Box 1
Possible macroeconomic effects of the minimum wage

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This Box quantifies the potential effects of a real increase in the minimum wage on a set of macroeconomic variables when the increment exceeds the sum of inflation and labor productivity growth by 17.2 percentage points (pp), as the one established for 2026. The analysis is conducted by updating the exercise presented in chapter 3.2 of the journal *Ensayos sobre Política Económica (ESPE)*, No. 103, which studies the macroeconomic effects of the minimum wage in Colombia. The benchmark exercise in ESPE considered a 1 pp increment; consequently, the results presented in this Box should be interpreted in the context of a larger shock. For a detailed description of the model and transmission mechanisms, see *Borradores de Economía* No. 1264.[1] Below, we summarize the model employed, its main transmission channels, and its effects on the labor market, economic activity, and prices.

In practical terms, the model describes a small open economy inhabited by two types of households: one with high productivity and access to capital markets, and another with lower productivity and no access to capital markets. The latter type of household supply both formal and informal labor, which is its only mechanism for smoothing income fluctuations.

Formal firms use capital (machinery, equipment, and buildings) along with high- and low-skilled labor to produce final goods. Low-skilled formal workers earn the minimum wage, whereas informal workers earn less than the minimum wage. In turn, highly skilled workers earn higher incomes, and in the short term, their wages adjust proportionately to increases in the minimum wage (the beacon or lighthouse effect). When firms hire formal workers, they pay a tax that is redistributed to low-income households. Additionally, the model incorporates a central bank that sets the monetary policy interest rate to reduce fluctuations in inflation and output.

In the model, the minimum wage is determined by past inflation, labor productivity, and an unanticipated shock. This shock may reflect adjustments to the minimum wage that deviate from the sum of past inflation and productivity, either through agreements between workers and employers or government decisions. The minimum wage directly affects the hiring of low-skilled formal workers and indirectly affects informal employment and aggregate macroeconomic adjustments. The results of a 17.2 pp shock in the minimum wage on several important economic variables are presented in Graph B1.1. Note that the model is calibrated to reproduce the average characteristics of the Colombian economy, including consumption

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1 For this exercise, the model was adjusted to reproduce additional characteristics of the Colombian economy, and therefore, its parameters are not the same as those presented in the journal Ensayos sobre Politica Económica (publication on relevant issues on economic policy in Colombia published by Banco de la República, or ESPE for its Spanish acronym) or in the research draft. The new characteristics include the size of informal employment. Consequently, given the magnitude of the shock, the results presented are not equivalent to simply scaling those from the ESPE; however, the mechanisms remain the same.

and investment ratios relative to GDP, as well as the labor informality rate, and wage gaps across worker groups.

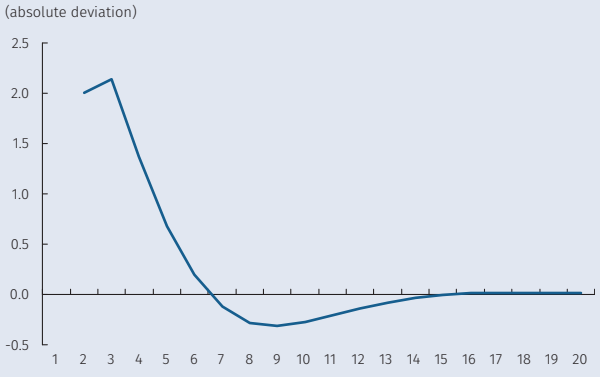
In the labor market, an increase in the minimum wage directly affects low-skilled workers, both formal and informal. The increase in hiring costs reduces demand for low-skilled formal work hours. In terms of impact, this reduction is close to 10%. However, as firms and the economy converge toward their new equilibrium, the decline intensifies, and, in the long term, total work hours for low-skilled formal jobs are reduced by approximately 20%.

Graph B1.1
Response of the main macroeconomic aggregates after a permanent increase in the real minimum wage

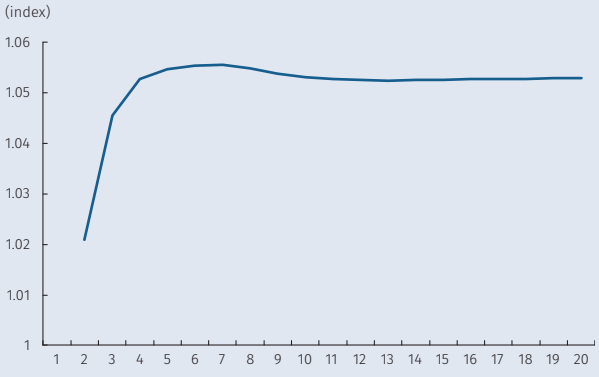
Note: GDP, investment, consumption, hours, and salaries are expressed as percentage deviations from their initial equilibrium levels. The monetary policy interest rate and quarterly inflation are expressed in annual terms as an absolute deviation from the initial equilibrium. Finally, the relation of formal employment over unskilled employment is expressed as an index, with the initial value normalized to 1.
Source: Authors' own calculations.

Graph B1.1 (continuation)

G. Quarterly inflation (annualized)



H. Informal employment / low-skilled employment



Note: GDP, investment, consumption, hours, and salaries are expressed as percentage deviations from their initial equilibrium levels. The monetary policy interest rate and quarterly inflation are expressed in annual terms as an absolute deviation from the initial equilibrium. Finally, the relation of formal employment over unskilled employment is expressed as an index, with the initial value normalized to 1.
Source: Authors' own calculations.

Some of the decline in formal hours is replaced by informal work, although this substitution is incomplete. In the short term, higher disposable income temporarily reduces the supply of informal work among low-income households. However, as formal labor income declines due to reduced hiring, these households increase their supply of informal work again. As a result, in the long term, informal work hours increase by approximately 5%, and the share of informal employment in aggregate employment steadily rises. As described below, this partial substitution toward lower-productivity work is one of the main channels through which the minimum wage increase affects aggregate output. In contrast, high-skilled work hours remain virtually constant throughout the adjustment period.

Overall, the results indicate a labor market reallocation concentrated among the low-skilled segment characterized by less formal hiring and greater reliance on informal labor.

Wages show heterogeneous responses throughout the adjustment. Unskilled formal wages increase immediately, in accordance with the minimum wage adjustment. In terms of impact, the hourly income of informal workers also increases as a result of the temporary contraction in labor supply; however, during the transition, the increase in informal labor supply exerts downward pressure on these wages. The wages of skilled workers initially increase due to the minimum wage's transmission effects. Subsequently, the contraction in economic activity leads to a decline in these wages, while skilled employment levels converge toward values close to those observed before the shock.

Together, the results indicate a labor-market reallocation, concentrated in the low-skilled segment, characterized by less formal hiring, greater use of informal labor, and differentiated wage responses. These responses reflect the interaction among income effects, changes in labor supply, and aggregate economic adjustment.

In terms of economic activity, GDP declines by approximately 1.0% in the second half of the year after the shock and gradually converges to a long-term decrease of approximately 0.7%. In the short term, output behavior reflects differentiated adjustments among its components, which converge over time toward a generalized decline in macroeconomic aggregates.

On the demand side, output contraction is largely explained by the response of investment. In particular, investment in capital complementary to low-skilled labor declines by nearly 10% in the short term. This reduction is partially offset by an increase in investment in machinery and equipment of around 8-9%. This increase reflects a substitution between productive factors, characterized by greater use of capital and lower demand for low-skilled labor, for example, through the automation of tasks previously performed by low-skilled formal workers, whose remuneration is indexed to the minimum wage.

With respect to consumption, responses differ among household types. Initially, consumption by unskilled households, composed of minimum wage earners or participating in the informal sector, increases as a result of higher labor income. Eventually, it declines as formal employment contracts. On the other hand, consumption among skilled households declines immediately and persistently, associated with a permanent decline in labor income due to the reduced aggregate economic activity. In aggregate terms, consumption shows an immediate slight increase, followed by a decline in subsequent quarters, remaining below its pre-shock level throughout the period studied.

From a price perspective, the increase in the minimum wage implies higher marginal production costs, which translate into an inflation increase of nearly 200 basis points (bp) in annual terms. In response to this dynamic, the monetary policy rate adjusts by approximately 200 bp after the shock and begins to decline toward its long-term equilibrium as inflation converges to its long-term target.

Note on the Interpretation of Results

It is important to note that this analysis quantifies the isolated effects of a real increase in the minimum wage on the main economic variables, assuming there are no other concurrent shocks. In this sense, it does not constitute a prognosis of the economy's future evolution, but rather a measure of the marginal impact of the minimum wage.

Consequently, for example, the estimated effect on inflation of 200 bp should not be interpreted to mean that inflation will mechanically increase from 5.1% in 2025 to 7.1% in 2026. Rather, it represents the contribution of the minimum wage increase to the inflation observed in 2026. If inflation in that year were 6%, the results indicate that, absent from the minimum wage increase, inflation would have been 4%. Similarly, if inflation in 2026 is 4%, this implies that, without the minimum wage increase, inflation would have been 2%.

In other words, inflation in 2026 may increase or decrease relative to the 5.1% observed in 2025 depending on multiple factors. However, according to this exercise, regardless of the inflation level ultimately observed, the contribution of the minimum wage increase will be approximately 200 basis points. Results for the remaining macroeconomic variables should be interpreted similarly.

References

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