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Social Spending and Income Inequality in Latin America. A Panel Data Approach

Pablo Quiñonez

Universidad de Guayaquil, Guayas, Ecuador
Email: pablo.quinonezr@ug.edu.ec

The relationship between social policy and inequality has often been contentious in Latin America. In this context, this article analysed the relationship between social spending and income inequality in the region in the short, medium, and long run. For this purpose, data on sixteen Latin American countries in the period 1990-2017 were gathered and analysed through a panel data study. The results showed that, in line with the findings at a global level, increased levels of overall social spending are indeed associated with reduced levels of income inequality in this region. However, each one of the four main areas of social spending were observed to have different effects on income inequality. Additionally, the results showed that, despite the reforms and the increases in budgets, the social protection and social services systems still have problems reaching those at the bottom of the income distribution in the region.

Keywords: Latin America, social spending, income inequality, panel data, social policy.

Introduction

Two factors have often been pointed to as being responsible for the relatively recent trend of decreasing inequality in Latin America: a reduction in the skilled labour premium and the renewed role of social policy – that included a substantial increase in social spending (Levy and Schady, 2013; Lustig, 2017; Ocampo and Gómez-Arteaga, 2017).

This should not come as a surprise since reducing inequality is one of the essential objectives of social policy (Saunders, 2010). Nevertheless, such a relationship has often been contentious in Latin America, with social programmes sometimes even privileging those at the top of the income distribution while distributing resources away from those in most need (Lloyd-Sherlock, 2009). Moreover, the existing research on the topic has found different effects of each area of social policy on inequality and has not considered those effects across time. Additionally, almost all of the research in this area is based on case studies, not available at the time-series level, and performed through a fiscal incidence analysis.

In this respect, apart from answering the general question on what has been the relationship between social spending and income inequality (as a measure of economic inequality) in Latin America over the period 1990-2017, this article will also focus on analysing whether each of the main social spending areas has been associated with different changes in income inequality in the region and if such relationships have been subject to variations in the short, medium, and long run.

For such purposes, a panel data analysis will be conducted, considering sixteen nations[1] over twenty-eight years. The Gini index will be used as the dependent variable – the Palma ratio and the percentage of income captured by the top 10 per cent and bottom 10 per cent of the households will also be considered as regressands for robustness purposes. On the other hand, social spending or its four main areas (social protection, health, education, and housing) will be used as regressors, along with controls for economic development, macroeconomic stability, democracy, and coverage of contributory social protection. Additionally, the moving averages of spending over the last three and ten years will be included for studying the relationship between the main areas of social spending and inequality in the medium and long run, respectively.

This article is structured as follows. Section two presents a theoretical discussion on the relationship between social policy and inequality in Latin America. Section three focuses on the research hypotheses. Section four is dedicated to the methodology and describes the econometric strategy and the choice and sources of variables used. Section five presents and discusses the results. Finally, section six presents the conclusions.

Social policy and inequality in Latin America: a contentious relationship

In Latin America, recent research has pointed at the expansion of social policy budgets, innovative policies and increased coverage of social programmes as some of the main contributors to the reduction of income inequality in the last two decades (e.g. Levy and Schady, 2013; Ocampo and Gómez-Arteaga, 2017; Sánchez-Ancochea, 2021).

Nevertheless, this has not always been the case. In the region, social policies have often been criticised for not necessarily contributing to reducing inequality. Notably, the strong link between social protection and formal work left those who probably needed it the most out of the system (Barrientos and Hinojosa-Valencia, 2009).

Such a problem has affected health services too. Even today, healthcare systems have a stratified nature in most countries in the region. This has resulted in different institutions providing health services of varying quality to different groups. Although universal health services exist, the institutions tend to offer low-quality services and are used by those who do not have a formal job and cannot access conventional social insurance. There is often a higher-quality health system where entitlements are structured on a contributory basis for those who can. However, due to the high levels of informality in the labour market, access to these health services has also been historically limited (Barrientos and Lloyd-Sherlock, 2003). Additionally, a growing private healthcare services sector has often been used by the richest.

In theory, such a stratification should have left more fiscal room for government spending in those who need it the most. However, the difference in health spending allocated to the lowest and the highest quintiles of the population used to be minimal until the mid-2000s, as both private and social insurance-related health services received transfers or tax exemptions from the government. Moreover, the introduction of user fees in many countries and the concentration of health infrastructure in urban areas and more affluent regions negatively affected the equalising effect of health spending (Lloyd-Sherlock, 2009).

Regarding education, several other problems have been noticed in the region. Notably, both tertiary and secondary education have often represented a significant share of the overall education spending. According to some authors (e.g. Lloyd-Sherlock, 2009), both

have had regressive effects. For others (e.g. Lustig, 2017), they have had an equalising impact, although spending on tertiary education is demonstrably not pro-poor in most countries.

Besides, there is abundant evidence that the limitations in the quality of public education have often affected the poor the most, limiting the progressive effect that education policies could have had on the distribution of income (Vegas and Petrow, 2007; Levy and Schady, 2013).

Finally, regarding housing policies, there have also been problems targeting the poorest. Across history, public housing programmes tended to favour the most powerful unionised groups (Gilbert, 2001) and were unaffordable for the poor, small in scale, and inefficient (Mayo, 1999). Moreover, government housing policies have not addressed the residential segregation pattern that characterises most of the largest cities in the region – which causes the agglomeration of the poorest households in peripheral areas, where they are subject to more precarious living conditions (ECLAC, 2014). It has even been argued that housing programmes in the region have reinforced this pattern (Marengo and Elorza, 2016).

Despite these problems, the substantial increase in social spending and the new non-contributory programmes have been positively regarded in terms of their equalising effects. However, most of the research on the subject is based on micro studies that compare income inequality before and after government intervention. In the region, the most comprehensive work of this style comes from the Commitment to Equity Institute (see Lustig, 2017). Based on case studies of sixteen Latin American countries at specific points between 2009 and 2013, Lustig concludes that health and education spending and contributory pensions have had an equalising effect in most countries of the region.

The only two studies focusing on the region that have employed panel data analysis have found opposite results. On the one hand, Ospina (2010) covered the period 1980-2000 and found that education and health spending had a negative and significant effect on income inequality, whereas social protection spending did not. On the other hand, Huber and Stephens (2012) covered the period 1970-2007 and found no effects of the different areas of social spending on inequality. However, none of them addressed the different effects that social policies might have had on inequality in the medium and long run – and there are good reasons to expect such effects, as will be discussed in the next section.

Research hypotheses

As explained in section four, economic inequality will be measured through income inequality while social spending will be used as a proxy for welfare effort of each country.

At a global level, despite the existing criticism of social spending as a comprehensive welfare effort indicator, there is strong evidence that larger welfare states are associated with greater disposable income equality (Esping-Andersen, 2001; De Gregorio and Lee, 2002). As explained in the last section, in Latin America, the expansion of social policy budgets has been associated with the reduction of inequality, too, through the expansion in coverage and the creation of new programmes. In this context, a first hypothesis emerges:

> H1: Increased levels of social spending are associated with lower levels of income inequality in the region.

Nevertheless, as social spending covers several areas, increased spending in each one may be associated with different effects on economic inequality. This leads us to a second hypothesis:

H2: Spending on social protection, education, health, and housing has different effects on the levels of income inequality in the region.

Social protection

The role of social protection in reducing income inequality is relatively straightforward since the vast majority of these programmes provide income transfers to those who need them the most, funded through income-related taxes on those at the top of the income distribution (Saunders, 2010). Notwithstanding the criticism mentioned above of how social protection systems have worked in Latin America and the regional tendency to regressive tax systems (Sánchez-Ancochea, 2021), we could expect an immediate redistributive effect of social protection in terms of income. Thus, a new hypothesis can be formulated as follows:

H3a: Increased levels of public spending on social protection are associated with reduced levels of income inequality in the short run.

Education

Traditionally, it has been observed that education interrelates with income inequality through two mechanisms. The first one is related to the idea that education is linked to productivity. In turn, productivity is linked to income. The second mechanism is associated with the idea that higher levels of education are associated with better jobs, and thus with higher income levels (Stiglitz, 1973). Indeed, evidence has shown that an equal distribution of education and higher educational attainment both contribute to equalising income distribution (De Gregorio and Lee, 2002).

However, as the group of skilled workers grows, income inequality may increase at the beginning due to the growth in wage disparities. Nevertheless, in the long run, income inequality is expected to decrease since the wage premium for skilled workers is expected to have diminished, as the supply of educated workers would continually increase (Knight and Sabot, 1983).

Hence, despite the immediate effect in disposable income that policies aimed at expanding education could have, its main equalising effects are expected to be seen in the long run. Consequently, a new hypothesis can be formulated:

H3b: Increased levels of public spending in education are associated with reduced levels of income inequality in the long run.

Health

Regarding health, evidence has shown that the main channel through which it interacts with income is employment. Ill-health can cause an immediate loss of income. The problem deepens when we consider that the socially disadvantaged often suffer from a

higher illness incidence. In the absence of appropriate insurance, they are more vulnerable in economic terms to such a situation (O'Donnell *et al.*, 2015). Furthermore, it has also been argued that health can affect income in the very long run. Early-life health conditions may affect the acquisition of human capital, thus conditioning children's future opportunities (Azevedo and Bouillon, 2010). Those early-life conditions may also have an incidence on the health of individuals during their adulthood (Barker, 2001). In both cases, health conditions during childhood are linked to future income. Increased social spending in health is therefore expected to have an equalising effect, as stated in the next hypothesis:

> H3c: Increased levels of public spending in health are associated with reduced levels of income inequality in the short, medium, and long run.

Housing and community services

Regarding housing, its links with income inequality are less straightforward since its ownership relates to wealth. Nevertheless, the cost of rent tends to be one of the most substantial expenditures for those households who do not own a house (Gilbert, 2001; Bratt, 2006). Besides, having a house is not enough. Poor housing conditions are associated with a wide variety of physical and mental health conditions (Krieger and Higgins, 2002). Beyond the house itself, the neighbourhood setting and location can affect educational opportunities as well as employment and social networks (Hartman, 2006; Katzman, 2011). In this context, social programmes aimed at providing affordable and quality housing to those households in need are also expected to improve their disposable income. So, considering that investment in housing and other infrastructure projects do not produce immediate results, another hypothesis can be stated:

> H3d: Increased levels of public spending in housing and community services are associated with reduced levels of income inequality in the medium and long run.

Methodology

Variables and data sources

The dependent variable

The Gini coefficient (here expressed as an index), one of the most common inequality indicators, was chosen as the primary dependent variable[2]. However, since it has been noted that transfers in the centre of the distribution are given more weight by the coefficient than those happening at the tails (Atkinson, 1970; Williams and Doessel, 2006), the Palma ratio was also considered to check for robustness. Following Dabla-Norris *et al.* (2015), the income share of the top 10 per cent and that of the bottom 10 per cent were also considered as dependent variables for the same purpose. This is detailed in Table 1.

The independent variables

Contrary to early comparisons (e.g. Wilensky, 1975), limiting the analysis to social spending has been challenged since it may not provide enough information about the

Table 1 Data employed, the dependent variable

Variable	Definition	Source
Gini Index	Gini index (0-100 scale) of household per capita disposable income	World Income Inequality Database (WIID) (UNU-WIDER, 2020)
Palma ratio	Household per capita income share of the top 10% divided by the bottom 40%	
Income share bottom 10%	Household per capita income share of the lowest decile	
Income share top 10%	Household per capita income share of the highest decile	

kind of welfare produced and for whom (Esping-Andersen, 1990, 2001; Korpi and Palme, 1998). Unfortunately, for Latin America, there is not enough comparable data across the mentioned period as would be required for a more comprehensive analysis. Nevertheless, in addition to the broad availability of spending data, one could argue in its favour when the characteristics of the programmes compared are similar across nations (Jensen, 2011).

Furthermore, several attempts have been made in Latin America to group its countries into typologies, according to characteristics of their social policy, and there has often been a strong relationship between the 'score' that the countries achieve in terms of those characteristics and the resources they allocate to social policies. This can be observed in popular categorisations such as Martínez Franzoni's (2008), Ocampo and Gómez-Arteaga's (2017), and even in the pioneer work of Filgueira (2005).

In this context, comparable data on central government social expenditure were gathered[3]. The data are presented in real 2010 USD per capita to facilitate international comparison. Commonly, spending indicators as a percentage of GDP would have been considered as the best option here. However, the volatility of the late 1990s and the rapid economic growth experimented by most countries in the region from the 2000s causes an underestimated impression of the actual growth of the budget allocated to social spending in all the sixteen countries when compared to each country's GDP.

For testing hypotheses 2 and 3(a-d), instead of the overall volume of social spending, its four main areas were considered separately as regressors. This is described in Table 2.

The number of additional controls was limited by the number of entities of the panel. Therefore, theoretically informed choice was preferred. Firstly, as shown in Table 3, economic development was controlled through the logarithm of GDP per capita. The square of this variable was also included as is common in the empiric study of inequality – an idea initially proposed by Kuznets (1955), who suggested an inverted-U relationship between income inequality and GDP per capita.

Secondly, since previous research has suggested a positive association between inflation and income inequality (Angeles-Castro, 2006; Albanesi, 2007), the inflation rate, which proxies economic stability, was also included as a control.

Thirdly, the role of democracy was controlled by introducing a regressor that measures its *stock*. Although the research on the links between democracy and income inequality has not always reached the same conclusions (e.g. Muller, 1988;

Table 2 Data employed, main independent variables

Variable	Definition	Source
Overall social spending	The overall volume of resources committed to social policies. For the regressions, all social spending variables are expressed in hundreds of real 2010 USD.	CEPALSTAT database[4] (ECLAC, 2020b)
a) Social protection spending	The disbursements for transfers and services to the population in the following areas: sickness and disability; family and children; unemployment; old age; survivors; housing and social exclusion.	
b) Education spending	The disbursements at all levels of education, from pre-school to tertiary.	
c) Health spending	The disbursements for health services provided to the population.	
d) Housing spending	The disbursements for urbanisation, house building, community development, public lighting, and water supply.	

Table 3 Data employed, further controls

Variable	Definition	Source
GDP per capita	Gross domestic product per capita. Units: natural logarithm of real 2010 USD per capita	World Development Indicators (World Bank, 2020)
Inflation	Annual variation (%) of the general consumer price index	CEPALSTAT database (ECLAC, 2020b)
Stock of democracy	For estimating the *stock* of democracy, each country's democracy score is summed from 1900 to the present year, applying an annual depreciation rate of 1 per cent. In turn, the democracy score is the POLITY2 score, which ranges from 10 (strongly democratic) to -10 (strongly autocratic).	Polity 5 Project (Center for Systemic Peace, 2020)
Workers affiliated to social security	Percentage of salaried workers (aged 15 to 64 years old) that are contributing to social security.	The Labour Markets and Social Security Information System (IADB, 2019)

Sirowy and Inkeles, 1990; Chong, 2004), theory often suggests that the rise of democracy should lead to a reduction in economic inequality (Bermeo, 2009).

Besides, how democracy is measured can also lead to extended debates. In this context, Gerring *et al*. (2012) argue that the *stock* of democracy is more important than its present *quality* when studying its supposed effects on improving social welfare. Moreover,

a stronger democratic history (as measured by a stock variable) could arguably result in greater political institutionalisation, which in turn might positively affect the implementation of policies – it has been shown that institutions have significant effects on welfare state outcomes and structures (Immergut, 2010). Consequently, this article uses the Polity V dataset (specifically, the *Polity2* variable) to estimate the stock of democracy in each country[5].

Finally, the coverage of social policy (or, at least, of social insurance) was controlled through the percentage of salaried workers contributing to social insurance. Unfortunately, comparable indicators of the coverage of all areas of social policy or, more broadly, of social rights were not widely available at a panel level. From the few variables that could proxy them, this one was chosen as the most appropriate, at least when used alongside the overall social spending level. Not only has it already been used as an indicator of the universality of social protection in the region (Ocampo and Gómez-Arteaga, 2017), but it is also related to a core feature of social protection in Latin America: its financing and provision are often a function of labour status, and in a region with such high levels of informality – where not even the majority of salaried workers have access to social insurance – this turns into a problem for the redistributive efficacy of social programmes (Ferreira and Robalino, 2011; Huber and Stephens, 2012; Levy and Schady, 2013).

Model specification

The following base model was constructed to find whether overall social spending and its components have been associated with the levels of inequality in the region, considering the foundations provided by similar previous studies (e.g. Niehues, 2010; Ospina, 2010).

$$Ineq_{it} = \beta_0 + \beta_1 SE_{it} + \beta_2 Y_{it} + \beta_3 Y_{it}^2 + \beta_4 Z_{it} + \beta_5 CP_{it} + \alpha_i + \gamma_t + u_{it} \qquad [1]$$

Where *Ineq* refers to inequality; *SE* denotes social spending[6]; *Y* is the real per-capita income; Y^2 is the squared real per-capita income; *Z* is a vector of political and economic controls; *CP* is a proxy to the coverage of social insurance (used only for testing H1); *i* refers to countries and *t* to years; *u* is the error term; α_i represents the entity-fixed-effect and γ_t denotes the time-fixed-effect.

The necessity of considering entity- and time-fixed effects was confirmed through a test of overidentifying restrictions and a joint F-test, respectively. Additionally, the following tests were performed: modified Wald test for groupwise heteroskedasticity, Pesaran's test of cross-sectional independence, Wooldridge test for serial correlation in panel-data models, Shapiro-Wilk normality test, estimation of variance inflation factor, and a Fisher-type unit-root test based on Phillips-Perron test for the main variables of interest.

Due to the presence of heteroskedasticity, cross-sectional dependence and serial correlation, fixed-effects regressions with Driscoll and Kraay (1998) standard errors were estimated through the *xtscc* command in Stata. The error structure of such regressions is assumed to be heteroskedastic, autocorrelated and correlated between the panels (Hoechle, 2007). Finally, a Granger test for causality in panel data was conducted between social spending and the Gini index.

Table 4 The effect of aggregate social spending on income inequality

	(1)	(2)	(3)	(4)	(5)
Variables	Gini	Gini	Palma	Bottom 10%	Top 10%
Social spending	−0.679***	−0.527**	−0.128**	0.015	−0.477*
	(0.072)	(0.247)	(0.056)	(0.014)	(0.233)
Log GDP per capita		−134.406***	−35.648***	5.671***	−126.627***
		(34.715)	(8.384)	(1.860)	(34.459)
(Log GDP per capita)^2		7.353***	2.011***	−0.320***	6.924***
		(2.069)	(0.495)	(0.103)	(2.054)
Inflation		−0.020	−0.003	0.001	−0.013
		(0.026)	(0.003)	(0.001)	(0.029)
Democracy		−0.037*	−0.004	0.003**	−0.024
		(0.021)	(0.005)	(0.001)	(0.020)
Affiliated workers		0.018	0.001	−0.002	0.000
		(0.031)	(0.006)	(0.001)	(0.033)
Constant	54.333***	662.510***	161.943***	-23.958***	617.004***
	(0.833)	(146.167)	(35.528)	(8.263)	(145.629)
Observations	308	281	281	281	281
R-squared	0.274	0.676	0.651	0.667	0.623
Number of countries	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

The moving average over the last three and ten years (including the present year) of social spending variables were included instead of the level variables in each year to account for medium and long run effects (as hypothesised by H3a-d).

Results

For testing H1, Table 4 presents different model specifications based on equation [1]. Model 1 in Table 4 shows that, at a general level, an increase in social spending is associated with a decrease in the Gini index. These results hold after controlling for the most relevant economic and political factors, as well as for the characteristics of each country's social policy in terms of coverage, as shown by model 2. Additional model specifications are shown in the Appendix[7] (Tables A2-A4) for robustness purposes. Overall, the regressors in model 2 explain around 67.6 per cent of the variation in the Gini index. Everything else remaining equal, a hundred dollars increase in per capita social spending is associated with a decrease of 0.53 in the Gini index (95 per cent

CI -0.02 to -1.03). Although this reduction may seem small, it doubles the average annual variation of the Gini index in the dataset (-0.26). If the Palma ratio is used as regressand, the significant negative association with social spending remains (model 3). However, overall social spending seems not to have significantly affected the income share of those households at the bottom 10 per cent, as the mentioned coefficient is not statistically significant in model 4 – despite its sign coinciding with what was expected. On the other hand, increased social spending seems to be associated with a reduced income share for the top 10 per cent of the population, although the coefficient in model 5 is only significant at 10 per cent.

In general, these results support the statement proposed in H1 – increased levels of social spending are associated with lower levels of income inequality in the region. However, since causation could run both ways, a Granger causality test for panel datasets was performed. The null that social spending does not Granger-cause the Gini index was rejected in favour of the alternative hypothesis that social spending indeed Granger-causes the Gini index for at least one panel (p>Z-bar tilde 0.000). Conversely, the null that the Gini index does not Granger-cause social spending failed to be rejected (p>Z-bar tilde 0.149).

Regarding the other controls, both the logarithm of GDP per capita and its square are significant in all the model specifications. Nevertheless, the signs of their coefficients in models 2-5 would seem to predict an upright-U shaped relationship instead of the inverted-U shape hypothesised by Kuznets (1955). Of the other control variables, none are statistically significant except from the stock of democracy – which is positively associated with the income share of the bottom 10 per cent and negatively associated with the Gini coefficient (although, this coefficient is statistically significant only at 10 per cent).

Aiming to test H2, Tables 5-8 separately consider each of the main social spending areas as independent variables. When viewed individually, spending on social protection, education, health, and housing indeed seem to be associated differently with income inequality, thus confirming H2.

As shown in Table 5, there is a negative and statistically significant relationship between social protection spending and income inequality – whether the latter is measured through the Gini index, the Palma ratio, or the income share of the top 10 per cent. Model 2 shows that everything else remaining equal, a hundred dollars increase in social protection spending per capita is associated with a reduction of 0.61 in the Gini index (95 per cent CI -1.00 to -0.22). Nevertheless, Model 4 suggest that social protection seems to be failing to reach those at the bottom of the income distribution since the social protection coefficient is not statistically significant (and also negative). Conversely, there is a positive and statistically significant relationship between social protection spending and the income share of deciles 2 and up to 8 (results not shown). This should not be a surprise given that, on average, deciles 9 and 10 concentrated 54 per cent of national income in the region over the period under study.

Table 6 shows that although education spending initially seems to be associated with reduced inequality (model 1), when the main economic and political controls (as well as year dummies) are considered (models 2-5), this relationship becomes positive (95 per cent CI 0.96 to 2.13 in model 2). As with social protection, the bottom 10 per cent seem not to be benefiting from education spending. Conversely, the income share of the top 10 per cent is positively and significantly associated with it.

Table 7 shows that health spending is negatively associated with income inequality – no matter which of the chosen measures is used. Model 2 reveals that a hundred dollars

Table 5 The effect of social protection spending on income inequality

	(1)	(2)	(3)	(4)	(5)
Variables	Gini	Gini	Palma	Bottom 10%	Top 10%
Social protection	−1.313***	−0.614***	−0.129***	−0.009	−0.640***
	(0.127)	(0.192)	(0.044)	(0.014)	(0.177)
Log GDP per cap		−73.567***	−17.977***	−0.098	−81.461***
		(22.112)	(6.163)	(2.782)	(19.806)
(Log GDP per cap)^2		3.782***	0.967**	0.017	4.249***
		(1.319)	(0.367)	(0.166)	(1.135)
Inflation		−0.006	0.000	0.001	0.005
		(0.015)	(0.003)	(0.001)	(0.015)
Democracy		−0.042***	−0.004	0.004***	-0.028*
		(0.014)	(0.003)	(0.001)	(0.014)
Constant	54.111***	403.323***	86.945***	0.701	425.251***
	(0.720)	(94.016)	(26.145)	(11.770)	(87.309)
Observations	308	308	308	308	308
R-squared	0.241	0.631	0.574	0.606	0.590
Number of countries	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

increase in per capita health spending is associated with a reduction of 0.90 in the Gini index (95 per cent CI -1.65 to -0.15), ceteris paribus. Contrary to social protection and education, health spending is associated with an increased income share for the bottom 10 per cent (as well as for deciles 2-5; results not shown).

Model 2 in Table 8 shows that a hundred dollars increase in per capita housing spending is associated with a reduction of 2.36 in the Gini index (95 per cent CI -5.05 to 0.34), ceteris paribus – although this is only significant at 10 per cent. When the Palma ratio is used as regressor (model 3), the housing spending coefficient becomes non-significant. This might be related to the fact that such a variable is negatively associated with the income share of the bottom 10 per cent (model 4) while it is positively correlated with that of deciles 4-8 (results not shown) and negatively and significantly associated with the income share of the top 10 per cent (model 5).

Finally, Tables 9-10 present four models each based on equation H3a-H3d. As seen in Table 9, in the medium run education maintains its positive association with inequality, while social protection, health and housing spending are negatively and significantly associated with the Gini index. In the long run, both social protection and housing spending are negatively correlated with inequality and are both significant at 5 per cent,

Table 6 The effect of education spending on income inequality

	(1)	(2)	(3)	(4)	(5)
Variables	Gini	Gini	Palma	Bottom 10%	Top 10%
Education	−1.411***	1.544***	0.300***	−0.024	1.554***
	(0.259)	(0.287)	(0.064)	(0.027)	(0.267)
Log GDP per cap		3.401	−2.511	−0.353	−2.804
		(20.887)	(5.594)	(2.433)	(19.010)
(Log GDP per cap)^2		−0.887	0.030	0.037	−0.518
		(1.234)	(0.334)	(0.148)	(1.075)
Inflation		−0.007	−0.000	0.001	0.003
		(0.016)	(0.004)	(0.001)	(0.015)
Democracy		−0.023*	−0.001	0.003***	−0.009
		(0.013)	(0.003)	(0.001)	(0.013)
Constant	52.530***	86.140	23.065	1.495	100.792
	(0.852)	(90.063)	(23.755)	(10.101)	(85.060)
Observations	308	308	308	308	308
R-squared	0.148	0.640	0.579	0.607	0.600
Number of countries	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

whereas the education coefficient maintains its positive sign and is statistically significant and health spending is not significant anymore.

Consequently, from the estimations obtained in Tables 5-10, one can agree with what was hypothesised in H3a and H3d. Moreover, social protection spending proved to be associated with reduced inequality in the medium and long run too. On the contrary, H3b cannot seem to be accepted since increased education spending levels did not demonstrate to be significantly associated with reduced income inequality in the long run – this will be further investigated later on. H3c is only partially confirmed since increased health spending was associated with reduced income inequality only in the short and medium run.

The negative association between social protection spending and inequality observed in the short run comes as no surprise since these kinds of transfers were expected to increase the disposable income of the less well-off. Nevertheless, increases in social protection spending were not significantly associated with the increase of the share of the income of the bottom 10 per cent of the population. This could prove the arguments of authors such as Ferreira and Robalino (2011), who have emphasised the permanent problem of Latin American social protection systems in reaching the poorest households. In turn, this might be related to the fact that, despite the considerable growth of non-contributory social programmes in the twenty-first century, most of the social protection budget is still destined to contributory programmes – by 2017, in none of the fifteen countries for which comparable data are available, did non-contributory programmes

Table 7 The effect of health spending on income inequality

	(1)	(2)	(3)	(4)	(5)
Variables	Gini	Gini	Palma	Bottom 10%	Top 10%
Health	−2.713***	−0.899**	−0.192**	0.081***	−0.621*
	(0.262)	(0.364)	(0.072)	(0.021)	(0.347)
Log GDP per cap		−59.453***	−15.060**	1.956	−60.434***
		(21.368)	(5.819)	(2.502)	(18.564)
(Log GDP per cap)^2		3.146**	0.836**	−0.114	3.171***
		(1.315)	(0.351)	(0.150)	(1.122)
Inflation		−0.010	−0.001	0.001	−0.000
		(0.013)	(0.002)	(0.001)	(0.014)
Democracy		−0.037***	−0.004	0.003***	−0.025*
		(0.013)	(0.003)	(0.001)	(0.013)
Constant	52.615***	330.034***	71.720***	−7.318	325.056***
	(0.733)	(89.205)	(24.508)	(10.518)	(79.416)
Observations	308	308	308	308	308
R-squared	0.229	0.622	0.565	0.615	0.574
Number of countries	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

represent more than 40 per cent of the social protection budgets, according to data from ECLAC (2020a). This means that a considerable proportion of informal workers cannot access the benefits of conventional social insurance – and most of them come from the bottom of the distribution (Tokman, 2011).

Regarding education spending, while it was expected to have a regressive effect on income distribution in the short run, a progressive effect was expected in the long run due to increased productivity and access to better jobs that accompany human capital formation (Knight and Sabot, 1983). The fact that a positive association between these two variables remained in time motivates a deeper analysis that should start by separating education spending in each one of its main levels (primary, secondary, and tertiary) since it has already been suggested that not all of them have always been pro-poor in the region (see Lustig, 2017).

In this connection, Table 11 shows that spending on each education level indeed has different effects. Spending on tertiary education seems to be regressive in the short and medium run. Nonetheless, the statistical significance of such an effect disappears in the long run, as seen in model 9. These results could have been influenced by the fact that in most countries the net enrolment rate in tertiary education is at least twice as high in the upper four than in the lower three deciles (IIPE-UNESCO, 2020). Consequently, the poor

Table 8 The effect of housing spending on income inequality

	(1)	(2)	(3)	(4)	(5)
Variables	Gini	Gini	Palma	Bottom 10%	Top 10%
Housing	−7.500***	−2.356*	−0.360	−0.182*	−3.025**
	(0.988)	(1.315)	(0.235)	(0.101)	(1.166)
Log GDP per cap		−52.465***	−12.892**	−0.411	−61.672***
		(17.244)	(5.096)	(2.512)	(14.478)
(Log GDP per cap)^2		2.560**	0.675**	0.033	3.096***
		(1.040)	(0.305)	(0.150)	(0.831)
Inflation		−0.013	−0.001	0.001	−0.003
		(0.014)	(0.003)	(0.001)	(0.014)
Democracy		−0.040***	−0.004	0.004***	−0.024*
		(0.013)	(0.003)	(0.001)	(0.013)
Constant	51.887***	312.671***	64.909***	2.212	340.835***
	(0.535)	(73.513)	(21.669)	(10.644)	(64.738)
Observations	307	307	307	307	307
R-squared	0.117	0.622	0.561	0.615	0.582
Number of countries	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

are not benefiting as much as other income groups from this type of spending because they do not access higher education as much as their peers from the upper deciles do. The implications of this problem are considerable since higher education levels are linked with access to influence networks as well as greater income and better jobs (Stiglitz, 1973; De Gregorio and Lee, 2002), thus limiting the social mobility opportunities of people from lower-income deciles.

On the contrary, spending on secondary education is significantly associated with reduced levels of income inequality in the short, medium, and long run. However, spending on primary education, although negatively associated with the Gini index in the medium and long run, is not statistically significant. Several explanations may arise for this phenomenon. Firstly, this could be linked to substantial variations in educational outcomes that mainly affect children from low-income families and ethnic minorities (Vegas and Petrow, 2007; Treviño *et al.*, 2010), thus hindering the potential progressive effect of education in the long run.

Secondly, these results might reflect that those households at the upper deciles of the distribution benefit more from public education. Data from IIPE-UNESCO (2020) show that a considerable proportion of the children from the four upper deciles go to publicly managed schools (46 per cent at the primary level[8]). This means that those households are

Table 9 The effect of the four main areas of social spending on income inequality, three-year averages.

	(1)	(2)	(3)	(4)
Variables	Gini	Gini	Gini	Gini
Social protection $_{3y\ avg.}$	−0.786***			
	(0.202)			
Education $_{3y\ avg.}$		1.484***		
		(0.323)		
Health $_{3y\ avg.}$			−0.951**	
			(0.393)	
Housing $_{3y\ avg.}$				−3.853**
				(1.460)
Log GDP per cap	−79.542***	0.201	−58.232***	−77.311***
	(20.785)	(20.329)	(20.344)	(17.096)
(Log GDP per cap)^2	4.139***	−0.617	3.074**	3.901***
	(1.244)	(1.193)	(1.244)	(1.008)
Inflation	0.004	0.004	−0.009	−0.037*
	(0.017)	(0.016)	(0.020)	(0.022)
Democracy	−0.042***	−0.024*	−0.037***	−0.012
	(0.013)	(0.014)	(0.013)	(0.010)
Constant	434.938***	91.520	326.697***	426.600***
	(87.701)	(88.323)	(84.107)	(73.853)
Observations	305	305	305	305
R-squared	0.631	0.628	0.615	0.493
Number of countries	16	16	16	16
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

paying little or no fees and thus have more disposable income. At the same time, the proportion of children from families in the bottom three deciles that do not attend schools is, on average, almost 4.6 times higher than that of the children from households in the upper four deciles. In turn, this means that the poorest households are benefiting less from the spending relief that publicly funded education brings.

This last argument leads to a third point. The higher rates of children not attending primary education seen among the lowest three deciles might be showing that the cost of opportunity (in terms of loss of income for their families) exceeds the perceived benefits of education. Such a phenomenon has already been hypothesised in the region (see Lloyd-Sherlock, 2009). Conditional cash transfer programmes have tried to address it by requiring families to send their children to school in exchange for a cash transfer. Nevertheless, such transfers are considered under the category of social protection. Therefore, if they succeeded in increasing the attendance rates of children from the

Table 10 The effect of the four main areas of social spending on income inequality, ten-year averages

	(1)	(2)	(3)	(4)
Variables	Gini	Gini	Gini	Gini
Social protection $_{10y\ avg.}$	−0.604**			
	(0.271)			
Education $_{10y\ avg.}$		1.488***		
		(0.340)		
Health $_{10y\ avg.}$			0.119	
			(0.607)	
Housing $_{10y\ avg.}$				−3.240**
				(1.403)
Log GDP per cap	−91.873***	−36.989*	−70.428***	−85.312***
	(16.062)	(17.788)	(18.342)	(14.369)
(Log GDP per cap)^2	4.883***	1.700	3.692***	4.320***
	(0.906)	(1.013)	(1.069)	(0.801)
Inflation	0.008	−0.001	−0.001	0.002
	(0.020)	(0.017)	(0.020)	(0.013)
Democracy	−0.026	−0.005	−0.022	−0.024***
	(0.018)	(0.015)	(0.017)	(0.005)
Constant	0.000	0.000	0.000	464.661***
	(0.000)	(0.000)	(0.000)	(64.414)
Observations	266	266	266	266
R-squared	0.706	0.709	0.700	0.685
Number of countries	16	16	16	16
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

poorest households and affected the distribution of income, that effect will not be evident in the education spending coefficient.

In summary, nuancing the initial assessment, H3b cannot be fully rejected since secondary education spending was proven to be significantly associated with reduced income inequality levels in the long run.

Regarding health spending, its negative association with inequality in the short and medium run was expected due to its direct connection with employment (by preventing ill-health causing the loss of income). Nevertheless, its lack of statistical significance in explaining income inequality in the long run is puzzling. In this respect, a plausible explanation is related to the stratified nature of health systems in the region and the accompanying regressive allocation of public funds and tax exemptions and the different quality of the services provided, as described by Lloyd-Sherlock (2009). Perhaps in the short run access to public health systems prevented the loss of income, but the inferior quality of those services did not make a substantial difference in the long run. Even if

Table 11 The effect of primary, secondary, and tertiary education spending on income inequality[9]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Variables	Gini *Short-run*	Gini *Short-run*	Gini *Short-run*	Gini *3y avg. spending*	Gini *3y avg. spending*	Gini *3y avg. spending*	Gini *10y avg. spending*	Gini *10y avg. spending*	Gini *10y avg. spending*
Primary education	0.014			-0.001			-0.012		
	(0.011)			(0.010)			(0.023)		
Secondary education		-0.021***			-0.021***			-0.024**	
		(0.006)			(0.005)			(0.009)	
Tertiary education			0.056***			0.027***			0.030
			(0.017)			(0.008)			(0.025)
Log GDP per cap	-4.684	-42.384*	78.032*	-17.973	-41.503*	33.369*	-57.149***	-74.318***	6.379
	(24.678)	(22.302)	(39.403)	(19.674)	(20.245)	(16.693)	(19.100)	(19.183)	(28.983)
(Log GDP per cap)^2	-0.618	1.581	-5.551**	0.251	1.626	-2.762***	2.392**	3.404***	-1.092
	(1.498)	(1.332)	(2.368)	(1.093)	(1.073)	(0.923)	(1.086)	(1.079)	(1.661)
Inflation	-0.079***	-0.079***	-0.080***	-0.095***	-0.087***	-0.098***	-0.050	-0.037	-0.068*
	(0.027)	(0.023)	(0.023)	(0.016)	(0.015)	(0.016)	(0.029)	(0.028)	(0.036)
Democracy	-0.127***	-0.134***	-0.125***	-0.135***	-0.137***	-0.129***	-0.095***	-0.095***	-0.071**
	(0.023)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)	(0.032)	(0.029)	(0.029)
Constant	128.302	289.919***	-218.770	213.358**	314.927***	-9.844	388.363***	460.337***	88.393
	(104.161)	(95.271)	(165.495)	(90.204)	(97.699)	(77.615)	(84.950)	(85.563)	(127.478)
Observations	214	214	205	196	196	191	122	122	122
R-squared	0.726	0.737	0.765	0.784	0.790	0.792	0.760	0.764	0.754
Number of countries	11	11	11	11	11	11	11	11	11
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

low-quality health services permitted the formation of human capital for children from the poorest households, most of them accessed low-quality public education anyway, thus restricting their opportunities in the labour market.

Finally, the negative relationship between housing spending and inequality in the medium and the long run causes no surprise because of the effects described in section three. However, a more detailed examination revealed that an increase in this type of spending might not be benefiting the poorest since it is only significantly associated with an increase of the income share of deciles 4-8 in the medium run and of deciles 3-8 in the long run.

Conclusions

This article analysed the relationship between social spending and income inequality in Latin America between 1990-2017. At a general level, the results confirmed that Latin America follows the globally observed pattern where increased levels of overall social spending are associated with reduced levels of income inequality. However, a more detailed analysis showed that spending on each area of social policy has had different effects on the levels of income inequality in the region.

Spending on social protection was found to be negatively associated with income inequality in the short, medium, and long run. Additionally, there were some hints that, despite the reforms seen in the last two decades, social protection systems in Latin America still have trouble targeting those at the bottom of the distribution.

Overall spending on education was found to be positively associated with income inequality in the short, medium, and long run. However, when spending on each of the educational levels were considered separately, different results emerged: spending on tertiary education was regressive in the short and medium run, whilst spending on secondary education had a negative and statistically significant relationship with income inequality in the short, medium, and long run. Although spending on primary education was negatively associated with income inequality in the medium and long run too, its coefficients were not statistically significant.

In line with previous findings for the region, spending on health was found to be negatively associated with income inequality in the short and medium run. This effect, however, diluted across time.

Spending on housing and community services demonstrated to be negatively associated with income inequality in the medium and long run. However, there were again some hints that these programmes failed to target the bottom decile of the population.

Although a Granger causality test alone, such as the one employed here, is not enough to rule out endogeneity (Charemza and Deadman, 1997) the results at least showed that changes in overall social spending indeed temporally preceded changes in income inequality. Thus, despite the fact this study did not specifically address causality, there are important policy implications for the region. Firstly, these results provide more evidence favouring sustaining the growth of social policy budgets as tools for reducing inequality – and give ideas on the different relationships that each area of social spending could have with inequality across time. Secondly, they call attention to the stratification and the provision of poor-quality social services that may be affecting the progressive effect of social policies. Thirdly, they demonstrate that the region is still having problems reaching those at the bottom of the distribution – perhaps a more universalist approach

could better address inequality than the heavily targeted approach inherited from the 1980s and 1990s, since, at a global level, evidence has shown that heavily targeted programmes tend not to have large distributional impacts (Niehues, 2010; Saunders, 2010; Jacques and Noël, 2018).

The main limitation of this study lies in the lack of panel-level data on the characteristics of social policies in Latin America, thus limiting the study to spending- and social insurance coverage-related variables. Although the criticism of social spending as a comprehensive measure of welfare effort is well known – especially due to the distinct effects that different policy designs may have on welfare outcomes – this article explained the case for using spending variables when studying Latin America.

Further research is required for better understanding the effects of each one of the areas of social policy on inequality – for instance, the different effects on inequality that spending on primary, secondary, and tertiary education seem to have had, or those of contributory and non-contributory social protection. In turn, more detailed and comparable data are required for all the countries in the region for such a task.

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Notes

1 Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay, Peru, Dominican Republic, and Uruguay.

2 Linear interpolation was used for the cases where countries reported data biannually. The same technique was applied for the variable *salaried workers contributing to social security*.

3 Since subnational government units also contribute to social programmes, general government spending would have been a better choice than central government spending. However, data on the former variable are only available for five countries in the region and for a shorter time span. Nonetheless, when both variables are compared where data are available, they show to be almost perfectly correlated (the overall correlation coefficient is 0.998).

4 ECLAC's CEPALSTAT database is used since it is the only source that provides comparable and disaggregated social spending data of Latin American countries from 1990 (to my best knowledge). In turn, this database is built with data obtained from each country's Central Bank, Ministry of Finance or Statistics Institute.

5 As put by Gerring *et al*. (2012), the *Polity2* variable is probably better than most other democracy measures. In fact, it is an industry standard.

6 For testing H1, overall social spending was considered. For testing H2 and H3(a-d), each of the four main components of social spending (health, housing, education, and social protection) were included (separately) as regressors.

7 Summary statistics and graphs are also included in the Appendix.

8 Unweighted regional average, c. 2017.

9 Data on per capita spending on primary, secondary, and tertiary education were estimated from UNESCO (2021). Unfortunately, due to data availability, the number of countries for the regressions was reduced from sixteen to eleven.

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Appendices

Table A1 presents the summary statistics of the data. Figures A1 and A2 present data on the distribution of income and the main areas of per capita social spending in the region, respectively.

Alternative model specifications Alternative model specifications to those provided in section five are presented here for robustness purposes. Table A2 presents four models that use the Gini index as regressand and overall social spending as the main regressor. Models 1-3 do not consider time-fixed effects, while Model 5 introduces an interaction coefficient (social spending*affiliated workers). These results show that despite different specifications, the sign and the significance of the spending coefficient hold.

Models 1-4 in Table A3 use the Gini index as regressand and the 3-year moving average of each spending indicator as the only regressor. Models 5-8 use the Palma ratio as regressand and incorporate all the controls as well as time-fixed effects. Table A4 is structured in the same way but uses 10-year moving averages of social spending indicators as independent variables. In both cases, the robustness of the results obtained in Section 5 is demonstrated.

Table A1 Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
Gini	Overall	50.19	4.92	39.70	61.50	N=	346
	Between		3.51	42.82	56.44	n=	16
	Within		3.41	39.00	59.00	T-bar=	21.625
Social spending (overall)	Overall	612.69	527.58	56.00	2456.00	N=	379
	Between		459.19	135.40	1490.71	n=	16
	Within		264.86	-219.03	1784.15	T-bar=	23.69
Social protection spending	Overall	291.09	335.77	2.00	1417.00	N=	379
	Between		316.42	9.40	1034.35	n=	16
	Within		126.23	-74.69	827.84	T-bar=	23.69
Education spending	Overall	181.66	145.90	18.00	761.00	N=	379
	Between		114.59	57.25	400.76	n=	16
	Within		91.01	-91.09	550.91	T-bar=	23.69
Health spending	Overall	99.76	105.51	7.00	704.00	N=	379
	Between		82.05	24.43	336.21	n=	16
	Within		63.19	-141.46	467.54	T-bar=	23.69
Housing spending	Overall	28.58	29.88	0.00	176.00	N=	378
	Between		28.67	1.50	119.68	n=	16
	Within		15.37	-36.10	84.90	T-bar=	23.63
GDP per capita	Overall	5525.23	3390.43	1051.36	14771.26	N=	448
	Between		3248.95	1399.28	10740.00	n=	16
	Within		1255.77	718.43	9899.37	T-bar=	28
Inflation	Overall	74.85	562.90	-49.00	7485.20	N=	448
	Between		125.58	5.30	381.20	n=	16
	Within		549.58	-303.35	7279.98	T-bar=	28
Democracy	Overall	47.57	199.76	-351.87	596.97	N=	448
	Between		196.33	-222.58	538.37	n=	16
	Within		60.71	-86.04	180.68	T-bar=	28
Salaried workers affiliated to social security	Overall	54.53	17.61	8.31	89.10	N=	342
	Between		16.03	31.29	78.73	n=	16
	Within		7.81	-4.59	76.20	T-bar=	21.38

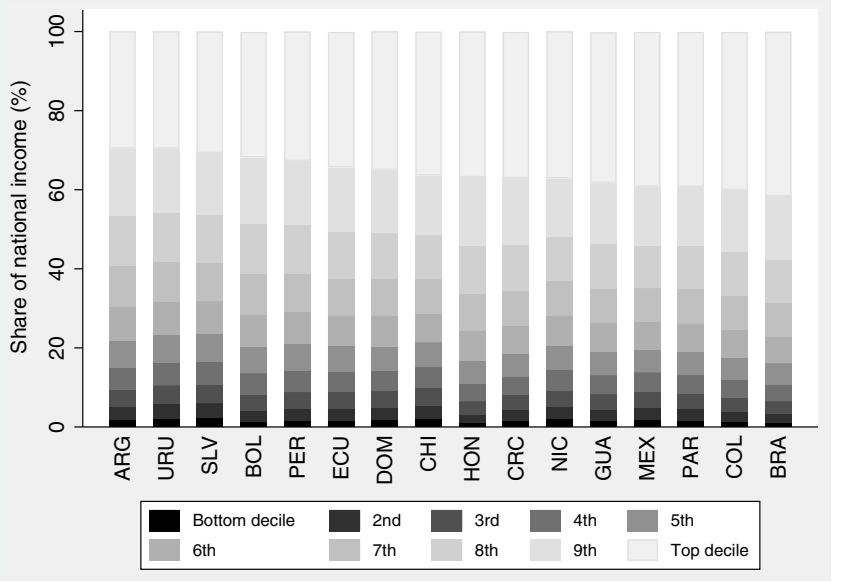

Figure A1. Income distribution in sixteen Latin American countries, c.2017
Source. UNU-WIDER (2020)

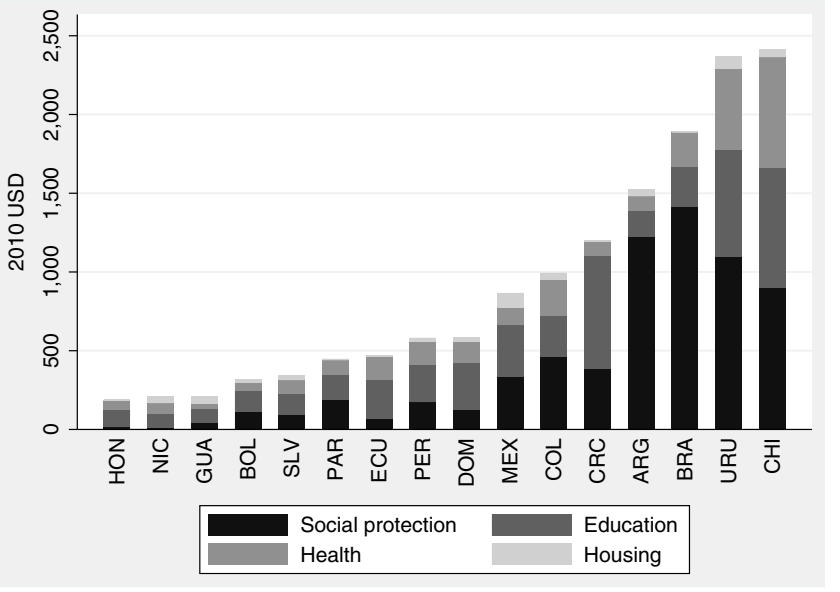

Figure A2. Main areas of social spending (per capita) in sixteen Latin American countries, 2017
Note. Data for Peru include general government spending. *Source*. ECLAC (2020b)

Table A2 Alternative specifications to those in Table 4

	(1)	(2)	(3)	(4)
Variables	Gini	Gini	Gini	Gini
Social spending	−0.679***	−0.617***	−0.608***	−1.230***
	(0.072)	(0.201)	(0.169)	(0.379)
Log GDP per capita		−126.467***	−166.306***	−111.736***
		(31.869)	(24.563)	(35.270)
(Log GDP per capita)^2		6.969***	9.226***	6.082***
		(1.916)	(1.471)	(2.104)
Inflation			−0.044*	−0.023
			(0.024)	(0.022)
Democracy			−0.011	−0.037*
			(0.007)	(0.021)
Affiliated workers			0.009	−0.055*
			(0.021)	(0.030)
Social spending * Affiliated workers				0.009**
				(0.003)
Constant	54.333***	623.105***	799.371***	566.871***
	(0.833)	(133.593)	(103.302)	(148.342)
Observations	308	308	281	281
R-squared	0.274	0.487	0.601	0.685
Number of countries	16	16	16	16
Country FE	YES	YES	YES	YES
Year FE	NO	NO	NO	YES
Prob>F	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

Table A3 Alternative specifications to those in Table 9

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Gini	Gini	Gini	Gini	Palma	Palma	Palma	Palma
Social protection $_{3y\ avg.}$	-1.375***				-0.177***			
	(0.149)				(0.048)			
Education $_{3y\ avg.}$		-1.469***				0.308***		
		(0.259)				(0.069)		
Health $_{3y\ avg.}$			-2.953***				-0.186**	
			(0.312)				(0.073)	
Housing $_{3y\ avg.}$				-7.918***				-0.643**
				(0.840)				(0.256)
Log GDP per cap					-19.746***	-2.538	-14.472**	-18.025***
					(5.814)	(5.455)	(5.579)	(4.735)
(Log GDP per cap)^2					1.074***	0.050	0.803**	0.937***
					(0.346)	(0.326)	(0.335)	(0.277)
Inflation					0.004*	0.003*	0.001	-0.005
					(0.002)	(0.002)	(0.003)	(0.004)
Democracy					-0.005*	-0.001	-0.004	-0.003
					(0.003)	(0.003)	(0.003)	(0.002)
Constant	54.100***	52.489***	52.675***	51.902***	94.429***	20.202	68.289***	89.028***
	(0.796)	(0.853)	(0.771)	(0.552)	(24.484)	(22.915)	(23.209)	(20.411)
Observations	305	305	305	305	305	305	305	305
R-squared	0.233	0.139	0.212	0.113	0.579	0.572	0.559	0.444
Number of countries	16	16	16	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

Table A4 Alternative specifications to those in Table 10

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Gini	Gini	Gini	Gini	Palma	Palma	Palma	Palma
Social protection $_{10y\ avg.}$	-2.109***				-0.177**			
	(0.234)				(0.069)			
Education $_{10y\ avg.}$		-2.982***				0.290***		
		(0.322)				(0.070)		
Health $_{10y\ avg.}$			-4.792***				-0.011	
			(0.315)				(0.139)	
Housing $_{10y\ avg.}$				-9.765***				-0.656***
				(0.861)				(0.221)
Log GDP per cap					-26.272***	-13.613***	-20.520***	-23.911***
					(3.687)	(4.130)	(4.191)	(3.314)
(Log GDP per cap)^2					1.456***	0.728***	1.140***	1.266***
					(0.206)	(0.236)	(0.244)	(0.185)
Inflation					0.001	-0.001	-0.002	-0.000
					(0.003)	(0.003)	(0.003)	(0.002)
Democracy					-0.002	0.003	-0.000	-0.005***
					(0.004)	(0.003)	(0.004)	(0.001)
Constant	55.477***	54.797***	53.865***	52.281***	0.000	0.000	0.000	115.315***
	(1.011)	(0.811)	(0.744)	(0.856)	(0.000)	(0.000)	(0.000)	(14.772)
Observations	266	266	266	266	266	266	266	266
R-squared	0.244	0.231	0.199	0.0989	0.668	0.663	0.655	0.633
Number of countries	16	16	16	16	16	16	16	16
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	NO	NO	NO	YES	YES	YES	YES
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Driscoll and Kraay standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.