Is the Minimum Wage Effective in a Context of Informality?

Susana Herrero Olarte[1]

[1] Department of Economics, Universidad de Las Américas, Ecuador

Correspondence: Susana Herrero Olarte, De los Granados E12-41 y Colimes esquina, Quito, Ecuador. Tel: 593-2-398-1000 ext. 681.

Abstract

There is a general trend in the South American region to increase the minimum wage (MW) to reduce poverty and inequality. However, empirical studies are inconclusive with respect to the effect of the MW. This study seeks to contribute to the empirical evidence regarding the impact of this policy by exploring its limitations and possibilities for reducing poverty in Ecuador. Unlike other studies, a measure to capture informality in the labor market is included. Using fixed effect estimation with panel data, I determine the relationship between labor income deciles and variations in the MW, using a proxy for its effectiveness. The results suggest that the MW positively affects the lower income deciles, to a lesser extent the intermediate deciles and with no effect on the higher ones. However, when considering a control for the degree of informality in the labor market, the effect on the lower deciles is mitigated. Therefore, increases in the MW may be a strategy to increase the income of the middle and vulnerable class, but it does not seem to be useful for reducing poverty.

Keywords: minimum wage, informality, poverty, inequality, income deciles

1. Introduction

In high-income countries, there has been in the last years a request for increase the MW because of the recent rise in poverty and inequalities [OECD (2015), p. 1]. Economic literature supported this strategy to improve quality of life of the poorest [ILO (2012)]. This tendency in the North can reinforce the request to increase the MW in South America, currently moderated because of the economic containment moment that lives the region. Recent literature does not yet enjoy consensus in the region about the impact of the MW increases on poverty, unlike in the Northern countries. It invites to question whether it makes sense to focus the political and social debate around a strategy to reduce poverty, the MW increases, that is not really been effective to improve quality of life of the lower deciles [OECD (2018)].

The lack of consensus about a positive impact of MW increases on reducing poverty is related to the fact that the MW is on the intermediate deciles [Herrero and Villarreal (2020)]. The MW is in the middle deciles, leaving behind the lowest ones, because of informality [Alejo and Parada (2017)]. Informality affects especially the lowest deciles, that have a big difficulty in reducing it. It is possible because of the lack of compliance with the labor law. The lack of compliance is related to the low enforcement by authorities [Beccaria and Maurizio (2018)].

To define the real purpose of the MW in South America, and attending to the poorest deciles, I explore its limits and capabilities to reduce poverty in Ecuador. The lack of compliance could explain the low impact of MW increases on the labor income of the lowest deciles [Rani *et al* (2013); Kanbur *et al* (2013); World Bank (2012)]. Consequently, MW increases could be a strategy to increase quality of life of the middle class and vulnerability, but not to reduce poverty. Things would be different in the case of a good level of law enforcement. In this case, changes in the MW would have a positive impact on the labor income of the lowest deciles.

The rest of this paper is organized as follows: Section 2 presents a review of relevant literature concerning the effects of MW legislation. Both theorical and empirical approaches are included. This section also presents statistical evidence regarding informality, MW, and income inequality focusing on Ecuador and other Latin American countries. Section 3 describes the data and methodology used to approach the problem. Section 4 presents the regression results. Finally, the conclusions are presented in Section 5.

2. Literature Review

In high-income countries, there is a request for increase the MW. To the Organization for Economic Co-operation and Development (OECD) "the recent crisis and the longer-running trend of rising inequality have added new momentum to minimum-wage debates" [OECD (2015), p. 1]. The European Commission [EC (2012), p. 9] considers that its Member States should establish "decent and sustainable wages" and that "setting minimum wages at appropriate levels can help prevent growing in-work poverty and is an important factor in ensuring decent job quality". The International Monetary Fund [IMF (2014), p. 4] recommended that "given its current low level (compared both to U.S. history and international standards), the minimum wage should be increased". A 2012 joint report by the International Labor Organization (ILO), OECD, IMF and the World Bank expresses support for minimum wages (MWs) at an appropriate level in the G20 countries [ILO (2012)].

These demands respond to the relative decline in quality of life of the major part of the society. The trend of poverty in developed countries is not conclusive, so it has increased depending on the country of analysis. Although trends in household income vary among OECD countries and among household income levels in the period 2007-2014, it can be concluded that in about two-thirds of the OECD's countries, low-income households have become poor since before the onset of the 2007-2008 economic crisis [OECD (2018)].

In a fully competitive labor market, classic economic theory tells us that a MW above the competitive equilibrium will cause unemployment [Fields (1994)]. However, Freeman (1996) introduces the redistribution theory, discussing how, under certain conditions, an effective MW can shift the earning distribution in favor of low-paid workers and prevent further erosion of the bottom tiers.

In practice, the theory is proved in high-income countries. A MW of around 30-40% of the average wage supports demand and reduces poverty and income inequality [ILO (2012)]. Another joint 2014 report by the ILO, OECD and World Bank on the labor market in the G20 countries acknowledges the growing recognition of MWs as a means of reducing working poverty [ILO (2014)].

In South America, the request for an increase in the MW is currently moderate. The less favorable conditions and circumstances of the region in the last years [Economic Commission for Latin America and the Caribbean [ECLAC] (2019)] and the increase of right-wing governments in the region [Panigo et al (2019)] are the breeding ground for pressure on labor and wage conditions to try to compete in a globalized market, in a race that developing countries are going to lose [Acemoglu (2010)].

Despite of this general economical trend in the region, there are still some voices than demand an increase of the MW to improve poverty and inequality rates. Alicia Bárcena, ECLAC Executive Secretary, at the International forum on minimum wages, employment, inequality and economic growth mentioned the "enormous potential of minimum wage policy to improve the income of the most disadvantaged, promote equality and strengthen internal demand" as a measure to promote the economic development of the region [ECLAC (2014)]. The ILO states that "minimum wages can also be one element of a policy to overcome poverty and reduce inequality" [ILO (2016)]. Countries with a higher level of unionization tend to give in on raising the MW [El Espectador (2019)]. In 2017, unions in Brazil, Chile, Colombia and Guatemala greatly influenced the MW policy of each country [Medina Uribe (2016)]. This demand is answering the poverty rate of 19%, and an extreme poverty rate of 9% in 2017 [World Bank (2019)].

Attending to the effect of the increase of the MW on the groups in worse condition of poverty, the related economic literature does not have a clear conclusion. Alaniz et al (2011), using probit and logit models with data from 1998 to 2006, found that, in Argentina, the MW increases the probability that a worker with a wage close to the MW will get out of poverty, without any indirect effects or the lighthouse effect on the distribution of labor income. In Chile, Saget (2001), using a panel data model, found that the MW is associated with a reduction in poverty in the case of workers in the upper levels of the low-income population, but not for the poorest groups. In the case of Brazil, Paes de Barros et al (2001), through simulations with microdata, concluded that the MW has no effect on poverty once the effects on unemployment are considered.

The lack of a clear relationship between the MW increase and the increase in lowest incomes in South America could be explained because, on average, the MW is in the intermediate deciles. Therefore, its changes do not affect the lowest groups. In South America, 40% of the population earns below the legal MW. While in Chile, Bolivia, Brazil, and Uruguay MW is just above the second decile, in other countries with poor enforcement, the MW is above the sixth decile [Herrero and Villarreal (2020)].

The MW is in the intermediate deciles, leaving behind the lowest deciles because of informality. Workers who are in informal condition are not covered by the law, which means that they do not have to earn the MW.

This lack of compliance especially affects the lowest deciles. Therefore, the less affected by changes in the MW would be the poorest groups. Figure 1 shows the share of informality per decile in the workers group in South American countries in 2015. The 58% of workers were in an informal condition. In decile 1 it reached 81%, the highest value. Decile 10 presents the lowest value, with 39%. The same pattern is observed in all the countries considered. This is consistent with the work developed by Alejo and Parada (2017), that confirm that and effort in formality can reduce inequality in Brazil by increasing the income of the lowest decile.

Informality is characteristic of the lowest deciles. Even though in the last decades informality has decreased in the lowest deciles but especially in the middle and upper deciles. Figure 2 shows the share of informal workers in the total number of workers per income decile in 2000, 2002, 2011 and 2015 for all South American countries. Since 2002, there has been a decline in informality, which is accentuated as the decile increases. The deciles in which informality decreased the most were 6 and 7, while in the intermediate deciles a positive behavior is also observed. In the case of the first deciles, the decline is not so pronounced. The lower the decile, the more persistent is the lack of compliance. This is coherent with the Beccaria and Maurizio (2018) analysis, that concludes that formality increased in Argentina, Brazil, Ecuador, Paraguay, and Peru in the 2000s, but especially in the middle and upper deciles.
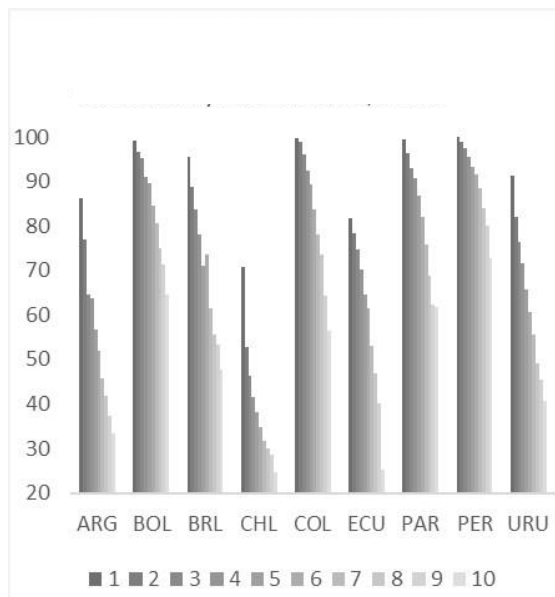

Figure 1. Informal self-employed workers as a percentage of total workforce by income decile, 2015.

Source: World Bank (2019) and Inter-American Development Bank (IDB) (2019).
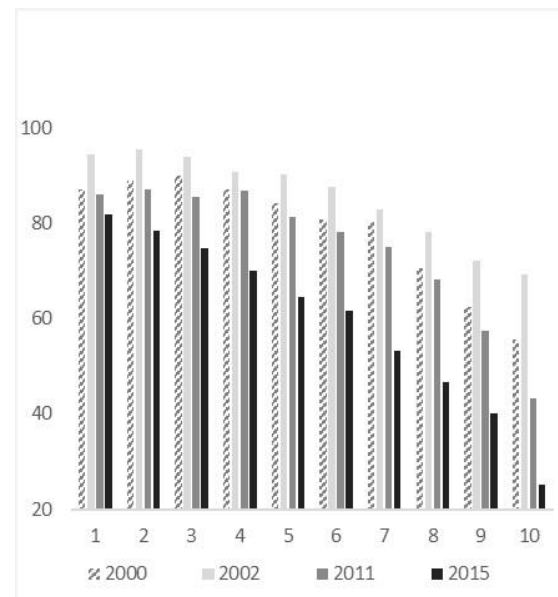

Figure 2. Informal self-employed workers as a percentage of total self-employed workers by income decile

Source: World Bank (2019) and IDB (2019).

As informality is a matter especially related to the poorest groups, the features of the lowest deciles are of the characteristics of the people in informal conditions. Attending to the data of Peru and Brazil, the lack of compliance affects the least qualified workers and women [Rani et al (2013)]. In Chile, indigenous and agricultural regions and foreign-born groups present the highest level of informality [Kanbur et al (2013)]. In Argentina, informality is a characteristic of the small businesses, with the lowest educated owners, without access to a credit [World Bank (2012)].

Because of the volume of informality in the lowest deciles and its persistence over time, the effect of the MW impact on the lowest deciles could be limited. There could be a possible indirect impact of changes in the MW not only for formally employed workers, but also on the incomes of the rest. This theory is called the lighthouse effect, proposed in Brazil by Souza and Baltar (1979). Under this theory, the MW would be a reference for all groups, like a lighthouse, which would eventually tend to achieve it. Beyond its direct effect on formal employment, informal workers would seek to equal their incomes with that of the formal sector. Conscious that prices probably could

increase, informal workers would put pressure on their employers to ensure their quality of life. The employers would tend to accept this to avoid possible legal claims and expect to improve their incomes through increased demand from formal workers.

Recent empirical studies are not clear about the lighthouse effect. For Arcidiácono (2015), MW growth did not have impact on informal groups in Argentina. She estimated the distributive effect of the MW on the gap between the MW and the income of a reference percentile on wage dispersion. Grau *et al* (2018) reached the same conclusion in Chile using a panel, that informality is out of the influence of MWs changes. Nogales *et al* (2019) calibrated a job search and matching model and concluded that MWs growth affected workers earning around that value. In Colombia, Maloney and Nuñez (2003) used a kernel density to obtain the same result, i.e., that changes in MW have an impact on wage distribution, but only around the MW. In a regional analysis, Gindling (2014) found that if MW legislation does not cover many informal workers, higher MWs are unlikely to reduce poverty.

Kristensen and Cunningham (2006), using estimates for 19 Latin American countries, found that the MW has effects on both the formal and informal sectors, showing compressions in wage distributions around the MW. However, the significance and effect on the formal and informal sector differs between countries, with no uniform effect across countries. Rani *et al* (2013), with data around the period 2005-2010, found that the effect of the MW on wage inequality, as measured by its distribution, differs across countries. For Latin American countries, the results suggest a compression in the distribution in Brazil and Costa Rica, an ambiguous effect in Peru and no effect in Mexico.

Figure 3 shows how the Ecuadorian hourly MW has had an upward trend, going from 0.8 USD/hour in 2000 to 1.8 USD/hour in 2018. Poverty and extreme poverty, in contrast, have had a downward trend going from 18% and 51% respectively in 2000 to 7% and 24% in 2018. Despite having opposite trends, the increase in the MW alone does not reflect its effectiveness as a poverty reduction policy, as there have been numerous factors responsible for halving in the last 18 years, such as government aid programs, improvement in productivity, access to education, etc. On the other hand, informality in low-income deciles has increased. Figure 4 shows that in the poorest decile, almost 90% of the workforce is informal, therefore, MW legislation should not apply to them.
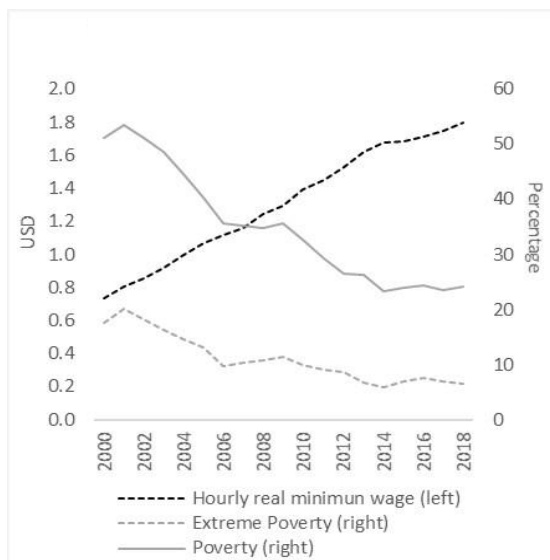

Figure 3. Minimum wage, poverty and extreme poverty

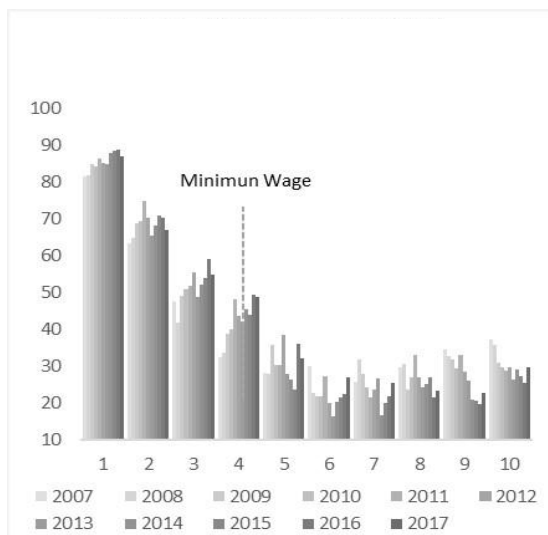Source: Central Bank of Ecuador (2019) and ECLAC (2019).

Figure 4. Prevalence of informal workers in Ecuador by income decile (percentage)

Source: Author's own calculations from ENEMDU (2007-2017).

3. Methodology

The objective of the present research is to estimate de effects of MW (MW) on monthly average earnings for different income deciles in Ecuador in a period from 2007 to 2017. For this research, I used microdata from the Encuesta Nacional de Empleo, Desempleo y Subempleo, ENEMDU (National Survey of Employment,

Unemployment and Underemployment) conducted by the Instituto Nacional de Estadística y Censos, INEC (National Institute of Statistics and Census). All data corresponds to surveys conducted in the month of December. The ENEMDU aims to provide information on the economic activity and sources of income of the population. This survey is designed to provide statistics on the levels, trends and changes over time of various labor market indicators such as the economically active population, economically inactive population, adequate employment, underemployment and unemployment, among the most important [INEC (2019)].

Given the purpose of the research, only the population between 15 and 70 years of age was considered. Workers by province and year with income above the top or below the bottom percentile were excluded from the sample. Labor income, the response variable, is defined as the sum of the individual's wage (formal) and self-employed income (informal). Income derived from capital, retirement pensions, gifts and donations, remittances from abroad, cash transfers (Bono de Desarrollo Humano) as well as disability benefits are excluded. Labor income was deflated through the Consumer Price Index (CPI).

To capture the effect of MW on changes in the income level of each decile over time, the surveys were added at the provincial level to obtain a synthetic data panel. Given the availability of data, the province of Santa Elena was merged with Guayas, and the province of Santo Domingo de los Tsachila was merged with Pichincha. Galapagos and undelimited zones were removed from the sample. Finally, because the sample size is small in the provinces from the Amazon region, they were unified into a single group called Amazonia. The resulting data panel is perfectly balanced with 16 units and 11 time periods, for a total of 176 observations.

The MW in Ecuador is the same for the entire country, therefore, there is no cross-section variation at the provincial or sector level. To solve this, I follow the methodology proposed by Canelas (2014) and estimate a proxy variable for the MW effectiveness, i.e., the degree of the MW impact, called '*fraction at*' [Lemos (2004)]. This measure is defined as the percentage of people whose income is between ±10% of the MW (0.9 MW ≤ income ≤ 1.1 MW) (Note 1).

To observe if the MW has caused a compression in the distribution of income over time, the economic literature usually makes use of kernel density estimation (KDE) to visualize the effect of MW on labor income [DiNardo *et al* (1996), Maloney and Nuñez (2003), Kristensen and Cunningham (2006)]. KDE also allows us to visualize coverage and enforcement of MW over time [Canelas (2014)]. Appendices 1 and 2 show the KDE plots of logarithm of income for formal and informal workers. These estimates suggest that there has been a compression of the distribution of labor income but only for formal employees. The effect on self-employees is not conclusive. It can also be observed that about 40% of employees earn less than the established MW. Among self-employed workers, this percentage is much higher, at around 95%. This shows the lack of enforcement of the law and the high rates of informality in Ecuador.

Next, I applied an econometric model to quantify the relationship between MW and income per decile. Following the methodology of Canelas (2014), I estimated the model shown in equation (1):

$$log\, W_{it}^d = \alpha + \beta \log MW_{it} + \gamma X_{it} + f_t + f_i + \varepsilon_{it} \tag{1}$$

Where W_{it}^d represents the real labor income for decile d in province i for period t. MW_{it} is the treatment variable and represents the MW proxy: '*fraction at*'. A matrix of control variables X_{it} is also considered. Control variables include: the proportion of women in the labor force, the proportion of workers by self-proclaimed ethnicity, the proportion of the labor force by level of education, the percentage of rurality, percentage of people by occupation group (single digit ISIC). Finally, fixed effects by time (f_t) and province are included (f_i).

Informality plays an important role in the effectiveness of MW legislation. However, there is no consensus in the economic literature regarding its definition or its measurement. Common definitions measurements of informality are, for example, the proportion of self-employed workers, workers with no income at all, workers not covered by the social security system, etc. [Maloney and Nuñez (2003), Gasparini and Tornarolli (2007)]. Another extensively used way to measure informality in empirical studies is the percentage of workers earning less than the MW [ILO (2016)]. This metric, however, fails to capture the magnitude of the underpayment, workers who earn just below the MW are indistinguishable from workers who seriously violate the MW legislation [Bhorat *et al* (2019)].

Nonetheless, in the present study I used the '*fraction at*' of employee wages (SAL_{it}) and '*fraction at*' for self-employed income (CP_{it}) as a measure to capture the effects of informality as seen in equation (2):

$$logW_{it}^d = \alpha + \beta_1 \log MW_{it} + \beta_2 \log SAL_{it} + \beta_3 \log CP_{it} + \gamma X_{it} + f_t + \varepsilon_{it} \tag{2}$$

Before estimation, the Levin-Lin-Chu test was used to determine the existence of unit root in all variables. To correct for non-stationary variables, first differences were used. In addition, the weights provided by the ENEMDU were used in each estimation.

4. Results

The results are shown in Table 1. The first two columns present the estimates of equation (1) without and with the corresponding control variables. MW has a larger and more significant effect on low-income deciles. As the decile increases, this relationship weakens: the coefficients become smaller and less significant. For the poorest decile, and after including control variables, the results suggest that a 1% increase in real MW increases real income by 3.24%.

However, the first two columns do not consider labor informality, which has a high prevalence rate in Ecuador, especially in lower deciles as shown in Figure 4; therefore, it becomes an important factor to be considered.

Columns 3 and 4 show the effect of MW on earnings controlling for informality according to equation (2). Results from this model suggest that MW policy is more likely to benefit middle-class income recipients. At a 10% significance level, on decile 3 and 4, for a 1% increase in real MW, labor income of each group would increase by 1.5%. Both the magnitude and significance of each estimate decrease as the decile increases.

Table 1. Results of the estimation by fixed effects

	Equation 1		Equation 2	
	(1)	(2)	(3)	(4)
Decile 1	2.53***	3.24***	1.9	1.38
	-0.7	-0.77	-1.31	-1.44
Decile 2	1.81***	2.25***	1.54	0.79
	-0.57	-0.62	-1.05	-1.17
Decile 3	1.28***	1.70***	1.90**	1.54*
	-0.44	-0.47	-0.81	-0.86
Decile 4	1.11***	1.45***	1.90***	1.46*
	-0.39	-0.41	-0.71	-0.75
Decile 5	0.57*	0.86**	1.26**	0.8
	-0.31	-0.34	-0.57	-0.62
Decile 6	0.073	0.28	0.55	0.07
	-0.27	-0.29	-0.49	-0.54
Decile 7	-0.12	0.18	0.28	-0.21
	-0.26	-0.27	-0.47	-0.51
Decile 8	-0.2	0.075	0.14	-0.34
	-0.29	-0.31	-0.54	-0.57
Decile 9	0.0041	0.22	0.035	-0.29
	-0.3	-0.31	-0.55	-0.58
Frac. At	MW	MW	SAL	SAL
Control	NO	YES	NO	YES

Source: Author's elaboration. Note: Significance levels at * $p<0.1$, ** $p<0.05$, *** $p<0.01$. Robust standard error in parenthesis.

From these estimates, it can be concluded that incomes above the fifth decile do not respond to changes in MW. For middle level deciles (3 and 4), the effect is moderate but significant at a 10% level. Due to a spillover effect, the MW affects individuals who earn close to it. Finally, the effect of the MW on the poorest deciles (1 and 2) is largely attenuated by the prevalence of informality. Figure 5 and 6 that, most of the self-employed population earns much less than the MW.
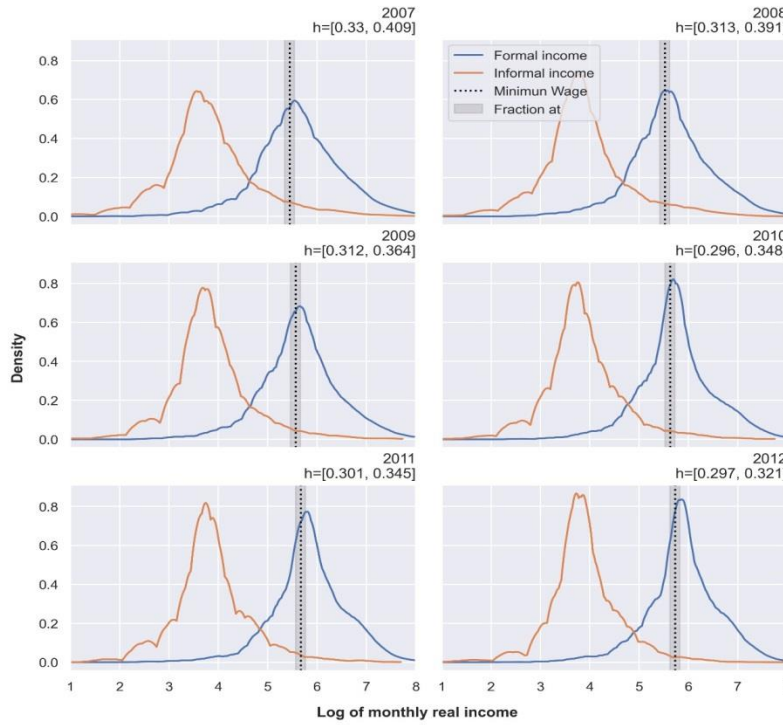
Figure 5. Kernel density estimation of monthly log income, 2007-2012

Source: Author's elaboration. Based on ENEMDU.

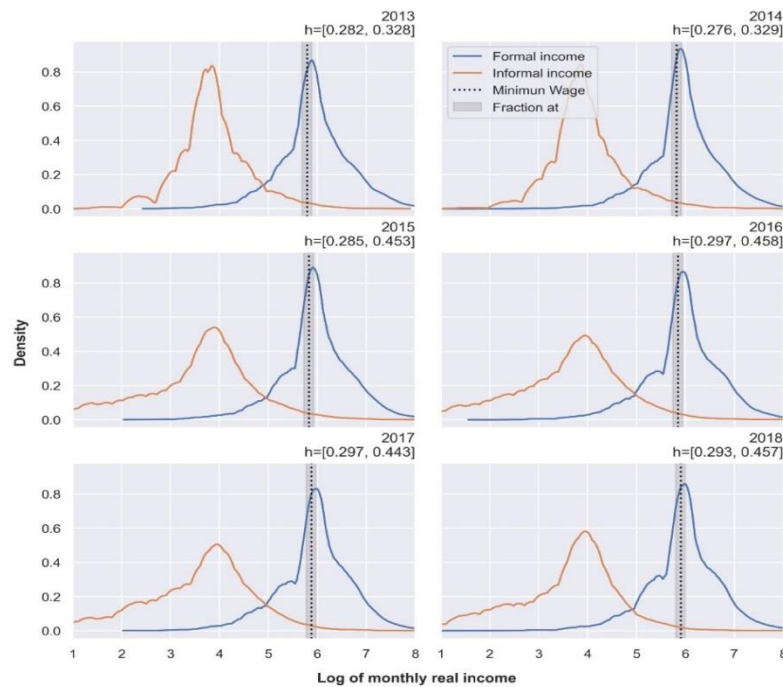Note: KDE using Epanechnikov kernel with a bandwith (h) according with Silverman (1986) rule of thumb.

Figure 6. Kernel density estimation of monthly log income, 2013-2018

Source: Author's elaboration. Based on ENEMDU.

Note: KDE using Epanechnikov kernel with a bandwith (h) according with Silverman (1986) rule of thumb.

5. Conclusions

In real terms, there has been a year-on-year increase in the MW in Ecuador, which, as mentioned above, is intended to combat poverty and inequality. An a priori relationship seems to show an inverse relationship between the MW and poverty. However, over the time analyzed the MW is in the fourth decile of income. To determine the relationship between income deciles and variations in the MW, a panel data was generated at the province and year level from the ENEMDU. With this, fixed effects estimation was used. Since the MW is set at the national level, this study used the fraction at measure suggested by Canelas (2014) and Lemos (2004) to capture the degree of impact or effectiveness of the MW across provinces.

The results suggest that the MW impacts positively and significantly on the lower deciles and to a lesser extent on the intermediate deciles, even when considering different control variables. In this case, there is a positive effect that gradually decreases when moving up in the different deciles. However, the higher deciles seem to be unaffected by changes in the MW. These results may suggest that the MW is a good policy for reducing poverty. However, in the context of the Ecuadorian labor market, there is a high presence of informality. The analysis conducted shows that this informality is high and persistent in the income deciles throughout the period considered.

Thus, once informality is included in the estimates, the effect of the MW on the low-income deciles disappears, with the effect on the intermediate deciles prevailing. This suggests that the MW increases the income of the middle and vulnerable classes, as it is shown to be a source of support for these groups. However, it seems that the MW does not fulfil the main function for which it was conceived, that of being useful to reduce poverty.

References

Acemoglu, D. (2010). When Does Labor Scarcity Encourage Innovation?. *Journal of Political Economy*, *118,* 1037-1078.

Alaniz, E., Gindling, T. H., & Terrell, K. (2011). The impact of minimum wages on wages, work and poverty in Nicaragua. *Labour Economics*, *18*, S45-S59.

Alejo, J., & Parada, C. (2017). Inequality and Informality in Latin America: The Case of Brazil. *Desarrollo y Sociedad*, *78*, 143-199.

Arcidiácono, P. (2015). Diez años de transferencias a las familias con hijos en la Argentina (2003-2013): una propuesta de periodización. In L. Pautassi, & G. Gamallo (Eds.), *El bienestar en brechas: las políticas sociales en la Argentina de la posconvertibilidad* (pp. 73-90). Buenos Aires: Biblos.

Beccaria, L., & Maurizio, R. (2018). Un Análisis Dinámico De Los Flujos De Entrada A La Formalidad En América Latina. *Revista de Economía Laboral - Spanish Journal of Labour Economics*, *15*, 8-56.

Bhorat, H., Kanbur, R., & Stanwix, B. (2019). Compliance with labor laws in developing countries. *IZA World of Labor 2019*, *80*, 1-10.

Brown, C. (1999). Minimum wages, employment, and the distribution of income. In O. Ashenfelter, & D. Card (Eds.), *Handbook of Labor Economics* (vol. 3, pp. 2101-2163). Amsterdam: North Holland.

Canelas, C. (2014). Minimum wage and informality in Ecuador. *WIDER Working Paper No. 2014/006,* The United Nations University World, Institute for Development Economics Research (UNU-WIDER).

Card, D. (1992). Do Minimum Wages Reduce Employment? A Case Study of California, 1987-89. *Industrial and Labor Relations Review*, *46*, 38-54.

DiNardo, J., Fortin, N. M., & Lemieux, T. (1996). Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach. *Econometrica*, *64*, 1001-1044.

Dolado, J., Kramarz, F., Machin, S., Manning, A., Margolis, D., & Teulings, C. (1996). The economic impact of minimum wages in Europe.*Economic Policy*, *11*, 317-372.

Economic Commission for Latin America and the Caribbean. (2019). *Social Panorama of Latin America 2019*. Santiago: ECLAC.

El Espectador. (2019). Salario mínimo 2020: sindicatos proponen subir 8.1% y los gremios 4.5%. *El Espectador.* Retrieved from https://www.elespectador.com/noticias/economia/salario-minimo-2020-sindicatos-proponen-subir-81-y-los-gremios-45/

European Commission. (2012). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards a job-rich recovery. *Strasbourg*, *COM(2012) 173*. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0173&from=ENhttps://eur-lex.eur opa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0173&from=EN

Fields, G. S. (1994). The Unemployment Effects of Minimum Wages. *International Journal of Manpower*, *15*, 74-81.

Freeman, R. B. (1996). The Minimum Wage as a Redistributive Tool. *The Economic Journal*, *106,* 639-649.

Gasparini, L., & Tornarolli, L. (2007). Labor Informality in Latin America and the Caribbean: Patterns and Trends from Household Survey Microdata. *CEDLAS Working Paper No. 0046,* CEDLAS, Universidad Nacional de La Plata.

Gindling, T. H. (2014). Does increasing the minimum wage reduce poverty in developing countries?. *IZA World of Labor*, *30,* 1-10.

Grau, N., Miranda, J., & Puentes, E. (2018). The Effects of the Minimum Wage on Employment and Wages. *Working Papers wp466 (Serie de Documentos de Trabajo SDT 466),* University of Chile, Department of Economics.

Herrero, S., & Villarreal, F. (2020). How does the worker's contribution to productivity explain the decrease in inequality in South America?. *Journal of Globalization, Competitiveness & Governability*, *14*, 84-104.

Instituto Nacional de Estadísticas y Censos. (2019). Boletín técnico N°01-2019: Encuesta Nacional de Empleo, Desempleo y Subempleo. *INEC*, Retrieved from https://www.ecuadorencifras.gob.ec/documentos/web-inec/EMPLEO/2018/Diciembre-2018/Boletin%20tecnico %20de%20empleo%20diciembre%202018.pdf

Inter-American Development Bank. (2019). Harmonized Household Surveys of Latin America. *IDB*. Retrieved from https://microdatos.iadb.org/

International Labour Organization. (2012). Boosting jobs and living standards in G20 countries. *International Labour Organization.* Retrieved from https://www.ilo.org/global/publications/books/WCMS_183705/lang--en/index.htm

International Labour Organization. (2014). G20 labour markets: outlook, key challenges and policy responses. *International Labour Organization.* Retrieved from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_30542 1.pdf

International Labour Organization. (2016). Minimum Wage Policy Guide. *International Labour Organization.* Retrieved from http://www.ilo.org/global/docs/WCMS_508566/lang--en/index.htm?shared_from=shr-tls

International Monetary Fund. (2014). 2014 Article IV Consultation with the United States of America Concluding Statement of the IMF Mission. *IMF*. Retrieved from https://www.imf.org/en/News/Articles/2015/09/28/04/52/mcs061614

Kanbur, R., Ronconi, L., & Wedenoja, L. (2013). Labour law violations in Chile.*International Labour Review*, *152*, 431-444.

Kristensen, N., & Cunningham, W. (2006). Do Minimum Wages in Latin America and the Caribbean Matter? Evidence from 19 Countries. *World Bank Policy Research Working Paper No. 3870*, World Bank.

Lemos, S. (2004). Are Wage and Employment Effects Robust to Alternative Minimum Wage Variables?. *IZA Discussion Paper No. 1070*, IZA.

Maloney, W. F., & Nuñez, J. (2003). Measuring the Impact of Minimum Wages: Evidence from Latin America. *NBER Working Paper No. 9800*, NBER.

Medina Uribe, P. (2016). Explainer: Latin America's Minimum Wage Increases. *Americas Society - Council of the Americas (AS/COA).* Retrieved from https://www.as-coa.org/articles/explainer-latin-americas-minimum-wage-increases

Nogales, R., Córdova, P., & Urquidi, M. (2019). Resultados en el mercado de trabajo y políticas laborales en Bolivia: un enfoque de búsqueda y emparejamiento. *Estudios de Economía*, *46*, 61-87.

Organisation for Economic Co-operation and Development. (2015). Minimum wages after the crisis: Making them pay. *OECD*. Retrieved from https://www.oecd.org/social/Focus-on-Minimum-Wages-after-the-crisis-2015.pdf

Organisation for Economic Co-operation and Development. (2018). Poor children in rich countries: why we need policy action. *OECD*. Retrieved from https://www.oecd.org/social/family/Poor-children-in-rich-countries-Policy-brief-2018.pdf

Paes de Barros, R., Carlos, H. C., & Samir, C. (2001). Salário mínimo e pobreza no Brasil: estimativas que consideram efeitos de equilíbrio geral. *IPEA Texto para discussão 779*, Instituto de Pesquisa Econômica Aplicada.

Panigo, D., Castillo, K., & Monzón, N. (2019). The Preference for Inequality and the Rise of the Right-Wing Governments in Latin America. *Cuadernos De Economía Crítica*, *5*, 71-98.

Rani, U., Belser, P., Oelz, M., & Ranjbar, S. (2013). Minimum wage coverage and compliance in developing countries. *International Labour Review*, *152*, 381-410.

Saget, C. (2001). Poverty reduction and decent work in developing countries: Do minimum wages help?. *International Labour Review*, *140*, 237-269.

Silverman, B. (1986). *Density Estimation for Statistics and Data Analysis.* London: Chapman and Hall.

Souza, P. R., & Baltar, P. E. (1979). Salário mínimo e taxa de salários no Brasil. *Pesquisa e Planejamento Econômico*, *9*, 629-660.

World Bank. (2012). Ecuador: las caras de la informalidad. *World Bank*. Retrieved from https://www.findevgateway.org/sites/default/files/publications/files/mfg-es-estudio-de-caso-ecuador-las-caras-de-la-informalidad-4-2012.pdf

World Bank. (2019). World Bank Open Data. *World Bank*. Retrieved from https://data.worldbank.org/

Note

Note 1. Alternative measures of MW effectiveness are the percentage of people earning below 90% of the MW: 'fraction below' or percentage of people between previous and current year MW 'fraction affected' [Card (1992), Dolado et al (1996), Brown (1999)].