Extended Abstract
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Paper/Poster Title	Minimum wages and productivity shocks: Evidence from South Africa

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Abstract	***200 words max***
In developing countries, where wages can move seasonally following agricultural productivity, the imposition of a wage floor -- in the form of a minimum wage -- can affect how the labour market responds to productivity shocks. Using data from South Africa, we show that an agricultural minimum wage leads to higher average wages without any impact on employment. However, the seemingly positive results with respect to the overall mean hide important heterogeneity in the effects of agricultural productivity shocks: the imposition of the minimum wage leads to relatively large decreases in overall employment and income in the sector in the wake of negative shocks, when there is usually downward pressure on wages. This heterogeneity essentially increases the variance of employment across years, suggesting caution in interpreting mean effects of minimum wage increases.	

Keywords	minimum wage, agriculture, shocks, weather, South Africa
JEL Code	J13, J38, J43, O12, O13 see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	***100 – 250 words***

The economies of developing countries are particularly vulnerable to weather shocks, due to a large share of their labour forces working in agriculture and the important role that this sector production plays in the economic lives of the poor. With climate change increasing the frequency of these shocks, numerous studies have tried to measure their impacts on labour markets (Townsend, 1994; Jayachandran, 2006; Henderson et al., 2017; Jessoe et al., 2018). Separately, there has been much recent interest in the effects of minimum wage legislation in developing country labour markets (Neumark et al., 2006; Gindling and Terrell, 2007; Dinkelman and Ranchhod, 2012; Bhorat et al., 2014). It is not immediately clear that minimum wages will have similar effects in developing and developed countries, due to differences in labour markets, like the larger share of informal workers and lower government capacity in developing countries. In this paper, we bring together these two strains of literature by exploring the effects of a minimum wage law enacted in South Africa in 2003.

Agriculture has historically accounted for a substantial share of employment of low-skilled workers in South Africa. However, there has been a trend towards commercialisation and mechanisation, and in the three decades between 1980 and 2010, over one million agricultural jobs were shed (Liebenberg and Johann, 2013). Agricultural employment is also highly variable due to currency- and, in particular, weather fluctuations (BFAP, 2016). There is anecdotal and descriptive evidence of droughts causing massive destruction in the agricultural economy (Vogel and

Drummond, 1993; BFAP, 2016). With climate change becoming an increasingly worrying part of everyday life, weather shocks may play even larger role in the future.

In this paper, we revisit the introduction of the agriculture minimum wage law in South Africa, with a particular emphasis on how the law changes the ability of the labour market to adjust to short-term agricultural productivity shocks. We first reanalyse the main effects of the law, correcting the matching of minimum wage levels to district boundaries. Using large, nationally representative labour surveys from September 2001 to September 2007, our empirical strategy involves changes over time across district councils that are differentially affected by the new minimum wage law. Specifically, we create a variable that measures the difference between the new minimum wage law and prevailing agricultural wages in a given district council, similar to previous work on minimum wages (e.g. Lee (1999); Dinkelman and Ranchhod (2012); Bhorat et al. (2014)).

Methodology	***100 – 250 words***

In order to identify the effects of the minimum wage increase, we create a new variable that measures the difference between pre-law agricultural wages and the post-law official minimum wage. While there is a time component to the law, there is also substantial geographic diversity in the law's "bite"; areas with wages further below the new floor face larger effects from the wage change. This variable identifies the cross-sectional variation in the wage gap between district councils in the pre-law period. We then implement a differences-in-differences approach.

Results	***100 – 250 words***

Our main set of results explores how the agricultural minimum law affects the ability of the labour market to adjust following shocks. We show that average effects on wages and employment can hide important changes related to agricultural productivity levels, proxied by rainfall. Jayachandran (2006) shows how wage changes correlate with agricultural productivity shocks. However, following the implementation of a wage floor, it is less clear how negative shocks, in particular, may affect the labour market. By making the wage bill less affordable for employers and/or reducing the flexibility of employers to adjust wages to shocks (Franklin and Labonne, 2019), the minimum wage could increase the susceptibility of agricultural employment to negative shocks.

Following Jayachandran (2006), we define a productivity shock variable based on historical rainfall patterns. We then show that the effect of the minimum wage differs substantially (and significantly) depending on agricultural productivity levels. Specifically, during normal years, we see increases in agricultural hours and the agricultural wage for those who are employed in agricultural wage employment. However, we see a noticeable relative decrease in agricultural hours during bad years and a symmetric increase during good years. For women, we see the largest effects for those in agricultural wage employment; when we expand the sample to all sectors, effects attenuate substantially. For men, on the other hand, this increase in the variance carries

over to the entire population. When we impute income for those self-employed in agriculture, we find a consistent pattern among all adults: significant negative effects on total agricultural income for men but not women during bad years and increases for both during good years.

Discussion and Conclusion

100 – 250 words

We contribute to several strands of literature. First and foremost, we document effects of a sector-specific minimum wage in a developing country. Many economists have long assumed that minimum wages would lead to lower levels of employment, since at least Stigler (1946). However, in developing countries, where enforcement is often lax or selective (Badaoui and Walsh, 2022) and where labour markets can differ markedly from developed countries, the case is not as clear cut. While some previous research in developing country settings has found small or null effects of minimum wages (Badaoui and Walsh, 2022; Dinkelman and Ranchhod, 2012), other papers have found sizeable disemployment effects either on the labour force as a whole (Gindling and Terrell, 2007) or on specific subgroups of the population, like women(Feliciano, 1998; Arango-Arango, 2004).

We focus on an important aspect of minimum wage legislation in developing countries: how it can affect the seasonal and year-to-year cycles of labour markets in the agricultural sector. Much of the previous literature on minimum wages has focused only on mean wages or employment. For example, in one recent review of minimum wages in developing countries, there is not a single mention of how minimum wages may interact with weather shocks (Betcherman, 2015). While some consider minimum wages as an important welfare policy (Eyraud and Saget, 2008), we show that this type of policy can also lead to larger variations in employment. When employment is seasonal (Breza et al., 2021) and when households have limited liquidity, as is often the case in developing countries (Casaburi and Willis, 2018; Fink et al., 2020), households may not be able to fully cope with variability. We have ample evidence that seasonal hunger is a prevalent condition in developing countries with long-term impacts (e.g. (Christian and Dillon, 2018; Dostie et al., 2002)). Our results suggest caution in interpreting average effects of minimum wages in such conditions, as increased variability can lead to reduced welfare (Ravallion, 1988), especially for the poor, for whom unexpected shocks and variance are an important part of life (Merfeld and Morduch, 2022).