal red line is the NMW of R20/hour. The median wage is calculated for all employees in 2018 quarter 4, it thus excludes employers and own-account workers who are not subject to the minimum wage. Where sectoral determinations include multiple rates we take the lowest minimum wage listed for that sector.

It is clear that there was considerable variation in minimum wage rates by sector, where in some cases SDs prescribed wages substantially below the NMW in 2018.⁵ At R20 per hour then, despite being low in terms of the basket of goods it can buy, the NMW is set relatively high on the current national wage distribution. Certainly, it requires a substantial increase for some of the sectoral minimum wage rates that it supercedes. The smallest required increase is for workers in contract cleaning (an average increase of 6 percent), followed by agriculture and hospitality (11 percent) and domestic work (15 percent). Larger minimum wage increases are required for low earners in private security (26 percent), wholesale and retail (34 percent) and the taxi industry (39 percent).

In Table 2, below, we go beyond the SD sectors to examine the proportion of all employees who earn less than the applicable NMW across the main industry categories. This is shown for the period directly prior to the NMW coming into force (2018 quarter 4), indicating where wage increases for the largest number of workers would be required. Sectors that have more than half of all employees earning less than the NMW in 2018 include Agriculture (65%), Construction (53%), and Wholesale and Retail Trade (51%). Together there are almost two million sub-minimum wage workers in these three sectors alone. Apart from mining all other sectors also have relatively large shares of workers earning below the NMW – varying between 40-50 percent. The national average shows that in total 5.2 million workers, or 46.6 percent of all wage earners, earned less than the 2019 NMW in the period before it was introduced. This estimate includes those working in both the formal and informal sector, as well as all part-time and full-time employees.⁶

⁵ As noted above, for farmworkers, domestic workers, and those employed through the EPWP there are lower NMW levels, which reduce the gap between the 2018 SD rates and the NMW. Where SD wage rates differ by area and job type we calculate the mean minimum wage.

⁶ We account for the lower NMW levels set for Agriculture and Domestic Work but are unable to identify EPWP workers in the data, as such the average share of non-compliant workers should be seen as an upper bound.

Table 2. Wage Earners by Sector, Below the NMW: 2018Q4

| Industry | Total Wage Earners | Total Below the NMW | Share Below the NMW |
|--------------------|--------------------|---------------------|---------------------|
| Agriculture | 861 581 | 560 180 | 65.02 |
| Mining | 358 988 | 110 392 | 30.75 |
| Manufacturing | 1 133 215 | 515 608 | 45.50 |
| Utilities | 94 689 | 22 415 | 23.67 |
| Construction | 864 574 | 459 776 | 53.18 |
| Wholesale & Retail | 1 725 091 | 878 674 | 50.93 |
| Transport | 600 444 | 290 530 | 48.39 |
| Finance | 1 718 829 | 774 079 | 45.04 |
| CSP | 2 519 615 | 1 021 361 | 40.54 |
| Private Households | 1 348 318 | 602 422 | 44.68 |
| Total | 11 225 344 | 5 235 437 | 46.64 |

Source: LMDSA (2018), own calculations.

Note: The NMW has been deflated to 2018 prices using CPI data from Statistics South Africa. The proportions reflect the lower NMW rates for Agriculture and Domestic Work. We make no distinction here between the formal and informal sectors, or between fulltime and part-time employment, as wages are measured based on hourly rates.

In terms of coverage, a NMW that applies to almost half of all workers in a country is extensive when compared internationally. For example, in the United Kingdom NMW coverage is below seven percent (Low Pay Commission, 2018). The data therefore suggest that both the relatively high level and the vast coverage of the NMW in South Africa make it a potentially hugely influential labour market intervention, and highlight the importance of carefully assessing its impact.

3. Analytical Approach: Data and Estimation Strategies

The main focus of this report is to measure the short-term impacts of the NMW on the labour market, and to do this we focus on three key variables, namely: wages, hours of work, and employment. These are the three main factors that employers can adjust in direct response to the law, and are thus where any short-term assessment must be concentrated. As a starting point it is critical to measure the impact of a minimum wage policy on the earnings of covered workers, which, together with adjustments to hours of work, will determine the likelihood of employment effects. The first thing we want to know is the extent to which the wages of those previously earning sub-minimum wages increased as a result of the NMW. Secondly, employers may adjust the total hours of employment of their employees in order to offset wage increases, but it is not immediately clear in which direction this adjustment will be. Changes in working hours in this case are commonly referred to as adjustments at the ‘intensive margin’. Lastly, employers can respond to a legislated wage increase by changing the number of people they employ, which is known as making changes at the ‘extensive margin’. In certain exceptional cases this may result in increased hiring, but more frequently employers

respond by reducing employment in response to a higher, and binding, minimum wage, even if this reduction is small on aggregate.

3.1. Data

In order to test the impact of the NMW on wages, hours of work, and employment we make use of data from Statistics South Africa's Quarterly Labour Force Survey (QLFS). The QLFS is a nationally representative household survey, collected by StatsSA four times per year. The surveys are administered to household members above the age of 15 and information is collected by proxy for those who are absent. The survey contains information on demographic and labour market variables, and also includes a small rotating panel component, which we exploit in our analysis. Wage data collected in the QLFS are ordinarily released annually in the Labour Market Dynamics in South Africa (LMDSA) dataset, which has a lagged release schedule. However, in this case StatsSA has provided us with the wage data for each quarter at the request of the National Minimum Wage Commission (NMWC). Specifically, we use eight waves of the QLFS covering the two-year period between 2018Q1 and 2019Q4. Out of these eight waves, four precede the introduction of the NMW, which was introduced in January 2019, and four follow it.

We restrict our sample to individuals of working age (15-64 years), and our analysis is focused on wage earners – those working for someone else for pay. We therefore exclude employers, and individuals who are self-employed, who are not covered by the NMW. All wages presented in our estimates are converted to hourly values using reported weekly hours of work at the individual level, and adjusted for inflation using the quarterly CPI from StatsSA, benchmarked to the first quarter of 2019. Wage outliers are detected using the studentised regression residual technique and removed. All estimates are weighted using the relevant sampling weights provided by StatsSA..

In Table 3 below, we provide a basic overview of employment in the QLFS sample for the 2018-2019 period. Total weighted employment at the national level is relatively stable at close to 16.5 million employed individuals, of which between 10.5 and 11 million are classified as employees. Given that the NMW applies only to wage earners this group is of primary interest here. The final row of the table reports the unweighted sample size from which our weighted estimates are derived. Each wave has a sample of wage earners that varies between 11,427 and 12,252. This then is the baseline sample we use to conduct the analysis that follows.

Table 3. QLFS Data Overview: 2018Q1-2019Q4

| | Pre-NMW | | | | Post-NMW | | | |
|---------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 2018Q1 | 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 | 2019Q4 |
| Period | 2018Q1 | 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 | 2019Q4 |
| Quarter | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Wave | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Total Employment (weighted) | 16,580,090 | 16,504,131 | 16,604,785 | 16,749,465 | 16,513,084 | 16,535,358 | 16,593,811 | 16,640,718 |
| Total Wage Earners (weighted) | 10,984,222 | 10,850,559 | 10,862,646 | 10,920,745 | 10,641,737 | 10,512,375 | 10,565,842 | 10,589,371 |
| Total Wage Earners (unweighted) | 12,252 | 12,143 | 12,073 | 11,986 | 11,556 | 11,404 | 11,515 | 11,427 |

Source: StatsSA (QLFS, 2018-2019), own calculations.

3.2. Estimation Strategies

The NMW required an increase in wages for approximately 50 percent of workers in South Africa, which in theory should produce a range of observable labour market effects. But to test the impact of this legislated increase on covered workers requires some form of comparative analysis. In its simplest iteration, such an evaluation involves comparing the outcomes of covered workers – those earning below the NMW in the pre-NMW period – to workers who are not covered, for example workers that earn wages higher up the income distribution. However, a simple descriptive comparison between two groups would not be sufficient to identify a causal effect because of possible pre-existing differences in the composition of workers. This makes some form of difference-in-differences approach an appealing estimation strategy, where the differential outcomes for two previously identified samples are assessed, while controlling for the composition of selected individuals. Put simply, this approach seeks to measure the differential outcomes between two groups in the post-NMW period as compared to equivalent differences in the pre-NMW period, in order to pick up the effects of the law. We employ two variations of a difference-in-differences estimation; the first uses the standard cross-sectional data available in the QLFS, while the second takes advantage of the panel component of the survey and constructs a smaller longitudinal sample. Both estimation strategies are introduced and described in more detail below.

3.2.1. Cross-Sectional Data: Using a ‘Wage Gap’ Approach

In the first instance we treat the QLFS data as a pooled cross-section over time, in which each wave serves as a representative labour market sample, or snapshot. The main benefit of this approach is that it allows us to analyse all employees in each wave and thus produce estimates based on the largest available sample of individuals. However, to try and isolate the effect of the NMW, we need to find some way of identifying

different employee sub-samples, where we expect individuals in each sample to have experienced a differential impact of the law. Identifying and measuring this differential impact will then provide an estimate of the effect of the NMW.

To do this we follow Lee (1999), Dinkelman and Ranchhod (2012) and Bhorat et al. (2014), and exploit geographic variation in wages, which allows us to pose the following question: Do areas that have lower average wages in the pre-NMW period experience larger NMW effects? The underlying assumption is that we expect areas with lower average wages in the pre-NMW period to experience larger NMW effects, as they have a bigger gap to close. We can thus compare areas with a larger wage gap (the distance between a worker's wage and the NMW) to those with a smaller gap, and test whether there are significantly different outcomes for workers in these different areas. Put another way, we test the effect of the NMW introduction by looking at 'before' and 'after' outcomes at the individual level, and observing whether these outcomes change by more in areas where the NMW required larger increases (i.e. where the gap between average pre-law wages and the NMW was larger).

As such we specify a standard difference-in-differences model of the following form:

$$y_{ijt} = \beta_0 + \beta_1 POST_t + \beta_2 WG_j + \beta_3 POST_t * WG_j + X_{ijt} + \mu_{ijt} \quad (1)$$

where y_{ijt} is the outcome of interest (employment, wages, hours worked) for individual i , living in district j , in period t . $POST_t$ is the pre/post time dummy, and X_{ijt} controls for various worker characteristics such as age, education, and race as well as a set of labour market variables such as industry and firm size. The sample in this estimation is restricted to workers who we expect to be directly impacted by the NMW, which we define here as those who earn less than the $NMW * 1.1$ (i.e. the NMW + 10%) to allow for some possible spillover effects. For the employment equation our sample also includes individuals who are unemployed and report previous employment – allowing us to test for whether the probability of employment changes. We run equation (1) as a probit regression, and where the dependent variable is categorical (employment) we report the marginal effects.

The wage gap (WG_j) is a constructed variable that identifies cross-sectional variation across District Councils in the pre-law period. The wage gap is constructed as follows:

$$WG_j = \log(NMW) - \log [\text{median } (w_j)] \quad (2)$$

where $\log(NMW)$ is the legislated minimum wage that applies to all workers as of January 1st 2019, in district j , and $\text{median } (w_j)$ is the median worker wage in district j , in the period before the law was introduced. As noted above, areas with a larger gap in the pre-law period would be expected to experience greater increases in wages in the post-law period if the law was binding.

In equation (1), β_1 indicates the changes in the post-law period for all workers, β_2 gives the average difference in outcomes for areas with larger wage gap over the full period. β_3 is the difference-indifferences parameter that provides an estimate of how much more outcomes changed in the post-law period, in areas where the wage gap was largest.

3.2.2. Panel Data: Comparing Covered Workers to Uncovered Workers

In our second specification we take advantage of the panel component of the QLFS, which makes it possible to match individuals across consecutive survey waves using unique identifiers. While the full sample is not re-surveyed in every wave, 75 percent of households that were in a previous wave are resampled in the following survey. As such this rotating panel allows one to follow a subset of individuals for a maximum of four periods, after which they exit the sample. For our analysis we construct a panel that includes six waves of data and covers the period 2018Q2-2019Q3. This ensures that we observe each individual in our sample for at least one wave in the pre-NMW period, and one wave in the post-NMW period.

In Table 4, below, we provide a basic overview of the panel construction for the QLFS. Beginning in 2018Q2, which in this case is our first wave (wave 1), we have the full sample of individuals that are surveyed – 68,974. In the next quarter, wave 2, approximately 75 percent of the sample is surveyed again (47,241), and 25 percent of the sample is made up of individuals who were not in the previous wave (21,841).⁷ In wave 3 only approximately 50 percent of the wave 1 sample remains (29 089). Finally, in wave 4, 25 percent of the original wave 1 sample is surveyed (13,750) and this is the last wave in which we observe individuals who were present in wave 1. Selecting the six waves shown in the table below allows us to incorporate the largest possible sample while always being able to identify all individuals in at least one pre-NMW, and one post-NMW, wave.

⁷ In this case the match between individuals in wave 1 and wave 2 is slightly less than 75 percent.

Table 4. Panel Data Overview: 2018Q2-2019Q3

| Pre-NMW Period | | | Post-NMW Period | | |
|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 |
| Observations in Wave 1 | Still Present in Wave 2 | Still Present in Wave 3 | Still Present in Wave 4 | Still Present in Wave 5 | Still Present in Wave 6 |
| 68,974 | 47,241 | 29,089 | 13,750 | 0 | 0 |
| | Entered in Wave 2 | Still Present in Wave 3 | Still Present in Wave 4 | Still Present in Wave 5 | Still Present in Wave 6 |
| | 21,841 | 18,073 | 15,591 | 13,369 | 0 |
| | | Entered in Wave 3 | Still Present in Wave 4 | Still Present in Wave 5 | Still Present in Wave 6 |
| | | 20,696 | 17,435 | 15,307 | 12,998 |
| | | | Entered in Wave 4 | Still Present in Wave 5 | Still Present in Wave 6 |
| | | | 19,973 | 16,886 | 14,987 |
| | | | | Entered in Wave 5 | Still Present in Wave 6 |
| | | | | 20,243 | 17,283 |
| | | | | | Entered in Wave 6 |
| | | | | | 20,773 |

Source: StatsSA (*QLFS, 2018Q2-2019Q3*), own calculations.

Given that we can follow the same individuals over time it is then possible for us to identify all employees who earn sub-minimum wages in 2018Q4 – the last quarter prior to the NMW introduction – and examine what happens to them in the waves that follow. We can then compare the outcomes for this group (a ‘treatment’ group) against the outcomes of a group that is not subject to the NMW (a ‘control group’). In this specification we identify a treatment and control group based on the wage cutoff that separates covered and uncovered workers, i.e. the outcomes for those earning below the NMW in the pre-law period are compared to the outcomes of those earning above the NMW. For the control group we select employees who earn between 10 percent above the NMW and 50 percent above the NMW – a group of workers who should be unaffected by the law but remain in other ways similar to those in the treatment group. The approach described here follows Stewart’s (2004) study of the NMW in the United

Kingdom. Our panel sample is sufficiently large for us to control for a variety of demographic and job-specific variables that may influence employment likelihoods. As in the cross-sectional approach above, we test whether variation in employment, wages, and hours of work is systematically different between the two sample groups in the post-law period.

Formally, our specification is set up as follows: Let a binary indicator Y_{it} denote the outcome status of individual i in period t , where this outcome is either earnings, employment, or hours of work. Define two groups of workers indexed by g : those in group $g = 1$ are affected by the minimum wage because their wages in the pre-NMW period are below the minimum wage, while those in group $g=2$ are not directly affected because their wages are already at least 10 percent above the minimum wage, but not more than 50 percent above the minimum wage. In addition, suppose that the NMW is introduced at t^* and that prior to t^* no NMW is in place. The simplest form of this estimation approach uses just two time periods: t_1 and t_2 , the pre- and post-law periods respectively, where $t_1 < t^* < t_2$. Comparing outcomes across g and t aims to estimate the impact of the NMW. The regression is then of the form:

$$Y_{it} = \alpha_1 + \alpha_2 g_i + \alpha_3 POST_t + \alpha_4 g_i * POST_t + X_{it} + \mu \quad (3)$$

Where α_2 is the coefficient on a group-specific effect fixed over time, and α_3 is a coefficient on a time-specific effect for both groups. The coefficient α_4 is the interaction term measuring the difference in outcomes for those workers covered by the NMW relative to those earning above the NMW, in the post-NMW period. When estimating employment, Y_{it} is the probability of employment in the post-NMW period and as such α_2 measures the differential employment effects. The variable X_{it} is a matrix of individual level controls that include: gender, age, population group, education, firm size, and industry. We run a panel fixed-effects regression for each of our outcome variables.

4. Results

Based on the two approaches outlined above, this section presents a set of descriptive and econometric results on the impact of the NMW. The descriptive data provides a useful overview of the key variables of interest and allows us to identify noticeable trends and correlations. Looking, for example, at how the wage distribution of low-wage workers changes over the period can offer some initial insight into what we expect to find in the more robust econometric work. As in previous studies on the impact of sectoral minimum wages in South Africa, the impact of the law is at least partially observable from a descriptive overview of wage trends in the cross-sections of labour force survey data (See Dinkelman & Ranchhod, 2013; Bhorat et al., 2014). However, descriptive employment trends are less likely to be able to suggest any meaningful interpretations regarding the impact of a minimum wage law. This is due in part to seasonality in certain sectors, as a result of the variety of factors that influence

employment, the benign effects that minimum wages usually have on employment, and in the case of a NMW the difficulty of isolating covered workers over time.

4.1. Cross-Sectional Data

As noted above, our cross sectional sample is restricted to employees that are likely to be affected by the NMW. In Table 5 below we present some basic wage and employment trends for low-wage workers over the period, where in each wave the sample is restricted to those earning less than the NMW. Broadly, this is the sample of individuals we expect to be impacted by the legislation, noting however that in each wave these are not the same individuals, and the group is only identified by the wage cutoff. In total just over 5 million employees of working age earn less than the NMW, and this number is relatively stable over the period. However, a decrease of about 380 000 jobs is apparent in the first quarter of 2019, relative to 2018:4, which is a decrease of 7.3 percent. Crucially however, given that this is a cross-sectional sample, it is not possible to attribute this decrease to the impact of the NMW, as it may simply mean that the wages of some covered workers increased and as a result they moved up and out of the sub-minimum wage sample shown here.

We know that the NMW cuts almost exactly at the median of the national wage distribution, and as such this sample comprises approximately half of all working-age employees in South Africa. The unweighted data show that in each wave our estimates are based on a sample of between 5,413 and 6,057 individuals, which is sufficient for the empirical approach. Surprisingly neither mean nor median hourly wages appear to change significantly over the period, suggesting that there is no clearly observable increase in average wages for this group in the post-law period. However, as with employment, this observation may be misleading given that employees whose wages did rise above the NMW would not be present in the sample in 2019. Nevertheless, one would expect to see a general upwards trend in the wages of these workers in 2019, where average wages rise to some extent in response to the NMW, even if for many workers this increase is not all the way up to the legislated minimum. The final row of the table, which shows the ratio of the median wage to the NMW, is instructive in this respect.

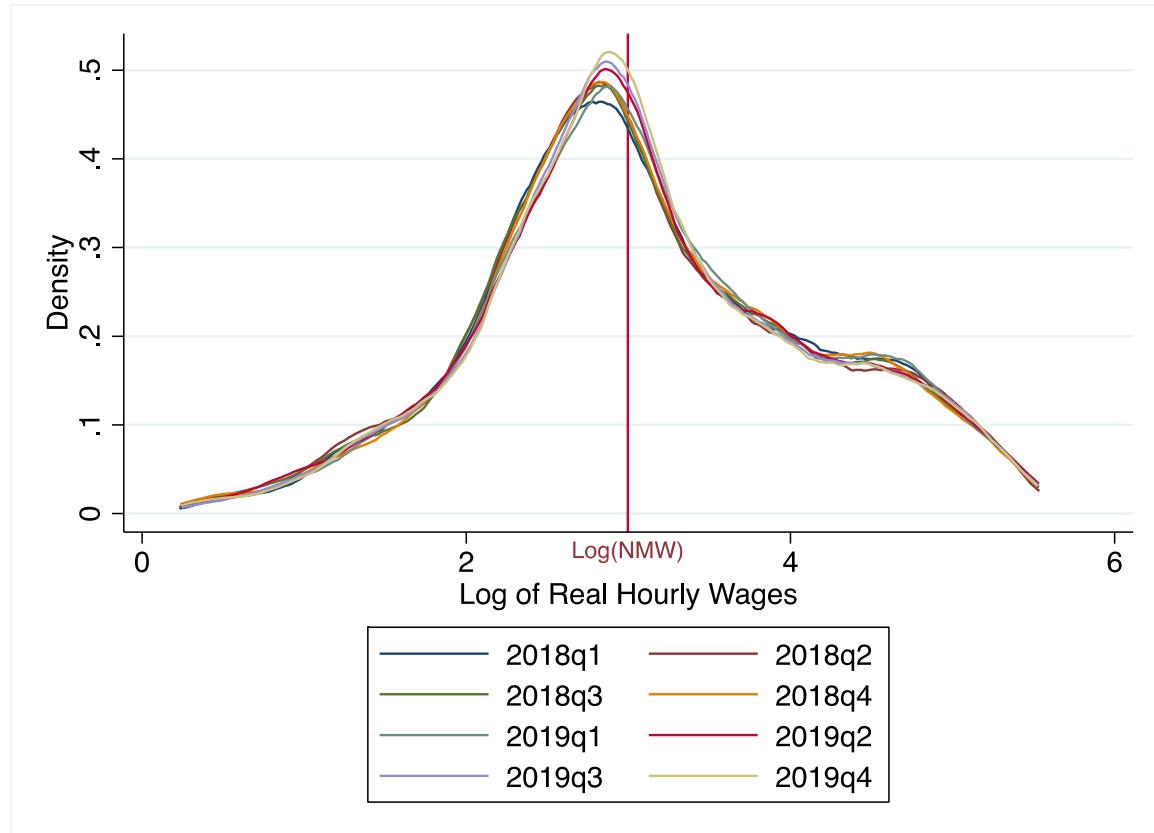
Table 5. Cross-sectional Data: Workers Earning Below the NMW

| | Pre-NMW | | | | Post-NMW | | | |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 2018Q1 | 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 | 2019Q4 |
| Period | 2018Q1 | 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 | 2019Q4 |
| Employment (weighted) | 5,184,604 | 5,261,166 | 5,198,363 | 5,212,366 | 4,833,784 | 5,057,665 | 5,100,092 | 5,078,411 |
| Employment (unweighted) | 5,971 | 6,057 | 5,929 | 5,910 | 5,413 | 5,662 | 5,684 | 5,624 |
| Mean Wage | 11.04 | 11.02 | 11.00 | 11.20 | 10.98 | 11.29 | 11.50 | 11.47 |
| Median Wage | 11.12 | 11.31 | 11.18 | 11.52 | 11.11 | 11.29 | 11.42 | 11.24 |
| Median/NMW | 0.56 | 0.57 | 0.56 | 0.58 | 0.56 | 0.56 | 0.57 | 0.56 |

Source: StatsSA (QLFS, 2018-2019), own calculations.

A more detailed way to look at how wages have responded over the period is to examine the full wage distribution. Figure 2 plots the distribution of wages for all workers in the country over the eight waves of the QLFS. The vertical red line cuts the wage distribution at the NMW. Typically, if as a result of a new wage floor being introduced wages had increased significantly for those earning below this floor, we would expect to see a noticeable rightward shift in the distribution.

Figure 2. Wage Density Distribution: 2018Q1-2019Q4

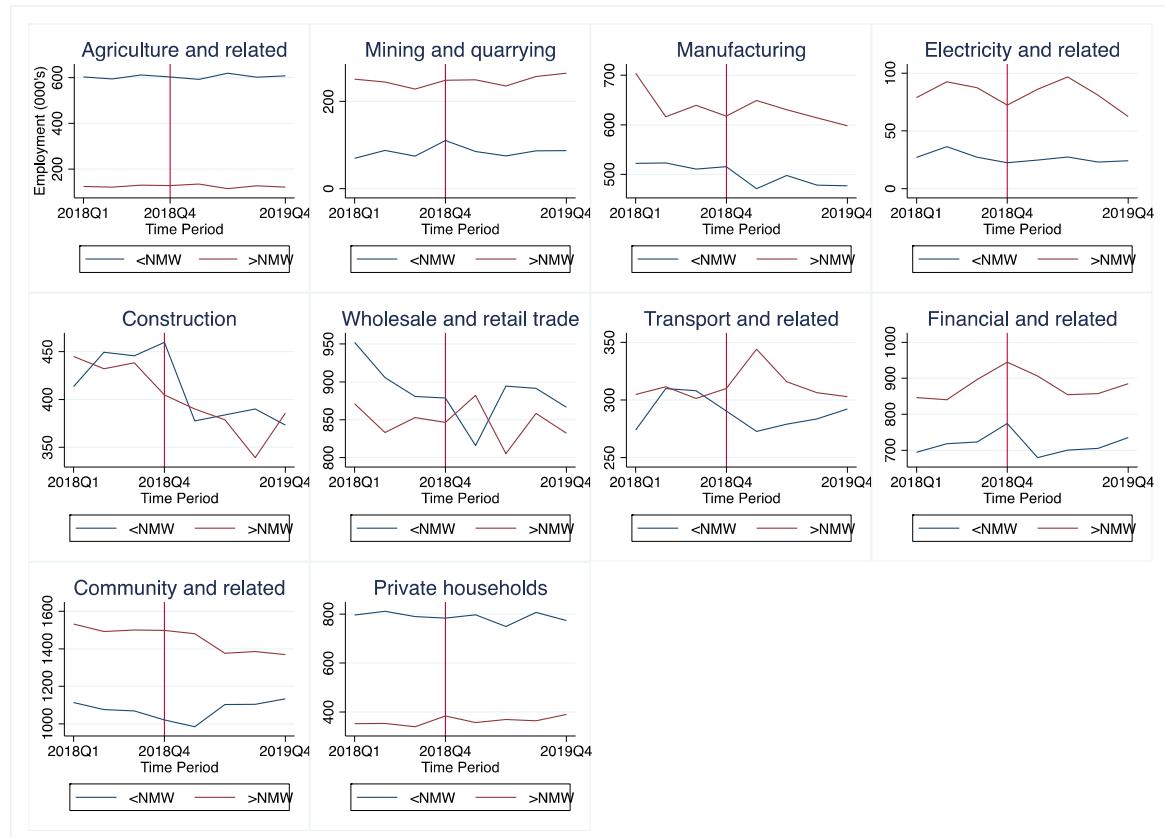


Source: StatsSA (QLFS, 2018-2019), own calculations.

In particular we would expect to see movement in the distribution that is to the left of the vertical line, for the waves in the post-law period. This type of wage shift was evident in all of the prior studies that examined the effects of sectoral minimum wages.⁸ While a pronounced shift is not immediately apparent, there is a slight rightward movement of the distribution, and we see an increased number of wage earners clustered near the NMW in the final quarter of 2019. Evidently though, many workers in 2019 still report earning wages below the NMW.

In Figure 3 we examine total employment trends, disaggregated by industry, to see if there are any obvious structural breaks in the data that could be linked to the introduction of the NMW. The figure plots employment separately for workers who earn below the NMW and those who earn at or above it, in each wave. If there were a large and significant impact of the NMW one change we might expect to see is a decrease in employment for sub-NMW workers, and either a corresponding increase in workers earning at or above the NMW, or no corresponding employment increase if employers responded by reducing employment. Looking at the different sectors the employment trends for Transport, Manufacturing, and Wholesale and Retail all appear to exhibit at least some pattern of this sort, but there is certainly no obvious economy-wide effect.

Figure 3. Total Employment, by Industry: 2018Q1-2019Q4



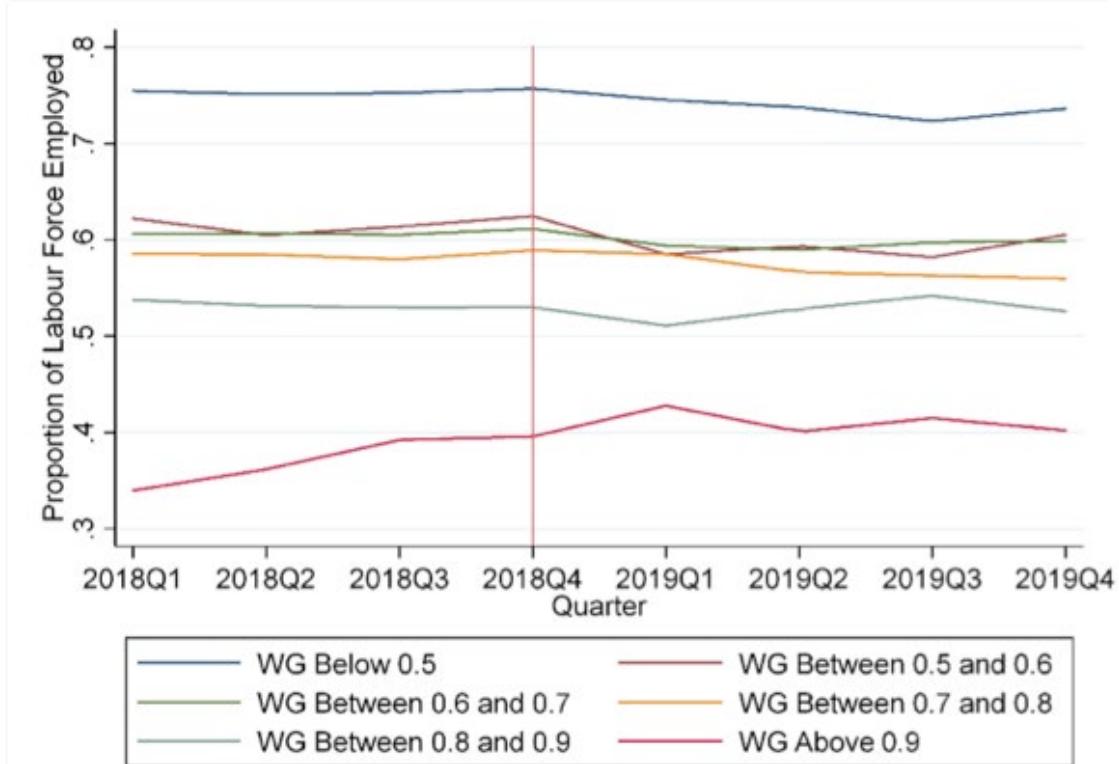
Source: QLFS (2018-2019), own calculations.

⁸ See Dinkelman and Ranchhod (2013), Bhorat et al., (2012, 2014).

Moreover, one noticeable feature of the quarterly employment data is the extent to which it fluctuates from quarter to quarter in certain industries, making any initial interpretations difficult. In summary, the descriptive employment data does not appear to offer any convincing evidence of a large employment response to the law in 2019.

It is clearly necessary at this point to take a more rigorous approach to understanding the effects of the NMW using the cross-sectional data. In order to provide some descriptive insight into our econometric strategy described above, we plot employment trends based on our constructed wage gap variable in Figure 4, below. Recall that a larger wage gap represents areas where the average district council wages are further away from the NMW prior to its introduction. Our interest here is to see whether there is a relationship between areas with larger wage gaps and changes in employment after the NMW is introduced. Before examining the trends, what is immediately clear is that areas with a larger wage gap have lower aggregate employment levels. Put differently, in district councils where wages are lower in the pre-law period, employment levels are also lower. Turning then to the employment trends, while there is clearly some variation in employment at the different wage gap levels over time, this does not appear to be systematically related to the district level wage gap. Indeed it does not seem to be the case that areas with larger wage gaps experienced significantly different employment shifts in 2019, relative to areas where the wage gap was smaller.

Figure 4. Employment and Wage Gap, by Wage Gap Level: 2018Q1-2019Q4



Source: StatsSA (QLFS, 2018-2019), own calculations.

Together, the descriptive evidence presented above indicates that perhaps the impact of the NMW was more muted than one might have expected when compared to previous sectoral responses. There is little to suggest that wages have changed significantly in the post-law period, although there does appear to be some marginal movement, and our analysis of employment trends is not able to produce any confident conclusions. In order to assess the impact of the NMW more directly, we run a set of regressions on employment, wages and hours of work, as described in equation (1). The results of these regressions are presented in Table 6, below.

We look firstly at the results of the employment regression, where the sample includes both employed and unemployed individuals, and the dependent variable estimates the probability of employment. The wage gap coefficient shows that across the full period employment probabilities are lower in areas where the wage gap is higher. This accords with the descriptive output presented above in Figure 4. The coefficient on the 'Post' variable is statistically significant, negative and small. This suggests that there was a marginal decrease in overall employment in 2019, relative to 2018, for those in the sample. Again this was observable in the descriptive output discussed above. The main coefficient of interest, however, is the interaction term 'Wage Gap*Post'. This is the differential employment effect in the post-law period based on the level of the wage gap in each district. The coefficient is small and not statistically significant, which shows that there are no systematic differences in employment for areas with higher wage gaps in the post-law period, relative to areas where the wage gap is lower.

Crucial to understanding the effects of the NMW, the regression results on hourly wages also do not suggest any significant impact of the law in this specification. The wage gap coefficient shows that wages are significantly lower in areas with a higher wage gap, which is axiomatic and attributable to the construction of the wage gap variable. But the time dummy (post) suggests no statistically significant change in average wages for the workers in our sample over the period. This is very important as it means that for the sub-sample of low-wage workers included here, average real hourly wages in 2019 are not measurably higher than they were in 2018, when controlling for various demographic and labour market variables. Put another way, on aggregate it appears that employers of low-wage workers have not increased the wages of their employees in the post-law period. Crucially, the difference-in-differences estimator is also statistically insignificant, meaning that wages for those in areas with a larger wage gap have not changed by more than wages in areas with smaller wage gaps, in the post-law period.

Finally, the regression output for hours of work does not pick up any significant impact of the NMW at the intensive margin. On average those in areas with a larger wage gap work slightly longer hours. Weekly hours of work do not, however, appear to change in the post-law period for those in our sample. And the interaction term, designed to pick up the marginal effect of the law, is not statistically significant.

Table 6. Cross-Sectional Data, Regression Results

| | Employment Probability | Log of Hourly Wages | Hours of Work |
|---------------------------------------------------------------------------------------|------------------------|-----------------------|---------------------|
| Wage Gap | -0.198*** (0.0662) | -0.362*** (0.0470) | 0.429 (0.711) |
| Post | -0.0427*** (0.0126) | 0.00367 (0.00848) | -0.161 (0.114) |
| Wage Gap*Post | -0.0291 (0.0466) | 0.00125 (0.0312) | 0.113 (0.548) |
| Controls | Y | Y | Y |
| Constant | -0.517*** (0.110) | 2.032*** (0.0761) | 45.72*** (1.186) |
| Observations | 124,445 | 71,563 | 71,563 |
| R-squared | | 0.267 | 0.150 |
| <i>Robust standard errors in parenthesis, *** p<0.01, ** p<0.05, * p<0.1</i> | | | |

Source: StatsSA (QLFS, 2018-2019), own calculations.

Notes: All specifications include demographic and labour market controls. The full set of results is in the Appendix.

To conclude this section of the analysis based on cross-sectional data, and using the wage gap approach of Dinkelman and Ranchhod (2013), we do not observe any significant impact of the NMW. Put differently, post-NMW outcomes for individuals in areas with lower pre-law wages are not significantly different relative to areas with higher pre-law wages. In particular, we do not observe any clear wage impact, which is not an anticipated finding and differs from the wage effects found in previous work analyzing the impacts of the introduction of sectoral minimum wages in the past (Dinkelman & Ranchhod, 2013; Bhorat et al., 2014). This lack of an average positive impact on wages helps then to explain the lack of impact on employment. How should this rather surprising result be interpreted? We address this in more detail at the end of the section, but with respect to our analytical technique, the lack of impact in the results does appear to be generally in line with the descriptive data, which suggests a muted response in wages after the NMW was introduced – certainly the trends in Figure 2 would support this. However, using cross-sectional data to measure a nationally applicable wage law, requires us to rely on a particular econometric strategy linked to geographic variation, which in this case may have limitations. As such, the more precise approach offered by using panel data may be preferable.

4.2. Panel Data

Using panel data allows us to try and identify the effect of the NMW in a more straightforward manner, by tracking covered and uncovered workers over time, and comparing their outcomes. Below, we present the descriptive and econometric results of our analysis using the QLFS panel described above. Table 7 begins by providing an overview of the panel sample for the 2018Q2-2019Q3 period, showing both the treatment and control group samples in each wave, and a set of basic demographic characteristics. To reiterate, the treatment group consists of workers who earn less than the NMW and the comparison group consists of workers who earn more than 10 percent above the NMW, but not more than 50 percent above the NMW.⁹ Given that our focus is on the impact of the law introduced between waves 4 and 5 we construct the panel such that all individuals in the sample are employed in 2018Q4 and must be present in 2019Q1 – the first post-law wave. In total then, there are six waves for which we can observe the same person in both the pre- and post-law period. As such, the number of observations in the panel sample is largest in 2018Q4 and 2019Q1. We also have a larger sample of individuals in the treatment group relative to the control group due to the wage cutoffs that define each group.

One drawback of using the QLFS panel is that the sample size is considerably smaller than when using cross-sectional data. This is dealt with to some extent by grouping the waves into a ‘pre’ and a ‘post’ period in our econometric specification. However, as the table shows, our sample of individuals in each wave is relatively small, especially considering the demographic and labour market variables we control for in our regression approach. Importantly, across a range of demographic characteristics (age, gender, education and population group) the individuals in our treatment and control group are very similar. Across all four of these categories the composition of the treatment and comparison groups are comparable, and this composition remains relatively stable even when the sample sizes diminish. Individuals in the panel are on average around 38 years old, have just over 11 years of education, and are mostly black South Africans. Women make up a slightly larger component of the treatment group compared to the comparison group, but the difference does not exceed seven percent in any given wave.

By construction the treatment and control group have very different earnings profiles. Average hourly wages are about R20 lower for those in the treatment group. Notably, across the period we observe that real hourly wages for both groups appear to be marginally higher in the post-NMW period compared to the pre-NMW period, but there is no sharp wage increase for covered workers following the introduction of the NMW in 2019Q1. This is in line with the broad cross-sectional trends observed above.

⁹ We tested varying this 50% figure to adjust the comparison group sample and found that it had no significant impact on the results.

Table 7. Panel Sample Overview, Treatment and Control Group: 2018Q2-2019Q3

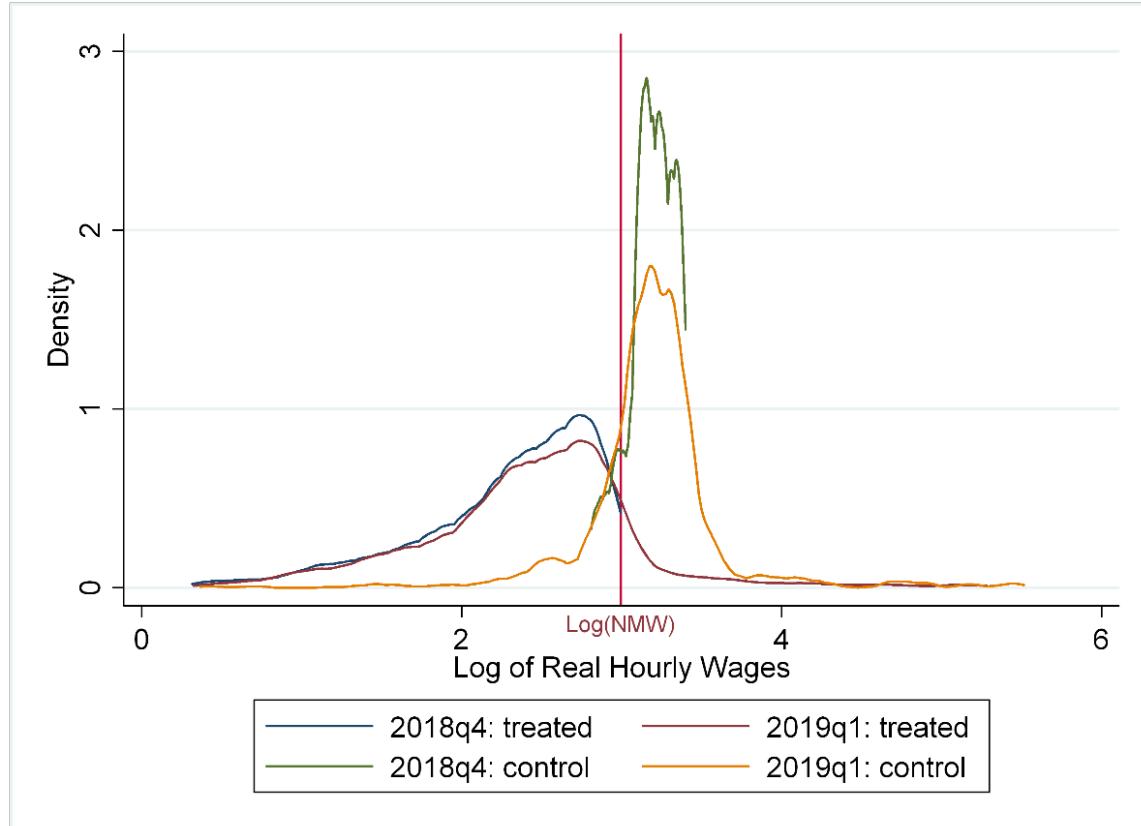
| | Pre-NMW | | | Post-NMW | | |
|-------------------------|---------|-----------|-----------|-----------|-----------|---------|
| | 2018Q2 | 2018Q3 | 2018Q4 | 2019Q1 | 2019Q2 | 2019Q3 |
| Sample: T Unweighted | 882 | 2020 | 3863 | 3074 | 1723 | 701 |
| Sample: C Unweighted | 335 | 694 | 940 | 1198 | 690 | 334 |
| Sample: T | 754,870 | 1,733,140 | 3,403,692 | 2,725,495 | 1,541,710 | 631,136 |
| Sample: C | 292,999 | 598,139 | 838,405 | 1,068,818 | 621,821 | 293,911 |
| Wages: T | 10.84 | 10.93 | 11.22 | 11.04 | 11.27 | 11.50 |
| Wages: C | 35.10 | 32.80 | 34.50 | 32.98 | 35.70 | 41.07 |
| Age: T | 38.9 | 38.1 | 37.9 | 38.2 | 38.7 | 39.7 |
| Age: C | 38.7 | 38.6 | 38.8 | 38.7 | 39.0 | 39.8 |
| Education: T | 11.2 | 11.3 | 11.3 | 11.3 | 11.3 | 11.2 |
| Education: C | 11.3 | 11.5 | 11.8 | 12.1 | 12.5 | 12.8 |
| Female: T | 50.2% | 50.4% | 48.7% | 49.7% | 50.1% | 51.4% |
| Female: C | 44.4% | 43.5% | 42.5% | 43.9% | 43.8% | 46.2% |
| Black: T | 89.1% | 86.2% | 86.6% | 86.2% | 85.7% | 84.8% |
| Black: C | 79.2% | 83.5% | 82.8% | 83.0% | 85.7% | 84.4% |

Source: StatsSA (QLFS, 2018-2019), own calculations.

In Figure 5 we plot the wage distribution for the treatment and comparison groups in the wave directly before and directly after the NMW was introduced. In 2018Q4, the wages of individuals in both groups are restricted by the wage cutoff levels which define them: For the treatment group wages have an upper bound set at the NMW, while for the comparison group wages are bound at between 10 percent above the NMW and 50 percent above the NMW.¹⁰ The figure shows that having been strictly defined in 2018Q4, individuals' wages in the next quarter disperse, as individuals in each group experience changes in their real hourly wages. For those in the treatment group we do see a slight rightward shift, noticeable among those who were previously earning within one log point of the NMW. For individuals in the comparison group it appears that wages spread out in both directions across the distribution, with some people earning more and others earning less in 2019Q1. Descriptively then, this is suggestive of differential wage effects for those earning sub-minimum wages in the pre-law period, relative to those earning above the NMW, but requires a more robust comparison to be sure.

¹⁰ These cutoffs are defined separately for farmworkers and domestic workers who are subject to a lower NMW. As such there are some observations in the comparison group that fall below the R20/hr NMW in 2018Q4.

Figure 5. Wage Density Distribution, Treatment and Control Group: 2018Q4-2019Q1



Source: StatsSA (QLFS, 2018-2019), own calculations.

Notes: Kolmogorov-Smirnov tests for equality of distributions suggest that the distributions in each wave are statistically different with significance at the 1% level. Wages of the treatment and comparison group samples are different, and are truncated in 2018Q4, by design.

It is not instructive to examine employment levels descriptively in the panel for obvious reasons, and thus in order to measure the effects of the NMW more directly we run a fixed effects regression as outlined in equation (3). The results of our preferred specification for employment, wages and weekly hours of work are presented in Table 8 below. As noted above, all individuals in the sample are employees present in 2018Q4, the wave directly before the NMW is introduced. As such the employment equation reports results on the probability of employment in the post-law period, where the variable of interest is simply the ‘treatment’ dummy which differentiates between covered and uncovered workers. For wages and hours of work, the standard difference-in-differences estimator is of primary interest. The ‘post’ variable combines the first three waves of in 2019 and as a result the estimates are an aggregate across these waves.¹¹

¹¹ For robustness we adjusted the pre/post period and tested three different wave cutoffs to account for possible early or lagged effects of the law. The results we present are our preferred specification.

Looking first at the results for wages, the treatment dummy shows that there are statistically significant differences between the wages of covered and uncovered workers, which follows directly from how the two groups are constructed. The time dummy, 'Post', reports the change in real wages in the post-law period, relative to the pre-law period, for the full sample of workers in the panel. The coefficient is not statistically significant and suggests, as in the case of the cross-sectional data, that there was not a general increase in real hourly wages for all workers in 2019. However, the interaction term, which reports whether the wages of those in the treatment group changed relative to those in the control group in the post-law period, is positive and statistically insignificant. This suggests that on average those in the treatment group experienced a wage increase of approximately 15.9 percent in the post-NMW period relative to those in the control group.

Table 8. Panel Data Regression Results

| VARIABLES | Log of Hourly Wages | Employment | Hours of Work |
|----------------|-----------------------|-----------------------|----------------------|
| Treatment | -0.856*** (0.0109) | -0.00463 (0.00567) | 2.509*** (0.414) |
| Post | -0.00467 (0.0150) | | 0.329 (0.229) |
| Treatment*Post | 0.159*** (0.0179) | | -0.923*** (0.271) |
| Controls | Y | Y | Y |
| Constant | 3.311*** (0.114) | 0.856*** (0.0346) | 42.50*** (2.479) |
| Observations | 11,384 | 12,284 | 11,659 |

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Source: StatsSA (QLFS, 2018-2019), own calculations.

Notes: All specifications include demographic, and labour market controls. The full regression output is in the Appendix.

For the employment equation, as noted above, there is no need to include time variation or an interaction term given the structure of equation (3). As such the only variation between the treatment and comparison group takes place in the post-law period and the 'treated' dummy picks this up. The result suggests that there was no statistically significant difference in employment outcomes between those in the treatment group and those in the control group, in the post-NMW period. Taking into account the wage results it thus appears that while the NMW did increase wages for covered workers, it did not negatively influence employment.

While employers do not appear to have made adjustments on the extensive margin, the results on hours of work show some statistically significant shifts at the intensive margin. Looking initially over the full period, the treatment dummy shows that covered employees work on average 2.5 hours more per week than uncovered employees, and this result is statistically significant. The 'Post' variable shows that for the full sample there was no measurable change in hours worked after the NMW was introduced. However, the difference-in-differences term shows that in the post-law period, weekly hours of work for those in the treatment group declined by 0.92 (slightly less than one hour per week) relative to those in the control group. This suggests that where wages have increased for workers subject to the NMW, we observe an average effect of marginally reduced hours of work for these employees, relative to those in our control group.

4.3. Explaining the Results: Initial Reflections

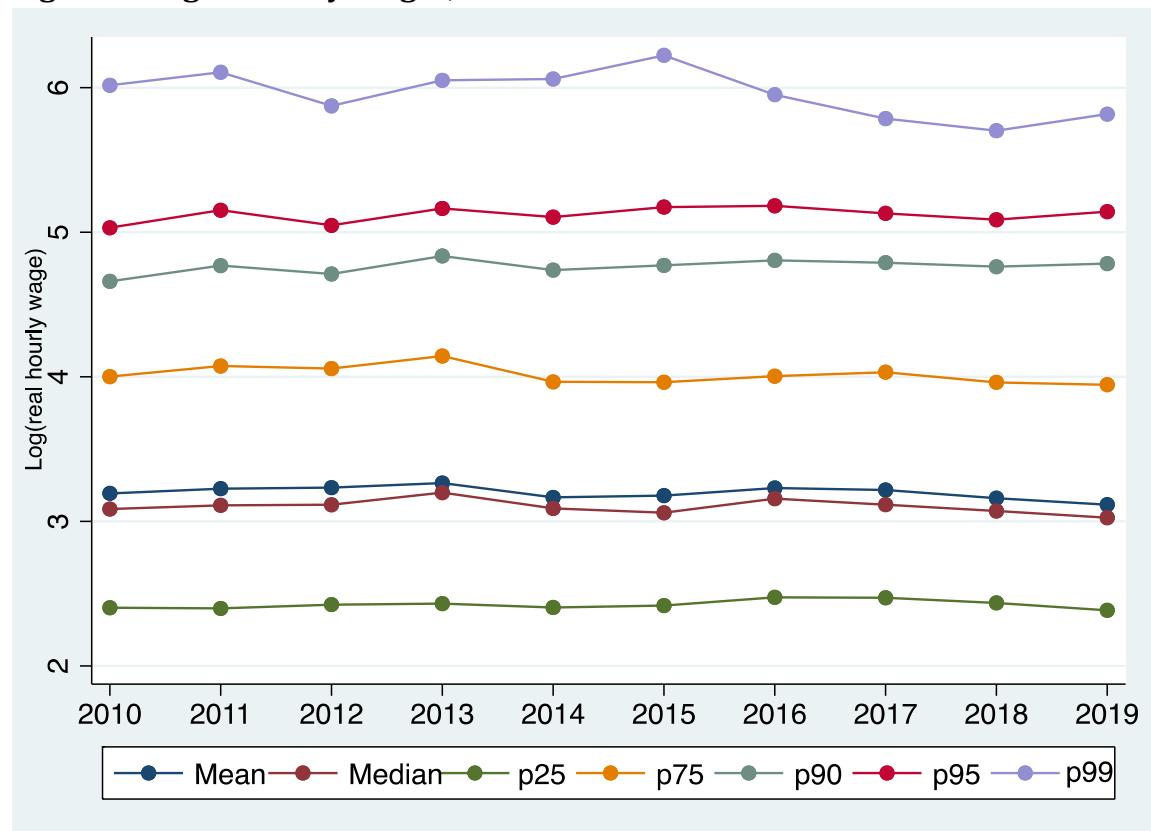
Perhaps the most surprising observation from the descriptive and econometric results above is the limited effect of the NMW on the wage distribution, given the level at which it is set and the number of workers it covers. One would expect a wage floor that legislates wage increases for approximately 50 percent of workers to have clearly visible labour market impacts. This expectation is also informed by observations from the introduction of sectoral minimum wages in the early 2000s, where the required wage increases were lower but the effects much more clearly apparent. Our results do suggest that the NMW did have some impact – the econometric analysis using the QLFS panel data finds a statistically significant increase in wages for covered workers. However, this is not picked up in our cross-sectional specification, and as shown in Figure 2, the overall wage effects appear to be muted. We find no employment effects in either of our analytical approaches, and in the panel specification we observe a marginal decrease in hours of work for individuals in our treatment group.

One reason for the limited response to the NMW may be that employers began adjusting to the impending NMW after it was initially announced in February 2017 – almost two years prior to its eventual implementation (The Presidency, 2017). Another reading is that perhaps the timeframe analysed here is too short to observe a significant NMW response and that the reaction to the law will be more gradual. A third interpretation of the results is that many employers simply did not adhere to the new legislation, for reasons that at this stage are not known. Clearly the government's enforcement architecture was unable to induce them to do so, but this may not be the only factor. The various explanations suggested here are certainly not mutually exclusive, but we reflect briefly on their respective merits below.

Given that the level of the NMW was announced two years before it was officially introduced, it may indeed be the case that employers preempted its introduction, and as a result we do not observe any clear structural break between the official pre- and post-

law periods identified above. This more gradual, preemptive response is very difficult to identify in the data, as there is no single point at which we expect to observe the change, and no underlying theory about which employers might be more likely to make such early adjustments. However, we present two tentative pieces of evidence to suggest that for most employers reacting long before the law came into force is unlikely. Figure 6 plots real hourly wages at different points of the wage distribution over the 2010-2019 period, including at the mean and median. If there was a substantial early response to the NMW, in which employers increased wages prior to 2019, it is not evident here. Indeed, it appears that average real wages, and those at the 25th percentile, remained flat after 2016, and perhaps even declined slightly. This does not lend support to a theory of preemptive response.

Figure 6. Log of Hourly Wages, Selected Percentiles: 2010-2019



Source: StatsSA (QLFS/LMDSA, 2010-2019), own calculations.

Another observation that casts doubt on changes that anticipated the NMW law can be found by looking more closely at the outcomes for those workers who were already covered by a pre-existing minimum wage until the end of 2018. For example, domestic workers and farmworkers were covered by a national sectoral minimum wage in the lead up to the introduction of the NMW. As such it would seem highly unlikely for employers in these sectors to begin paying wages above the existing and required legal rate if they had not previously done so. The required minimum wage increase for agricultural employers to meet the new agricultural NMW in 2019 was 11 percent, while for employers of domestic workers it was up to 21 percent. In both of these

sectors, which employ over two million people, we would expect then to see a relatively obvious shift in the wage distributions of workers in 2019. However, when we examine these wage distributions, and re-run our regression specifications for these sectors alone, we find the same outcomes as those presented above.¹² Namely, we do observe some increase in wages, but this increase is much smaller than expected, and we find no significant effects on employment or hours of work.

Together this seems to suggest that on aggregate what we observe is actually a relatively muted response to the introduction of the NMW, rather than a preemptive adjustment, which makes the response seem muted. The reasons for this limited labour market response are unclear but certainly include a lack of enforcement and may also be linked to a lack of knowledge of the new law. If a lack of knowledge is indeed an issue then perhaps the short time period of the analysis presented here is an important limitation. Again, however, previous work on the impact of the SD minimum wages would suggest that a year is sufficient to observe significant labour market responses to a new minimum wage law, but perhaps there are differences in the way that information about the minimum wage was circulated in these cases. There are other developing country experiences showing that widespread national information campaigns to inform a population about minimum wage laws do have a significant effect on compliance (Gindling et al., 2015). So it may be that as knowledge of the NMW increases more employers will begin to adjust.

What is clear is that our results suggest relatively widespread non-compliance with the NMW, and we measure this as being at a comparable level to average non-compliance rates with SD minimum wages in the past (DPRU, 2016). Table 9, below, provides estimates of the levels of non-compliance with the NMW, across sectors. The 'headcount' measure reports the overall level of non-compliance, while the 'depth' measure reports, for those who earn sub-minimum wages, how far below the NMW they earn, on average. We also show the percentage change over the period for each measure. At the aggregate the data show that there was a very marginal reduction in headcount ratio, showing really no adoption of the NMW by employers on aggregate. And instead we see a rise in the aggregate depth of violation. One interpretation of this is that the channel through which the non-existent disemployment effects may be operating is via the majority of employers simply not complying with the new NMW law.

¹² The wage distributions for agricultural and domestic workers are presented in the Appendix.

Table 9. Measures of NMW Non-Compliance, by Sector: 2018-2019

| Sector | 2018Q4 | | 2019Q4 | | Headcount Change | Depth Change |
|--------------------|-----------|-------|-----------|-------|------------------|--------------|
| | Headcount | Depth | Headcount | Depth | | |
| | % | % | % | % | % | % |
| Agriculture | 65,0 | 13,5 | 59,2 | 12,8 | -8,9 | -5,2 |
| Mining | 30,8 | 7,7 | 24,7 | 12,5 | -19,8 | 62,3 |
| Manufacturing | 45,5 | 10,7 | 44,4 | 17,4 | -2,4 | 62,6 |
| Utilities | 23,7 | 6,0 | 27,9 | 12,5 | 17,7 | 108,3 |
| Construction | 53,2 | 11,3 | 49,2 | 18,8 | -7,5 | 66,4 |
| Wholesale & Retail | 50,9 | 11,1 | 51,0 | 20,3 | 0,2 | 82,9 |
| Transport | 48,4 | 13,7 | 49,1 | 24,4 | 1,4 | 78,1 |
| Financial Services | 45,0 | 9,2 | 45,4 | 16,1 | 0,9 | 75,0 |
| CSP | 40,5 | 10,7 | 45,3 | 21,2 | 11,9 | 98,1 |
| Private Households | 44,7 | 11,1 | 43,7 | 9,9 | -2,2 | -10,8 |
| Total | 45,1 | 10,5 | 43,5 | 16,6 | -0,9 | 61,8 |

Source: StatsSA (QLFS, 2018-2019), own calculations.

The number of people earning below the NMW has decreased slightly between 2018Q4 and 2019Q4 – on average it has gone from 45.1 to 43.5 percent. Still, the data suggests that at the end of 2019, almost a year after the law had been introduced, over 40 percent of employees in South Africa earned less than the NMW. Moreover, of those earning sub-minimum wage, the gap between their wages and the minimum wage increased – the only exceptions were in agriculture and domestic work.

5. Conclusion

This report uses labour force survey data to examine and measure the quantitative effects of the NMW in South Africa, which was introduced on January the 1st 2019. The NMW required a substantial wage increase for a large group of workers – we estimate that almost half of all employees (46%), or 5.2 million workers, earned hourly wages below the NMW in the period prior to its introduction. This relatively high level of the NMW, resulting in widespread coverage, pointed toward a policy intervention that was likely to have substantial labour market impacts. What the data from our analysis suggests, however, is that in fact the effects of the law, at least in the short term, have been much more moderate than expected. For the majority of workers, hourly wages do not appear to have increased substantially. Consequently, at the end of 2019, levels of non-compliance with the NMW are relatively high, although not significantly different from aggregate non-compliance with the SD minimum wages in the past. Specifically, at the national level, 43.5 percent of workers report earning wages below the NMW at the end of 2019.

We present both descriptive and econometric data to examine the impact of the NMW, where two different empirical strategies are used. The first relies on the standard QLFS cross-sectional data, while the second makes use of the smaller longitudinal component of the survey. In both cases, our approach builds on pre-existing methodologies that have been used to examine minimum wage impacts at the sectoral level. Taken together our key findings from these combined approaches are as follows:

Firstly, our descriptive analysis suggested relatively benign labour market responses to the NMW in the year after it was introduced, and this was largely supported by the econometric results. Certainly, none of the descriptive wage trends are in line with prior expectations, given the level at which the minimum wage was set, and the sectoral wage responses observed in the past. Using the cross-sectional QLFS data, we find no clear change observed in either wages or employment. Arguably, the muted disemployment effects could be a function of non-compliance with the NMW law. To summarise then, the results from our work using the cross-sectional data show no statistically significant impact of the NMW at all.

Secondly, in our panel specification, which has a much smaller sample size but allows us to follow the same individuals for several waves, we do find an increase in wages for covered workers. On average, covered workers' wages increased by 15.9 percent more than workers higher up the wage distribution. This wage effect is coupled with a small reduction in weekly working hours for covered workers – an intensive margin adjustment. These effects do appear to be driven by the introduction of the NMW. Notably, we find no evidence of an associated decrease in employment.

The timeframe of this analysis remains relatively short, and the results should therefore be interpreted with some caution. The fact that we do not observe stronger wage effects in general, and thus find no employment effects and only a small decrease in hours of work in our panel specification, is certainly influenced by widespread non-response by employers to the NMW. Certainly then what these results do suggest, is that in addition to a longer timeframe, we need to develop a better empirical understanding of minimum wage violation, as this emerges as a key transmission mechanism that is critical to a more comprehensive understanding the impact of the NMW in South Africa.

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7. Appendix

Table 10. Cross-Sectional Data, Probit Regression Output

| VARIABLES | Employment | Wages | Hours of Work |
|----------------------|------------------------|--------------------------|-----------------------|
| Wage Gap | -0.198*** (0.0662) | -0.362*** (0.0470) | 0.429 (0.711) |
| Post | -0.0427*** (0.0126) | 0.00367 (0.00848) | -0.161 (0.114) |
| Wage Gap*Post | -0.0291 (0.0466) | 0.00125 (0.0312) | 0.113 (0.548) |
| DEMOGRAPHICS | | | |
| Age | 0.0304*** (0.00438) | 0.0214*** (0.00323) | 0.0946** (0.0465) |
| Female | -0.152*** (0.0153) | -0.191*** (0.0110) | -2.569*** (0.157) |
| Coloured | 0.112** (0.0448) | 0.0843*** (0.0272) | -1.606*** (0.474) |
| Indian | 0.461*** (0.0368) | 0.279*** (0.0347) | -0.882*** (0.246) |
| White | 0.564*** (0.0412) | 0.485*** (0.0249) | -1.769*** (0.199) |
| Years of Education | 0.0324*** (0.00134) | 0.0538*** (0.00138) | 0.0420*** (0.0138) |
| Verbal Contract | | -0.209*** (0.0153) | 2.706*** (0.302) |
| Firm Size | | 0.0608*** (0.00453) | -0.205*** (0.0704) |
| Hours of Work | | -0.0168*** (0.000498) | |
| INDUSTRY | | | |
| Mining | 0.246*** (0.0943) | 0.661*** (0.0586) | 0.388 (0.904) |
| Manufacturing | 0.0583 (0.0755) | 0.273*** (0.0302) | -1.133* (0.653) |
| Utilities | 0.149 (0.123) | 0.608*** (0.107) | -2.680*** (0.800) |
| Construction | -0.440*** (0.0760) | 0.289*** (0.0305) | -5.023*** (0.655) |
| Wholesale and Retail | -0.105 (0.0743) | 0.330*** (0.0274) | 1.614** (0.634) |
| Transport | 0.119 (0.0768) | 0.395*** (0.0306) | 5.009*** (0.751) |
| Financial Services | 0.0550 (0.0735) | 0.350*** (0.0276) | 1.746*** (0.655) |

| | | | |
|-----------------------------------------|----------------------|----------------------|----------------------|
| Community, Social and Personal Services | 0.242*** (0.0749) | 0.270*** (0.0296) | -4.757*** (0.655) |
| Private Households | -0.0828 (0.0818) | 0.188*** (0.0300) | -11.59*** (0.704) |
| Constant | -0.517*** (0.110) | 2.032*** (0.0761) | 45.72*** (1.186) |
| Observations | 124,445 | 71,563 | 71,563 |
| R-squared | | 0.267 | 0.150 |

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: StatsSA (QLFS, 2018-2019), own calculations.

Table 11. Panel Data, Fixed Effects Regression Output

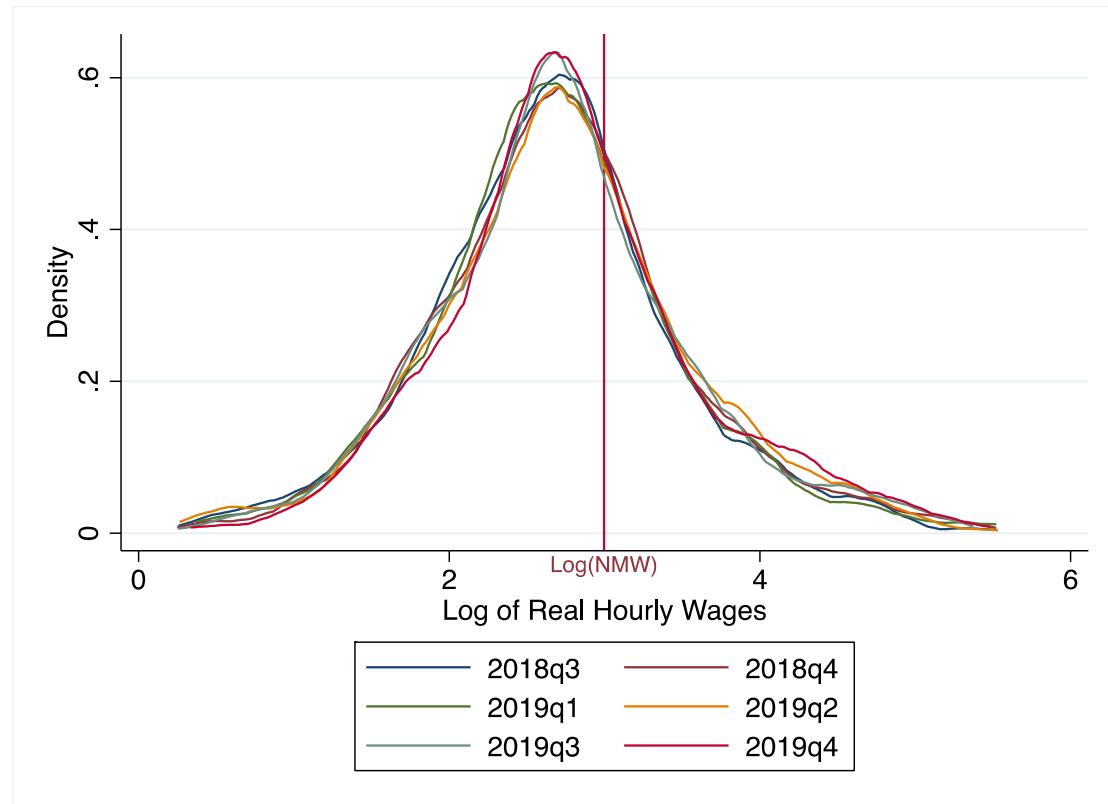
| VARIABLES | Employment | Log of Hourly Wage | Hours of Work |
|-----------------------------------------|---------------------------|---------------------------|-----------------------|
| Treatment | -0.00463 (0.00567) | -0.856*** (0.0109) | 2.509*** (0.414) |
| Post | | -0.00467 (0.0150) | 0.329 (0.229) |
| Treatment*Post | | 0.159*** (0.0179) | -0.923*** (0.271) |
| Age | 0.00109 (0.00153) | -0.00327 (0.00526) | 0.200* (0.115) |
| Female | -0.00521 (0.00558) | -0.0473*** (0.0170) | -3.039*** (0.358) |
| Coloured | -0.00434 (0.00885) | 0.127*** (0.0237) | -0.971** (0.473) |
| Indian | 0.0372*** (0.00837) | 0.0932 (0.0709) | 0.956 (1.078) |
| White | 0.0216*** (0.00588) | 0.100* (0.0549) | 1.136 (0.841) |
| Years of Education | 0.00174*** (0.000354) | 0.00968*** (0.00208) | 0.0934*** (0.0351) |
| Verbal Contract | -0.0305*** (0.00741) | -0.110*** (0.0200) | 2.920*** (0.489) |
| Firm Size | 0.00304 (0.00200) | 0.0160*** (0.00587) | -0.468*** (0.137) |
| Hours of Work | 0.000580*** (0.000198) | -0.00393*** (0.000630) | |
| Mining | 0.00486 (0.0154) | 0.0252 (0.0752) | 3.229*** (0.977) |
| Manufacturing | -0.00954 (0.0112) | -0.0397 (0.0316) | -0.296 (0.538) |
| Utilities | -0.0682 (0.0426) | -0.159 (0.143) | 0.194 (1.583) |
| Construction | -0.0466*** (0.0138) | 0.0315 (0.0327) | -5.620*** (0.709) |
| Wholesale and Retail | -0.00466 (0.0103) | 0.0277 (0.0271) | 3.081*** (0.564) |
| Transport | 0.00429 (0.0127) | -0.0195 (0.0435) | 7.148*** (1.071) |
| Financial Services | -0.00230 (0.0101) | 0.0581** (0.0293) | 4.650*** (0.638) |
| Community, Social and Personal Services | 0.00389 (0.00990) | -0.128*** (0.0290) | -6.304*** (0.649) |

| | | | |
|--------------------|----------|-----------|-----------|
| Private Households | 0.0282** | -0.127*** | -7.939*** |
| | (0.0127) | (0.0362) | (0.859) |
| Constant | 0.856*** | 3.311*** | 42.50*** |
| | (0.0346) | (0.114) | (2.479) |
| Observations | 12,284 | 11,384 | 11,659 |

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

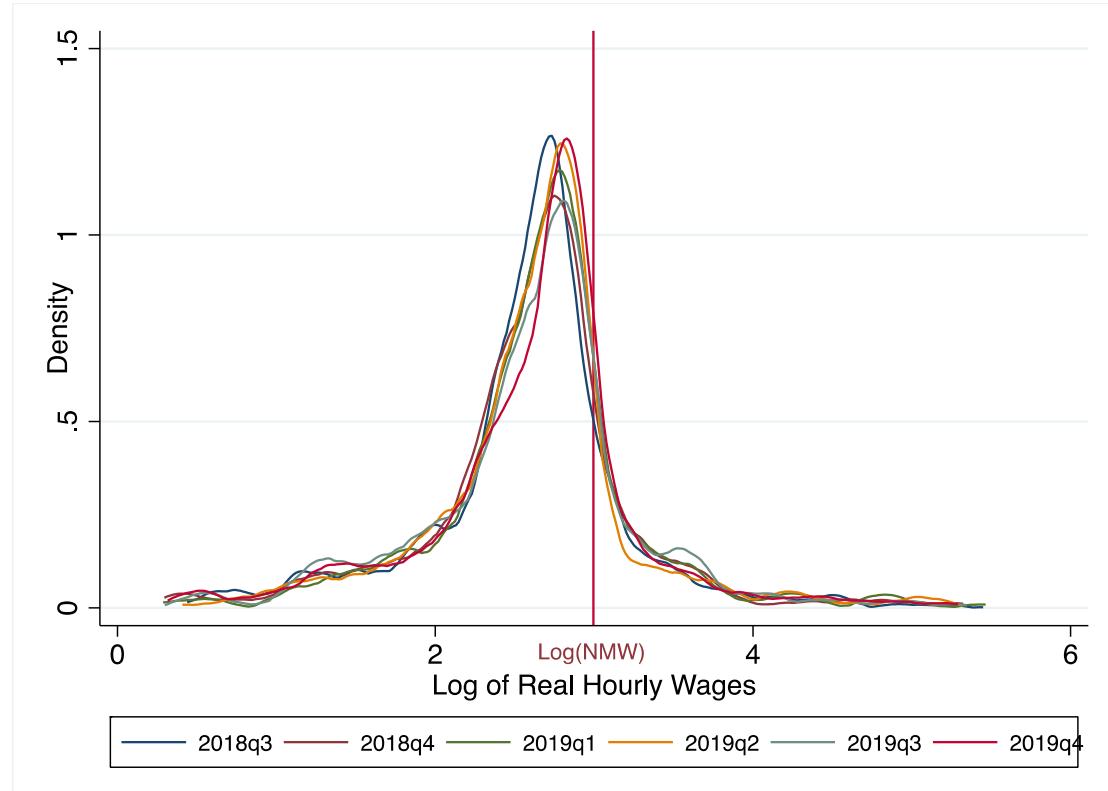
Source: StatsSA (QLFS, 2018-2019), own calculations.

Figure 7. Domestic Work, Hourly Wage Distribution: 2018Q3-2019Q4



Source: StatsSA (QLFS, 2018-2019), own calculations.

Figure 8. Agriculture, Real Hourly Wage Distribution: 2018Q3-2019Q4



Source: StatsSA (QLFS, 2018-2019), own calculations.