Box 3
Effects of the Minimum Wage on Prices and Inflation

The minimum wage (MW) is one of the most widely used public policies in almost all the countries. Included among its objectives are the protection of workers against unduly low wages and to contribute to the reduction of poverty and inequality. However, there has been evidence of the adverse effects of its implementation on the labor market that has cast doubt on its ability to increase the welfare of the labor force and allow the labor market to function well (Neumark and Wascher, 2008).

In Colombia, the concept of the MW was legally established in the mid-twentieth century through Act 6/1945 and became effective in 1949. In its implementation process, a wide range of minimum wages was introduced. Thus, for example, Decree 236/1963 (which regulated Law 1/1963) established minimum daily wages by department and company size; Decree 240 from the same year readjusted the MW for the agricultural sector and for workers under sixteen years of age and fixed the hourly minimum wage.

Starting in 1964, the MW was determined by economic sector (commerce, manufacturing, services, transportation, construction, etc.), company size and geographical area (urban and rural), but in 1983, by means of Decree 3506, it was unified throughout the country. Among the arguments justifying this measure was "the elimination of unjust discrimination against workers in the rural sector. The adjustment process culminated on July 1, starting from which date there was a MW for all Colombian workers who were placed at this level of remuneration."[1]

Today, the establishment of the MW in Colombia is governed by Act 278/1996, Act 990/2005 and Constitutional Court Ruling C-815/9912. The regulations create the Standing Committee for the Coordination of Wage and Labor Policies that is made up of representatives of the national government, employers, workers, pensioners, and the unemployed. Among the variables that determine the annual increase in the MW are: inflation at the end of the year and the inflation target for the following year –set by the Board of Directors of *Banco de la República*– the productivity agreed upon by the Tripartite Productivity Committee, the contribution of wages to national income, and the increase in gross domestic product (GDP).

The way in which the MW has been implemented in Colombia, including its annual increase, has resulted in it representing close to 90% of the mean salary[2] while, on average, in the countries of the Organization for Economic Cooperation and Development (OECD) (where the labor market functions more fluidly based on many of its indicators), this ratio is close to 50%. A ratio of the magnitude seen in Colombia suggests a very high MW compared to other wages in the economy or, in other words, it means a much higher MW than the mean productivity of workers.

With this ratio in mind, numerous technical studies have shown how increases in MW contribute to the prevalence of labor informality, job destruction, and structural unemployment. Similarly, evidence has been found of its effects on other areas of the economy such as the distribution of wages and labor income and the prices of some goods and services, particularly eating out.[3]

1 For more details, see Arango, Herrera, and Posada (2008) and Arango et al. (2022).

2 The relationship between the MW and the mean wage is known as the Kaitz index. The mean wage is the one in which half of the employed obtain a wage lower than this value and, consequently, the other half of the employed obtain a higher wage.

3 Details of this evidence can be found in Mondragón, Peña, and Wills (2010), Arango and Flórez (2020a), Arango, Flórez, and Guerrero (2020), Bell (1997), Arango and Rivera (2022), Arango and Flórez (2020b), Maloney and Núñez (2004), Arango and Pachón (2007), Mondragón, Peña, and Wills (2013), Pérez (2020), and Arango, Gómez, and Ardila (2011). Arango et al. (2022a) gather and analyze this evidence.

The increases in the MW also affect government revenue and expenditures in both the short and long term. The effects were recently estimated[4] by analyzing the average premium regime of the pension system, the financing of the health system, the mechanisms for the protection of the elderly –including the periodic economic benefits program, and the payroll of public servants. In general, the effects are reflected in a deterioration of the fiscal accounts.

The results of the increases in the minimum wage with respect to distribution presented in a recent volume of the journal Essays on Economic Policy (*Ensayos sobre Política Económica* - ESPE)[5], entitled "Macroeconomic Effects of the Minimum Wage in Colombia", do not seem to benefit families at the bottom of the distribution or other vulnerable groups such as self-employed workers without higher education and self-employed workers who do not contribute to social security. In terms of household monetary poverty and inequality reduction, the MW does not produce the expected results either since it increases the probability of being below the monetary poverty line and increases household inequality.

An aspect of the MW changes that is less explored and also possibly less expected, by both policy designers and implementers as well as by workers, is the effects on inflation. The pass-through of the MW to prices can occur through different channels. Among these are the increase in the labor costs of companies, the stimulus to aggregate demand due to a higher MW, the increase in the price of some services indexed to the annual increase, etc. Recently, in the same ESPE magazine, evidence was presented suggesting that, in Colombia, increases in the MW affect the prices of individual goods and services as well as core and total inflation. The results correspond to prices at monthly frequency and inflation at quarterly and annual frequency. To do this, they used four different methodologies that rely on different databases.

The first methodology allows us to estimate the response (elasticity) of the prices of individual goods and services in the family basket without some regulated items (CPI-SAIR) to changes in the minimum wage. Using data between January 2009 and December 2018, a period in which there were nine increases in the minimum wage that ranged from 3.64% to 7.0%, it was found that, indeed, the prices of the selected items reacted albeit with a high degree of variability to increases in the nominal MW. For example, in the months of January the majority of the elasticities were between -0.3 and 0.6. However, more than 50% of the CPI-SAIR had positive coefficients, which is consistent with a direct relationship between the increase in the MW and the aggregate inflation of the CPI-SAIR set. This, however, turned out to be low since the mean coefficient is only 0.056.[6] This means that the mean inflation would increase by only 0.056% as a result of the 1.0% increase in the nominal MW. In aggregate terms, an increase of this magnitude is associated with arise in the cumulative mean monthly inflation between January and May of the CPI-SAIR of 0.16% after which the responses dissipate.

Between January and May, the mean accumulated increase in the price variations of the individual items that make up the different sub-baskets is mixed. In terms of tradability, the price response of non-tradable goods and services (0.185%) is higher than the response of tradable goods and services (0.115%). The price changes of items produced by companies with market power (0.239%) show a greater transmission to prices than the price changes of items produced by companies exposed to greater competition (0.104%). Two sub-baskets such as food (0.347%) and eating away from home (0.508%), show cumulative transmissions of significant magnitude.

With the second methodology, based on time series, the response of the annual change in the CPI excluding food and regulated items to 1.0% changes in the nominal MW is estimated. This is the main core inflation indicator used by *Banco de la República* which is supposed to be the most affected by both the changes in the MW and monetary policy. Complementary price aggregations such as food and regulated price inflation would probably respond primarily to supply factors and national regulations respectively. The results of this exercise suggest that a 1.0% increase in nominal MW causes a 0.14% increase in quarterly core inflation, which translates into a 0.095% rise in total inflation. Since there is no evidence that changes in the price of food and regulated goods are not associated with rises in the

4 See Arango *et al.* (2022b).

5 Corresponding to Arango *et al.* (2022a).

6 This is the mean response of prices to changes in the nominal MW in the month of January. Below this number are half of the elasticities and the other half of the responses are above this number.

MW, this coefficient can be interpreted as a lower limit to the pass-through of MW changes to total inflation. This approach makes it possible to show that, in part, since the inflation at the end of the year is an essential input for the increase in the MW, it contributes to the persistence that characterizes the inflationary process in Colombia: past inflation determines the increase in the MW and this, again, contributes to the current year's inflation.

The Input-Output Matrix (IOM) approach assumes that the pass-through of the MW adjustments to the prices of goods occurs through the labor market, since this increase leads to higher costs for those workers whose remuneration corresponds to the MW or is indexed to it. In other words, this methodology considers the impact of such changes on the distribution of labor income. According to the aforementioned ESPE magazine, all quintiles of the distribution of wages and labor income of workers are impacted by increases in the MW. Thus, higher labor costs, through linkages between sectors, end up affecting consumer prices. According to this methodology, the average adjustment that the nominal MW had between 2010 and 2019 (5.25% per year) implied an average 0.758% increase in consumer prices per annum, i.e., for every 1.0% increase in the nominal MW, the CPI rose 0.144%. In other words, the average increase in the nominal MW over the past decade absorbed slightly more than a quarter of the specific long-term inflation target at the end of the year (0.758% / 3.0%), a result that should be taken into account.

The latest approach used by Arango *et al.* (2022a) relied on a general equilibrium model in which the multiple effects triggered by a surprise 1.0% increase in the MW above the rule used in Colombia based on the inflation of the year that ended and changes in productivity are explained and quantified. This increase identifies the exogenous component of the change in the MW. Quantitative results suggest that an unexpected 1.0% increase in the MW generates a slight increase in inflationary pressure, close to 0.08% in the first quarter; however, it slowly disappears over the next two years with the help of a slight increase (close to 5 basis points (bp)) in the policy interest rate. Again, this inflation response adds to the usual increase associated with past inflation and the change in productivity.

In short, the different approaches suggest a pass-through of the MW increases to inflation which, in turn, feeds into next year's MW increase. This pass-through can absorb about 25% of the long-term inflation target. The MW increases over and above past inflation and productivity are intended to have redistributive effects. However, based on the evidence presented in the ESPE document, such effects have not been achieved. Rather, increases such as these generate pass-through from the minimum wage to inflation that are even greater and affect the most vulnerable, who usually have fewer instruments to protect themselves from inflation, as has been explained in the main body of this Report to the Congress of the Republic.

It is important to remember that, in a high inflation environment such as the current one, increases in the MW will be even higher. This will introduce more persistence—possibly higher pass-through—to the changes in the general price level. The situation could be more difficult considering two facts derived from the current labor reform project. First, what if not only the MW but also the other formal sector salaries that are lower than two minimum wages are indexed to past inflation? Second, what if the higher labor costs that, in general, represent many of the items that have become known from this proposal are passed on to prices by companies?

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