Inequality and social polarization in Chilean municipalities

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Abstract

The social inequality associated with the current pattern of income distribution in Chile remains a subject of interest, as much remains to be learned about the trends in this connection in differing contexts. The aim of this study is to analyse the existing degrees of inequality and social polarization at the municipal (*comuna*) level arising from the current pattern of income distribution in the country. The measurements used for this purpose are autonomous per capita income and total per capita income. Seventy-eight municipalities in five regions of northern, central and southern Chile were studied. The results confirm the existence of a significant degree of inequality in terms of income distribution and a marked degree of polarization at the municipal level. These findings underscore the need for targeted income redistribution policies at this level to address inequality and polarization, both of which have been linked to social discontent stemming from the conflicts and social injustices that are created and intensified by these phenomena.

Keywords

Economic conditions, social conditions, income distribution, equality, poverty, social conflict, data analysis, economic indicators, Chile

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I. Introduction

The reduction of inequality is one of the 17 Sustainable Development Goals agreed upon by the countries of the world when they adopted the 2030 Agenda for Sustainable Development at the United Nations General Assembly in 2015 (UNDP, 2017). Some experts have argued that the world's significant and persistent social inequalities need to be addressed by means of social policies specifically designed for that purpose (Alvaredo and others, 2018). Income distribution within a society is a fundamental aspect of broader equality or inequality issues (Wilkinson, 2005; Uribe López, 2009; Amarante and Colacce, 2018) and is currently a focus of interest owing to the vast body of empirical evidence that links income gaps with certain adverse psychosocial effects (Wilkinson and Pickett, 2009; Campos-Arias and Herazo, 2015; Quijada and others, 2018; Navarro Yánez and Pérez Yruela, 2000) and widespread discontent (UNDP, 2017), although it is recognized that the link between the social inequality resulting from uneven resource distribution and people's discontent may be mediated or moderated by other social variables. At the macro level, the stigma associated with inequality is negatively reflected in a wide variety of ways, including financial status, material assets, capacities, opportunities, access to well-being, social relations and respect for people's rights. This is all connected with the fact that inequality hinders people from making full use of their capacities, delegitimizes political activity and undermines democracy and tolerance while setting the stage for conflict (ECLAC, 2018).

In recent decades, as scholars try to gain a better understanding of social inequality and of how it affects people and society, the concept of polarization has come to the fore as an explanation for the level of inequality-driven conflict (Wolfson, 1997; Esteban and Ray, 1994). Although the social phenomena of inequality and polarization are related, the concept of polarization entails an aspect that the idea of inequality does not, as it refers to the extent to which the population is clustered into a few disparate yet internally homogenous groups and to the growing social tensions between those groups (Vergara, 2011) along with mounting feelings of discontent at the individual level. A recent study in Spain has concluded that levels of satisfaction resulting from improved living conditions among the general population may mask and even feed into the polarization of society into one group of people who have unmet needs but still say that they are satisfied with their situation and another group that is well off and whose members are satisfied with themselves but not with the State or with the society in which they live (Navarro Yánez and Pérez Yruela, 2000).

A considerable number of studies highlight how unequal and socially polarized Chilean society is. Most of these studies have offered analyses and comparisons at the country level and, in some cases, at the regional level (Contreras, 1999; Schatan, 2005; Raventós, 2005; Conte, 2008; Vergara, 2011; Silva Burgos, 2013; UNDP, 2017). Less research has been done on inequality at the level of municipalities (*comunas*) using data from the National Socioeconomic Survey (CASEN) (1992–2003) and from censuses (Ruiz-Tagle, 1999; Vergara, 2011). One of these studies shows how inequality at the municipal level hinders poverty reduction efforts and plays a role in the emergence of social problems that impede the country's development (Agostini and Brown, 2007). Another focuses on the existence of areas where income distribution is better and others in which it is worse and demonstrates how distribution dynamics have been shifting since at least the 1990s (Ramírez, Tartakowsky and Modrego, 2009). Carpentier (2011) examines inequality at the municipal level based on education-related variables and concludes that higher average levels of schooling and women's participation in the labour market are helping to reduce income inequality at the municipal level.

The literature does not, however, contain studies that provide a conclusive explanation of how the phenomenon of inequality links up with social polarization at more disaggregated territorial levels. This article will therefore focus on the following question: how are the inequality and social polarization created by uneven income distribution exhibited at the municipal level in Chile? The starting assumption is that the sharp, persistent inequality evidenced at the regional and national level is also repeated —and

may even be more intense— in some municipalities, resluting in polarization at that territorial level as well. This is reflected in the presence of a few highly concentrated, internally homogenous groups that are socially distanced from one another.

In an effort to answer this research question, this study will: (i) analyse income distribution inequality in the country's municipalities; and (ii) examine the social polarization resulting from income distribution patterns at the municipal level.

This study is structured as follows. In order to provide context and contribute to an understanding of why so little progress has been made in terms of increasing social equality or reducing inequality that is driven by income distribution, the analysis starts out with a description of the main social advances brought about in Chile since the 1990s by social policies and economic growth (section II). This is followed by a discussion of the conceptual basis for the Gini coefficient as a measure of inequality and for the polarization index used to identify the presence of disparate groups, or poles, and the distance separating them as a consequence of the existing pattern of income distribution (section III). This leads into a description of the methodology employed to analyse inequality and polarization in 78 municipalities in 5 different regions of Chile (section IV). The results of this analysis are then presented. These findings confirm the existence of a significant degree of inequality in income distribution and a marked extent of polarization at the municipal level (section V). Finally, a comparative analysis of Gini coefficients based on measurements of autonomous per capita income and Gini coefficients based on total per capital income draws attention to the as yet insufficient effectiveness of cash transfers as a tool for reducing inequality and the need to put in place public policies that address this specific issue at the municipal level (section VI).

II. Background information on social policy in Chile and the main advances

Starting in the 1990s when the military dictatorship came to an end, Chile embarked on a development model "with equity" in a bid to reduce its high poverty levels by opening up the country to international markets and steadily increasing public social spending (Cleary, 2007).[1] And indeed, the upswing in social spending, which climbed from 11.6% of gross domestic product (GDP) in 2011 to 13.9% in 2016 (OECD, 2018), succeeded in lowering poverty indicators from 22.2% (14.1% non-extreme poverty and 8.1% extreme poverty) in 2011 to 8.6% (6.3% non-extreme poverty and 2.3% extreme poverty) in 2017 (Ministry of Social Development, 2018). The tax system has also been reformed to make it more progressive, and social programmes have been expanded. These measures have also been aimed at improving indirect indicators of inequality by narrowing pay gaps between men and women. But the labour market's gender-based duality continues to be reflected in a highly unequal pattern of wage distribution (OECD, 2015).

This development model paved the way for economic growth rates of over 7% of GDP[2] during certain periods and for reductions in inflation and in public and external debt levels. It also allowed the economy to stave off the negative effects of macroeconomic crises and to become an attractive market for foreign investment. In addition, the country succeeded in improving some of its indicators —including the coverage of basic and intermediate education and the length of compulsory school attendance, life expectancy, literacy rates, nutrition standards, and maternal and child mortality rates— to the point where they were on a par with developed-country levels (Araya Rosales and Gallardo Altamirano, 2015; ECLAC, 2017). Even while the economy has been growing rapidly, however, the level of inequality has remained high, giving rise to other social constraints and barriers to social mobility (OECD, 2015).

[1] The heading of social spending includes spending on education, health and social protection (OECD, 2018).

[2] GDP at purchasers' prices is the sum of the gross value added of all resident products plus the taxes on those products, minus subsidies, at a given point in time. This value may be regarded as an indicator of a country's economic power.

Yet social policy has not been specifically aimed at reducing inequality. While some social policy mechanisms, such as cash transfer policies targeting poor households (mainly those experiencing income poverty), have addressed this problem indirectly, these mechanisms do not constitute a tool for State action aimed specifically at redistribution (Pizarro, 2005; OECD, 2014; Araya Rosales and Gallardo Altamirano, 2015). This becomes even more evident if Chile's Gini coefficient is compared to those of other high-income countries belonging to the Organization for Economic Cooperation and Development (OECD) (see table 1). The fact that Chile's Gini coefficient has remained closer to those of low- and middle-income countries shows that, while the level of wealth has increased,[3] mechanisms have not been put in place to distribute income more equally (OECD, 2014; Vivanco Muñoz and others, 2015).

Table 1
Gini coefficients of selected countries, by income level

High- and middle-income member countries of the Organization for Economic Cooperation and Development (OECD)	Gini coefficient	Year	Upper-middle-income and lower-middle-income countries	Gini coefficient	Year	Low-income countries	Gini coefficient	Year
Austria	0.31	2014	Armenia	0.32	2015	Benin	0.48	2015
Belgium	0.28	2014	Belarus	0.27	2015	Burundi	0.39	2015
Chile	0.48	2015	Bolivia (Plurinational State of)	0.46	2015	Comoros	0.45	2012
Chechia	0.26	2014	Brazil	0.51	2015	Madagascar	0.43	2013
Denmark	0.29	2014	Colombia	0.51	2015	Niger	0.34	2013
Spain	0.36	2014	Costa Rica	0.48	2015	Rwanda	0.50	2013
Slovenia	0.26	2014	Ecuador	0.47	2015	Togo	0.43	2014
Finland	0.27	2014	Egypt	0.32	2015			
Italy	0.35	2014	El Salvador	0.41	2015			
Iceland	0.26	2014	Philippines	0.40	2015			
Norway	0.27	2014	Honduras	0.50	2015			
Sweden	0.27	2014	Panama	0.51	2015			
Uruguay[a]	0.42	2015	Paraguay	0.48	2015			
			Peru	0.44	2015			

Source: Prepared by the authors, on the basis of data from World Bank, "Indicators", undated [online] https://data.worldbank.org/indicator.

Note: The World Bank classifies countries as low-, lower-middle-, upper-middle- and high-income countries based on their per capita gross national income (GNI) using the Atlas method. The thresholds for these categories are denominated in dollars. For more information on the World Bank thresholds, see World Bank, World Bank Blogs, undated [online] https://blogs.worldbank.org/.

[a] Uruguay is not a member of OECD.

The available data indicate that the OECD member countries' Gini coefficients have ranged from 0.27 to 0.48, for an average of around 0.30, with 67% of those 12 countries having a coefficient below that average; Chile's, on the other hand, is the highest of them all (see table 1).

According to Pizarro (2005), the rollback of the welfare State has led to the shrinkage of social protection systems and a downplaying of aspirations for equality of opportunity because State regulation of the economy has been relaxed to the point where the capitalist economic model is being allowed to self-regulate. Consequently, the State has been relegated to a subsidiary role in which government action is primarily confined to channeling resources to households in the lower-income quintiles through

[3] Chile's GDP has been rising steadily, climbing from US$ 33.114 billion in 1990 to US$ 77.86 billion in 2000, US$ 218.53 billion in 2010 and US$ 250.03 billion in 2016 (World Bank, n/d).

cash transfer programmes. The country's economic growth and the fruits of that growth are not, however, being used to reduce inequality to acceptable levels. Instead, those levels have held more or less steady, with Gini coefficients for autonomous income of 0.49 and for monetary income of 0.48 in 2015 (Ministry of Social Development, 2017), which puts Chile among the countries with the highest levels of inequality in the world (Solimano and Torche, 2008) (see table 2).

Table 2
Chile: Gini coefficient, 2006–2015

	2006	2009	2011	2013	2015
Gini coefficient for autonomous income (GAI)	0.50	0.51	0.50	0.50	0.49
Gini coefficient based on monetary income (GMI)	0.49	0.49	0.49	0.49	0.48

Source: Prepared by the authors, on the basis of Ministry of Social Development, *Informe de Desarrollo Social 2017*, Santiago, 2017 [online] http://www.desarrollosocialyfamilia.gob.cl/storage/docs/Informe_de_Desarrollo_Social_2017.pdf.

III. Background information on the Gini coefficient and social polarization

Numerous studies on inequality in income distribution have used the Gini coefficient to measure this variable and to help determine how it ties in with a variety of social problems (Kennedy, Kawachi and Prothrow-Stith, 1996; Nagel, 1974; Vergara, 2011; Campos-Arias and Herazo, 2015; Gatica and others, 2017). Studies have also been done that have contributed to the identification and understanding of some of the sets of circumstances in which social inequality arises and intensifies (Schatan, 2005; Silva Burgos, 2013).

The Gini coefficient is a calculation of the income differentials existing between all individuals and the aggregation of all the absolute differentials. The result of these calculations is expressed as a value between 0 and 1, with a value of 1 corresponding to maximal inequality and a value of 0 corresponding to a totally equal income distribution (Esteban and Ray, 1994).

According to the Pigaou-Dalton (Vergara, 2011) transfer principle, a transfer from one individual with more resources to an individual with fewer resources reduces inequality. It follows that economic inequality derives from the degree of income dispersion around a reference value (average income) that represents perfect equality, which is when everyone has the same level of income. Various indices are used to measure this, with each such index having a different level of sensitivity to the transfers made at the various points along the distribution. The Gini coefficient is most sensitive to transfers that occur near the centre of the distribution.

While there is general agreement that this index has certain limitations (Escobar, 1998; Contreras, 1999; Ortiz and Cummins, 2011), some of these shortcomings are not entirely a statistical issue but are instead a consequence of the diversity and quality of the household income data, both at a local level and in international comparisons, used to calculate it. Many authors also argue, however, that the Gini coefficient has a great deal of predictive power and can be used in conjunction with other indicators (the Palma index, the Theil index, income quintile ratios and the Atkinson index, among the most commonly used ones) to conduct a more nuanced analysis of the behaviour of income distribution within a given society.

The polarization index is used to understand the negative impacts of the distribution or concentration of resources in a society (Duclos, Esteban and Ray, 2004; Cárdenas, 2011; Villalobos and Valenzuela, 2012) and to explain some of the relationships between the distribution of resources and the creation

of internally homogenous poles" or clusters of persons or households that are very different from one another. For example, if the consumption habits of people are analysed on the basis of the quintile to which they belong, it may be found that the members of the first income quintile share certain product preferences, payment systems and purchase points that differ from the shared preferences of members of the fifth income quintile. The existence of these disparate groups or poles sets the stage for the emergence of social conflicts between these socially distanced clusters (Gradín and Rossi, 2002; Cárdenas, 2011; Huesca Reynoso, 2003; Villalobos and Valenzuela, 2012).

The equation proposed by Duclos, Esteban and Ray (2004) for calculating the degree of polarization has been used here because it does not require an a priori definition of these clusters' members in each case, as other methods do. This indicator therefore uses the continuous income distribution to estimate the probability that one person will have an income similar to the incomes of other persons. Therefore, if the level of income in a given case is equally likely as the level of income in another, then the degree of polarization will be equal to the Gini coefficient (uniform distribution); when dealing with very different income groups, however, the degree of polarization will be higher even though the Gini coefficient may be the same.

Theoretically, the minimum degree of polarization is 0 (when the Gini coefficient is also 0) and the maximum is infinite. It is important to remember that the calculation of the degree of polarization will depend on what alpha value is chosen. With a low alpha value, the value of polarization will be close to the Gini coefficient, while higher alpha values (close to 1) will tend to heighten the polarization differentials to the point where they become as large as the differentials between individuals, independently of the clusters.

The polarization formula is as follows:[4]

$$P_{\alpha}(f) \equiv \iint f(x)^{1+\alpha} f(y) |y - x| dy dx \quad (1)$$

where $\alpha \in [0.25;1]$.

According to Esteban and Ray (1994), polarization increases as inter-cluster dissimilarity and intra-cluster similarity rise and the smaller the number of clusters and the larger the size of those clusters. These last two factors are what differentiates polarization from inequality, since, as the degree of intra-cluster similarity rises, inequality declines and polarization increases (Huesca Reynoso, 2003; Conte, 2008; Vergara, 2011). This is because isolated individuals have less of an influence on the polarization index than they do on the indicators used to measure inequality, and in order for inequality to increase, there must be greater heterogeneity among all the observations as a whole.

IV. Methodology

The sample was composed of a total of 78 municipalities[5] (23% of all the municipalities in the country) in 5 regions in the northern, central and southern parts of Chile.[6] The size of the sample *n* is between 33.3% and 50% of the total number of municipalities in each region: 5 out of 15 in the Coquimbo Region; 13 out of 38 in the Region of Valparaíso, 19 out of 54 in the Biobío Region, 15 out of 32 in

[4] Duclos, Esteban and Ray (2004).

[5] All the municipalities represented in the 2015 CASEN in each region were used.

[6] The 2015 CASEN was based on the 15 regions that existed in Chile at that time. On 12 July 2017, the Biobío Region was divided in two, creating a sixteenth region (the Ñuble Region).

La Araucanía and 26 out of a total of 52 in the Metropolitan Region. Autonomous per capita income[7] and total per capita income[8] were used to calculate the Gini coefficients, and the municipal expansion factor was applied.[9]

In analysing the data, four moments were calculated. The first moment was calculated using the following indices for the 78 municipalities covered by the analysis: the Gini coefficient based on autonomous per capita income (GAI),[10] the Gini coefficient based on total per capita income (GTI),[11] the polarization index based on autonomous per capita income (PAI)[12] and the polarization index based on total per capita income (PTI).[13] In calculating the polarization indices, different values for alpha were tried out, and when they were bootstrapped, a considerable bias was found to exist with alphas over 0.5 in municipalities with high Gini coefficients, such as Traiguén, so an alpha of 0.25 was ultimately used. The ordering of the cases (which, in this study, correspond to municipalities) based on their polarization is independent of the selected alpha value, as the ordering is unaffected by that value. For the second moment, Student's test for dependent samples was used to determine the differences between the GAI and the GTI and between the PAI and the PTI. For the third moment, descriptive analyses were undertaken in order to track the behaviour and trends of the variables under study in the 78 municipalities. Finally, a Pearson correlation coefficient was computed in order to determine the relationship between inequality and polarization (see table 3).

Table 3
Pearson correlation between the Gini coefficient and the polarization index for 78 municipalities

	Polarization index based on autonomous per capita income	Polarization index based on total per capita income
Gini coefficient based on autonomous per capita income	0.77**	0.73**
Gini coefficient based on for total per capita income	0.81**	0.81**

Source: Prepared by the authors.
Note: *: p < .05; **: p < .01.

V. Results

1. Calculation and analysis of Gini coefficients and polarization indices for 78 municipalities

The Gini coefficients for these municipalities covered a wide spectrum, with the GAI ranging from 0.36 and 0.81 (for a mean (*M*) of 0.46 and a standard deviation (*SD*) of 0.06) and a GTI of between 0.29 and 0.74 (*M:* 0.39; *SD:* 0.06) (see table 4). The municipality with the lowest level of inequality is Cerro Navia, in the Santiago Metropolitan Region, and the municipality with the greatest inequality is Traiguén, in the Region of La Araucanía.

[7] Autonomous per capita household income is the sum of all payments received by members of a household deriving from labour, ownership and assets, including monetary and in-kind wages, the proceeds from independent work, self-provision of goods produced by the household, rents, interest earned, dividends, profit withdrawals, retirement and other pensions and current transfers, divided by the number of household members.

[8] Total per capita household income is the sum of autonomous income plus the monetary subsidies received by household members, excluding the income of live-in domestic service workers, divided by the number of household members.

[9] The expansion factor is a statistical measure that allows the input from each sample observation to be increased to reflect the corresponding share of the study population.

[10] The GAI was calculated on the basis of autonomous per capita household income.

[11] The GTI was calculated on the basis of total per capita household income.

[12] The PAI was calculated on the basis of autonomous per capita household income.

[13] The PTI was calculated on the basis of total per capita household income.

Table 4
Descriptive statistics: Gini coefficients and polarization indices of 78 municipalities

	N	Lowest	Highest	Mean	Median	Standard deviation *(SD)*
Gini coefficient based on autonomous per capita income (GAI)	78	0.36	0.81	0.46	0.45	0.06
Gini coefficient based on total per capita income (GTI)	78	0.29	0.74	0.39	0.38	0.06
polarization index based on autonomous per capita income (PAI)	78	0.15	5.05	0.25	0.19	0.55
polarization index based on total per capita income (PTI)	78	0.15	4.18	0.24	0.19	0.45

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.

The polarization indices cover an even wider range than the Gini coefficients, with PAIs between 0.15 and 5.05 (*M:* 0.19; *SD:* 0.55) and PTIs between 0.15 and 4.18 (*M:* 0.24; *SD:* 0.45). Traiguén, in the Region of La Araucanía, is the municipality with the highest PAI (1.86; confidence interval *(CI)*: 0.40–2.74) and the highest PTI (1.60; *CI*: 0.33–2.54), while the municipalities with the lowest PAI and PTI (0.30; *CI:* 0.29–0.32; and 0.25; *CI:* 0.25–0.31) are Conchalí and Cerro Navia, respectively, both of which are in the Santiago Metropolitan Region.

Thus, the most unequal and most socially polarized municipality out of the 78 that were studied is Traiguén, in La Araucanía, while the least unequal and least socially polarized municipality is Cerro Navia, in the Santiago Metropolitan Region.

The municipalities in the Region of Coquimbo have GAIs of between 0.42 and 0.51 (*M*: 0.47; *SD:* 0.03) and GTIs of between 0.35 and 0.42 (*M:* 0.39; *SD:* 0.02). The municipality with the highest GAI is Illapel, at 0.51 (*CI:* 0.43–0.56), and the municipality with the highest GTI is La Serena, at 0.42 (*CI:* 0.40–0.43). Ovalle has both the lowest GAI (0.42; *CI:* 0.39–0.42) and the lowest GTI (0.35; *CI:* 0.33–0.37).

These municipalities' PAIs are between 0.33 and 0.43 (*M:* 0.38; *SD:* 0.03) and their PTIs are between 0.28 and 0.34 (*M:* 0.32; *SD:* 0.02). Coquimbo has the highest PAI and Vicuña has the highest PTI; Ovalle has the lowest PAI and the lowest PTI (see table 5).

Table 5
Region of Coquimbo: Gini coefficients and polarization indices, with confidence intervals

Municipality	Total population	GAI (*CI*: 95%)	GTI (*CI*: 95%)	PAI (*CI*: 95%)	PTI (*CI*: 95%)
Coquimbo	257 931	0.46 (0.43–0.49)	0.39 (0.36–0.42)	0.43 (0.39–0.50)	0.34 (0.31–0.41)
Illapel	32 964	0.51 (0.43–0.57)	0.40 (0.33–0.46)	0.41 (0.38–0.56)	0.33 (0.30–0.43)
La Serena	237 433	0.48 (0.45–0.50)	0.42 (0.39–0.44)	0.38 (0.37–0.44)	0.33 (0.33–0.38)
Ovalle	127 072	0.42 (0.38–0.44)	0.35 (0.32–0.37)	0.33 (0.33–0.39)	0.28 (0.28–0.32)
Vicuña	27 069	0.49 (0.42–0.53)	0.41 (0.36–0.45)	0.39 (0.37–0.49)	0.34 (0.33–0.42)

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.
Note: GAI: Gini coefficient based on autonomous per capita income; GTI: Gini coefficient based on total per capita income; PAI: Polarization index based on autonomous per capita income; PTI: Polarization based on total per capita income.

The municipalities in the Region of Valparaíso have GAIs ranging from 0.42 and 0.53 (*M:* 0.46; *SD:* 0.03) and GTIs between 0.34 and 0.48 (*M:* 0.39; *SD:* 0.03). The municipality with the highest GAI and GTI is Viña del Mar, at 0.53 (*CI:* 0.50–0.56) and 0.48 (*CI:* 0.45–0.51), respectively. San Antonio has the lowest GAI and GTI, at 0.42 (*CI:* 0.38–0.44) and 0.35 (*CI:* 0.32–0.37), respectively.

These municipalities' PAIs are between 0.34 and 0.85 (*M:* 0.43; *SD:* 0.16), and their PTIs are between 0.28 and 0.75 (*M:* 0.36; *SD:* 0.12). The municipality with the highest PAI and PTI is Viña del Mar, and those with the lowest PAI and PTI are El Quisco and La Ligua, respectively (see table 6).

Table 6
Region of Valparaíso: Gini coefficients and polarization indices, with confidence intervals

Municipality	Total population	GAI (*CI*: 95%)	GTI (*CI*: 95%)	PAI (*CI*: 95%)	PTI (*CI*: 95%)
Concón	55 805	0.49 (0.44–0.53)	0.43 (0.38–0.46)	0.38 (0.38–0.52)	0.34 (0.34–0.44)
El Quisco	14 479	0.43 (0.39–0.47)	0.35 (0.31–0.38)	0.34 (0.32–0.40)	0.28 (0.27–0.33)
La Calera	56 067	0.46 (0.38–0.51)	0.39 (0.33–0.44)	0.39 (0.37–0.52)	0.35 (0.32–0.46)
La Ligua	33 803	0.43 (0.38–0.47)	0.34 (0.30–0.37)	0.34 (0.32–0.39)	0.28 (0.26–0.32)
Limache	46 870	0.44 (0.40–0.47)	0.38 (0.35–0.41)	0.37 (0.34–0.49)	0.34 (0.32–0.55)
Los Andes	69 609	0.44 (0.39–0.47)	0.38 (0.34–0.42)	0.36 (0.35–0.46)	0.32 (0.32–0.42)
Quillota	99 063	0.48 (0.41–0.53)	0.41 (0.35–0.45)	0.40 (0.38–0.54)	0.35 (0.34–0.47)
Quilpué	181 831	0.47 (0.42–0.51)	0.41 (0.36–0.44)	0.42 (0.35–0.51)	0.33 (0.31–0.21)
San Antonio	98 299	0.42 (0.38–0.45)	0.35 (0.31–0.38)	0.34 (0.33–0.43)	0.28 (0.28–0.34)
San Felipe	76 103	0.47 (0.43–0.49)	0.40 (0.37–0.43)	0.35 (0.35–0.41)	0.32 (0.31–0.36)
Valparaíso	295 916	0.48 (0.44–0.52)	0.43 (0.39–0.47)	0.72 (0.37–0.82)	0.41 (0.33–0.69)
Villa Alemana	155 527	0.45 (0.41–0.47)	0.40 (0.37–0.43)	0.37 (0.37–0.45)	0.33 (0.32–0.39)
Viña del Mar	330 898	0.53 (0.49–0.57)	0.48 (0.44–0.51)	0.85 (0.48–0.95)	0.75 (0.42–0.83)

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.
Note: GAI: Gini coefficient based on autonomous per capita income; GTI: Gini coefficient based on total per capita income; PAI: Polarization index based on autonomous per capita income; PTI: Polarization based on total per capita income.

The Biobío Region's municipalities have GAIs of between 0.40 and 0.56 (*M:* 0.47; *SD:* 0.053) and GTIs of between 0.32 and 0.50 (*M:* 0.38; *SD:* 0.05). At 0.56 (*CI:* 0.52–0.58), San Pedro de la Paz has the highest GAI, and it also has the highest GTI (0.50; *CI:* 0.47–0.53). Hualpén has the lowest GAI and the lowest GTI, at 0.40 (*CI:* 0.35–0.43) and 0.32 (*CI:* 0.28–0.34), respectively.

These municipalities' PAIs are between 0.34 and 0.92 (*M* 0.42; *SD:* 0.13) and their PTIs range from 0.27 to 0.78 (*M* 0.33; *SD:* 0.11). The municipality with the highest PAI and the highest PTI is Chillán, with 0.92 (*CI:* 0.46–1.11) and 0.78 (*CI:* 0.36–0.95), respectively. Curanilahue has both the lowest PAI and the lowest PTI, with 0.34 (*CI:* 0.33–0.40) and 0.27 (CI: 0.26–0.032), respectively (see table 7).

In the Region of La Araucanía, the municipalities' GAIs range from 0.45 to 0.81 (*M:* 0.52; *SD:* 0.087) and their GTIs vary between 0.35 and 0.74 (*M:* 0.41; *SD:* 0.095). Traiguén has the highest GAI, at 0.81 (*CI:* 0.46–0.90), and it also has the highest GTI (0.74; *CI:* 0.37–0.85). Freire and Padre Las Casas have the lowest GAI (0.45; *CI:* 0.39–0.49; and 0.45; *CI:* 0.41–0.48), respectively, and Freire also has the lowest GTI (0.33; *CI:* 0.28–0.36).

The PAIs for these municipalities are between 0.36 and 1.86 (*M:* 0.49; *SD:* 0.37), and their PTIs are between 0.28 and 1.60 (*M:* 0.40; *SD:* 0.33). The highest PAI and the highest PTI are for Traiguén (1.86; *CI:* 0.40–2.74 and 1.60; *CI:* 0.33–2.54), respectively. Padre Las Casas has the lowest PAI (0.36; *CI:* 0.35–0.43) and Freire has the lowest PTI (0.28; *CI:* 0.26–0.34) (see table 8).

Table 7
Biobío Region: Gini coefficients and polarization indices, with confidence intervals

Municipality	Total population	GAI (*CI*: 95%)	GTI (*CI*: 95%)	PAI (*CI*: 95%)	PTI (*CI*: 95%)
Arauco	38 521	0.46 (0.41–0.50)	0.33 (0.29–0.36)	0.41 (0.40–0.53)	0.30 (0.29–0.37)
Cañete	34 214	0.51 (0.47–0.53)	0.41 (0.37–0.43)	0.38 (0.37–0.43)	0.31 (0.30–0.35)
Chiguayante	104 382	0.44 (0.40–0.46)	0.36 (0.32–0.38)	0.35 (0.35–0.42)	0.29 (0.29–0.35)
Chillán	182 622	0.55 (0.48–0.61)	0.46 (0.39–0.53)	0.92 (0.46–1.11)	0.78 (0.36–0.95)
Chillán Viejo	36 553	0.45 (0.36–0.51)	0.37 (0.28–0.43)	0.41 (0.37–0.58)	0.32 (0.30–0.50)
Concepción	228 779	0.51 (0.47–0.53)	0.44 (0.40–0.46)	0.47 (0.46–0.57)	0.39 (0.37–0.49)
Coronel	120 729	0.41 (0.37–0.43)	0.33 (0.30–0.35)	0.34 (0.33–0.42)	0.27 (0.27–0.32)
Curanilahue	35 157	0.43 (0.39–0.46)	0.34 (0.30–0.37)	0.34 (0.33–0.40)	0.27 (0.26–0.32)
Hualpén	114 833	0.40 (0.35–0.43)	0.32 (0.28–0.34)	0.35 (0.35–0.44)	0.28 (0.28–0.35)
Laja	24 079	0.56 (0.46–0.64)	0.43 (0.32–0.52)	0.53 (0.42–0.73)	0.35 (0.29–0.50)
Lebu	26 791	0.55 (0.45–0.62)	0.47 (0.38–0.53)	0.46 (0.41–0.65)	0.38 (0.35–0.52)
Los Ángeles	202 214	0.48 (0.46–0.50)	0.42 (0.39–0.43)	0.40 (0.39–0.45)	0.32 (0.31–0.35)
Lota	46 241	0.42 (0.37–0.47)	0.34 (0.29–0.39)	0.34 (0.33–0.43)	0.27 (0.26–0.34)
Mulchén	30 354	0.47 (0.39–0.53)	0.35 (0.28–0.40)	0.38 (0.36–0.51)	0.29 (0.27–0.40)
Nacimiento	28 699	0.46 (0.40–0.51)	0.37 (0.32–0.41)	0.37 (0.36–0.45)	0.30 (0.29–0.37)
Penco	52 695	0.42 (0.36–0.48)	0.34 (0.29–0.39)	0.35 (0.34–0.48)	0.29 (0.29–0.41)
San Pedro de la Paz	153 562	0.56 (0.51–0.59)	0.50 (0.46–0.53)	0.45 (0.43–0.55)	0.39 (0.38–0.47)
Talcahuano	179 670	0.44 (0.41–0.47)	0.38 (0.34–0.40)	0.37 (0.36–0.45)	0.30 (0.30–0.38)
Tomé	55 760	0.44 (0.37–0.49)	0.36 (0.30–0.41)	0.37 (0.35–0.50)	0.31 (0.30–0.41)

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.
Note: GAI: Gini coefficient based on autonomous per capita income; GTI: Gini coefficient based on total per capita income; PAI: Polarization index based on autonomous per capita income; PTI: Polarization based on total per capita income.

Table 8
Region of Araucanía: Gini coefficients and polarization indices, with confidence intervals

Municipality	Total population	GAI (*CI*: 95%)	GTI (*CI*: 95%)	PAI (*CI*: 95%)	PTI (*CI*: 95%)
Angol	56 563	0.48 (0.43–0.51)	0.38 (0.34–0.41)	0.37 (0.36–0.46)	0.30 (0.29–0.34)
Carahue	26 276	0.58 (0.45–0.69)	0.44 (0.31–0.56)	0.48 (0.38–0.74)	0.35 (0.29–0.58)
Collipulli	24 875	0.52 (0.46–0.56)	0.42 (0.36–0.46)	0.39 (0.36–0.46)	0.32 (0.30–0.38)
Cunco	18 724	0.50 (0.42–0.57)	0.35 (0.28–0.41)	0.39 (0.36–0.53)	0.28 (0.26–0.36)
Curacautín	16 907	0.55 (0.45–0.63)	0.41 (0.33–0.51)	0.47 (0.37–0.63)	0.32 (0.28–0.47)
Freire	23 867	0.45 (0.39–0.49)	0.33 (0.28–0.37)	0.37 (0.35–0.46)	0.28 (0.26–0.34)
Lautaro	37 952	0.49 (0.45–0.53)	0.39 (0.35–0.43)	0.40 (0.39–0.48)	0.32 (0.31–0.39)
Nueva Imperial	33 976	0.47 (0.42–0.51)	0.35 (0.31–0.38)	0.38 (0.37–0.46)	0.28 (0.28–0.34)
Padre Las Casas	98 459	0.45 (0.40–0.49)	0.36 (0.32–0.40)	0.36 (0.35–0.43)	0.30 (0.28–0.36)
Pitrufquén	25 184	0.51 (0.45–0.55)	0.40 (0.34–0.45)	0.38 (0.36–0.46)	0.31 (0.29–0.38)
Pucón	29 991	0.48 (0.43–0.52)	0.39 (0.34–0.43)	0.39 (0.38–0.51)	0.33 (0.32–0.40)
Temuco	298 974	0.50 (0.46–0.53)	0.43 (0.39–0.46)	0.46 (0.43–0.58)	0.39 (0.36–0.49)
Traiguén	19 473	0.81 (0.48–0.90)	0.74 (0.39–0.86)	1.86 (0.40–2.74)	1.60 (0.33– 2.54)
Victoria	34 674	0.52 (0.47–0.55)	0.44 (0.39–0.47)	0.37 (0.36–0.43)	0.33 (0.31–0.38)
Villarrica	57 753	0.51 (0.46–0.54)	0.40 (0.35–0.44)	0.38 (0.37–0.48)	0.32 (0.31–0.40)

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.
Note: GAI: Gini coefficient based on autonomous per capita income; GTI: Gini coefficient based on total per capita income; PAI: Polarization index based on autonomous per capita income; PTI: Polarization based on total per capita income.

The municipalities in the Santiago Metropolitan Region have GAIs between 0.36 and 0.60 (*M* 0.42; *SD:* 0.088) and GTIs between 0.29 and 0.53 (*M:* 0.37; *SD:* 0.061). Talagante has the highest GAI and GTI, at 0.60 (*CI:* 0.44–0.69) and 0.53 (*CI:* 0.39 and 0.62), respectively. Cerro Navia is the municipality with the lowest GAI (0.36; *CI:* 0.32–0.39) and the lowest GTI (0.29; *CI:* 0.26–0.31).

The PAIs of these municipalities range from 0.34 to 0.85 (*M:* 0.43; *SD:* 0.16), and their PTIs are between 0.28 and 0.75 (*M:* 0.36; *SD:* 0.12). Talagante has both the highest PAI and the highest PTI (0.87; *CI:* 0.47–1.15 and 0.53; *CI:* 0.41–0.98), respectively. At the other end of the spectrum, the municipalities with the lowest polarization indices are Conchalí, with a PAI of 0.30 (*CI:* 0.29–0.32), and Cerro Navia, with a PTI of 0.25 (*CI:* 0.25–0.31) (see table 9).

Table 9
Santiago Metropolitan Region: Gini coefficients and polarization indices, with confidence intervals

Municipality	Total population	GAI (*CI*: 95%)	GTI (*CI*: 95%)	PAI (*CI*: 95%)	PTI (*CI*: 95%)
Cerro Navia	158 670	0.36 (0.32–0.39)	0.29 (0.25–0.31)	0.31 (0.30–0.37)	0.25 (0.25–0.31)
Colina	140 475	0.38 (0.33–0.42)	0.34 (0.29–0.38)	0.35 (0.34–0.48)	0.29 (0.30–0.41)
Conchalí	140 988	0.40 (0.37–0.41)	0.33 (0.31–0.34)	0.30 (0.29–0.32)	0.26 (0.25–0.27)
El Bosque	196 166	0.41 (0.38–0.43)	0.34 (0.32–0.36)	0.31 (0.31–0.36)	0.27 (0.26–0.29)
Estación Central	148 400	0.37 (0.32–0.40)	0.32 (0.28–0.34)	0.32 (0.33–0.43)	0.29 (0.29–0.36)
La Florida	390 403	0.43 (0.39–0.46)	0.37 (0.33 –0.40)	0.40 (0.40–0.52)	0.34 (0.35–0.45)
La Granja	144 260	0.37 (0.32–0.40)	0.32 (0.28–0.35)	0.32 (0.32–0.40)	0.28 (0.27–0.36)
La Pintana	217 034	0.37 (0.33–0.39)	0.31 (0.28–0.34)	0.32 (0.32–0.39)	0.27 (0.27–0.33)
Las Condes	290 869	0.45 (0.42–0.47)	0.40 (0.37–0.42)	0.34 (034–0.40)	0.32 (0.32–0.37)
Macul	125 855	0.53 (0.40–0.62)	0.50 (0.34–0.62)	0.52 (0.39–0.79)	0.52 (0.34–0.85)
Maipú	571 632	0.40 (0.37–0.42)	0.35 (0.33–0.37)	0.40 (0.41–0.51)	0.34 (0.35–0.43)
Melipilla	123 669	0.45 (0.39–0.49)	0.37 (0.32–0.41)	0.43 (0.41–0.56)	0.32 (0.32–0.44)
Ñuñoa	242 287	0.51 (0.47–0.56)	0.47 (0.42–0.51)	0.41 (0.38–0.53)	0.36 (0.34–0.48)
Pedro Aguirre Cerda	122 600	0.40 (0.36–0.43)	0.33 (0.29–0.35)	0.32 (0.31 –0.37)	0.28 (0.27–0.32)
Peñalolén	246 871	0.49 (0.45–0.53)	0.44 (0.39–0.47)	0.51 (0.46–0.78)	0.44 (0.41–0.65)
Providencia	155 166	0.45 (0.42–0.48)	0.41 (0.38–0.43)	0.34 (0.34–0.41)	0.32 (0.31 –0.38)
Pudahuel	244 395	0.40 (0.36–0.42)	0.34 (0.31–0.36)	0.40 (0.36–0.51)	0.32 (0.31–0.43)
Puente Alto	647 428	0.41 (0.39–0.42)	0.36 (0.34–0.37)	0.36 (0.33–0.44)	0.33 (0.30 –0.39)
Quilicura	248 306	0.37 (0.33–0.41)	0.34 (0.30–0.38)	0.42 (0.34–0.60)	0.35 (0.30–0.54)
Quinta Normal	117 930	0.39 (0.34–0.42)	0.35 (0.29–0.40)	0.35 (0.34–0.46)	0.32 (0.29–0.46)
Recoleta	172 820	0.44 (0.41–0.47)	0.39 (0.35–0.41)	0.37 (0.36–0.45)	0.32 (0.31–0.38)
Renca	155 465	0.38 (0.34–0.40)	0.31 (0.28–0.33)	0.32 (0.32–0.38)	0.27 (0.28–0.32)
San Bernardo	312 169	0.45 (0.39–0.49)	0.40 (0.35–0.44)	0.43 (0.41–0.57)	0.36 (0.35–0.49)
San Miguel	122 562	0.50 (0.47–0.53)	0.45 (0.41–0.47)	0.39 (0.39–0.45)	0.36 (0.35–0.41)
Santiago	430 114	0.43 (0.39–0.46)	0.42 (0.38–0.44)	0.41 (0.40–0.54)	0.39 (0.39–0.52)
Talagante	73 748	0.60 (0.44–0.69)	0.53 (0.39–0.62)	0.87 (0.47–1.15)	0.53 (0.41–0.98)

Source: Prepared by the authors, on the basis of Ministry of Social Development and Family, "Encuesta CASEN 2015", Observatorio Social, Santiago [online] http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2015.php.
Note: GAI: Gini coefficient based on autonomous per capita income; GTI: Gini coefficient based on total per capita income; PAI: Polarization index based on autonomous per capita income; PTI: Polarization based on total per capita income.

In the course of the analysis based on computations of the Gini coefficient, the municipality of Traiguén emerged as an atypical case in that its GAI of 0.81 and its GTI of 0.74 are both outliers. The reason for this plausibly has to do with the fact that the 2015 CASEN respondents in this municipality may have included some very rich households. Traiguén is located in the Region of La Araucanía, where 25% of its population of 20,000 people is made up of persons who fall into the category of income poverty and another 25% come under the heading of multidimensional poverty (Ministry of Social Development, 2015). Given the traits associated with a small population in a municipality such as this, in the far south of the country, the information on income provided by a small number of high-income households may have had a disproportionate impact on the resulting Gini coefficient.

The differential between the GAI and GTI coefficients is significant ($t(77)=24.10$; $p<0.001$). This would appear to be a reflection of the effect which the State's social policies on monetary subsidies for households may have had on income distribution, inasmuch as they have diminished the extent of inequality that is measured by the Gini coefficient.

The three municipalities in which the differential between the GAI and the GTI is the widest are Cunco, Carahue and Curacautín, all of which are located in the Region of La Araucanía. Those with the smallest differentials are Santiago, Quilicura and Macul, all of which are in the Santiago Metropolitan Region (see table 10). This is attributable to the fact that social cash transfer programmes target poor and extremely poor groups in the population, and the Region of La Araucanía has the highest poverty rates anywhere in the country. Households in that area are therefore the ones to which the State channels its cash transfers.

Table 10
Municipalities with the largest and smallest differentials between Gini coefficients based on autonomous per capita income (GAI) and Gini coefficients based on total per capita income (GTI)

	Region	Municipality	GAI	GTI	Differential
Largest differentials	La Araucanía	Cunco	0.50	0.35	0.15
	La Araucanía	Carahue	0.58	0.44	0.14
	La Araucanía	Curacautín	0.55	0.41	0.13
Smallest differentials	Metropolitan	Quilicura	0.37	0.34	0.03
	Metropolitan	Macul	0.53	0.50	0.03
	Metropolitan	Santiago	0.43	0.42	0.02

Source: Prepared by the authors.

The results of the analysis of social polarization were quite different, as no significant differential between PAIs and PTIs was observed. The analysis of the relationship between inequality and polarization did turn up any statistically significant correlations, however.

VI. Concluding observations

An analysis of the Gini coefficients for 78 municipalities indicates that, although those coefficients vary a great deal, the level of inequality is high in all of them. The Gini coefficient based on autonomous per capita income (GAI) ranges from 0.36 to 0.81, and 27% of the municipalities have values above the national average (0.49). The Gini coefficients based on total per capita income (GTI) were slightly lower, ranging from 0.29 to 0.74, with 5% of these municipalities registering coefficients above the

national average (0.48). A comparison between these levels and the mean Gini coefficient for the OECD countries (0.30) shows that nearly 100% of the municipalities under study have GAIs and GTIs above that average, however.

This corroborates the finding of a number of other studies (Contreras, 1999; Schatan, 2005; Vergara, 2011; UNDP, 2017) that, although Chile has experienced steady economic growth and has improved many of its social indicators to the point that they are on a par with developed-country levels, it has not improved its income distribution.

In market economies such as Chile's, efforts to achieve a more equal distribution of income and —in particular— of wealth should be driven by a government policy that includes not only targeted subsidization policies but also mechanisms for regulating wealth accumulation (Schatan, 2005). The population's well-being can be increased by narrowing inter-group social differences generated by highly polarized forms of social stratification. Research has shown that more egalitarian societies tend to create a more enabling environment for the development of empathy for others, which facilitates harmonious interpersonal relations (Jahoda, 1958), and, in general, the formation of positive bonds between people and between groups (Ryff, 1989). Other researchers have shown that when people see themselves as being of a lower social status or class than a more privileged reference group, they may suffer physical and psychological ill effects (Osafo Hounkpatin and others, 2015; Quijada and others, 2018).

In an economy that, on the one hand, has strong growth indicators and yet, on the other, high levels of inequality, cash transfer programmes have fulfilled an important public policy role. Clearly, however, the main purpose of these kinds of transfers is not to reduce inequality but rather to improve certain quality-of-life indicators. Be that as it may, the results of this study point to some significant effects —effects that merit further analysis— based on a comparison of Gini coefficients calculated on the basis of autonomous income and those calculated on the basis of total income. Significantly, a higher level of inequality was observed in all the municipalities when inequality was measured on the basis of autonomous household income. This appears to be a reflection of the impact of cash transfers in diminishing inequality and bears out the findings reported in government statements (Ministry of Social Development, 2017). However, it is important to remember that these kinds of results do not improve these indicators at the national level, as Chile remains one of the most unequal countries in the world (OECD, 2015). What is more, the redistributive impact of cash transfers appears to be three times greater in the OECD countries as a group than it is in Chile (Martner, 2008; Aguirre Briones, 2009).

The results of the analysis of polarization indices are quite different, since no significant differentials were found when polarization based on measurements of autonomous per capita income (PAI) was compared to polarization calculated on the basis of total per capita income (PTI). As noted earlier, the term "polarization" refers to the existence of distinct groups that are very different from one another but that are internally very homogeneous. As in the case of inequality, the problem of polarization should be addressed with cash transfer policies, but in order for this to be an effective approach, the transfers would need to be considerably larger than they are at present and would need to be conducted differentially on the basis of households' positions within the existing distribution. They would then do more than simply improving national averages, which often tend to conceal the existence of situations at both extremes of the spectrum (Vergara, 2011). An illustration of this type of case is provided, for example, at the high end of the income distribution, by municipalities in the Region of Traiguén with GAIs and GTIs of 0.81 and 0.74, respectively, and the Region of Talagante, with GAIs and GTIs of 0.60 and 0.53, respectively, and, at the low end, the municipality of Cerro Navia, where the GAI and GTI stand at 0.36 and 0.29, respectively.

Consequently, while cash transfers do make the income distribution less unequal, that reduction in inequality is not large enough to bring about a change in the structure of the distribution, much less a change in the formation of socially distanced clusters or groups. The existence of these clusters fuels

conflict, as studies have shown that social polarization is associated with a deterioration in the security of property and contractual rights (Keefer and Knack, 2002) and with an increased likelihood of socially harmful crimes (Vergara, 2011).

This analysis of inequality and social polarization demonstrates that the highly unequal nature of income distribution seen at the national and regional level is replicated at the municipal level. This underscores the need for targeted income redistribution policies that have been designed for application at the level of the municipality, since inequality and social polarization can have both direct and indirect impacts on the population's perception of well-being. In Chile, one of the main ways in which efforts have been made to support the advancement of the poorest territorial units has been to modify the structure of political/administrative divisions to form new municipalities, provinces and regions (Pressacco, 2009). These measures have not, however, been coupled with decentralized development policies aimed at improving inequality and social integration indicators (Pérez, 2011) and reducing the negative impacts of the social distancing resulting from existing levels of inequality.

In closing, it is important to take note of the limitations of this study, which include the difficulties involved in working with household-reported income data (Schatan, 2005; Ortiz and Cummins, 2011; Atkinson, Piketty and Saez, 2011) owing, in particular, to the difficulty of gaining access to wealthier households, which tend not to participate in this type of research or, if they do, to underreport their incomes. In Chile, economic resources are concentrated in a very small group of families or economic groups that are largely inaccessible for researchers (Atria and others, 2017). It is therefore highly probable that household income inequality is greater than the levels that are reported by the government and the levels estimated in studies based on information from official national surveys such as CASEN. Cross-cutting and longitudinal studies are needed that can draw on other supplementary sources of information on hard-to-reach households (whether because of their social status or because they are located in remote areas of the country) to help researchers arrive at more accurate estimates of existing levels of inequality and polarization. The effects of polarization in different demographic and territorial contexts are another area that warrants further study.

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