# Agricultural producer responses to minimum wage changes

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## ABSTRACT

The South African agricultural sector experienced a significant increase in minimum wages of about 52% in 2013. This study employs a difference-in-differences estimator to assess the channels through which farm owners internalised the additional costs associated with the increase in minimum wages. Our study is significant at two primary levels; Firstly, in addition to the employment channel, which South African minimum wage literature extensively focuses on due to difficulties in accessing micro firm-level data, this paper investigates the other firm-level margins used to internalise the additional costs associated with minimum wage increases. Secondly, we use administrative tax data to study the effects of minimum wage changes, which provides a large sample size and increased accuracy relative to survey data.Our results show that low-wage farms experienced a rise in average wages after the minimum wage increase and responded by significantly reducing their employment levels. Although we find no evidence of capital-labour substitution, we show that the increase in minimum wages did not affect the sales revenues, implying an increase in efficiency.

**Key words:** minimum wage, demand-side, Agriculture, labour cost, employment, revenue, efficiency

**JEL classification:** C21, C23, J23, J38

## 1. Introduction

The study of minimum wage adjustment channels has received much attention in the broad literature. We identify two main streams of minimum wage literature - the supply and demand-side streams. Supply-side studies employ household survey data to investigate the impact of minimum wage changes on wages and employment, at the individual level. A common finding presented by the supply-side studies is that the minimum wages increase workers' earnings at the bottom of the wage distribution. However, there is no consensus on the impact of minimum wage changes on employment. While many empirical studies show that minimum wages decrease employment (Brown et al., 1982; Paredes and Riveros, 1989; Chacra Orfali, 1990), some studies find that minimum wages have no significant impact,

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and others present positive effects on employment (Card and Krueger,1993, Martinez et al., 2001; Miranda, 2013).

Demand-side literature presents a broader picture of the effects of minimum wage increases on the economy. These studies use firm-level data, mostly producer surveys, to evaluate the impact of minimum wage changes on firm-level outcomes, including employment, wages, profits, sales revenue etc. So, unlike household survey data, firm-level data allow the researcher to study the minimum wage effects on employers, workers (and sometimes consumers). Demand-side studies are relatively scarce due to the difficulties in accessing firm-level data. Moreover, the available demand-side studies have mainly focused on developed economies and the few studies on emerging economies concentrate exclusively on the manufacturing sector.

The present study contributes to the scarce demand-side literature that focus on minimum wage adjustment channels in emerging economies. Our study is significant on two primary levels. Firstly, while South African minimum wage literature extensively focuses on the employment channel due to difficulties in accessing micro firm-level data, our study provides a broader picture of the effect of minimum wages on South Africa's economy by exploring other firm-level margins that shift in response to minimum wage changes. Secondly, we use administrative tax data to study minimum wage effects. While administrative tax data are challenging to access and require a lot of effort to clean to make them usable for research, they have many attributes that make them desirable compared to survey data. These attributes include increased accuracy, larger sample sizes, and sensitive information that respondents are less likely to provide in a survey. However, it is worth noting that despite the mentioned desirable attributes, the major disadvantage of using administrative tax data is that it excludes the informal sector, which consists primarily of micro and small-scale producers.

Using the fraction of affected workers as our treatment variable, we follow Harasztosi and Lindner (2019) to estimate a difference-in-differences model, investigating the demand-side effects of a 50% minimum wage increase in South Africa's farming sector in 2013. Our empirical results show evidence of an increase in average wages and significant employment reductions following the minimum wage increase. We find that despite significant employment cuts, revenue and operating profit of low-wage farms remained unaffected after the minimum wage increase, indicating an increase in labour productivity.

The structure of the paper is as follows. First, we present the background of the study in Section 2. Section 3 presents the theory and empirical evidence of the effect of minimum wage adjustment channels. In Section 4, we describe the identification strategy employed in this study. In Section 5, we

describe the data and present summary statistics. Our results and robustness checks are presented in Sections 6 and 7. And Section 8 concludes the paper.

## 2. Background

Before the introduction of a National Minimum Wage in 2019, minimum wages were sector-specific. Sectorial Determinations 8 and 13, regulated employment conditions and minimum wages in the agriculture sector. Agricultural minimum wages were introduced in 2003 and increased in line with inflation each year. As a result of farmworker strikes in the Western Cape province at the end of 2012, the agricultural sector experienced an increase in minimum wages from ZAR 70 to ZAR 105 per day, as of 1 March 2013[4]. This significant increase provided a good testing ground for the effects of minimum wages. In this study, we analyse the impact of the 2013 minimum wage hike on the evolution of multiple firm-level outcomes.

Supply-side studies have explored the employment effects of the 2013 minimum wage hike. They present evidence of disemployment effects (Bhorat *et al.,* 2014; Garbers *et al*., 2015; van der Zee, 2017; Piek & von Fintel, 2019, Piek *et al*., 2020). Due to the lack of firm-level data in South Africa, demand-side studies on minimum wage effects are scarce. To the best of our knowledge, only one study has explored the demand-side effects of the agricultural minimum wages in South Africa, presenting empirical evidence of a significant increase in labour costs and their spillover effects to firms exposed the 2013 minimum wage increase via supply chains (Tan, 2021).Our paper is therefore the first one to investigate the other adjustment channels that farmer used in response the minimum wage hike.

## 3. Theory and evidence on minimum wage adjustment channels

Labour market models present varying assumptions about the labour market and predictions of the effect of minimum wages on firms' decisions. The main models used to assess the impact of minimum wages include the neoclassical competitive, monopsony, institutional and search-theoretic models (Bhaskar and To, 1999; Herr et al., 2009; Schmitt, 2013; Gorry, 2013) . These models help us to understand that there are several margins which firms can shift when responding to a binding minimum wage. In addition to employment adjustments, firms can internalise the minimum wage costs by cutting non-labour expenses, improving overall efficiency, or passing a portion of the costs to consumers by

[4] It is worth noting that in the post-policy period, the farming sector's minimum wage increased by 1.5 percentage points above inflation each year.

increasing the prices of goods produced. Failure to employ any adjustment channels can decrease sales and profits due to increased costs induced by the minimum wage increase.

The neoclassical competitive model presents a frictionless labour market, and as such, wage floors result in the reduction of employment in the absence of other channels (Lester 1960, Hirsch et al. 2015, Wilson 2012, Kaufman 2010, Lee and Saez 2012, Schmitt 2013). However, employment adjustment is not limited to reducing employee head count. A firm can also react by cutting the number of working hours. The firms in the neoclassical model can also respond to wage floors by cutting non-wage benefits and reducing investment in the training of low-skilled workers. Where the minimum wage is binding, firms can also mitigate the minimum wage effect by reducing fringe benefits such as employer-provided health insurance (Clemens, Khan, and Meer; 2018). Furthermore, since firms operate at maximum efficiency, there is no room for efficiency improvements in the neoclassical model

Relaxing the *ceteris paribus* assumption and introducing non-fixed output prices allows one to investigate the price transmission channel in the competitive model. A price increase in response to a minimum wage increase depends on the elasticity of the goods produced (i.e. the ability to increase prices without losing customers). Unlike firms in tradeable sectors, firms in non-tradable sectors do not face internation competition and can therefore increase their prices in response to an increase in minimum wages..

Search and monopsony models account for market imperfections (Cahuc 2014, Flinn 2006; Rogerson et al. 2005; Ashenfelter et al., 2010). These models aim to address some key issues which the competitive model does not easily address. Here, wage floors can positively affect employment (Manning, 2003; Ashenfelter et al., 2010). Search models allow for the coexistence of unemployed individuals and unfilled job vacancies. Therefore, an increase in minimum wages can boost job search, leading to a rise in employment and improved efficiency. Similarly, in the monopsony models, individual firms face an upward-sloping labour supply curve, where employment is an increasing function of wages. So, in monopsony theories, minimum wage increases can lead to increased employment. In addition, if monopsonistic firms have a market power in the products market that allows them to pass some of the minimum wage costs to consumers, one may find increases in output prices.

Firms in the institutional model (Kaufman 2010, Hirsch et al. 2015, Lester 1960, Hall and Cooper 2012, Schmitt 2013, Wilson 2012), unlike the neoclassical model, have room to improve economic efficiency. This model predicts that a firm's immediate response to high minimum wage costs is to improve efficiency by adjusting the flexibility of work schedules, effort requirements, and investing in employee

training opportunities (Clemens, 2021). Firms here can also increase the prices of their products to complement the increase in economic efficiency.

The perfectly and imperfectly competitive labour market models do not account for some adjustment channels that are empirical realities – such as non-compliance. The models assume a binding minimum wage. However, firms may choose to not comply with minimum wage legislation when minimum wages are relatively higher than average wages or when firms fail to pass the increased cost to consumers (Goraus-Tanska and Lewandowski, 2019; Weil, 2005).

The employment adjustment channel of minimum wage adjustment is the most widely studied and contentious topic among empirical economists. While a recent study by Geide-Stevenson and Perez(2020) reports a decrease in the consensus among economists that minimum wages reduce youth and low-skill employment over time, there exists recent empirical evidence of the adverse effects of minimum wages on employment of low-skilled workers (Neumark & Washer, 2006; Neumark et al., 2014).

The evidence of price pass-through is presented by Wadsworth (2010) who observed a relatively faster and more significant increase in prices of goods produced in minimum wage intensive sectors. Harasztsosi and Lindner (2019) also investigated price effects of minimum wages and reported a substantial pass-through of around 75%. Furthermore, the pass-through was lower in tradeable than non-tradeable sectors, which suggests that the tradeables sector is more in line with the competitive model predictions. Several other studies support the positive effect of minimum wages on inflation (Card and Krueger, 1995; Macdonald and Aaronson,2000; Hirsch et al., 2015; Huang et al., 2014).

While older studies find that minimum wage increases do not significantly affect productivity (e.g., Acemoglu and Pischke 2003; Grossberg and Sicilian 1999; Neumark and Wascher 2001), more recent studies present positive minimum wage effects on training and productivity. For instance, Hirsch et al. (2015) find that minimum wages enhance productivity through the introduction of tighter working schedules and increased investment in employee training. Similarly, Riley and Bondebene (2015) report that the UK minimum wage increased labour productivity through an increase in the total factor productivity - a finding consistent with the institutional model of the labour market.

If firms fail to use any channel of adjustment in response to minimum wage increase, increased labour costs lead to reduced revenues and profits. However, empirical evidence on the effect of minimum wages on profits is scarce. Draca, Machin and van Reenen (2011) found that firms largely absorbed the newly introduced National minimum wage in the United Kingdom (UK) through reduced profits. The

profit effects on minimum wage legislation have implications for firm survival and exit. A negative impact of minimum wages on revenue and profit increases exit of low rated firms (Luca and Luca, 2019).

## 4. Empirical strategy

To estimate the impact of the minimum wage hike on farms, we compare the evolution of key variables between our treatment and control firms. We closely follow Harasztsosi and Lindner (2019) to estimate the difference-in-differences framework in the form:

$$\frac{y_{it}-y_{i2013}}{y_{i2013}} = \alpha_t + \beta_t FA + \gamma X_{it} + \varepsilon_{it} \qquad (1)$$

Where $y_{it}$ is the outcome variable of interest for firm $i$ at time $t$, $FA$ is the fraction of affected workers and is contant for each firm for the entire period. And, $X$ represents the firm-level controls (i.e. firm-size dummy variables , foreign ownership status, pre-policycapital-labour ratio) and $\varepsilon_{it}$ is the error term. We also control for three-digit industry classification. The dependent variable in Equation 1 is the percentage change in the outcome variable between 2013 (i.e. the last tax year before the minimum increase) and year $t$. The parameter $\beta$ measures the impact of the minimum wage hike on the dependent variable. In this setup, time effects and firm characteristics vary flexibly over time (Harasztsosi and Lindner, 2019).

## 5. Data and variables

We use South African anonymized tax data to study the firm-level effects of the minimum wage hike. This study uses the Corporate Income Tax (CIT) and payroll tax certificate (IRP5) datasets.

The fraction of affected workers, our treatment variable, comes from the IRP5 data containing rich income information on employment spells and annual employment incomes of individuals. We aggregate the IRP5 data to the firm level after calculating the number of workers in each farm (i.e., employment) and fraction of workers in 2012 earning below the 2013 minimum-wage. The IRP5 data contains unique firm identifiers which are used to merge the employment data into the CIT data.

Other outcome variables, are from the CIT data, which contains detailed balance sheet information on the farm. We use the two-digit SIC7 industry codes to limit our sample to the farming sector.[5] Not all farms in the CIT have corresponding IRP5 certificates. The CIT dataset contains about 30,553 farms, but

[5]The specific agricultural sub-sectors of interest include : (i) Growing of non-perennial crops, (ii) Growing of perennial crops, (iii) Plant propagation, (iv) Animal production, and (v) Mixed farming

we only matched 15,037 (i.e., approximately 49 % ) to the IRP5 data. Our final analysis sample restricts the analysis to CIT farms that have corresponding IRP5 certificates. As shown in Table 1, the matched sample consists of relatively larger farms, and as such, we weigh out results by farm size to account for the oversampling of larger farms.

**Table 1: Mean comparison between matched and unmatched samples**

| Tax year | Labour cost (ZAR) | | Capital Expenditure (ZAR) | | Sales Revenue (ZARZ0 | |
|---|---|---|---|---|---|---|
| | Matched | Unmatched | Matched | Unmatched | Matched | Unmatched |
| 2010/2011 | 3,833,521 | 1,859,318 | 11,396,921 | 7,638,598 | 40,090,864 | 10,092,924 |
| 2011/2012 | 4,172,529 | 1,807,241 | 14,041,518 | 7,972,111 | 43,295,332 | 10,518,447 |
| 2012/2013 | 4,077,651 | 2,454,689 | 15,389,129 | 10,590,323 | 42,449,404 | 14,309,355 |
| 2013/2014 | 4,936,624 | 2,497,485 | 18,700,073 | 10,723,606 | 51,079,534 | 16,974,225 |
| 2014/2015 | 5,689,800 | 2,429,357 | 22,056,752 | 11,287,229 | 57,516,251 | 17,171,298 |
| 2015/2016 | 6,282,174 | 3,786,944 | 25,890,801 | 12,779,931 | 66,298,197 | 27,159,031 |
| 2016/2017 | 6,973,257 | 2,775,420 | 29,383,460 | 12,627,818 | 72,352,202 | 20,442,980 |

Notes: Table 1 shows the means values in ZAR of the key CIT variables for matched and unmatched farms. We only use the matching farm in the final sample.

Source :Authors computations from own datasets (CIT) based on National Treasury and UNU-WIDER (2021)

**Table 2: Time series values of labour cost, employment, capital and revenue**

| Tax year | Labour cost (ZAR) | Farm Employment (ZAR) | Capital Expenditire (ZAR) | Sales Revenue (ZAR) |
|---|---|---|---|---|
| 2010/2011 | 1,003,962,564,608 | 210,841 | 2,981,089,247,232 | 10,507,942,625,280 |
| 2011/2012 | 1,093,059,870,720 | 243,54 | 3,674,502,332,416 | 11,340,643,041,280 |
| 2012/2013 | 1,185,175,175,168 | 241,826 | 4,466,417,860,608 | 12,357,276,270,592 |
| 2013/2014 | 1,252,043,915,264 | 239,65 | 4,737,278,148,608 | 12,947,473,563,648 |
| 2014/2015 | 1,312,030,982,144 | 258,086 | 5,079,629,824,000 | 13,254,987,350,016 |
| 2015/2016 | 1,296,707,223,552 | 253,486 | 5,328,326,885,376 | 13,666,644,656,128 |
| 2016/2017 | 1,262,382,219,264 | 265,705 | 5,314,899,869,696 | 13,093,870,501,888 |

Notes: Table 2 shows the time series values, from our final matched sample, of the critical variables across the tax years covered in the sample. The values are reported in the South African Rand (ZAR)

Source :Authors computations from own datasets (CIT and IRP5) based on National Treasury and UNU-WIDER (2021)

The fraction affected variable shows the proportion of minimum wage workers on a farm in the pre-policy period. We use the pre-policy (2011-2013) mean of the fraction of workers earning below the new minimum wage to compute the fraction of affected workers variable. In our model, this value is constant for each farm and ranges from 0 to 1, with the least affected farms at the bottom of the distribution and the most affected farms at the top. As shown in Table 3 and Figure 1, more than 15% of farms were paying all their workers above the new

minimum wage and were not affected by the minimum wage hike. On the other hand, around 5% of the farms were largely exposed, with all their workers earning below the minimum wage.

**Table 3: Percentiles of Fraction of affected workers**

| | 1% | 5% | 10% | 25% | 50% | 75% | 90% | 95% | 99% |
|---|---|---|---|---|---|---|---|---|---|
| Fraction affected | 0 | 0 | 0 | .27 | .65 | .83 | .94 | .99 | 1 |

Notes : Table 3 shows the distribution of our treatment variable, a fraction of affected workers.

Source :Authors computations from own datasets (IRP5) based on National Treasury and UNU-WIDER (2021)

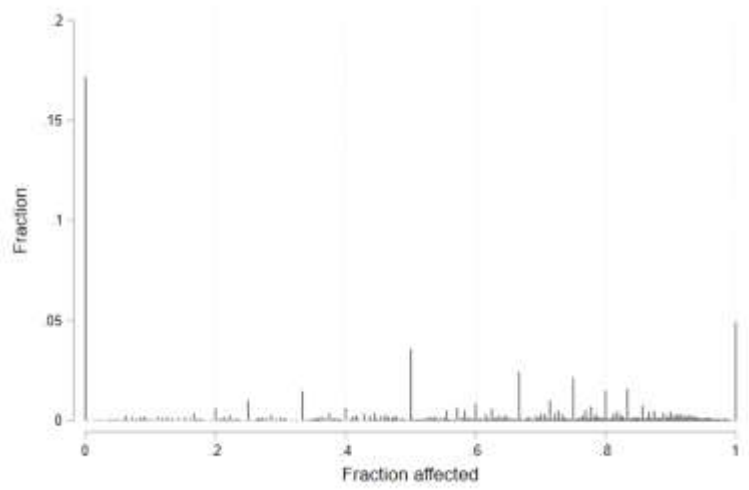



Figure 1 : Spike plot showing the distribution of the treatment variable (fraction of affected workers)

As illustrated in Figure 2, our analysis sample shows a positive but weak relationship between the fraction of affected and the number of workers employed on the farm. This relationship implies that big employers are not necessarily low-wage farms

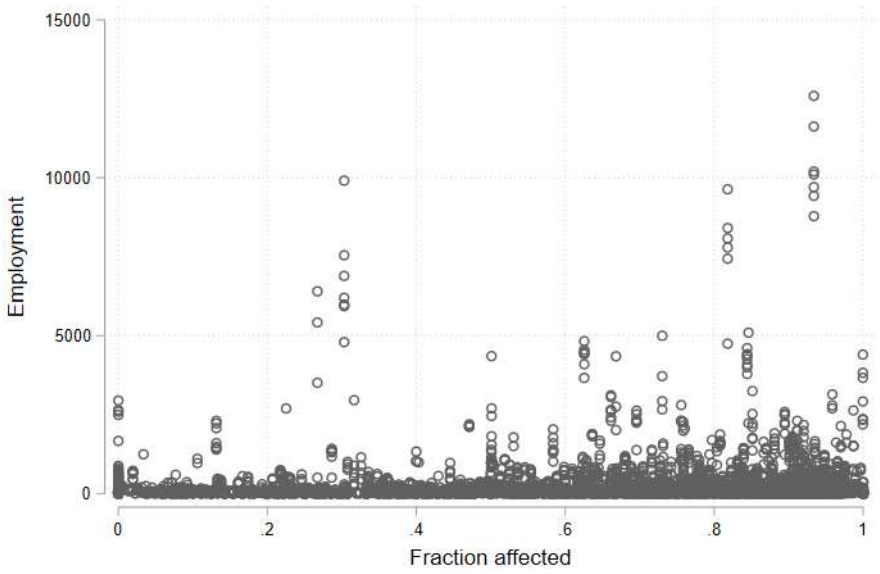
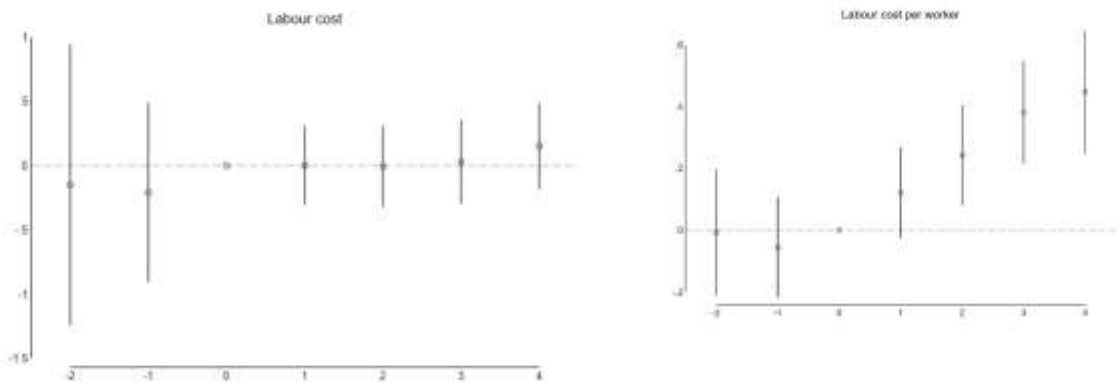



Figure 2 : Scatter plot showing the relationship between employment and fraction of affected worker
Source: Authors computations from own datasets (CIT and IRP5) based on National Treasury and UNU-WIDER (2021)

## 6. Results and Discussion

This section presents the regression results obtained from running Equation 1. The regression tables associated with the coefficient plots presented in this section are in Appendix A. Figure 3 shows the effect of the minimum wage legislation on the total labour cost and labour cost per employee of low-wage farms. While the results show no policy effect in the total labour cost outcome variable, we find that low-wage farms experienced a significant increase in the labour cost per employee. This is driven by a reduction in employment and is discussed below.

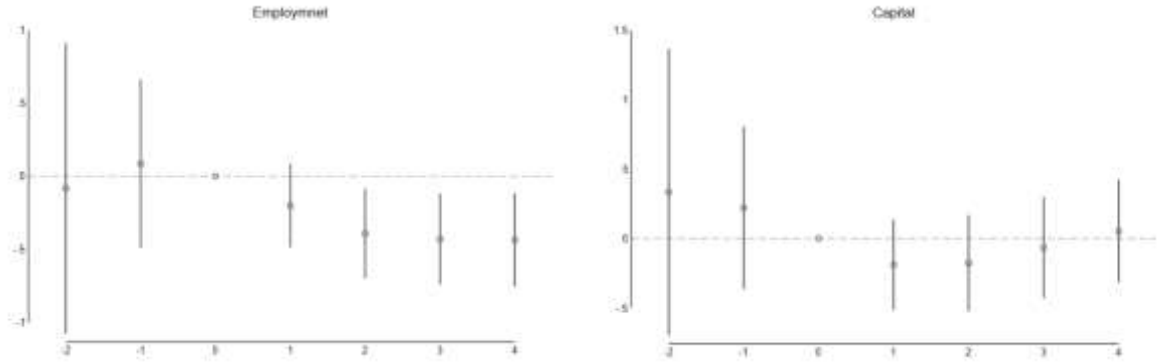
Figure 3: Effect of minimum wage hike on Labour cost per worker



Notes: Figure 3 shows the results of the evolution of total labour cost after the minimum wage increase. A firm's total labour cost consists of wage and non-wage components. The non-wage component may include group life insurance, Unemployment Insurance Fund (UIF) contribution, employee training expenditure etc.
Source: Authors computations from own datasets (CIT and IRP5) based on National Treasury and UNU-WIDER (2021).

The left-hand side panel in Figure 4 shows the employment effects. Affected farms reacted to the minimum wage increase by gradually reducing employment. Employment decreases become larger over time. The decrease in employment drives the observed increase in labour cost per worker. There is, therefore, no conclusive evidence in our results that the minimum-wage increase resulted in increased labour costs among affected farms. Our findings, however, imply that farms with a high proportion of minimum-wage workers reduced their employment in response to the minimum wage hikeThe right-hand panel in Figure 3 shows that farms did not increase capital in response to the minimum wage hike. We therefore rule out significant capital-labour substitution.

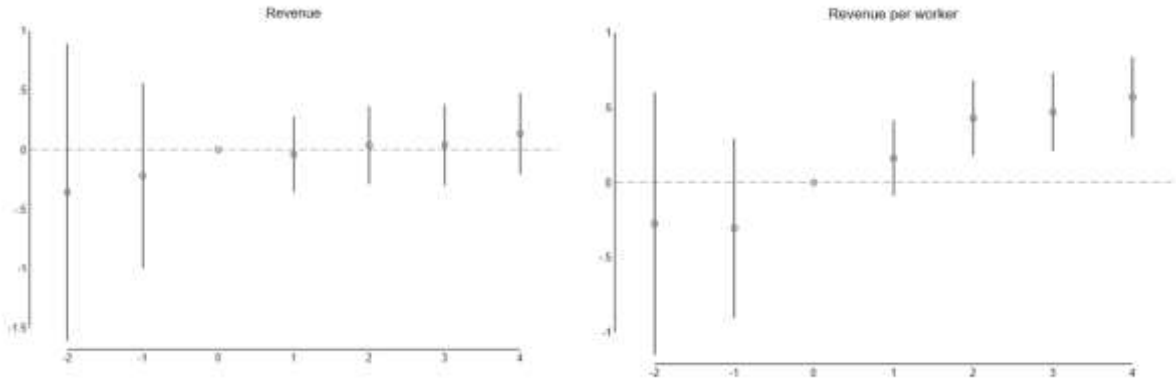
Figure 4: Effect of minimum wage hike on employment and capital




Notes: Figure 4 shows the evolution of employment and capital after the minimum wage hike. The results are weighted by farm size. See the regression table in Appendix A to compare the results from the weighted and unweighted models.
Source: Authors computations from own datasets based on National Treasury and UNU-WIDER (2021)

Given the results in Figure 4, one would expect low-wage farms to decrease production levels and consequently suffer revenue and profit decreases. However, contrary to our expectations, Figure 5 shows that the minimum-wage hike did not significantly impact the revenues. So, with fewer workers and no change in fixed capital expenditure, low-wage farms maintained their pre-policy levels of revenue. The increase in revenue per worker suggests increased labour productivity among the low-wage farms. The farm owners possibly achieved increased efficiency by laying off less productive workers and holding on to more productive ones.

Figure 5: Effect of minimum wage hike on revenue and revenue per worker




**Notes:** Figure 5 shows the evolution of sales revenue and revenue per-workers after the minimum wage hike. The results are weighted by farm size. See the regression table in Appendix A to compare the results from the weighted and unweighted models.

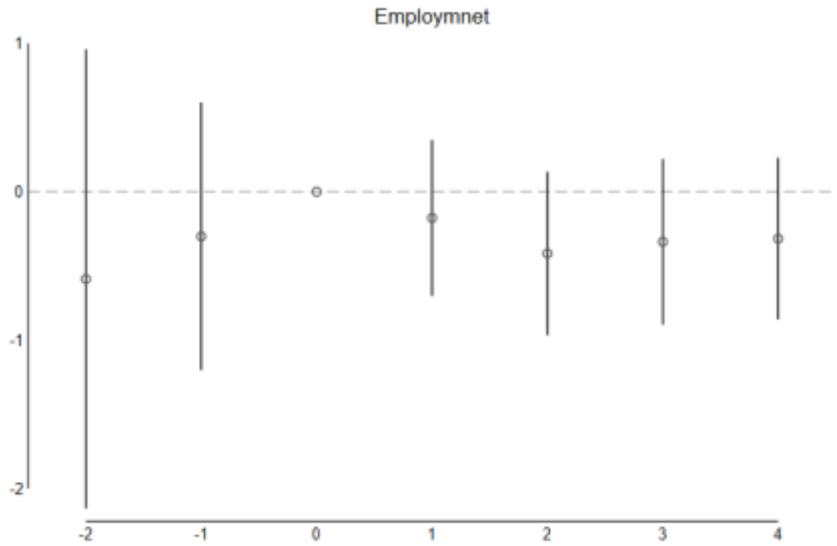
**Source:** Authors computations from own datasets based on National Treasury and UNU-WIDER (2021)

## 7. Robustness Analysis

Our results show significant employment cuts among low-wage farms following an extensive and persistent minimum wage increase. While the coefficient plot showing the employment outcome shows that the common trend assumption holds, the common practice is to conduct a placebo test to check the robustness of the results. Many studies check the robustness of their findings by conducting a horizontal placebo test where they introduce the treatment before the event date and check out for policy effects in their outcome variables. A policy effect in the outcome variable during a placebo test casts doubts on the validity of the results; it indicates that the results are driven by a variable other than the treatment variable.

Our sample only has two years in the pre-policy period; therefore, conducting a horizontal placebo test will be impossible. We, however, can conduct a vertical placebo test by running our model on a sample of high-wage farms (i.e., least affected farms). To create our placebo sample we restricted our sample to farms above the $75^{th}$ percentile of labour cost distributing in the pre-policy period. Our placebo sample has 1,884 farms, and there is still some variation in treatment variables (i.e., a fraction of affected workers).

Figure 6: Placebo test: Effect of minimum wage hike on high -wage farms




**Notes:** Figure 6 shows the evolution of employment for farms above the 75th percentile of the pre-policy labour cost distribution. Appendix B presents a regression table showing estimate results foe employment and other outcome variables.

**Source:** Authors computations from own datasets based on National Treasury and UNU-WIDER (2021)

Figure 6 shows the employment outcome results when we estimate our model on a sample of high-wage firms, and we do not observe a policy effect on employment (See appendix B for a regression table with the results obtained from the placebo sample). This outcome of our placebo test gives us confidence that the change in the minimum wage legislation drives our reported results.

## 8. Conclusion

Our study used unique administrative tax data to investigate the firm-level effects of a significant minimum wage increase on South Africa's farming sector. Our difference-in-differences results do not show evidence of increased total labour costs among affected farms. However, we observe a gradual increase in labour cost per employee, driven by an observed decrease in employment levels. This

outcome suggests that affected farmers responded to the minimum wage legislation by cutting employment to avoid incurring significant labour costs induced by the newly introduced minimum wage. We further show that affected farmers maintained their policy revenue levels with fewer workers and pre-policy levels of fixed capital expenditure. Given that farming is a "tradeable" sector, one would expect revenues to either decrease or remain unchanged post the minimum wage hike. However, given that the main adjustment channel was employment, our findings suggest that the minimum-wage legislation had an efficiency-enhancing effect on South Africa's farming sector, possibly attained by terminating jobs of unproductive workers and holding on to more productive workers to maintain pre-policy revenue levels.

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Appendix A : Regression Table

| | Labour cost | Labour cost | Employment | Employment | Capital | Capital | Revenue | Revenue | Profit | Profit |
|---|---|---|---|---|---|---|---|---|---|---|
| fa*2011 | 0.308 | -0.149 | 0.199 | -0.083 | 0.585 | 0.334 | 0.225 | -0.358 | -0.125 | -0.504 |
| | (0.353) | (0.558) | (0.382) | (0.507) | (0.473) | (0.527) | (0.393) | (0.638) | (0.414) | (0.621) |
| fa*2012 | 0.079 | -0.208 | 0.538*** | 0.085 | 0.475** | 0.220 | 0.201 | -0.220 | -0.012 | -0.314 |
| | (0.180) | (0.357) | (0.195) | (0.293) | (0.242) | (0.299) | (0.201) | (0.397) | (0.212) | (0.382) |
| fa*2013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| fa*2014 | 0.016 | 0.001 | -0.349*** | -0.202 | -0.122 | -0.190 | -0.006 | -0.040 | -0.046 | -0.038 |
| | (0.105) | (0.158) | (0.114) | (0.145) | (0.141) | (0.166) | (0.117) | (0.162) | (0.123) | (0.162) |
| fa*2015 | -0.002 | -0.006 | -0.544*** | -0.392** | -0.069 | -0.178 | 0.009 | 0.038 | -0.086 | -0.065 |
| | (0.106) | (0.162) | (0.115) | (0.157) | (0.142) | (0.177) | (0.118) | (0.167) | (0.124) | (0.167) |
| fa*2016 | -0.017 | 0.030 | -0.630*** | -0.430*** | 0.008 | -0.068 | 0.006 | 0.039 | -0.104 | -0.116 |
| | (0.109) | (0.167) | (0.118) | (0.159) | (0.146) | (0.186) | (0.121) | (0.174) | (0.128) | (0.176) |
| fa*2017 | 0.024 | 0.152 | -0.756*** | -0.436*** | 0.041 | 0.053 | 0.075 | 0.135 | -0.057 | -0.046 |
| | (0.112) | (0.172) | (0.121) | (0.163) | (0.150) | (0.188) | (0.125) | (0.174) | (0.131) | (0.173) |
| Weight | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 10513 | 10299 | 10513 | 10299 | 10513 | 10299 | 10513 | 10299 | 10509 | 10295 |
| R squared | 0.34 | 0.28 | 0.46 | 0.42 | 0.58 | 0.57 | 0.43 | 0.38 | 0.35 | 0.30 |

Appendix B : Placebo sample regression table

| | Labour cost | Employment | Capital | Revenue | Profit |
|---|---|---|---|---|---|
| fa*2011 | -0.601 | -0.588 | -0.311 | -0.288 | -0.418 |
| | (0.871) | (0.789) | (0.750) | (1.050) | (1.013) |
| fa*2012 | -0.284 | -0.300 | -0.377 | -0.351 | -0.364 |
| | (0.541) | (0.460) | (0.468) | (0.610) | (0.571) |
| fa*2013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| fa*2014 | 0.126 | -0.177 | -0.232 | 0.011 | 0.006 |
| | (0.279) | (0.268) | (0.290) | (0.304) | (0.295) |
| fa*2015 | 0.155 | -0.416 | -0.184 | 0.289 | 0.137 |
| | (0.282) | (0.281) | (0.303) | (0.311) | (0.300) |
| fa*2016 | 0.303 | -0.338 | -0.079 | 0.472 | 0.229 |
| | (0.289) | (0.285) | (0.316) | (0.319) | (0.304) |
| fa*2017 | 0.481 | -0.316 | 0.088 | 0.588* | 0.248 |
| | (0.296) | (0.278) | (0.308) | (0.312) | (0.304) |
| Observations | 3415 | 3415 | 3415 | 3415 | 3412 |
| R squared | 0.19 | 0.32 | 0.43 | 0.25 | 0.18 |

Source :Authors computations from own datasets (CIT and IRP5) based on National Treasury and UNU-WIDER (2021)