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ABSTRACT

Minimum Wages in Developing Countries

There is considerable debate on the level and effects of minimum wages for many decades. However, most of the studies are conducted in developed countries. This chapter first reviews the theoretical frameworks of anticipated effects of a minimum wage increase on wages and employment in developing countries. The empirical challenges are then discussed, including potential heterogeneity, simultaneity (or endogeneity) between employment and minimum wages, and possible omitted variable bias, taking into consideration of the different labour market structures and labour market institutions in developing countries, particularly the level of informal sector, extent of binding minimum wages, level of enforcement, and the vulnerability of the workers impacted. Evidence from BRICS members (Brazil, Russia, India, China, and South Africa) are reviewed and discussed. Surprisingly, there is substantial evidence of positive wage effects in both formal and informal sectors, although the adverse effects on employment are generally modest in the formal sector, and almost non-existent in the informal sector. However, when minimum wages are binding and enforced, studies focusing on vulnerable workers do find significant and positive wage effects and strong disemployment effects, implying that the classic trade-off of minimum wages between higher wages and lower employment does occur in developing countries.

JEL Classification: J31, J33, J38

Keywords: minimum wages, labour market outcomes, developing countries

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Introduction

Minimum wages are an almost universally accepted instrument for regulating wage floors. According to the International Labor Organisation (2016), more than 90 percent of all countries in the world have some form of minimum wage regulation, which protects workers by determining a particular wage floor under which pay level is not legally permitted. However, existing minimum wage levels are increasingly criticized for being not adequate to address the working poverty issues. Living wage movements worldwide have demanded substantial increases in minimum wages to ensure low wage workers can enjoy a decent standard of living (Anker and Anker 2017). Low pay became even more prominent during the COVID-19 pandemic when it became clear that many so-called "essential" or "key" workers were at the bottom of the wage ladder. Regions around the world have also witnessed growing protests to improve the value of the minimum wage and strengthen compliance with the law among employers (Alamgir and Banerjee 2019).

Although minimum wages have existed for more than a century and have now been adopted in more than 100 industrialized and developing countries, there is no consensus on the most important rationales behind the legislation. Minimum wages have been considered an important policy tool to curb poverty and assist low-income individuals and families to achieve self-sufficiency (Duval and Loungani 2019); to protect workers in low-paid occupations and the unorganized non-union sector (Zhang and Deng 2005; Sun 2006); to help reduce income inequality and serve as an important safety net by providing a minimum floor on wages (Jia and Zhang 2013); to foster managerial efficiency and labour productivity through higher labour costs (Cooke 2005); and to prevent 'unfair' low-wage competition and induce employers to move up the value-added chain and invest in productivity-enhancing technology (ibid.).

There is an extensive literature in developed countries that studies the consequences of minimum wage hikes. This is particularly the case in the United States where minimum wage studies found economically modest but statistically significant adverse employment effects for the vulnerable workforce (Neumark and Wascher 2008; Brown 1999). Research on developing countries has tended to follow the research on developed countries, but their labour market characteristics differ substantially from developed countries and potentially influence the minimum wage effects. In developing countries, minimum wages (relative to productivity) tend to be higher (Maloney and Mendez 2004), are less likely to be effectively enforced (Munguia 2019), and labour markets often have a large informal sector where minimum wage policies are not covered (Medina and Schneider 2019). Given these differences, understanding how

minimum wages affect labour market outcomes is critical for economic development, poverty dynamics, and income inequality in developing countries.

The issue of minimum wages in developing countries is generating heated debate. Advocates argue that in the transition period in which companies have strong growth and market competition is intensifying, a minimum wage can regulate employers' behaviours and protect workers' interests. An increase in the minimum wage would provide incentives for firms to increase R&D investments, promote enterprise innovation, and reduce turnover. In other words, higher labour costs pressure firms to improve managerial efficiency and improve the quality of labour supply. Thus, minimum wages can benefit developing countries in the long run by forcing low-productivity and low-technology sectors which rely on low-cost labour to invest in productivity-improving technology (Levine 1992; Li et al. 2022).

Opponents argue that minimum wage regulations will only lead to unemployment of low-wage workers, reductions in the country's international competitiveness, or substitution for high-cost or low-productive labour with technology investment (Bhorat et al. 2014). They argue that a relatively growing economy can stimulate the labour demand, which increases both wages and employment. Low-wage labour is developing countries' comparative advantage, and raising such wages will only reduce the comparative advantage and slow down the growth process that can naturally sustain wage increases and higher labour standards.

Therefore, the effect of minimum wage hikes on developing countries' labour market outcomes is an empirical issue. While the minimum wage studies in these countries are accumulating, there has been a limited attempt to review the evidence systematically. This chapter aims to fill this gap. Overall, we find that with some exceptions, minimum wages have no or insignificant employment effect for the entire work force in developing countries. However, the chapter also finds that vulnerable groups, including youth, the less-skilled, and low-wage workers, are more adversely affected by the minimum wage hike. Furthermore, our review also finds strong evidence of positive wage effects. Finally, there is some indication that the employment effects of minimum wages may be influenced by particular research methodology and data set used.

The chapter is organized as followed. We will first explain how labour markets' characteristics impact the effectiveness of minimum wages. We will then discuss the theoretical frameworks and methodological issues of minimum wage studies, followed by a summary of empirical research findings in selected developing countries. The chapter concludes with a summary of findings and offers some suggestions for future research in this area.

Labour Market in Developing Countries

Research on minimum wages in developing countries has tended to follow the research on developed countries, but the issues facing developing countries are somewhat distinct. More specifically, developing countries have significantly higher proportion of informal sectors that are not covered by minimum wage laws. In addition, the enforcement of minimum wage laws is not a strong as in developed countries. This section reviews the labour market characteristics in developing countries that differ from advanced economies, which potentially impact the minimum wage studies and outcomes (Neumark and Corella 2021; Nataraj et al. 2013; Maloney and Mendez 2004).

High Level of Informality

The term informality refers to economic activities that are not covered or insufficiently covered by legal arrangements (ILO, 2002). The informal economy is known by different terms, such as the shadow economy, cash economy, or the uncovered economy. Their activities may not be regulated by the labour law; even if they do, the law may not be enforced rigorously. Examples of jobholders in the informal economy range from street vendors, farmworkers, part-time workers, domestic servants, and self-employed workers.

The minimum wage law's effect on the labour market critically hinges on the size and characteristics of the informal and formal sectors in the economy (Maloney 2004). Depending on the existing informal sector features, the effect of minimum wage regulation varies in different directions. A significant difference between wages of formal employment and informal employment alters the cost of employing formal workers, and thus, formal-sector labour demand decreases. On the labour supply side, an increase in the minimum wage may provide an additional incentive to work in the formal sector, and thus, labour supply in the formal sector increases. In the labour market with a high level of informality, a hike in minimum wages may cause a combination of a decrease in labour demand and an increase in labour supply in the formal economy. In such circumstances, standard economic models predict workers would be displaced or shifted from the formal to the informal economy, thereby leading to higher rates of non-compliance with minimum wage law in the formal sector and downward pressure on wages in the informal economy. On the other hand, if the informal sector labour market is small and only serves as the last resort to unemployment, an increase in the minimum wage would not significantly affect labour supply and demand in the formal sector labour market.

Informal economies exist in both advanced and developing countries, but their relative size varies greatly in the developmental context. The informal economy in many developing countries accounts for a substantial portion of the labour force. Some developing countries even have more than 80 per cent of the working population employed in the informal economy (ILO, 2019). The informal economy is, by its nature, difficult to measure, as agents engaged in this economy activities to remain undetected. Medina and Schneider (2019) used a Multiple Indicators Multiple Causes (MIMIC) model to generate a global database of estimated size of the informal economy for 157 countries. The model suggests that the OECD countries are estimated to have the lowest proportion, while the informal economy makes up less than 20 per cent of their GDP. The informal economy is considerably more significant in Latin America and Sub-Saharan Africa, averaging almost 38 and 39 per cent of GDP, respectively. ILO (2018) also estimates the size of informal employment in developing countries. Informality is strongly correlated with the stage of development and level of income. According to ILO (2018), informal economies account for 90 per cent of employment in low-income countries, 67 per cent in middle-income countries, and 18 per cent in developed countries.

Limited Enforcement Capacity for Labour and Employment Laws

The effectiveness of a minimum wage policy depends not only on the coverage of its legal provisions but also on the degree of enforcement and compliance. Even in countries where a high proportion of the workforce are wage earners, the minimum wage policy is not guaranteed to have any "bite" if firm compliance is low. It is well-recognized that firms are more likely to cheat or evade minimum wage law when the likelihood of detection is low, or compliance costs are high. There are many examples in developing countries where minimum wage laws have little impact because of low enforcement levels. Lax enforcement usually occurs due to poor administration and the inability of regulators to carry out adequate inspections. Similarly, firms have an incentive to evade minimum wage regulations when the compliance costs are relatively high or levels of enforcement are low. This situation is likely to emerge when the minimum wage is set above the market equilibrium, and the elasticities of labour supply and demand are high enough to substantially impact firm efficiency (Munguia 2019).

In developing countries, the enforcement issue presents a serious challenge due to lack of transparency, insufficient inspection capabilities, and weak sanctions, compounded by the existence of high level of informality (Ghosheh, 2013; Benassi, 2011). While most of the literature estimates the minimum wage effects using cross country/region variation, more recent studies have identified the enforcement of labour regulations as a significant issue (e.g., Mansoor and

O'Neill 2021; Fang et al. 2021). Munguia (2019) finds minimum wage has significant adverse employment effects when the law dictates more vigorous enforcement.

Compliance with minimum wage requirements by employers can be measured in several ways (Rani et al. 2013). An easy method extensively used in empirical studies is calculating the percentage of workers earning less than the legal minimum wage. For example, Bhorat et al. (2012) measured South Africa's enforcement capability using this method, but they also measured the depth and magnitude of the violations. Another measure is based on violations of minimum wage laws detected during workplace inspections. However, an analysis based on labour inspections would be only partial because the informal economy in developing countries is quite large and beyond the reach of labour inspections. Also, non-compliance with minimum wages can be difficult to detect in administrative records and data on wage-related violations are not readily available.

A notable examination of the effects of minimum wages in developing countries employing the enforcement capacity for labour law as a plausible explanation of the heterogeneous impacts on labour market outcomes is provided by Munguia (2019). He used the ILO's "Database of National Labour, Social Security and Related Human Rights Legislation" (NALEX) to measure each country's enforcement degree. NALEX consolidates records of labour laws for more than 250 countries and territories. As an illustrative example of Munguia's work, Ghana does not have any penalty specified in its labour law; the law established a division that oversees the implementation of minimum wage regulation but does not specify what happens in case of violations. Hence, Munguia classified Ghana as having "no enforcement." Whereas, in Bolivia, fines are relatively costly (up to 1447 USD per incident), and the authorities have the power to close down an establishment when it repeatedly fails to abide by the law. Thus Bolivia is classified as having "strong enforcement."

Ratio of Minimum Wage to Median Wage

While minimum wages need to be set beyond the minimum income needs of workers and their families, economic factors, such as productivity levels, may constrain increases in minimum wages. When the minimum wage is higher than the average value-added per worker, employers make a loss when hiring an additional worker and thus have a strong motivation to bypass the law or not hire more workers. The risks of adverse employment effects must be considered seriously in developing countries, as the ratio of the minimum wage to the median wage (or average value-added per worker) is higher than it is across developed countries. This reflects low absolute median wages (or low productivity) in developing countries. Thus, the minimum wage is required to be set at a high relative level to fulfil

its antipoverty objective. Furthermore, the compliance rate may broadly reflect the relative level at which minimum wages are set (Rani et al. 2013). Low minimum wages may thus quite naturally be associated with a relatively high degree of compliance.

To explore this possibility, the level of minimum wages can be measured both through the ratio of minimum wage to median wages (the so-called simplified Kaitz index) and through the ratio of minimum to mean wages (Terrell and Rita 2008). The study by Terrell and Rita shows that in countries where the minimum wage is set at relatively high levels in the wage distribution, increases in the minimum will produce a significant disemployment effect in the labour market. Some evidence indicates that substantial increases in the minimum wage are not helping and may even be hurting low-wage workers (Neumark et al. 2004).

Using national surveys and restricting the analysis to full-time workers, ILO (2020) shows significant differences in relative levels of minimum wages between developed and developing countries. Results from ILO (2020) indicates that on average, the ratios of minimum wages to median wages are at approximately 0.55 and 0.67 in developed countries and at developing countries, respectively. All developed countries have the minimum to median wages ratio ranging from 0.50 to 0.65, apart from a few exceptional countries. In developing countries, minimum-to-median wage ratios are widely different ranging from 0.16 in Bangladesh to 1.47 in Honduras. In countries where minimum wages are very close or actually higher than the median, it may be impossible for many enterprises to comply with as most of workers are paid less than the minimum wages. On the other hand, when minimum wages are set too low relative to median wages, there is often a higher degree of wage inequality or the minimum wage is not effective as the minimum wages may well be too low to allow a decent living.

Characteristics of the Vulnerable Workforce

The minimum wage is generally meant to protect vulnerable workers who earn a wage at or barely above the minimum wage. As a result, the minimum wage study should focus on those workers instead of looking at the employment rate or income of the whole population because the high-wage earners are less likely to be affected by the minimum wage laws. In advanced countries, minimum wage studies have extensively examined teenagers and specific industries, such as food services and retail sectors, because minimum wage workers are disproportionately represented in this age group and those industries (Belman and Wolfson 2016). The relatively large share of minimum wage earners among teenagers makes it relatively easy to detect the effect of the policy on outcomes for this group, hence making them an attractive group to study.

Globally, most minimum wage earners are located in the lower tail of the distribution of household incomes. Still, the characteristics of minimum wage earners vary across country and region (ILO 2020). In Europe, 69 per cent of minimum wage earners are within the lower half of the income distribution. Additionally, minimum wage earners in poorer households are more likely to be older and live as single parents than those in wealthier families. However, many workers with low incomes are self-employed in developing countries rather than wage earners. Overall, women, young workers, workers with lower education or low skill levels, and rural workers are generally over-represented among low paid workers. Regarding job characteristics, the report shows that minimum wage earners are more likely to hold temporary contracts and part-time jobs than those paid at higher level wages.

It is anticipated that there should be more robust evidence of adverse employment effects of minimum wages on vulnerable workers because their wage is more likely to be directly affected by the minimum wage (Neumark and Corella 2021). However, if the minimum wage is set very low, it is possible that it is not effective even for low-wage, vulnerable workers.

Minimum Wages in Developing Countries: Theory

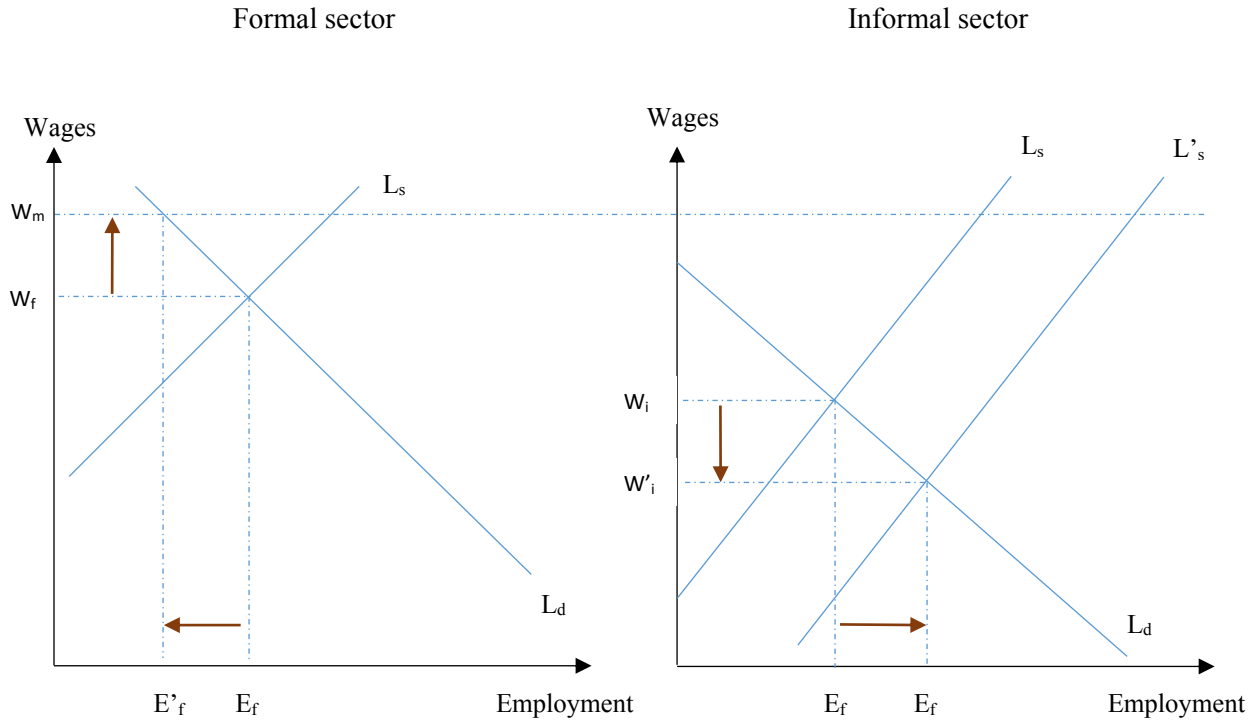
The effects of a minimum wage policy on labour market outcomes are fiercely debated among economists and policymakers. Its advocates argue that raising the wages of the lowest-paid would help reduce poverty and inequality. In contrast, its opponents argue that introducing such rigid labour market intervention would hinder the role of flexible wages and possibly cause more unemployment and even push more people into poverty. Since the effects of minimum wages are highly dependent on the labour market structures, current theoretical labour economics is unable to offer a clear answer to which viewpoint is correct. Minimum wages are often seen to be unfavourable to employment conditions in competitive labour markets, while introducing a wage floor can actually improve employment outcomes if the labour market is characterized as monopolistic and minimum wages are not set at too high levels. This section discusses in detail the theories of minimum wages supporting either of the two views: the competitive labour market model and the monopsony model.

The Standard Competitive Labour Market Model

The standard model of the minimum wage effects on labour market outcomes is the competitive labour market model, which assumes homogenous labour, a competitive labour market, and the complete coverage of the minimum wage legislation (or in the informal economy there is no coverage). However, the dual-sector model, which takes into

consideration moves between formal and informal employment, is notably more relevant for developing countries where the informal (uncovered) sector tends to be relatively large. Figure 1 illustrates the anticipated effects of a minimum wage hike in the dual sector competitive labour market model (Boeri et al. 2011).

Figure 1. The effects of a minimum wage increase in a dual-sector labour market



Under the competitive labour market model, an increase in the minimum wage is bound to bring about an *employment decline* in the formal (covered) sector. If the wage rate is pushed above its equilibrium level from W_f to W_m, then job losses follow so as to restore the equality between the wage rate and the marginal revenue product of labour. Workers whose productivity is under the minimum wage are priced out of work. As a result, a minimum wage set above the equilibrium level causes the employment rate to decline from E_f to E'_f.

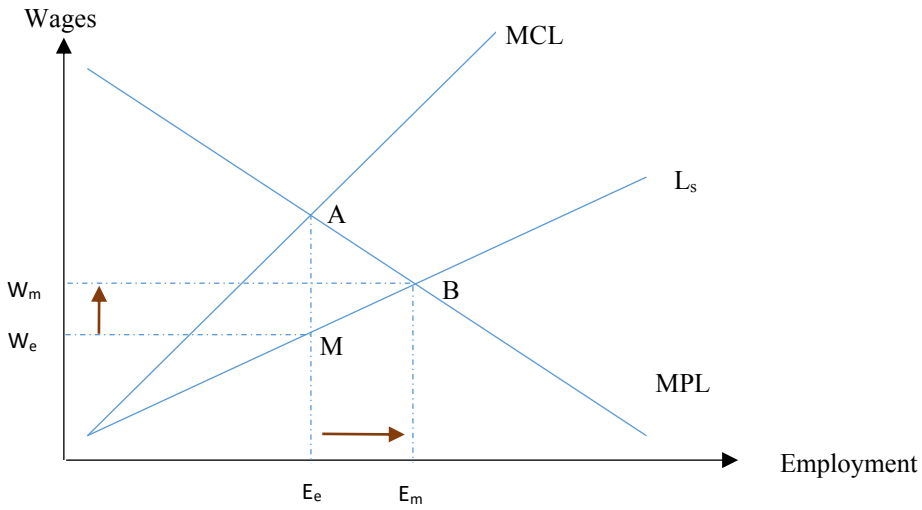
These adverse effects of the minimum wage policy in the covered sector are further exacerbated if one accounts for the impact on the sector that is not covered by the minimum wage regulation (the informal sector). Workers released from the covered sector in search of work move to the informal sector and shift the labour supply curve to the right from L_s to L'_s, driving down the informal sector wages from W_i to W'_i. Under such a scenario, wage gains of workers who remained in the formal sector are achieved at the expense of wage losses of the growing ranks of workers in the informal sector (Figure 1).

The Monopsony Model

The monopsony model is applied if the labour market in the formal sector is mainly characterized as monopsonistic. A firm with monopsony power can dictate the wages they pay to workers (even below the market equilibrium) at a level to maximize its profit. A classic example is a mining company that owns a mine in an isolated town and has the ability to set wages below fair value since there is no rivalry from other companies in recruiting workers. This is because the company is the only employer in town and geographic isolation helps prevent local workers from seeking work elsewhere. Figure 2 details the expected consequences of a binding minimum wage hike in the monopolistic formal labour market (Johns 1997).

A typical firm faces the marginal revenue product of the labour demand curve (MPL curve, the extra revenue generated by an additional worker) and the marginal cost of the labour curve (MCL curve, the extra cost due to an additional worker). The first-order condition for maximum profit is satisfied at point A of the diagram, where the MPL and MCL curves intersect. As the firm has monopsony power, it faces a labour supply curve that is upward-sloping and below the MCL curves. The profit-maximizing point A determines the employment as E_e on the horizontal axis and the corresponding wage W_e at point M from the labour supply curve L_s. Under a competitive labour market, competition forces firms to offer a wage higher than that at M until it reaches point B, whether the MPL intersects the labour supply curve. Consequently, the profit-maximizing monopsonist hires fewer workers at a lower wage rate than a competitive firm would (Figure 2).

Figure 2. The effects of a minimum wage increase in a monopsony labour market



Under the monopsony model, a minimum wage can *increase employment* by increasing work pay and inducing more labour supply. If a minimum wage W_m is introduced and set above the monopsonist's wage W_e, the marginal cost of labour for the firm becomes constant at W_m. In this situation, the firm's profit is maximized at the intersection of the new marginal cost line and MPL curve, point B. These positive effects of the minimum wage policy in the covered sector may lead to positive spillover effects on the informal sector. Additional workers gaining employment in the covered sector withdraw from the informal sector and shift the labour supply curl to the left and, in turn, drive up the informal sector wages.

This phenomenon was so far interpreted as a lighthouse effect, in which a hike in the minimum wage makes the formal sector become more appealing to some informal sector workers and causes a fall in the labour supply in the informal sector, resulting in wages increase in the informal sector (Boeri et al. 2011). Wages in the formal sectors may also become a reference price for negotiation in the informal sector.

Informal sector may pay the same wage but only avoid insurance, tax, etc. Non-compliance is observed in other aspects of the labour contract, such as payroll taxes, paid holidays, health insurance premium, etc. (Amadeo and Camargo 1997). Workers and firms are better off with that deal; workers take the comparable pay to the formal sector, and firms pay less overhead costs. This way, the informal sector offers a way of avoiding the inefficiencies of labour market regulation (Maloney 1999). If there is monopsony power in the informal sector, implementing minimum wage in the formal sector will also increase wages in the informal sector (Khamis 2011; Maloney and Mendez 2004).

Minimum Wage Studies in Developing Countries: Methodological Issues

Research Design

Estimating the causal effects of policy changes based on past responses to policy changes requires choosing appropriate controls to capture what would have happened in the absence of such policy changes (a counterfactual). In recent decades, the traditional "workhorse" in the empirical literature on the employment effects of minimum wages has been the standard two-way fixed-effects model with province and time dummy variables – an estimator that compares changes in low-skilled employment in a country/province where the minimum wage increased more in countries/regions where it increased less (or not at all). The traditional two-way fixed effects model to estimate the effect of minimum wage increases on wages, employment, and hours of work for low-skill workers can be performed by the following functional form (Neumark 2019):

$$Y_{ipt} = \alpha + \beta MV_{pt} + Province_p + Time_t + Individual_{ipt} + X_{st} + \varepsilon_{ipt} \quad (1)$$

where *i*, *p*, and *t* denote individual, province, and time indexes. The dependent variables *Y* may include, respectively: the log of hourly wages; a dichotomous employment measure that takes on the value one if the low-skill worker is working, zero otherwise; and the log of hours worked. The dependent variables can also be individual income, family income, and the probability of being in poverty.

MW is the explanatory variable which measures the minimum wage level. *MW* can be the log of the minimum wage (in monetary terms) or minimum wage index variables (for example, minimum-to-average wage ratio).

Province and *Time* are province (or country) and year dummy variables (fixed effects) vectors. The purpose to include these vectors is to compare changes in employment and earnings in provinces (or countries) where the minimum wage increased more to provinces (or countries) where it increased less or was unchanged. The estimates are based on using geographically-close areas in different provinces (or countries) as a control or comparison group. In this specification, including province and time dummies is assumed to sufficiently control local labour market conditions facing low-skill workers.

Individual is a vector of individual characteristics: age, sex, education, marital status, immigration status, ethnic group, and so on. It also includes job and firm characteristics such as: full time status, permanent job status, union/collective bargaining coverage, firm size, and industry.

X is a vector of control variables intended to proxy supply and demand forces influencing employment. Neumark and Wascher (1994) suggest that these controls include exogenous shifters of labour supply and labour demand.

Econometric Issue: Unobserved Heterogeneity and Selectivity of Control Vectors

The modern debate in the minimum wage literature is concerned with how to best address issues related to unobserved heterogeneity in extensive panel data studies. The traditional two-way fixed effects estimator assumes that ε_{it} is an idiosyncratic error term; no missing variables are correlated with the minimum wage. There is a threat of unobserved common factors in the error term, which can be correlated with the regressors. Unobserved common factors can cause employment across districts and provinces to be interdependent because they are being affected by common unobserved shocks. These unobserved common shocks could be macroeconomic shocks influencing both minimum wage and employment in the same time. This interdependence across areas is commonly referred to as cross-section dependence. Allegretto et al. (2011) and Dube et al. (2010) raised the concern that cross-state minimum wage variation could be correlated with shocks that also affect the employment of low-skilled workers. The idea is that the provinces

(or countries) affected by minimum wage hikes may experience the same economic shocks to labour markets as nearby provinces uncovered by these policy changes. As a result, comparisons between the treated areas and control areas (without taking into account such economic shocks) may be less reliable in identifying the causal effects of minimum wages. In other words, ε_{it} is correlated with the minimum wage variable.

It is easy to think of a common factor that would cause bias in each direction. As an example of economic shocks to the low-skill labour market, technological change could produce negative bias if omitted. Smith (2011) studied teenage employment rates from 1980 to 2009 and showed that job polarization, or the removal of routine, middle-skill tasks due to technological change, pushes middle-skill adults into traditionally low-wage teenage jobs, lowering teenage employment. This technological change example would cause negative bias in the OLS estimate of the unit and period fixed effects approach.

There is also an issue with control for cross-province differences and control for province-specific shocks. Most employment equation specifications in the minimum wage literature use quite parsimonious controls as they often only include aggregate labour market indicators. A couple of recent papers introduce richer sets of controls (Clemens and Wither 2016). The controls of greatest interest include proxies for macroeconomic conditions and flexible, time-varying controls for demographic characteristics. Demographic differences, for example, create the risk that one might expect the employment trajectories of individuals in treated provinces and control provinces to differ.

Econometric Issue: Endogeneity

The question is whether the model estimators adequately account for the potential simultaneity (or endogeneity) between employment and the minimum wage. Neumark et al. (2014) argue that perhaps the minimum wage tends to be raised by the state/province only when its labour market is strong, or employment is expected to grow. In other words, states/provinces tend to pass laws to increase minimum wage during good economic times. If the minimum wage level is affected by employment, then unsophisticated regression estimates of the employment effect of minimum wage might be biased upward or downward. Allegretto et al. (2011) show that minimum wages "are often enacted when the economy is expanding, and unemployment is low. But by the time of implementation, the economy may be contracting and unemployment increasing, possibly leading to upward biased disemployment effects of minimum wage studies.

Newmark (2017) summarized three responses to the concern about the potential endogeneity of minimum wage increases or unobserved heterogeneity of employment trends. First, research has explored the approach by Dube et al.

(2010) and Allegretto et al. (2011) in which valid labor market controls were used along with state/province and time fixed effects to deal with unobserved economic shocks (Neumark et al. 2014). Second, researchers have pushed further the development of synthetic control methods to select or construct appropriate control groups (most notably, Powell 2016). And third, alternative identification strategies (triple differences and instrumental variables estimates) have been used to separate the effects of minimum wage hikes from shocks that are potentially correlated with the policy changes (Thompson 2009; Baskaya and Rubinstein 2015).

Another common diagnostic approach is to assess whether the policy change appears to have an effect on the outcome before it actually occurs. The presence of such pre-event trends, or "pre-trends," or pre-announcements, which could confound the minimum wage effects, is taken as evidence against the strict exogeneity of the policy change. This assumption is that the control provinces provide the appropriate counterfactual of the trend that the treated provinces would have followed in the absence of the policy change. That is, the two provinces are assumed to have had parallel trends.

Given the methodological challenges and labour market complexities, the impact of minimum wages on labour market outcomes in developing countries is, therefore, to a large extent, an empirical issue. Later sections further review and summarize recent empirical evidence.

Empirical evidence: The Impact of the Minimum Wage in Selected Countries

There is extensive literature of minimum wage studies from developed countries and especially the US. Based on that literature, Brown (1999) arrived at a "consensus" that a 10 per cent increase in the wage floor led to a statistically significant 1-3 per cent reduction in employment of teens, the group that was most often studied. Later studies incorporating data from the 1980s found smaller and often statistically insignificant effects, more in the lower end of the 1-3 per cent range (Neumark and Wascher 2008). The more recent studies that use the "difference-in-difference" methodology comparing jurisdictions that increased their minimum wage with those that did not increase their minimum wage tend to find no adverse employment effect. Overall, it would appear that minimum wage studies in developed countries found economically modest but statistically significant adverse employment effects for vulnerable workers only.

The labour markets in developed countries may differ from those in less developed and developing countries because the latter has a much larger informal sector, a large pool of unskilled labour in the rural areas, and compliance

may be difficult and less stringent. There are also fewer studies of the impact of minimum wages in developing countries, although the evidence from those studies is mixed, with some studies finding no effect and others seeing a substantial adverse effect on employment. Based on the factors/characteristics of the labour market that complicate the analysis of minimum wage effects in developing countries, this section aims to make cross-country comparison of minimum wage studies. Countries from BRICS members (Brazil, Russia, India, China, and South Africa) are selected for the study. They are five major emerging economies representing different regions in the world. Additionally, their labour markets have very different minimum wage levels, sector informality, and enforcement levels. Table 1 provides a comparison of the characteristics of their labour markets.

Table 1. Characteristics of BRICS members' labour markets

Country (region)	**Minimum to average wage ratio** *(i)*	**Share of informal employment in total employment** *(ii)*	**Enforcement** *(iii)*
Brazil (South America)	0.43 (MW: BRL 998; average wage: BRL 2304)	46.0%	Weak enforcement
Russia (Eastern Europe)	0.25 (MW: RUB 12130; average wage: RUB 47867)	35.9%	Strong enforcement
India (South Asia)	0.62 (MW: INR 270/day; average wage: INR 13143)	88.2%	No enforcement
China (East Asia)	0.24 (MW: CNY 1785; average wage: CNY 7542)	54.4%	Strong enforcement
South Africa (Africa)	0.17 (MW: ZAR 3633; average wage: ZAR 21958)	34.0%	Weak enforcement

(i) Own calculation using data from ILO (2020)
(ii) ILO (2018)
(iii) Munguia (2019)

This chapter focuses on understanding the differences in estimated employment and wage effects of minimum wages across selected developing countries. There are increasing number of studies on other aspects, such as educational attainment, productivity improvement, firm profit, and inflation, which need further discussion.

Brazil

Lemos (2004) used data from 1982 to 2000 to study the impact of minimum wage at various points across the Brazilian wage distribution. Lemos reported a more significant and robust effect on wages of workers at lower percentiles. At higher percentiles, the effects are not only smaller but also at times insignificant. Such evidence suggests that the minimum wage compresses wage distribution, which is in line with the estimates of Fajnzylberg (2001). Regarding the employment effect, Lemos employed various employment variables such as total employment, hours worked, and employment rate. Lemos found that the minimum wage does not have an adverse employment effect, and to the degree

that it does have one, this effect is negligible. However, Lemos does not report results separately for the formal and informal sectors.

Neumark et al. (2006) used data from a lower inflation period (1996 to 2001). While Neumark et al. do not report separate estimates for the formal and informal sectors, they report results for the head of households and non-heads. The rationale is that non-heads are more likely to work in the informal sector, whereas household heads tend to work in the formal sector. For household heads, they found modest overall disemployment effects. However, the concentration of these disemployment effects is among those lower-wage workers. Turning to non-heads, evidence suggests some weak positive effects on employment and hours.

Regarding wage effects, the authors find that minimum wages are binding for low-wage workers and increase wages at the lower points of the wage distribution. But there is no impact of minimum wages on wages for higher-wage workers. Again, evidence suggests that the minimum wage compresses wage distribution. Finally, Neumark et al. (2006) look at the effect on family income as a net effect of both heads and non-heads and a net effect on wages and employment. The results show that a hike in minimum wage positively affects the family income at the bottom of the distribution. Still, such a positive effect fades away on a longer horizon. The result suggests wages respond quickly, but employment adjustments occur more slowly. The paper provides no evidence that minimum wages in Brazil lift family incomes at the bottom of the income distribution, except in the short run.

Lemos (2009) then tries to estimate minimum wage effects separately for the formal and informal sectors, using data from a low inflation period (1995 to 2004). The principal finding is evidence that the minimum wage compresses the wage distribution of both sectors but does not affect employment. The compression effect is at the bottom of the formal sector distribution, and the higher up in the distribution of the informal sector. The employment results indicate that neither the number of jobs nor hours worked changed in either sector following a minimum wage increase. In sum, the evidence for both the formal and informal sectors indicates that wage effects in Brazil are significant, whereas employment effects are not found or not substantial.

Russia

Research on minimum wages in the Russian Federation is limited, which is likely due to the low minimum wage level compared to average wages and the low level of informality. Because of the relatively low minimum wage, the minimum wage regulation directly affects a small fraction of workers. Therefore, it is not surprising that minimum wage studies on the employment impact in Russia find no or minimal effect.

Muravyev and Oshchepkov (2016) studied the impacts of a substantial increase in the minimum wage in Russia, where the minimum wage was more than doubled in nominal terms in 2007. Correspondingly, the minimum wage to average wage ratio increased approximately from 10 per cent to 20 per cent. The authors find adverse but statistically insignificant effects on overall employment in the formal sector while the statistically significant positive employment impact in the informal sector. The results suggest a movement of workers from the formal sector to the informal sector. However, the estimated effects are too small to be economically significant, as doubling the minimum wage only increased the employment rate by 6.1 percentage points in the informal sector (or a 10% increase in the minimum wage would lead to a 0.6% increase in the informal sector employment). When focusing on the different sub-groups, the authors find that the minimum wage harms youth unemployment by 16.5% and female unemployment by 6.0%.

Regarding wage effects, Lukyanova (2011) used wage information in the payroll data in the Russian corporate sector between 2005 and 2009 to investigate the impacts of a sharp increase in the minimum wage on wage distribution. The results suggest minimum wage leads to a substantial earnings compression in the lower tail of the overall earnings distribution. Theoretically, a hike in the minimum wage in Russia is expected to have a modest wage effect because the minimum wage regulation directly affects a relatively small fraction of low-wage workers. The study by Lukyanova indicates there are sizeable spillover effects where an increase in minimum wage provides a signal (a lighthouse) conveyed by statutory minimum wage to wage setting at the bottom of the wage distribution. The paper has data limitations where the author can not estimate the wage effects in the informal sector and in small firms where low-wage workers are concentrated. Kapelyuk (2015) try to overcome such limitation by looking at the poverty rate during a comparable period from 2006 to 2011. The main finding suggests that the minimum wage increase contributed to a reduction in poverty, yet the size of this effect was modest. A 10 per cent increase in the real minimum wage decreased the poverty rate by approximately 0.74 percentage points.

India

There has been limited research on the effect of minimum wage legislation on employment in India, which is likely to be a consequence of the complexity of the country's minimum wage system and its limited coverage and enforcement (Belser and Rani 2012). Informal employment accounts for more than 80% of overall employment, and the non-compliance rate is as high as 90% for some workers.

Soundararajan (2019) analyses the impact of the minimum wage on employment in the construction sector. Exploiting the difference in the number of labour inspectors and the minimum wage level across regions, the author

finds a negative or null effect on employment in districts with weak levels of enforcement and a positive or null impact in districts with strong levels of enforcement. A study by Gudibande and Jacob (2020) also confirms the results. Gudibande and Jacob conducted a minimum wage study specifically for informal workers by evaluating the impact of the minimum wage legislation for domestic workers introduced during the period from 2004 to 2012. Domestic workers in India are not covered by labour law. The results show a positive impact of the legislation on real wages in the short-run, albeit of very small magnitude. However, the legislation seems to have no effect on real wages in the long run. They conclude that minimum wage legislation has minimal impact on the domestic service sector, where there are no enforcement mechanisms.

Mansoor and O'Neill (2021) analyze over 1500 minimum wage regimes in India. Their findings suggest that minimum wages do not reduce the employment rate while positively affecting wages and consumption in India. However, positive wage effects are strongly correlated to the enforcement level. Notably, a worker in a labour market with strong enforcement (non-compliance rate is less than 20%) would expect to receive almost all minimum wage increases. In contrast, a worker in a labour market with weak enforcement (non-compliance rate is 60%) receives 45 paise of each rupee increase in the minimum wage, while a worker in a labour market with no enforcement (non-compliance rate is above 80%) receives only 12 paise of each rupee increase in the minimum wage. A paise is 1/100th of a rupee.

In sum, India's literature suggests minimum wage has a positive effect on wages, with no evidence of a corresponding impact on employment in both covered and uncovered sectors. However, compliance matters. The benefit of higher minimum wages to earnings is mitigated in low compliance regimes (or uncovered sector).

China

In recent years, the impact of minimum wages on labour market outcomes in China has received significant attention. Effects have also differed between the different Chinese regions, which vary by the degree of development. For example, using provincial-level data, Ni et al. (2011) find the minimum wages have no significant adverse effect on the overall employment. When studying the impacts by separate regions, evidence suggests slightly adverse effects in the more prosperous eastern region and somewhat positive results in the developing central and western provinces over the 2000–2005 period. Wang and Gunderson (2011) used provincial data of rural migrants in the urban area for a comparable period (2000-2007) and found no statistically significant disemployment effects for each region. However, when studying the impacts separately by sector, Wang and Gunderson find a positive employment effect

for the public sector in the east and adverse effects for the private sector in the central and western regions. The discrepancies between these studies may partly be explained by the fact that different target groups were studied as Ni et al. (2011) focus on all workers and Wang and Gunderson (2011) focus on at-risk workers only.

Fang and Lin (2015) examine the minimum wage effects on several subgroups, and their estimates seem to be consistent with the above two findings by Ni et al. (2011) and Wang and Gunderson (2011). Fang and Lin (2015) find that the minimum wage has slightly adverse employment effects for the east and central but positive (though statistically insignificant) results for the western region during the period from 2004 to 2009. Using young and low-wage workers as the target groups, Fang and Lin (2015) find that the disemployment effects in the east and central were more profound for those target groups. This result suggests that even though the minimum wage has no significant impact on aggregate employment, vulnerable workers were more likely to suffer considerable employment losses. Regarding the wage effects, Fang and Lin (2015) find significant positive effects for the target groups in the eastern and central areas but not significant in the western region. The authors then investigate the enforcement level at each region to identify the potential reasons for such discrepancies between regions. During the study period, enforcement levels were strongly increased in the eastern region, while the central and western regions did not show any increases in enforcement. Their estimates confirm that the enforcement has considerable effect on wages and employment in the more developed east region, no effect in the less developed west region, and a relatively smaller impact in the middle ground of the central region.

In sum, the literature available for China suggests that minimum wage has a positive effect on wages at the aggregate level, with a small disemployment effect. However, the impacts on both wages and employment are magnified for vulnerable workers. This group has had a significantly higher wage increase but has experienced more pronounced employment losses. Additionally, enforcement matters. The minimum wage impacts are muted and less substantial in the regions where minimum wage enforcement was relatively weak.

South Africa

From 1999 to 2007, South Africa introduced sectoral minimum wage law, which set the minimum wage separately for each sector. For example, a sectoral minimum wage was introduced for the domestic work sector in 2002 and the agriculture sector in 2003. As discussed below, there have been several minimum wage studies for each sector. In 2019, a new national minimum wage law was introduced and a single national minimum wage was set at R20 per

hour. At the time of writing, there has not been considerable research to take advantage of this new national minimum wage.

Bhorat et al. (2014) analyzed the effects of the sectoral minimum wage law for the agriculture sector, which became effective in 2003. The minimum wage was set relatively high upon introduction, at around the 70th percentile of the wage distribution, and created a shock to the agriculture sector. The regression results suggest significant wage effects as farm workers' wages rose by approximately 30% due to the law. Examining the minimum wage's impact on employment, Bhorat et al. (2014) show that employment declined dramatically as a result of the minimum wage law. The probability of being employed as a farmworker was shown to have reduced by approximately 9% in the post-law period. Such effects indicate that disemployment effects are more likely for unskilled workers. Notably, employment losses appear to have been concentrated among part-time workers, who comprised approximately 23% of the sample in 2002 but only 6% in 2003. The authors suspect the results of disemployment may also be due to other factors specific to agriculture but unrelated to the promulgation of the minimum wage. The authors include additional control variables such as agriculture GDP, net profit of farms, change in agriculture technology, and food price. They find no evidence such factors have driven down employment after 2003. The authors then conclude that a sizeable low-productivity workforce was forced out of the industry due to the significant increase in labour costs. In other words, the least skilled workers are the first to be forced out of the sector.

Dinkelman and Ranchhod (2012) examined the effect of the sectoral minimum wage law for domestic workers, which became effective in 2002. The wage floor was set at 1.5 times the median monthly earnings of domestic workers. The result suggests domestic workers experienced significant increases in wages in the post minimum wage hike period: on average, wages rose between 18.9 and 21.7%. Despite the absence of strong enforcement, the authors show evidence of a strong wage response to the policy change and limited statistical evidence of employment reductions on the intensive or extensive margins. The employment effect for domestic workers contradicts the study by Bhorat et al. (2014) for farmworkers who experienced a significant disemployment effect. Bhorat et al. (2014) speculate the reasons for such difference are: (i) labour cost as a percentage of employer's income in the domestic service sector (6.5%) is significantly lower than that in the agriculture sector (40%), and (ii) availability of capital investment as a replacement for low productive labour is much higher in the agriculture sector. As a result, demand for domestic workers is highly inelastic, and a hike in minimum wage significantly raise wages across the entire domestic work sector. In fact, the

impact of sectoral minimum wages on employment has been positive for almost every sector assessed, except the agricultural sector.

South Africa's sectoral minimum wages result in positive wage effects and no significant disemployment effects in almost all studied sectors, except for agriculture. The least skilled part-time farm workers experienced a considerable employment loss probably due to their lowest productivity and availability of capital investment to replace them.

Empirical Evidence: Heterogeneity of the Minimum Wage Effects

Comparisons across studies are problematic not only because of different empirical techniques, data periods, and data sources, but also because the effect of the minimum wage on wages and employment largely depends on many other factors, such as the level of minimum wage, its enforcement, labour market particularities, and labour market institutions in each country. The critical question, therefore, is whether these systematic differences across studies explain the variations in estimated effects.

Employment Effect

Most of the studies that examine formal sector employment find a significant adverse effect of labour regulations on some aspects of employment. However, such a disemployment effect may be compensated by a positive effect on employment in the informal sector. Therefore, the net effect on overall employment is ambiguous due to these offsetting effects of minimum wages in the two sectors. The employment effects vary both across and within studies, something that should not be a surprise in light of the differences in institutional characteristics of the countries and the differences in the groups of focus. Several studies of minimum wage policies have found adverse effects on employment, but the effects sizes are generally modest. Two notable recent studies that review and summarize more than 1000 estimates generated by using data from developing countries (Broecke et al. 2017; Neumark and Corella 2021), have revealed the heterogeneity of the minimum wage effects, which will be discussed below.

Broecke et al. (2017) reviews the impact of minimum wages on employment in the 14 largest emerging economies as measured by total GDP. The list of countries covered in this paper also provides a good geographical spread covering four continents: Africa, Asia, Europe, and South America. Those countries include Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Mexico, Poland, the Philippines, the Russian Federation, South Africa, Thailand, and Turkey. The paper reviews 1,083 estimates from 56 studies of the minimum wage effects on employment.

Summary statistics of the selected studies show that these studies' average (unweighted) minimum wage elasticity is −0.052. In other words: a 10% increase in the minimum wage reduces employment by 0.52%, which is a relatively small in magnitude. Only a small share of the estimates are statistically significant. The authors then performed a meta-regression analysis (MRA) of those 1,083 estimates to calculate the minimum wage effect on employment's 'average' size and significance. The regressions include several control variables: skill level, youth, wage level, sex, and informality. The MRA findings show that the minimum wage effect is marginally positive but economically small: a 10 per cent increase in the minimum wage is associated with a 0.03 – 0.04 per cent decrease in employment. Overall, the summary statistics confirm that: while negative, the impact of minimum wages on employment appears to be small overall.

Neumark and Corella (2021) reviewed 61 papers on the employment effects of minimum wages in developing countries. Across the 61 studies, there are 1250 total estimates. Summary statistics show that the average estimated elasticity of all estimates is −0.061. The authors then identified 229 preferred estimates (to mitigate biased estimates), and the average elasticity for this subset of estimates is −0.102. The paper focused mainly on those 229 preferred estimates. The authors assess whether there are systematic differences in estimates across studies that explain the variation in estimated employment effects. In particular, the authors classify the estimates in the survey of the studies by four specific features of the estimates: bindingness, formality, enforcement level, and vulnerability. By breaking down the estimates into those features, the authors can classify whether the estimates (i) measured the bindingness of minimum wages; (ii) reviewed for the formal sector, the informal sector, or both; (iii) conducted in countries with strong, or weak, or no enforcement of minimum wage law; and (iv) specifically studied the "vulnerable" workers, or for all workers. From this classification, the authors showed strong disemployment effects for vulnerable workers in the formal sector of the countries with binding minimum wage and strong enforcement (i.e., binding/formal/strong/vulnerable).

On the other hand, all estimates with significant positive minimum wage impacts correspond to studies for the informal sector. The initial result is more aligned with the competitive model than the monopsony model. The authors then perform a meta-regression analysis of those preferred estimates. The MRA result shows that estimated employment elasticities based on a greater number of features that more strongly predict adverse employment effects (i.e. binding/formal/strong/vulnerable) are, in fact, more likely to be negative and significant, more consistent with the monopsony model..

Wage Effects

Minimum wage increases directly affect the formal sector wages. An increase in minimum wages leads to higher wages for formal sector workers who remain employed in the sector. It is suggested that the positive wage effect is most significant for workers earning near the previous minimum wage. Freeman (2010) conducts a literature review on minimum wage studies in developing countries and concludes that minimum wages raise the pay of low wage workers in the formal sector by enough to produce spikes in the distribution of earnings and help low paid workers in the covered groups.

The empirical evidence strongly indicates that wages in the informal sector rise or are at least unaffected following an increase in the formal sector's minimum wage. The so-called lighthouse effects are widely recognized in the literature. Gindling (2018) reviews minimum wage studies in developing countries and concludes that "no study has found that a higher minimum wage depresses wages among informal sector workers as a whole". A summary of estimated wage effects based in selected minimum wage studies is provided by Adam and Buffie (2020). Gindling and Terrell (2005) showed an elasticity of 0.15 for urban informal workers in urban areas and 0.40 for rural informal workers in Costa Rica; Neumark et al. (2006) estimated elasticity of 0.43 for Brazil, and Menon and Rodgers (2017) estimated elasticities of 1.08 and 0.69 for men and women, respectively, in the rural area for India. As shown in Bhorat et al. (2016), Lemos (2009), Andalon and Pages (2009), and Gindling and Terrell (2007), empirical evidence reflects the ubiquitous "lighthouse effect".

The evidence for developing countries demonstrates that a higher minimum wage often leads to an increase in the aggregate earnings for the whole group of workers. However, the evidence also indicates that an increase in minimum wage creates both winners and losers. Some workers see their total earnings increase, while others see their total earnings decline because they become unemployed, underemployed, work fewer hours, or are pushed into lower-paid jobs in the informal sector (from the formal sector). Overall, the vulnerable workers are more likely to experience significant disemployment effects.

Summary

Main Findings

This chapter aims to review the estimated effects of minimum wages on labour market outcomes in developing countries. There is extensive literature in developed countries that studies the consequences of minimum wage hikes,

while minimum wage studies in developing countries have only received significant attention from researchers in recent years. Research on developing countries has tended to follow the research from the OECD countries, but the issues facing developing countries are somewhat different from and more complex than those facing the OECD countries. Developing countries are more likely to have sectors not covered by minimum wage laws, and those uncovered sectors are considerably more significant than those in the OECD countries. Additionally, minimum wages tend to be set relatively high relative to the medium wages, are less likely to be rigorously enforced, and the characteristics of the vulnerable workers in developing countries are also different from those in developed countries. Given these differences, understanding how minimum wages affect labour markets outcomes is critical for economic development, poverty alleviation, and inequality mitigation in developing countries.

The effects of a minimum wage policy on labour market outcomes are fiercely debated among economists and policymakers. Its advocates argue that raising the wages of the lowest-paid would help fight poverty and inequality, while its opponents argue that introducing such rigid market intervention would hinder the role of flexible wages and possibly causes more unemployment and even pushes more people into poverty. While minimum wages are generally expected to be harmful to employment in the competitive labour market model, there is the possibility that introducing a wage floor can actually increase employment if the labour market is characterized as monopsonistic structures. Theoretical labour economics cannot provide a clear-cut answer on the effects of minimum wages, which depend heavily on the labour market structures and labour institutions.

Estimating the causal effects of policy based on past responses to policy changes requires choosing appropriate control or comparison group to capture what would have happened in the absence of such policy changes. The common methodological issues include unobserved heterogeneity and selectivity of right control variables. The traditional two-way fixed-effects estimator assumes that the error term is idiosyncratic or that no omitted control variables are correlated with the minimum wages. However, there is a risk of unobserved common factors in the error term, which can be correlated with the regressors. The controls of interest should include exogenous shifters of labour supply and labour demand, proxies for macroeconomic conditions, and time-varying controls for demographic characteristics. Another methodological issue is the potential endogeneity between employment and the minimum wage. If the minimum wage level is affected by employment, then unsophisticated regression estimates of the minimum wage effect on employment might be biased. This chapter reviews these methodological issues and labour market complexities, and offers potential empirical solutions to deal with them.

This chapter then moves on to review minimum wage studies in selected developing countries. Based on the factors/characteristics of the labour market that complicate the analysis of minimum wage effects, countries of BRICS members (Brazil, Russia, India, China, and South Africa) are selected for the study. They are five major emerging economies representing different regions in the world. In Brazil, the evidence for both the formal and informal sectors indicates that wage effects are significant, whereas employment effects are not found or not substantial. Research on minimum wages in the Russian Federation is limited, and studies show minimal impact, which is likely due to the low level of the minimum wage (not binding or a symbolic only minimum wage) and the low level of informality. India's literature suggests minimum wage has a positive effect on wages, but there is no evidence of a corresponding employment effects in both covered and uncovered sectors. However, compliance matters. The effects of higher minimum wages on earnings are mitigated in low compliance regimes (or uncovered sector). The literature available for China and South Africa suggests a similar conclusion. However, the impacts of minimum wages on both wages and employment are magnified for vulnerable workers. This group has had a significantly higher wage increase but has also experienced more pronounced employment losses as a result of higher minimum wages. Particularly in South Africa, the least skilled part-time farm workers experienced a considerable employment loss likely due to their least productivity and availability of capital investment to replace those workers as the result of minimum wage hike.

Comparisons across studies are problematic not only because of different empirical techniques, data periods, and data sources but also because the effects of the minimum wage on wages and employment depend on the level of minimum wages, level of enforcement, and labour market particularities, and labour institutions in each country. The critical question is whether systematic differences across studies explain the variation in the estimated effects. Several studies of employment effects, which used meta-regression analysis of a large number of estimates in developing countries, show that binding minimum wage in the formal sector of countries with strong enforcement for vulnerable workers (i.e., binding/formal/strong/vulnerable) generate much stronger disemployment effects. Regarding wage effects of minimum wage hike, the so-called lighthouse effects are widely recognized as the empirical evidence strongly suggest that wages in the informal sector increase or are at least unaffected following an increase in wage floor in the formal sector.

Implications and Discussion

Many of the studies in developing countries have generated mixed results on the impacts of minimum wages. While the competitive model and institutional factors more strongly predict adverse employment effects, such adverse

employment is found to be moderate or insignificant in the formal sector, and non-existent in the informal sector employment.

However, when minimum wages are binding and enforced, studies focusing on vulnerable workers do find significant and positive wage effects and strong disemployment effects, implying that classic trade-off of minimum wages between higher wages and lower employment does occur in developing countries. Hence, in assessing the optimal level of minimum wage increases in developing countries, it is crucial also to weigh evidence on other outcomes, such as whether higher minimum wages in developing countries raise the incomes of low-income families – benefits that might offset the costs of some job losses for vulnerable workers. Gindling (2018) suggests that, overall, minimum wages tend to reduce poverty in developing countries, but only modestly.

Directions for Future Research

The big surprise in studies of minimum wages in developing countries is substantial evidence that minimum wages raise wages in the informal and formal sectors. Some studies suggest a hike in minimum wage does have adverse effects on employment in some countries, but the magnitudes are generally modest. These effects run counter to the model that economists often use to analyze minimum wages, in which labour displaced from covered employment moves to the uncovered sector and depresses wages there. Perhaps something else is going on that is not captured in the model, or maybe the measures of wages in the informal sector are poor and the wage levels are too low in the informal sector. In any case, the results stand against applying the standard model to understanding what minimum wages do in developing countries.

Even though literature shows a similar result, it has its weaknesses. From a policy standpoint, absent any substantive input from theory, the stylized facts are something of a black box: a set of potentially significant, policy-relevant results that we do not understand and therefore cannot fully trust (Adam and Buffie 2020). The problem was noted by Brown (1989) and has unchanged to the present day. Eyraud and Saget (2005) called for studies to identify the factors explaining the weak effect of minimum wages on employment; Lemos (2009) called for development of a theoretical framework that can solve the "puzzling results" in developing countries; and to meet the need of policymakers when promulgating minimum wage policy (Fields 2011). As Adam and Buffie (2020) noted, while minimum wage study is relatively mature in many OECD countries, our understanding of minimum wage policy in developing countries is not.

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