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The impact of labour policy on productivity and wages in South Africa: a review of the literature

Cecil Mlatsheni*

Abstract

This paper synthesises international and South African evidence on the effects of collective bargaining, employment protection legislation (EPL) and minimum wages on productivity, wages and employment, addressing gaps in South African empirical research. International findings indicate that centralised or uncoordinated collective bargaining can be associated with lower productivity and reduced investment per worker, while highly coordinated systems may enhance productivity and economic stability. Union density and bargaining structures significantly shape outcomes. In South Africa, evidence points to a union wage premium that is larger at lower pay levels, with mixed trends over time and limited wage compression. There is evidence that bargaining councils may negatively affect firm survival in some sectors. International evidence on EPL suggests heterogeneous effects on productivity and wages depending on firm size, technology, workforce skills and employment contracts; stricter EPL reduces job turnover and firm entry, with ambiguous productivity effects. Evidence on minimum wages shows consistent wage increases with modest employment effects internationally, though productivity impacts vary. In South Africa, minimum wages have raised wages in low-paid sectors, sometimes at the cost of employment, underscoring trade-offs in policy design and enforcement.

JEL classification

J23, J24, J31, J38, J51

Keywords

Labour policy, collective bargaining, minimum wages, productivity, employment protection legislation

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1. Introduction

The impact of labour market policy on labour productivity and total factor productivity is ambiguous. On the one hand, regulation increases the costs associated with adjusting labour, which can negatively affect productivity. On the other hand, regulation may boost worker motivation and commitment and, through coordinated wage bargaining, could spur labour-saving technological advancements, thereby raising productivity. The influence of wage-related labour policy on wages, however, is often more clear-cut. Policy designed to raise the wages of a certain group of workers will raise wages as long as there is compliance by employers. With respect to collective bargaining, the effect beyond the targeted worker groups depends on the degree of extension (i.e. how far the wage increase extends to workers who were not the intended beneficiaries).

The issues surrounding productivity and wages have been extensively debated in the economics literature, and a number of contributions to these debates are documented in this review. Of interest, for example, is whether bargaining should be multi-employer or single-employer, how union strength affects productivity and wages, how employment protection influences worker behaviour, the role of firm size in the outcomes of labour policy and whether more or less regulation is desirable.

Some studies favour deregulation and question the advantages of tenure and rigid regulations. They contend that in current globalised markets, wage rigidity and lack of employment adjustments in the face of economic shocks constrain productivity and employment growth. This view – expressed in reports by institutions such as the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD) and the World Bank – advocates for high labour market mobility rather than stable, tenured employment framed by rigid regulations such as employment protection laws.

In relation to South African labour policy, the limiting effects of strict regulation and legislation on economic performance have occasionally been discussed (Faulkner and Loewald 2008; Herrington, Kew and Kew 2010; Womack 2020). Studies on the effect of regulations and legislation on wages are far more common than studies of their effect on productivity in South Africa.

This paper investigates the impact of three labour regulations: collective bargaining, employment protection and minimum wages. International evidence points to these as key regulations that influence productivity and wages. The paper is structured as follows: section 2 discusses the literature on the effects of collective bargaining, first on productivity and then on wages, section 3 considers the effects of employment protection legislation on productivity and wages, section 4 reviews the effects of minimum wage legislation on productivity and wages, and section 5 concludes. This review of the literature is structured to serve as a reference for possible replication of the cited studies; to this end, details about data and methodologies are mentioned for a number of the studies (see Table 1 in the annexure).

2. Collective bargaining

The right to collective bargaining is enshrined in the Labour Relations Act 66 of 1995 (LRA). The LRA was introduced to establish fair and stable labour relations between employees and employers. It seeks to promote the rights of both employers and employees (i.e. the right to strike without fear of dismissal), facilitate collective bargaining and support a new dispute resolution system in the workplace. Collective bargaining encompasses determination of wages, terms and conditions of employment, and other matters of mutual interest to employers and employees.

Collective bargaining is a process in which workers' organisations or trade unions represent the interest of workers during negotiations between employees and their employers in the hope of winning collective agreements that favour employees who are members of the workers' organisations or trade unions. A third party, such as the government, may be involved in the negotiation process so that a form of cooperation or agreement can be reached. Collective bargaining falls under Section 27 of the LRA, which states that one or more trade union and one or more registered employers' organisation may form a bargaining council in a sector, industry, region or nationally. The main purpose of the bargaining council is to regulate wages and conditions of employment.

2.1 Impact of collective bargaining on productivity

Studies focusing on South Africa have not examined the impact of collective bargaining on productivity, but a few international studies have done so. For instance, Arnold and Barbosa (2015) conduct an empirical analysis of the link between labour policies and firm productivity in Portuguese manufacturing firms between 2006 and 2011. Productivity estimates for over 40 000 Portuguese manufacturing firms were obtained using firm-level information from a firm census. Total factor productivity was obtained as the residual from sector-specific estimations of a logarithmic Cobb-Douglas production function. They find that a negative relationship exists between collective wage bargaining and total factor productivity. Similar findings are reported in an OECD (2018) publication that uses a mix of country-, sector-, firm- and worker-level data and the Juhn-Murphy-Pierce decomposition technique. The study finds that centralisation of collective bargaining in Germany, France, Finland, Denmark and Austria is associated with lower productivity growth, both for total factor and labour productivity.

However, Braakmann and Brandl (2021) find the level of coordination rather than the degree of centralisation to be key. Their study examines the relationship between institutional structures of collective bargaining and the development of labour productivity across the 27 member states of the European Union (EU). The authors used the 2013 wave of the European Company Survey and linear probability modelling. The focal independent variables are the different systems of collective bargaining. The study finds that processes and structures of collective bargaining – specifically sectorally uncoordinated systems – appear to be detrimental to company performance, while the opposite is true of sectorally coordinated systems. The authors conclude that what matters most are the processes and institutional structures in which collective bargaining is embedded rather than whether bargaining is conducted collectively or individually.

Adopting a slightly different focus, Cardullo, Conti and Sulis (2015) study the effect of union bargaining power on the level of investment per worker in the manufacturing sector across 11 OECD countries during the period 1980–2000. They developed a search and matching model with heterogeneous sectors and ex-post collective wage bargaining and tested the predictions of the model using a difference-in-differences approach on manufacturing sector data. They find that collective agreements where

unions have higher power have a negative effect on the level of investment per worker, and this eventually directly reduces the average level of labour productivity.

In Norway, Svarstad and Kostøl (2022) use matched employer–employee panel data for the period 2002–2018 to examine the causal relationship between union density, collective agreements and total factor productivity in the private sector. They use a Cobb-Douglas production function and a generalised method of moments estimator. Their results reveal that if a firm is covered by a collective agreement, an increase in the union density is associated with a 0.8% increase in productivity; without a collective agreement, higher union density was estimated to reduce productivity. Garnero, Rycx and Terraz (2020) investigate the effect of firm-level collective agreements on wages and productivity in Belgium from 1999 to 2010. In their methodology, they directly estimate a production function and a wage cost equation at the firm level. They find that firm-level agreements benefit both employers and employees through higher productivity and wages without being very detrimental to firms' performance. In a study of Norway, Barth, Bryson and Dale-Olsen (2020) exploit changes in tax subsidies for union members to study the effect of firm-level union density on productivity and wages. The authors assume a Cobb-Douglas production function and find that, accounting for selection effects and the potential endogeneity of unionisation, increasing union density at the firm level leads to a substantial increase in both productivity and wages. The wage effect was larger in more productive firms, consistent with rent-sharing models.

The studies cited in this section point to a clear relationship between collective bargaining, union power and union density on productivity at the firm level. Whether the relationship is positive or negative depends on specific circumstances, such as level of coordination and union density. Centralisation of collective bargaining is associated with lower total factor productivity growth and lower labour productivity growth in certain countries, such as Austria, Denmark, Finland, France and Germany. Collective bargaining has a negative effect on total factor productivity in some instances, such as in Portugal. Furthermore, evidence from OECD countries is that collective bargaining results in less investment per worker by firms where unions have relatively more power. Evidence from EU countries is that sectorally uncoordinated systems lower productivity, whereas sectorally coordinated systems raise productivity.

The implication is that the processes and structures in which collective bargaining is embedded are more important than the nature of the collective bargaining. Union density also has a bearing on the outcomes of collective bargaining. In Norway, for example, union density increased total factor productivity under collective agreements and reduced productivity when not covered by collective agreements. These studies provide a useful guide for future research focused on South Africa, where there is a gap in the literature.

2.2 Impact of collective bargaining on wage level

Given the monopoly power of trade unions in South Africa, by exercising their constitutional right to collective bargaining and strike, they tend to improve the working conditions of their workers while raising wages through a wage premium above market clearing levels that results in elevated unemployment in the unionised sector and surplus labour in the non-union sector (Freeman and Medoff 1984). The literature cited below supports this view.

Numerous studies have documented the impact of labour unions on wage levels in South Africa. One of the earliest is Moll's (1993) analysis of the union wage premium for black (African, coloured and Asian) and white blue-collar workers using 1985 data. The paper finds that by 1985 black unions in South Africa had made wage gains similar to those of unions in more developed countries. For both black male and female blue-collar workers, the wage premium was found to be about 24%. Schultz and Mwabu (1998) use ordinary least squares (OLS) and quantile regressions to study the union wage premium among African male workers in 1993. They find an extraordinarily high wage premium of 145% for African male workers in the bottom decile (tenth percentile) of the wage distribution and a lower premium of 19% in the top decile (ninetieth percentile). They also find that returns to observed productive characteristics of workers, such as education and experience, were larger for non-union than union workers.

Using the October Household Survey of 1995, Butcher and Rouse (2001) study the union wage premiums for African and white workers in South Africa. Their results reveal an average union premium of 20% for African workers and 10% for white workers, in line with other countries. The paper dispelled the notion prevalent at the

time that a high union wage premium and the industrial council system were the primary causes of high unemployment in the South African labour market.

Bhorat, Goga and Van der Westhuizen (2012) conduct a similar study to Butcher and Rouse (2001). Using the 2005 Labour Force Survey data, the authors examine the effect of the bargaining council wage premiums for Africans in the formal private and public sectors of the South African economy. The paper reports that when correcting for the endogeneity of union status through a two-stage selection model and including firm size, type of employment and non-wage benefits, there is a much lower union wage premium for African workers in the formal sector than premiums reported in some earlier studies. Within the private and public bargaining council systems, non-union workers were estimated to earn wage premiums of 9% and 10% respectively. The authors also show that union workers covered by the public bargaining council systems earn a wage premium of about 22%. They find evidence of extension procedures in both private and public bargaining council systems but find that unions negotiated for additional gains for their members at the plant level. Furthermore, they find some evidence that unions negotiated for awards for their members in the private sector irrespective of bargaining council coverage.

Using the 1997 October Household Survey and a switching model similar to Moll (1993), Rospabé (2001) reports a wage premium of between 13% and 20% (depending on methodology) for African workers who were union members compared to those who were not. Further findings are that non-unionised African workers experienced higher earnings inequality (and discrimination) than unionised Africans. In a more textured analysis around statistical discrimination, Azam and Rospabé (2007) find that statistical discrimination disappeared when wage rates were determined by efficient bargaining between a representative firm and a union with endogenous membership. Using the 1999 October Household Survey, the paper considers both a treatment effects model and a switching model, the appropriateness of either depending on the assumptions made regarding the role of unions on wages, specifically whether unions affect only the intercept or the intercept and the slope.

Turning to the evolution of the union wage premium, Banerjee et al. (2008) find that the union wage premium increased for Africans from 14% in 1995 to 27% in 2000, with

a slight decline to 23% in 2004. In a related study, Ntuli and Kwenda (2013) use cross-sectional data drawn from Labour Force Surveys for 2001–2010 to find a monotonically declining union wage premium among wage-employed African men in South Africa but an increase in union-induced wage inequality among African men.

Ntlhola, Kwenda and Ntuli (2019) investigate whether unionisation leads to wage compression in South Africa. After controlling for unobserved time-invariant worker characteristics, they find the union wage premium to be more or less consistent across the conditional wage distribution, suggesting that unions do not contribute to wage compression. The study uses a fixed effect quantile regression estimator based on the 2001–2007 South African Labour Force Survey.

In a more specific setting, Nattrass and Seekings (2014) document the effect on wages of National Bargaining Council (NBC) agreements in the clothing and textile sector, with a particular focus on Newcastle. Minimum wage increases were agreed in the NBC and extended countrywide. Major firms shut down, while others failed to comply fully with the repeated minimum wage increases and levies imposed by the NBC. The authors conclude that the Newcastle case shows how, under the guise of promoting 'decent work' for workers and the supposed levelling of the playing field for producers, the unholy coalition of a trade union, some employers and the state initiated and drove a process of structural adjustment that undermined labour-intensive employment and exported South African jobs to lower-wage countries such as Lesotho and China.

A number of international studies have examined the impact of collective bargaining or unions on wage levels. Fanfani (2023) use a generalised difference-in-differences model with continuous treatment to examine how contractual pay levels in Italy, set by industry-wide agreements through collective bargaining, affect wages and employment. The paper shows that contractual pay levels set through collective bargaining strongly affect wages by an increase of about 48.9% and have a negative impact on employment. In another study conducted in Italy that considered firm size, Dell'aringa (2013) examines the role of unions and collective bargaining in wage determination in Italian manufacturing firms. The data used are from the 1989 Assolombarda survey, which surveyed 150 firms in the province of Milan. The firms responded to a postal questionnaire on a range of factors, such as wage levels,

unionisation, absenteeism, turnover, strikes and collective bargaining arrangements. Using 75 of the firms from the metal-mechanical and chemical sectors, the study finds that collective bargaining had a positive influence on wages, with wages increasing with firm size. The extent of unionisation at firm level had a positive effect on collectively bargained pay components and a negative effect on the components set by the firm (mainly 'merit' pay).

In another permutation of the topic, Dell'Aringa and Pagani (2007) examine the wage premiums of workers covered by a single-employer bargaining process relative to workers covered by both a single-employer and multi-employer bargaining process.[1] The authors analyse Italy, Belgium and Spain using the 1995 European Structure of Earnings Survey, a large dataset containing detailed, matched employer–employee information. All three countries have a multi-level collective bargaining system; in Italy and Belgium, single-employer bargaining can take place only as a way to implement multi-employer bargaining and in addition to it. In most of the cases in Spain, single-employer bargaining did not set wages below the level set by multi-employer bargaining. However, the paper finds that collective bargaining at the level of the single firm did not contribute to higher wage inequality, implying that workers' wages covered only by multi-employer contracts were no more compressed than those covered by both multi-employer and single-employer contracts.

Plasman, Rusinek and Rycx (2007) offer further insights into this region, focusing on single-employer bargaining and investigating the impact of the collective bargaining regime on wages in the manufacturing sector in Belgium, Denmark and Spain using the 1995 European Structure of Earnings Survey. Their study finds that single-employer bargaining increased workers' wage levels in all three countries, though wage dispersion increased for Belgium and Denmark and declined in Spain. The authors postulate that in Belgium and Denmark single-employer bargaining is used to adapt pay to the specific needs of the firm, while in Spain it is mainly used by trade unions to compress wage distribution. Using the Juhn-Murphy-Pierce decomposition technique to examine the effect of collective bargaining coverage on earnings in

[1] A single-employer bargaining process is collective bargaining between trade unions and a single employer, whereas a multi-employer bargaining process is between trade unions and multiple employers.

21 OECD countries, an OECD (2019) report shows that not all levels of bargaining provide a high wage premium, finding that workers are paid more with firm-level bargaining than with sectoral bargaining.

López Novella and Sissoko (2013) estimate the elasticity of actual wages to industry-level collective bargaining, empirically quantifying the role of industry-level bargaining on wage determination. In their study, they employ generalised method of moments system wage equation models on an employer–employee panel dataset covering the entire Belgian employment population over nine years (1998–2006). Their results show that the elasticity of wages to industry-level bargaining is significant and close to unity for all the worker categories, and thus on average is fully passed on to individual wages. In addition to the effects of industry-level bargaining, the study notes the extent of supplementary wage increases granted at the firm level, referred to as wage drift or wage cushion in the literature. The paper finds that wage drift is affected by firm size, by the economic performance of the industry and to a much lesser extent by labour market tensions as measured by the local unemployment rate.

Similar results were found in an Australian study in which Peetz and Preston (2009) examine wages for individual contracts and wages from collective agreements using data from an unpublished national earnings survey. They find that the earnings distribution of employees registered under individual contracts was more unequal than those registered under collective agreements. In addition, the link between contracting and pay was found to be contingent on occupation, industry, firm size band, employee position in the labour market and employers' use of union-avoidance strategies.

In a study with a unique focus, Jiménez-Martin (2006) investigates the relationship between strike and wage outcomes using Spanish firm-level data, finding that strikers on average received a significant wage premium increase of about 0.33 basis percentage points. The paper also finds that the longer the strike, the lower the wage premium received after the bargaining process.

Using the Labour Force Surveys of 1993–2006 and the Workplace Employment Relations Survey 2004, Blanchflower and Bryson (2010) draw attention to the gap between the public and private sector union membership wage premium in the United

Kingdom (UK). Their study, which uses OLS modelling techniques, finds a growing gap between the membership premium in the public and private sectors that closed with the addition of three-digit occupational controls. Despite a decline in union membership in the UK, however, wage premiums still exist, and workers in the public sector receive a union membership wage premium that is twice the union membership wage premium of workers in the private sector.

Similarly, Owusu-Afriyie, Baffour and Baah-Boateng (2023) use data from the Ghana Living Standards Survey 6 for 2012/2013 and the Ghana Labour Force Survey 2015 to estimate the union wage effect in the public and private sectors of Ghana respectively. The study also investigates whether the union wage effect in the two sectors varies. The Blinder–Oaxaca decomposition and unconditional quantile regression decomposition techniques were used. The authors find that unions in the public sector exert a higher positive wage effect on unionised workers than in the private sector. They also find that the higher wage in effect in the public sector is due to higher union coverage and greater collective bargaining power in the public sector, where unions have greater political influence.

The abovementioned papers do not distinguish between permanent and temporary workers. However, Litwin and Shay (2022) have examined the impact of collective bargaining on temporary workers. Their OLS models reveal that within a given sector and occupation, temporary workers who are unionised receive a higher wage premium than those who are not. However, the wage premium is contingent on the labour relations orientation of the employment relationship. Adversarial union-employer employment conditions tend to yield a higher collective bargaining wage premium, whereas unions with a more cooperative stance to the employer do not.

The literature above suggests that a union wage premium exists in South Africa that varies by skill or pay level, with a greater premium evident at the lower end of the pay scale. Earlier studies also found the premium to be in line with international norms. More recent studies that consider unionisation in public and private formal sectors, firm size and non-wage benefits find smaller premiums than earlier studies did. Additional gains are negotiated by unions at firm level. With respect to the evolution of the union wage premium in South Africa, some studies find a general increase while others report

a decrease. However, available evidence indicates a lack of wage compression in South Africa. There is indirect evidence of a negative impact of bargaining councils on firm survival, as raising wages has resulted in job losses and the closure of some firms in the clothing and textiles industry.

The international evidence cited above provides further insights into the role of collective bargaining in determining wages. Firm size influences the degree of the wage increase induced by collective bargaining (as in Italy). The level of bargaining – for instance, multi-employer versus single-employer – also influences wage outcomes, as in Belgium, Denmark, Italy and Spain. Also of interest is wage drift, which in Belgium was found to be affected by firm size, economic performance in the industry and the local unemployment rate. Evidence from Spain suggests that strikes result in a wage premium increase, with longer strikes leading to a lower premium.

3. Employment protection legislation

Employment protection legislation (EPL) is the set of rules that governs the hiring and firing of workers. These rules have been designed to protect employees from unfair dismissal and treatment and to increase job stability. EPL can be considered a subset of the Basic Conditions of Employment Act 75 of 1997. Unlike the LRA, which focuses on principles governing labour relations in South Africa, the Basic Conditions of Employment Act is intended to regulate workplace conditions by setting out minimum required standards applicable to both employers and employees. The act regulates the number of hours of work, overtime, leave, remuneration, deductions and termination of employment. The act also prohibits the employment of children and forced labour. Like the LRA, the act does not cover members of the South African Secret Service, National Defence Force, National Intelligence Agency or unpaid volunteers working for an organisation serving a charitable purpose.

3.1 The impact of EPL on productivity

The neoclassical view of EPL and the regulation of the labour market in general is that employment protection reduces productivity, because it has the potential to raise dismissal costs. If firing is costly, it is assumed that firms will be more circumspect when hiring new workers, as firms will be under pressure to retain such workers, even if they are not as productive as anticipated and may thus have an adverse effect on

labour and firm productivity. In addition, EPL may incentivise or influence worker productivity. This view has been tested by many experimental studies that have come to mixed, contradictory and often conditional conclusions. There is a clear gap in the South African literature with respect to the relationship between EPL and productivity or wages. Some international studies are discussed below that capture the essence of the literature on EPL and productivity, while the next section considers studies that relate EPL to wages.

Bassanini and Venn (2007) examine the impact of EPL, minimum wages, parental leave and unemployment benefits on labour productivity and multifactor productivity. They used a difference-in-differences approach, relying on the assumption that a specific policy will influence worker or firm behaviour, and thereby productivity, more in industries where the policy in question is likely to be more binding than in other industries. The study covers 18 OECD countries over the years 1982–2003. The results showed that EPL has a negative impact on both labour and multi-factor productivity. Bjuggren (2018) studies the Swedish last-in-first-out reform of employment protection rules in 2001 that enabled small firms with fewer than 11 employees to be exempted from the rules, finding that the reform increased labour productivity by 2% to 3% in the treatment group of small firms relative to a control group of larger firms. In contrast, Ardito et al. (2022) find that the Italian Jobs Act – which reduced EPL for open-ended contracts signed after March 2015 in firms with more than 15 employees – was associated with a decrease in firm productivity as measured by value added per worker. Effects were found to be stronger among non-exporting and non-innovative firms.

Using the adoption of wrongful-discharge protection by state courts from 1970 to 1999 to evaluate the empirical link between dismissal costs and productivity, Autor, Kerr and Kugler (2007) find that the adoption of dismissal protections influences firms' short-term production choices. Where employers were forced to retain unproductive workers, capital deepening increased and total factor productivity decreased.

Bartelsman, Gautier and de Wind (2016) show empirically that high-risk sectors, which contribute strongly to aggregate productivity growth, are relatively small and have relatively low productivity growth in countries with strict EPL. The authors developed a

two-sector matching model in which firms endogenously chose between a safe and a risky technology. The study finds that EPL raised the costs of shedding workers for firms that chose the risky technology and that high-EPL countries benefited less from the arrival of new risky technologies than did low-EPL countries. Brookes, James and Rizov (2018) compare the UK's manufacturing labour productivity with that of three countries (France, Germany and Sweden) that have more stringent employment protection laws. They find no evidence of a clear negative relationship between legal stringency and productivity but find that the effect of employment protection on productivity varies both within and across countries, depending on a number of factors. Okudaira, Takizawa and Tsuru (2013) examine the impact of Japanese courts' strict enforcement of employment protection on firms, specifically restrictions on firing workers, between 1994 and 2002, and find that pro-worker judgements significantly reduced growth in overall labour productivity.

Fedotenkov, Kvedaras and Sanchez-Martinez (2023) investigate whether employment protection affected sectoral productivity growth differently during crises and recovery periods in the EU. They find that stricter labour protection reduced labour productivity growth in sectors with a large share of workers with tertiary education, whereas this effect was negligible or positive in sectors with more workers with secondary or only primary education. The authors attribute this to more intensive labour hoarding in sectors that have workers with tertiary education, which rely on firm-specific knowledge accumulation and skilled human capital difficult to substitute with physical capital. Furthermore, they find that the negative effect in sectors with tertiary-educated workers was prominent only during the crisis, and an increase in the stringency of EPL over an extended period stimulated employers to substitute labour with investments in physical and knowledge capital.

Mainar, Green and Paniagua (2018) look at the interplay between EPL and absenteeism at work in Spain and how that affects labour productivity. The authors find that individuals employed on a permanent contract have a higher probability of being absent from work by about 0.30 of a day per week, which has a substantial and negative impact on labour productivity. Micco and Pagés (2010) apply a difference-in-differences estimator methodology on industry-level data for several developed and developing countries and find that more stringent legislation slows down job turnover

by a significant amount, an effect more pronounced in sectors that are intrinsically more volatile. They also find that employment and value-added decline in the most affected sectors, while employment and output effects are driven by a decline in the net entry of firms. Burgess, Knetter and Michelacci (2000) use data from the OECD International Sectoral Database, an industry-country panel of OECD countries, to examine the impact of EPL (termed 'job security provisions' in their paper) on the dynamic path of adjustment of a country's output and employment in response to a shock. The paper finds that countries with stricter EPL display a slower rate of adjustment of output and employment. The authors conclude that job security provisions are a form of non-price regulation that appears to have real consequences for economic performance. One reported qualification of the results is that the connection between EPL measures and speed of adjustment is much less clear when industry controls are removed from the panel or when the data are aggregated across all industries.

In a study covering several OECD countries, Storm and Naastepad (2007) assess the effect of EPL on three types of labour relations systems: highly coordinated systems featuring high real wage growth; highly coordinated systems with low real wage growth; and liberal systems with low real wage growth. Cross-country regression analysis of 20 OECD countries (1984–1997) suggests that labour productivity growth is higher in the first scenario, where labour markets are highly regulated (strict EPL) and real wage growth is high. The authors point out that this result directly contradicts the claim that excessive labour market regulation is a major cause of slow labour productivity growth, and they caution against overly optimistic assessments of the productivity impacts of labour market deregulation and real wage restraint. Using firm-level data in Italy, Cingano et al. (2016) study Italy's reform of unjust-dismissal costs for firms with fewer than 15 employees, while firing costs were left unchanged for bigger firms. They find that a reduction in firing costs led to an increase in the capital-labour ratio and a decline in total factor productivity in small firms relative to larger firms. However, among firms with low capital-labour ratios, capital deepening in response to the EPL change was more pronounced for firms with more liquid resources.

Ichino and Riphahn (2005) investigate the effect of EPL on worker behaviour, analysing the behaviour of 858 white-collar workers hired by a large Italian bank between January 1993 and February 1995. These workers were only protected against

firing after their twelfth week of tenure, and the authors observed them for one year. The study finds that, particularly for men, the number of days of absence per week increased significantly at the end of the probationary period, when employment protection had been granted.

Bradley, Green and Leeves (2014) also examine the effects of employment protection on worker behaviour and find that the shift into a permanent contract led to increased worker absence. They find that an increase in the likelihood of gaining a permanent job, proxied by temporary to permanent transition rates, was associated with temporary workers exerting more effort and being absent less often. The study uses data from the Australian Minimum Obligatory Human Resources Information database collected between 2001 and 2004.

In a similar study, Olsson (2009) investigates the direct relationship between employment protection and sickness-related absence in response to a change in policy in 2001 that made it possible for employers with a maximum of 10 employees to exempt two workers from the seniority rule at times of redundancies. The study uses data from short-term employment statistics collected by Statistics Sweden, which contains detailed quarterly information for a selection of Swedish establishments in the non-agricultural private sector for the period 1994 to 2001. Using a difference-in-differences estimator, Olsson finds that a reduction in employment protection among firms with fewer than 10 employees is associated with a 13% decrease in sickness-related absenteeism. Scoppa (2010) conducts a similar study, focusing on reforms in Italy that made it more costly for small firms to dismiss workers. Using a difference-in-differences estimator to analyse the effects of the increased stringency of EPL on worker absenteeism, the study finds that worker shirking increases.

In a study of the effects of stricter EPL in India, Schwab (2020) examines India's Industrial Disputes Act in the manufacturing sector, which requires large firms to obtain permission from the government before they can fire a permanent employee. The findings reveal that the act led to an older formal workforce, as firms were reluctant to hire young workers that it would be more difficult to fire. This led to the plausible explanation that the act also resulted in a reduction in total factor productivity of firms affected by the act. In contrast, Sofi and Sharma (2015) use a panel dataset on

28 industrial sectors across 13 major states of India for the period 1999–2000 to 2007–2008 and find that EPL does not affect total factor productivity in India's manufacturing sector. Explaining this finding, they argue that there is substantial flexibility in contemporary labour markets.

3.2 The effect of EPL on the wage level

As mentioned earlier, no existing studies relate EPL to productivity or wages in South Africa, so insights are garnered from international literature. Using the Dutch Socio-Economic Panel dataset, Van der Wiel (2010) analyses the causal effect of employment protection in the form of employers' term of notice on the wage levels of employees in the Netherlands. Term of notice is defined as the period that an employer has to notify workers in advance of their dismissal. The study uses a change in the term of notice that resulted from the introduction of a new Dutch law in 1999 and finds strong evidence that a longer term of notice leads to higher wages. The author offers two plausible reasons for this outcome. The first is insider/outsider theory, which suggests that the bargaining position of insiders is enhanced by better protection, such that unions only representing incumbent workers win higher gains. The second is that employment protection creates more incentives for firms and workers to invest in match-specific human capital, leading to higher productivity and wages.

Heywood et al. (2018) examine the impact of stricter EPL on wage differentials in major OECD countries between 1984 and 2005, particularly for the wages of unskilled workers. Specifically, they consider whether industries with relatively more need for layoffs and labour flexibility had lower wages in countries where stricter EPL protected workers from layoffs. The authors find that wages were lower, particularly for unskilled workers, in countries with stricter EPL layoff protection. Lin (2013) uses a regression discontinuity model to examine the effects of employment protection (Taiwan's Labour Standards Law) on wages in Taiwan over the period 1980–1995. The study finds an inverse relationship between the strictness of EPL and wages (i.e. the stricter the EPL, the lower the wages) and that the degree of this relationship depends on how strictly the law is enforced.

In a less common approach to examining the impact of EPL on wages, Perugini (2020) investigates the role that EPL played in shaping the gender wage gap in 25 EU

countries, using the 2008 and 2013 releases of the European Union Statistics on Income and Living Conditions microdata. Results from the applied quantile regression techniques generally support the notion that lower levels of employment protection are associated with greater gender inequality. The study's more detailed findings are that strict employment protection for temporary workers reduced the wage gap in all parts of the age distribution, while for permanent workers it increased the wage gap at the bottom of the wage distribution (for low-paid workers) and reduced the wage gap at the middle and top of the wage distribution.

In a related study, Ordine, Rose and Vella (2020) evaluate the impact of more stringent EPL on employment outflows and wages of permanently employed women in the manufacturing and construction industries relative to those of men in the Italian labour market. The study focuses on a 1990 reform in the Italian labour market that raised firing costs for firms with fewer than 15 employees but that did not change rules for larger firms. Using administrative linked employer–employee data and a difference-in-differences approach, the paper reveals a statistically significant reduction in the gender wage gap for women under the age of 45 after the legislation was implemented. The findings suggest that employment protection may help reduce gender disparities.

In summary, there is a gap in the South African literature on the relationship between EPL and productivity and EPL and wages, but the international literature cited above offers some useful insights. The effects of EPL reforms on productivity depend on firm size, as was found in Italy and Sweden. The nature of technologies adopted by firms also has a bearing, as does whether firms are export-oriented or operate in inward-focused sectors. The level of education of a firm's workforce affects how EPL reforms influence firm productivity, as found in the EU. The worker response to greater employment protection is influenced by whether employment is permanent or temporary. Increased stringency of EPL has been found to reduce job turnover and, relatedly, the entry of new firms. The slower adjustment to shocks in countries with strict EPL also affects productivity. Evidence from several OECD countries suggests that labour market deregulation and real wage restraint do not necessarily enhance productivity. Furthermore, reducing firing costs opens avenues for capital deepening. In industries where there is a need for layoffs but these are restricted by EPL, wages are found to be lower. In terms of the gender dynamics of EPL, lower levels of

employment protection are found to be associated with greater gender inequality in wages.

4. Minimum wages

In South Africa, wage determination in sectors not covered by bargaining council agreements has historically occurred through sectoral determinations. An established commission in the Department of Employment and Labour would conduct research and public hearings between employees and employers and, flowing from this, suggest wage increases (and thus minimum wages) to be implemented in those sectors. Sectors such as domestic workers, wholesale and retail trade, hospitality, the taxi industry and farm workers were covered by sectoral determinations. The sectoral determination of minimum wages ceased when the National Minimum Wage Act 9 of 2018 was signed into law, taking effect from 1 January 2019.

Many developed and developing countries have introduced a minimum wage as a labour market policy intended to regulate wages, reduce poverty and inequality, and ensure a minimum standard of living. The minimum wage can be complex, however, and many countries have different wage laws for different locations, sectors and occupations. Furthermore, some minimum wages require continued negotiation between unions and employers even after being established through laws and regulations (Betcherman 2014). The study of minimum wage policies has been heavily skewed to their impact on employment, with studies of their impact on employee and firm productivity lagging far behind.

4.1 The impact of minimum wage policies on productivity

The discussion in this section again relies on international literature. The studies reviewed below examine the relationship between minimum wages and employee productivity, with some supporting the efficiency wage theory, which holds that higher wages incentivise workers to be more productive. One such study is by Kim and Jang (2019), who examine the effects of increasing the US federal minimum wage on productivity in the restaurant sector during the 1980–2014 period. Their results show that an increase in the minimum wage had an immediately positive and significant effect on productivity in the first two subsequent years, with a 1% growth in productivity observed in the first year and a further 0.4% increase a year later. The sample includes

1 926 firm-year panel data for 242 restaurant firms, obtained from the US Department of Labour.

Using border-discontinuity research analysis and fixed effects modelling, Coviello, Deserranno and Persico (2022) similarly show that workers became more productive after a minimum wage was implemented in the US retail sector. However, their results depended on how closely employees were monitored during their work: if monitored less, an inverse relationship between minimum wage and productivity was observed. The study was based on a large US retailer whose employees work in many store locations and are paid according to performance. Further evidence is provided by Rizov, Croucher and Lange (2016), who, using difference-in-differences analysis, find an increase in productivity in low-paying sectors in the UK after the introduction of the minimum wage in April 1999. Using a panel-regression model to estimate the relationship between the statutory minimum wage and productivity in South-Eastern European countries, Trenovski et al. (2021) produce mixed results, with some countries (Albania, North Macedonia and Serbia) displaying a positive and significant relationship between minimum wages and productivity, and others (Bulgaria, Croatia and Romania) displaying a negative relationship.

Vergeer and Kleinknecht (2010) offer further insights on the relationship between productivity and minimum wages. They argue that deregulation of labour markets, with the accompanying dampening of minimum wages, may increase employment – but at the cost of decreased productivity. The results of this study, which uses a panel dataset of 19 OECD countries over the period 1960–2004, imply a positive relationship between an increase in minimum wage and productivity. A similar study was conducted by Bassanini and Venn (2007), who use a sample of 11 OECD countries over the period 1979 to 2003 to examine the effect on average productivity of raising the minimum wage. The study uses annual cross-country aggregate data on relevant implemented policies and industry-level data on productivity. Using OLS and instrumental variable approaches, the authors find that an increase in the minimum wage was significantly correlated with an increase in average labour productivity in low-wage industries.

Owens and Kagel (2010) find a direct proportional and statistically significant increase in employees' effort in response to an increase in the minimum wage. Their study finds that the minimum wage reduced effort where initial wages were in the region of the minimum, increased effort where initial wages were below the minimum, but had no systematic effect on effort levels at higher wages. As minimum wage raised the average wage, average effort was found to increase modestly with the introduction of a minimum wage.

The studies described above discuss developed countries, as literature covering this topic for developing countries is sparse. One example of the latter is Nguyen (2019), who examines the impact of the minimum wage on productivity using a detailed Vietnamese firm-level dataset from 2010 through 2015. The regression results suggest a positive and statistically significant impact of minimum wage on productivity, where firms initially paying below the minimum wage experienced greater increases in labour productivity than high-paying firms.

4.2 The impact of minimum wages on wage levels

Minimum wages are set at an hourly rate, so their effect on wages is conventionally measured in hourly wages. However, the effect on monthly wages, total compensation and aggregate earnings can also be analysed. Where the percentage increase in hourly wages outweighs any resultant percentage reduction in hours of work, monthly hourly earnings and aggregate earnings will increase. Total compensation encompasses benefits over and above wages. Where there is compliance with the relevant legislation, minimum wages will raise wages. However, it can also be instructive to investigate whether this increase in wages comes at the expense of employment or hours worked. Indeed, most studies incorporate an analysis of the effect of minimum wages on employment.

Studies on the impact of minimum wages on wage levels in South Africa are relatively more prevalent. For example, using a difference-in-differences model to estimate the impact of multiple minimum wage laws in South Africa on employment, wages and hours of work, Bhorat, Kanbur and Mayet (2013) find evidence that during the 2000-2007 period, workers in the retail, domestic work, security and taxi industries experienced a significant increase in their real hourly wages and a reduction in hours

worked rather than a reduction in employment, after the introduction of the minimum wage laws in March 2003. The reduction in hours worked was outweighed by the increase in wages, such that monthly earnings increased. In a similar study, Bhorat, Kanbur and Stanwix (2014) investigate the introduction of the sectoral minimum wage law in the South African agricultural sector and find a significant reduction in employment (in particular, of part-time workers), an increase in wages on average and a rise in non-wage benefits.

In a review of the effect of a minimum wage in the South African informal sector, specifically the domestic sector, Dinkelman and Ranchhod (2012) use a difference-in-differences methodology in finding that the effect was immediate and significant, with average wages increasing by about 20% in the 16 months after the law was introduced. The authors postulate that given the lack of monitoring and enforcement in this sector, strong external sanctions are not necessary for new labour legislation to have a significant impact on the informal sectors of developing countries, at least in the short term. A similar, earlier study was conducted by Hertz (2005) using data from seven waves of the Labour Force Survey of September 2001 through September 2004. This study finds that the real hourly wages, average monthly earnings and total earnings of all employed domestic workers rose after relevant regulation came into effect. In contrast to Dinkelman and Ranchhod (2012), it also finds that hours of work per week and employment fell for women, while the effect of hours was insignificant for men, whose employment actually rose. The study uses OLS wage regressions, which could explain the slight difference in findings between the two studies.

Ranchhod and Bassier (2017) adopt a difference-in-differences estimation to examine the short-term effect of an increase in the minimum wage for farm workers in South Africa in 2013. Using both repeated cross-sectional data and individual-level longitudinal data from the Quarterly Labour Force Survey, the authors find a significant increase in the real monthly earnings of rural farm workers, but also substantial job losses. Piek and Von Fintel (2020) consider the impact of the national minimum wage on two sectors, one exposed to international competition (agriculture) and the other domestically oriented (retail). Their study finds that small firms in agriculture were most vulnerable to job losses, while large firms were more resilient. The retail sector, however, did not experience job losses, regardless of firm size. The authors postulate

that firms exposed to international markets cannot easily increase prices when their employees' wages increase, while non-tradable sectors can more readily shift the burden of higher labour costs onto consumers by increasing prices.

The evidence from the above literature on South Africa suggests unambiguously that minimum-wage legislation increases hourly wages. The effect on total monthly earnings depends on adjustments made by employers – that is, whether they occur at the extensive margin (job cuts) or the intensive margin (reduction in hours). Where employers respond by cutting jobs rather than hours, those workers who remain employed experience increased total earnings.

Klein (2012) investigates the factors that contributed to the observed job-shedding in South Africa during the financial crisis of 2008. The study finds that rapid growth of the real wage, which outpaced labour productivity growth in most sectors, played an important role in suppressing employment creation. The study also reports that the link between the real wage and labour productivity is substantially weaker in South Africa than in other emerging markets, even after controlling for labour market tightness indicators.

On the international front, while specific findings vary, studies generally suggest that increasing the minimum wage raises wages for low-wage workers, with the employment effects ranging from negligible to modest job losses, depending on factors such as the magnitude of the increase and the characteristics of the labour market.

For example, Dustmann et al. (2022) examine the effect of the introduction of a national minimum wage in Germany in 2015. Specifically, the study investigates the wage, employment and reallocation effects of the policy. Using a difference-in-differences methodology, the paper finds that the minimum wage substantially increased wages for low-wage workers without having significant negative effects on employment. It also finds that the minimum wage led to the reallocation of low-wage workers from smaller to larger, from lower- to higher-paying and from less to more productive firms.

Harasztosi and Lindner (2019) obtain similar results in their study of the impact of a significant increase in the Hungarian minimum wage in 2001, which effectively doubled

in two years. The paper, which also employed difference-in-differences estimation, finds that the increase in the minimum wage raised wages for low-wage workers without causing significant employment losses. Draca, Machin and Van Reenen (2011) analyse the impact of minimum wage increases in the UK from 1999 to 2011 and find that they raised wages for low-wage workers without causing significant employment losses. However, they also find an accompanying reduction in firm profitability.

Georgiadis, Kaplanis and Monastiriotis (2018) investigate the impact of minimum wages on wages and employment in Greece between 2009 and 2017. During this period, Greece experienced an unprecedented recession, extensive labour market reforms and several changes in the minimum wage, including a large decrease. The authors find that minimum wages had a positive and significant effect on individual- and firm-level wages, with significant positive wage spillovers extending, sometimes, above the median wage, but with no systematic employment effects. The study uses an administrative panel matched employer–employee dataset and a range of estimators, such as difference-in-differences, fixed effects and instrumental variables.

Studies such as those described above challenge the earlier consensus that higher minimum wages reduce employment (Brown, Gilroy and Kohen 1982). However, debate continues over whether this issue has been conclusively settled. For example, Dube, Lester and Reich (2010) and Allegretto, Dube and Reich (2011) attempt to construct better counterfactuals for estimating how minimum wages affect employment and concluded that the negative employment effects for low-skilled workers found in the literature are spurious and generated by other differences across geographic areas not adequately controlled for by researchers. Neumark, Salas and Wascher (2014) have challenged this conclusion, however, and through their own analysis find evidence of disemployment effects similar to those reported in past studies.

5. Conclusion

In considering the impact of collective bargaining on productivity, lessons for South Africa are that collective bargaining can enhance productivity if the level of coordination is high. A key benefit of coordinated collective bargaining is the promotion of a more stable economic environment. This coordination can be brought about not only by centralised bargaining but also through greater participation by relevant stakeholders

and standard-setting agreements across key industries. However, evidence also suggests that the strength of South African unions and their influence on labour relations brings a risk of less investment per worker by firms. In addition, union wage premiums may be influenced by firm size, public versus private sector union status, and single-employer versus multi-employer bargaining processes.

While there is a gap in the South African literature on the relationship between EPL and productivity and EPL and wages, a number of avenues of exploration are provided by the international literature. International findings are that the effects of EPL reforms on productivity depend on firm size, the nature of technologies adopted by firms and whether firms are export-oriented or operate in inward-focused sectors. The education level of a firm's workforce and whether the employment is permanent or temporary also affect how EPL reforms influence firm productivity. It is important to note, though, that reducing firing costs opens avenues to deepening capital. A further cautionary observation is that lower levels of employment protection are associated with greater gender inequality in wages. These instructive findings can inform thinking around the implementation of EPL reforms and their subsequent evaluation.

Regarding the effects of minimum wages, there is clear evidence of their positive effect on wages; however, there is mixed evidence internationally on whether this is accompanied by employment losses. In South Africa, minimum wages via sectoral determinations have increased wages in low-wage occupations at the expense of employment in sectors such as agriculture. Although there is no evidence of the impact of minimum wages on productivity in South Africa, international evidence points to a positive effect under the right conditions.

Based on the above review, the following topics would be fruitful avenues for future research:

- What is the effect of collective bargaining on productivity, with a specific focus on the degree of centralisation, the level of coordination or union density?
- With respect to collective bargaining and wages, what is the extent of wage drift, where wage drift is defined as the difference between a collectively agreed wage and the actual wage ultimately paid by an individual firm?

- When collective bargaining fails and ends in strike action, how does the duration of the strike affect the final outcome of the wage increase?
- How does EPL or reform in EPL affect productivity, and what is the role of firm size and degree of export orientation ?
- What is the relationship between worker response (in the form of absenteeism) and EPL reform, based on permanent versus temporary employment status and level of education of a firm's workforce?
- How does the stringency of EPL implementation affect labour turnover, capital deepening and market entry by new firms?
- What is the impact of minimum wages on productivity in South Africa?

Annexure

Table 1: Research methodologies

Section	Cobb-Douglas production function	Juhn-Murphy-Pierce decomposition	Blinder-Oaxaca decomposition	Linear probability model or ordinary least squares	Difference-in-differences	Selection model	Fixed effects
2	Arnold and Barbosa (2015)	OECD (2018)	Owusu-Afriyie, Baffour and Baah-Boateng (2023)	Braakmann and Brandl (2021)	Cardullo, Conti and Sulis (2015)	Bhorat, Goga and Van der Westhuizen (2012)	Ntlhola, Kwenda and Ntuli (2019)
	Svarstad and Kostøl (2022)	Plasman, Rusinek and Rycx (2007)	Rospabé (2001)	Schultz and Mwabu (1998)	Fanfani (2023)		
	Barth, Bryson and Dale-Olsen (2020)			Blanchflower and Bryson (2010)			
				Litwin and Shay (2022)			
3					Bassanini and Venn (2007)		
					Micco and Pagés (2010)		
					Olsson (2009)		
					Scoppa (2010)		
					Ordine, Rose and Vella (2020)		
					Bjuggren (2018)		
					Ardito et al. (2022)		
					Autor, Kerr and Kugler (2007)		
4				Bassanini and Venn (2007)	Rizov, Croucher and Lange (2016)		Coviello, Deserranno and Persico (2022)

					Bhorat, Kanbur and Mayet (2013)		Georgiadis Kaplanis and Monastiriotis (2018)
					Ranchhod and Bassier (2017)		Kim and Jang (2019)
					Dustmann et al. (2022)		Trenovski et al. (2021)
					Draca, Machin and Van Reenen (2011)		
					Georgiadis, Kaplanis and Monastiriotis (2018)		

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