

ORIGINAL ARTICLE

Regional Growth and the Persistence of Regional Income Inequality in Argentina in the First Half of the Twentieth Century

María Florencia Aráoz¹ and Esteban A. Nicolini^{2*}

¹Centro de Investigaciones Económicas para el Desarrollo Humano, Universidad del Norte Santo Tomás de Aquino, San Miguel de Tucumán; Departament de Història Econòmica, Institucions, Política i Economia Mundial, Universitat de Barcelona and ²Centro de Investigaciones Económicas para el Desarrollo Humano, Universidad del Norte Santo Tomás de Aquino, San Miguel de Tucumán; Departamento de Economía, Universidad Carlos III de Madrid; Instituto de Investigaciones Económicas, Universidad Nacional de Tucumán

*Corresponding author. E-mail: esteban.nicolini@gmail.com

(First published online 14 February 2020)

Abstract

Southern and central regions of Argentina moved from being relatively poor in the sixteenth century to being the richest in the country today. Although there is some evidence of this reversal, the process of regional growth in Argentina in the first half of the twentieth century is, in the main, unknown. In this paper, we present an estimation of the GDPs of Argentina's 25 provinces in 1914: this is the first consistent estimation of this variable for any period before the 1950s. Our results confirm that in 1914 the city of Buenos Aires and some districts in Patagonia had the highest per capita GDP, and a comparison with the available data for 1953 shows strong persistence in incomes per capita in this period; sectoral analysis of provincial GDPs suggests that growth in the leading districts was driven by economies of agglomeration in some cases and land abundance in others.

Keywords: regional development; inequality; Argentina; persistence

Introduction

After several decades of civil war and internal political conflict, economic growth took off in Argentina between 1870 and 1914. This period witnessed the longest

For comments and previous discussions on the topic the authors thank Marc Badia, María Florencia Correa-Deza, Alfonso Herranz, Mauricio Talassino and Henry Willebald. They are also grateful for comments received at the Cuarto Congreso Latinoamericano de Historia Económica in Bogotá (2014) and for seminars at the Universidad de la República (Montevideo) and the Universidad de Barcelona. Esteban Nicolini acknowledges financial support from the Spanish Ministry of Science and Innovation through Project ECO2011-25713 and from the Consejo de Investigaciones de la Universidad Nacional de Tucumán through Subsidy 26/F410. María Florencia Aráoz acknowledges financial support from the Spanish Ministry of the Economy through Project ECO2012-39169-C03-03. Both authors thank the Universidad del Norte Santo Tomás de Aquino (for continuous financial support) and the Argentine Ministry of Science and Technology (for financial support) through PICT 2429-2013.

© Cambridge University Press 2020

and the highest period of growth in Argentine history and was based on the incorporation of productive factors (land, capital and labour) in a context of strong integration into international markets.¹ This process of economic development, with growth rates higher than those of the United States, transformed the country in many aspects and placed Argentina among the ten richest countries in the world.²

After 1914 and, in particular, after the Great Depression of the 1930s, the direction of the country's macroeconomic policies and the pace and nature of its economic development changed dramatically: the level of openness was reduced in terms of both international trade and movement of productive factors, government intervention in the economy increased, and public expenditure and public deficits expanded along with inflation rates; growth rates of per capita income decreased until at least the 1950s.³ In this context, domestic markets become more important, the traditional specialisation in agro-pastoral commodities weakened, and industrial production accelerated in absolute and relative terms.

We know very little about the relative economic performance of the different regions of the country in these periods. The first available consistent estimation of the GDP of the Argentine provinces was for 1953,⁴ and it shows that the Capital Federal (the largest city in the country)⁵ had the third highest GDP per capita in that year. Most of the other high-income districts were in Patagonia and had very low population densities: Tierra del Fuego was the first in terms of per capita income, Santa Cruz the second and Chubut and Río Negro the fourth and the fifth respectively. Historical evidence strongly suggests that this situation was relatively new: from colonial times a slow change took place in the relative economic importance of different regions within the current boundaries of Argentina. In pre-colonial times the mountainous north-west area was the most densely populated and, in the sixteenth century, the most affluent and important within a colonial system which linked it to the mining system in the Alto Perú. From the eighteenth century, the economic supremacy of Potosí and Lima started to be contested by the city of Buenos Aires and its growing involvement in the Atlantic trade.

After the wars of independence and during the period of the first globalisation in the second half of the nineteenth century the Pampa Húmeda ('wet pampa'), with its comparative advantages in agro-pastoral activities, became economically more significant. In the last decades of the nineteenth century, some provinces⁶ in

¹See Roberto Cortés Conde, *La economía política de la Argentina en el siglo XX* (Buenos Aires: Edhasa, 2005), pp. 15–48.

²Angus Maddison, *The World Economy, Vol. 2: Historical Statistics* (Paris: OECD Development Centre, 2006).

³See Pablo Gerchunoff and Lucas Llach, *El ciclo de la ilusión y el desencanto: Un siglo de políticas económicas argentinas* (Buenos Aires: Ariel, 2005), pp. 470–6; Roberto Cortés Conde, *Progreso y declinación de la economía Argentina* (Buenos Aires: FCE, 1998).

⁴CFI–ITT, *Relevamiento de la estructura regional de la economía argentina*, 5 vols. (Buenos Aires: Ediciones CFI, 1962, reprint 1965).

⁵The city of Buenos Aires became the federal capital (Capital Federal) of the country in 1880.

⁶These areas were at the time not in fact provinces but 'national territories'. National Law no. 1532 passed in 1884 created nine Territorios Nacionales (Misiones, Chaco, Formosa in the north-east; Pampa, Neuquén, Río Negro, Chubut, Santa Cruz and Tierra del Fuego in the centre and Patagonia); Los Andes, in the north-west, was created in 1900. Almost all of them became provinces in the first half of the 1950s; the only exception was Los Andes, whose territory was distributed between Jujuy, Salta and

Patagonia generated high per capita incomes in activities requiring intensive exploitation of natural resources, such as extensive cattle raising and mining. William Maloney and Felipe Valencia Caicedo confirm this long-run process of reversal in Argentina using correlations across provinces between income per capita today and population density – as a proxy for productivity – in pre-colonial times.⁷ However, the timing and the causes of this reversal are not precise: was it caused by changes in colonial regulations in the eighteenth century? Or by Argentina's growing involvement in the Atlantic trade in the nineteenth century? Or, maybe, by dramatic change in the economic policies of the second third of the twentieth century? Although some evidence suggests that many important changes in the relative positions of the regions took place during the nineteenth century,⁸ lack of comparable data makes impossible any precise assessment of the levels of regional development for any period before 1950.

In this paper, we present an estimation of the economic structure and the GDPs of the 14 provinces, the city of Buenos Aires and the ten national territories existing in 1914 in Argentina (25 districts). This year is particularly relevant because it marks the beginning of a significant change in the Argentine economy, from export-led to inward-looking state-led industrialisation that characterised the central decades of the twentieth century. Our results show that already in 1914, as in 1953, most of the population and the economic activity of the country were concentrated in the province and city of Buenos Aires. Regarding per capita income, we observe a firm persistence of the relative positions of the provinces in the ranking between 1914 and 1953; some districts in Patagonia (Tierra del Fuego and Santa Cruz), together with the Capital Federal, were the richest both in 1914 and 1953, while most of the provinces in the north of the country that were relatively poor in 1953 were already lagging at the beginning of the twentieth century. This consistency is remarkable given the different levels of openness, average growth, government intervention and, in general, development patterns prevailing between the two dates. In addition to these findings, we advance the hypothesis that the relative success of the high-income provinces was the result of, on the one hand, the continuation of a long process of growth of the city of Buenos Aires with agglomeration economies arising in the industrial and services sector and, on the other, exceptionally high labour productivity in Patagonia related to low population density and abundant natural resources that emerged well before the expansion of mining activities in the central decades of the twentieth century.

The rest of the paper is organised as follows: in the next section, we provide a short account of the theoretical reasons for economic persistence or reversal and discuss

Catamarca. Argentine Patagonia, organised into the national territories of Río Negro, Neuquén, Chubut, Santa Cruz and Tierra del Fuego, covered a vast area, encompassing around 28 per cent of the total national territory, according to República Argentina, *Tercer Censo Nacional de la República Argentina*, 10 vols. (Buenos Aires: Rosso, 1916–17), hereafter *TCN*, Vol. 1, p. 58. See Map A.1 in the [on-line appendix](#) (accessed via the 'Supplementary Materials' tab).

⁷William Maloney and Felipe Valencia Caicedo, 'The Persistence of (Subnational) Fortune', *The Economic Journal*, 126 (2015), pp. 2363–401.

⁸Carlos Newland, 'Economic Development and Population Change: Argentina 1810–1870', in J. Coatsworth and A. Taylor (eds.), *Latin America and the World Economy since 1800* (Cambridge, MA: Harvard University Press, 1999).

some of the relevant hypotheses and evidence for Latin America and Argentina. Then we present the available estimations of national GDP and some previous estimations of provincial income per capita for the period under consideration. The following two sections describe the methodology and data and present the results of our estimations for 1914 and the comparison with the available figures for 1953. Finally, we draw our conclusions. The [on-line appendix](#) provides some ancillary information.

Persistence, Reversal and Evolution of Argentina's Economy and its Regions in the Long Run

At least three different theoretical hypotheses can be proposed to explain regional growth and the patterns of persistence of or reversal in per capita incomes in Latin America and Argentina in the long run. Probably the most important is the distribution of locational fundamentals based on geographic characteristics, like latitude, access to the coast or abundance of natural resources, such as mining or fertile land. Where regions specialise in the production of goods intensive in natural resources, regional differences in productivity are shaped by the relative abundance of those natural resources. For instance, temperate regions with high-quality land will generate higher per capita income than those with worse land in tropical regions.⁹ Of course, if purely geographic characteristics were the primary determinant of economic development, persistence would be the natural outcome.

Given that rich regions can decline and previously backward regions flourish, we can posit a modified geography hypothesis: geographic characteristics influence income per capita by interacting with a set of technological characteristics and relative prices. That is, a natural resource or a geographic advantage can be crucial for the production of a particular set of goods with a particular technology, but it can be irrelevant in a different context.¹⁰ The commodity export boom in Latin America in the second half of the nineteenth century is an example of how certain regions exploited comparative advantages after a reduction in transportation costs and a change in relative prices.¹¹

The process of regional growth can also be affected by agglomeration economies arising when transportation costs, increasing returns and/or spill-overs induce producers to locate close to each other. If there are significant agglomeration economies at different points of a geographic space, the spatial distribution of income is shaped by the initial relative concentration of economic activity, population and market size. For instance, if there is an initial, possibly randomly located, cluster of producers with high productivity in a city and they are influenced by increasing returns, network effects and positive spill-overs, the potential new producers will choose to locate within or close to the cluster reinforcing the effect and, all other things being equal, increasing regional differences in income per capita.¹²

⁹John Luke Gallup, Jeffrey D. Sachs and Andrew D. Mellinger, 'Geography and Economic Development', *International Regional Science Review*, 22 (1999), pp. 179–232.

¹⁰Jeffrey D. Sachs, 'Tropical Underdevelopment', NBER working paper no. 8119 (2001), accessible at <https://www.nber.org/papers/w8119> (last access 1 Aug. 2019).

¹¹Victor Bulmer-Thomas, *The Economic History of Latin America since Independence* (Cambridge: Cambridge University Press, 2014).

¹²Paul Krugman, *Geography and Trade*, Vol. 1 (Cambridge, MA: MIT Press, 1991).

Finally, different institutional frameworks have also been suggested as an explanation of the variability of income per capita across regions and its evolution across time. Daron Acemoglu and co-authors have proposed that a reversal in income per capita took place among the areas colonised in the fifteenth and the sixteenth centuries (Latin America among them). Before colonisation, incomes were positively correlated with population density, and high pre-colonial population density was linked to higher inequality and extractive institutions.¹³ In the nineteenth century, when secure property rights were a pre-condition for growth, high-density regions experienced lower economic growth.¹⁴

Many changes in the relative economic importance of regions in South America since colonial times are related to the expansion of and decline in mining activities around the city of Potosí. In the sixteenth century, a vast economically integrated space – from Ecuador to the north of Argentina and Chile – was articulated around the demand generated by the extraordinary economic and demographic expansion of the area surrounding the silver deposits of Potosí.¹⁵ The north-west of Argentina, which specialised in the production of mules for transportation, food, and low-quality textiles, was more important and productive in this period than the marginal plains close to the River Plate. In the eighteenth century, Buenos Aires started gradually to gain importance as a commercial port within the expanding Atlantic trade and, afterwards, as the capital of the Viceroyalty of Río de la Plata.¹⁶ Under the Spanish colonial system, imports within the Atlantic trade were limited and regulated, and the growing city of Buenos Aires increased demand for the production of the Interior (centre and north-west: Andean provinces of Mendoza, La Rioja and Catamarca; central provinces of Córdoba and Santiago del Estero; northern provinces of Tucumán, Salta and Jujuy) and started to compete with Potosí.¹⁷ The wars of independence at the beginning of the nineteenth century resulted in the collapse of the economic networks based around Potosí, and the different provinces of contemporaneous Argentina engaged in a long period of civil wars between the Interior, the Litoral (mainly Santa Fe and Entre Ríos) and the province and city of Buenos Aires. The characteristics of trade policy (protectionism vs. free trade) and the administration of customs revenues were the major issues at stake within an economy that was increasingly oriented towards the Atlantic trade.¹⁸

After the end of the civil wars, the economic evolution of Argentina until 1914 provides an archetypical example of rapid income growth based mainly on the

¹³Daron Acemoglu, Simon Johnson and James A. Robinson, 'Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution', *Quarterly Journal of Economics*, 117: 4 (2002), pp. 1231–94.

¹⁴Kenneth Sokoloff and Stanley Engerman agree in several respects with the previous argument but they propose that 'factor endowments' of a particular region were crucial in defining the initial level of inequality prevailing and the kind of institutions that were adopted in that region. See Kenneth L. Sokoloff and Stanley L. Engerman, 'Institutions, Factor Endowments, and Paths of Development in the New World', *Journal of Economic Perspectives*, 14 (2000), pp. 217–32.

¹⁵Carlos Assadourian, *El sistema de la economía colonial* (Lima: IEP, 1982).

¹⁶Manfred Kossok, *El virreinato del Río de la Plata* (Buenos Aires: Hyspamérica, 1986).

¹⁷Silvia Palomeque, 'La circulación mercantil en las provincias del interior, 1800–1810', *Anuario IEHS*, 4 (1989), pp. 131–210.

¹⁸Newland, 'Economic Development and Population Change'.

exploitation of abundant fertile land and comparative advantages in the production of primary goods (wool, meat, cereals) for international markets. The expansion of available productive land in the south of the country was gradually complemented by an increase of labour supply through European migration (mainly Spaniards and Italians) and the expansion of productive capital through a significant inflow of foreign investment.

The east-central part of the country, sometimes known as the Pampa Húmeda (including mainly the provinces of Buenos Aires and Santa Fe, and some areas of Entre Ríos, Córdoba and La Pampa), was the epicentre of the expansion in livestock and cereal production. Technological changes in the meat refrigeration sector increased the relative value of cattle production and displaced sheep-raising to the south; after the Conquista del Desierto ('Conquest of the Desert', the military campaign to establish Argentine dominance over Patagonia) towards the end of the nineteenth century, sheep raising became the predominant economic activity in the large haciendas of Patagonia.¹⁹ In this period, most of the provinces of the north languished because their artisanal manufacturing could not compete with cheaper imports.²⁰ The regional balance changed and the city of Buenos Aires consolidated its position as the most important urban centre of the country. Secondary and tertiary sectors nationwide also expanded before the First World War, but at a slower pace. The growth in manufactures was mainly concentrated in the sectors processing local raw materials for both exports (chilled meat and grain processing) and domestic consumption (food and beverages), with a high concentration in the city of Buenos Aires. In 1914 these sectors accounted for 42 per cent of total industrial production.

This model of economic development changed after the First World War and even more so after the worldwide recession of the 1930s. With the globalisation backlash, the international flow of goods, services and productive factors shrank. In Argentina, economic growth decelerated, and the country responded to the international context with increased levels of public intervention in the economy, higher tariffs, stimulation of the industrial sector and import substitution policies. In 1936 Argentina already had the second largest industrial sector in South America (in relative terms) encompassing not only the traditional sectors of food processing (cereal mills, meat processing plants) but also many sectors oriented to the internal market (textiles, metals, electrical).²¹ The process of industrial growth, mainly located in the city of Buenos Aires and its industrial belt, went hand in hand with an acceleration in urbanisation and rural-urban migration, and reinforced the regional imbalance between Buenos Aires and the rest of the provinces that had started in the previous century.²² The 1953 estimations,

¹⁹Eduardo Míguez, 'La gran expansión agraria (1880–1914)', in Academia Nacional de la Historia (ed.), *Nueva historia de la nación argentina*, Vol. 6: *La configuración de la república independiente (1810–c.1914)* (Editorial Planeta, 2001), pp. 101–28.

²⁰See Viviana Conti, 'Espacios económicos y economías regionales. El caso del norte argentino y su inserción en el área andina en el siglo XIX', *Revista de Historia*, 3 (1992), pp. 27–40, available at <http://revele.uncoma.edu.ar/htdoc/revele/index.php/historia/article/view/812> (last access 31 July 2019).

²¹Gerchunoff and Llach, *El ciclo de la ilusión y el desencanto*, p. 142.

²²Claudio Belini, 'Industrial Exports and Peronist Economic Policies in Post-War Argentina', *Journal of Latin American Studies*, 44: 2 (2012), pp. 285–317.

mentioned in the Introduction, suggest that in this year the city of Buenos Aires accounted for more than 19 per cent of the national population and that this district – together with some provinces in Patagonia (Tierra del Fuego, Santa Cruz and Chubut) – was the richest in per capita terms.

The only formal analysis of the historical process of the long-run changing regional patterns of development in Argentina is that by Maloney and Valencia Caicedo.²³ They explored the hypotheses of persistence and/or reversal of fortunes in the Americas at the subnational level in the long run (from the fifteenth to the twentieth century) and found that, within countries, persistence was the norm and that population density and per capita income in 2000, measured at the subnational unit, were strongly and robustly correlated with pre-colonial population density. However, Argentina is one of the two countries – the other is Chile – where significant reversals can be observed. The authors confirm that the north of Argentina, with relatively low per capita income today, was the most densely populated region before colonisation, while the wealthiest areas in Argentina in the twentieth century, in the centre and the south of the country, had low pre-colonial population density.²⁴ They suggest that the observed reversal can be mainly explained by the increasing importance of the city of Buenos Aires after the eighteenth century, the emergence of the previously low-population density region of the Pampa Húmeda as a significant exporter of agro-pastoral goods in the nineteenth century, and the specialisation of some Patagonian provinces in mineral activities in the second part of the twentieth century.

Previous Estimations of National and Provincial GDPs in Argentina

There are two principal independent estimations of the level of national GDP for 1914 in Argentina: the first was devised by the Comisión Económica para América Latina (Economic Commission for Latin America, CEPAL), which generated a GDP series for the period 1900–55, using information from a previous empirical work published by the Secretaría de Asuntos Económicos (Secretariat of Economic Affairs, SAE), and takes 1950 as the base year.²⁵ The second was proposed more recently by Roberto Cortés Conde, with data covering the period 1875–1935, using 1914 as the base year; it generates slightly higher growth rates for the period before 1930.²⁶ Later, both Orlando Ferreres and Gerardo della Paolera *et al.* generated new GDP series for this period, but these are, in one way or another, based on the CEPAL or Cortés Conde estimates.²⁷ The four series, although not

²³Maloney and Valencia Caicedo, 'The Persistence of (Subnational) Fortune'.

²⁴In this context, the high level of economic activity in the Andean region of Argentina related to the colonial system organised around Potosí seems to be a continuation of the pre-colonial pattern of prosperity. See Assadourian, *El sistema de la economía colonial*.

²⁵CEPAL, *El desarrollo económico de la Argentina* (Santiago de Chile: CEPAL, 1958); Secretaría de Asuntos Económicos, *Producto e ingreso de la República Argentina: En el período 1935–54* (Buenos Aires: G. Kraft, 1955).

²⁶Roberto Cortés Conde, 'Estimaciones del Producto Bruto Interno de Argentina 1875–1935', Mimeo, Departamento de Economía, Universidad de San Andrés, Buenos Aires, 1994.

²⁷Gerardo della Paolera, Alan M. Taylor and Carlos G. Bózzoli, 'Historical Statistics', in Gerardo della Paolera and Alan M. Taylor (eds.), *A New Economic History of Argentina* (Cambridge: Cambridge

exactly coincident, generate a quite similar picture of the trend of per capita income in Argentina in that period: vigorous growth between 1880 and 1914, a deceleration between 1914 and 1930.

At the provincial level, the first set of consistent estimations of economic activity was provided by the Consejo Federal de Inversiones (Federal Investment Council, CFI), an inter-provincial public institution created in 1959, which, in collaboration with the Instituto Torcuato di Tella (ITT), proposed the first official estimation of GDP in the provinces of Argentina for the years 1953, 1958 and 1959. The estimations are disaggregated and extremely detailed. They use the 'value added by sector' approach for 14 major sectors of economic activity in each province. The methodology to calculate the value added by sector, per province, is (1) direct calculation of the gross value of production minus intermediate consumption (raw materials, fuels, energy, etc.) and (2) distribution of national totals using an appropriate distributor. For instance, the values for the agricultural and livestock production sectors are estimated using the value added method while those for transport are calculated by distributing the total national figure.²⁸ Even though the methodology and sources are different from those we use in our study, the CFI-ITT make it clear that their estimation ('gross geographical product at factor cost')²⁹ is equivalent to the gross remuneration of all the productive factors used in the corresponding territory,³⁰ which is the approach we follow in our estimation. In this sense, the results seem to be comparable to ours.

We have almost nothing for any period before the middle of the twentieth century. Although there are some recent reconstructions of macroeconomic variables for some Argentine provinces in the nineteenth century, these are not strictly comparable because the methodology applied in each case was different.³¹ This lack of reliable and consistent estimations of the level of economic activity in the provinces before the middle of the twentieth century has pushed some researchers to use imperfect proxies for testing their hypotheses. For instance, Lucas Llach used the level of public expenditure as a proxy for income per capita at the end of the

University Press, 2003), pp. 376–85; Orlando J. Ferreres and Fundación Norte y Sur (eds.), *Dos siglos de economía argentina: Edición bicentenario 1810–2010: Historia argentina en cifras* (Buenos Aires: El Ateneo, 2010).

²⁸The methodology is specific to each sector and – in many situations – to different parts of each sector. The description of the methodology and sources for these estimations encompasses 80 pages (CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, pp. 247–327).

²⁹The CFI-ITT's equivalent to Argentine provincial GDP is called the 'Producto Bruto Geográfico' (Gross Geographical Product, PBG). The main difference between GDP and PBG is the unit of observation for measuring economic activity. In Argentine official statistics, when economic activity is measured for a sub-national unit, the value added is directly assigned to the productive unit according its geographic location. In this article we will use the English acronym GDP, following Joan Ramón Rosés *et al.* in respect of Spanish regions: Joan Ramón Rosés, Julio Martínez-Galarraga and Daniel A. Tirado, 'The Upswing of Regional Income Inequality in Spain (1860–1930)', *Explorations in Economic History*, 47 (2010), pp. 244–57.

³⁰CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 250.

³¹For Mendoza, see Luis A. Coria, 'El PBG de Mendoza para 1914. Algunos aspectos metodológicos', XXI Jornadas de Historia Económica – Asociación Argentina de Historia Económica, Universidad Tres de Febrero, Caseros, Buenos Aires, 23–6 Sept. 2008 and, for Salta, Eduardo Antonelli, Gastón Carrazón Mena and Fernando Romero, *La economía de Salta. Entre finales del siglo XIX y comienzos del siglo XX* (Salta: Enfoques Alternativos, 2011).

nineteenth century, while Jorge Gelman relied on a very imperfect measure of wealth to derive inferences on regional inequality in the middle of that century.³²

Methodology and Data for Estimating Provincial GDPs in 1914

The most usual approach to calculate regional (or provincial) GDP in historical contexts is that proposed by Frank Geary and Tom Stark for the United Kingdom (which at the time included Ireland) between 1861 and 1911, based on the identification of a set of variables that can be used as predictors of the level of value added. In particular, they chose employment and sector-specific productivity, assuming that sector-specific wages capture such productivity.³³ There are many estimations of regional GDP in historical contexts based on the Geary and Stark methodology.³⁴

In this paper, we present an alternative approach to the calculation of several macroeconomic variables, including provincial GDP, for the 25 districts of Argentina in 1914; our methodology is based on the identity between GDP and the sum of the returns to productive factors (labour, land and capital). In order to calculate the value added in each province, we use the income approach to GDP and the identity between the sum of the added values and the sum of the returns to the productive factors. In particular, we will assume that the provincial GDP (Y) for each province will be:

$$Y = \sum_{i=1}^N L_i w_i + [r_A K_A + r_C K_C + r_I K_I + r_S K_S] + [q_A T_A + q_C T_C] + s_C C \quad (1)$$

The first term on the right-hand side of the equation is the remuneration to labour that is equal to the sum of all the wages paid to workers across the N different occupations. The second term in brackets encompasses the rents (r) paid to physical capital (K) in agriculture (A), livestock production (C) and in establishments in industry (I) and services (S). The third term, also in brackets, is the rent (q) paid to land (T) in agriculture and livestock production; and the last term is the flow of income generated by livestock (C). In this equation we allow the rate of return to differ between sectors.

Sources

The primary source on which we based our research was the *Tercer Censo Nacional de la República Argentina (Third National Census of the Argentine Republic, TCN)*,

³²Lucas Llach, 'The Wealth of the Provinces: The Rise and Fall of the Interior in the Political Economy of Argentina, 1880–1910', Ph.D. dissertation, Harvard University, 2007; Jorge Gelman (ed.), *El mapa de la desigualdad en la Argentina del siglo XIX* (Rosario: Prohistoria, 2011).

³³Frank Geary and Tom Stark, 'Examining Ireland's Post-Famine Economic Growth Performance', *The Economic Journal*, 112: 482 (2002), pp. 919–35; Frank Geary and Tom Stark, 'Regional GDP in the UK, 1861–1911: New Estimates', *The Economic History Review*, 68: 1 (2015), pp. 123–44.

³⁴See Rosés, Martínez-Galarraga and Tirado, 'The Upswing of Regional Income Inequality'; Erik Buyst, 'Continuity and Change in Regional Disparities in Belgium during the Twentieth Century', *Journal of Historical Geography*, 37: 3 (2011), pp. 329–37; Emanuele Felice, 'Regional Value Added in Italy, 1891–2001, and the Foundation of a Long-Term Picture', *Economic History Review*, 64: 3 (2011), pp. 929–50.

taken on 1 June 1914, during the administration of Dr Roque Sáenz Peña.³⁵ Another important source of information was the book *Riqueza y renta de la Argentina*, by Alejandro Bunge;³⁶ it was crucial for allowing us to estimate the value added in agriculture and cattle production. We will provide more detail later about the way we used Bunge's information.

Information about wages came from several sources, mainly (but not exclusively) the *Boletín (Bulletin)* of the Departamento Nacional de Trabajo (National Department of Labour, DNT); these are described in detail below.³⁷

Labour Remuneration

To calculate labour remuneration, we used the TCN. This classified all the workers of each province in one of 436 occupations (so N in Equation (1) = 436) and gives information on the total number of male and female, Argentine and foreign workers in each category. These numbers are L_i in Equation (1). One of the 'occupations' recorded by the TCN is '*Varias y sin especificar*' (Various and unspecified), to which 1,793,661 individuals in Argentina were assigned; we assumed that this figure mainly captures the non-active population.³⁸ The other categories associated with the non-active population were students, the retired, beggars and 'rentiers', for whom we assumed zero income from labour. For categories related to entrepreneurial activities (like *comerciantes*, *industriales*, *hacendados*, etc.) we also have assumed zero income from labour (see the section on 'Entrepreneurial profits' in the [on-line appendix](#) for more details). In total, the active population in Argentina in 1914 was 3,121,091 individuals, and the active population made up 39.5 per cent of the total.

Information about wages comes mainly from:

- (1) A report published by the DNT for 1912, citing wages for around 50 categories from 13 provinces (Buenos Aires, Catamarca, Córdoba, Corrientes, Entre Ríos, Jujuy, La Rioja, Mendoza, Salta, San Juan, San

³⁵From data included in TCN, Vol. 2: *Población (Population)*, we produced the figures for total population and occupational categories. From Vol. 5: *Explotaciones agropecuarias (Agro-Pastoral Establishments)*, we obtained information on land used for agriculture and cattle production. From Vol. 6: *Censo ganadero (Livestock Census)*, we obtained information on livestock and the value of land used for agriculture and cattle production. All the information related to industry and trade and services was obtained from Vol. 7: *Censo de las industrias (Industry Census)* and Vol. 8: *Censo del comercio. Fortuna nacional. Diversas estadísticas (Census of Commerce. National Wealth. Various Statistics)*. Vols. 9 and 10: *Instrucción pública. Bienes del estado (Public Instruction. State Property)* and *Valores mobiliarios y Estadísticas diversas (Transferable Securities and Miscellaneous Statistics)*, provided information on public utilities, ports and hospitals, among others.

³⁶Alejandro Bunge was an economist with a vast working experience in the Labour Department and the National Statistics Office, academic activities in the universities of La Plata and Buenos Aires, and a deep knowledge of the functioning of the Argentine economy. See Alejandro E. Bunge, *Riqueza y renta de la Argentina. Su distribución y su capacidad contributiva* (Buenos Aires: Agencia General, 1917).

³⁷See note 39.

³⁸In their description of this category, the commentators on the census claimed that it included those individuals '... who in each province were without a known occupation, profession or means of livelihood at the time of the census': TCN, Vol. 1, p. 258. Translations from TCN are by the authors.

Luis, Santa Fe and Tucumán).³⁹ The province of Santiago del Estero and the national territories (Los Andes, in the north-west; Chaco, Formosa, Misiones in the north-east; La Pampa in the centre; Neuquén, Chubut, Río Negro, Santa Cruz and Tierra del Fuego in the south) were excluded from the report. In general, the most significant categories in the provinces with the largest populations were included; the active population of these provinces was 2,883,656 while that of the excluded regions was only 237,435.

- (2) For Buenos Aires, we also used wages information for another 90 categories presented in the *Anuario Estadístico (Statistical Yearbook)* published by the DNT in 1916, with information for 1914.⁴⁰
- (3) A DNT report with wages for some categories in the national territories of Misiones and La Pampa.⁴¹

From the information above we assigned wages to 1,628,918 individuals in the 13 provinces listed in (1) above and two national territories (La Pampa y Misiones). This represented 52.19 per cent of the active population in the country.

We do not have direct information for the provinces of Santiago del Estero, Chaco, Formosa, Neuquén, Chubut, Santa Cruz, Tierra del Fuego and Los Andes. The total active population in these provinces was only 182,321 individuals (5.8 per cent of the total active population in the country). For these provinces, we assigned wages similar to those in the closest and/or the most similar province in geographic terms for which we had information. In particular:

- (4) We have used wages from Catamarca (the province of the north-west with the lowest average salary) for Santiago del Estero and Los Andes.⁴²
- (5) For the five Territorios Nacionales in Patagonia (Neuquén, Chubut, Río Negro, Santa Cruz and Tierra del Fuego) we used a proportion of the wages in La Pampa. This proportion is from a DNT report for 1907 with reports of wages for labourers (*peones*) in La Pampa and four of the national territories (excluding Neuquén).⁴³ The details of the process are in the [on-line appendix](#).
- (6) For San Luis, we used wages similar to those in Córdoba. (Wages for the categories of casual labourer (*peón-jornalero*), carpenter, tinsmith, building worker and blacksmith (the most significant categories in general) in the two provinces were very similar.)⁴⁴

³⁹Departamento Nacional del Trabajo (DNT), *Boletín del Departamento Nacional del Trabajo* no. 25 (Buenos Aires: DNT, 1913), pp. 1084–93.

⁴⁰DNT, *Anuario Estadístico del Trabajo* (Buenos Aires: Talleres Gráficos A. de Martino, 1916), pp. 111–65.

⁴¹DNT, *Boletín* (1913), p. 1094.

⁴²The Territorio de Los Andes was located in the west of the provinces of Salta, Catamarca and Jujuy, in the Puna area. This is very arid land and most of its economic activity was based on primary low-productivity activities.

⁴³DNT, *Boletín del Departamento Nacional del Trabajo*, no. 3 (Buenos Aires: DNT, 1907), p. 369.

⁴⁴According to DNT, *Boletín* (1907), pp. 360–9, which reported on wages in several provinces in 1907.

To impute a wage to the remaining categories in all the provinces we classified them in four groups of workers according to the skill required and extrapolated known wages of workers in each category to the workers with missing wages in the same category.⁴⁵ The details of this process and other methodological decisions to complete the data on wages and workers are presented in the [on-line appendix](#).

Capital Used in Industry and Services

We include in the secondary (industrial) sector all activities associated with the transformation of food and raw materials through industrial processes and other activities, like building, energy, iron and steel making, textiles, etc. The tertiary sector includes commercial activities, transportation, financial services, insurance, education, etc.⁴⁶

The capital stock for each of the sectors mentioned in the previous paragraph was obtained directly from the *TCN* volumes relating to industry and commerce. The capital stock used in industry included both fixed capital (building, land, machinery and implements) and working capital (all the material used in the process of production).⁴⁷ The branches of activity included in the *TCN* were: general industries, mills, salting factories, wine and beer factories, sugar mills, distilleries, gas factories and electric light plants. In order to account for differences between sums declared for individual assets and total capital investment, one of the *TCN*'s commentators stated: 'Under no circumstances should the capital sums imputed to industrial production be considered exaggerated; on the contrary, they should be considered to be under-reported by 30 per cent.'⁴⁸ With this statement in mind we increased total capital in the secondary sector by 43 per cent.⁴⁹

In the services sector the underestimation of the capital stock for food, clothes and toiletries, teaching, building⁵⁰ and transport seems to be even more significant than in the case of industry, and the *TCN* figures should be increased

⁴⁵The determination of the required skill was based on the definitions of the tasks involved in each plus contemporary descriptions of the kind of jobs, plus (and mainly) common sense. The list of the 436 categories and their assumed respective level of required skill is available from the authors upon request.

⁴⁶The value added of the government sector was calculated, as is usual, from the sum of the wages of all public servants.

⁴⁷*TCN*, Vol. 7.

⁴⁸*Ibid.*, p. 48.

⁴⁹If the declared capital was 70 per cent of the actual capital, we need to multiply by $1/(0.7)$ to arrive at the actual capital. We followed two strategies to check if this multiplier was reasonable. The first was to look for an alternative source to confirm the level of under-registration mentioned by the census officials. Analysis by an expert on historical Argentine GDP (Coria, 'El PBG de Mendoza para 1914') suggests that a rough but reasonable approximation of the magnitude of under-registration in the industrial sector is given by the difference between the number of workers declared by the owners of the firms in each economic sector or sub-sector (*TCN*, Vol. 7) and the number of individuals declared to be working in that particular sector or sub-sector (from the household survey, *TCN*, Vol. 4, *Población*). Following these criteria, we confirmed significant levels of under-registration (49 per cent) in the industrial sector. The second strategy was to simulate alternative estimations with different levels of under-registration (from 0 to 49 per cent): these confirmed that none of the qualitative results in this paper was affected.

⁵⁰This was not building activity *per se* but the sale of inputs and raw materials for the building process.

by 100 per cent.⁵¹ The *TCN*'s commentator said: 'The same problems as those observed in the 1895 Census, i.e. an under-declaration of capital, which the Census estimated at 50 per cent, must have existed in 1914, because always, and everywhere, even in the countries most used to this type of research, declared capital, both in trade and in industry, is lower than actual.'⁵² We also considered capital stock in railways, tramways, ports, public utilities, printing and hospitals.⁵³

To calculate $r_I K_I + r_S K_S$, which is the contribution of capital in secondary and tertiary sectors to total output, we used a rate of return to capital of 8 per cent, following the *TCN*'s 'Considerations on the Results of the Livestock Census'.⁵⁴

Land and Capital in the Primary Sector

Regarding income from agriculture and pastoral activities, the information used in this paper comes mainly from *TCN*, Vols. 5–6 and Bunge, *Riqueza y renta*. To get the value added generated by land in agriculture, we applied *TCN* data on the quantity of land used in agriculture and yearly rents (in pesos, AR\$) in each province.⁵⁵ In this way, the value added by land in agriculture would be $q_A T_A$, where q_A is the yearly rent and T_A is the land used in agriculture.

In order to estimate the value added by other productive factors (in this case, capital) we used information from the *TCN* on the value of fixed capital (stables, fences etc.) and machinery and implements. Given that the *TCN* did not discriminate between capital in agriculture and capital in pastoral activities, we relied on Bunge, who claimed that one-third of the fixed capital was used in agriculture and two-thirds in livestock production;⁵⁶ regarding machinery and implements, we assumed that 100 per cent was used in agriculture.⁵⁷ The value of capital in agriculture was combined with a rate of return of 8 per cent; the value added by this productive factor was obtained with the formula $r_A K_A$.

⁵¹If the declared capital was 50 per cent of the actual capital, the multiplier required to arrive at the actual capital is $1/(0.5)$. To check the multiplier in the services sector we followed a similar strategy to that for industrial capital (see note 49); the level of under-registration that emerged from the differences in number of workers in services was 53 per cent. Again, alternative simulations in which we increased capital in services from 0 to 100 per cent did not change the relative positions of the provinces' incomes (the results of the simulations are available on request).

⁵²*TCN*, Vol. 8, p. 133.

⁵³Railways: Ministerio de Obras Públicas, *Estadística de los ferrocarriles en explotación*, Vol. 22: Año 1913 (Buenos Aires: Talleres Gráficos del Ministerio de Obras Públicas, 1916); public utilities: *TCN*, Vol. 9, p. 461; tramways: *TCN*, Vol. 10, pp. 429–30; ports: *TCN*, Vol. 9, p. 453; printing: *TCN*, Vol. 9, p. 277; hospitals: *TCN*, Vol. 10, pp. 517–20.

⁵⁴'Consideraciones sobre los resultados del censo ganadero', *TCN*, Vol. 6, p. xlii. The rather conservative underlying assumption here is that entrepreneurs invested in activities whose profitability was at least as high as the alternative provided by the financial system. The resulting figure (around 7 per cent; methodology for obtaining that 7 per cent is available upon request) is consistent with the rate of return on investment in industrial capital and services that can be obtained following the empirical analysis by Yovanna Pineda, 'Manufacturing Profits and Strategies in Argentine Industrial Development, 1904–1930', *Business History*, 49: 2 (2007), pp. 186–210.

⁵⁵Land used: *TCN*, Vol. 5, p. 683; rents: *TCN*, Vol. 5, pp. 752ff.

⁵⁶Bunge, *Riqueza y renta*, p. 74.

⁵⁷*TCN*, Vol. 5, pp. 585–91 provides tables of the value of agricultural machinery and implements per province that gives the same numbers as *TCN*, Vol. 6, p. xlvi (table with values for agriculture and livestock production combined).

Bunge suggested that the yearly value added in livestock production was equal to 15 per cent of the value of the livestock.⁵⁸ Given that the *TCN* provided the total value of the livestock for each province,⁵⁹ it was possible to calculate the value added by livestock production in each province. However, this would not be equal to $r_C K_C + q_C T_C + s_C C$ in Equation (1) because the number provided by Bunge included the return to labour. Unfortunately, it was not possible to discount the value added by labour in livestock production (obtained from our estimation of the value added by labour and described in an earlier sub-section) because there were many occupations in the *TCN* classification that included workers from both agriculture and livestock production.⁶⁰ Bunge made it clear that, once the return to capital and land was discounted, one-third of the remaining return went to labour and two-thirds was the economic return of livestock.⁶¹ So, by calculating the value added of land and capital, it was possible to arrive at the combined value added by both labour and livestock as a residual and then to use the one-third/two-thirds shares suggested by Bunge to obtain the return to each.

The total return to land in cattle production ($q_C T_C$) was obtained using the value of land rents per hectare (in pesos, AR\$) and the quantity of land. The quantity of land was obtained from the total quantity of animals of each kind in each province⁶² and technical equivalence coefficients for the ratio of livestock and land.⁶³

The value added by capital was calculated using the total value of capital in agropastoral establishments and, as we mentioned before, following Bunge (two-thirds share to pastoral establishments). The rate of return of this capital, according to Bunge, was 4 per cent.⁶⁴

From the two previous paragraphs, we obtained $q_C T_C$ and $r_C K_C$. The value $s_C C$ was obtained by subtracting these two values from the total value added in agriculture and multiplying the result by two-thirds (in order to discount the value added by labour).

Results

The Relative Affluence of the Provinces in 1914

Combining all the information above we obtained a total national GDP of AR\$4.2 billion (1914 values), more than half of which was contributed by the Capital Federal and Buenos Aires (Table 1); Santa Fe represented 12.7 per cent, Córdoba

⁵⁸Bunge, *Riqueza y renta*, p. 47.

⁵⁹*TCN*, Vol. 6, p. 17.

⁶⁰This is particularly true in the case of *peones* and *jornaleros*.

⁶¹Bunge, *Riqueza y renta*, p. 74.

⁶²*TCN*, Vol. 6, p. 3.

⁶³The equivalent coefficients are provided by Danilo Astori in respect of Uruguay in the central decades of the twentieth century; they indicate the quantity of land required to raise a unit of each kind of livestock. Danilo Astori, *La evolución tecnológica de la ganadería uruguaya 1930–1977* (Montevideo: Banda Oriental, 1979).

⁶⁴Bunge, *Riqueza y renta*, p. 74. This rate of return is different from that assumed for capital in the secondary and tertiary sectors (8 per cent). Given that the assumptions arise from Bunge's expert assessment in these sectors, we preferred to stick to his opinion. If we reduce the rate of return in the secondary and tertiary sectors to 4 per cent, the levels of GDP in each province diminish slightly but the relative positions of the provinces remain basically the same.

8.6 per cent and Entre Ríos 4.2 per cent, all of them in the centre region of the country. Providing a minor contribution were the provinces of Tucumán in the north (3 per cent) and Mendoza in the west (2.9 per cent).

The emergence of the conglomerate of the Capital Federal and Buenos Aires as the main centre of the economic development in Argentina was complete by 1914. The regions of the Interior, allegedly more important in the colonial period, had lost much of their relative affluence by the beginning of the twentieth century. While the province of Buenos Aires had the largest areas of agricultural production and the most extensive cattle stocks in the country, the Capital Federal accounted for 31 per cent of total capital in manufacturing and 50 per cent of total capital in commerce.

Our approach generates an estimation of the national GDP per capita of AR \$530, relatively close to the figure of AR\$572 estimated by Cortés Conde.⁶⁵ This correspondence is remarkable given that the methodology used for our estimation is very different from that used in previous approaches.⁶⁶

To calculate the share of each economic sector (primary, secondary and tertiary) in the GDP we need to define the economic sector of each factor of production. This is trivial for land and livestock which are, by definition, in the primary sector. When providing the value of capital, the *TCN* was very specific as to whether it belonged to the primary, secondary or tertiary sectors. In the case of labour, the *TCN* classified the list of occupational categories into 16 groups which, in most cases, could be easily assigned to a specific economic sector. The notable exceptions were the categories *jornaleros* and *peones*, which were in the group 'General designations without indication of a specific profession'. To solve this problem, we assumed that the total amount of wages in each sector was proportional to the relative value added generated by capital, land and livestock in the sector.

With this methodology, we were able to apportion the GDP of each province to the primary, secondary and tertiary sectors (Table 2). At the national level, the relative size of each sector is quite similar to that obtained by Cortés Conde,⁶⁷ with 33.9 per cent of value added in the primary sector, 28.4 per cent in the secondary and 37.7 per cent in trade and services. Most of the capital in industry was in the Capital Federal and Buenos Aires (31 and 26 per cent of the total national value of capital in industry, respectively); the most important sub-sectors within the industrial sector were food processing and energy production. Food processing accounted for 39 per cent of the total capital in the industrial sector in Buenos Aires and 14 per cent in the Capital Federal; in Tucumán, Mendoza, San Juan and Jujuy the capital invested in the food processing sub-sector was more than 70 per cent of the capital in the secondary sector.⁶⁸ The provinces with the largest secondary sectors were Tucumán and Mendoza (Table 2). In the case of Tucumán the size of the industrial sector was linked to sugar mills, and in Mendoza the most important industry was wine production.

⁶⁵Cortés Conde, 'Estimaciones del Producto Bruto Interno', p. 20.

⁶⁶If labour income were imputed to the individuals classified as entrepreneurs following the criteria defined in the section 'Labour Remuneration' (above), the national average GDP would be AR\$616.

⁶⁷Cortés Conde, 'Estimaciones del Producto Bruto Interno', p. 17.

⁶⁸These figures are the authors' results based on the data used for calculating the GDPs.

Table 1. Argentina: Regional Aggregate and Per Capita GDP in 1914 and 1953

	1914					1953		
	Aggregate GDP ^a	Share	Per capita GDP ^b	Ranking per capita	Pop. density	Per capita GDP ^c	Ranking per capita	Pop. density
Capital Federal	1,083,949	25.9%	687.87	3	8512.4	10,155	3	17,516.3
Buenos Aires	1,216,677	29.0%	588.59	6	6.7	7,126	6	17.0
Santa Fe	532,209	12.7%	591.58	5	6.7	6,048	9	54.1
Entre Ríos	178,049	4.2%	418.57	14	5.4	4,254	16	10.5
Corrientes	111,845	2.7%	322.27	22	3.9	3,076	21	6.1
Córdoba	360,575	8.6%	490.07	9	4.4	4,784	11	9.6
San Luis	56,480	1.3%	485.78	11	1.5	3,523	19	2.2
Santiago del Estero	59,736	1.4%	228.28	25	1.9	2,689	23	3.6
Tucumán	125,199	3.0%	376.05	18	14.6	4,360	14	30.0
Mendoza	122,906	2.9%	442.85	13	1.9	6,650	8	4.6
San Juan	40,469	1.0%	339.35	20	1.3	4,462	12	3.5
La Rioja	31,041	0.7%	389.20	16	0.9	2,742	22	1.3
Catamarca	24,056	0.6%	239.63	23	1.3	2,384	24	1.6
Salta	47,633	1.1%	337.99	21	1.1	3,901	18	2.2
Jujuy	35,949	0.9%	469.12	12	1.8	4,953	10	3.7
Chaco	19,465	0.5%	408.48	15	0.5	4,392	13	4.8
Chubut	11,947	0.3%	517.98	7	0.1	9,383	4	0.5
Formosa	9,417	0.2%	488.43	10	0.3	3,964	17	2.0

La Pampa	62,897	1.5%	620.66	4	0.7	6,815	7	1.2
Los Andes	860	0.0%	345.90	19	0.0			
Misiones	12,736	0.3%	237.78	24	1.8	3,146	20	10.3
Neuquén	10,986	0.3%	380.60	17	0.3	4,266	15	1.0
Río Negro	20,833	0.5%	493.18	8	0.2	9,140	5	0.6
Santa Cruz	11,041	0.3%	1109.89	1	0.0	13,463	2	0.2
Tierra del Fuego	2,542	0.1%	1015.09	2	0.1	16,652	1	0.3
ARGENTINA	4,189,499 ^d	100.0%	530.07		2.8	6,536		6.8

Notes: ^a Current 1914 thousands of AR\$.
^b Current 1914 AR\$.
^c Current 1953 AR\$.
^d Totals are rounded.

Sources: Aggregate GDP and per capita GDP for the year 1914: authors' elaboration (see text).

Per capita GDP and population for the year 1953: CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 159 (population), p. 205 (GDP data).

Population density: authors' estimation based on population data from (1914) *TCN*, Vol. 1, p. 58 and (1960) CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 159 and land area: from (1914) *TCN*, Vol. 1, p. 202 and (1960) Dirección Nacional de Estadísticas y Censos, *Censo Nacional de Población 1960*, Vol. 1 (Buenos Aires: Dirección Nacional de Estadística y Censos, 1960), p. 2.

Table 2. Argentina: Sector Distribution of GDP by Region, 1914

	Primary	Secondary	Tertiary
Capital Federal	0.3%	37.7%	61.9%
Buenos Aires	51.5%	21.8%	26.7%
Santa Fe	45.7%	20.7%	33.6%
Entre Ríos	40.8%	27.2%	32.0%
Corrientes	49.6%	25.2%	25.2%
Córdoba	52.3%	24.9%	22.8%
San Luis	54.5%	24.1%	21.4%
Santiago del Estero	51.9%	27.6%	20.4%
Tucumán	17.4%	49.6%	33.0%
Mendoza	18.5%	45.2%	36.3%
San Juan	30.0%	35.1%	34.9%
La Rioja	29.6%	19.0%	51.4%
Catamarca	35.6%	24.7%	39.6%
Salta	34.5%	32.3%	33.2%
Jujuy	36.4%	41.8%	21.7%
Chaco	31.5%	42.2%	26.2%
Chubut	50.7%	11.3%	38.0%
Formosa	56.4%	23.1%	20.5%
La Pampa	71.4%	8.3%	20.4%
Los Andes	60.3%	30.3%	9.4%
Misiones	18.0%	36.2%	45.9%
Neuquén	44.2%	24.4%	31.4%
Río Negro	52.1%	12.1%	35.8%
Santa Cruz	50.7%	15.9%	33.4%
Tierra del Fuego	46.8%	19.2%	34.0%
ARGENTINA	33.9%	28.4%	37.7%

Note: Percentages are rounded.

Source: Authors' elaboration. See text.

The provinces of the Pampa Húmeda (Buenos Aires, Santa Fe, Córdoba and Entre Ríos), with undeniable comparative advantages in cereal and livestock production, had relatively large primary sectors, as did most of the provinces in Patagonia (Tierra del Fuego, Santa Cruz, Río Negro). Regarding the relative importance of the tertiary sector, the Capital Federal stands out with a value added of almost 62 per cent in that sector.

The top positions in the ranking of per capita GDP were occupied by Santa Cruz, Tierra del Fuego, the Capital Federal, La Pampa, Santa Fe and Buenos

Aires (see Table 1). The poorest provinces were Santiago del Estero, Misiones, Catamarca, Corrientes and Salta. By 1914, the north of the country was already relatively backward.

Most of the descriptions of Argentina at the beginning of the twentieth century emphasised the comparative advantage of the cereal-growing and cattle-raising area in the centre of the country, corresponding approximately to the provinces of Buenos Aires, Santa Fe and parts of Córdoba, Entre Ríos and La Pampa. In this context, the relative positions in our results of some provinces like Santa Cruz and Tierra del Fuego in Patagonia are surprising. All the provinces in Patagonia (and Formosa in the north-east) have very low population density (see Table 1) and a comparatively large quantity of livestock per capita, and this explains the high income per capita in Santa Cruz and Tierra del Fuego. In Santa Cruz, income generated only by cattle-raising (excluding wages) was AR\$330.67 per capita, which was higher than the total GDP per capita in provinces like Catamarca and Santiago del Estero. In Tierra del Fuego, income generated from cattle-raising (again excluding wages) was AR\$235.57, while the national average was AR\$61.90 per capita and in Buenos Aires it was AR\$112.75 per capita.

A comparison of the sectoral compositions of the more affluent districts can shed light on the debate about the reasons for the regional disparity in relative incomes. Provinces like Buenos Aires, Santa Fe and La Pampa on the one hand, and Santa Cruz and Tierra del Fuego on the other, derived more than 45 per cent of their GDP from the primary sector: the first group of provinces belongs to the Pampa Húmeda, the traditional area of cereal production and cattle and sheep raising; the second group of provinces is part of Patagonia, whose value added in the primary sector was related not to agricultural production but rather to the specialisation in sheep raising that took place after the Conquista del Desierto.⁶⁹ Although the two groups had different specialisation profiles, high incomes in all these provinces were related in one way or another with a natural comparative advantage arising from land abundance. In Santa Cruz and Tierra del Fuego, mineral activities became important when oil deposits were discovered in the 1940s; oil extraction started in Comodoro Rivadavia (province of Chubut) in 1907, but was negligible until the beginning of the First World War.

The Capital Federal (with the third-highest income per capita and responsible for almost 26 per cent of the total GDP of the country) exhibited an entirely different pattern. This region was an almost purely urban district in which the primary sector accounted for less than 1 per cent of GDP and in which the tertiary sector, where economies of scale were more feasible, produced more than 60 per cent of the value added.

⁶⁹Livestock production, mainly sheep raising, started in Patagonia before the region was incorporated into the national economy in 1884 (Law no. 1532; see note 6). The most common form of productive organisation was large latifundia devoted to sheep raising, with very low population and labour inputs and small and scattered urban centres. See Míguez, 'La gran expansión agraria'; Susana Bandieri, 'La Patagonia: Mitos y realidades de un espacio social heterogéneo', in Jorge Gelman (ed.), *La historia económica argentina en la encrucijada: Balances y perspectivas* (Buenos Aires: Prometeo, 2006), pp. 389–410; Alberto Soriano and José M. Paruelo, 'El pastoreo ovino', *Revista Ciencia Hoy*, 2: 7 (1989), pp. 44–53.

The Evolution of the Regional Pattern of Income per Capita in the First Half of the Twentieth Century

Our estimation not only provides the essential information for understanding the relative affluence of the provinces in 1914, but also opens up the possibility of comparing the 1914 regional distribution of income with that in 1953 and of analysing the regional dimension of the economic changes that took place in Argentina in the first half of the twentieth century. According to the estimations by CFI–ITT, the two districts with the highest GDP per capita in 1953 were Tierra del Fuego and Santa Cruz.⁷⁰ The Capital Federal was in third position, and Chubut and Río Negro in fourth and the fifth positions, respectively; the provinces of Buenos Aires, La Pampa and Santa Fe, representative of the traditional cereal-growing and pastoral production, occupied the sixth, seventh and ninth positions.

Figure 1 shows the relationship between the logs of income per capita of provinces in 1914 estimated in this paper and the log of income per capita in 1953 according to the CFI–ITT. Despite almost 40 years of profound changes in economic structure and policies, the association is remarkable. A simple linear regression between the two variables shows that the log of GDP in 1914 can explain almost 78 per cent of the variance of the log of GDP in 1953, and the elasticity of GDP in 1953 to changes in GDP in 1914 is very close to 1.⁷¹ In Argentina in the first half of the twentieth century, we observe neither reversal nor convergence but, rather, clear persistence. The long process of reversal since colonial times suggested by the historical accounts seems to have been completed by the beginning of the twentieth century, when the city of Buenos Aires and some provinces in Patagonia were already the wealthiest districts in the country.⁷²

A closer inspection of the sectoral composition of the GDP of the three most affluent districts in 1914 and 1953 helps to highlight the different processes involved. In the Capital Federal, in 1953, the primary sector made almost no contribution to GDP (it provided just 0.1 per cent, from fisheries): the secondary sector (manufacturing and building) accounted for 35.8 per cent and the tertiary sector for the remaining 64.1 per cent (mainly trade, government and other services);⁷³ this structure was very similar to that observed in 1914. The economic structure of the province of Buenos Aires changed substantially in the period under consideration: the primary sector accounted for only 22.4 per cent in 1953 (less than half of the contribution 40 years earlier) and between 1914 and 1953 its industrial sector expanded by almost ten percentage points until reaching 31.5 per cent of GDP. Most of the industrial sector was located in the area very close to the boundaries of the city of Buenos Aires, suggesting a process of spill-over of the industrial

⁷⁰CFI–ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 159 (population) and p. 205 (GDP).

⁷¹Given these econometric outcomes, it is not surprising that the standard statistic tests of beta-convergence fail to find any significant evidence that the poorer provinces in 1914 grew faster in the period 1914–53 than the richer ones. See R. Barro and X. Sala-i-Martin, ‘Convergence’, *Journal of Political Economy*, 100: 2 (1992), pp. 223–51.

⁷²Cf. Maloney and Valencia Caicedo, ‘The Persistence of (Subnational) Fortune’, p. 2387.

⁷³We placed trade, transportation and communications, electricity, gas and water, finance, housing, government, and other services in the tertiary sector for 1953: CFI–ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 205.

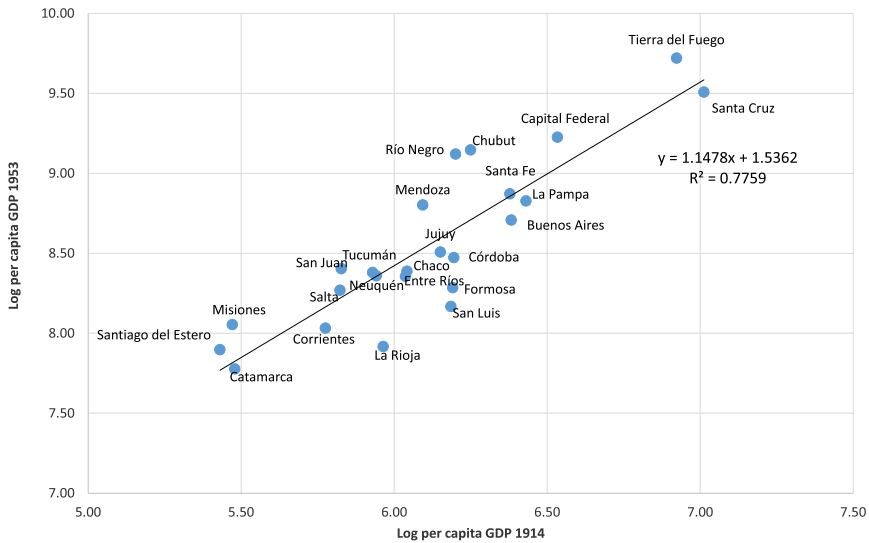


Figure 1. Argentine Provinces: Logs of Income per Capita, 1914 and 1953

Sources: 1914: Authors' elaboration; 1953: CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 159 (population), p. 205 (GDP data).

activity from that district.⁷⁴ Following the process of concentration of the secondary sector in the Capital Federal and its hinterland in the province of Buenos Aires, 75.2 per cent of the national production in manufacturing in 1953 was located in those two districts. At the same time, 39.9 per cent of the value added in the tertiary sector in Argentina was produced in the city of Buenos Aires. The economies of agglomeration and the expansion of the secondary and tertiary sectors already present in 1914 in the Capital Federal not only persisted in that district but even expanded to the province of Buenos Aires and changed its economic structure.

The province of Santa Cruz (the second richest in both 1914 and 1953) seems to provide a clear example of the importance of the abundance of natural resources: in 1953, 46.3 per cent of the provincial GDP came from livestock production and the second most important sector was mining with 11.3 per cent.⁷⁵ In 1914 the primary sector accounted for 50.7 per cent of provincial GDP (Table 2). In 1914, the primary sector in Tierra del Fuego accounted for 46.8 per cent of GDP and most of that came from pastoral production; in 1953, 28.0 per cent of provincial GDP was due to livestock production, and 12.3 per cent came from the fishing sector.⁷⁶

The sector composition of the GDP in the more affluent provinces suggests that their processes of growth did not share a common underlying rationale. In the

⁷⁴The CFI's estimate (*ibid.*) distinguished the GDP of the province of Buenos Aires in the 'Partidos Conurbanos' (i.e. the administrative units bordering on the Capital Federal) from that in the 'Partidos Restantes' (i.e. the remaining administrative units of the province, more distant from the Capital Federal).

⁷⁵CFI-ITT, *Relevamiento de la estructura regional*, Vol. 2, p. 205.

⁷⁶*Ibid.*

Capital Federal and some areas in the province of Buenos Aires, most of the growth took place in the secondary and tertiary sectors, where the emergence of agglomeration economies was more feasible. At the same time, high levels of income per capita in Tierra del Fuego and Santa Cruz – in both 1914 and 1953 – suggest that natural resources (firstly abundant land for sheep raising and then mineral resources) were enough for the retention of an advantageous situation under very different economic conditions.

Conclusions

The present-day regional distribution of income in Argentina seems to be the result of a long process of reversal. While in the first part of the colonial period the northern part of the country was the most important and the richest, in the second half of the twentieth century the city of Buenos Aires and some provinces in Patagonia had the highest income per capita.

Our evidence shows that these relative positions were already defined in 1914 and that the first half of the twentieth century was characterised by the persistence of relative positions of income per capita; the long-run process of reversal had already been completed by the beginning of the twentieth century.

Within the set of the leading districts in both 1914 and 1953 the productive profiles differ: the provinces of Patagonia, incorporated into the national market only in the last decades of the nineteenth century, at the beginning based their growth on extensive sheep raising and, after the 1930s, on oil production. The very high incomes per capita in 1914 in Patagonia were related to land abundance, low population density and very high labour productivity. In this sense, our results show that the role of these provinces in the process of reversal was related not only to mineral resources after 1930 (as suggested by Maloney and Valencia Caicedo)⁷⁷ but also to high pastoral production in the first decades of the twentieth century.

The increasing importance of the city of Buenos Aires, in the long run, was the result of, first, the expansion of Atlantic trade in the eighteenth century; then its consolidation as the prime commercial and administrative centre in the nineteenth century and, finally, as shown in our estimations, by the concentration of most of the industrial and services activities in the period of import substitution in the central decades of the twentieth century. Our results indicate that the leading role of the city of Buenos Aires was very well established by the first decades of the twentieth century; in 1914 it contributed more than 25 per cent of total national GDP and had the third highest GDP per capita. Most of the value added in the city of Buenos Aires was generated in manufacturing and services both in 1914 and 1953, suggesting that agglomeration effects played an essential role in this district. Disaggregated information for 1953 also suggests that there were some spill-overs into the areas in the province of Buenos Aires located close to its boundary, producing an expansion in the manufacturing sector in that province.

⁷⁷The Persistence of (Subnational) Fortune.

The provinces in the north of Argentina exhibited the downside of this persistence: they were already comparatively poor in 1914 and continued to lag behind the other regions of the country during the twentieth century. Santiago and Catamarca in the north-west and Misiones and Corrientes in the north-east were in the bottom six positions in both 1914 and 1953.

Regional imbalance in the processes of economic growth and development is a central concern for economic historians, economists and policymakers. Regional inequality seems to be insensitive to changes in macroeconomic strategies, cohesion policies and targeted interventions. In the very long run, Argentina experienced a change in the relative affluence of the regions. However, marked structural change and substantial modifications in the strategic and social priorities of the policymakers, in the role of the public sector, and in the level of integration into the global markets of the first half of the twentieth century did not have a noticeable impact on the geographic pattern of economic development of the country. The high income per capita of some districts in Patagonia and the city of Buenos Aires and the low income per capita of most provinces in the north of the country has been the dominant pattern at least since 1914.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/S0022216X19001299>.

Spanish abstract

Las regiones del sur y del centro de Argentina pasaron de ser relativamente pobres en el siglo XVI a ser de las más ricas del país hoy en día. Aunque hay alguna evidencia empírica de este cambio, el proceso del crecimiento regional en Argentina en la primera mitad del siglo XX es prácticamente desconocido. En este artículo, presentamos un cálculo del PIB de las 25 provincias en Argentina en 1914 que representa la primera estimación consistente de esta variable para cualquier periodo antes de los años 1950s. Nuestros resultados confirman que en 1914 la ciudad de Buenos Aires y algunos distritos en la Patagonia tenían los mayores PIB per cápita y una comparación con los datos disponibles para 1953 muestra una fuerte persistencia en los ingresos per cápita durante ese periodo; análisis sectoriales del PIB provincial sugieren que el crecimiento de los distritos principales fue resultado de economías de aglomeración en algunos casos y de abundancia de tierra en otros.

Spanish keywords: desarrollo regional; desigualdad; Argentina; persistencia

Portuguese abstract

As regiões centrais e do sul da Argentina transformaram-se de relativamente pobres no século dezesseis às mais ricas do país atualmente. Embora haja alguma evidência empírica desta mudança, o processo de crescimento regional na Argentina na primeira metade do século vinte é quase desconhecido. Neste ensaio apresentamos um cálculo do PIB de vinte e cinco províncias na Argentina em 1914, que é a primeira estimativa consistente desta variável em qualquer período antes de 1950. Nossos resultados confirmam que em 1914 a cidade de Buenos Aires e alguns distritos na Patagônia apresentavam o PIB per capita mais alto e uma comparação com dados disponíveis de 1953 demonstram forte persistência em ganhos per capita nesse período; análises setoriais do PIB das províncias

sugerem que o crescimento do distritos líderes foi impulsionada pela economia de aglomeração em alguns casos e pela abundância de terra e outros.

Portuguese keywords: desenvolvimento regional; desigualdade; Argentina; persistência

Cite this article: Aráoz MF, Nicolini EA (2020). Regional Growth and the Persistence of Regional Income Inequality in Argentina in the First Half of the Twentieth Century. *Journal of Latin American Studies* 52, 293–316. <https://doi.org/10.1017/S0022216X19001299>