Santiago Chile: city of cities? Social inequalities in local labour market zones[1]

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Abstract

This article seeks to define and characterize the urban structure of Santiago, Chile, based on the relation between its inhabitants' places of residency and work, which form local labour market zones. The article explains the criteria and methodological procedures used to define these zones, and it describes them on the basis of this functional definition, to determine the extent to which they underpin the social inequalities prevailing in the city. It also makes a spatial analysis of income inequality, access to education and the composition of the social classes.

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I.   Introduction

Globalization has given rise to various transformations of world economic geography, in which cities have served to articulate the internationalization of domestic economies (Sassen, 2001). Latin American cities have not been immune from this process (De Mattos, 2010). The Chilean capital, Santiago, is a special case, owing to the country's early integration into the global economy, and consequent changes in the function, morphology, and socio-spatial structure of the city over different periods.

Recent trends in the urban growth of Santiago have made its structure more complex, owing to processes that have been analysed in specific studies. Nonetheless, as will be seen below, further progress needs to be made in understanding the functional modalities, general characteristics, and inequalities displayed by the city. In this regard, the questions addressed in this paper relate to the spatial configuration of the relation between place of residency and work. Specifically, what is the functional structure of the city; and to what extent, and through what mechanisms, is this linked to urban inequalities? The specific aim is to identify possibilities for characterizing and analysing the evolution of the functional structure of the city and the trends that explain urban inequalities in recent years.

Based on the conclusions reached by various studies and the analysis of the varied dimensions of urban evolution, the article aims to contribute to the debate on the structure of Santiago, based on a classification of the social spaces using criteria related to place of work and residency, so as to define the boundaries of the city on an aggregate scale. In addition, labour market zones are defined by the relation between supply and demand for labour in the city space. To validate this methodology, its contribution to the characterization of the city is tested from the standpoint of social inequalities in income, education, classes and other relevant indicators.

We postulate that a spatial configuration based on the residency-work relation offers an overall image of the structure and functioning of a large city such as Santiago; and it has the advantage of helping to elucidate the social inequalities that exist within it. This is because each of the zones considered displays specific characteristics in terms of the basic socioeconomic indicators, the level and distribution of income, and the composition of the social classes. The study thus demonstrates that socioeconomic inequalities are accentuated in some zones, and that there are major differences between some of them. Assuming the existence of a two-way relation between the spatial configuration and urban inequalities, the approach used prioritizes the influence of the social space on those inequalities.

Section II of the article describes the academic debate on the structure of the city and the methodological approach focused on local labour market zones. Section III gives details of the method applied in this study to identify and define the boundaries of such zones in Santiago. Section IV analyses the make-up of the labour market zones and characterizes their socioeconomic inequalities and social composition. Lastly, the article analyses conclusions relating to the spatial configuration of the city and its capacity to add value to the analysis of intra-urban social inequalities.

II.   General framework of the urban spaces

1.   Studies of the territorial structure of Santiago

This article considers the labour markets that exist in Santiago as a key factor for understanding the city's heterogeneity. Several studies on this and other Latin American cities have highlighted the growing structural complexity generated by new urban growth processes. A study by Dockendorff and others

(1990), which describes the socioeconomic and spatial structure of Greater Santiago, concluded that the constant distinctive feature was social segmentation between boroughs (*comunas*).

More recent studies have paid special attention to various urban dynamics, including residential shifts and internal migration (De Mattos, Fuentes and Link, 2014; Ortiz and Escolano, 2013; Ortiz and Morales, 2002); recent phenomena whereby business districts and jobs are relocating (Escolano and Ortiz, 2005; Rodríguez, 2012; Truffello and Hidalgo, 2015); the transformation of residential segregation patterns (Agostini, 2010; Sabatini, Cáceres and Cerda, 2001) and the new morphology generated by the financial system in the housing sector (Cattaneo, 2012).

Some of the studies mentioned have attempted to classify and characterize different functional zones of Santiago, by analysing poly-centrality from the standpoint of commercial density and mobility. Truffello and Hidalgo (2015) note that Santiago has a poly-centric business sector, although it also displays mono-centric features, since its central business district continues to play a predominant role. Taking account of variables such as the distribution of jobs and commercial nuclei ("centralities"), Rodríguez (2012) concludes that an incipient process of emerging sub-centralities coexists with the persistence of the historical business district, which makes studying the spatial dimension of the labour market even more relevant. On this point, it is difficult to find analysis of the territorial configuration of Santiago's labour markets which go beyond the general studies on the metropolis (De Mattos, 2002; Pollack and Uthoff, 1987; Riffo, 2004) in which its characteristics or trends are linked to social stratification, poverty and residential segregation.

In terms of the socioeconomic inequalities prevailing in Santiago, Agostini (2010) finds that, despite an improvement in living standards in recent years, there are sharp differences in income between its inhabitants and the residents of boroughs elsewhere in the country. Based on a review of borough-level Gini coefficients, this author studies income heterogeneity and homogeneity in the wealthiest and poorest boroughs, and concludes that the widespread belief that the former are more homogeneous and the latter more heterogeneous is mistaken.

Arriagada (2010) argues that segregation intensified in Chile following the application of a social policy in certain zones of the city, and the concentration of urban infrastructure in comfortable zones of the eastern sector, compounded by the vertiginous rate of expansion towards outlying neighbourhoods with insufficient facilities.

Internal segmentation has been analysed by Sabatini, Cáceres and Cerda (2001), who define the eastern cone of Santiago as a socially heterogeneous area, and the peripheries of other sectors of the city as stigmatized places in which social problems accumulate. Taking account of multiple variables, including income and education, a description has been made of the formation of zones that display the existing social segmentation (Heinrichs and others, 2011).

With the aim of conducting technical studies on the urban transport system, the Transport Planning Secretariat has divided the city into macro-zones, between which journeys occur, which are quantified in origin and destination surveys (SECTRA, 1992). In addition, a study on the distribution of power and governance (Orellana and Fuentes, 2007) also developed a classification of the boroughs of Santiago.

The literature contains studies on specific issues, such as commuting to and from work and the transition from mono-centrality to poly-centrality; and others focused on narrowly defined problems, such as segregation and the lack of governance of the city. Based on the conclusions reached in the analyses of those aspects of urban evolution, the present article aims to supplement the previous studies and contribute to a debate on the urban structure of Santiago as a whole. In the authors' opinion, before making a socioeconomic characterization, or one based on other variables, the basic distinction of local labour market zones facilitates an understanding of the social inequalities that exist in the city, which, in the final analysis, have been the focus of most of the studies.

2.   Studies of local labour market zones

The basic purpose of this article is to contribute to the debate on the territorial dimension of the labour market, through an analysis of work-motivated journeys similar to research undertaken in the United States (Singelmann and Deseran, 1993; Tolbert and Sizer, 1996), in Spain (Casado-Díaz, 2003), in Germany (Russo and others, 2011) and in other countries (Casado-Díaz and Coombes, 2011; OECD, 2002).[2] These spaces have been conceptualized in different ways. In the United Kingdom, a study was made of the zones within which workers have to travel for work reasons (Coombes and Bond, 2008); in Italy, the local employment systems (ISTAT, 2005), and in France, the living spaces, "*bassins de vie*", and inhabited territories (Vallès, 2004). It is important to have a comparative research agenda on labour market zones at the international level, since one of the difficulties faced by the regionalization process over the last several years has been the definition of the most important territories for national public policies. Moreover, to respond more effectively to the globalization of economy and society, it is useful to establish zones that are comparable between countries (Casado-Díaz and Coombes, 2011).

One of the first studies to consider the territorial dimension of labour markets, conducted in the United States in 1940, posited the existence of zones in which workers could change job without moving house (Casado-Díaz and Coombes, 2011). Based on those initial studies, this concept started to be defined as the area covering both the place of residency and the workplace of a given local population (Tolbert and Sizer, 1996). Thus, most of the current definitions of labour market zones accord special importance to the relation between the place of residency and place of work, and their connection through daily journeys. From the spatial standpoint, this has led to zones being defined by two key criteria: the nexus of the supply of and demand for labour, and the zone that defines the interaction between the place of residency and the place of work. These criteria are used to study the proximity between various municipalities,[3] which involves a new analysis and, in the long run, the adoption of new administrative divisions that replace the traditional ones.

One of the salient features of research into local labour markets undertaken in Latin America, to which this article is an addition, is its contribution to the study of social and spatial inequalities. In the case of the metropolitan zone of the Valley of Mexico, research has revealed the complexity of the urban structure, resulting from growth processes associated with the mobility of firms and individuals (Casado, 2012). As in this article, the Casado study examines the interior of the city, to analyse the urban structure in terms of the geographic configuration of basic economic and social relations. The metropolitan zone of the Valley of Mexico is divided into 12 local labour market zones that are more or less autonomous in terms of the relation between residency and work, but which display a considerable concentration of employment in the business district, which extends beyond the traditional boundaries of the city centre.

Application of a similar methodology in Chile has contributed to the study of new dynamics in the rural world and inequities that affect different types of rural territory (Berdegué and others, 2011). This methodology has also been used to test whether there is a network of intermediate cities in the south of the country (Maturana and Arenas, 2012). As well as distinguishing labour market zones in Chile (Mac-Clure and Calvo, 2013), they have been linked with the distribution of income and the composition of the social classes in the country's various territories (Mac-Clure, Barozet and Maturana, 2014). This article makes a study of the city of Santiago, Chile, which, like other large cities of Latin America, is characterized by accentuated inequalities.

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[2]   The methodology used to define local labour market zones in various countries and studies is generally similar to that applied in this study. Casado-Díaz and Coombes (2011) provide a full description of the main procedures used.

[3]   Smaller zones can also be considered as units of analysis, depending on the availability of statistical data.

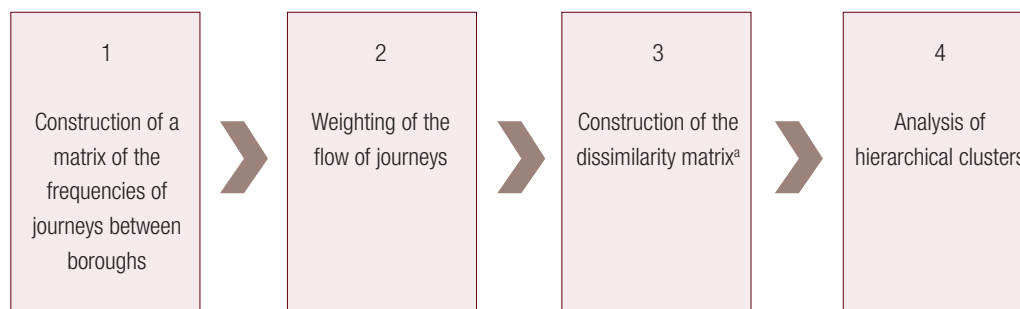# III. Methodology: definition of local labour market zones

Local labour market zones in the Chilean capital are defined in terms of place of residency and journey to work, as has been done in the studies outlined above.

The method applied is inductive, which means that the research process does not assume a given structure around which local labour markets coalesce, but instead aims to identify that structure. A statistical review is made of hierarchical clusters based on the conclusions of the analysis of matrices, with the aim of including the elements —in this case the boroughs— in homogeneous groups not known in advance but derived from the available data. The analysis of clusters uses a set of methods and statistical techniques that make it possible to describe and recognize the groupings that are implicit in a dataset, so it is possible to classify or divide a series of elements defined by different variables into more or less homogeneous groups.

The universe of this study consists of 38 boroughs of Greater Santiago, which encompass the province of Santiago and the largest boroughs in the provinces of Cordillera, Chacabuco and Maipo.[4] The smallest unit of analysis used is the borough, since this makes it possible to conduct subsequent socioeconomic analyses. The definition of the local labour market zones is based on data from the Origin and Destination Survey, conducted by the Transport Planning Secretariat (SECTRA), with the aim of conducting a diagnostic study of the urban transport system and planning it, since it contains up-to-date journey data.[5] Use was also made of other data sources to validate the zones identified, covering other years.[6]

The process of analysis based on that information was divided into four stages, in which the local labour market zones were defined (see diagram 1).

Diagram 1
Sequence used to define local labour market zones

1	2	3	4
Construction of a matrix of the frequencies of journeys between boroughs	Weighting of the flow of journeys	Construction of the dissimilarity matrix[a]	Analysis of hierarchical clusters

Source: Prepared by the authors.

[a] Dissimilarity refers to the extent to which the data diverge from each other, based on a comparison between a series and the whole set.

Firstly, a double entry matrix was constructed containing the frequencies of journeys made by individuals who travel between two boroughs for work reasons, in either direction. The second step involved the weighting of the frequencies; on this point, it is important to bear in mind that the cluster analysis defines the most heterogeneous groups possible; accordingly, when the variables

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[4] The boroughs considered are those included in studies by the Transport Planning Secretariat (SECTRA).

[5] The sample of the 2012 Origin and Destination Survey consisted of 11,000 households, in which interviews were held on working days.

[6] A review was made of the results of the 2009 National Socioeconomic Survey (CASEN), the only survey in the series that includes information on daily work-related travel, together with data from the 2002 Census.

are expressed in different magnitudes, the data has to be weighted or standardized. The aim of the weighting is to avoid biases attributable to the size of the pairs of boroughs observed. To that end, journey flows are corrected by dividing the number of people travelling for work reasons between two boroughs by the employed population of the smaller borough. The flow thus calculated is an indicator of the intensity of work-related journeys between that pair of boroughs. A double-entry matrix is thus developed, which contains the same 38 boroughs in both the columns and the rows.

The third step in defining the labour market zones consists in applying measures of similarity. In this case, a matrix is prepared of distances or dissimilarity between the boroughs, which illustrates the difference between the value one and the weighted journey flow obtained from the previous matrix. The purpose of this exercise is to measure the degree of dissimilarity between the data, by comparing a series with the whole set, which serves as a basis for producing a ranking.

The fourth step entails an analysis of the hierarchical clusters. This procedure identifies the boroughs that are closest to each other in terms of dissimilarity, and these are grouped in a cluster. Then, ever larger and more heterogeneous clusters are established, until a single global cluster is attained, corresponding to the city as a whole and consisting of 38 units, each of which can be considered a cluster. This makes it possible to evaluate the heterogeneity of the clusters constituted in each stage and facilitates the identification of homogeneous groups of boroughs, which agree with the conclusions of studies on the city. The boroughs grouped according to journey flows within a cluster are interpreted as local labour markets. In contrast, isolated clusters reflect low rates of journey flow and are considered different labour markets. Using a tree-diagram, a cut-off is made at one of the resulting ranking levels. With the analytical purpose of distinguishing a small number of labour market zones in the city, an agglomeration threshold was established on the basis of the journey flow. This threshold was defined according to the specialized criteria on the subject, striking a balance in the formation of a small number of local labour market zones that are representative and statistically manageable.[7] To corroborate the result, a multidimensional scaling statistical technique was applied, to develop a representation of the differences between the boroughs in terms of journey flow, which helps locate the zones in the city. Then, to validate the identified zones, their geographical consistency is analysed using various data sources and statistical techniques, to see whether they follow the same pattern.

Lastly, to assess the relevance and usefulness of identifying labour market zones for the analysis of the social inequalities that exist in the city, basic socioeconomic indicators corresponding to each of them are considered.

IV. Formation of the zones

1. Labour market zones in Santiago

Based on the 38 boroughs of Greater Santiago, six conglomerates were defined using the method described above.[8] Their inhabitants travel relatively less outside them for work reasons, and the journeys are concentrated between the boroughs comprising the conglomerates. The spatial configuration thus defined does not vary greatly when different data sources and techniques of analysis are used.

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[7] Six borough clusters were considered.

[8] The six zones encompass a total of 38 boroughs, grouped as follows: North: Colina, Lampa, Renca, Conchalí, Huechuraba, Quilicura, Independencia and Recoleta. Centre-east: La Reina, Ñuñoa, Providencia, Santiago, Las Condes, Vitacura and Lo Barnechea. West: Cerrillos, Maipú, Estación Central, Lo Prado, Lo Espejo, Cerro Navia, Pudahuel and Quinta Normal. South: La Florida, La Granja, San Joaquín, Macul, Peñalolén, Pedro Aguirre Cerda and San Miguel. South-east: Puente Alto, La Pintana and Pirque. South-west: Calera de Tango, San Bernardo, El Bosque, La Cisterna and San Ramón.

As an illustration, the centre-eastern zone is a destination of work-related journeys originating in all boroughs of the city; the frequency of journeys between the boroughs that form the zone is high, while a relatively small proportion of its residents travel to work outside those boroughs. The resulting zones are not closed spaces, but are integrated into the broader labour market of the city, whose inhabitants commute between multiple points, although mostly within the limits of the identified zones. Map 1 shows the six zones defined using the methodology described above, corresponding to the local labour markets of the city of Santiago.

Map 1
Santiago, Chile: definition and basic characteristics of the local labour market zones[a]
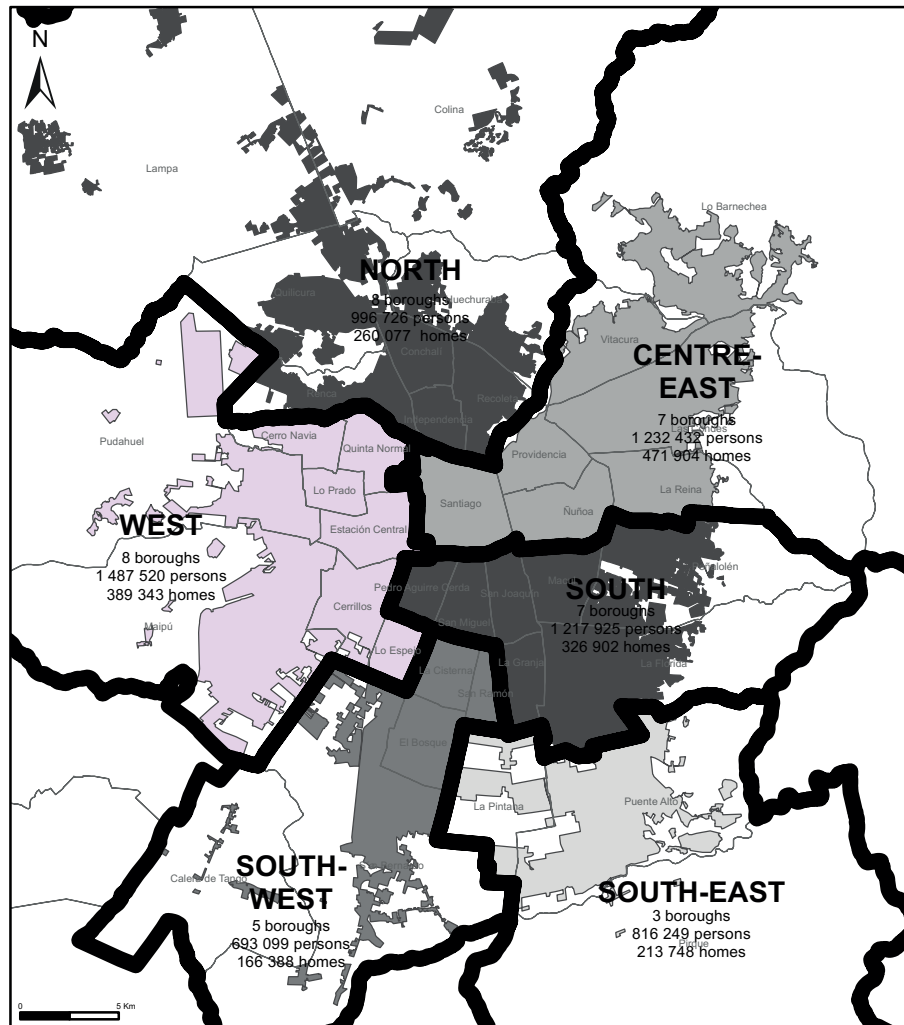
Source: Prepared by the authors, on the basis of data from the 2012 Origin-Destination Survey and the 2012 Census.
[a] The zones indicated on the map are those used by the Transport Planning Secretariat.

In general, the configuration of the labour market zones of Santiago shows a clear geographic pattern, whereby the boroughs are grouped in differentiated and independent areas. The clearest departures from that pattern include the cases of the centre-east zone, which "takes over" the borough of Santiago, and the southern zone, a conglomerate of boroughs that are projected towards the western sector of the city. In themselves, these are relevant conclusions, since most of the articles consulted analyse the configuration of local labour markets in aggregate spatial structures, whereas this study also aims to determine the internal structure of the city.

It is interesting to compare these conclusions with those reported in the study of the metropolitan zone of the Valley of Mexico, which used a similar methodology (Casado, 2012). The author identified a structure consisting of 12 zones, which display a radial spatial pattern, unlike that of Santiago; the latter also differs from the representations of the structure of the city in the form of concentric rings.

This geographic configuration is the spatial expression of the analysis of the tree-diagram and multidimensional scaling. The initial levels of agglomeration in the tree-diagram distinguish the centre-east zone, the south zone and the south-west zone, which are more homogeneous groupings than the others which have more porous boundaries.

The zones do not have the same number of boroughs or, therefore, of inhabitants and homes. For example, the zone with the fewest boroughs and inhabitants, located in the south-east of the city, comprises Puente Alto, La Pintana and Pirque, which have a total of 800,000 inhabitants. In contrast, the west zone —the most heavily populated and the one with the largest number of boroughs and homes— encompasses eight boroughs in which over 1.4 million people live (see map 1).

Apart from these differences, it is important to analyse the zones according to two key concepts: the level of self-containment and porosity. The former refers to the percentage of employed people who live in the same zone as that in which they work, and do not need to leave the zone to go to work. The second refers to the capacity to attract inhabitants from other labour market zones for work reasons. Table 1 summarizes this relation.

Table 1
Santiago, Chile: workers resident in labour market zones, 2009[a]
(Percentages and number of persons)

Area of residency	Workers who live and work in the same zone	Persons who go to work outside the area of residency		Total	
		To the centre-east zone	To another zone	Number of people	Percentage of the whole city
North	56%	32%	11%	373 963	15.3%
Centre-east	81%	-	19%	582 403	23.9%
South	35%	45%	21%	447 107	18.3%
South-East	29%	39%	32%	285 155	11.7%
West	45%	39%	17%	510 937	21.0%
South-West	48%	24%	29%	232 882	9.5%
Total				2 432 449	100%

Source: Prepared by the authors, on the basis of data from the 2012 Origin-Destination Survey.
[a] Only includes cases for which journey data exist.

The second column of this table shows the percentage of employed persons who work and live in the same zone. The lowest rate of self-containment is 29%, which validates the characterization of the zones as endogenous labour markets, despite displaying sharp differences. For example, as the approximate average level of self-containment is 49%, there are clearly sharp deviations. Areas that are above average include the centre-east zone, which has an 81% self-containment rate, more than double the rates in the south and south-east zones, which have the lowest values.

Table 1 also reveals the exogenous nature of the employment of workers residing in all zones, except for the centre-east, since the proportion of work-related journeys to that zone is high. In fact, a high percentage of workers from the two zones with the strongest exogenous relation between place of residency and place of work travel to the centre-east zone, and in some cases this exceeds the level of self-containment.

The data of table 1 show that porosity is greatest in the centre-east zone, which is the destination of numerous journeys that start elsewhere, exceeding those that occur between the other zones. Moreover, the sum of the percentages of self-containment and journeys to the centre-east zone show that in most cases the proportion of work-related journeys to that zone is above 75%, but generally low in relation to the others.

The frequency of work-related journeys between labour market zones shows that for the inhabitants of the centre-east zone —followed, to a lesser extent, by the north zone— this is basically endogenous, whereas it is exogenous in the others and is centred on the first. In addition, the centre-east zone displays the highest level of porosity, since it receives a large number of external workers. Accordingly, similar to the finding in the study of the metropolitan zone of the Valley of Mexico (Casado, 2012), while it is possible to distinguish different local labour market zones, which in Santiago, Chile, display a non-radial configuration, the existence of a zone with great capacity to concentrate jobs gives rise to a territorial structure dependent on a broad centre, as occurs in the centre-east zone. Nonetheless, in general, the city of Santiago is a broad labour market, which is distinguished from the zone surrounding it and from neighbouring cities, and which encompasses zones with a relatively high level of self-containment.

2.   Analysis of socioeconomic inequalities

In Latin America's large cities, characterized by a high degree of socioeconomic inequality, the definition of labour market zones can add value to the analysis of inequalities, so the following paragraphs consider its validity from this standpoint in the case of Santiago.

Income inequality, a fundamental element of socioeconomic inequalities, is clearly seen in the classification of the labour market zones by income quintiles (see table 2).

Table 2
Santiago, Chile: classification of labour market zones by workers' income quintiles,[a] 2013
(Percentages)

	I	II	III	IV	V
Centre-east	3	7	8	20	63
West	12	23	29	24	12
South	13	17	26	27	18
South-west	17	24	25	24	10
North	15	25	29	23	8
South-east	21	23	26	26	5
Total	13	19	22	23	23

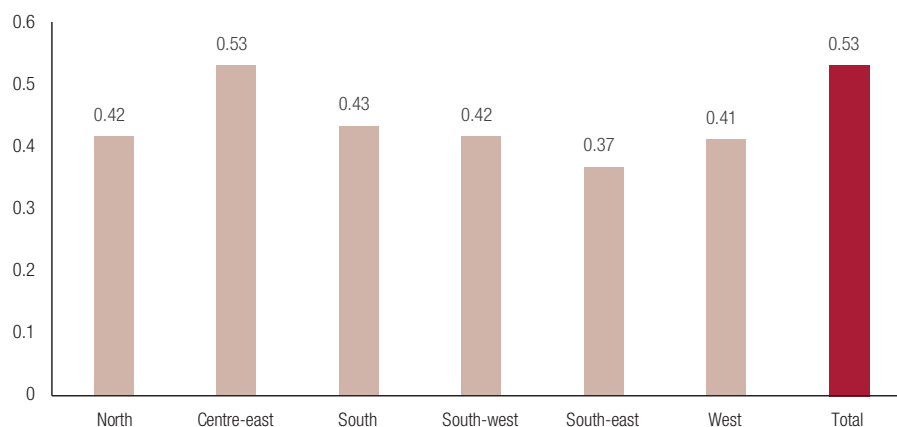**Source**: National Socioeconomic Survey (CASEN), 2013.

[a] The distribution represents regional autonomous income (measured using the new survey methodology).

A comparison between the zones reveals clear differences: particularly a greater concentration of the upper quintile in the centre-east zone, and of the lowest quintile in the south-east. The prevalence of the highest quintile in the centre-east zone is accompanied by a general income level that is substantially lower than in the other zones. In fact, this displayed a median autonomous income of US$ 1,260 equivalent per month in 2013,[9] whereas, in the other zones, the median varied between US$ 533 equivalent in the west zone and around US$ 478 in the south-west, north, and south. Within the zones, even in the centre-east, there are variations that are not adequately reflected in median

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[9] According to the exchange rate prevailing in June 2015 (627 pesos per dollar).

income, among other measures. As is the case with education levels, it would be difficult to base general territorial distinctions on income alone. This validates the distinction by labour market zones, which is also very useful for the territorial analysis of income inequality, as shown in the comparison of the Gini coefficient (see figure 1).

Figure 1
Santiago, Chile: Gini coefficient of workers in the labour market zones, 2013

Source: National Socioeconomic Survey (CASEN), 2013.

The distinction between the six zones sheds light on income inequality in Santiago. The Gini coefficient is much higher in the centre-east zone, but relatively low in the south-east. The other zones display below-average inequality, so the overall level of inequality in the city largely reflects the notable heterogeneity of the centre-east zone.

Education level is a key factor in income inequality and is also distributed heterogeneously in the different labour market zones (see table 3).

Table 3
Santiago, Chile: education level of residents in the labour market zones, 2013
(Percentages)

	Basic	Secondary	Higher
Centre-east	9	26	65
West	33	47	20
South	31	44	25
South-West	39	42	19
North	39	45	16
South-East	43	45	12
Total	29	40	30

Source: National Socioeconomic Survey (CASEN), 2013.

The centre-east zone is not only characterized by having the highest level of income in Santiago, but also by the fact that its inhabitants include a large proportion of professional and technical workers with higher levels of studies; the south-west zone is ranked second in this regard, although with a much lower percentage. In contrast, a large fraction of workers in the south-east, south-west and north zones only have basic education, either complete or incomplete, or no education at all. The south and west zones are in an intermediate situation.

The clear definition of the zones comprising the city's socio-territorial space makes it easier to understand the gradual differences in terms of income and education. The analysis based on labour market zones affords a better understanding of other territorial inequalities in domains such as housing. The approximate value of real estate can be calculated from Property Tax data.[10] According to data from the Internal Revenue Service for 2014, in the centre-east zone, 90% of properties are liable for this tax, whereas in the other zones the percentage is less and varies between 25% in the north and 8% in the south-east; other properties are exempt from the tax. On average, in the zone studied, 31% of properties are liable for the tax; this percentage is tripled in the centre-east zone, followed by the south zone, in which the proportion is slightly above average. The sharp differences reflect the value of properties in each of the zones and, therefore, reflect inequality in real estate assets. The average fiscal valuation varies considerably from one zone to another; in the centre-east sector it is 1.5 times higher than the city average, and 3.5 times higher than in the south-east zone, which has the lowest average valuation of all.

3. Composition of the zones by social classes

The composition of the labour market zones by social classes largely explains the differences present in this domain, both between zones and within each of them. Social classes are large groups defined generally by the place they occupy in the social hierarchy and relation with other conglomerates in terms of possession of usable or productive assets, prestige, and other social or symbolic assets (Mac-Clure, Barozet and Maturana, 2014). To analyse the social structure of the zones considered, the EGP classification is applied (Erikson and Goldthorpe, 1993),[11] one of the most widely used internationally and also in several studies undertaken in Chile (Espinoza, Barozet and Méndez, 2013; Mac-Clure, 2012; Mac-Clure, Barozet and Maturana, 2014; Torche and Wormald, 2004). This classification applies criteria relating to ownership and control of productive assets, autonomy, type of activity of the workers (manual or non-manual) and their skill level. Table 4 shows the composition by social classes of the labour market zones of the city of Santiago.

Table 4
Santiago, Chile: social classes by labour market zones, 2013
(Percentages)

Class	Zone						
	Centre-east	West	South	South-West	North	South-East	Total
High-level services	29	6	8	6	5	2	11
Low-level services	30	10	15	10	10	8	16
High-level non-manual routine occupations	9	12	11	11	11	12	11
Low-level non-manual routine operations	9	15	15	13	12	13	12
Small-scale entrepreneurs	1	1	1	1	1	1	1
Self-employed workers	9	16	16	18	18	18	15
Skilled manual workers	4	15	11	17	14	17	12
Unskilled manual workers	10	25	23	23	29	28	22
Farm workers	0	1	1	1	2	1	1
Farmers	0	0	0	1	1	0	0

Source: National Socioeconomic Survey (CASEN), 2013.

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[10] The fiscal valuation on which the property tax is based is roughly equivalent to 50% of the commercial valuation. Non-agricultural residential properties valued at less than US$ 3,500 (according to the June 2015 exchange rate) are not subject to this tax.

[11] The variable "Social classes", based on the EGP scheme applied to Chile, was obtained from the CASEN surveys, using a syntax developed by Vicente Espinoza. The authors are grateful for his contribution.

As table 4 shows, the composition of the social classes in Santiago is dominated by unskilled manual workers, followed in smaller proportions by the low-level services class, consisting mainly of technicians, the self-employed (including nonprofessional own-account workers), the low-level manual routine occupations class (wage-earners working as sales persons or service providers) and skilled manual workers. The third group of social classes, which has slightly lower percentages, corresponds to the high-level services class, consisting of professionals with a university degree, and the high-level non-manual routine occupations class, which includes middle-level administrative employees. Lastly, the classes with the smallest share are small-scale entrepreneurs, farm labourers and farmers. This classification of the social classes present in Santiago does not include the socioeconomic elite, since they are generally not represented in household surveys, and they concentrate much of the country's social, economic and political power. The high-level services class, described above, occupies positions closer to the elite.

The territorial distribution of the classes in the different zones varies considerably, with the high and low-level service classes being over-represented in the centre-east. The concentration of members of the high-level service class in this zone is consistent with its high level of income inequality, with income levels differing considerably from those in the other social classes and large internal dispersion. The services class is also represented in the south zone although to a lesser extent, and especially by intermediate level technicians and professionals. Here, as in the west zone, there is a high percentage of administrative employees and sales people in the low-level routine operations class. Manual workers are a larger proportion in the west, south west, north, and south-east zones, mostly unskilled in the latter two zones. Unlike the centre-east, in these four zones the services class is generally under-represented.

In the long run, and from the standpoint of intergenerational social mobility, the social classes within each zone are differentiated according to the origin of their members, parents' education and a variable that is generally not considered in the studies: place of birth. Members of the high-level services class who live in the centre-east zone, in which they are more numerous than in the other zones, come from families in which the father generally did not pursue higher studies, and was born in a borough from another zone. Consequently, the centre-east zone is a labour market in which the higher strata of the middle class represent the outcome of an intense process of social mobility and considerable inter-generational territorial migration.

Between 1996 and 2013, there was a rapid increase in the proportion of workers from the service classes residing in the centre-east zone, and a reduction in the share of manual workers. The latter was partly due to the fact that the children of the inhabitants of boroughs in this zone frequently cannot choose to continue living there owing to the rise in land prices, which pushes up house prices and leads to the construction of social housing in the outlying boroughs of the city, where the price is lower. Unlike what happens in the centre-east zone, elsewhere the share of the non-manual routine operations classes, both high and low level, and skilled and unskilled manual workers, remains unchanged. All this suggests that the upward social mobility process is concentrated in that zone.

Presumably, the multiple inequalities that exist in the labour market zones reflect social differences. In addition, the presence of the various social classes in these zones allows for a better understanding of varied preferences and subjective perceptions.

The heterogeneity of the city in terms of facilities, which affects the quality of life of its inhabitants (Orellana, 2014), drives migration towards certain zones. The centre-east, which has a high concentration of fixed assets, accounted for 40% of building permits and 68% of the constructions undertaken in the Metropolitan Region between 2000 and 2012 (data on construction from the National Institute of Statistics). This greater endowment of fixed assets —along with better services, including health, education, and security— would provide an economic-interest explanation of both the preference of members of the high- and low-level services classes to live in the centre-east zone and

the strategy of real estate firms to selectively target this zone. The way in which the real estate market operates facilitates upward residential mobility (Sabatini, 2006), particularly among the members of those classes, who migrate to the centre-east zone.

A preference for one zone of residency or another (Sabatini and others, 2012) also reflects subjective motivations, including those of the upper strata of the middle classes who live in the centre-east zone, related to a desire to increase their cultural and social capital through social distinction mechanisms (Bourdieu, 2012). Residents in the other zones —and those less favoured in the centre-east zone— must use other means to maintain or improve their social status. According to recent studies based on methodologies inspired in game theory (Barozet and Mac-Clure, 2014; Mac-Clure, Barozet and Moya, 2015), from a subjective point of view, the members of the less privileged segments of the middle classes consider that there are three decisive factors in income growth: personal effort, which is applied to the limited access to pre-existing economic resources; development of cultural capital, associated with education; and social capital linked to the family and the close circle. In particular, they attribute fundamental importance to educational and labour effort, which in their opinion is more important than accumulated or inherited economic capital, which they lack, and the symbolic value and resources embodied in fixed assets such as those existing in the centre-east zone, while criticizing the "discriminations" associated with their original borough of residency.

To summarize the socioeconomic characterization of the labour market zones of the city of Santiago from the analysis performed above, the centre-east zone is mainly inhabited by a high-income upper-middle stratum, but also displays considerable economic inequality among its residents. Most of them have higher university or technical education and, from the occupational standpoint, belong to the services classes, consisting particularly of high-level service-class professionals, whose preference for this zone reflects the value they accord to it as a symbol of upward social mobility. The inhabitants of the west and south zones belong to the middle strata, dominated by lower-middle income employees and salespeople of the non-manual routine occupations class. In these, internal inequality is moderate compared to the centre-east zone, and there is an aspiration for social mobility based on work and education effort. Nonetheless, both display specific distinguishing features: most of the inhabitants of the west zone have secondary education, whereas those in the south have a slightly higher proportion of individuals with higher level studies; in the latter case, there is also a larger percentage of middle-level technical and professional workers belonging to the low-level services class.

In terms of social hierarchies, manual workers predominate in the south-west, north, and south-east zones, where over half of the city's inhabitants live. In these zones, the population's income is low, and economic inequality is moderate —even relatively low in the south-east zone. Education levels are lower than in zones inhabited mainly by members of the middle classes, but whereas the population with secondary education predominates in the south-west and north zones, the south-east has a high proportion of residents with only basic education. Although the south-west and north zones have similarities, the former has a larger proportion of skilled manual workers than the latter, where there is a clear predominance of the unskilled manual workers class. In general, the social economic status of these zones does not vary, in contrast to the upward mobility that occurs in the residency zones of the middle classes, particularly the centre-east.

V.   Conclusions

In short, this study shows the relevance of a methodological approach based on the analysis of local labour markets defined by inter-borough travel flows, to analyse large cities such as Chilean capital, Santiago. The criteria and methodological procedures described make it possible to distinguish six labour market zones in the city's Metropolitan Area.

According to the socioeconomic indicators analysed, the greatest differences seen in the city occur in the centre-east zone and other labour markets. Moreover, it was found that the centre-east displays the sharpest social inequalities, which are manifested, among other things, in a high Gini coefficient. In the centre-east zone, numerous inhabitants from the two extremes of the social ranking coexist: the high-level services class and the unskilled manual workers class. The first of these is predominant; so, in terms of social categories, this zone is the most polarized of all. Consequently, social inequality in the city of Santiago is eminently spatial, and fundamentally reflects the heterogeneity of the centre-east zone, and the differences between this and the city's other labour market zones. The social inequalities existing in the other zones are more moderate and determined by the high proportion of members of the manual workers class living in them, except for the south-west, where there is a larger presence of middle-income strata corresponding to the low-level services classes, and high- and low-level manual routine occupations.

The conclusions set forth confirm the relevance of applying a territorial approach based essentially on the configuration of labour market zones, to the study of social inequalities in a metropolitan area. Labour markets shape geographic inequalities in the city of Santiago, which are expressed spatially through substantial differences between zones in terms of income, access to education and the composition of the social classes. Mechanisms of social distinction and subjective factors related to cultural and social capital also operate within the zones. In the case of Santiago, the spatial nature of the inequalities is manifested twice over, both between the metropolitan space as a whole and the rest of the country and also within the city, consisting of various local labour market zones. This conclusion affords a better understanding of urban spaces, since the analysis performed shows that labour market zones are characterized by a socioeconomic and social class configuration, and not only as sociodemographic phenomena linked exclusively to the place of residency and work-related journeys.

This article provides specific elements to help understand the city of Santiago, particularly in relation to under-studied aspects of the formation and transformation of the socio-territorial structure. The marked differences that exist between labour market zones show that Santiago is a city in which several cities seem to coexist. To some extent, the social differences between the various zones of Latin American metropolitan areas and other regions are habitual; the novelty of the analysis presented in this article is the application of a method for defining and describing those urban spaces, based on which one can discern that the trajectory of the social classes in the labour market zones of Santiago, over the last decade, tends to accentuate and consolidate the social differences displayed in the city, instead of reducing them. A consideration of the specifics of the zones makes it possible to apply the concept of "city of cities," evoked by Nel.Lo (2002) to refer to Barcelona, and expand it from a perspective related to the socio-spatial configuration of a large cities such as Santiago.

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