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A story of Natural Resources and Infrastructure

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Abstract

This paper offers a general assessment of the economic activity in Bolivian regions thanks to an estimation, for the first time, of regional GDPs in Bolivia from 1950 onwards. The new quantitative evidence shows the economic upsurge and consolidation of new regions beyond the traditional economic zones, which were located to the west of the country since colonial times. This process is in stark contrast with most Latin American experiences, where economic activity has tended to be concentrated continuously in the same regions since the mid-19th century. This changing pattern is firstly explained by the availability of natural resources endowments. However, given the landlocked nature of the country, the vibrant set of ecological regions and the consequent relevance of transports costs, it is argued that natural resources may act as potent engines of regional economic growth only when a minimum network of public infrastructure is available.

JEL Codes: N16, N56, N96, R12

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1. Introduction

The present paper on Bolivian's regional GDPs offers additional insights to the debate on the location of economic activity in Latin America given the landlocked nature of the country. Indeed, it has been suggested several times that economic activity in landlocked countries could be highly determined by investments in infrastructure such as roads or bridges (Limao & Venables, 2001; United Nations, 2014; Wilmsmeier & Sánchez, 2009). This is undoubtedly the case of the Bolivian economy, which, in addition to the lack of sea access, offers a vibrant set of ecological regions (with a considerable ruggedness to some of them), and does not have navigable rivers that connect the most populated areas.

The analysis of Bolivian's regional GDPs is also illustrative of Bolivian historiography. On the one hand, a very influential interpretation stresses that Bolivian history is not the result of class clashes, but that of regional confrontations (Roca, 1999). It is argued that despite a centralized framework being adopted by the country since Independence (1825), territorial conflicts have been constant throughout history. The civil war, which took place at the end of the 19th century, determined a change of the Legislative and Executive seats from Sucre to La Paz, was the most dramatic example. Another recent illustration lies in the political turmoil fueled by regional demands at the beginning of the 21st century.² On the other hand, except a book published several decades ago (Fifer, 1972), most historical studies have focused on specific regions of the country (Langer & Conti, 1991; Rodríguez, 1994; Sandoval et al., 2003).

This paper overcomes this limitation by offering a general assessment of the economic activity in Bolivian regions thanks to an estimation, for the first time, of regional GDPs in Bolivia since 1950 onwards.³ The analysis of Bolivian's regional GDPs starts in 1950 due to the inability to allocate agriculture production (see the methodological section) between the different Bolivian *departamentos* (see the discussion in Herranz-Loncán & Peres-Cajías, 2016).⁴ Departments will be the unit of

² Political instability increased dramatically in Bolivia at the beginning of the 21st century because of different reasons. One of them was the demand by the East and South departments of a higher political and administrative autonomy. Moreover, even if its relative relevance is debatable, separatist claims were also sometimes expressed.

³ Urquiola *et al.* (1999) study the evolution of economic activity from 1950 to 1992 by using population statistics. Machicado *et al.* (2012) and Pereira *et al.* (2012) offers a general assessment of regional growth by using regional GDPs since 1988 to 2009. Recently, Mendieta (2019) offered an analysis of regional GDPs that starts earlier than previous work (the 1970s) but not than the present one.

⁴ Bolivia is divided in nine *departamentos*, which are composed by provinces which, in turn, are composed by municipalities.

analysis of this chapter due to two features: a) no significant border changes have taken place since the late 1930s; b) there is evidence on a wide range of economic indicators for the administrative unit from the 1950s onwards, something that does not hold for provinces or municipalities – the latter were importantly reorganized in the early 1990s. Map 1 shows the nine Bolivian departments and the ecological diversity previously noted.

Map 1. Administrative Division of Bolivia and Ecological Regions



Sources: Map created by Miguel Sevilla-Callejo; available in

https://es.wikipedia.org/wiki/Geograf%C3%ADa_de_Bolivia#/media/Archivo:Bolivia_satelite.png.

The new quantitative evidence shows the economic upsurge and consolidation of new regions beyond the traditional economic zones, which were located to the west of the country since colonial times. This process took place in the second half of the 20th century and is in stark contrast with most Latin American experiences, where economic activity has tended to be concentrated continuously in the same regions since the mid-19th century. This changing pattern is firstly explained by the availability of natural resources endowments. However, given the landlocked nature of the country and the relevance of transports costs, it is argued that natural resources may act as potent engines of regional economic growth only when a minimum network of public infrastructure is available.

After this introduction, the rest of the chapter is organized as follows. Section 2 presents an overview of the evolution of regional economic growth in Bolivia since Independence to the present day; Section 3 explains the methodology and sources used

in the reconstruction of regional GDPs; Section 4 presents the main results, and Section 5 concludes.

2. Regional Growth in Bolivia since Independence

The current economic space of Bolivia has been integrated into the world economy since the 16th century thanks to silver exports and, despite some oscillations, was among the most dynamic areas of the Spanish Empire in the Americas during colonial times. This dynamism was affected by a severe drought that took place at the beginning of the 19th century and the long Independence wars (1809-1825). According to Herranz-Loncán & Peres-Cajías (2016), who estimated the Bolivian GDP since 1846 to 1950, the Bolivian economy continued with a slow dynamism throughout the 19th century. Thus, during this period the economic gap between Bolivia and most of the developed economies of the world and the region (the Southern cone) increased. The divergence of the Bolivian economy stopped during the first half of the 20th century thanks to the consolidation of mining exports and, after that, industrial production. During the second half of the 20th century, divergence resumed not only regarding most of the world and regional developed economies but also most countries in the Americas. Thus, at the beginning of the 21st century, Bolivia was among the poorest economies in the region.

This evolution of the Bolivian economy has had different consequences in regional terms. During colonial times, far away from an enclave economy, silver exploitation in Potosi fueled the economic integration of different economic regions (Assadourian, 1982). In effect, either by the supply of currency or by demand effects, the economic behavior of Potosi profoundly influenced cereal production in Cochabamba or sugar production in Santa Cruz, to name a couple of examples. This market integration was not uniform across the different regions or throughout time. However, it persisted until the last decades of colonial rule (Menegus Bornemann, 1999).

Once Independence was achieved (1825), these colonial markets remained integrated (Mitre, 1986). Nevertheless, they were affected by the new political and economic context (Gelman, 2009; Prado, 1995). On the one hand, silver production in Potosi was unable to recover from the sharp decrease that took place at the beginning of the 19th century. Whereas, de-urbanization, the consolidation of foreign competitors, and the direct and indirect costs of independence created new restrictions. In spite of this low

economic dynamism, the relative importance of Bolivian regions remained more or less similar to that of colonial times, being the departments of La Paz, Cochabamba, Potosí, and Chuquisaca the most important (Dalence, 1851; Pentland, 1975). The former two because of their agricultural centrality, the third for mining and agriculture production, and the latter for its administrative importance and the connection with the economy of Potosi.

Some decades later and in spite of the general slow dynamism of the economy, some critical changes must be considered to understand future regional differentiation. First, after a slow but constant recovery since the 1850s, silver production in Potosi overcome colonial records during the early 1870s (Mitre, 1981). Secondly, whereas the coastal region was a marginal one in terms of population density or state presence, the loss at the War of the Pacific against Chile (1879) determined the landlocked nature of Bolivia. Thirdly, disadvantageous trade agreements with neighbor countries and the arrival of railways to the mining centers of Uyuni (1888) and Oruro (1892) improved the competitiveness of imports to the west of the country (Peres-Cajías, 2017).⁵ Consequently, contrary to colonial times, the rebound in mining production witnessed during the last decades of the 19th century does not necessarily improve production levels to those Bolivian regions specialized in agricultural or manufacturing production (Rodríguez, 1994).

Further changes took place during the last decade of the 19th century. Indeed, the fall in the international price of silver and the consequent crisis in the sector was offset by a rapid transition to tin exploitation, which was located once more in the west (Mitre, 1993). At the same time, there was a rapid rise in rubber production in the north-east of the country, which reached international markets through the networks of Amazonian rivers that end up in the Atlantic Ocean (Gamarra, 2007); these routes were transited both by traditional boats and steamships. Thus, for the first time, a Bolivian commodity was located beyond the Andes, and its exploitation fueled new economic interactions between the departments of Santa Cruz, Beni and Pando (Orsag, 2019). Last but not least, the victory of the liberals in the so-called Federal War (1898-1899) determined the transfer

⁵ The most relevant of mentioned bilateral trade agreements were those signed with Chile and Peru. The treaties included different elements such as transit fees or administrative clauses. However, they also implied virtual free trade agreements between Bolivia and these countries. The liberalization was disadvantageous for Bolivia since few products were exported from this country to the remained two. By contrast, different Chilean and Peruvian products, such as wheat or sugar, competed directly with Bolivian local production (Peres-Cajías, 2017).

of the Executive and Legislative seats from Sucre to La Paz and, with it, the consolidation of new political elites.

On the eve of the 20th century, these new elites promoted an export-led growth strategy through different schemes that looked at the restrictions that affect a landlocked economy. For instance, separate peace and boundary treaties were signed with all neighboring countries (Paraguay being the exception) to reduce transaction costs, such as the payment of transit fees (Peres-Cajías, 2017). Likewise, new railways lines were built, which allowed connecting western locations to the world economy (through the Ocean Pacific) and between them. In this context, La Paz and Oruro consolidated as the leading economic poles of the Bolivian economy, the latter because of mining production and the former for being the new seat of government and that of modern services such as banking or retailing. In contrast, local suppliers in the east had stronger difficulties in reaching the old western colonial markets. Thus, not surprisingly, the representatives of eastern departments claimed against the existence of a so-called “railways regionalism” and asked for the spread of railways to their regions (Barragán & Peres-Cajías, 2007).

In the context of economic growth at a country level, the years of the First World War witnessed new changes in this regional divide. As a result of Asian competition, the rubber boom ended abruptly in 1914, which affected exports and the regional dynamism generated in the east by this commodity. After that, a railway line between Cochabamba and Oruro was inaugurated in 1917, which allowed the connection of the former to the most dynamic regions. Mainly due to this line, railway expansion also became crucial to the transport of local products inside the country and not only in export commodities to international markets (Contreras, 2017). Meanwhile, price and production increases allowed the expansion of mining exports. Thus, tin consolidated as the most important export, representing at least two-thirds of Bolivian exports since the late 1910s to the early 1950s (Peres-Cajías & Carreras-Marín, 2017). It was also noticed that during that same period, 80% of Bolivian exports transited through Chilean ports (Arica and Antofagasta) before reaching world markets (Agramont & Peres-Cajías, 2016).

The Great Depression represented the first major crisis that the Bolivian economy suffered in the 20th century (Herranz-Loncán & Peres-Cajías, 2016). Its effects were increased by the Chaco War (1932-1935), and it was not until 1938 that the GDP per capita recovered to the pre-crisis level. As a consequence of these shocks and changes in the political status quo, state intervention in the economy became increasingly important.

This was reflected, for instance, in higher taxes on mining (Contreras, 1990; Peres-Cajías, 2014) or the nationalization of oil resources, a sector located in the south-east of the country that was growing tentatively since the 1920s (Klein & Peres-Cajías, 2014). The trauma of the war also brought anxiety about the need to integrate the country. This was reflected in a railway project to connect Santa Cruz with Argentina and Brazil and the centralization of road investment, an alternative that begun to be considered in the 1930s (Contreras, 2017). However, the lack of an useful connection between Cochabamba and Santa Cruz maintained the division of the Bolivian internal market and the economic supremacy of western departments (Peres-Cajías, 2017). This division was amplified by an industrialization process that started in the late 1920s and was highly concentrated in the department of La Paz (CEPAL, 1958; Rodríguez, 1999).

The 1952-1985 period is one of the most exciting and paradoxical in Bolivian economic history: whereas it began and ended with major financial crises (which explains the Bolivian divergence), it presented the highest economic growth rates in the middle years (Herranz-Loncán & Peres-Cajías, 2016). The period is known as state-capitalism, given that, after the 1952 Revolution, state intervention in the economy became critical, either by the increase of public investment or the creation of new public companies (Wilkie, 1969; Zondag, 1966). The 1952 Revolution also fostered the so-called “East March”, an economic strategy that presented the following objectives: a) the connection of the east and west of the country through the construction of a new highway between Cochabamba and Santa Cruz; b) the substitution of agricultural imports by promoting agrarian projects in the east; c) the replacement of oil imports by investing directly or facilitating private investment in the hydrocarbon industry.

Progressively, the “East March” modified the regional divide. In effect, Santa Cruz became connected to Brazil and Argentina through railways since 1953 and 1957 respectively, and to Cochabamba through the highway inaugurated in 1954. Likewise, imports of several agricultural products such as sugar or rice were substituted, and agro-industrial production increased. Whereas the results were less successful in terms of exports (for instance, cotton sales made in the early 1970s were not sustainable, Demeure, 1999), products of Santa Cruz (such as sugar) regained prominence in western markets. More critical, price differentials between Santa Cruz de la Sierra (the capital city of Santa Cruz) and the rest of department capitals tended to disappear towards the 1960s (Peres-Cajías, 2017). As for the hydrocarbon sector, oil self-sufficiency was achieved in 1954,

and progressive improvement continued until the 1970s when the industry became central at a national level both in terms of its size over GDP and its contribution to total exports (Klein & Peres-Cajías, 2014).

Despite the impulse of national integration through road construction, large areas of the country remained isolated. This was particularly true for the departments of Beni and Pando. In effect, in contrast to Santa Cruz, price differentials between Trinidad and Cobija (the capitals of Beni and Pando) and the rest of capitals remained significant during the 1960s. Likewise, it was not until the 1980s that a paved road between Santa Cruz de la Sierra and Trinidad was inaugurated. Thus, the increase in meat production in Beni that started in the late 1940s was only possible because of the existence of airplane facilities (De Marchi *et al.*, 2018). Indeed, the creation of public companies and the proliferation of private services, allowed the transportation of meat from several places in Beni to west markets, particularly the city of La Paz and the mines in Oruro and Potosí.

The limits of state-capitalism became evident in the early 1980s. On the one hand, although the development of so-called medium-sized mining (in private hands) generated some dynamism and diversification, nationalized mining represented almost two-thirds of the sector (Espinoza, 2010). Production levels in this sub-sector remained stagnant, so its financial sustainability ended up depending exclusively on the evolution of international prices. As for manufacturing production, the sector did not surpass 15% of the Bolivian GDP since the 1940s, depended on foreign inputs and was concentrated in the so-called light areas (Luna, 1995). Worse still, there was an exceptional drought in 1982 that affected agricultural production, especially in the western departments (Luna, 1995). Likewise, Bolivian public finances depended on external resources (Peres-Cajías, 2014). In this context, state intervention ended up as an engine of macroeconomic instability that was reflected in a sharp hyperinflation process (Kehoe, Machicado, & Peres-Cajías, 2019). Thus, during these years, the only economic activities that maintained some dynamism were oil and gas production in the south-east of the country, and cocaine production (which in contrast to coca leaf production is not accounted for in official statistics) in the tropical valleys of Cochabamba and Beni (SEAMOS, 1992).

Hyperinflation was ceased in 1985 through a shock policy that was accompanied by several structural reforms that were in line with the Washington Consensus. These policy changes were effective in curbing macroeconomic instability, but not so much in promoting economic growth: between 1985 and 2004, growth rates were not particularly

high and were affected by the various financial crises that took place in Latin America. Moreover, the change in the role of state intervention very often created social tensions and fostered regional differentiation. This was particularly clear in the case of the public mining company, whose closure generated around 20,000 unemployed in the departments of Potosí and Oruro; this shock was worsened by a general crisis in the mining sector led by the sharp decrease of international prices that took place in the mid-1980s.⁶ In the same vein, the end of state protection affected the traditional industrial sector.

In stark contrast, thanks to a partnership between the Bolivian government, private companies, and foreign aid, a soybean complex was developed in Santa Cruz, and exports of these products reached relevance immediately (Montenegro & Guzmán, 1999). Similarly, thanks to a gas trade agreement between Brazil and Bolivia (which started in the mid-1970s and was finally reached in the early 1990s), and the subsequent construction of a pipeline, natural gas became the most critical Bolivian export since 2000, representing around 40% of total exports.

During the 2004-2014 period, the Bolivian economy was benefited by the commodities super cycle. In regional terms, the benefited regions were widespread. For instance, it helped the hydrocarbon departments (Tarija, Chuquisaca and Santa Cruz), the mining regions (Potosí, Oruro, north of La Paz), soybean producers (Santa Cruz) and, at the end of the period, quinoa producers located in La Paz, Oruro and Potosí. In spite of these improvements, there is still evidence pointing to the low integration of the Bolivian economy, a phenomenon that affects especially Beni and Pando.⁷ Indeed, whereas there has been a noticeable increase in public investment in roads over the past years, the most important cities of Pando and Beni (Cobija, Trinidad, and Riberalta) are not connected by a paved road nor to the national system (see De Marchi et al., 2018).⁸

Summing up, this overlook of Bolivian regional growth suggests the existence of some stylized facts: a) the Bolivian economy has been integrated into the world economy through the export of a few commodities; b) the construction of the Bolivian internal market has been painful and still is an on-going process; c) changes in the Bolivian exports were in line with changes in the relative importance of Bolivian regions; d) these

⁶ Notice that other public companies were also closed or privatized.

⁷ This has been proved by looking at the correlation of regional GDP growth from 1988 to 2009 (Pereira, Sheriff & Salinas, 2012) or a spatial correlation matrix from 1970 to 2015 (Mendieta, 2019).

⁸ Truly, the network of Amazonian rivers has been widely used for the Bolivian internal trade during and after the rubber boom. However, this system is still under the control of the State and is not a reliable alternative to road transport (see de Marchi et al, 2018).

changes were determined by natural resource endowments and investment in transport infrastructures such as railways or roads. The analysis of Bolivian's regional GDPs will allow identifying the size and timing of these changes.

3. The Estimation of Bolivian Regional GDPs

“Historical GDP reconstructions are the result of ad hoc efforts by individual scholars who had to make the best possible use of available incomplete sources” (Felice, 2019: 8). So, this section aims to present the methodology and sources used in the estimation of Bolivian's regional GDPs. This allows identifying the potentialities and restrictions of the new quantitative evidence. First of all, the reconstruction is based on the production approach, by which sectorial GDPs at national level are allocated between the nine Bolivian departments: regional GDPs are obtained as an aggregation once all national-sectorial GDPs have been distributed between the nine departments. The reconstruction considered six different sectors: agriculture, mining, hydrocarbons, manufactures, electricity and gas, and the rest of the industries (which aggregates construction, financial establishments, trade, transport, communal services, restaurants, and hotels, and public administration services). The inability to allocate agricultural production before 1950 (because of the inexistence of reliable information on *national production levels* and the inexistence of indicators to map the output of the leading products *by regions*), explains why the reconstruction of Bolivian's regional GDPs starts in 1950.

Secondly, given the relevance of the so-called “Gerschenkron effect” (the changing results that may derive from linking series calculated in different base years, Felice, 2019: 12), sectorial GDPs were in current prices. This, however, may generate other sources of bias when comparing the economic importance of regions. Specifically, it may increase the size of resource-rich regions just because of increases in international prices.

Thirdly, the distribution of the sectorial GDP has been based mostly on direct indicators (Felice, 2019) (see Table 1). To this end, the reconstruction used the current methodological guidelines of the official estimations of Bolivian's regional GDPs (INE, 2004). For instance, it has been based on some of the indicators used to allocate sectorial GDPs, or, has been achieved through the use of national average prices (that is, uniform prices across the regions).

Table 1. Sources and Indicators used in the Reconstruction of Bolivian Regional GDPs

Sectors	1950	1967	1970	1980	1988-2017
Agriculture	Direct: gross value of production	Ministerio de Planificación y Coordinación (1970)	COPSCZ (1982)	Ministerio de Planeamiento y Coordinación (1992)	Official estimations
Mining	Direct: value exported	Direct: gross value of production			
Hydrocarbon	Direct: production	Ministerio de Planificación y Coordinación (1970)			
Manufactures	Direct: gross value of production	Direct: gross value of production			
Electricity	Direct: production	Ministerio de Planificación y Coordinación (1970)			
Rest of sectors	Indirect: urban population	Indirect: urban population			

Sources: Author's own elaboration.

Along with the use of some previously unexplored secondary sources (which were firstly presented by Mendieta, 2019), the original contribution of this chapter is the estimation of Bolivian's regional GDPs in 1950 and 1967. The following paragraphs explain the indicators and sources used in this reconstruction. To begin with, the agricultural sector (which represented 31% of Bolivian GDP in 1950) was allocated over the nine departments by estimating the share of each department in the value of production of a sample of products.⁹ For this, information on quantities were obtained from the National Agrarian Census of 1950, and that of prices from CEPAL (1958). The agricultural GDP of 1967 was then allocated to each department by the Ministerio de Planificación y Coordinación (1970).

Secondly, two different extractive subsectors were reconstructed: mining and hydrocarbons. In 1950, the mining GDP (13% of Bolivian GDP) has been allocated over

⁹ Given the diversification of the Bolivian agricultural sector and differences in the productive aptitude of the various regions of the country, several products have been considered: nine crops (maize, potatoes, wheat, coffee, yucca, rice, barley, coca, sugar cane), three fruits (oranges, raisins and peaches) and three livestock products (beef, lamb and pork meat). The value of production obtained with this sample of products is equivalent to 84% of the value of production of the agricultural sector estimated by CEPAL (1958). Furthermore, the sample of products used allows obtaining a structure of agricultural production that is very similar to that of official statistics: in our estimation the total agricultural value of production is distributed between crops (55%), fruits (5%) and livestock products (40%); in that of official statistics is distributed between crops (43%), fruits (9%), livestock products (42%), forestry (4%) and exports (1%). See CEPAL, 1958.

the five departments (La Paz, Oruro, Potosí, Cochabamba, and Chuquisaca) by using the value of exports declared in the Bolivian official trade statistics; the allocation was based on the average relative importance of mining exports of each department in 1950 and 1951. In 1967, the distribution took into account the relative importance of each department (La Paz, Oruro, Potosí, and Cochabamba) in the value of production presented by Ministerio de Planificación y Coordinación (1970b). The hydrocarbon sector was distributed by using the quantities produced of oil in each department in 1950¹⁰; for 1967, the estimations by the Ministerio de Planificación y Coordinación (1970a) were used.

Thirdly, manufacturing production (15% of Bolivian GDP in 1950), was allocated based on the share of each department on the value of output provided by CEPAL (1958) for 1950, and by the Ministerio de Planificación y Coordinación (1970b) for 1967. In the case of 1950, the value of production used was that of each department in 1954.¹¹

Fourthly, Bolivian statistics include, in a single sector, the value added by electricity, water, and gas production. Due to the lack of information on the water sector and practically zero gas production, the distribution of this sectorial GDP in 1950 (1.4% of total GDP) was carried out considering electricity production in thousands of Kwh on each department capital in 1954.¹² In the case of 1967, the estimations by the Ministerio de Planificación y Coordinación (1970a) were used.

Finally, the rest of the sectors were added into a single category due to the lack of indicators that allow for its regional distribution. Thus, following Badia-Miró (2015), the delivery of this remnant was operationalized considering the relative importance of each department in urban population.

¹⁰ These were obtained from *Estadísticas económicas de la actividad petrolera* (www.ine.gob.bo/indice/indice.aspx?d1=0201&d2=6). The distribution according to production figures by department assumes the absence of large differences in operating costs and/or in the level of productivity of the different oil fields. This assumption can be accepted as valid for the period and, given the low relative importance of the hydrocarbon sector, does not affect the main conclusions of the article.

¹¹ Bolivian regional GDP statistics consider seven different sub-sectors: food; drinks and tobacco; textiles, clothing and leather products; wood and wood products; other manufacturing industries; petroleum refining products; and non-metallic mineral products. The use of the 1954 value is justified by the "... inertia that normally tends to be created in terms of location" (CEPAL, 1958: 131). Furthermore, the original source does not record the information related to industrial production in the departments of Tarija, Beni and Pando. However, the source reports the production value of "Other Departments", which has been distributed among these three departments taking into account their relative importance on urban population in 1950.

¹² The original source also presented electrical production generated by the "Great Mining" and electrical production generated in the "Rest of the country". The former has been distributed among the mining departments by applying the mining GDP ratios of 1950 previously presented; the electrical production of the "rest of the country" was assigned to the nine departments considering their relative importance on urban population. The use of urban population is justified by the fact that there was not an interconnected national system of electricity. So, consumption should be strongly correlated with production.

Before presenting the main results, it is also necessary to clarify the sources of population figures. Total population figures for the years 1846, 1900, and 1950 were obtained from Herranz-Loncán & Peres-Cajías (2016).¹³ The share of department population was obtained from Dalence (1851), and the population censuses of 1900 and 1950; these same sources were used for the estimation of urban population (people living in locations with more than 2.000 inhabitants). For 1976, 1992, 2001, and 2012, Bolivian total population figures were obtained from ECLAC estimates, which apply a correction factor by census omission (that is common in most censuses) on the original census data. In each of these four years, shares of both department population and urban population were obtained from the original figures offered by national censuses. Lastly, population figures between censuses years were obtained by geometric interpolation.

4. The Relative Importance of Bolivian Regions, 1950-2017

This section presents the evolution of economic activity in Bolivian departments throughout time. Department population figures allow a first insight into the relative importance of Bolivian regions since Independence onwards (Table 2). The data shows that despite a small reduction over the last decades, the relative importance of La Paz has been maintained since the 19th century, being the most populated department until very recent years (according to official projections around 2015). In the case of Oruro, there have been continuous oscillations around a mean of 5% of total Bolivian population. By contrast, the relative importance of Potosi remained high during the 19th century and the first half of the 20th century, but declined after that: from a peak of 18% of the total Bolivian population in 1950, it decreased to 8% in 2012. In the Valles, the relative importance of Cochabamba and Tarija fell slightly during the first half of the 20th century but also recovered after that. Furthermore, Cochabamba has been the second/third most populated department in Bolivia throughout this time, absorbing 15-20% of the Bolivian population. As for Chuquisaca, it stands out for having a continuous decline during the 20th century, reducing from 12% (1900) to 6% (2012) of the total Bolivian population.

¹³ In this work, total population is the result of the aggregation of the census population, the “non-subject” population and the population added by census omission.

Table 2. Department Population in Bolivia (% of the total population), 1846-2012

%	1846	1900	1950	1976	1992	2001	2012
La Paz	29.0	25.6	30.6	31.8	29.6	28.4	27.0
Oruro	6.4	5.0	6.9	6.7	5.3	4.7	4.9
Potosi	16.4	18.9	18.2	14.3	10.1	8.6	8.2
Cochabamba	19.0	19.1	16.3	15.6	17.3	17.6	17.5
Chuquisaca	11.1	11.9	9.5	7.8	7.1	6.4	5.8
Tarija	6.2	5.4	4.2	4.1	4.5	4.7	4.8
Santa Cruz	6.6	11.1	9.5	15.4	21.2	24.5	26.4
Beni	4.8	1.8	4.1	3.6	4.3	4.4	4.2
Pando		1.3	0.6	0.7	0.6	0.6	1.1
Litoral	0.3						

Sources: See text.

Notes: No information is presented for Litoral from 1900 onwards because this department was lost during the War of the Pacific (1879). The department of Beni was created in 1842, and the population information in 1846 includes data from the current department of Pando. Indeed, Pando was founded only in 1938, so the 1900 information refers to what was called "National Territory of Colonies".

To understand the changes above, Table 3 presents information on rates of population annual average growth and net immigration by department since 1950 – i.e. during the period of the most dramatic changes.¹⁴ Indeed, the table shows that the decline in the relative importance of Potosi over total population can be explained by low population growth rates (they have systematically been among the lowest), and the relevance of negative immigration rates (they have been the most negative during the entire period under scrutiny). A favorite destination of Potosi emigrants was La Paz (particularly before the debt crisis of the 1980s), Cochabamba, and Santa Cruz (in both cases, particularly after the debt crisis of the 1980s).

¹⁴ Figures on population annual average growth rates depicted in Table 3 are different to those presented by official Bolivian statistics (see, for example, INE, 2012: 13) since, as previously stated, I introduce the CEPAL figures on total population that includes census omission. During the 1950-1976 period, my estimates on department population growth rates are generally 0,2 percent points higher; the only exception is Beni where the INE figure presents a growth rate of 3.3% per year. During the 1976-1992 period, my estimates are 0.1 percent points higher. The 1992-2001 period is more problematic since my estimates are 0.5 percent points lower. Differences in the 2001-2012 period are not significant. In spite of these differences between my estimates and those of INE, the relative importance of each department in terms of population growth rates remains similar, which maintain the conclusions of the analysis unchanged.

Table 3. Department Population Growth Rates and Immigration Rates (%), 1950-2012

	1950-1976		1976-1992		1992-2001		2001-2012	
	Population growth	Net immigration						
La Paz	2.3	3.3	1.8	0.0	1.8	-2.5	1.3	-3.9
Oruro	2.0	-6.4	0.8	-18.6	1.0	-20.5	2.1	-13.5
Potosi	1.2	-10.2	0.1	-22.8	0.5	-27.3	1.3	-24.8
Cochabamba	2.0	-2.3	2.9	8.2	2.5	6.6	1.7	6.9
Chuquisaca	1.4	-9.8	1.7	-12.0	1.2	-15.0	0.7	-16.3
Tarija	2.0	5.7	3.0	9.2	2.7	14.4	1.9	13.3
Santa Cruz	4.1	18.4	4.3	22.2	3.9	27.2	2.4	19.4
Beni	1.7	-6.9	3.3	-5.9	2.5	-10.9	1.3	-11.8
Pando	2.7	4.8	0.8	-3.8	3.0	10.5	6.9	44.2

Sources: For population growth figures, see text. Net immigration rates were calculated by using total population figures by place of born and place of residence originally offered in national censuses.

Notes: Immigration rates are measured as the difference between total immigrants and total emigrants in the department *i* over total population originally born in department *i* between censuses years without considering foreign immigrants or Bolivians that migrated abroad.

In the same vein, the decline in the relative importance of Chuquisaca over total population is also linked with low population growth rates (except the 1976-1992 period, consistently among the lowest), and the relevance of negative immigration rates (systematically, the second most negative during the period analyzed). It was noticed that most of the Chuquisaca emigrants (around 50%) went to Santa Cruz. Table 3 also shows low population growth rates and negative immigration rates in the case of Oruro (particularly during the 1976-2001 period), which may help to understand the oscillations in the relative importance of its population over total population. Throughout this time, Oruro's population migrated to La Paz (particularly before the debt crisis of the 1980s) and Cochabamba (particularly after the debt crisis of the 1980s).

The dramatic increase in the population in Santa Cruz represents the other side of the coin of the above mentioned tendencies. Indeed, Table 2 shows that there has been considerable stability, as well as a marginal role in the relative importance of Beni (around 4%) and Pando (below 1%) over total Bolivian population. By contrast, the decline of Santa Cruz during the first half of the 20th century was recovered after that, jumping from 10% (1950) to 26% (2012) of total population. Moreover, according to up to date estimations, Santa Cruz is nowadays the most populated Bolivian department.

This increase is explained by the achievement of the highest population growth rates during the second half of the 20th century (around 4% per year) and the significance of favorable immigration rates (approximately 20% of the population initially born in the department) (see Table 3). Whereas Santa Cruz received immigrants from all over the country, most of them initially came from Cochabamba, Chuquisaca, and Potosí; after the debt crisis of the 1980s, immigration fluxes from these departments remained significant, and those from La Paz became relevant.

Overall, population figures stress changes in the relative importance of Bolivian regions that, since 1950, negatively affected western departments in favor of Santa Cruz. The estimation of regional pc GDPs offers new evidence that goes in this same direction (Table 4). Indeed, it is true that, despite some loss in their relative importance during the last quarter of the 20th century, La Paz and, overall, Oruro have maintained their economic relevance. However, there is a reversal of fortune in the case of Potosi: whereas its pc GDP was similar to the national average in 1950, it has tended to be below it since the 1960s, and it has been among the lowest until the last commodity boom. By contrast, the regional pc GDP of Santa Cruz has been above the national average since the 1960s. Similarly, whereas the regional pc GDP of Tarija was among the lowest in the 1950s, it has increased since the mid-1970s. Not surprisingly, once natural gas consolidated as the most important Bolivian export since the early 2000s, the regional pc GDP of Tarija has tended to double the Bolivian average.

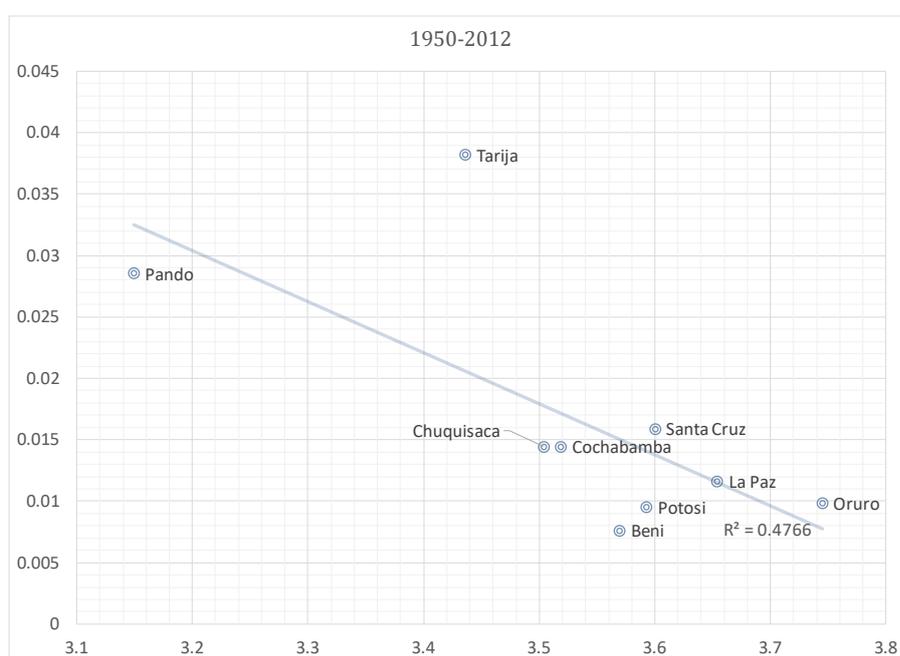
Table 4. Departmental pc GDP (Bolivian pc GDP=1), 1950-2017

	1950	1967	1970	1980	1988	1995	2005	2012	2017
La Paz	1.13	1.04	1.04	0.94	0.92	1.01	0.88	0.93	1.09
Oruro	1.40	1.08	1.29	1.40	1.02	1.13	1.02	1.03	1.11
Potosi	0.99	0.81	0.90	0.66	0.56	0.51	0.54	0.71	0.83
Cochabamba	0.83	0.99	1.02	0.97	1.09	1.04	0.96	0.81	0.85
Chuquisaca	0.80	0.64	0.77	0.77	0.91	0.76	0.71	0.78	0.89
Tarija	0.69	0.75	0.73	1.18	1.08	0.95	2.36	2.81	1.62
Santa Cruz	1.00	1.49	1.21	1.37	1.30	1.23	1.17	1.07	1.02
Beni	0.93	0.90	0.58	0.84	1.00	0.90	0.71	0.60	0.64
Pando	0.36	0.39	0.77	0.54	1.17	1.25	1.21	0.82	0.72

Sources: See text.

Are these changes the result of a general process of convergence among Bolivian departments? The new pc GDP series also allows the testing of this hypothesis. For this, two different concepts of convergence were used: β -convergence (more impoverished regions grow at higher rates than more affluent regions) and σ -convergence (a reduction in the dispersion of pc GDP).¹⁵ To begin with, Figure 1 could suggest the existence of an unconditional β -convergence from 1950 to 2012: poorer departments in 1950 tended to grow in real terms at higher rates than richer departments.

Figure 1. Beta Convergence of Department pc GDP, 1950-2012



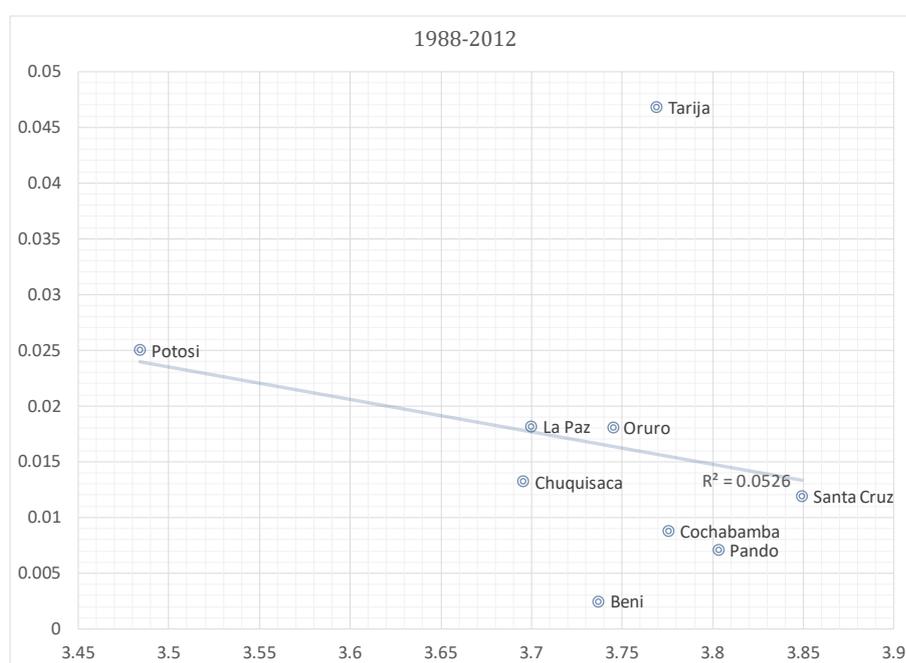
Sources: See text.

However, the small sample size (nine departments) should be taken in mind and, therefore, the amplified impact that specific regions may have on the results. Indeed, if Pando and Tarija are removed from this simple graphical analysis, there is no more unconditional convergence in Figure 1, changing the R^2 from 0.47 to 0.16. In the same context, if the analysis is split into two periods (1950-1980 and 1988-2012), a simple graphical analysis of unconditional β -convergence remains in the first case (not shown)

¹⁵ It is said that β -convergence is a precondition of σ -convergence. However, the existence of β -convergence does not necessarily mean that there is σ -convergence; by contrast, if there is σ -convergence, there will also be β -convergence.

but not in the second one (see Figure 2). This is in line with different works that (with the use of more complex methodologies) have rejected the hypothesis of an unconditional convergence among Bolivian regions during this last period (Caballero-Claure & Caballero-Martínez, 2016). For instance, by using a non-parametric framework, a recent paper suggests the existence of a clear divergence during the 1988-2000 period and another one for the 2000-2014 period where two groups of convergence would have consolidated (Mendez-Guerra, 2017).

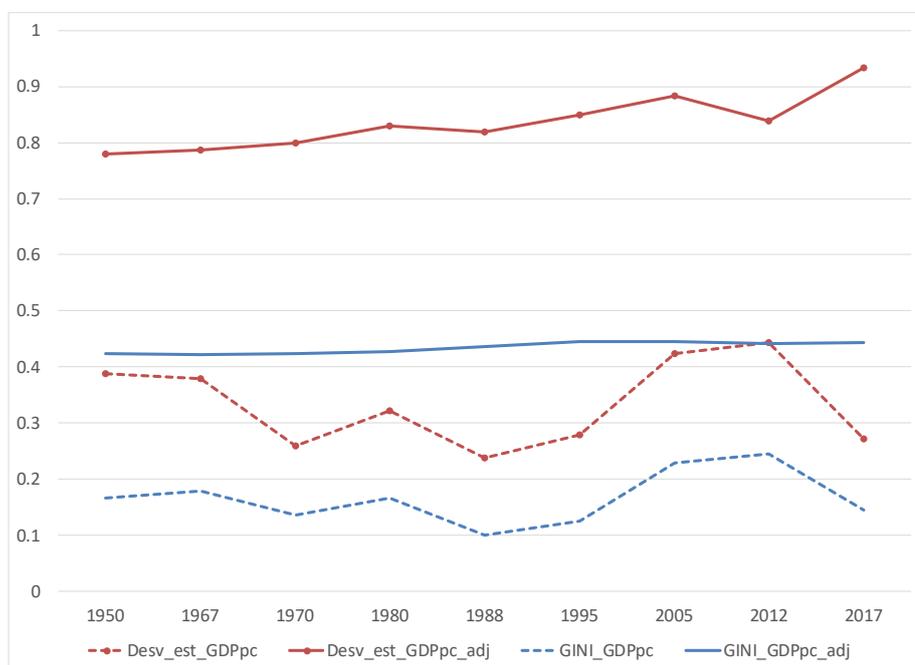
Figure 2. Beta Convergence of Department pc GDP, 1988-2012



Sources: See text.

The analysis of σ -convergence (which is measured as the standard deviation of pc GDP) allows going further into this debate (Figure 3). If all regional GDPs have the same weight, a σ -convergence is identifiable during the 1960s and 1980s; after that, there is a divergence that stops with the end of the commodity boom in 2014. This trend is also identifiable when regional inequality is measured either by Gini (presented in Figure 3) or Theil (not shown in Figure 3) coefficients: differences between regional pc GDPs tended to decrease during the state capitalism period and increased after that, particularly since the 1990s.

Figure 3. Sigma Convergence of Department pc GDP, 1950-2012



Sources: See text.

However, if regional GDPs are adjusted by its relevance to the total Bolivian population, there is a constant process of σ -divergence (see Figure 3). At the same time, when Gini or Theil indicators (the former presented in Figure 3) are also weighted by population shares, regional inequality tends to remain stable at high levels throughout the entire period. Overall, all convergence indicators suggest the lack of convergence between Bolivian departments after the 1980s. The lack of convergence holds for the 1950-1980 period if the β -convergence is analyzed without certain specific regions or if the σ -convergence is measured with population-weighted pc GDP.

Table 5 presents further evidence on the existence of significant differences between Bolivian departments from the 1950s onwards. Indeed, it shows that the relative importance of the aggregate GDP of the three biggest departments (La Paz, Cochabamba, and Santa Cruz) over total GDP increased from 58% in 1950 to 70% in 1988, where it has stabilized since then.

Table 5. Departmental GDP (% of total GDP), 1950-2017

	1950	1967	1970	1980	1988	1995	2005	2012	2017
La Paz	34.8	32.7	32.8	29.4	27.8	29.5	24.5	25.2	28.1
Oruro	9.6	7.4	8.8	8.9	5.8	5.8	4.9	5.1	5.3
Potosi	18.0	12.6	13.6	8.6	6.2	4.9	4.5	5.9	6.6
Cochabamba	13.5	15.8	16.2	15.7	18.5	18.1	16.9	14.2	14.8
Chuquisaca	7.6	5.3	6.3	5.9	6.6	5.2	4.4	4.5	5.0
Tarija	2.9	3.1	3.0	4.9	4.8	4.4	11.2	13.5	8.0
Santa Cruz	9.5	19.5	16.7	22.9	25.5	27.5	29.5	28.2	28.7
Beni	3.8	3.4	2.2	3.2	4.1	3.9	3.1	2.5	2.7
Pando	0.2	0.3	0.6	0.4	0.7	0.8	0.9	0.9	0.9

Sources: See text.

Therefore, the changes above in the relative importance of Bolivian department population, or those of the ratio of department pc GDP to the national average, should not be understood as a general process of convergence, but as an output of specific crisis and booms in particular regions. Indeed, Table 5 confirms a decline in the relative importance of the three western departments during the second half of the 20th century: the relative importance of La Paz, Oruro, and Potosí decreased from 35%, 10% and 18% of GDP in 1950, to 25%, 6%, and 8% during the last years. Likewise, the aggregate relative importance of these economies fell from 62% of total GDP in 1950 to 40% in recent years. Although in a minor range, Table 5 also shows the decline in the relative importance of Chuquisaca.

On the other hand, the progression of Santa Cruz is evident: from less than 10% of total GDP in 1950, it became the second most crucial regional economy in the 1960s, and the biggest since the mid-1990s, absorbing almost 30% of the Bolivian GDP in recent years. The increase is also noticeable in Tarija: from 3% of total GDP until the 1970s, the department has come to represent 14% of GDP during the last commodity boom, and 8% in the post-commodity context. By contrast, the relative importance of the other eastern economies (Beni and Pando) remained marginal. It also points out the stability of the relative importance of Cochabamba around 15% of total GDP, which is consolidated as the third most crucial regional economy.

The boom and crises of Bolivian departments are critically linked with their natural resource endowments, the ability to transport these products, and their prices in international markets. For instance, the dynamism in the north of the country on the eve of the 20th century was linked to rubber exports (that transited through the network of Amazonian rivers up to the Atlantic) and ended when the international price of this commodity fell because of the Asian concurrence. At the same time, the predominance of western departments before the 1950s was importantly determined by their mineral resource endowments and the existence of a relatively well-developed railway network that connected these departments with Chilean and, to a lesser extent, Peruvian and Argentinean ports. The three western departments remained the most relevant in terms of mineral production during the second half of the 20th century (95% of the total output before the 1980s crisis and 80% after that). This relevance and the particular virulence of the 1980s crisis on the international price of tin is also critical to understand the decline of Oruro and Potosi from the 1980s to the beginning of the 21st century (see below).

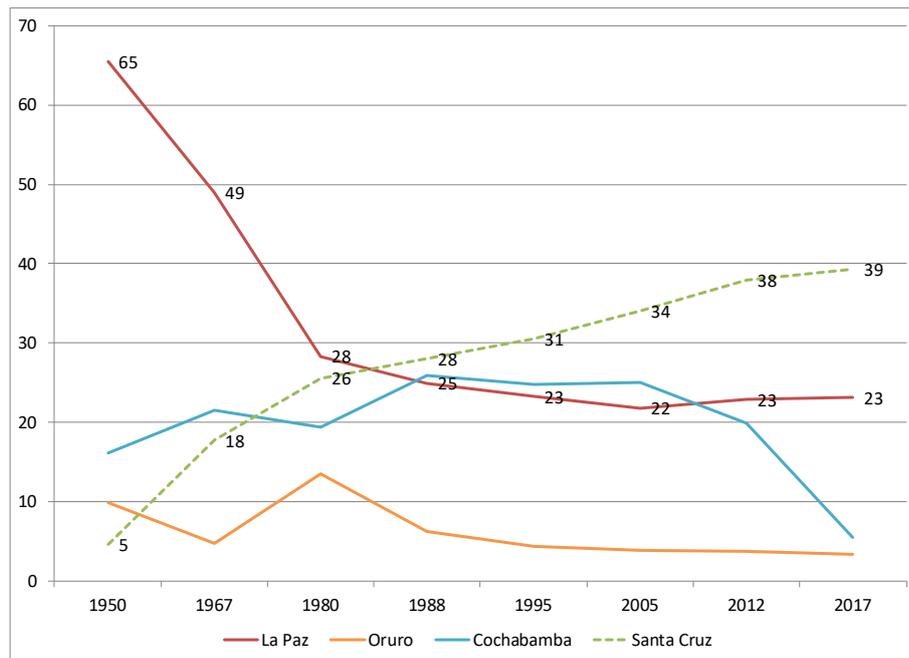
Natural resource endowments and public infrastructure are also critical to understand the more recent success stories of Santa Cruz and Tarija. On the one hand, the fertile soils of Santa Cruz could be increasingly exploited since the mid-1950s thanks to the highway between Cochabamba and Santa Cruz: it allowed to transport agriculture products from the east to the west and to move migrants from the west to the east. Furthermore, additional road improvements in the east, as well as an increase in public and private investments, generated a reconfiguration of the location of agricultural production in Bolivia: in 1950, 24% of this sectoral GDP was generated in La Paz and just 14% in Santa Cruz; in 1980 the ratios moved to 17% and 22%, respectively; in recent years, it has maintained around 17% in La Paz and increased to 43% in Santa Cruz.

The behavior of Santa Cruz is also linked to hydrocarbon production; in the 1950s, when the Bolivian economy became self-sufficient in oil production, 80% of the hydrocarbon GDP was generated by this department. In the 1970s, with the beginning in the transition of Bolivian exports from mining to hydrocarbon products, the relevance of Santa Cruz remained unchanged. At the beginning of the 21st century, when natural gas consolidated as the main Bolivian export, two-thirds of hydrocarbon production was originated in Tarija and a quarter in Santa Cruz. In the former case, spectacular increases in the department's GDP was witnessed during the last commodity boom. These changes were undoubtedly related to the evolution of the international price of oil but would be

impossible without the existence of previous investments in infrastructure such as pipelines or refineries.

Natural resource endowments are even essential to understand changes in the regional predominance of manufacturing production (Figure 4). As previously stated, the Bolivian industrialization process started in the late 1920s and was predominantly located in La Paz, which in 1950, according to our estimates, represented 65% of the manufacturing GDP. In 1980, the relative importance of La Paz and Santa Cruz was roughly similar, around 27% of the sectoral GDP. Over the last decades, the relative importance of La Paz in the manufacturing GDP has reduced to 23%, but it has increased to 40% in Santa Cruz.

Figure 4. Departmental Manufacture GDP (% of total Manufacture GDP), 1950-2017



Sources: See text.

This consolidation of Santa Cruz as the manufacturing engine is related to the increasing predominance of Santa Cruz in the production of food and, to a lesser extent, petroleum refining products. For instance, the relative importance of La Paz and Santa Cruz in food production in 1967 (which represented 26% of the gross value of manufacture production) was somewhat similar (around 35% of total food production).

In 1995, food production (which represented 33% of total manufacturing production) originated mostly in Santa Cruz (43%), and the relevance of La Paz was much lower (13%). In 2017, food production still represented 36% of total manufacturing production, and half of it came from Santa Cruz (a share that can be traced back to 2008) and just 12% from La Paz.

Overall, new quantitative evidence points to a change to the center of gravity from a north-south axis located in the west to a western-eastern one where Santa Cruz gets increasing preeminence. This transition can be visualized by different maps that group the nine departments into four quartiles before the National Revolution of 1952 (Map 2), during state-capitalism (Map 3), after the hyperinflation process (Map 4), and during the last commodity boom (Map 5).

Indeed, according to Map 1, the wealthier departments in 1950 were La Paz and Oruro. They were followed by Potosi and Santa Cruz which, however, presented very different features; the relative importance of the former both in total population and total GDP doubled that of the latter. The similarities between Cochabamba and Beni also mask very different situations; the former was among the more significant departments in terms of population and production, and the latter was among the smaller. Finally, the map stresses the marginality of Chuquisaca (one of the most critical departments in the 19th century) already in 1950 and that of Pando and Tarija.

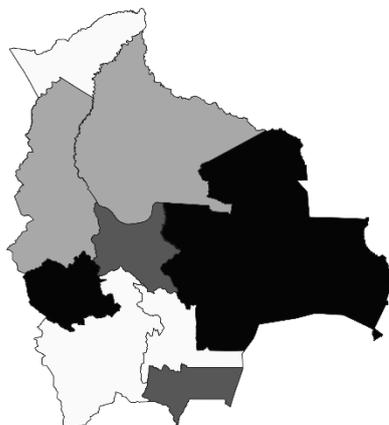
Map 2. The Relative Importance of Bolivian Departments (Bolivian pc GDP=1), 1950



Sources: See text.

During the state capitalism period, and thanks to the East March, Santa Cruz became one of the more vibrant regional economies; the other one was Oruro (Map 2). They were followed by Cochabamba and Tarija; in this last case, the department left out its previous marginality thanks to hydrocarbon production. The map also points to the relatively small size of the pc GDP of La Paz towards the national average. This “marginality” would be suggesting the existence of low levels of productivity, given that this department was the biggest in terms of population and regional GDP. Indeed, the pc GDP of La Paz concerning the national average is grouped with that of Beni, a department whose total population and GDP was around 10% of those of La Paz. Pando and Chuquisaca remained in the group of poorer departments, a cluster that was also reached by Potosi, a department whose relative importance over total population and total GDP has reduced steadily since the 1950s.

Map 3. The Relative Importance of Bolivian Departments (Bolivian pc GDP=1), 1980



Sources: See text.

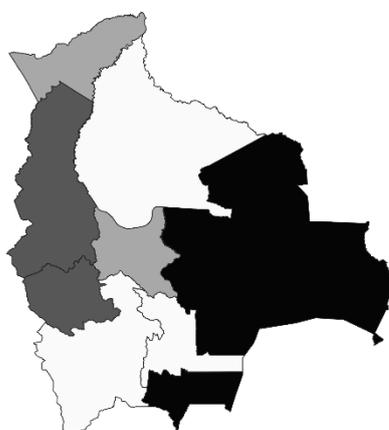
The 1980s crisis affected not only the evolution of the Bolivian economy but also the relative importance of each region. Indeed, the regional GDP in 1986 (when the reduction of the Bolivian GDP that started in the early 1980s stopped) was above its pre-crisis level (1980) in Pando and Cochabamba, was somewhat similar to the pre-crisis level in Chuquisaca, and was below the pre-crisis level with the rest of departments. However, the distance between the GDP level of 1986 and that of 1980 was below ten percentage points in the case of Santa Cruz and Beni, was around 13 percentage points in La Paz and Tarija and was approximately 40 percentage points in Oruro and Potosi.

The severity of the crisis in these two departments was heavily influenced by the behavior of the mining sector; the mining GDP in Potosi in 1986 was equivalent to 46% of its level in 1980, and in the case of Oruro, it was equal to 40% of its pre-crisis level. The reduction of the mining GDP was also noticeable in the case of La Paz (in 1986 equivalent to 37% of the 1980 level), but its impact on the total GDP was milder given the lower relevance of the sector in this department.

Essential reductions in the agricultural sector were also witnessed during this period. However, the shock was mostly a consequence of the 1982 drought and, except Oruro where the agricultural GDP in 1983 was equivalent to 46% of the 1980 level, was not as severe as in the mining sector. Other significant reductions in sectoral GDPs took

The regional configuration of the Bolivian economy also changed as a result of the last commodity boom. Santa Cruz remained in the group of more prosperous economies, where it was joined by Tarija thanks to the consolidation of natural gas as the main Bolivian export and the evolution of the international price of this commodity. La Paz and Oruro recovered their previous relevance; in the last case, once more, thanks to mineral production (in 2012, it represented a third of the GDP of Oruro). The significance of Cochabamba reduced somewhat as did that of Pando, whose relative position is more in line with what could be expected given its relative importance over total population and GDP. During these years, the departments of Beni, Chuquisaca, and Potosi remained as the poorest, being particularly worrying the last case given the noticeable increase in international mining prices and the relevance of the sector in this department (44% in 2012).

Map 5. The Relative Importance of Bolivian Departments (Bolivian pc GDP=1), 2012



Sources: See text.

Summing up, the analysis of the relative importance of each department over the total population and total GDP stresses the existence of significant changes from the 1950s onwards. There is relative stability in the position of La Paz and Cochabamba, a reversal of fortune in the case of Potosi (something that could have also happened in the

case of Chuquisaca during the first half of the 20th century) and a definite improvement in the case of Santa Cruz. When the analysis focuses on the relative position of each regional pc GDP over the national pc GDP average, it points out the leadership of Santa Cruz since the 1960s, the lower ranks of La Paz in spite of being the most populated and for a long time the biggest economy, and the consolidation of Chuquisaca and Potosi among the poorest even before the 1980s crisis. It also points out the improvements of Tarija during the 1970s and the last commodity boom. However, the reduction in the relative weight of the regional economy over total GDP in the post-boom context, questions the sustainability of these upward movements. In short, western economies such as La Paz and Cochabamba remain critical, but Santa Cruz consolidated undoubtedly as the most dynamic.

5. Conclusions

This paper has analyzed the evolution of the location of economic activity in Bolivia. In contrast to most Latin American experiences, it shows a significant change in the relative importance of regions. To begin with, the early connection (16th century) of the current Bolivian economic space to the world economy through silver exports, gave economic prevalence to the nowadays western departments. This configuration persisted once Independence was achieved (1825), regarding the relatively short-lived dynamism of rubber exports in the north-east (1890s-1910s) as an exception. Furthermore, the prevalence of western departments was particularly noticeable during the 1888-1954 period, given that the configuration of the Bolivian railway network connected the western departments with each other and to the world economy but divided the Bolivian internal market.

This configuration changed dramatically during the second half of the 20th century when the relative importance of Santa Cruz increased markedly. Previous studies have already analyzed this process by looking at population figures. This chapter provides additional evidence thanks to the estimation for the first time of regional GDPs since 1950. In effect, either by studying the regional pc GDP as a share of the national pc GDP or by looking at the regional participation in the total GDP, there is no doubt that Santa Cruz consolidated as the most crucial regional economy. Interestingly, the relevance of Tarija has also changed from one of the most marginal to one of the most relevant over

the last decades. By contrast, there is an apparent reversal of fortune in the case of the famous colonial center of Potosi.

Thus, since the 1950s, there has been a progressive change to the center of gravity of the Bolivian economy, from a north-south axis located in western departments to a west-east axis where Santa Cruz gained increasing prevalence. Undoubtedly, these changes are explained by the availability of natural resources. In effect, the early prevalence of western departments was highly influenced by mineral endowments. Similarly, the upsurge of Santa Cruz cannot be understood without considering its fertile soils and the hydrocarbon resources. This is also true in the case of Tarija, the region that has produced two-thirds of the hydrocarbon GDP since the early 2000s.

However, given the landlocked nature of the country, previous investments in infrastructure were critical to making these endowments economically valuable. Indeed, the prevalence of Santa Cruz is also linked to the highway between Cochabamba and Santa Cruz which was inaugurated in 1954. Thanks to this road, retail prices in Santa Cruz de la Sierra tended to converge to those of the rest of the capitals in western departments. Likewise, this road allowed the arrival of immigrants from the rest of the country and the achievement of population growth rates of around 4% per year. Similarly, it should be remembered that hydrocarbon sales depend on previous substantial investments in capital goods and transport infrastructure, as well as political bargaining with potential customers. This suggests that regional economic growth in Bolivia is not only determined by a resources lottery but also by active public policies.

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