Chapter 5 – Setting and adjusting minimum wage levels

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Summary

Setting and adjusting the level is perhaps the most challenging part of minimum wage fixing. If set too low, minimum wages will have little effect in protecting workers and their families against unduly low pay or poverty. If set too high, minimum wages will be poorly complied with and/or have adverse employment effects.

A balanced and evidence-based approach is necessary which takes into account, on the one hand, the needs of workers and their families and, on the other, economic factors. An appropriate balance between these two sets of considerations is essential to ensuring that minimum wages are adapted to the national context, and that both the effective protection of workers and the development of sustainable enterprises is taken into account.

An evidence-based approach also implies that there should be clear criteria to guide discussions on the level of minimum wages, as well as reliable statistical indicators to support governments and social partners in their deliberations. Common statistical indicators that are used include the general level and

distribution of wages, the evolution and differences across regions in the cost of living, as well as national or sectoral levels of labour productivity and rates of economic growth.

To maintain their relevance, minimum wage levels need to be adjusted from time to time. Failure to do so may lead to an erosion of the purchasing power of workers who earn the minimum when prices of goods and services are rising, or may lead to more wage inequality when the general level of wages is increasing.

Because the social and economic effects of minimum wages are never fully predictable, **it is essential to ensure that the impact of minimum wage adjustments is adequately monitored and studied.**

If mathematical formulas are used to periodically adjust minimum wage rates, these should be consulted with social partners and not be used as a substitute for social dialogue.

5.1 What is a balanced and evidence-based approach?

A balanced approach is one that takes into account, on the one hand, the needs of workers and their families and, on the other, economic factors. Such an approach combines both social and economic factors in order to find a level that benefits workers and society without prompting negative effects. A balanced approach is necessary because a minimum wage is a redistributive tool that has both benefits and costs.

If set too low, minimum wages will have little effect in protecting workers and their families against unduly low pay or poverty. If set too high, minimum wages will be poorly complied with and/or have adverse employment effects.

The balanced approach in ILO Convention No.131

The balanced approach is emphasized in the [Minimum Wage Fixing Convention, 1970 (No. 131)](#) ,which in Article 3 states that:

> The elements to be taken into consideration in determining the level of minimum wages shall, so far as possible and appropriate in relation to national practice and conditions, include—
>
> **(a) the needs of workers and their families, taking into account the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups**;
>
> **(b) economic factors, including the requirements of economic development, levels of productivity and the desirability of attaining and maintaining a high level of employment.**

It is understood that these criteria are not exhaustive.

While economic factors may constrain increases in minimum wages, in other instances they may provide an opportunity to increase minimum wages beyond the minimum survival needs of workers and their families.

How to ensure that minimum wage fixing is evidence-based?

While minimum wage fixing is always the result of a political process, including in principle the full consultation of social partners, setting the minimum wage should be evidence-based. In this respect, it is useful to identify objective

criteria. The importance of the collection of statistics and other data for analytical studies is emphasized in Recommendation No. 135 and the Labour Statistics Convention, 1985 (No. 160).

When governments and social partners agree on the basic criteria that they intend to use for the minimum wage adjustment, discussions can occur within a common framework. The availability of data also allows for the effects of the minimum wage rate to be carefully monitored over time.

These effects, measured by a monitoring process, can subsequently feed into the next round of decisions that policy-makers take to uprate the minimum wage.

Data used for this purpose should be timely, comprehensive, and disaggregated by sex. In order to assess the effect of the minimum wage, or simulate the effects an uprate might have on the economy, it is necessary to have data which are as representative of the economy as possible.

> ➢ Learn more about surveys
> In many countries, a labour force survey will broadly meet these requirements. In some cases, in cooperation with national statistical offices, the labour force survey can be modified to include questions on wages or to oversample a specific population, like domestic or migrant workers, as was done recently for example in Namibia.
>
> Admittedly, there are criticisms of household surveys, like labour force surveys, since they are prone to measurement error, particularly with regards to self-reporting of income, wages and hours. Other surveys, like establishment surveys, can complement analyses undertaken using the labour force survey.
>
> However, it is important to note the groups that are often excluded from establishment surveys – workers in the informal economy, the self-employed and often small or medium-sized enterprises. Excluding these groups from surveys also excludes them from subsequent data analyses that are used to set and adjust the minimum wage.

5.2 How frequently should minimum wages be adjusted?

ILO Conventions and Recommendations

Convention No. 131 considers that minimum wages should be "adjusted from time to time (Article 4)."

The accompanying Minimum Wage Fixing Recommendation, 1970 (No. 135) , further clarifies that "Minimum wage rates should be adjusted from time to time to take into account changes in the cost of living and other economic conditions." In principle, this revision can take place "either at regular intervals or whenever such a review is considered appropriate in the light of the variations in a cost-of-living index".

The advantages of regular adjustments

Governments and social partners can in principle agree to revise the minimum wage whenever they consider it necessary. However, **in the absence of fixed periodicity, both workers and employers will be affected by some uncertainty.**

Workers who receive a minimum wage do not know for how long price inflation will erode their purchasing power, while employers do not know when they might suddenly face an abrupt increase in their labour costs. Indeed, it has been observed that in countries without fixed periodicity, minimum wages sometimes remain unadjusted for long periods followed by sudden and large adjustments. This not only weakens the relevance of the minimum wage, but also makes it more challenging for enterprises to absorb the cost increases.

Most frequently, countries adjust their minimum wages once a year. Some countries, adjust rates every six months, while others have 2-years intervals. Annual adjustments seem adequate in periods of low or moderate inflation, providing workers and employers with appropriate predictability and allowing for regular adjustments, in line with evolving economic circumstances.

What to do if there is high inflation?

Yearly adjustments allow for predictability and smooth adjustments, and can be complemented by more frequent adjustments when inflation exceeds some threshold.

In some countries, when inflation accelerates above a certain threshold, more frequent adjustments are automatically applied. In France, for example, the minimum wage is automatically increased whenever price inflation exceeds 2 per cent within a given year.

Automatic indexation above a certain level, however, can be risky and lead to inflationary wage-price "spirals" in situations of sharply accelerating inflation.

5.3 The needs of workers and their families

To be meaningful, minimum wages have to be set at a level that covers the needs of workers and their families, while taking into account economic factors.

Assessing whether existing rates are sufficient to meet the needs of workers and their families can be challenging. First, needs of workers and their families cannot be considered in a vacuum; they must be understood in relation to a country's level of economic and social development, taking into account the views of social partners. Secondly, whether a minimum wage is sufficient to cover family needs depends on the size of one's family, which varies across workers. It also depends on how many family members earn the minimum wage, and on the local cost of living.

Because of all these reasons, **adequate minimum standards of living should be ensured through the combination of a minimum wage and social security measures.** Yet some useful benchmarks can be used for the purpose of fixing minimum wages.

Estimating absolute and relative needs

Absolute estimates of needs of workers and their families can be constructed by estimating the average cost of basic but decent life style for a worker and his or her family by adding up the cost of food, housing, and other essential expenses like for health, education of children, and participation in the social life of the community. This is the approach usually taken in estimating national poverty lines[1] or "living wage" thresholds.

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[1] National poverty thresholds may be determined on the basis of various methods. Some examples are described in Haughton, J.; Khandker, S.R. 2009. Handbook on poverty and inequality (World Bank, Washington DC)

Relative needs and relative poverty lines are defined as some proportion - sometimes 60 per cent - of median household income. Relative poverty lines better capture the "cost of social inclusion and equality of opportunity in a specific time and space"[2] and are usually preferred in more developed economies.

> ➢ [Learn more about needs of workers and their families in Annex 2](#)

Adjusting for increases in prices

Increases in the general level of prices and the cost of living is the most frequent consideration in minimum wage adjustments. This is because **inflation erodes the real value of the minimum wages over time**. One indicator to capture the changes in prices is the consumer price index (CPI). This index tracks the evolution of prices for a basket of goods and services purchased by consumers over time. It is well established in most countries. Monthly figures are usually available after a short period of time.

However, sometimes countries publish different CPIs. Some countries may wish to consider a CPI that is computed for the poorest households since they are among those most likely to be affected by the minimum wage. In particular, this CPI has a special relevance in cases where food prices have grown more rapidly than average prices since poor households usually spend a larger share of their income on food.

Because past inflation is not necessarily going to be reproduced in the future, an alternative is to use expected future inflation. However, as with most forecasts, estimates of future inflation usually differ from the effective inflation rates. An ex-post "corrective adjustment" can thus be introduced in case the estimates are significantly different from the effective rates.

> ➢ [Click to learn more about the link between inflation and the real value of minimum wages in Annex 3](#)

5.4 Economic factors

When setting the level of the minimum wage, policy makers should take into account economic factors. If the minimum wage is set too high or increased too much, this may have unexpectedly large impacts on the labour costs that employers must pay. This, in turn, could trigger price inflation, hurt exports, and reduce the level of employment. Wages that are too low, by contrast, constrain domestic household consumption.

According to ILO Convention No.131, economic factors to take into account include, "the requirement of economic development, levels of productivity, and the desirability of attaining and maintaining a high level of employment". Other economic factors that can be considered include issues related to competitiveness, investment, prices, and economic growth.[3]

Labour productivity - sharing the fruits of progress

In setting and adjusting minimum wages, policy makers frequently make reference to labour productivity. Labour productivity provides contextual information on the market value of what is produced by an average worker in

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[2] [Jonathan Bradshaw](#) ; Yekaterina Chzhen; Gill Main; Bruno Martorano; Leonardo Menchini; Chris de Neubourg (January 2012). [Relative Income Poverty among Children in Rich Countries](#) (PDF) (Report). Innocenti Working Paper. Florence, Italy: UNICEF Innocenti Research Centre. [ISSN 1014-7837](#)

[3] [IOE. The Minimum Wage, Guidance paper of the International Organisation of Employers](#)

a country, given existing levels of capital and technology.[4] Taking into account labour productivity in regular adjustments also ensures that workers receive a share of the fruits of progress.

Average labour productivity in a country is usually measured as GDP per worker, or GDP per hour worked. Data on sector-level productivity is also useful when minimum wages are set at different levels in different industries. However, in some sectors, measuring labour productivity is problematic. For example, quantifying the value added in the education sector or in domestic work are particular challenges.[5]

> Learn more about wages and productivity

In practice, in their periodic adjustments, many countries use some proxy indicators, like GDP growth or GDP per capita growth. In Brazil, the legislation places price inflation and GDP growth in a mathematical formula for minimum wage adjustment. Other countries, such as Costa Rica, increase the minimum wage by inflation plus a share of past economic growth.

Proportion of workers affected and impact on total wage bill

Another statistical indicator to consider is the proportion of employees who will likely be affected by the introduction of a minimum wage or an uprating of an existing minimum wage. This indicator captures the impact that the minimum wage will likely have on the overall wage structure and the total wage bill.

If the minimum wage is set too high, it will likely affect a large number of workers and this could have unexpectedly large impacts on average labour costs and on the total wage bill that employers must pay. This, in turn, could trigger price inflation and/or reduce the level of employment. Since compliance is partly dependent on the level of the minimum wage, there is also a high probability that a minimum wage set too high would result in a low level of compliance.

The proportion of workers affected can be calculated at the national, regional or industry level. It can also be calculated for certain groups of workers (such as by sex, race, and so on). These disaggregated analyses enable a richer understanding of the wage distributions unique to each part or group of workers in the economy. They also allow a better understanding of the individuals, regions or industries that will be most likely or disproportionately affected by the minimum wage.

> Learn more about impact on labour costs in Annex 4

Managing aggregate demand - finding the right balance

For some individual enterprises, increasing wages can be very problematic. At the same time, even during periods of economic difficulty, there are strong economic and social reasons why governments may want to encourage wage increases in line with average productivity growth. One such reason is that higher wages for low-paid workers can increase their consumption levels and in some circumstances lead to higher aggregate demand. When wages are pushed too high, however, exports and investment may decline, and aggregate demand may fall.

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[4] OECD. 2001. Measuring Productivity: OECD Manual, Measurement of aggregate and industry-level productivity growth (Paris, OECD) .
[5] Atkinson. 2005. Atkinson Review: Final Report. Measurement of Government Output and Productivity and the National Accounts (New York, Palgrave Macmillan) .

From a macroeconomic perspective, wages which increase roughly at the rate of medium-term productivity growth plus the Central Bank's target rate of inflation (or some other low inflation rate if there is no explicit inflation target) should guarantee price stability, ensuring that wage developments do not cause deflation or excessive inflation.

5.5 Ratio of minimum to average wages

One useful and widely used statistical indicator is the ratio of the minimum wage to the mean or the median wage. As mean wages are affected by extreme values, median[6] wages provide a better point of reference, especially in countries that have high wage inequality. This indicator shows the level of the minimum wage relative to that of the "average worker", and – to the extent that average wages reflect at least in part average productivity levels – also provides information on economic factors.

The first figure below shows that in developed economies, the minimum wage ranges usually from 35 to 60 per cent of the median wage. The second figure shows that in developing countries, the ratio of minimum to median wages is frequently higher. This could be due to the fact that in developing countries, the median wage earner is often relatively low-paid. Thus, considerations related to the needs of workers and their families sometimes lead to higher minimum wage ratios than in developed economies.

While such indicators can be useful in evaluating minimum wage levels, they should be complemented by more refined country-specific analysis. Country-level ratios should also be calculated at a disaggregated level by sector, sex, and region in order to identify the groups or regions most likely to be affected by the minimum wage.

It should also be noted that these ratios can be misleading when they are interpreted too literally. The figure below shows for example that minimum wages are relatively high in France, which may suggests that it also has higher effects on labour costs than in other countries. To some extent, however, the cost of minimum wages in France are mitigated by reduced social security contributions for employers who hire minimum wage workers.

> ➢ Learn more about caveats and limitations
> When comparing the minimum to average wage ratio, it is important to compare the monthly minimum wage for normal hours with full-time (or full-time equivalent) workers.
>
> Average wage data for all employees tends to be lower than that for full-time or full-time equivalent employees since there is variation in hours worked in the former. The difference will depend on the percentage of employees who work less than full time.
>
> Also, the minimum to average wage ratio should be interpreted with care. For example, in some sectors, the average wage may be very close to the minimum wage in industries where minimum wage-type work predominates. This is the case in Cambodia, where the minimum wage is exclusively set for the textile industry and where, with the exception of a few managers, the majority of workers earn the minimum wage. Under these circumstances, the minimum wage actually sets the average wage in the sector.
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> In all circumstances, the minimum to average wage ratio requires additional analysis. In emerging and developing economies, where employees represent a smaller share of total employment and the informal

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[6] Median wages refer to the middle wage. For example, in a country with five people who earned monthly wages equal to 5, 6, 7, 9, and 15, the median would be 7

economy is usually larger, there may be a disconnect between the average wage of employees who would be legally covered by the minimum wage and the average wage of all employees.

Figure 1. Ratio of minimum wage to median wages in selected developed countries (2014)
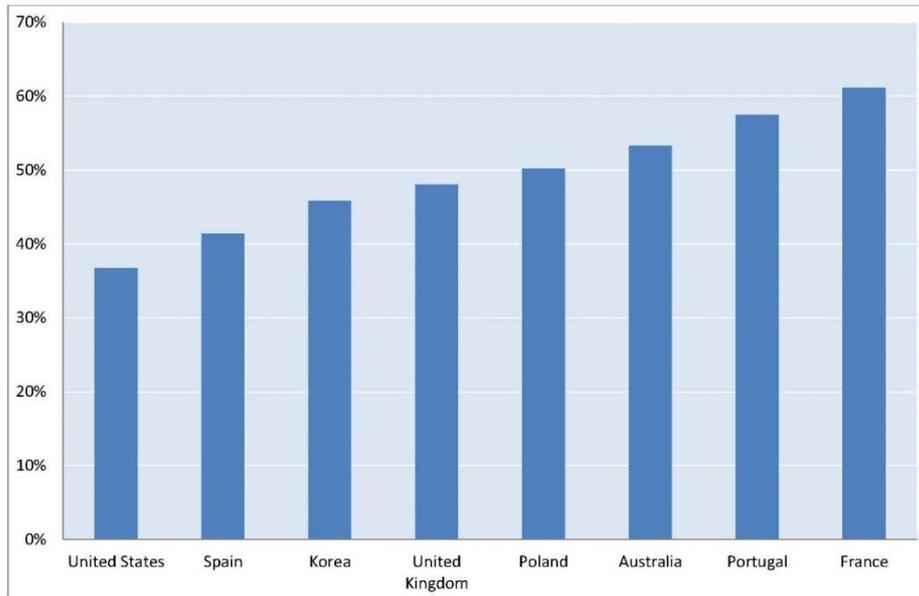
Source: OECD (2015), "Earnings: Minimum wages relative to median wages", OECD Employment and Labour Market Statistics (database) .

Figure 2. Ratio of minimum wage to median wages in selected developing countries
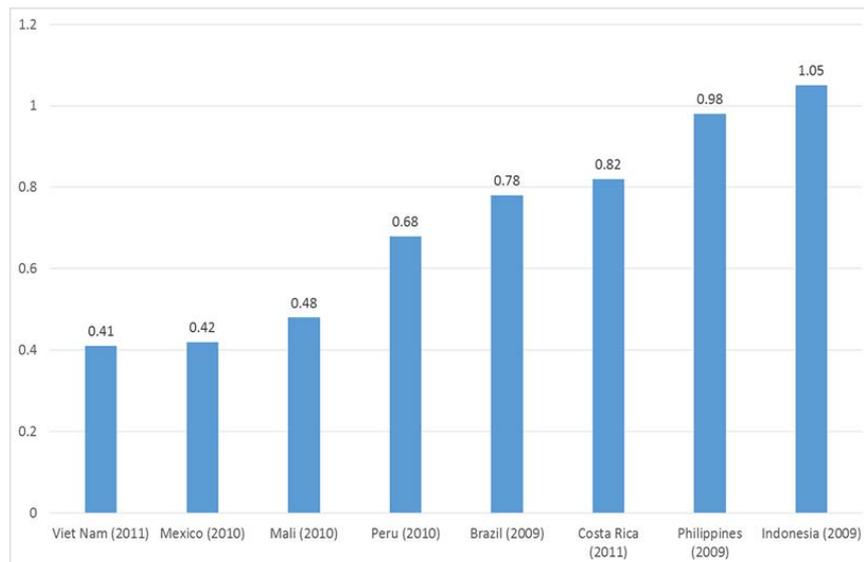
Note: Analysis based on data from household and labour force surveys.
Source: Rani, U.; Belser, P.; Oelz, M.; and S. Ranjbar. 2013. "Minimum wage coverage and compliance in developing countries" in International Labour Review, Vol. 152, No. 3-4.

5.6 Should a mathematical formula be used?

Some countries have adopted a mathematical formula for the periodic adjustment of their minimum wages. This can increase predictability, avoid having to hold discussions on the adjustment every year, or remove the possibility for sudden or extraordinarily large increases motivated by political rather than technical factors.

However, if mathematical formulas are used, these should be adopted after full consultation with social partners.

Is indexation a good idea?

If minimum wages are automatically uprated to compensate for all past inflation, this would, in principle, guarantee the real level (purchasing power) of minimum wages.

However, such "indexation" mechanisms have been questioned in recent times as they were considered to introduce "inflationary inertia" under some circumstances. That is, the reproduction of past inflation in wages and other prices can become an obstacle for reducing the current inflation rate.

During the 1980s, European countries such as Denmark, Austria, Belgium, Italy and France modified or even eliminated this formal link.[7] At the same time, a similar process took place in Latin American countries that were suffering much higher rates of inflation. Since then, countries tend to be more cautious of adopting mathematical formulae to uprate minimum wages automatically.

More complex formulas

It must be stressed that a minimum wage that is adjusted only on the basis of a change in the cost of living would result in a constant minimum wage in real terms, and minimum wage-earners would not see their real wages increase even in circumstances of economic growth. Most countries which use a formula therefore also include another economic factor, such as economic growth or the growth in labour productivity.

Below we provide some example of countries which have adopted a minimum wage formula. These country examples illustrate the diversity of criteria used in order to determine minimum wage adjustments.

> ➤ Brazil
> In Brazil, a law has established that minimum wage adjustments be determined by a formula that considers past inflation and GDP growth. In the case of inflation, the formula considers the inflation accumulated during the previous year (t-1), while for GDP, due to the lag in receiving final results, they apply the rate of increase of year t-2.
>
> Brazil's formula for determining adjustments (where MW is minimum wage) is as follows:
>
> Δ MW t = Δ CPI t-1 + Δ GDP t-2
>
> The law establishes that this formula should be revised every four years. It was first adopted in 2008, and renewed in 2012 and 2016.

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[7] Eyraud F.; Saget, C. 2005. The fundamentals of minimum wage fixing (Geneva, ILO).

➢ **Costa Rica**

In Costa Rica a new formula was agreed between Government and social partners in 2012. The formula contains an inflation component, as well as a growth-related component. The inflation component considers expected inflation, plus an ex post correction of the estimates. The growth-related component incorporates 20 per cent to 40 per cent of average GDP per capita growth of the previous five years (lagged by one year). The final determination of the production component is left for negotiations between the social partners in the minimum wage tripartite commission.

Costa Rica's formula therefore is:

Δ MW = expected Δ CPI (+correction factor) + (20%-40%) * Δ GDP per capita

The application of this formula is made conditional on certain situations in the economy and labour market. The inflation component is not automatic if inflation accelerates (i.e. effective inflation is greater than expected inflation plus 1 per cent). Also, the economic growth component is not automatic if one of the following situations occurs: the unemployment rate is greater than 8 per cent; there was negative economic growth for four successive quarters; or there is more than a 15 per cent change (positive or negative) in the exchange rate between minimum wage adjustments.

In the event that any one of the particular situations listed above takes place, the social partners are called on to recommend the final adjustment, taking the particular circumstances into account.

➢ **Malaysia**

In the case of Malaysia, the minimum wages rate was set using a combination of several socio-economic indicators grouped as either base criteria or adjustment criteria. The base criteria were the Poverty Line Income (PLI) per worker and median wages. The PLI is used to account for the basic cost of living per worker in a household while median wages of the lower half of wage earners in the private sector reflects the firms' ability to pay. These two elements were then averaged to represent the floor wage. This floor wage is then adjusted by the adjustment criteria. This second group of criteria includes: labour productivity growth, the percentage change in the Consumer Price Index (CPI) and real unemployment rate, as illustrated below:

$$MW_i = Avg\left(\frac{PLI_i}{Avg\ workers\ per\ household} + Median\ wage_i\right) X \left[1 + \left(\frac{P_i}{100}\right) + \left(\frac{CPI_i}{100}\right) - \left(\frac{UE_i}{100}\right)\right]$$

MW = Minimum Wages (RM)
PLI = Poverty Line Income (RM)
P = Productivity growth (%)
CPI = Consumer Price Index (% change)
UE = Real Unemployment Rate (%) = (Unemployment rate – 4%)
i = Region (Peninsular Malaysia, Sabah and Sarawak)

➢ **France**

In France, annual minimum wage adjustments are linked to the evolution of the CPI, as well as to the increase in the purchasing power of blue-collar workers' basic hourly wage. The minimum wage adjustment takes place every January. It incorporates the change in the CPI over 12 months (November t-2 to November t-1).

The annual revision of the minimum wage also incorporates half the annual increase in the hourly basic rate of blue collar wages (from September t-2 to September t-1), resulting from a specific survey carried out quarterly by the Ministry of Labour.

France's formula is:

$$\Delta \text{MWt} = \Delta \text{CPI Nov } t\text{-}2/\text{Nov } t\text{-}1 + 0.50 * \Delta \text{Blue collar hourly wage Sep } t\text{-}2/\text{Sep } t\text{-}1$$

France's minimum wage also has an automatic guarantee concerning the evolution of prices. This adjusts the minimum wage every time the price index increases by 2 per cent or more since the last adjustment.

In addition to this mathematical determination of minimum wage adjustments, France also has a discretionary component that can introduce an additional percentage to the final increase. Since 2009 a commission of independent experts recommends if there is space for an additional increase (coup de pouce), taking into account the economic context.

➢ **The Netherlands**
The Netherlands adjusts its minimum wage twice a year (1 January and 1 July) in line with changes in the weighted average of collectively agreed wages. It is important to note that minimum wages also determine minimum social security benefits, raising concerns related to the tax burden that minimum wage increases could entail.

For this reason, in 1993 a condition for minimum wage uprates established that if the "inactives to actives ratio" exceeds a threshold of 82.6 per cent there would be no increase. Inactives are defined as those receiving benefits, including public old-age pension, while actives are those employed, including self-employed and part-time workers. In addition, the law provides for an assessment every four years. Despite these very clear criteria, in practice the minimum wage has been frozen even in situations when the inactive–active threshold ratio was not exceeded (July 2003 to January 2006).

(See: W. Salverda (2008) 'The Netherlands: Minimum wage fall shifts focus to part-time jobs', in Vaughan Whitehead, ibid.)

Note that it is almost impossible for a mathematical formula to incorporate all the key considerations. It is not unusual therefore, to see that the application of a formula is made conditional on a number of situations, or that, in addition to the formula and additional considerations, there is space for social dialogue or for reaching a different decision on the basis of political considerations.

5.7 Combining short-term adjustments and a longer-term perspective

In periodic adjustments there is a tendency to concentrate on short- and medium-term indicators. A typical minimum wage adjustment normally will give much weight to a limited set of factors, such as price inflation or economic growth.

While this approach is natural, minimum wage fixing authorities should also bear in mind the longer-term perspective.

Some long-term objectives can be to reach a minimum wage level that is sufficient to cover the basic needs of a worker and his/her family (revised regularly to consider economic development); to ensure the minimum wage is

effectively applied, with non-compliance reduced to a minimum; and to provide a comprehensive coverage of wage employees. It is also useful to contextualize a minimum wage policy within a broader economic perspective in which economic factors are affected by structural changes.

Have a medium-term strategy

Many countries have discovered that a gap exists between the legitimate needs of workers and their families and what the economy is capable of paying in terms of minimum wages. It will not be possible to eliminate this gap in a single minimum wage adjustment, at least not without adverse economic effects.

This suggests that there should be a medium- to long-term target for this policy – that is, closing this gap in successive, gradual adjustments. This approach has also been used for example in the domestic work sector (see chapter 8).

It is also important to monitor the effective application of the policy. Effective monitoring is crucial for the successful implementation of the minimum wage.

Therefore, the minimum wage fixing authorities should commission once in a while detailed reports detailing the inspections made with regard to minimum wages, cases of non-compliance detected, and action taken to correct this situation. It is important for the minimum wage fixing authorities and/or bodies to know if their decisions have a real impact on the ground.

Annex 2: The needs of workers and their families

The discussion of needs has been part of the main concerns of minimum wage fixing from the outset. The Preamble of the ILO Constitution in 1919 makes reference to a "provision of an adequate living wage". The minimum wage issue was also discussed during the 1927 and 1928 sessions of the International Labour Conference (ILC). The report draft from these sessions, which produced the Minimum Wage Fixing Machinery Convention, 1928 (No. 26), considered different alternatives to workers' needs: "mere subsistence, the amount necessary for health and decency, and the amount to provide a standard of comfort", as well as whether minimum wages should take into consideration the needs of the worker alone, or of the whole family.[8]

In the end, consideration of the family was not included, and the idea of a living wage was not one of the alternatives. The responding countries rejected the inclusion of criteria for minimum wage fixing, as well as methods for how to do it. Indeed, most governments agreed that the Convention should only lay down general principles. As a result, Convention No. 26 represented a step towards improving labour conditions by promoting the adoption of a minimum wage, but offered no concrete guidance on the criteria to be applied.

By contrast, Convention No. 131 groups the social protection role of minimum wages in a first set of criteria, including "the needs of workers and their families". The economic considerations were kept separately, forming a second set. Although the inclusion of this "needs of workers" criterion was evident at the time, it was agreed that it was difficult to put into practice. The experts' report shows that even the determination of nutritional needs, which are basic for survival, was very much discussed. Another concern was the inclusion of family needs. The reference to family needs was retained in the Convention on the proviso that it did not promote different rates for workers with and without dependants.

Many countries' national legislation reflects a reference to the needs of workers or to poverty reduction. For example, Costa Rica's Labour Code establishes that "every worker has the right to a minimum wage that covers the normal needs of the household (material, moral and cultural)" (Article 177). This is also the case in Armenia, some provinces of Canada, Croatia, the Czech Republic, Kenya, Lithuania, South Africa and the United Republic of Tanzania.[9]

Measuring the needs of workers and their families

Convention No. 131 states that in determining the level of the minimum wage, the needs of workers and their families should be taken into account, irrespective of the complexity or simplicity of the minimum wage system in place. Assessing the needs of workers and their families, for the purpose of setting the minimum wage, can be complex for three principle reasons

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[8] ILO. 1927. Minimum wage-fixing machinery, questionnaire, International Labour Conference, Tenth Session, Geneva; ILO. 1927. Minimum wage-fixing machinery, questionnaire, International Labour Conference, Eleventh Session, Geneva, 1928.

[9] ILO *General Survey 2014 on minimum wage systems*

tied to: the measurement of the minimum income level, the household size, and the number of household members working. The three elements are discussed in detail below.

Income benchmarks – what are the needs of an individual?

The definition of needs is a relative concept. There can be basic needs, higher needs, and so on. The definition of these different types of needs can also vary across and within countries. For example, should allowance for recreation be considered as part of basic needs – or are they higher needs? The difficulty of pinning down what constitutes what type of need explains why there is no universal definition that is widely accepted. This is despite the fact that there are multiple references to needs in international conventions, national legislation or even enterprise-level regulations. Generally however, as countries develop, standards of living rise and as they do, so does the definition of needs.

As a starting point, national poverty lines or thresholds, combined with information on household size and labour force participation rates, can be used to estimate a potential minimum wage that is high enough to lift households out of poverty. This section reviews such a method in detail and provides a practical example of its application. A poverty threshold offers a benchmark for minimum needs, usually based on the cost of basic requirements for adequate nutrition and other non-food essentials such as clothing, shelter and other items.

International poverty lines

There are both international and national poverty lines. International poverty lines are used for the purpose of international comparison. They include those established by the World Bank at 1.25 purchasing power parity (PPP) dollars per day and at 2 PPP dollars per day. PPP dollars capture the amount of a country's currency that is required to buy the same basket of goods and services in the domestic market as a US dollar would buy in the United States. In addition, while the Food and Agriculture Organization of the United Nations (FAO) does not provide information on poverty lines, it does provide data for selected countries on food security. Some of the indicators on food security include: the minimum dietary energy requirement per country and the average dietary energy requirement. The minimum dietary energy requirement captures "the minimum amount of dietary energy per person that is considered adequate to meet the energy needs at a minimum acceptable BMI [body mass index] of an individual engaged in low physical activity"[10] (expressed in kilocalories per day). The average dietary requirement calculates the average amount of dietary energy per person (expressed in kilocalories per day). In the absence of a poverty line (or a recent poverty line) these data could be used in combination with data on local prices to estimate an approximate amount of cash required to meet minimum dietary requirements.

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[10] Food and Agriculture Organization of the United Nations. FAOSTAT.

National poverty thresholds

National poverty thresholds provide a more useful reference for policy-makers since they take into account the level of development and context specific to a given country.[11] National poverty lines can normally be found from the national statistical office and/or other government agencies responsible for their calculation. However, it is important to bear in mind that the national, statistical definition of a poverty line may not necessarily correspond to the legal definition of the needs of workers established in national legislation and necessary for minimum wage fixing. In case of a discrepancy, poverty lines can and should be complemented with additional elements. Poverty lines or any other index measuring workers' needs are not permanent parameters. The sustained development of a country should result in the inclusion of more concepts in the basic needs basket for low-income workers. For this reason, it is recommended that these standards be revised on a regular basis.

Relative poverty lines

Relative needs and relative poverty lines are defined as some proportion - sometimes 60 per cent - of median household income. Relative poverty lines better capture the "cost of social inclusion and equality of opportunity in a specific time and space" and are usually preferred in more developed economies[12].

Household size: How many people's needs can or should be met?

Household size varies across workers and also through the lifetime of a worker. During the working lifetime of an individual, it is common that a wage earner's family comprises both adults and dependants. But how many dependents? How many people's needs should be met? Considering the potential multiplicity of situations, what is the best approach to estimate the size of a household? Three possible options are presented below:

- consider the national average
- consider two adults and two minors as a structure that ensures population replacement
- consider the average household size of lower-income households, given that minimum wages generally aim to protect these groups and that poorer households tend to be larger.

Irrespective of the option chosen, household size should also be adjusted for the lower consumption needs of children and for economies of scale. The poverty line for a family of four is not equivalent to four times the poverty line for one person, since, for example, children

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[11] National poverty thresholds may be determined on the basis of various methods. Some examples are described in Haughton, J.; Khandker, S.R. 2009. *Handbook on poverty and inequality* (World Bank, Washington DC).

[12] *Jonathan Bradshaw; Yekaterina Chzhen; Gill Main; Bruno Martorano; Leonardo Menchini; Chris de Neubourg (January 2012). Relative Income Poverty among Children in Rich Countries (PDF) (Report). Innocenti Working Paper. Florence, Italy: UNICEF Innocenti Research Centre. ISSN 1014-7837 .*

consume fewer calories and only one house is needed (instead of four homes for a four-person family).

There are different ways to account for differences in consumption and economies of scale. One example of an adjustment formula is: $E = (A + \alpha K)^\theta$ where A represents the number of adults, K is the number of dependent children, α represents the spending of a child relative to an adult, and θ captures the economies of scale in a given household.[13] Another option is to use the OECD equivalence scale, which assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child.

Labour force participation rates: how many people work in a household?

How many people work in a household? This question is important to determine how many people's needs should be met through one minimum wage. The answer is of course different if two adult members earn a minimum wage as opposed to only one adult.

When minimum wage policies were introduced at the beginning of the twentieth century, the labour force was mainly composed of male workers, with only one breadwinner per household. This has changed in recent times and labour force participation rates among women have generally increased. In developed countries, female labour force participation averaged around 53 per cent in 2013, compared to about 67 per cent for men.[14] In developing and emerging economies, labour force participation rates vary across regions, and gaps still remain between men and women. For example, in Latin America, female labour force participation in 2013 was about 54 per cent (compared to about 80 per cent for men), while in the Middle East it was only about 19 per cent (compared to 75 per cent for men).

Changes in the labour force participation rates of women over time increase the likelihood that families may have more than one income. This is equally true for youth that may postpone their transition out of the family home. At the same time, in many parts of the world there has been an increase in the number of mono-parental households, which still depend on only one income.
The amount of income earners per household is very much related to the income distribution, which can vary across the distribution. For example, high-income families may have one, two or more incomes, while at the lower end of the distribution poorer families may have only one income earner.

Hours worked

It is also important to take into consideration the number of hours worked, as the minimum wage usually corresponds to the amount obtained when working full time. Part-time workers are only entitled to the proportion of the minimum wage that corresponds to the hours worked. Therefore,

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[13] Deaton, A.; Zaidi, S. 2002. Guidelines for constructing consumption aggregates for welfare analysis, Living Standards Measurement Study Working Paper 135 (Washington DC, World Bank).; Also see OECD, "What are equivalence scales".

[14] ILO, Key Indicators of the Labour Market (KILM).

when estimating the number of workers per household it is important to adjust the figures to the equivalent full-time worker (i.e. 1.5 full-time equivalent workers implies one person working full time and one working part time).[15]

Given all these different situations, as well as the methodological aspects, what is the most appropriate way to estimate the number of income earners per household for purposes of the minimum wage fixing process? Four possible model scenarios are presented here:

- Only one full-time worker, in order to ensure that a household covers its basic needs with one minimum wage.
- All working-age adults in a household work full time. For example, in a family with two adults and two children, the two adults would work full time.
- The average at the national level, taking into consideration that in many households there is more than one income earner and that not all workers work full time.
- The average among lower-income families, in case the number of workers differs from the average family.

Estimating the needs of workers and their families in practice – an illustration

To illustrate the effects of applying the different alternatives, we have selected data from Costa Rica. In Costa Rica, the minimum wage is set for nine skill levels (unskilled worker, semi-skilled worker, and so on); and for selected occupations (such as domestic workers and coffee pickers among others). The minimum wage for unskilled workers is known as the *salario minimo minimorum.* It acts as the floor for all workers, except those with specific rates (like domestic workers).

In 2011 Costa Rica estimated the cost of a basic basket of foods on the basis of the National Survey of Incomes and Expenditure. This basket, known as "canasta básica de alimentos" (CBA), contains the food necessary to satisfy the caloric needs of an average household (at the monthly market price). Non-food basic needs are also included and estimated to be 12 per cent above the CBA. In addition, the average size of the household was estimated at 3.4 people, while the average size of the poorest 50 per cent of households was 3.8 people. The average number of full-time equivalent workers per household was estimated to be 1.48, while in the poorest 50 per cent of households the average number of full-time equivalent workers was 1 per household.
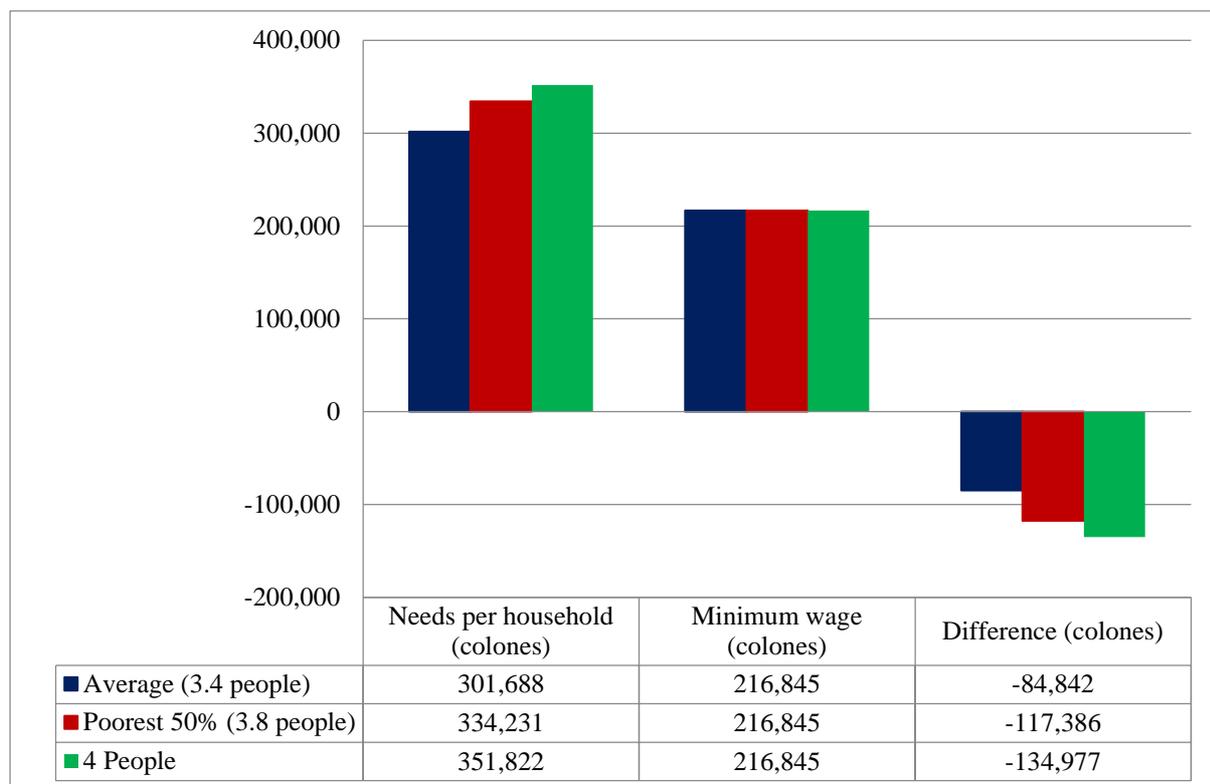
Lowest minimum wage example

In order to estimate a potential minimum wage that is high enough to lift households out of poverty, first we consider the situation of a family with only one minimum wage earner (which corresponds to the reality of the poorest 50% of households). We estimated whether the lowest minimum wage (the *salario minimo minimorum* for unskilled workers), provided below in local

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[15] Fagan, C.; Norman, H.; Smith, M.; and Gonzalez Menendez, M. "In search of good quality part-time employment", Conditions of Work and Employment Working Paper Series No.43, (ILO INWORK, Geneva).

currency (Costa Rican colones), was enough to cover the basic needs of a family of three alternative sizes: 3.4 people (national average), 3.8 people (poorest 50 per cent) and four people (the size guaranteeing reproduction). For this comparison we considered the minimum wage net of mandatory contributions to social security (9.2 per cent less than the gross minimum wage). In all three cases, there is a gap between the needs requirement and the minimum as illustrated by the difference column in the chart (it is negative for all household sizes). Therefore, in all three cases, the lowest minimum wage (*salario minimo minimorum*) is insufficient to cover the needs of workers and their families, using the national poverty line as a basis.
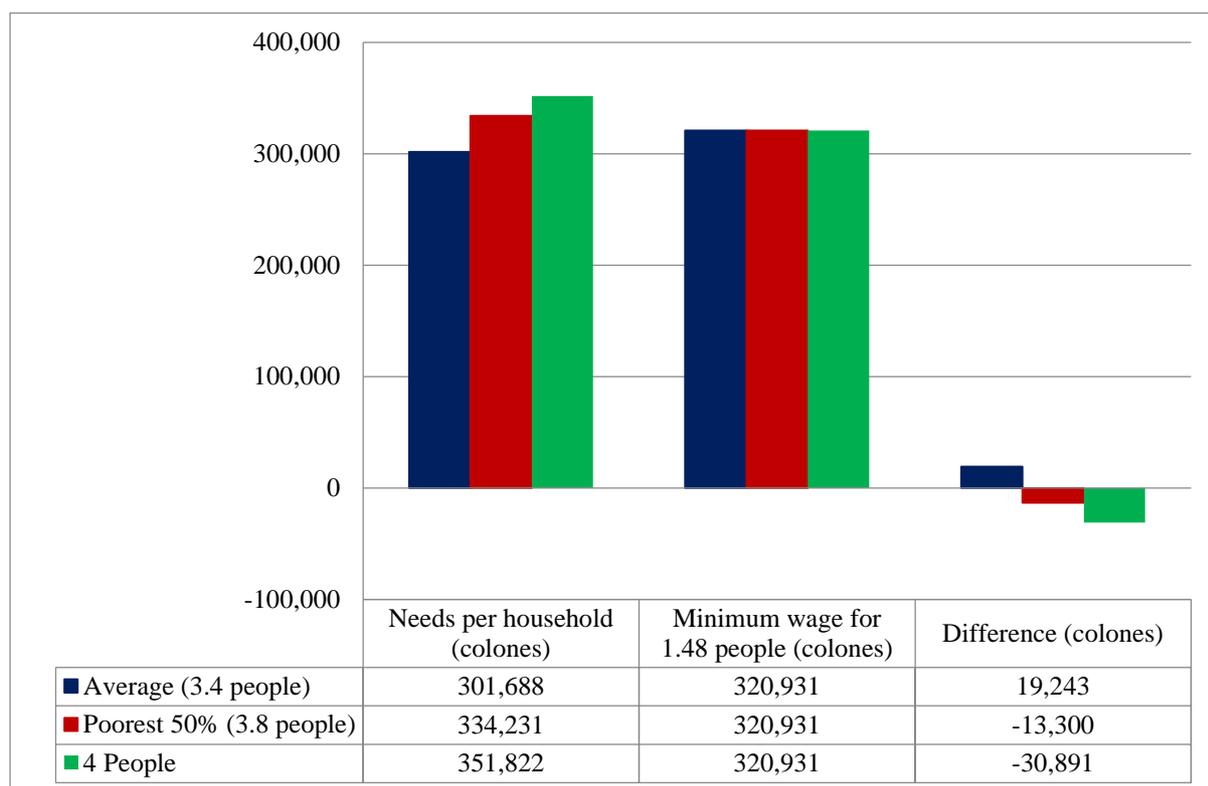
Figure 1: Meeting the needs of workers and their families with one minimum wage, by household size (2012)

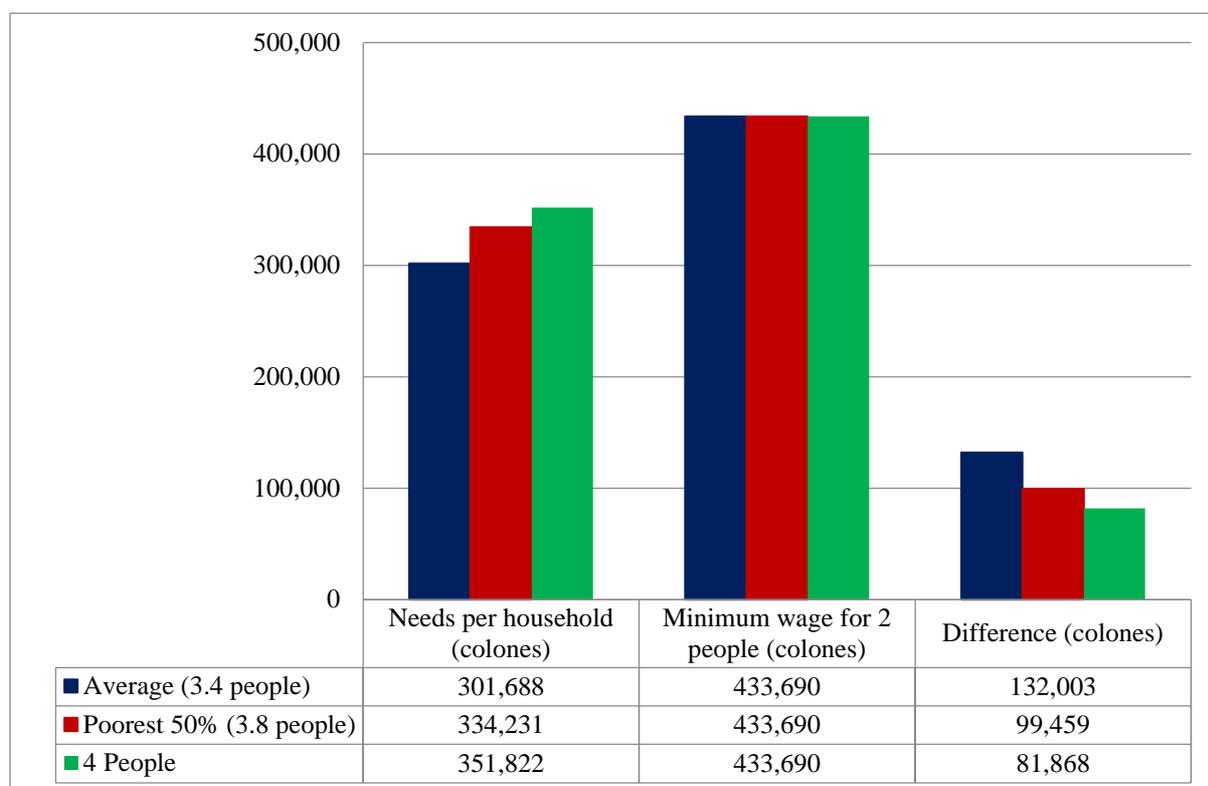|	Needs per household (colones)	Minimum wage (colones)	Difference (colones)
■ Average (3.4 people)	301,688	216,845	-84,842
■ Poorest 50% (3.8 people)	334,231	216,845	-117,386
■ 4 People	351,822	216,845	-134,977

Examples with multiple minimum wages

By contrast, as can be seen in Figure 2, if we consider the average number of workers per household to be 1.48, the national average, the gap between the minimum wage and the needs of the household disappears for the average 3.4 person household. However, the small gap remains for households with 3.8 and four people. Finally, Figure 3 shows the case where two people work full time. In all family types, the minimum wage earned by two full-time workers meets their needs and those of their families. This can be seen by the positive difference column.

Figure 5.2 Costa Rica: Meeting the needs of workers and their families with 1.48 minimum wages, by household size (2012)

	Needs per household (colones)	Minimum wage for 1.48 people (colones)	Difference (colones)
■ Average (3.4 people)	301,688	320,931	19,243
■ Poorest 50% (3.8 people)	334,231	320,931	-13,300
■ 4 People	351,822	320,931	-30,891

Figure 5.3 Costa Rica: Meeting the needs of workers and their families with two minimum wages, by household size (2012)

	Needs per household (colones)	Minimum wage for 2 people (colones)	Difference (colones)
■ Average (3.4 people)	301,688	433,690	132,003
■ Poorest 50% (3.8 people)	334,231	433,690	99,459
■ 4 People	351,822	433,690	81,868

A short conclusion

Our discussion shows that there are no unambiguous ways to determine whether a minimum wage meets the needs of workers and their families. The answer will always depend on what criteria are used to determine the needs of workers and their families in a given country, the household size of workers, as well as the number of workers per household. It is important for policy makers, however, to have a clear understanding of the living standard that minimum wage earners can afford, and to try to agree on minimum income benchmarks that should be reached through minimum wages and other policies such as income transfers.

Annex 3: The effects of inflation on real minimum wages

Figure 1 presents two situations with constant inflation and full indexation of minimum wages on the basis of past inflation. In country A, with an annual inflation rate of 10 per cent, the annual average of the real minimum wage is 95. At the beginning of the second year the application of full indexation results in a starting level of 100 and the constant inflation rate reproduces the erosion in the purchasing power, resulting in the same average real minimum wage of 95.

In country B, where the inflation rate is only 2 per cent per annum, the annual average real minimum wage is 99. Therefore, although this kind of indexation seeks to protect the purchasing power of minimum wages, the real minimum wage is affected by the inflation rate.

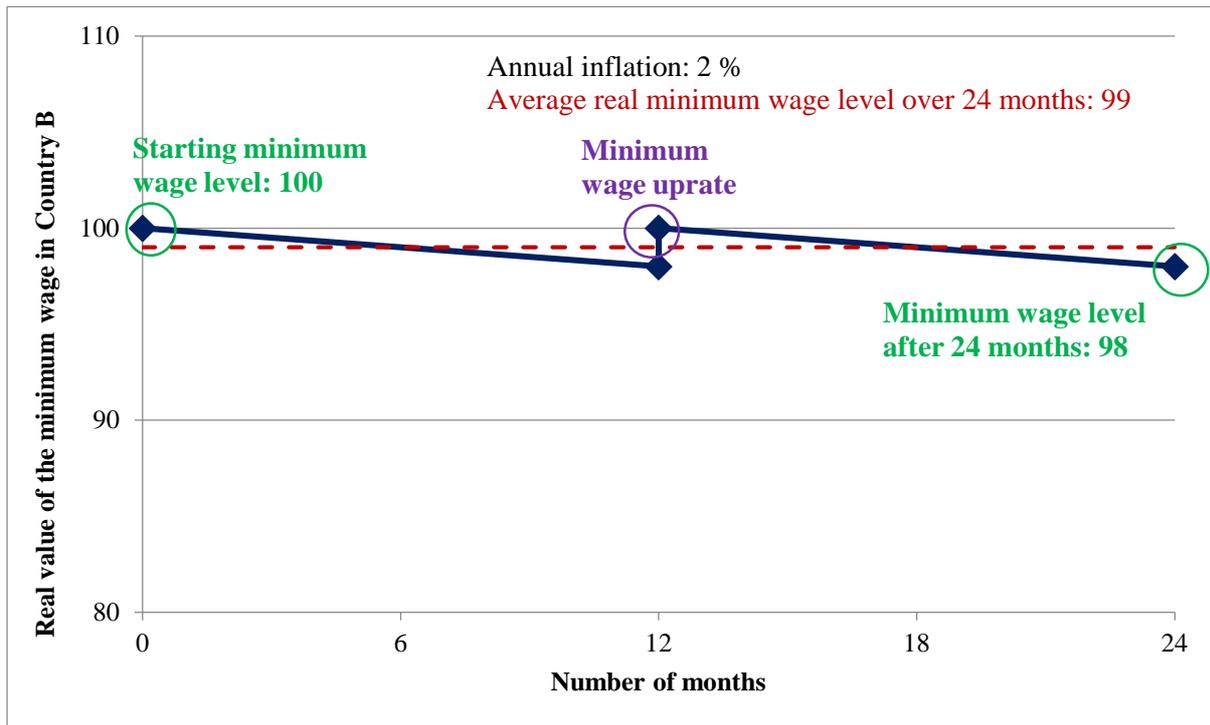The faster inflation accelerates, the more the real minimum wage loses value.

Figure 2 illustrates this situation for a hypothetical country where the inflation rate goes from 5 per cent in year 1, to 10 per cent in year 2 and 15 per cent in year 3 (the intensity of the inflationary process is reflected in the slope of the curve in each of the years). Although the departing level is the same for each of the three years, the real minimum wage at the end of each period is smaller every year, as well as the resulting average real minimum wage level.

Figure 1. Two situations with constant inflation and fully indexed minimum wages
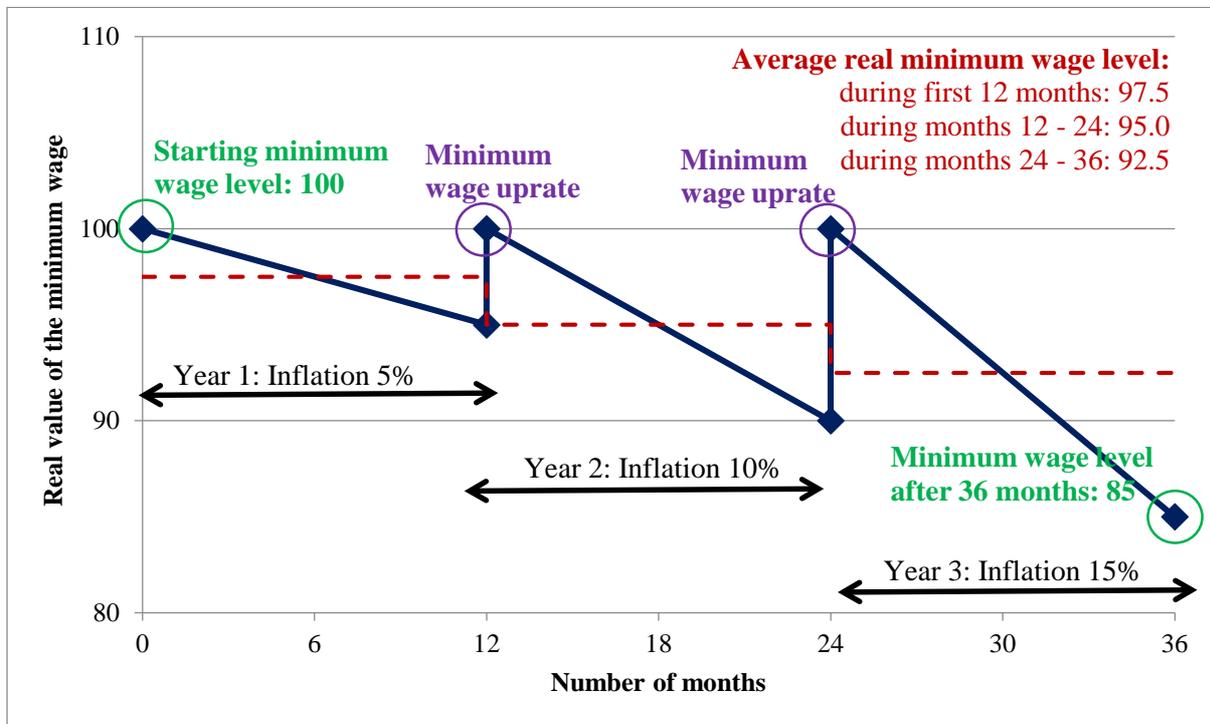
Country A: Constant inflation and full indexation to past inflation (annual inflation 10%)
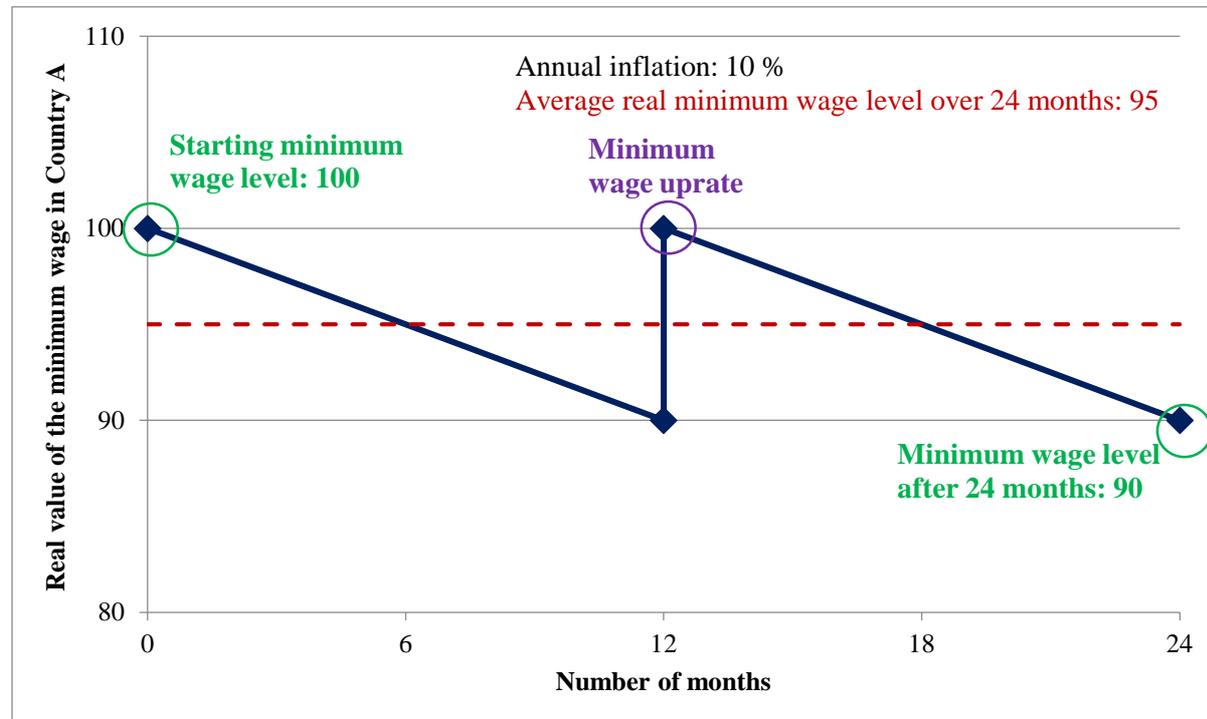
Country B: Constant inflation and full indexation to past inflation (annual inflation 2%)

Figure — Real value of the minimum wage in Country B.

- Annual inflation: 2 %
- Average real minimum wage level over 24 months: 99
- Starting minimum wage level: 100
- Minimum wage uprate
- Minimum wage level after 24 months: 98

Figure 2. Accelerating inflation, minimum wage fully indexed to past inflation

Figure — Real value of the minimum wage.

- Average real minimum wage level:
  - during first 12 months: 97.5
  - during months 12 - 24: 95.0
  - during months 24 - 36: 92.5
- Starting minimum wage level: 100
- Minimum wage uprate
- Minimum wage uprate
- Year 1: Inflation 5%
- Year 2: Inflation 10%
- Year 3: Inflation 15%
- Minimum wage level after 36 months: 85

By contrast, the application of full indexation to past inflation in a situation where the inflation rate is falling would result in real minimum wage increases. Figure 3 presents a situation where the inflation rate goes from 20 per cent in year 1 to 10 per cent in year 2 and 5 per cent in year 3. The reduction in

the rate of inflation results in an improvement of the average real minimum wage in the successive years, even if indexation only recovers the initial level.

Hence, although full indexation to past inflation is implemented to protect the purchasing power of minimum wages, keeping inflation at low levels is still crucial to attain that objective.

Figure 3. Decelerating inflation, minimum wage fully indexed to past inflation
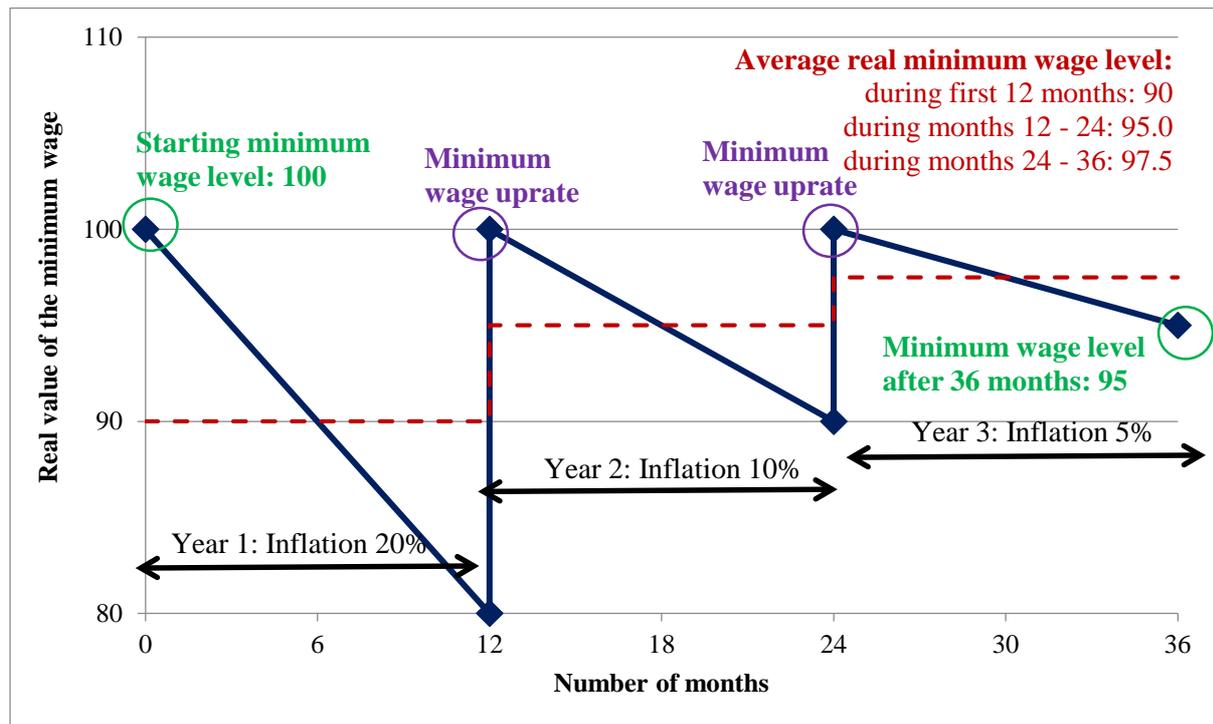
The Frequency of the Adjustment

In a context of inflation, the frequency of the adjustment matters too: the longer the period without adjustment, the higher the erosion in the real value of the minimum wage.
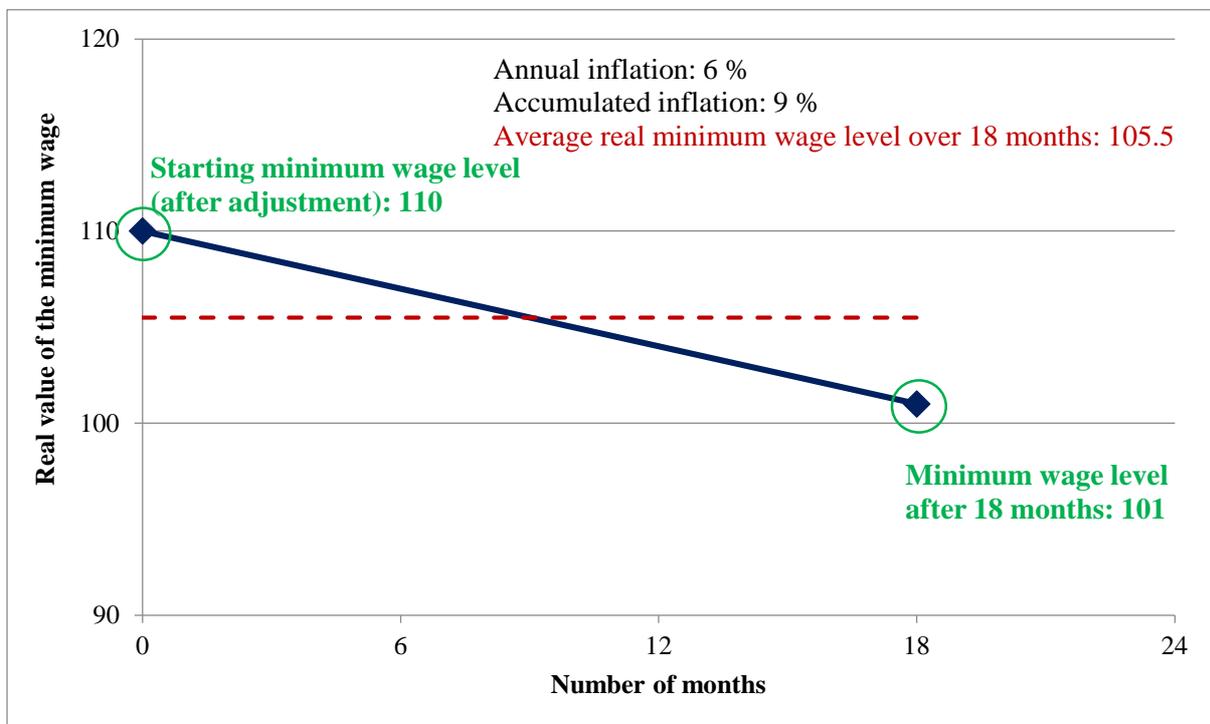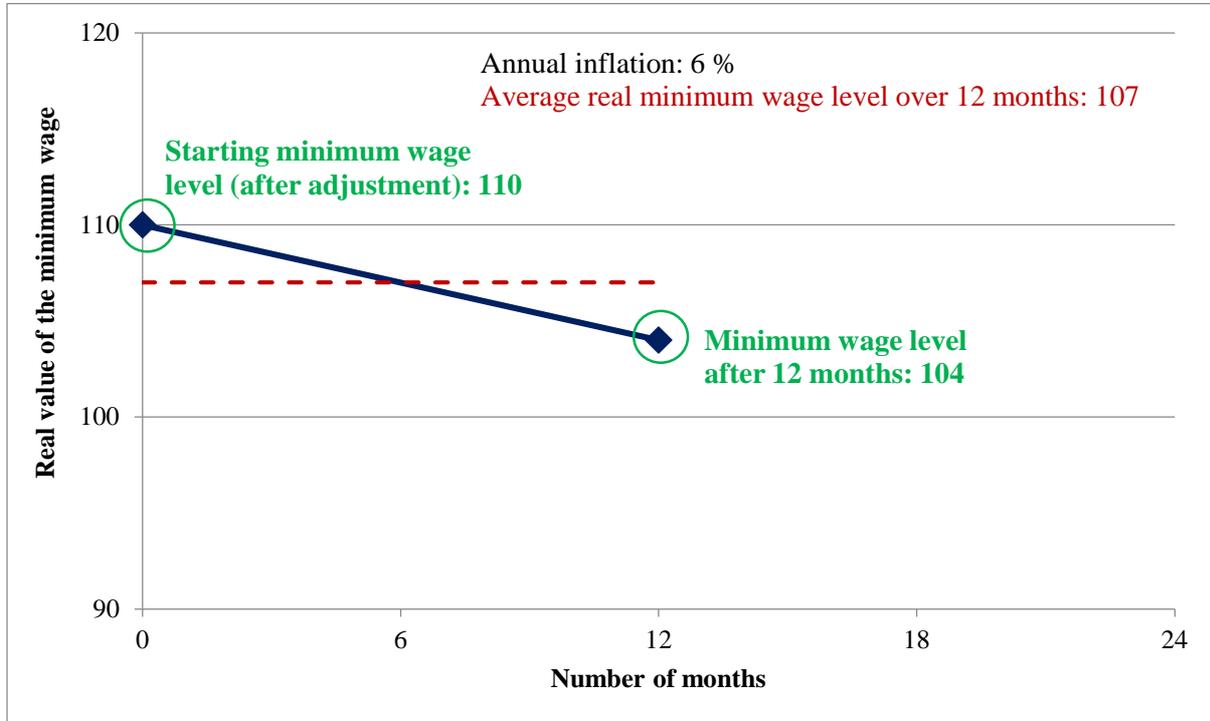
Let's take a hypothetical example of Country X where the social partners have just agreed to increase the minimum wage by 10 per cent. Of that rise, 9 per cent corresponded to past inflation accumulated during the previous 18 months, and the additional point corresponded to the other criteria considered. Assume that annual inflation is around 6 per cent.
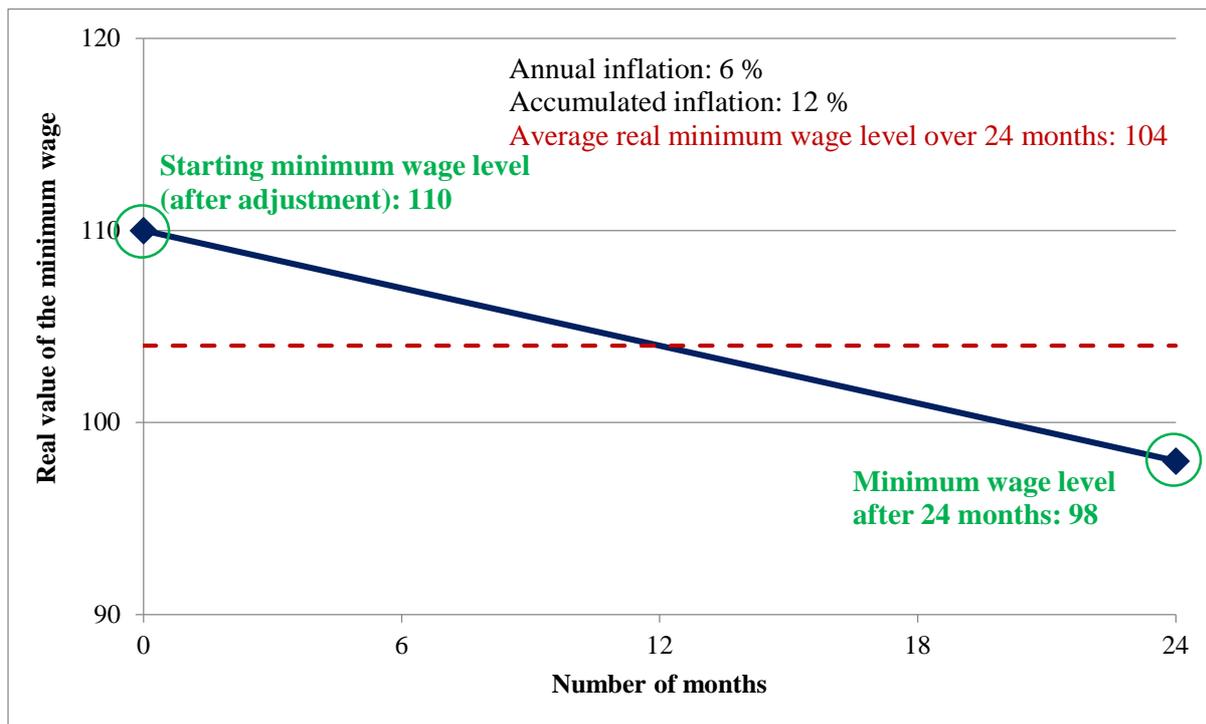
To simplify matters, we will consider that Country X's inflation rate remains stable at that same level in the coming months, and that economic performance is constant over the same period.

Country X adjusts minimum wages at irregular periods, which are not determined by any quantitative variable. This means that when the new minimum wage level is determined, the parties involved do not know the duration for which it will be applied.

What would be the result of the 10 per cent minimum wage adjustment if the period of application is 12 months, 18 months or 24 months? This is illustrated in Figure 4.

Figure 4. The result of Country X's 10% minimum wage rise, 12 months, 18 months, 24 months

Annual inflation: 6 %
Accumulated inflation: 12 %
Average real minimum wage level over 24 months: 104

Starting minimum wage level (after adjustment): 110

Minimum wage level after 24 months: 98

If the new minimum wage level is applied during 12 months, the accumulated inflation during the period would have been 6 per cent. Compared to the real level prevailing just before the last adjustment, the real value at the end of the actual period would be 104, that is, four percentage points above the departing level.

However, if the minimum wage is applied during 18 months, the accumulated inflation would be 9 per cent and the real gain at the end of that period would be just one percentage point (101).

In the last case, the new minimum wage is applied during 24 months, during which the accumulated inflation is 12 per cent, and the real minimum wage ends at 98. In this case, at the end of the period, the minimum wage reflects a real loss of 2 percentage points.

The Country X example shows that the same minimum wage adjustment could result in a real gain, could be neutral, or could even result in a real loss, depending on the duration of application of the new minimum wage level. As the parties involved in determining the new level do not know its effective duration, they are taking into account only part of the decision – the other part remains in the hands of the body determining the timing of the next minimum wage adjustment.

Annex 4:
Proportions of workers affected and impact on total wage bill

The proportion of workers affected can be calculated at the national, regional or industry level. It can also be calculated for certain groups of workers (such as by sex, race, and so on). These disaggregated analyses enable a richer understanding of the wage distributions unique to each part or group of workers in the economy. They also allow a better understanding of the individuals, regions or industries that will be most likely or disproportionately affected by the minimum wage.

Varying proportions affected

Take, for example, situations where an aim of the minimum wage is to redress pay inequity between men and women at the bottom of the wage distribution. This type of analysis allows for an assessment of the percentage of women likely to be affected by the minimum wage, its impact on the gender wage gap at the bottom of the distribution and its subsequent impact on the average gender wage gap across the entire distribution.

In practice, the share of workers who earn minimum wages varies from country to country. When the United Kingdom introduced the new national minimum wage of £3.60 in 1999, this floor was higher than the wages of 9 per cent of all the country's wage earners. In France, it is estimated that around 10 to 12 per cent of employees are clustered around the minimum wage (SMIC). In Indonesia, the share of workers below the minimum wage has been estimated at about one half of wage earners.[1]

What percentage of workers should be affected by the minimum wage? Not surprisingly, there is not a single optimal percentage of employees who should be affected by the minimum wage. Rather, the optimal percentage will be determined by social dialogue based on the overall impact on the total wage bill and the other statistical indicators discussed here.

How this impacts on the total wage bill

How does the proportion of workers affected impact on the country's total wage bill? The impact on the total wage bill depends on two factors: the number of workers affected and the average wage increase brought about by the new minimum wage.

In the case of Cape Verde, for example, it was estimated that if a new minimum wage were introduced to benefit 15 to 20 per cent of employees, this would increase the total wage bill by about 2 per cent. This does not take into account possible "domino" or spillover effects on wages above the minimum.

Hence, as long as a minimum wage is set below the peak of the wage distribution, its overall

[1] ILO (2015) Indonesia : Wages and Productivity for Sustainable Development. Brief.

impact on the total wage bill remains limited. This is because such a floor affects a limited share of employees, and also because the bottom percentiles of earners typically account for a strikingly small share of total earnings (the reverse image of the fact that high earners account for a disproportionately large share of earnings).

What would be the inflationary pressure from a 2 per cent increase in wages? The answer depends on the evolution of labour productivity as well as on the share of labour in total production costs in the sectors or occupations where minimum wage workers are most concentrated. The latter can be obtained from 'input-output tables' or, if not available, from data from establishment surveys.

Imperfect compliance

If labour costs in a given sector represent for example half of total production costs, it will follow that a 2 per cent increase in labour costs will increase total production costs by around 1 per cent – even in the unrealistic case where minimum wages are perfectly enforced. If, at the same time, labour productivity also goes up by 1 per cent, there is no reason to expect higher prices. But even under the assumption of unchanged labour productivity, the pressure on price increases does not exceed 1 per cent.

In practice, the overall effects of a 2 per cent increase in the wage bill in, say, Cape Verde, are likely to be even less than 1 per cent. One reason for this is imperfect compliance. Even with the best of intentions, minimum wages are never perfectly enforced. When simulating the possible effect of an increase in minimum wages it is therefore instructive to assume not only full compliance but also to assume that the so-called "fraction of workers affected" by an increase includes all wage earners whose hourly wages are set somewhere between 95 per cent of the old minimum wage and 105 per cent of the new minimum wage. These people are the most likely to benefit from a legislated adjustment in wage levels. Others, in particular those who were paid substantially less in violation of the earlier legal minimum, are likely to remain in non-compliance even after the adjustment – unless inspection measures are strengthened or other mechanisms put in place to strengthen compliance.