Chapter 7 – Monitoring the effects of minimum wages

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Summary

Monitoring the effects of minimum wages is a key element of an evidence-based system. Findings from rigorous impact assessment studies should find their way back to Governments and social partners, and inform subsequent rounds of adjustment or changes to the system.

Governments and social partners should have access to studies on the effects of minimum wages on variables such as wages, employment, informality, hours of work, gender pay gaps, income inequality or poverty. Studies should also monitor effects on prices and on the different elements of aggregate demand, including household consumption, investment or the competitiveness of exports.

Different and credible methodologies should be used to ensure that conclusions are not driven by biases in the choice of methodologies.

If they are effective, minimum wages should raise the wages of some groups of workers. When women are over-represented among low-paid workers, the minimum wage should also reduce the gender pay gap. But the overall wage

effect depends on the level and legal coverage of the minimum, the degree of compliance, and the "spillover" effects on the wages of workers who are paid above the minimum.

Spillover effects arise when, as a result of a higher minimum wage, workers with more seniority or skills also demand higher wages, either through collective or individual bargaining. Spillovers can also occur because changes in the minimum wage can have far-reaching effects on pay in the public sector.

More controversial is the debate on the employment effects, which have been found to vary across countries and studies. A recent World Bank overview concluded that "although the range of estimates from the literature varies considerably, the emerging trend in the literature is that the effects of minimum wages on employment are usually small or insignificant (and in some cases positive)."[1] But differences in findings across countries and studies point towards the importance of country-specific programmes for monitoring the employment effects of minimum wages, particularly on vulnerable workers and enterprises.

7.1 The importance of monitoring

Enough resources should be allocated for monitoring the effects of minimum wages

Monitoring the effects of minimum wages is a key element of an evidence-based minimum wage system. Findings from rigorous impact assessment studies should find their way back to Governments and social partners, and inform subsequent rounds of adjustment or changes to the system. Enough resources should therefore by allocated to study the effects of minimum wages.

The U.K. Low Pay Commission, for example, has in the last few years allocated substantial amount of resources to commissioning research projects, analyse relevant data and actively encourage the Office of National Statistics to establish better estimates of the incidence of low pay, carry out surveys of firms in low-paying sectors, and make fact-finding visits throughout the UK to meet employers, employees and representative organisations.[2]

Recent research projects in the U.K. have for example covered issues such as:

- The impact of minimum wages on earnings, employment and hours
- How the minimum wage changed consumption, savings and debt behaviour
- The impact of the minimum wage on productivity and training
- The imapct of the minimum wage on the gender pay gap
- The impact of the minimum wage on young people
- The impact of the minimum wage on businesses and low-paying companies
- How the minimum wage interacts with the taxes and benefits system
- The impact of the minimum wage on pay settlements
- The nature of non-compliance

All this research has helped the members of the Low Pay Commission in their deliberations and recommendations on annual rate adjustments.

[1] Kuddo, A., Robalino, D., and M. Weber, 2015. Balancing Regulations to Promote Jobs: From employment contracts to unemployment benefits, World Bank Group, Washington, D.C.,

[2] https://www.gov.uk/government/organisations/low-pay-commission

Using different methodologies

Current empirical research is notably varied in methods, data and measures, especially in contrast with earlier research on the subject. Because the choice of methodology can have an effect on results that are obtained, it is important to carry out a critical mass of studies using a variety of methodologies.

7.2 Effects on wages

Minimum wages can benefit minimum-wage earners as well as workers with somewhat higher earnings

The first step in monitoring the effects of a minimum wage is to verify that it really does increase wages. If it does not, then the minimum wage is not an effective wage floor. If it does, then the minimum wage will normally increases average wages and reduce wage inequality compared to a situation where it is absent.

By pushing up the wages of low-paid workers, the minimum wage also contributes to raising the relative wages of more vulnerable or disadvantaged workers, such as those who are young, less educated, or migrant workers.

In practice, minimum wages can benefit two categories of workers.

- Firstly, they should benefit so-called "bound" workers – those who previously earned less than a newly introduced or newly increased minimum wage. This is normally the target group of the policy.
- Secondly, minimum wages can have "ripple" or "spillover" effects further up the wage distribution, increasing wages of those above the level of the minimum. Spillover effects refer to indirect wage increases that take place because employers or workers (or both) want to maintain differences in job status, or higher wages for workers with more seniority or skill. They can also arise in the public sector, when different groups of workers are paid a multiple of the minimum wage. Spillover effects are normally stronger at wages that are close to the minimum, and progressively disappear as workers earn higher wages.

In developed economies low-paid workers predominantly work in places such as restaurants, hotels, retail outlets, nursing homes, hairdressers, in agriculture and in the textile, clothing and food processing industries. In developing countries, agriculture and the textile, garment, leather and footwear industry (TGLF) – including as part of global supply chains - are major employers of minimum wage workers.

Empirical findings

Among advanced economies, the inequality-reducing effect is found in most empirical studies across a wide range of countries and periods.

Belman and Wolfson, in their review of the United States and other developed economies, found that "the preponderance of evidence is that higher minimum wages raise the wages of both bound workers and workers who had previously been earning above but close to the new minimum".[3] In the U.S., for example, about 5 per cent of paid employees earn no more than the applicable state-level minimum wage, but a total of up to 25 per cent (those who earn up to 150 per cent of the minimum) have been estimated to benefit from the policy. In France, not taking into account spillover effects, it was estimated that the wages of about 11 per cent of workers increased as a result of the minimum wage increase in January 2015.[4]

[3] Belman D.; Wolfson, P. 2014. What does the minimum wage do?, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

[4] DARES, La Revalorisation du SMIC au 1er Janvier 2015, Octobre 2015, No.077

Among developing economies, there is similar evidence that minimum wages can reduce wage inequality. The reactivation of minimum wages has, for example, reduced wage inequality in Brazil.[5] But in many countries, their effectiveness in doing so is reduced by widespread non-compliance. In some cases, minimum wages appear to only reduce wage inequality in the formal sector.

The size of the effect on wages and wage inequality thus differs across countries and depends – among other factors - on the level at which the minimum wage is set, the number of workers it covers, the extent of the "spillover" effect, and the degree of compliance.

Additional References:

- Grimshaw and Miozzo (2003) Minimum wages and pay equity in Latin America Working Paper 12/2003, ILO, Geneva.
- Rubery (2003) Pay Equity, minimum wage and equality at work Working Paper 19/2003, ILO, Geneva.

7.3 Effects on gender pay-gaps

Gender pay-gaps

One element of the overall level of total inequality lies in the wage gaps between different groups of workers, including between men and women. In order to close these wage gaps, it is important to understand why they exist.

Unadjusted or "raw" gender wage gaps refer to the earnings of men minus the earnings of women. This can be calculated for average wages, median wages or wages in different places in the distribution. The fact that women earn less than men is an almost universal feature of labour markets around the world. In many countries, the gap is higher among well-paid workers than among low-paid ones.

Much research has attempted to interpret the gender wage gap, and some of the factors that have been advanced by researchers include:

- differences in levels of education and work experience
- sex segregation channelling women into lower value-added sectors and occupations;
- pay discrimination and the undervaluation of women's work

Empirical evidence

Given the over-representation of women in low-paying jobs, minimum wages can also make a significant contribution towards lower gender pay gaps.

This link between minimum wages and reduced gender pay gaps has been documented in countries as diverse as the U.S. and Indonesia.[6] An ILO study showed, for example, that the introduction in 2012 of a minimum wage in the former Yugoslav Republic of Macedonia may have contributed to reduce the gender pay gap between 2011 and 2014.

[5] Lemos, S. 2010. Minimum wage in Brazil: The effect of the minimum wage on wages, employment, and prices in Brazil (Great Britain, Marston Gate). Belman and Wolfson, 2015.

[6] For the U.S., see Di Nardo, J, Fortin, N., and T. Lemieux (1996), "Labor Market Institutions and the Distribution of Wages, 1973-1992: A semi-parametric approach", Econometrica, 64(5). For the U.K., see M. Hallward-Driemeier, B. Rijkers, and Waxman A., 2015. "Can Minimum Wages Close the Gender Wage Gap? Evidence from Indonesia, Policy Research Working Paper 7364, World Bank Group.

But maximizing the effect of minimum wages on gender pay gaps requires that the labour market institutions and wage policies do not themselves directly or indirectly discriminate against vulnerable groups of workers (e.g. by setting lower wage levels in sectors or occupations held by women or excluding migrants from coverage of minimum wage laws).

Also, because its causes are multiple, comprehensive policy packages are required to reduce gender wage gaps. National legislation must provide for the right to equal remuneration for work of equal value and effective access to justice to claim this right. In addition, equal pay between men and women needs to be promoted through strong polices to promote gender equality, including combating gender-based stereotypes about women's roles and aspirations, strengthening polices on maternity and paternity as well as parental leave, and advocacy for better sharing of family responsibilities.

Additional references:

- Minimum wages and pay equity in Latin America
- Pay equity, minimum wage and equality at work
- A Comparative Analysis of Promoting Pay Equity: Models and Impacts

7.4 Effects on employment

Employment effects are controversial

Monitoring the employment effects of minimum wages is essential. Employment effects have long been at the centre of minimum wage research, with much debate over whether and how minimum wages affect jobs, employee numbers and hours worked. As highlighted by Belman and Wolfson, "support for the minimum wage is premised on its improving the lives of those most vulnerable in the labour market. If a minimum wage leads to job loss for many of those same people, serious questions arise with respect to its relative benefits and costs".[7]

Debates on employment effects are also frequently controversial, with different economic theories leading to different predictions. According to one view, minimum wages increase the cost of labour above the marginal productivity of low-paid workers and thus prices them out of the market. Other theories consider that up to a certain level, the cost of minimum wages can be absorbed through a combination of lower wage increases for more highly paid workers, lower profit margins, higher productivity, and/or lower employee turnover. Keynesian macroeconomics suggests that employment may increase if minimum wages lead to higher domestic consumption and aggregate demand.

- See our summary on employment effects in different economic theories

  Neoclassical economic theory predicts that higher minimum wages will lead to lower employment. This may happen for two reasons: firstly, because minimum wages may force enterprises to raise the prices of their goods and services, and consumers or international buyers who face higher prices may therefore cut back on their demand (the so-called "scale effect"). Secondly, when low-wage workers become more "expensive" due to the minimum wage, firms may decide to replace some of them with more machines and a few skilled workers to operate these (the "substitution effect").

  If these effects are large, aggregate employment levels of low-wage workers may decline. There is also likely to be a "cross-industry" effect, as employment is predicted to fall in labour-intensive industries, where the proportion of low-paid workers is higher and where labour costs represent a high proportion of total production costs for enterprises. In other industries, employment may remain unchanged or may even increase, as consumers spend more of their money on goods and services where prices are less affected by minimum wages.

[7] Belman D; Wolfson, P. 2014. What does the minimum wage do?, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, p.21

Other theories, based on different assumptions, take a different view. Different theories start with the hypothesis that many employers exercise a degree of 'monopsony power' – that is, they have market power in employing a particular type of labour often in a defined local labour market (retail workers or nurse assistants for example) and can hold wages (the price of labour) below their contribution to productivity. This theory implies that - when faced with higher labour costs – employers may have an incentive to maximize their profits by expanding production and employment (the "monopsony" effect). So-called "search models" also show that in imperfectly functioning labour markets, higher wages for those at the bottom can, up to a certain point, be compensated by a combination of reduced profits, lower wage increases for managers, or other cost-saving or productivity-enhancing measures.

Macro-economic theories highlight the fact that higher wages not only raise labour costs for employers, but they also increase consumption demand among the low-paid workers and their families. Assuming there are no large negative effects on external competitiveness (which might be the case for very export-oriented economies) or investment, such positive "consumption effects" can lead to increases in aggregate demand and employment. Macro-economic perspectives show that even if some low-productivity firms reduce employment or go out of business, this does not necessarily mean that aggregate employment will be reduced. Employment may expand in other firms and higher wages may attract more people into the labour market.

Empirical evidence

Empirical findings are varied, country- and time-specific, and also depend to some extent on the type of data and methods that are used.

In high-income countries, a comprehensive reviews of about 70 studies, shows that estimates range between large negative employment effects to small positive effects. But the most frequent finding is that employment effects are close to zero and too small to be observable in aggregate employment or unemployment statistics[8]. Similar conclusions emerge from meta-studies (quantitative studies of studies) in the United States[9] , the United Kingdom[10] , and in developed economies in general[11] . Other reviews conclude that employment effects are less benign and that minimum wages reduce employment opportunities for less-skilled workers[12].

Although there are fewer studies in developing countries, similarly mixed findings emerge.[13][14] A recent World Bank publication concluded that "although the range of estimates from the literature varies considerably, the emerging trend in the literature is that the effects of minimum wages on employment are usually small or insignificant (and in some cases positive)."[15] One review of studies in ten major economies (Brazil, Chile, China, Colombia, India, Indonesia, Mexico, the Russian Federation, South Africa and Turkey), found small or no impact on employment, except in circumstances where the minimum wage is set at very high levels.[16] A review of experiences in Latin America also concludes that employment effects of minimum wage increases are varied and depend on the level.[17]

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[8] Belman D; Wolfson, P. 2014. What does the minimum wage do?, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, p.21

[9] Doucouliagos, H.; Stanley, T.D. 2009. "Publication selection bias in minimum wage research? A meta-regression analysis" in British Journal of Industrial Relations, Vol. 47, No. 2, pp.406-426.

[10] Leonard, M.; Stanley, T.D.; Doucouliagos, H. 2014. "Does the UK minimum wage reduce employment? A meta-regression analysis" in British Journal of Industrial Relations, Vol.52, No.3, pp.499-520.

[11] Belman and Wolfson, 2014. Op.cit.

[12] Neumark, D., and W Wascher, 2008. Minimum Wages, MIT Press, Cambridge, Massachusetts and London, England.

[13] Belman D. and P. Wolfson, (2016) "What Does the Minimum Wage Do in Developing Countries? A Review of Studies and Methodologies", ILO Geneva.

[14] Betcherman, G. 2014, "Labor Market regulations: What Do We Know about Their Impacts in Developing Countries?" The World Bank Research Observer

[15] Kuddo, A., Robalino, D., and M. Weber, 2015. Balancing Regulations to Promote Jobs: From employment contracts to unemployment benefits, World Bank Group, Washington, D.C.,

[16] Broecke, Forti and Vandeweyer (forthcoming), "The Effect of Minimum Wages on Employment in Emerging Economies: A Literature Review" OECD Social, Employment and Migration Working Paper, forthcoming

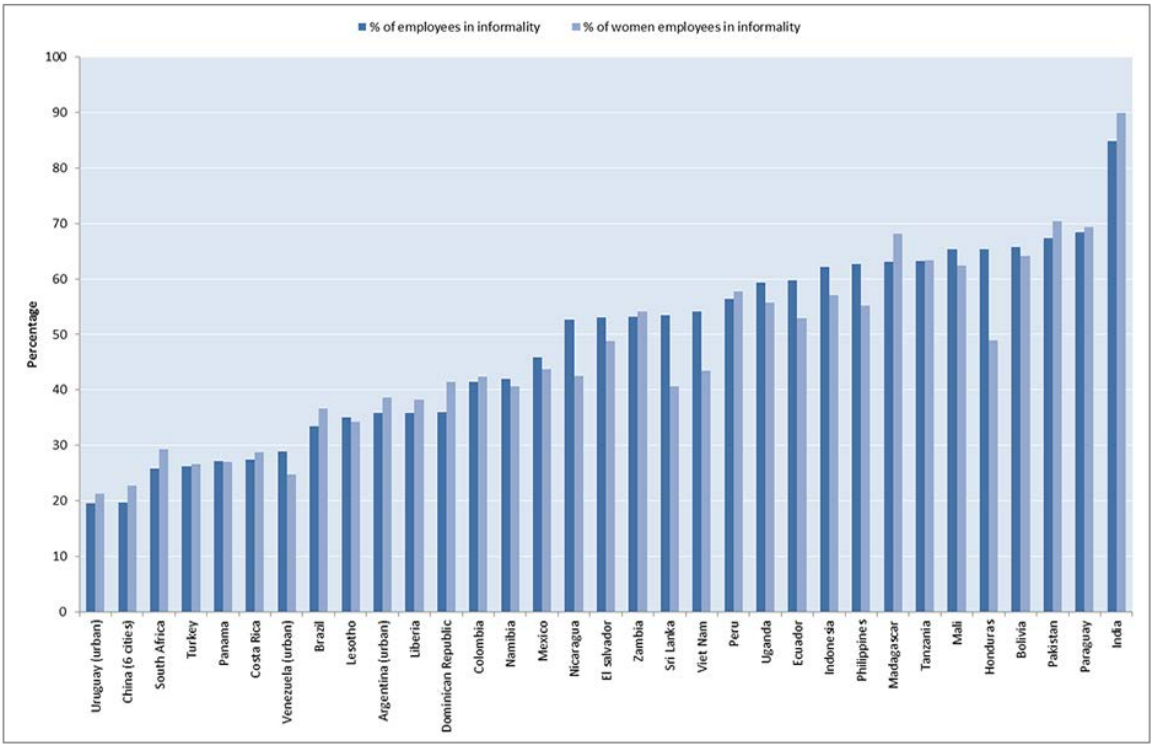
[17] See Mario D. Velasquez Pinto, forthcoming.

7.5 Effects on formal and informal employment

Developing countries are frequently characterized by the co-existence of a formal and an informal employment. According to the definitions adopted in 2013 at the 17th International Conference of Labour Statisticians, jobs in small or unregistered enterprises as well as non-declared jobs in registered enterprises are included in the definition of informal employment.

Based on the ICLS definition, figure 1 below shows that the percentage of wage-earners in informal employment ranges from about 20 per cent in urban areas of Uruguay to more than 80 per cent in India, where an estimated 135 million casual workers in 2009-10 far outnumbered salaried workers.[18]

Figure 1. Percentage of employees in informal employment, latest year available



Source: ILO, 2013. Women and Men in the Informal Economy: A Statistical Picture, Second Edition, Geneva

In most countries, minimum wage laws in principle do apply to small or unregistered enterprises or non-declared jobs (see chapter 4 on who is covered). Almost by definition, however, enforcement of legal or regulatory frameworks is much more of a challenge when wage employment is not registered or takes place in un-registered enterprises.

Taking this reality of developing countries into account, economists have long hypothesized that instead of causing lower employment, minimum wages that are too high and effectively enforced may cause employees to be displaced or shifted from the formal to the informal economy – thereby leading to higher rates of non-compliance and downward pressure on wages in the informal economy.[19]

[18] On India, see Rani U. and P. Belser, 2012. "The effectiveness of minimum wages in developing countries: the case of India", International Journal of Labour Research, Vol 4, Issue 1.

[19] Nataraj, S., Perez-Arce, F. Srinivasan, S. V. and Kumar, K. B. 2014. The impact of labor market regulation on employment in low-income countries: A meta- analysis. Journal of Economic Surveys 28(3): 551-572.

Empirical findings

While several studies have documented reduced formal employment, a review of employment effects in Latin America shows that effects are frequently more complex. One study in Argentina found for example that minimum wage increases have had only little effect on the formal sector, but have increased wages in the informal economy[20] – pointing to the fact that non-compliance with one legislation (like registration or social security) does not necessarily mean that minimum wages have no influence.
One explanation for the effect of minimum wages on wages in the informal economy, where only few labour inspections take place, has been the "lighthouse effect" – i.e. a signal given by the minimum wage to workers and employers in the informal sector about socially acceptable minimum levels of pay.[21]

County-specific research is required to determine whether the displacement or lighthouse effect dominates. To understand overall effects, such research into the effect of the minimum wage on the uncovered/informal economy should include estimates of wage as well as employment effects.

More work is currently under way at the ILO on transition from the informal to the formal economy.

7.6 Effects on labour productivity

Recent studies have shown that minimum wages not only help to reduce wage dispersion and to channel productivity gains into higher wages, but they also can contribute to higher labour productivity – both at the enterprise level and at the aggregate economy-wide level.

At the enterprise level

At the enterprise level, workers may be motivated to work harder. Various studies have supported the hypothesis that first by Akerlof in 1982 that employees consistently provide higher effort levels in response to higher wages, the so-called "efficiency wage" theory.

Workers may also stay longer with their employer, gaining valuable experience and encouraging employers and employee to engage in productivity-enhancing training. Dube, Lester and Reich (2012) attribute reduced turnover for restaurant workers in California to the effect of the minimum wage, which reduces wage competition between low-paying enterprises. When employers can better retain their workforce, workers can learn on the job and be trained to become more productivity over time.

Researchers have pointed out that productivity increases may be the result of a fall in employment due to the minimum wage, as enterprises substitute capital for labour and adopt more capital-intensive production technologies.

While this remains a distinct possibility, particularly when the minimum wage is set too high, other research shows that productivity increases in enterprises were the result of organisational change, training and efficiency wage responses to increased labour costs from minimum wages.

Economy-wide labour productivity

[20] Khamis, M. 2008. "Does the Minimum wage Have a Higher Impact on the Informal than on the Formal Labor Market? Evidence from Quasi-Experiments", Discussion Paper Series IZA DP No3911, Institute for the Study of Labor. Bonn, Germany.
[21] See, for example: Souza, P.; Baltar, P. 1979. "Salario minimo e taxa de salaries no Brasil" in Pesquisa e Planejamento Economico, 9, pp. 629-60; Bell, L. A. 1997. The impact of minimum wages in Mexico and Colombia. Journal of Labor Economics 15 (3): 103–35.

At the aggregate level, minimum wages can result in more productive firms replacing least productive ones – and surviving firms becoming more efficient. These mechanisms can increase overall economy-wide productivity.

In China, for example, it has been observed that higher city-level minimum wages resulted in lower survival probability of low-productive firms. There was no negative employment effect, however, because employment and productivity increased in surviving firms. Hence the minimum wage may have allowed more productive firms to replace the least productive firms, and forced incumbent firms to strengthen their competitiveness.

Learn more:

- Minimum wages and productivity: a brief review of the literature in Annex 5

7.7 Joint effects of minimum wages and collective bargaining

The effects of minimum wages, and their magnitude, depends on how they interact with other policies and labour market institutions. One such interactions is between minimum wages and collective bargaining. Indeed, the effects of minimum wages are different in countries with a strong tradition of collective bargaining than in countries where wages are set unilaterally by enterprises in negotiation with individuals.

What is collective bargaining?

Collective bargaining refers to the negotiation of wages and working conditions between workers organizations and employers and/or their organizations. Negotiations as part of collective bargaining take place bilaterally, with government only intervening to create the necessary framework and promote its development.

Collective bargaining can take place at various levels. Under enterprise-level bargaining, each employer bargains independently; under sectoral multi-employer bargaining, employers come together in associations with a mandate to bargain.

The latter type of bargaining is sometimes seen as more inclusive, giving employers and workers more bargaining power and saving on bargaining costs and removing the potentially conflictual topic of pay negotiations from the workplace. This multi-employer type negotiation also establishes a common rule for competition among enterprises that are parties to the agreement. However, it can restrict the independence of individual firms, and may not take into account the heterogeneity of firms within a particular sector. Moreover, many agreements increasingly allow for tailor making of terms at the enterprise level (dual level bargaining) and provide for conditional derogations depending on firm size.

Extension of collective agreements[22] to all enterprises, in accordance with national law and practice, can also be used to ensure fair competition by providing a level playing field and extending coverage to all workers.

Empirical evidence

In many countries, minimum wages and collective bargaining co-exists and complement each other. In principle, minimum wages should be targeted at the lowest-paid employees, while collective bargaining can set wage floors but should also promote wage increases for workers who also earn more than the minimum, in line with productivity growth. However, if the minimum wage is too high or the minimum wage system too complex (with too many rates, including for workers with very different levels of qualifications or occupations), there is a risk that minimum wages will "crowd out" collective bargaining – that is, encroach on the domain of collective bargaining and not leave enough space for the latter to develop.

When collective bargaining is weak, there is a risk that many workers' wages will be clustered around the minimum wage, dragging down median or mean wages.

[22] An extension procedure is a legal process used in many countries which allows the government to extend the coverage of a sectoral agreement to all workers in the sector irrespective of whether an enterprise has signed the agreement.

Box 1

The combined effects of minimum wages and collective bargaining

In France, the minimum wage influences the base rate in collective agreements, which in turn also influences all collectively agreed wages above the floor. Because most collective agreements are extended to entire industries, spillover effects are "institutionalized" across the economy, and are therefore relatively strong and far-reaching. For example, studies suggest that the spillover effect is fully felt on wages up to 10 per cent above the minimum wage and extends to a wage level twice the minimum wage, equivalent to a wage above the 50th percentile.

In the United States, by contrast, weaker trade unions and lower collective bargaining coverage explain the weaker spillover effect. Studies in the United Kingdom find an even weaker spillover effect that is almost insignificant. In fact, for workers paid a little above the minimum, some studies even report a negative wage effect, suggesting that some employers have shifted the cost of minimum wage up-ratings on to other low-wage workers by proactively reducing differentials.

Source: adapted from Grimshaw, Bosch and Rubery (2014). "Minimum wages and collective bargaining: What types of pay bargaining can foster positive pay equity outcomes?" British Journal of Industrial Relations, Vol. 52, Issue. 3, pp. 470-498.

7.8 Effects on household income and poverty

From Wages to Incomes

Can minimum wages reduce poverty or income inequality?

Income is measured at the household level, as the sum from all different sources accruing over a certain period of time. Figure 2 provides an example of a family of four (two adults and two children) with multiple sources of income. Wages are only one of these sources. Other sources include income from self-employment, income from capital and state transfers, such as social security.

In developed countries, wages represent the largest source of income - up to 70 or 80 per cent of total pre-tax and post-transfers income - for households with at least one member in the labour force. In emerging and developing economies, the contribution of wages to household income is smaller, ranging from about 50 to 60 per cent in Argentina or Brazil to about 40 percent in Peru and 30 per cent in Vietnam.

Hence higher wages are one part of the multiple components of a strategy to reduce poverty or inequality. The creation of wage employment (as opposed to other types of employment, like self-employment) and fiscal redistribution through taxes and social transfers also play a key role.

Figure 2. Components of a household income of US$6,500

Source: ILO Global Wage Report 2014/15 (see Appendix II).

Empirical evidence

While minimum wages may not directly affect all low-income households, empirical studies do show that they play an important role since a significant proportion of minimum wage workers live in poor or low-income households. But the effect of minimum wages on poverty headcounts varies depending on country characteristics.[23]

For example, in the United States, 20 per cent of low-wage workers live in families with incomes below the poverty line. Another 16 per cent live in families with incomes less than 1.5 times the poverty line.[24] In European countries, minimum wage workers are much more at risk of poverty than others.[25] In India, about 30 per cent of salaried workers and 40 per cent of casual wage workers who earn less than state-level minimum wages live in poor households. [26]

Minimum wages can therefore play a useful role in supporting incomes for those in the lower part of the distribution – even when they do not lift households above an "arbitrary" poverty line. What matters more than the effect on poverty-headcounts, is whether minimum wages improve the lives of low-income households and whether they are better off as a result of it.

7.9 Effects on Government Finances

Government finances

Minimum wages have sometimes been described as an attractive policy tool for poverty reduction and social justice because they do not require significant government spending (Cunningham, 2007)[27]. Yet, minimum wage increases can have unintended collateral effects that do affect government finances.

[23] Betcherman (2014, op.cit).
[24] CBO (Congress of the United States). 2014. The Effects of a Minimum-Wage Increase on Employment and Family Income, February
[25] Rycx F. and S. Kampelmann 2012. "Who earns minimum wages in Europe? New evidence based on household surveys", ETUI, Report 124
[26] Belser, P; Rani, U. 2011. "Extending the coverage of minimum wages in India: Simulations from household data.
[27] Cunningham, W. 2007. Minimum Wages and Social Policy: Lessons from Developing Countries, The World Bank

There are three main linkages:

- One is that a higher minimum wage can lead to increases in the public sector wage bill, particularly when public sector pay scales are calculated as a multiple of the minimum. In some instances, this direct link – and the fear of its consequences – has prevented increases in the minimum wage.
- A second complication arises when different aspects of social protection, such as basic pensions, disability payments or maternity benefits, are automatically linked to the level of minimum wages. So, for example, the basic pension may be set at 75 per cent of the level of the minimum wage. In practice, this means that retirement and other benefits will be adjusted upwards when the minimum wage increases.
- A third linkage displays the reverse relationship and occurs where governments supplement low wages with means-tested in-work benefits to address problems of household poverty among low paid workers. Governments then face a strong incentive to raise the minimum wage so as to reduce the size of welfare transfers to the low paid.

While having these links may be attractive for various reasons, it creates the risk of potentially unsustainable increases in social security costs when the minimum wage is adjusted upwards. When the minimum wage increases faster than average wages in order to reduce wage inequality, the consequence is that social security spending grows faster than the revenue base for the social security system, which depends on trends in real earnings.

Marinakis and Velasco (2006, p. 13)[28], for example, point out that in the 1980s the fall in the real value of the minimum wage in Argentina and Brazil was in fact mostly aimed at shrinking the budget deficit by cutting social security spending. Some countries have thus chosen to de-link minimum wage increases from increases in social benefits.

- De-linking Portugal's minimum wage

  In Portugal, social security benefits were previously set as a percentage of the minimum wage – the so-called "Guaranteed Monthly Minimum Remuneration" (RMMG). Since 2007, social security benefits, including pensions, have been separated from the RMMG. Law 53-B/2006 laid down rules for updating pensions and other social benefits and formally established a new index called the "social support index" (IAS) for adjusting social security benefits.

  The minimum pension is now set as a percentage of the IAS, which is updated annually on the basis of the consumer price index (CPI) and the GDP growth rate.

  The de-linking of social security and minimum wages came from two important agreements signed between the government and social partners: the agreement on social security reform and the agreement on the fixation and evolution of the RMMG. The latter aimed to progressively raise the monthly minimum wage from €403 in 2007 to €450 in 2009 and to €500 in 2011.

  Given the major effects that such an increase would have had on welfare spending, it was considered necessary to de-link social security from minimum wages. This meant the minimum wage was kept for its intended purpose, namely to increase the remuneration of low-paid workers. As such, the Portuguese system now resembles the system of many other European countries, such as France, which has a minimum wage that is independent of the "minimum social" index.

  Source: Luisa Guimares, ILO

[28] Marinakis A; Velasco, J.J. (EDS.) 2006. Para Que Sirve el salario minimo? Officina Internacional del Trabajo, Santiago, Chile

Annex 5: Minimum wages and labour productivity

Recent studies have shown that minimum wages not only help to reduce wage dispersion and to channel productivity gains into higher wages, but they also can contribute to higher labour productivity – both at the enterprise level and at the aggregate economy-wide level. At the enterprise level, workers may be motivated to work harder. They may also stay longer with their employer, gaining valuable experience and also encouraging employers and employee to engage in productivity-enhancing training. At the aggregate level, minimum wages can result in more productive firms replacing least productive ones – and surviving firms becoming more efficient. These mechanisms can increase overall economy-wide productivity.

(a) workers can be more motivated

A large number of experimental studies have supported the hypothesis formulated by Akerlof in 1982 that employees consistently provide higher effort levels in response to higher wages, the so-called "efficiency wage" theory. Most of these studies have focused on pay levels of individual firms, showing that higher pay compared to elsewhere can attract more experienced and motivated applicants. Higher pay can also elicit greater commitment and productivity from existing employees (Ehrenberg and Smith, 2009). The effect of minimum wages - as opposed to higher wages in individual firms - on workers' motivation has also been found to be positive. Using a standard natural experiment design Georgiadis (2013) for example found that the U.K. national minimum wage has operated as a kind of "efficiency wage" in the residential care homes sector, increasing motivation and leading to a reduction in the level of worker supervision required. Experimental evidence in the U.S. by Owens and Kagel (2010) also points to a positive relationship between minimum wages and workers' effort, leading to the conclusion that – if well-designed – minimum wages can generate improved outcomes where employees have higher wages and employers have the same, or slightly higher, average labour cost.

(b) there can be more productivity-enhancing training as a result of lower turnover

Another area that has been increasingly researched in recent years is the link between minimum wages and reduced turnover, i.e. the flow of workers in and out of jobs (or the rate of employee separations and hires). Dube, Lester and Reich (2012) found that in the U.S. a 10% increase in the minimum wage results in a reduction of 2.1% in turnover for restaurant workers and a 2.0% reduction in turnover for teenagers. They attribute this finding to the reduction in wage competition between low-paying enterprises. In Canada, Brochu and Green (2013) found that hires, quits and layoffs of young workers with low education decline in the year after a minimum wage increase. In Portugal, a study documents how separations of young workers fell substantially after a youth-specific minimum wage increase (Portugal and Cardoso, 2006).

All this evidence suggests that with a more generous minimum wage, employers more easily retain their workforce, as a result of which workers can learn on the job and be trained to become more productivity over time. Efficiency wage and training responses to increased labour costs have been studied by Arulampalam et al. (2004), who found indication that the introduction of the national minimum wage in Britain led to increased employers' training.

(c) some firms can become more efficient

Researchers have pointed out that productivity increases may be the result of a fall in employment due to the minimum wage, as enterprises substitute capital for labour and adopt more capital-intensive production technologies. While this remains a distinct possibility when the minimum wage is set too

high, the emerging trend is that the effects of minimum wages on employment are often small or insignificant, and in some cases positive (Kuddo et al., 2015). Although the range of estimates from the numerous existing studies varies widely, meta-studies (studies of studies) in the U.S. and the U.K. found the most precise estimates to be clustered at or near zero employment effects (Doucouliagos and Stanley, 2009; Leonard et al., 2013; Belman and Wolfson, 2014). Among emerging economies, no obvious employment effects of minimum wages were identified in China (Wang, forthcoming).

Riley and Bondibene (2015) exploited the introduction of the National Minimum Wage in Britain and subsequent increases to identify the effects of minimum wages on productivity. They found that companies responded to these increases in labour costs by raising labour productivity. These labour productivity changes did not come about via a reduction in firms' workforce or via capital-labour substitution. Rather they were associated with increases in total factor productivity, consistent with organisational change, training and efficiency wage responses to increased labour costs from minimum wages. These conclusions align with findings of some previous studies, such as those of Croucher and Rizov (2012) who found an improvement in labour productivity in all of U.K.'s low-paying sectors as a result of the introduction of the national minimum wage, and particularly so in larger firms.

(d) There can be increased efficiency at the macro level

At the macro-economic level, it has been observed that minimum wages may prompt low-productivity firms to leave the market and higher-productivity firms to expand – thereby raising overall efficiency of the economy. Mayneris, Poncet and Zhang (2014), using data for more than 160'000 manufacturing firms in China found that increases in city-level minimum wages resulted in lower survival probability of low-productive firms. For surviving firms, wage costs increased without negative repercussions on employment. They explain this finding by the fact that productivity in surviving forms improved significantly, allowing firms to absorb the higher labour costs without hurting their employment or profitability. They conclude that minimum wage growth allows more productive firms to replace the least productive firms and forces incumbent firms to strengthen their competitiveness.

Although less scientific, surveys of employers also show that companies first and foremost try to meet the cost of higher minimum wages by investing in training and equipment to make their workers more productive (FT, November 18, 2015). This suggests that minimum wages can also lead to more innovation over the long run (Noah Smith, Bloomberg View). Using semi-structured interview with 80 senior representatives of employers' organizations and trade unions, senior civil servants and industrial relations academics, McLaughlin (2007) examined how minimum wage regulations can raise productivity in Denmark, New Zealand and Ireland. He found that higher minimum wages are important for productivity but in the long-term other supporting institutions – such as collective agreements that enable training outcomes - can contribute to encourage firms to adopt the "high road" strategy through training and higher quality-based products market strategies.

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