Bolivia Public Finances, 1882-2007

Challenges and restrictions of State intervention in a small, multiethnic and revolutíonary economy

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INTRODUCCIÓN

"Why is it that you white people developed so much cargo and brought it to New Guinea, but we black people had little cargo of our own?" (Diamond, 1997). Esta pregunta que da inicio a uno de los libros de divulgación científica más reconocidos durante las últimas décadas es presumiblemente uno de los interrogantes económicos que más intriga a cualquier individuo: ¿por qué unos países son más ricos que otros? o, alternativamente, ¿por qué unos países han logrado crecer económicamente mientras que otros se han quedado relativamente estancados? Esta pregunta de *sentido común* ha estado también en el centro del debate entre economistas e historiadores económicos, quienes, en términos generales, han ofrecido tres grandes tipos de argumentos. Por un lado, según una tradición de pensamiento que se mantiene sólidamente anclada hasta nuestros días, las diferencias económicas se explicarían ante todo por diferencias culturales (Landes, 1998) y/o por diferencias genéticas (Clark, 2007; Ashraf y Galor, 2013). Otros investigadores descartan esta explicación y manifiestan, más bien, que las diferencias geográficas constituyen la principal explicación de las diferencias económicas (Diamond, 1997; Sachs, 2003). Finalmente, otra línea de análisis identifica a las instituciones y a las organizaciones como los determinantes últimos del desarrollo y crecimiento económico (Acemoglu, Johnson y Robinson 2005; Rodrik, Subramanian y Trebbi, 2004).

A pesar de que todas estas explicaciones han mantenido un interés y una renovación constante, no se puede negar que la tercera -la denominada hipótesis *neo-institucionalista*- es una de las que más atención y debate ha generado a lo largo de los últimos años. En términos sencillos, las instituciones –tanto políticas como económicas- son definidas como las "reglas del juego" que determinan el accionar y las decisiones de los agentes económicos (North, 1990). Asimismo, por organización se define a todos aquellos "…grupos específicos de individuos que persiguen objetivos comunes e individuales a través de un comportamiento coordinado" (North, Weingast y Wallis, 2009). De acuerdo con esta hipótesis, *el tipo de instituciones* y la *forma en la cual operan las*

organizaciones determinan, en gran medida, la evolución y el destino de las economías en el largo plazo. Esta idea ha sido validada en trabajos que destacan por su complejidad teórica (Greif, 2006) o por el ingenio metodológico aplicado en el análisis (Acemoglu, Johnson y Robinson, 2002; Acemoglu *et al*., 2003; Dell, 2010), pero también por el uso de la historia económica como campo de verificación y contraste de hipótesis alternativas.

Esta creciente atención hacia los trabajos neo-institucionalistas y la coincidente revitalización de la historia económica, ha permitido revisitar el pasado con nuevos enfoques y nuevas perspectivas de análisis. Ello ha sido particularmente interesante y fructífero en el caso de América Latina, donde, a lo largo de los últimos años, se han sucedido diversos trabajos de historia económica con propuestas y enfoques novedosos (Cárdenas, Ocampo y Thorp, 2000; Bértola y Gerchunoff, 2011). Estos trabajos han facilitado, por ejemplo, la ampliación del debate en torno a la cronología y las causas de la divergencia de las economías de América Latina frente a las economías más desarrolladas del mundo (Haber, 1997; Prados de la Escosura, 2009). La relectura del pasado ha facilitado también repensar algunos mitos históricos profundamente anclados en el pensamiento latinoamericano. Por ejemplo, analizando la tasa arancelaria promedio en diferentes países del mundo, Coatsworth y Williamson (2004) sugieren que el crecimiento guiado por las exportaciones en América Latina entre 1850 y 1929 convivió con un elevado nivel de protección arancelaria. Igualmente, Haber (2006) ha sugerido que la industrialización en América Latina no fue fruto del impulso estatal, sino del despegue de las exportaciones desde mediados del siglo XIX.

El objetivo básico de la presente tesis doctoral es participar en estos debates mediante un análisis del impacto de la participación estatal en la economía boliviana. Para ello, el trabajo no pretende abarcar las múltiples facetas de la intervención estatal (Barr, 2004), sino uno de sus componentes: la hacienda pública, es decir, los ingresos y gastos públicos del Estado boliviano. La elección de estas variables como objeto de análisis tiene al menos tres justificaciones. Por un lado, al ser una organización que condensa elementos económicos, políticos y sociales, la hacienda pública constituye un campo multidisciplinario de encuentro de

diferentes ramas académicas (Lamb, 2005) que facilita un acercamiento transversal al problema de investigación. Por otro lado, al tratarse de una organización que tiende a ser sumamente estable a lo largo del tiempo (Comín, 1996), la hacienda pública se convierte en un útil instrumento para entender los equilibrios institucionales existentes al interior de una economía. Finalmente, el estudio de la hacienda pública permite analizar uno de los instrumentos más importantes –sino el más importante- de intervención estatal. Por tanto, ya sea por su potencial heurístico o por su importancia relativa, la hacienda pública constituye un instrumento plenamente válido a la hora de analizar el impacto de la intervención estatal en Bolivia.

El estudio de la hacienda pública tiene importantes antecedentes en la historiografía boliviana, que han permitido repensar el rol de la intervención estatal a lo largo de la historia de la República (Contreras, 1990; Gallo, 1991; Morales y La Torre, 1995; Dunkerley, 2003; Barragán y Peres-Cajías, 2007). Sin embargo, esta tesis supone un avance respecto a estos antecedentes pues presenta un horizonte temporal de muy larga duración, que permite identificar el impacto de las restricciones estructurales que diferencian en cierta medida al caso boliviano del resto de las economías de la región. Por un lado, permite indagar el rol que la mediterraneidad pudo tener en la evolución del Estado y la economía bolivianos, como también las condiciones que determinaron la extrema dependencia de éstos –incluso bajo parámetros latinoamericanos- de la explotación de recursos naturales. Por otro lado, esta mirada larga permite también entender el rol que pudieron tener tanto la población indígena, como su progresivo empoderamiento político, sobre la intervención estatal y la evolución de la economía. Estos elementos, a su vez, permiten ofrecer insumos al debate sobre cómo y por qué uno de los espacios económicos más importantes durante la época colonial es a día de hoy una de las economías más pobres de América Latina.

Pero además de esta mirada de largo plazo, esta tesis doctoral se diferencia de de la investigación precedente por la presentación de series cuantitativas totalmente inéditas. Esta contribución permite sin lugar a dudas complejizar el debate, y los cuatro capítulos de los que se compone la tesis son una primera muestra de este potencial. En este sentido, el

capítulo 1 presenta una estimación del PIB y del PIB per cápita boliviano entre 1846 y 1950 que -luego de ser conectada con las estimaciones oficiales existentes desde 1950 hacia adelante- resalta los límites de las explicaciones neo-institucionales para entender las heterogéneas experiencias de crecimiento económico en Bolivia. Asimismo, el capítulo 2 presenta una estimación desagregada de los ingresos y gastos públicos del Estado boliviano entre 1882 y 2007 que permite resaltar que, más allá del fomento explicito o no a determinadas partidas, la intervención estatal en Bolivia estuvo restringida por su escasa sostenibilidad fiscal en el largo plazo. Luego, aprovechando esta desagregación, el capítulo 3 presenta una estimación de la tasa arancelaria promedio en Bolivia entre 1890 y 1936, que permite cuestionar aquellas hipótesis que plantean la existencia de una relación causal entre *liberalismo económico* y desintegración del mercado nacional. Finalmente, el capítulo 4 estima la evolución y distribución del gasto público en educación desde 1900 hasta la actualidad, y resalta que la Revolución de 1952 no generó ninguna diferenciación significativa en la configuración del sistema educativo boliviano frente al resto de la región.

Los anteriores resultados permiten cuestionar algunas ideas preconcebidas que gozan de una amplia popularidad en el debate académico o en el sentido común bolivianos. Por ejemplo, los nuevos datos que ofrece la tesis sugieren que los niveles actuales de pobreza y de subdesarrollo difícilmente son resultado de un proceso lineal y continúo a lo largo del tiempo. Igualmente, la tesis sugiere que la intervención estatal en Bolivia difícilmente refleja las ideas preconcebidas de elites reducidas capaces de determinar el rumbo estatal, sino, más bien, el resultado de continuas pugnas entre diversos grupos que actúan bajo determinadas restricciones políticas, sociales e incluso internacionales. Con relación a esto, el análisis de la política comercial boliviana durante la Primera Globalización sugiere que la visión que tenemos los bolivianos de nuestro pasado puede estar llena de presupuestos o prejuicios sumamente inexactos desde un punto de vista histórico. Finalmente, el análisis del impacto de la Revolución de 1952 en el gasto educativo resalta que la insumisión política que nos ha caracterizado muchas veces como sociedad, no es necesariamente condición suficiente para lograr cambios sostenibles en las capacidades y condiciones de vida de los bolivianos. Si bien estas nuevas ideas y toda la evidencia que presenta la tesis pueden requerir aún de una mayor investigación y

profundización histórica, constituyen nuevos insumos para revitalizar un necesario debate sobre la evolución histórica de la economía boliviana.

Administrative map of Bolivia

Sources: Central Intelligence Agency webpage (https://www.cia.gov/library/)
Notes: Bolivia has nine Departments; La Paz is the seat of the Government; Sucre is the legal capital and the seat of Judiciary.

Chapter 1.

Tracing the reversal of fortune in the Americas. Bolivian GDP per capita since the mid-nineteenth century[1]

In the centuries before the Spanish conquest, the Bolivian space was among the most highly urbanised and, arguably, most complex and developed societies in the Americas. According to the estimates reported in Acemoglu, Johnson and Robinson (2002), the urbanisation rate in the Bolivian area ca. 1500 was, together with those in Mexico, Ecuador and Peru, the highest in the continent. The economic prominence of the Bolivian space consolidated after the conquest due to silver discoveries. Thanks to these, the Bolivian city of Potosi became one of the most important economic centres in the Americas during the colonial era. For a long period of time, Potosi silver production was critical for the world economy (Pomeranz, 2000: 269-274), for regional economic integration (Assadourian, 1982) and for the Spanish administration's sustainability (TePaske and Klein, 1982). Despite its gradual loss of positions in favour of other areas of the Empire, Potosi remained an important economic centre until the collapse of the Spanish colonial power (Tandeter, 1992; Grafe and Irigoin, 2006).[2] Not surprisingly, today, almost 500 years after its arrival at the region (1548), Spaniards still use the expression "*vale un Potosí*" (it is worth a *Potosí*) as equivalent to "it is worth a fortune".

In stark contrast with its prosperity during pre-colonial and colonial times, in the early 21st century Bolivia is one of the poorest economies in the Americas. In 2012, according to the World Bank, its income per capita (PPP-adjusted) was the sixth lowest in the continent, just ahead of Haiti, Guyana, Nicaragua, Honduras and Guatemala, and the country ranked 108th in Human Development Index (UNDP). The HDI figure becomes

[1] This chapter has been written in collaboration with Alfonso Herranz-Loncán.

[2] The economic importance of Potosí was higher at the beginning of the colonial period (1570-1630) than thereafter (Bakewell, 1984; Tandeter, 1992). Recent works by Arroyo-Abad, Davies and van Zanden (2012) and Allen, Murphy and Schneider (2012) show the relative decline of Potosi relative to other economies in the Americas and the world since the second half of the 17th Century.

substantially worse if it is corrected for inequality. Indeed, Bolivia is one of the most unequal economies in one of the most unequal regions of the world (SEDLAC).

This contrast between pre-colonial and colonial opulence and current relative poverty would make Bolivia a perfect example of the so-called "reversal of fortune" hypothesis (Acemoglu *et al*., 2002). According to this hypothesis, among the countries colonised by European powers since 1500, those that were relatively rich at the beginning of the colonial era are now relatively poor and vice versa. The reversal of fortune would be the result of an "institutional reversal" created by the colonisers, which were more prone to establish extractive institutions in rich and densely populated areas, and institutions that encouraged investment in poor and scarcely populated regions. After independence, the continuity in the rent-seeking and investment-discouraging character of the institutional framework in previously rich areas would prevent them from taking advantage of the opportunities to grow and industrialise, and would condemn them to sustained divergence.

Actually, Acemoglu *et al*. (2002: 1266) explicitly mention Potosí among the examples of territories where the Europeans established an institutional framework that would hinder growth and investment in the long term. According to them, "(...) the area now corresponding to Bolivia was seven times more densely settled than the area corresponding to Argentina; so on the basis of [our] regression, we expect Argentina to be three times as rich as Bolivia, which is more or less the current gap in income between these countries" (Ibid: 1248). In the same vein, Dell (2010) identifies a number of channels through which the negative effects of the mining mita, a forced labor system instituted by the Spaniards in Peru and Bolivia in 1573, persisted over time and affected the current development levels of the areas where it was established.

The "reversal of fortune" hypothesis, however, has been criticised for oversimplifying causal relationships by "compressing" history. For instance, in the case of Sub-Saharan Africa, Austin (2008) stresses the difficulty of providing general explanations for a region with wide variations in economic growth experiences over time and across countries.

In the case of Bolivia, the available official series of income per capita, which starts in 1950, clearly indicates that the second half of the 20th century was a period of divergence from the core economies of the world. More specifically, according to the New Maddison Project database, Bolivian pc GDP represented 20 percent of US pc GDP in 1950 and only 10 percent in 2010. However, that divergence was not constant over time, but was associated with two specific economic catastrophes: i) the depression that followed the 1952 Revolution, and ii) the debt crisis and the structural adjustment programs of the 1980s. Moreover, economic growth in Bolivia since the late 1950s has not been significantly lower than in neighbouring Argentina, a country which, according to Acemoglu *et al*. (2002: 1248), would have benefited in the long term, through the institutional channel, from the low levels of population density and urbanisation of its territory ca. 1500.[3]

Therefore, far from being a sustained process, Bolivian divergence during the second half of the 20th century seems to have been associated to certain conjunctures and countries. The available research on the period before 1950 also seems to suggest an alternation of cycles of stagnation and economic dynamism. For instance, instability, de-urbanization, export stagnation and (since 1870) the decrease in silver prices and the Bolivian terms of trade would have reduced the country's potential for economic growth and convergence during the second half of the 19th century (Huber, 1991; Pacheco, 2011; Langer, 2004; Mitre, 1981; Klein, 2011; Bértola, 2011). By contrast, the boom in rubber and, specially, tin exports since the early 20th century would have boosted a sustained growth process at least until the Great Depression of 1929 (Mitre, 1981; Bértola, 2011), and this crisis would have had a relatively mild impact in Bolivia, compared with other Latin American countries (Bértola, 2011: 262).

Unfortunately, so far the lack of information on the main magnitudes of the Bolivian economy has prevented from testing any hypotheses on the country's relative performance since independence. Indeed, analyses of Bolivian long-term economic growth have suffered so far, either from being constrained to the second half of the 20th century (e.g. Mercado, Leitón and

[3] The yearly growth rates of pc GDP between 1955 and 2010 were approximately 0.9 percent both in Argentina and Bolivia, according to the New Maddison Project database.

Chacón, 2005; Humérez and Dorado, 2006; Grebe *et al.*, 2012; Machicado, Nina and Jemio, 2012; Pereira, Sheriff and Salinas, 2012), or from lacking an homogeneous indicator of economic performance for the whole postcolonial period (see e.g. Morales and Pacheco, 1999; Mendieta and Martín, 2009; Bértola, 2011; Peres-Cajías, 2012).

This chapter aims at filling this gap by providing estimates of the Bolivian income per capita from the mid nineteenth century to 1950. This is the first attempt to estimate the long term evolution of Bolivian pc GDP before 1950. There are, however, some antecedents for some specific periods or benchmark years. More precisely, Mendieta and Martín (2009) have estimated yearly GDP figures for 1929-1950 through a regression with three independent variables: exports, public expenditure and money supply (real M3). Morales and Pacheco (1999) report average GDP growth rates for some sub-periods between 1900 and 1945, and yearly GDP figures for 1928-1936, although without giving information on their estimation methodology. Finally, Hofman (2001) provides GDP estimates for 1900, 1913 and 1929, also without indicating sources or estimation methods.

In contrast with these antecedents, we present new yearly income per capita figures for 1890-1950 and a point guesstimate for the mid-nineteenth century. The new series may help to find out when Bolivia left its ancient colonial centrality and became a marginal space in the Americas, and to identify the main periods of Bolivian economic divergence after independence. The results of our estimation indicate that the country's divergence, which started before the mid-19th century, has not been a persistent feature of its postcolonial economic history. Instead, it seems to have been concentrated in the second half of the 19th century and the catastrophic episodes of the second half of the 20th century. By contrast, during the first half of the 20th century, economic growth was not low by international standards, and Bolivia converged both with the core countries and with the richest economies in the region. It is therefore difficult to describe the postcolonial era in Bolivia as one of sustained divergence associated to a bad institutional setting. An adequate understanding of Bolivian present poverty would require instead more specific explanations, in order to understand the reasons why the country was unable to take advantage of the available growth opportunities in certain specific periods.

Next section presents the sources and methods that we used to estimate the evolution of Bolivian GDP between the mid nineteenth century and 1950, and compares our series with the alternative available figures. The second section presents the methodology applied in the reconstruction of our "guesstimate" for 1846. The third section analyzes and explains the driving forces behind the evolution of the Bolivian GDP since the mid nineteenth century. The fourth section contrasts the Bolivian experience with other economies in the Americas. The last section concludes.

1. Bolivian pc GDP between 1890 and 1950: sources and estimation methods

There has been substantial progress in the estimation of historical national accounts during the last years. On the one hand, it has been possible to reconstruct GDP estimations for some European and Asian countries since the late-middle ages (e.g. Álvarez-Nogal and Prados de la Escosura, 2007; Broadberry *et al*. 2011; Broadberry and Gupta, 2012; Edvinsson, 2013). On the other hand, the available evidence for some developing economies has been expanded to the middle or late 19th century (see e.g. Bértola, 1997; Prados de la Escosura, 2009; Santamaría, 2009; Pamuk 2006). This chapter contributes to this growing literature through the estimation of a series of Bolivian GDP for 1890-1950 and a point "guesstimate" for the mid 19th century. In this section we present the sources and methods used to obtain the yearly series from 1890 onwards, whereas the next one describes the assumptions that underlie the guesstimate.

Our GDP series is based on the production approach. In order to grant the link with the current GDP figures, the starting point of the estimation is the information on the value added of each Bolivian economic sector in 1950, coming from the official national accounts (Table 1). We have then estimated a series of *real gross output* for 1890-1950 for each of the sectors considered in that classification, which we have used to extend backwards each 1950 sectoral value added figure. Finally, we have taken the sum of the resulting sectoral value added series as the yearly estimation of the Bolivian GDP.

Table 1. Sectoral composition of the Bolivian GDP, 1950

Agrarian Sector	**31.21**
Mining and petroleum industry	**15.48**
Mining	14.94
Petroleum industry	0.54
Manufacturing industry	**14.08**
Urban industry	13.12
Rural artisan production	0.96
Utilities	**1.39**
Construction	**2.36**
Services	**35.48**
Government	5.36
Transport	6.67
Trade	11.32
Housing rents	4.93
Financial and other services	7.2
Total	**100**

Sources: Sector percentages (in 1958 prices, the earliest available) have been taken from the ECLAC webpage, and the importance of the subsectors within each main sector comes from CEPAL (1958).

Notes: We have introduced two modifications on the original ECLAC data. Firstly, we have corrected the sectoral percentages to account for the fact that financial services were not included in the ECLAC database before 1962 (the series included instead a non-classified "statistical difference" up to that year, which we took as a basis for our estimation of the weight of the financial sector, together with its sectoral share in 1962). Second, we corrected the percentage of construction to account for the fact that the 1950 figure was a clear outlier; we took instead the average percentage for 1950-1955 and recalculated the relative importance of the remaining sectors accordingly.

The quality of our results is affected by the absence of information for some sectors, which is especially serious in the case of agriculture, manufacturing industry before 1925, and domestic trade services, and may have introduced biases of unknown direction in the level, fluctuations and composition of the series. In addition, our estimation also suffers from the lack of information on the evolution of prices and productivity in each sector. The importance of this problem is reduced by the low technological dynamism of an exceedingly large share of the Bolivian economy during the period under study. However, due to both those potential biases and the gradual reduction in the amount and quality of the available empirical information as the series go back into the past, it is necessary to allow for relatively large error margins in the case of the earliest observations.

The following paragraphs describe in detail the sources, methods and assumptions applied in the estimation of each sectoral series of output volume. Before that, however, we describe the population series that we have used to express the GDP in per capita terms, and also as an index for the evolution of some of the output series.

Population

The available information on the historical evolution of the Bolivian population is very scarce. For the 19th century there is no official census, but only a bunch of estimates published for different benchmark years (1825, 1831, 1835, 1846, 1854, 1865 and 1882), which seem to have been obtained with different methodologies and are mutually inconsistent, involving huge and unlikely demographic changes in different directions over short periods of time (Barragán, 2002; Urquiola, 1999: 216). In the case of the first half of the 20th century, apart from a few incomplete estimates for some intermediate years, which do not cover the whole territory of the country, there are only two national censuses available, which were carried out in 1900 and 1950. The estimates for the 19th century, together with the national census totals, are reproduced in Table 2.[4]

Table 2. Available estimates of the Bolivian population, 1825-1950

Year	Population
1825	1,100,000
1831	1,088,768
1835	1,060,777
1846	1,378,896
1854	2,326,126
1865	1,813,233
1882	1,172,156
1900	1,766,451
1950	2,704,165

Sources: Barragán (2002) and National Censuses of 1900 and 1950.

[4] We have excluded from the 1900 figure the population from the old Bolivian coastal areas (*Litoral)*, which were still included in the census despite having being lost in the Pacific War.

Our estimation of the Bolivian population since the late nineteenth century is based on a geometric interpolation between the three national estimates that we consider as the most reliable among the available ones: the 1900 and 1950 national censuses and the 1846 figure. The latter comes from Dalence (1851) and is usually preferred in Bolivian historiography, because it was elaborated in the context of an exhaustive and detailed survey of the Bolivian economy. The main shortcoming of the 1846 estimation is the uncertainty on the size of the so-called "infidel" population, which seems to account for those indigenous communities that were not fully integrated in the Bolivian state institutional structure yet.[5] These communities, which the 1900 and 1950 National Census estimated in 91,000 and 87,000 individuals respectively, were considered by Dalence in the mid 19th century to amount to approximately 700,000 people, i.e. 34 percent of the total Bolivian population. This figure, however (which is not included in the 1846 total population reported in Table 2), seems to be an overestimation, because it would involve a substantial net demographic decrease in Bolivian population of more than 200,000 inhabitants throughout the second half of the 19th century, a period of demographic expansion in all Latin American countries (Yáñez *et al.*, 2012).[6] In the same vein, the 1950 national census also considers this figure as unrealistic and suggests that the "infidel" population would amount instead to approximately 100,000 individuals by the mid 19th century.

Given that uncertainty, we have estimated two population series. One includes all individuals that were adequately accounted by the Bolivian

[5] The 1900 national census distributed this population as follows: 27% in the Department of Tarija, 21% in the Department of Santa Cruz, 16% in the "Territorio de Colonias", 16% in the Department of La Paz and less than 10% in each of the Departments of Beni, Cochabamba and Chuquisaca. The distribution of this population in 1950 was similar, and is consistent with the history of the Bolivian State expansion (Barragán and Peres-Cajías, 2007), since the "infidel population" would be mostly located in the tropical lowlands and the Chaco, i.e. mostly at the northern and eastern areas of the country.

[6] Neither migration nor the territorial loss associated to the Pacific War might explain that decrease. The population of the areas that were lost to Chile in the early 1880s may be estimated in ca. 74,000; see Yáñez *et al.* (2012: 21). Likewise, net Bolivian migration might have involved even lower numbers. For instance, according to the official censuses of each country, by 1895 the number of Bolivian-born citizens living in Chile and Argentina, which were probably the main destinations of the Bolivian emigration, was 8,869 and 7,361 respectively, whereas the number of foreigners living in Bolivia in 1900 was 7,425.

State, and the other also includes the population of the "infidel" or "non-subjected" (as the 1900 Census calls them) communities. The former is the result of making a geometric interpolation between Dalence's figure for 1846 and the National Censuses of 1900 and 1950.[7] In the latter we add an almost stagnant series of "non-subjected" population that decreased monotonously from 100,000 individuals ca. 1850 to 91,000 in 1900 and 87,000 in 1950. In turn, the first series is divided between urban and rural population. We consider as urban the population living in cities with more than 2,000 inhabitants in each of the three benchmark years, and all the remaining population as rural. With this broad definition of cities, the Bolivian urbanisation rate is estimated to have increased from 11 percent in 1890 to 26 percent in 1950.[8]

Agrarian sector

The available information on the Bolivian agrarian sector before the mid 20th century is extremely scarce. The first Agrarian Census was carried out in 1950 (see CEPAL, 1958). Before that year, there are no reliable agricultural production data for the whole country in the national official statistics, and the 1900 national census, for instance, considered impossible to provide even rough estimates of national agrarian production, due to the absence of statistical information (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica, 1904: LXVII). There is a total absence of national production data also in the historical literature (e.g.

[7] In order to estimate this series, we have increased the 1950 Census figure by 0.7 percent, which is the estimated census omission for that year according to ECLAC; see Yañez et al. (2012: 11). For 1900, the Census estimates an omission of 5 percent, which is also incorporated in the calculation. Following Yañez et al. (2012), we also account in the series for the demographic effects of the Pacific War (1879) and the Chaco War (1932-1935).

[8] Maddison (2006) and Yáñez *et al*. (2012) provide alternative population series for Bolivia, which start, in the first case, in 1900, and, in the second, in 1826. Differences between those series and our own are not very large (always lower than 11 percent), with the exception of the last few years of the 19th century and the early 20th century in the case of Yáñez *et al.* (2012). The reason for that difference is twofold. First, Yáñez *et al*. (2012) assume a population figure for 1900 of 1,561,000, much lower than the total census estimate. This is apparently the result of the exclusion by those authors of non-censed population, non-subjected communities and census omissions. Second, for 1882 they accept the figure reported in Table 2, which we consider as a clear underestimate. As a consequence, our estimate of the Bolivian population for 1890 is 20 percent larger than these authors' figure.

Larsson, 1988) and in the international statistical publications,[9] with the only exception of a series of rubber exports (which would be barely equivalent to output, since practically the whole domestic production was exported) for 1890 onwards (Gamarra, 2007).[10]

Leaving rubber production aside, for the rest of the agrarian sector we have chosen an indirect estimation strategy. First, we have estimated agrarian output in the mid 19th century on the basis of the information reported in Dalence (1851) and the assumption that the Bolivian import capacity at the time was relatively low and, therefore, domestic output should be enough to feed the Bolivian population.[11] Second, we have linked the estimate for the mid 19th century with 1950 on the basis of the evolution of rural population.

As has been indicated, our estimate of agrarian production for the mid 19th century is based on the information provided by Dalence (1851), who indicated the value of the agrarian gross production in Bolivia in 1846 and its composition. He also offered an estimation of the produced quantities of different products which represented, overall, 96 percent of the total value of the sector. However, his estimation is not consistent with the nutrition

[9] The League of Nations and UN yearbooks provide some data of agrarian production for Bolivia for 1923-1951, but they are difficult to accept, showing huge changes between consecutive years and being inconsistent with the information reported in the Agrarian National Census of 1950.

[10] Actually, Bolivian foreign trade statistics might underestimate rubber production, since a lot of Bolivian rubber was smuggled into Brazil through the porous border line between both countries. Unfortunately, the importance of this smuggling activity is impossible to quantify.

[11] According to Dalence (1851), Bolivian food imports in 1846 were rather limited, consisting of just 100,000 *cargas* of potatoes and chuño, "a lot of" ají and "many" *arrobas* of rice. A low level of Bolivian import capacity in the mid 19th century would be consistent with the small size of mining output and exports at the time. This might have been partially overcome, however, by the depreciation of the Argentinean peso relative to Bolivian silver and the resulting increase in Bolivian terms of trade with Argentina (Irigoin, 2009). Nevertheless, the impact of this problem on Bolivian food import capacity would have been rather low, since legal imports from Argentina accounted only for 7% of total Bolivian imports at the time, and only 12% of these were foodstuff – basically cows (Dalence, 1851: 268-274). In addition, the value of the Bolivian currency in relation with the Argentinean peso was not stable over time and, given the persistent monetary heterogeneity in Argentina, probably not uniform across regions (see Irigoin, 2009: 563-568). Finally, if our assumption on the low level of Bolivian food imports were too low, the resulting overestimation of the agrarian production in the mid 19th century would be compensated by the underestimation of the relative value of silver exports.

needs of the Bolivian population in 1846. Under the assumption of a relatively low import capacity of the country during those years, that mismatch would be a consequence of an underestimation of food production (maybe due to the inability to account for self-consumption; see Langer, 2004). In addition, such underestimation would mainly affect agricultural produce, rather than livestock.[12] Under these circumstances, we have re-estimated agrarian production in 1846 by assuming that: i) nutrient availability was 1,940 calories per male adult-equivalent per day;[13] ii) animal products were correctly assessed by Dalence (1851); and iii) in the case of agricultural products, Dalence's estimates correctly reflect the composition of output, but not its level (see Appendix 1). As a result of those assumptions, we obtain an estimate of agrarian product in 1846 that is 46% higher than the value proposed by Dalence.

In order to compare that estimate with the output of the sector in 1950, we have taken a sub-group of goods for which price and quantity data were available both for 1846 and 1950, and which represented 82 percent of the total gross production in 1846 and 74 percent in 1950. We have expressed the production of those goods in both years in 1950 prices, and have added up in each case the total value of the products for which unit prices and quantities were not available for both years (with the exception of rubber, see below). Finally, we have increased gross production in each year by 11 percent to account for forestry production.[14] According to these calculations, the gross output of the agrarian sector in 1950 was approximately twice as high as in 1846. This difference has been used to

[12] Dalence's estimation of meat consumption per person is very similar to that provided by the 1950 Agrarian Census, which is around 23 kilograms per year (CEPAL, 1958: 268). If Dalence's figures for the whole agrarian sector were accepted, meat production would account for almost 20% of the total nutritional needs of the country (see Appendix 1). This percentage is too high to be likely; for example, meat has been estimated as 12 percent of the total nutritional ingest in colonial times in Mexico, Peru, Bolivia and Colombia by Arroyo-Abad *et al*. (2012: 153).

[13] This is the nutrient availability level used by Arroyo-Abad *et al*. (2012: 153) in their bare-bones basket for Latin America during the colonial era. Although this amount is rather low in comparative terms, we have preferred to use it here in order to account for the possibility that Dalence underestimated the level of food imports. We have excluded the "non-subjected" population from the calculation of the nutritional needs of the Bolivian society because we estimate the subsistence production of this population separately from the rest (see below).

[14] This was the percentage in 1950 (CEPAL, 1958); Dalence (1851) does not present data for this sector for 1846.

construct an index of output volume that, due to the lack of additional information, is assumed to have grown in line with rural population. Finally, we have increased that index by the value of rubber (at 1950 prices), under the assumption that all rubber production was exported,[15] and by an additional amount to account for the food production of the "non-subjected" population.[16]

Although the paucity of empirical information on the sector prevents from drawing any detailed conclusions on the evolution of the output series, our estimates would indicate that the agrarian value-added per rural inhabitant would have increased just by 23% in a century. This extremely low progress is consistent with the very low levels of Bolivian agrarian productivity in the mid 20th century (CEPAL, 1958: 54) and, together with the gradual increase in urbanisation, it would help to explain the substantial growth in Bolivian food imports that took place since the late 1920s.

Mining and petroleum industries

Unlike population or agriculture, the available information on output and prices of extractive industries (mining and the oil industry) is abundant and allows reconstructing the evolution of the production of silver, tin, copper, gold, antimony, lead, tungsten, zinc and petroleum and its derivatives. Since, in most cases, all output was exported, we have often assumed exported quantities to be representative for production.[17]

Our series of silver production is based, up to 1907, on Klein's (2011: 304) decennial estimates, which have been annualized on the basis of Haber and

[15] Rubber exports were negligible until 1890, when they started growing at a very high pace. In the 25 years before 1915 they amounted, on average, to around one third of total Bolivian exports. After 1915, due to Asian concurrence, and with the exception of the Second World War years, rubber exports became marginal. Export data come from Gamarra (2007) for 1890-1926 and from the official trade statistics afterwards. The relative price of rubber in 1950 has been taken from the Christopher Blattman database: http://chrisblattman.com.

[16] Under the oversimplifying assumption that these communities lived at subsistence level and all their economic activity was food production, we assume their per capita agrarian (and total) GDP to be 300 Geary-Khamis dollars of 1990. This is the subsistence minimum assumed by Milanovic, Lindert and Williamson (2011:262).

[17] On this assumption, see Gómez (1978) and Mitre (1986, 1993).

Menaldo's (2011) database.[18] After 1907, we use silver exports figures, taken from the official trade statistics. When these were not available, we used Haber and Menaldo's (2011) data. The tin output index is based on export data taken from Haber and Menaldo (2011) up to 1903, Peñaloza Cordero (1985) for 1904-1924, and CEPAL (1958) for 1925-1950. Silver and tin were the two main minerals produced in Bolivia, and accounted for more than three quarters of total mining production in the century before 1950. We have also estimated the evolution of the output of six other minerals of lower importance: copper (from Haber and Menaldo, 2011), gold (from the official trade statistics), and antimony, lead, tungsten and zinc (from the official trade statistics for 1908-1930 and Haber and Menaldo, 2011, for 1931-1950).[19]

We aggregated the resulting eight production indices by using the structure of prices in 1846, 1908, 1925 and 1950, obtained from information in Haber and Menaldo (2011) and the Blattman's database. Finally, we have calculated a single series through weighted averages of each couple of aggregate indices, in which the relative weight of each series depends on the distance to the year of the price structure of that series. We have then used the average volume series as representative of the evolution of mining value added (assuming therefore a constant ratio between value added and gross production).

Finally, the value added series of the petroleum industry is based on two volume indices, of raw and refined oil production, that start in 1925 (when this industry was established in Bolivia) and are taken from CEPAL (1958: 193). Once more, due to the scarcity of information, we have assumed a constant ratio between oil value added and gross production between 1925 and 1950, which is 75 percent higher for refined oil than for raw oil.

[18] For this section, we actually rely on the complete mining production data estimated by Haber and Menaldo and which were kindly provided to us by the authors.
[19] We assume that the relative importance of the production of the last four minerals was negligible before 1908.

Manufactures

Following ECLAC, we have divided the manufacturing sector into four subsectors: registered industry, non-registered industry, urban artisan production and rural artisan production. Together with the importance of each of those subsectors in the total manufacturing value added in 1950,[20] CEPAL (1958) also provides a series of gross production of the registered industry and some of its main branches for 1938-50. We have assumed that the non-registered industry and the urban artisan production grew at the same pace as the registered industry during those years, and have extended backward the sum of the output of these three subsectors until 1925 on the basis of a series of volume of imports of raw materials (CEPAL, 1958: 54).[21] Assuming a constant ratio between manufacturing gross production and value added, this series has been used as representative of the evolution of the value added of Bolivian manufacture (always excluding rural artisan production) between 1925 and 1950.

Unfortunately, there is no systematic information on the evolution of the manufacturing sector before 1925, and we can only make a very rough guesstimate of its evolution on the basis of Dalence's (1851) description of Bolivian industry in 1846. With this information, and under the assumption that in 1846 the value added in manufacturing was ca. 50 percent of gross production (as in 1950), we can estimate the value added of urban industry in 1846 as approximately 26 percent of its level in 1925, and link those two benchmark years according to the evolution of urban population.[22] The growth of the resulting series is very low until the 1920s, which is consistent with the extremely slow Bolivian industrialisation process before that decade (Rodríguez, 1999) and the delay in the arrival of modern industrial companies to the country (Tafunell and Carreras, 2008:Table 8). It is also consistent with the assessment of the sector included in the 1900 National Census, according to which the Bolivian industrial sector was

[20] Registered industry: 33.5%; non-registered industry: 29.3%; urban artisan production: 30.4%; and rural artisan production: 6.8%.

[21] For each year we have taken the average of the imports of that year and the previous one, in order to account for the time lag between the purchase of the raw materials and the commercialization of the industrial product.

[22] A similar procedure is followed in Álvarez-Nogal and Prados de la Escosura (2007) for preindustrial Spain.

composed almost exclusively by artisans, among which 95 percent were textile producers. For instance, on the textile industry, the 1900 Census stated that it was: "(...) still in an embryonic state. There is no information about any factory or establishment with the features of a stable and improved company. The only factory of this nature in Bolivia is one established in the city of La Paz" (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica 1904: LXVII- our translation).

In the case of rural artisan production, and given the total absence of information, we have assumed that the value added of the subsector grew at the same pace as rural population between 1890 and 1950.

Utilities

Due to the absence of information on water distribution services, our estimation of the evolution of the value added of the utilities sector is only based on the production of electricity.[23] For 1891-1930, we assume that electric power capacity grew in line with the imports of electric material, which are available in Tafunell (2011).[24] After 1930, CEPAL (1958: 171-179) provides the total amount of electric production in Bolivia for several benchmark years (1938, 1947 and 1952) and the yearly output of the main producers since 1945. This data allow estimating a yearly series of electricity production between 1938 and 1950.[25] Finally, we link the 1930 and 1938 estimates by using the increase in Bolivian electric production between 1929 and 1937, provided by ONU (1952), and the fluctuations in industrial production.

Construction

The value added of the Bolivian construction sector in the mid 20th century has been projected backwards on the basis of different indicators. For 1928-1950 we have taken the geometric average of two variables: apparent

[23] We do not consider gas production and distribution because this sector was negligible in Bolivia before 1950.
[24] We assume the value added of the electricity sector to be zero before 1891. This is consistent with the historical description of the main Bolivian cities at the time.
[25] In order to approach the yearly changes between 1938 and 1945 we use the fluctuations in industrial output.

consumption of cement and imports of construction materials. The former has been estimated, for 1938-1950, on the basis of domestic production (taken from CEPAL, 1958: 161), under the assumption (also suggested by CEPAL, 1958) that there were no cement imports during those years. For 1928-1938, we have carried out a geometric interpolation between cement imports in 1927 (when domestic production was almost inexistent; see Tafunell, 2006: 15) and domestic production in 1938. Imports of construction material since 1928 have also been taken from CEPAL (1958:54). For 1912-1927, we have assumed that the value added in the sector grew in line with the imports of construction materials (cement included), which have been taken from the official trade statistics. Finally, for 1890-1912 we have used the geometric average of urban population and an index of railway construction, which has been estimated by distributing the railway mileage that was open each year (Sanz, 1998) between the five previous years.

Government services

The value added of government services has been assumed to grow in line with government expenditure expressed in real terms. Data on government expenditure comes from Gamarra (2007: 142) for 1890-99, and from our own estimation, based on official fiscal statistics, for 1900-1950 (see Chapter 2). In order to express those figures in real terms, we have used, for 1931-1950, the CPI estimated by Gómez (1978). Before 1931, given the absence of information on price changes, we have assumed, on the basis of the PPP hypothesis, that the annual increases in domestic prices in Bolivia were similar to the three year moving average of the product of the British CPI (Clark, 2013) and the Bolivian peso/pound sterling exchange rate (Gamarra, 2007: 142).[26]

[26] Moving averages have been introduced to avoid abrupt yearly changes in the price index. The validity of the methodology described in the text has been tested by comparing the Chilean and Peruvian available CPI for the early 20th century (taken from Braun *et al*. 2000; and Portocarrero, Beltrán and Romero, 1992) with an alternative CPI for those countries, estimated as is indicated in the text. Both series are very similar in both cases.

Transport services

The value-added of transport services has been estimated on the basis of information on two sub-sectors: railways and roads.[27] First, we have distributed the value-added of the transport sector in 1950 between those two subsectors according to their respective revenues in 1951, as estimated by CEPAL (1958).[28] Railway value added has then been projected backwards until 1930 on the basis of the evolution of railway ton-kms and passenger-kms (taken from www.docutren.com), weighted according to their respective unit transport prices in 1955 (estimated from price information in CEPAL, 1958: 226-227). Before 1930, we have assumed that the value added of railway transport grew in line with mining exports, corrected for the evolution of railway mileage.

The value added of road transport has been projected backward, for 1926-1950, on the basis of the evolution of gasoline consumption. This is available in CEPAL (1958: 199) for 1938-50 and has been projected back until 1926 using information on gasoline imports (taken from the official trade statistics)[29] and gasoline production, which started in 1931 (also taken from CEPAL, 1958: 197). Before 1926 gasoline consumption was very low, reflecting the fact that truck diffusion was relatively limited before that year. Therefore, for 1890-1926 we have used the sum of (deflated) imports and exports to approach the evolution of the value added of road transport.[30]

[27] Due to its marginal importance during the period, air and river transport services have been ignored.
[28] According to CEPAL, by 1951 railway revenues were 57% of road transport revenues. There is, however, a high error margin in the latter, due to the low quality of the available information.
[29] For 1933-37, it is impossible to obtain data on gasoline imports from the trade statistics and we have estimated it from information on total fuel imports, taken from CEPAL (1958: 54).
[30] Imports and exports are available in real terms since 1925 in CEPAL (1958: 54). Before 1925 we have used our estimated CPI to deflate imports and have used our volume index of mining output (see above) as indicator of the evolution of exports in real terms.

Banking services

The estimated value added of the services of the financial sector in 1950 has been projected backwards on the basis of a deflated series of bank deposits. This series is available since 1869, when the first Bolivian bank ("Banco Boliviano") was established. Information on deposits has been taken from the *Extracto Estadístico de Bolivia* (1935) for 1890-1935 and from Gómez (1978: 199-200) for 1936-1950.

Other services

Information on other services is virtually inexistent. We have then used indirect indicators to project backwards their value added in 1950. In the case of trade services, as has been done by other authors (see e.g. Prados de la Escosura, 2003), we have assumed that their value added grew in line with the evolution of the commercialised physical product, which is estimated as the sum of: i) a percentage of agrarian output equivalent to the relative importance of urban population on total population; ii) the overall production of the extractive and manufacturing industries; iii) total imports. We have used two-year moving averages in order to account for stocks. Finally, we have assumed that housing rents and other services evolved as urban population, just allowing, in the case of housing rents, for a 0.5% annual increase in quality (see also Prados de la Escosura, 2003).

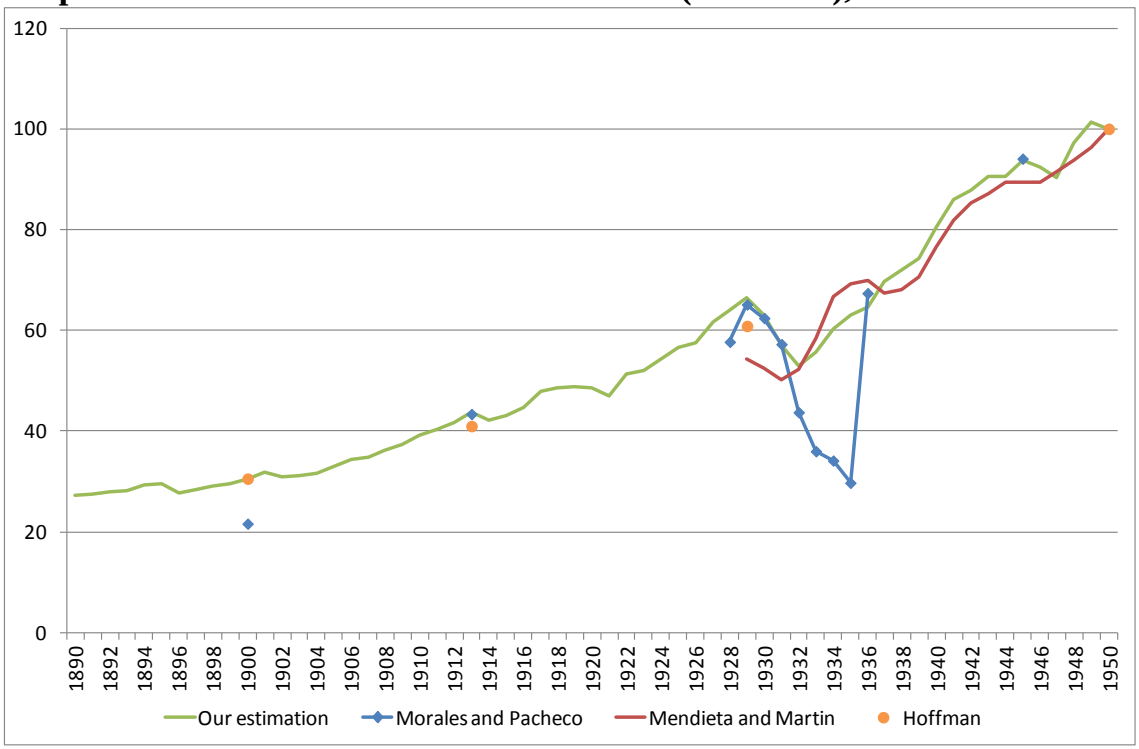
Graph 1 present our series for 1890-1950 and compares it with the alternative available estimates.[31] The long term trend of our series is very similar to the others, with the exception of Morales and Pacheco's (1999) estimate for 1900.[32] The main deviations are observed in the short-run fluctuations and, more specifically, in the Great Depression. According to Morales and Pacheco (1999), Bolivian GDP fell by more than 50 percent between 1929 and 1935, and fully recovered in 1936, whereas our estimates would indicate a much milder crisis (a 20% fall between 1929 and 1932)

[31] See Appendix 2 for the specific GDP figures and the evolution of each of the sub-sectors considered in our estimation.

[32] Apparently (although they do not indicate it explicitly), Morales and Pacheco (1999) assumed that Bolivian GDP and exports grew at the same pace between 1900 and 1929. This may partially explain the deviation between their series and our own figures in 1900, since we estimate the ratio exports/GDP to have grown substantially between 1900 and 1913.

and a much more gradual process of recovery of the 1929 GDP levels, which would have taken 5 years.[33] Differences with Mendieta and Martín's (2009) estimates are much smaller, although they consider the consequences of the Great Depression to have been even less serious (just a 7% fall between 1929 and 1931) and the growth of the early 1930s much more intense than in our series. A possible explanation of that difference is the influence on their estimation of the evolution of M3 and public expenditure, which grew at high rates between 1933 and 1935 due to the financial costs of the Chaco War.

Graph 1. Bolivian GDP: alternative estimates (1950=100), 1890-1950



Sources: Pacheco and Morales (1999), Hofman (2001), Mendieta and Martín (2009) and our own estimates.
Note: Mendieta and Martín's specific figures are not published in Mendieta and Martín (2009), but were kindly provided to us by Pablo Mendieta.

[33] Once more, the lack of information on Morales and Pacheco's estimation methodology prevents from knowing the reasons for that difference, which might be associated to the high weight of certain variables (such as public revenues) in these authors' calculation. On the relatively low impact of the Great Depression in Bolivia, see Bértola (2011: 262).

2. Bolivian income per capita ca. 1846: a guesstimate

As has been shown in the previous section, the available statistical information on the Bolivian economy becomes increasingly scarce as one goes back in time. As a consequence, the error margin of our series is higher for the earlier periods, up to the point, around 1890, in which the scarcity of data has prevented us from extending our estimation to previous years. Although we have some evidence on the long term trends of some of the GDP components, it is impossible to capture differences in growth rates among periods or to describe the successive growth cycles of the country. For instance, the lack of information makes impossible to account for the effects of the growth of the Bolivian coastal areas (the current Chilean region of Antofagasta) since the late 1850s (Klein, 2011: 123, 140-143), or for the consequences of their loss to Chile in 1879, in the course of the Pacific War.[34]

However, in order to have a preliminary picture of the long term process of growth of the Bolivian economy since the first few decades after independence, in this section we suggest a very rough guesstimate of the level of its income per capita by 1846. This is mainly based on the aforementioned description of the Bolivian economy by Dalence (1851), which allows comparing the situation of the main sectors of the economy in the mid 19th century with their level of development by 1890. Actually, Dalence's description has already been used in the previous section to capture the long term trends of those series, such as population, agrarian production, or manufactures before 1925, for which information is scarcer for the late 19th and early 20th century.

Our guesstimate of Bolivian income per capita in 1846 follows, as far as possible, the same sectoral division as the series described in the previous section. As has been indicated there, we have estimated the value added of the agrarian sector in 1846 on the basis of the nutrition needs of the Bolivian population. We assume that animal products were correctly

[34] Before the 1850s, the Bolivian coast was a marginal space from an economic point of view. For example, population in that region was equivalent to 0.3% of the total Bolivian population in 1846. However, this space became increasingly important between the late 1850s and its conquest by Chile in the Pacific War, thanks to the guano, saltpetre and silver export booms.

assessed by Dalence (1851) but that, in the case of agricultural products, his estimates correctly reflected the composition of output, but not its level. The result of these assumptions is an agrarian output figure in 1846 that amounted to 76 percent of the production of the sector in 1890. We have increased that amount by an estimate of the food production of the "non-subjected" population.[35]

Mining output in 1846 is estimated on the basis of the decennial data of silver production provided by Klein (2011: 304) for the period 1840-1909 and Mitre's (1986) estimates of the yearly fluctuations in silver production in Potosí. For the volume of tin, copper and gold produced in 1846, we have used Dalence's data on their value in 1846 and information on the relative prices of these minerals coming from Haber and Menaldo (2011) and the Blattman's database. The resulting amounts have been expressed in 1908 prices, and they represent 17% of the production of this sector in 1890.

Manufacturing value added is also estimated on the basis of Dalence's information, as has been described before. For government services, we use the data on government expenditure in 1846-72 that are published by Huber (1991). And, finally, estimates for other sectors (rural artisan production, construction, transport, trade, housing rents and other services) are based on the evolution of the same indirect indicators that have been used to estimate the series for 1890-1950.[36]

The result of those calculations is a GDP "guesstimate" for 1846 which amounts to 76 percent of the 1890 GDP. In per capita terms, it would represent 84 percent of the Bolivian pc GDP in 1890, which is a first indication of the extremely low growth rate of the Bolivian economy during the second half of the 19th century. It is important to stress, however, that this figure constitutes just a very preliminary approach with a very high

[35] On these calculations see the previous section and Appendix 1. As has been indicated, Dalence (1851) estimated the "non-subjected" population to amount to 700,000 people in 1846, but this is inconsistent with the level of the Bolivian population in 1900. Here we follow the 1950 Census suggestion that the size of these communities by 1846 was ca. 100,000, i.e. very similar to their size in 1900 and 1950, which is consistent with the low demographic dynamism of traditional populations. Changing this assumption has very little effect on the estimates (see below).

[36] Imports, exports and rural and urban population for 1846 have also been taken from Dalence (1851).

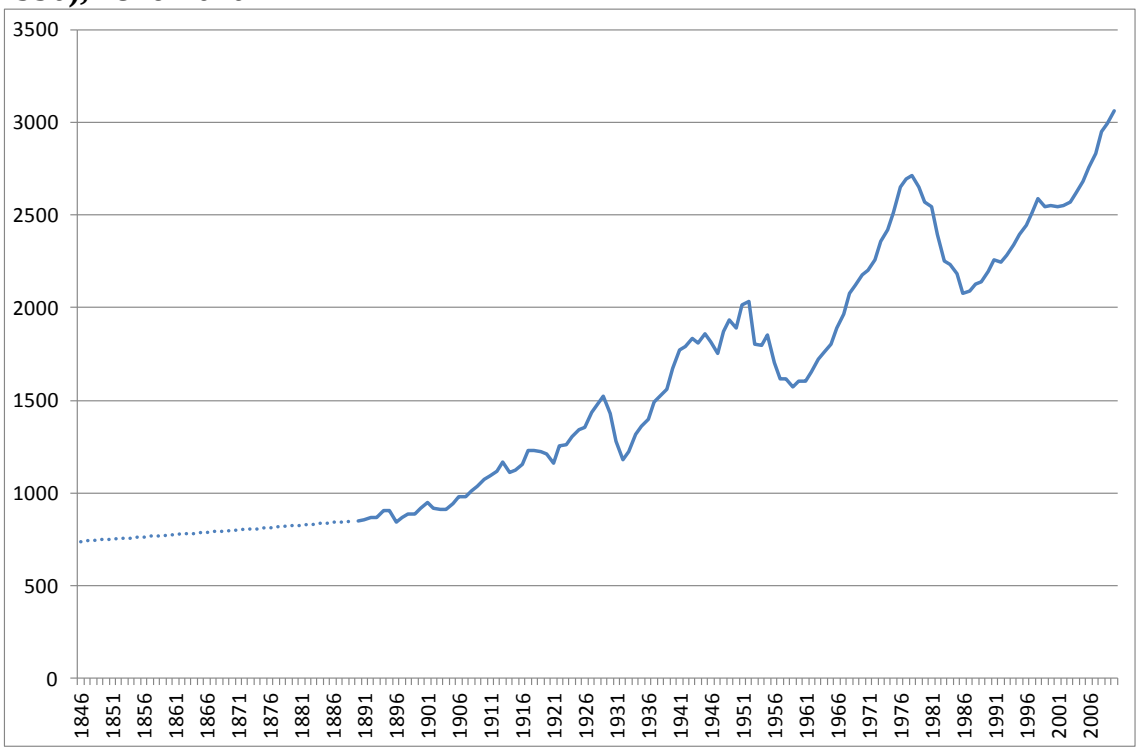
error margin. Changes in the basic assumptions would involve some variations in the estimate, although not large enough to allow rejecting the hypothesis of a virtually stagnant economy between 1850 and 1890.[37]

3. The Bolivian economy since the mid-nineteenth century

Thanks to the estimation of the GDP "guesstimate" for 1846 and the GDP series from 1890 to 1950, it is possible for the first time to approach the evolution of the Bolivian economy since the mid-19th century. Graph 2 and Table 3 show the gradual process of economic growth and structural transformation undertaken by the Bolivian economy since the first decades after independence. Income per capita in the early 21st century is 4 times as high as it was around 1850 and the agrarian sector, which accounted for three quarters of GDP in the mid 19th century, has experienced a sustained decrease in relative terms, being replaced by services as the main sector of the economy since the 1950s. Mining, manufacturing, utilities and construction also increased their importance from the mid 19th century onwards, although the GDP percentages they accounted for reached their maximums in the central decades of the 20th century and stagnated thereafter. As a consequence, the industrial share of the Bolivian GDP is still today among the lowest in Latin America.

[37] For instance, if "non-subjected" population were assumed to be twice as high as in 1900, the resulting pc GDP in 1846 would be 4 percent lower than our estimates. If we assumed that industrial output was twice as large as indicated by Dalence (as we do in the case of agriculture), the increase in the 1846 GDP pc would be just 6 percent.

Graph 2. Bolivian pc GDP (International Geary-Khamis dollars of 1990), 1846-2010



Sources: New Maddison Project database and, before 1950, our estimates.

Table 3. Sectoral composition of the Bolivian GDP (%), 1846-2008

	Agrarian sector	Mining and petroleum industries	Manufactures	Utilities and construction	Services
1846	73	1	8	1	16
1890-1899	69	6	7	1	17
1900-1909	65	8	7	1	19
1910-1919	56	12	8	2	23
1920-1929	48	16	9	2	25
1930-1939	45	14	8	3	30
1940-1950	34	18	12	3	33
1950-1960	28	15	13	4	40
1960-1970	26	11	14	6	43
1970-1980	18	19	15	6	43
1980-1990	21	14	13	4	48
1990-2000	16	7	17	6	54
2000-2008	14	11	14	6	55

Sources: Own estimations (see text) and, since 1950, ECLAC database.
Notes: Some rows do not add to 100 due to rounding. After 1950, we have used the "subtotal" provided by ECLAC and distributed the statistical discrepancies among all sectors, in proportion to their size.

As may be seen in the graph, income pc growth in Bolivia was seriously affected during the 20th century by three economic catastrophes: the Great Depression, the crisis that followed the 1952 Revolution and the external debt crisis that devastated Latin America in the 1980s. The incidence of these crises was so serious that we can characterise the Bolivian 20th century, in economic terms, as a succession of "lost decades". In all three cases the Bolivian economy took a long lag before recovering the previous maximum level of its income per capita: 9 years in the case of the Great Depression, 17 years after the 1952 Revolution, and 28 years after the 1978 shock. The recovery from the last two crises was especially difficult because they were contemporaneous of the country's demographic transition.[38]

[38] As a consequence of a steady reduction in mortality rates and the stagnation of the birth rates –which were, according to CELADE's estimates, around 45 per 1,000- the annual average growth rate of Bolivian population was around 2% from the early 1950s to the late 1960s, and increased up to 2.3% per year from the late 1960s to the early 1990s. It was not until the first years of the 21st century when Bolivian population started growing at annual rates below 2%. (http://www.eclac.org/celade/indicadores/)

The coincidence of two extremely destructive crises in the second half of the 20th century is indeed behind the slow progress of the Bolivian economy after 1950. Since this was also the period for which GDP estimates were available so far, it helps to explain the broad characterisation of Bolivia as a poor economy with very low growth prospects. However, the series that we present here shows that this was not the general pattern of the whole 20th century. For instance, according to our estimates, income per capita grew at much higher rates between 1900 and 1950 (1.45 percent yearly) than between 1950 and 2010, when the average pc GDP growth rate was 0.81 percent (Table 4).

Actually, Bolivian economic growth may be characterized in the long-term by the alternation of high-growth and low-growth periods. In this regard, the Bolivian historiography has already identified a series of economic cycles in which the country's economic performance was rather different, and our series largely confirms this heterogeneity (Table 4).[39]

[39] The economic cycles that are identified in Table 4 have been constructed considering the landmarks proposed by Bolivian historiography but also linking the peaks and troughs of our series.

Table 4. Annual average growth rates of Bolivian GDP and GDP per capita (%), 1846-2010

	GDP	GDP pc
Long term		
1846-1900	0.72	0.39
1900-1950	2.38	1.45
1950-2010	2.91	0.81
1846-2010	2.03	0.87
Min-Max cycles		
1846-1903	0.73	0.37
1903-1929	2.91	1.96
1929-1932	-7.55	-8.50
1932-1952	3.66	2.72
1952-1959	-1.45	-3.63
1959-1978	5.17	2.86
1978-1986	-1.50	-3.36
1986-1998	4.07	1.83
1998-2002	1.71	-0.33
2002-2010	4.15	2.29

Sources: See Graph 1.

The first of these cycles went from 1825 to 1872, and was affected by the reorganization of the economy after independence. These years have been featured as a period of economic disorder (Huber, 1991, 1994; Prado, 1995; Pacheco, 2011), de-urbanization (Langer, 2004) and export stagnation (Mitre, 1981; Platt, 1996; Klein, 2011: 102-117). Indeed, either because of geographic restrictions (Gelman, 2009) or because of the indirect consequences of independence (Coatsworth, 2008) it took a long time for the once famous mining district of Potosi and the overall country to recover its former major dynamism.[40] This recovery started during the late 1850s thanks to the fall in the international price of mercury, the arrival of new

[40] The origins of Potosi's crisis started during colonial times. Silver mining in Potosi had required considerable capital investment since the mid-eighteenth century (Tandeter, 1992). This structural restriction was initially overcome by using public credit (Buechler, 1989). However, the situation worsened at the beginning of the 19th century because of shortfalls in mercury supply from Huancavélica (Peru) and Almadén (Spain) and because of a severe draught which restricted the availability of water, a key input for silver smelting. Investment requirements climbed even higher because of the destruction of physical capital after more than 15 years of war (1809-1825).

investment and economic growth in the coastal areas (Klein, 2011: 123-130).

However, the main changes did not take place until the early 1870s when, thanks to a number of important institutional reforms, both foreign and national investment boosted and fuelled a sharp increase in silver production (Mitre, 1981). Thanks initially to the high ore content and, later on, to railway construction, silver output went on increasing during the 1880s and the early 1890s (Mitre, 1981: 97-98; 122-125). Thereafter, the economic advantages provided by the railways were insufficient to compensate the fall in silver prices, and silver production and total exports stagnated until 1903, when rubber and tin gave a new dynamism to Bolivian foreign trade.

Our estimates does not allow making a detailed analysis of those two cycles, but it provides instead a broad long-term picture of a large part of the so-called "silver period" of independent Bolivia's economic history (1825-1903). According to our estimates, between 1846 and 1903 Bolivian GDP grew at an annual average rate of just 0.73 percent. In per capita terms, the yearly growth rate was even lower (0.37 percent). These low rates may be explained by the exceedingly high share that the stagnant agricultural sector represented within GDP and the small size of the mining activities, which were the most dynamic sector of the Bolivian economy at the time.

During the first third of the 20th century, Bolivian exports increased substantially mostly because of the expansion of tin, which represented two thirds of Bolivian exports throughout the period. The tin export boom was the result of different factors: the increase in international prices, the previous existence of mining skills, the availability of infrastructure (which was built during the silver era), the high ore content and, especially after the First World War, the considerable investments made in the sector both by foreign and national producers (Mitre, 1993; Contreras, 1994). The expansion of tin was high enough to explain the increase in the GDP share of the extractive industries up to a level higher than 10 percent for the first time in Bolivian history. As a consequence of the export boom, the annual average rate of economic growth was much higher between 1903 and 1929

than in the previous period, reaching a level of 2.9 percent in the case of GDP and 1.9 in the case of GDP capita.

The Great Depression put an end to this expansion. Indeed, according to our estimates, this external shock generated the worst economic depression in Bolivian history in the short term: from 1929 to 1932, the annual average growth rates were -7.5% and -8.5% for GDP and GDP per capita respectively.[41] The Bolivian economy achieved positive growth rates again in 1933 thanks to the renewed dynamism of tin exports and the increase in government expenditures.[42] This initial recovery consolidated thanks not only to the sustained growth of tin exports but also to the expansion of the industrial sector, which accounted for 12 percent of GDP in the 1940s. The resulting average yearly rates of economic growth were, as a consequence, even higher than in previous growth periods: 3.6 and 2.7 percent for GDP and GDP per capita respectively between 1933 and 1952.

The National Revolution of 1952 represents a breaking point in Bolivian history (Grindle and Domingo, 2003). From an economic point of view, it inaugurated a new economic strategy characterised by a high interventionism from the State, the so-called State Capitalism.[43] This strategy initially provoked a serious economic downturn, which can mainly be explained by the indirect costs related with the reorganization of the economy and the inability to correct the macroeconomic imbalances that had been generated by non-orthodox trade policies (Klein, 2011: 213-222). Due to these initial problems, the revolutionary government had to ask for

[41] The Bolivian historiography has traditionally claimed that, besides the Great Depression, three other external shocks hampered the evolution of the Bolivian economy during the first half of the 20th century: the 1907 crisis, the beginning of the First World War and the post-war crisis (Morales and Pacheco, 1999). Our series confirms the importance of the last two crises, since the growth rates of GDP became negative in 1914, 1920 and 1921. The economy, however, recovered very quickly from those shocks and, in the case of 1907-08, GDP growth rates remained positive.

[42] The first process was largely the result of the international cartelization of tin production around the "International Board of Tin" (1931) and the subsequent stabilization of world tin prices. The second is not explained by any Keynesian strategy, but by an important increase in military expenditure due to the Chaco War (1932-1935) against Paraguay.

[43] The main expression of this new economic strategy was the nationalization of the three largest mining firms and the subsequent creation of a State company ("Corporación Minera de Bolivia"- COMIBOL) on October 31st 1952.

external aid, which gave way to the Stabilization program of 1956, supervised by the International Monetary Fund and the US government. Whereas the program rapidly stopped macroeconomic instability, it did not foster economic growth until 1959, when GDP per capita was just 77 percent of its pre-revolutionary level.

After these episodes, the Bolivian economy achieved its highest growth rates in history. From 1959 to 1978, GDP and GDP per capita grew at an average 5.1% and 2.8% respectively. This dynamism was driven by the recovery of the traditional growth engine of the country -mining exports- and the so-called "Marcha al Oriente", i.e. the consolidation of the oil industry (Miranda, 1999) and agrarian production in the eastern lowlands. The expansion of the Bolivian economy towards the East was the result of the completion of the national road between Cochabamba and Santa Cruz (1954), the liberalization of the labour market through the Agrarian Reform, and the availability of soft credits from the State (Zondag, 1966, Sandoval *et al.*, 2003).

Economic growth came to a sudden stop in the late 1970s, and the Bolivian economy had again negative growth rates from 1979 to 1986. The proximate causes of the crisis were the inability to control several macroeconomic imbalances that had been fostered by the external debt crisis and internal political instability (Morales and Sachs, 1990). Nevertheless, the downturn also reflected the State Capitalism inability to break some important structural restrictions: the strong dependence on external markets[44] and the difficulty to change the structure of an economy which was largely based on primary production.[45] The impact of the crisis was extremely severe: in 1986 GDP per capita was still at 75 percent of the level it had reached before the crisis.

The crisis brought about a new reorganization of the Bolivian economy, this time following the guidelines of the Washington Consensus, which were

[44] This dependence was reflected in the critical role of tin prices for the overall economy, and also in the indispensability of capital inflows –foreign aid, multilateral credits or commercial credits- for fiscal sustainability (see Chapter 2).

[45] As has been indicated, and in sharp contrast with other experiences in Latin America, the relative importance of manufactures remained fluctuating around 14% of GDP between the 1950s and the 1980s.

explicitly reflected in the so-called "New Political Economy". The reforms were aimed at controlling macroeconomic imbalances, reducing State intervention and attracting foreign direct investment (FDI). The model succeeded in the accomplishment of these objectives, and was contemporary to the diversification of the export sector associated to the development of the agro-industry complex in the east lowlands of the country (Grebe *et al.*, 2012: 78-80). As a result, GDP grew at high rates –by Bolivian standards- during the 1990s, although the effects of these rates on living standards were largely overcome by the demographic dynamism of Bolivian society. Furthermore, at the eve of the 21st century, economic growth was weakened by the Asian crisis and widespread political instability.

Growth resumed from 2003 onwards under a new scenario. On the one hand, the increase in the international prices of several commodities allowed increasing natural resources exports up to levels never reached before (Grebe *et al.*, 2012: 47). On the other hand, political instability decreased and, simultaneously, the State was reintroduced as a key agent in the economy. Whereas these processes have increased the annual average growth rates of both GDP and GDP per capita up to some of the highest figures in Bolivian history, is still soon to evaluate its impact on the long-run growth of the Bolivian economy.

This last episode, anyway, helps to illustrate the take home message of the present section: rather than a scenario of permanent economic stagnation, Bolivian economic history has been characterized by the alternation of periods of rapid growth with years of sharp contraction of the economy. The next section evaluates the effects that such oscillations have had on the international position of the Bolivian economy.

4. The Bolivian economy and the "reversal of fortune" in the Americas

This section compares the evolution of Bolivia with other Latin American economies and the US, in order to identify the periods of Bolivian convergence or divergence. Beyond the general analysis, we focus

specifically in the comparison with the US, Argentina, Mexico and Peru, in order to make a preliminary test of the reversal of fortune hypothesis. According to Acemoglu, Johnson and Robinson (2002), Argentina, due to its low level of population and urbanisation at the beginning of the colonial era, would be among the Latin American countries with a higher growth potential after independence. By contrast, Mexico and Peru would be, like Bolivia, typical examples of relative affluent societies by 1500. They would have therefore received the worst institutions during the colonial period and this would have hindered their long-term growth prospects. Thus, according to this hypothesis, we should expect a permanent divergence of the Bolivian economy from Argentina (and the US), and a more or less similar evolution to Mexico and Peru.

To start with, Table 5 compares, for a series of benchmark years, our series of pc GDP with a sample of Latin American countries and the US. According to the table, in the mid-19th century Bolivian pc GDP was already clearly below the level of income per capita in Argentina, Chile, Uruguay and the US, i.e. those American economies which, according to the "reversal of fortune" hypothesis, enjoyed a higher growth potential when they started their history as independent republics. In other words, the gap between Bolivia and those economies can be traced back at least to the first decades after independence.[46] By contrast, by 1850 Bolivia was not significantly poorer than most economies of the region, and it might actually have been richer than some countries like Colombia or Mexico.

[46] On the stagnation of the Bolivian economy in the early postcolonial period see Mitre (1981), Pacheco (2011), or Bértola (2011: 240).

Table 5. Bolivian pc GDP as a percentage of other Latin American economies and the US (%), 1850-2010

	ca. 1850	1890	1950	2010
Argentina	60	35	38	30
Brazil	109	107	113	45
Chile	82	43	51	22
Colombia	151	119	88	43
Cuba	96	56	92	78*
Mexico	114	87	80	40
Uruguay	51	40	41	27
Venezuela	102	98	25	31
US	40	25	20	10

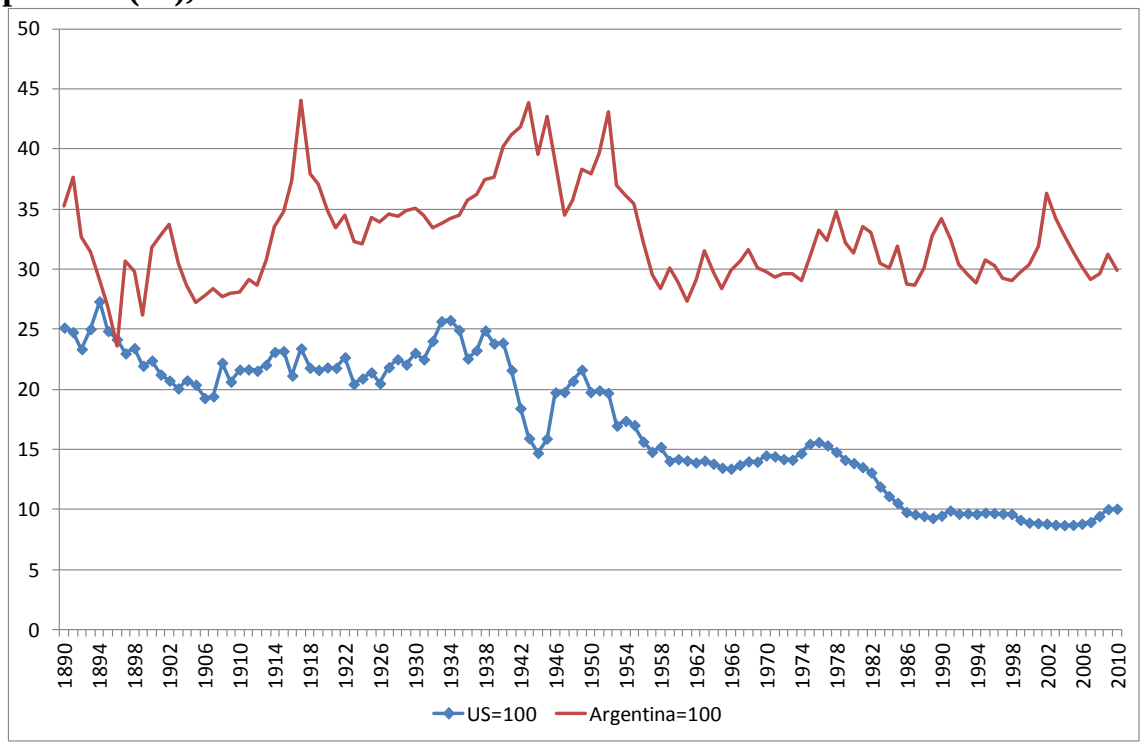
Sources: New Maddison Project database and our own figures.
Note*:* (*) In 2008.

During the second half of the 19th century, the Bolivian economy seems to have lost track of most Latin American economies, with the exception of Brazil. However, Table 5 also suggests that this negative performance would have come to a halt at the eve of the 20th century, when the growth of the Bolivian economy was enough to keep or, in some cases, reduce distances with several economies of the region. As a result, by 1950 Bolivia had similar pc GDP levels to Brazil, Mexico and Colombia (although it was still much poorer than the US and the Southern Cone countries). Divergence with most of the region, however, was clearly resumed from the 1950s onwards, when those economies' dynamism could not be followed by Bolivia.

Graph 3 show in more detail the comparison between Bolivia, on the one hand, and the US and Argentina, on the other hand. In the case of the US, the gap with Bolivia was very large in the late 19th century but remained constant throughout the first half of the 20th century. As for the Argentinean case, Graph 3 shows that differences were substantial in the late 19th century but tended to decrease from the late 1890s to the early 1950s. Moreover, whereas the relative distance between these countries increased again after the crisis that followed the 1952 National Revolution, it remained virtually constant thereafter. Actually, if the whole 20th century is taken together, it is not possible to detect any sustained divergence process between the Bolivian and the Argentinean economies. Instead, their long-

term growth rates seem to have been virtually identical, something that would be inconsistent with the predictions of the "reversal of fortune" hypothesis.[47]

Graph 3. Bolivian pc GDP as a percentage of the US and Argentinean pc GDP (%), 1890-2010



Sources: Own estimation, New Madisson Project Database and Johnston and Williamson (2013).

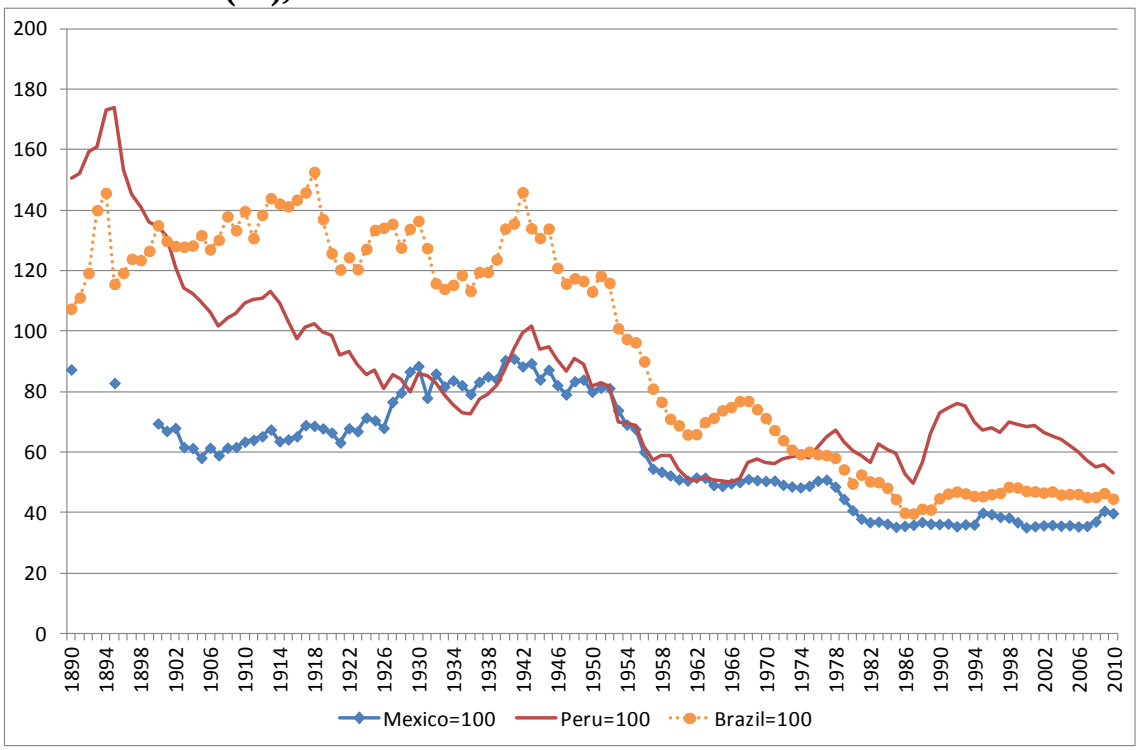
Graph 4 allows going further on this issue by comparing the evolution of the Bolivian economy with Brazil, Mexico and Peru. It is true that this comparison is affected by the large error margins of the GDP figures for the four countries involved, specially before the Interwar period.[48] However, if the years 1890-1950 are taken together, Bolivian pc GDP seems to have

[47] We take Argentina and the US as representative cases of high growth countries according to the "reversal of fortune" hypothesis. The evolution of the Bolivian economy in relation with other countries of that group, such as Uruguay or Chile, is rather similar to its evolution in relation with Argentina. The main exception to this general pattern arises at the end of the 20th century, when the international position of the Bolivian economy diverged steadily from the Chilean economy but stayed more or less constant in relation with both Argentina and Uruguay.

[48] For instance, the earliest Peruvian estimates (557 Geary-Khamis dollars of 1990 in 1896 and twice this level 15 years later) seem rather dubious.

been systematically higher than the Brazilian one and slightly lower but not significantly different from the Mexican and Peruvian ones. Therefore, Bolivia would have managed to grow at similar rates as the other countries and even to converge with them in certain specific conjunctures during the first half of the 20th century.

Graph 4. Bolivian pc GDP as a percentage of Brazilian, Mexican and Peruvian GDP (%), 1890-2010



Sources: Own estimation and New Madisson Project Database.

To sum up, both Table 5 and Graphs 3 and 4 suggest that it was not until the second half of the 20th century when Bolivia clearly joined the club of the poorest economies of Latin America. In other words, whereas Bolivia was already far away from the Southern Cone countries by 1850, the current Bolivian poverty levels relative to countries such as Brazil, Peru or Mexico are to a large extent a consequence of the shrinking of the economy during the crisis that followed the 1952 National Revolution (1952-1959) and during the years of the external debt crisis (1979-1986). Therefore, Bolivian divergence and the current poverty levels would be to a large extent a consequence of these two particular events, and not the result of a

sustained poorer record during the entire postcolonial period, as the "reversal of fortune" hypothesis seems to imply.[49]

Conclusions

The reversal of fortune hypothesis suggests that the European colonisers were more prone to establish extractive institutions in rich areas (including present-day Bolivia), and institutions that encouraged investment in poor regions. After independence, the persistence in the rent-seeking and investment-discouraging character of the institutional framework in previously rich areas would have prevented them from taking advantage of the available opportunities to grow and industrialise and would have condemned them to sustained divergence (Acemoglu, Johnson and Robinson, 2002; Dell, 2010). In the case of postcolonial Bolivia, according to this hypothesis, we should expect therefore systematically lower growth rates than in the highest income countries of the continent.

This chapter has presented a new series of Bolivian GDP for the period 1890-1950 and a "guesstimate" for the mid 19th century which provides, however, a rather different and more complex picture. Firstly, the current distances between Bolivia and the US or the Southern Cone economies had already been opened up to a large extent by the mid-19th century and are not, therefore, the result of long-term sustained differences in growth rates during the postcolonial period. And, secondly, Bolivian rates of economic growth since 1890 have not been very different from those of Argentina. Actually, during the first half of the 20th century, Bolivia performed better than the Southern Cone economies. This makes difficult to explain present-day income differences exclusively on the basis of the long-term consequences of bad institutional settings on growth.

As Austin (2008: 1013) reminds in the case of Sub-Saharan Africa, Bolivian growth record has not always been "tragic" and, echoing his own words, it may be worth asking which is more attributable to the institutional legacy of colonialism: the rapid growth of the first half of the 20th century

[49] The main exception to that common pattern was Venezuela, which can be explained by the evolution of the Venezuelan oil industry. In that case, Bolivian divergence was sustained until 1950 but did not continue thereafter.

or the slow growth and decline of the second halves of the 19th and 20th century. In addition, also as in the African case, the most negative shocks of Bolivian Economic History were associated to two institutional changes that would be supposed to have a long-term positive impact, such as the establishment of more inclusive political institutions in the 1952 Revolution and the implementation of Structural Adjustment programs which would give a much more prominent role to the markets. Probably, the long-term disadvantage of Bolivia relative to the Southern Cone can only be understood if we take a much more complex view of growth factors, and take into account aspects such as differences in the specific factor endowments and geography of those countries, as well as, in the case of the institutional factor themselves, the possibility of much more complex explanations that give room to the countries' potential for institutional reversals throughout their development process.[50]

[50] This would help to explain, for instance, the inability of the Argentinean economy to grow faster than the Bolivian one throughout the 20th century. On the possibility of a negative "institutional reversal" in Argentina in the early 20th century, see, for instance Araoz (2013) and Prados de la Escosura and Sanz-Villarroya (2009). In that context, the reversal of fortune hypothesis would only be applicable to the comparison between Argentina and Bolivia during the 19th century.

Appendix 1. Estimation of the Bolivian agrarian production in 1846

As is indicated in the text, our estimation of the Bolivian agrarian production in 1846 is based in the following assumptions: i) nutrient availability was 1,940 calories per male adult-equivalent per day; ii) animal products were correctly assessed by Dalence (1851); and iii) in the case of agricultural products, Dalence's estimates correctly reflect the composition of output, but not its level.

Table A1 indicates the indices of nutrient content of different products that are the basis of our calculation and the percentage contribution of each product to the nutrition of the Bolivian population that results from Dalence's data.

Table A1. Food production and nutrient content of the Bolivian agrarian sector in 1846 according to Dalence (1851)

Product	Calories per kilogram	Percentage contribution to the nutrition of the Bolivian population
Wheat	3,420	17.01
Maize	3,180	44.99
Potatoes	700	6.21
Rice	3,420	2.29
Peas	2,790	2.11
Quinua	3,680	1.9
Ají	400	0.34
Chuño	3,230	9.3
Ocas	670	0.58
Chickpea	2,920	0.01
Cañagua	3,400	0.66
Pumpkin	260	0.29
Olives	1,060	0
Vegetables	233	0.19
Plantain	890	0.92
Nuts and coco	5,250	0.6
Grapes and sweet cane	1,780	1.14
Other fruits	430	1.17
Meat	2,482	10.29

Sources: Own elaboration based on Dalence (1851); the nutritional content has been obtained from Arroyo-Abad et al. (2012), Simpson (1988), Allen (2001), (2001), Allen *et al*. (2012) and the USDA National Nutrients Database.
Notes: i) Calories/person/day has been calculated in relation to the male-adult-equivalent population (see text); ii) the global calculation does not include imports.

In order to do the calculations, we have transformed the traditional weight units that were used by Dalence (*fanegas*, *cargas*, *arrobas* and *libras*) in kilograms. While Dalence does not offer a table with the equivalences among these units, he presents the total weight in kilograms of an aggregate of different products that were expressed in different units. The following equivalences would be consistent with that information: 1 *libra*, 0.46 kgr; 1 *arroba*, 25 *libras*; 1 *carga*, 100 *libras*. The *fanega* is a unit of volume that varied in function of the product. Dalence used it –as it was usual during that period- to measure the production of wheat and maize. The present estimation has assumed the conversion used in Spain during the early

modern period: 1 *fanega*: 94 *libras*. On the other hand, we assume that a nuclear family of a father, a mother and two children consumed the same quantity as three male adults (Allen *et al.*, 2012). Considering this relationship and the population structure of 1900 –offered by the 1900 national census- the total population in 1846 has been converted into total adult population. We have also accounted for the food imports reported by Dalence (1851: 236): 100,000 *cargas* of potatoes and *chuño*, "a lot of" *ají* and many *arrobas* of rice, and we have assumed that *ají* and rice imports had the same weight as potatoes and *chuño* imports. We have finally added up the nutritional contributions made by milk and eggs (taken from Allen *et al*., 2012).

Appendix 2. Estimation of the Bolivian GDP, 1890-1950

This appendix presents the Bolivian GDP pc (in 1990 International Geary-Khamis dollars) and GDP (in million 1990 International Geary-Khamis dollars) and the relative importance of each of the subsectors (in percentages) considered in our estimation.

Chapter 2.

Bolivian Public Finances, 1882-2007. The challenge to make State intervention sustainable

During the last decade, there has been a transition in the Latin American political hegemony from right-wing to left-wing governments, which has been contemporaneous to the commodity trade boom in global markets. Beyond the differences among them (Panizza, 2005a; Panizza, 2005b), left-wing governments have usually taken advantage of the new economic context in order to apply redistributive policies (CEPAL, 2010). This certainly applies to the Bolivian case, where the Government led by Evo Morales (2006 onwards) has increased the tax burden on gas exports while fostering, among other policies, social public expenditure. For instance, during the last few years the government has made substantial efforts to expand education and health services through the implementation of both the "Bono Juancito Pinto" and the "Bono Juana Azurduy", two of the most emblematic programs of Morales' administration (PNUD, 2010; Paz Arauco *et al.*, 2013). The aim of this chapter is to analyze these recent changes from a historical perspective and to identify some of the limitations which previously restricted the effectiveness of State intervention. To that purpose, I present the first long-term detailed estimates of the evolution of Bolivian public finances since the late 19th century.

Whereas this is not the first historical analysis of Bolivian public finances, it has several differences over previous research. On the one hand, while earlier research has focused on specific periods of the 20th century, the present study covers more than 120 years of the history of the Republic.[1] On the other hand, while Barragán R. and Peres-Cajías (2007) studied the Bolivian Public Finances through *budget* data, the present research uses *actual* revenue and expenditure figures; likewise, while Gallo (1991) offers evidence on the composition of expenditure just for the period 1911-1950, the database that is presented in this chapter provides complete evidence

[1]For instance, Contreras (1990) studies the years 1920-35, whereas Gallo (1991) and Barragán R. and Peres-Cajías (2007) focus on the first half of the 20th century.

both on expenditure and revenue composition since 1900.[2] Moreover, my analysis can benefit from the reconstruction of the Bolivian GDP which has been presented in Chapter 1 and offers for the first time a long-term and comparative study of several Bolivian fiscal indicators in relative terms.

Based in this new quantitative evidence, this chapter shows that the importance of social public expenditure within total public spending started growing since the late 1930s. In this context, the recent expansion of social public expenditure does not represent a new feature but an acceleration of one of the most significant characteristics of Bolivian public finances over the most of the 20th century. Meanwhile, my estimates clearly show the unbalanced structure of Bolivian public revenues over time: from the last quarter of the 19th century to the early 1980s, the State was highly dependent on trade taxes; later on, on indirect internal taxes, and taxes and non-tax revenues derived from oil and gas exploitation. Furthermore, the estimates show that, in great extent because of this extreme dependence on certain revenue sources, Bolivian government revenues and expenditures were relatively small and volatile until the late 1980s. Finally, the new series confirm that Central Government revenues have usually been insufficient to cover expenditures, fostering thus constant fiscal deficits which, in some periods, such as the early 1980s, reached a level that was especially damaging for the overall economy.

Overall, this historical analysis of Bolivian public finances would suggest that the effectiveness of State intervention has not been necessarily restricted by the lack of an explicit commitment towards certain types of public expenditures, but by an extreme vulnerability in the revenue side. Therefore, in line with previous studies (CEPAL, 2010; Breceda, Rigolini and Saavedra, 2009; Goñi, Lopez and Servén, 2011), this chapter stresses that the current Latin American discussion about the effectiveness of redistributive policies should focus not only on the allocation of public spending, but also on which policies may ensure a sustainable flow of revenues.

[2] Other previous analyses on the composition of Bolivian public revenue and expenditure also cover short-time spans, such as Palenque (1933) (which covers the 1911-1931 period), Wilkie (1969) (who provides data for 1930-1966), and the IMF and ECLAC estimates (which provide data from the 1970s onwards).

Next section presents the methods and sources used to estimate the new Bolivian public finance database and analyses both its reliability and its utility for an adequate understanding of the impact of Bolivian fiscal policies. The second section identifies some of the most important stylized facts of the history of Bolivian public finances. The third section explores the composition of both public expenditures and revenues and the fourth section offers a first assessment of the economic impact of Bolivian public finances from a macroeconomic perspective. The final section concludes.

1. The Bolivian public finance database: definition, sources and estimation methods

Until the end of the 20th century, most analyses on the long-term evolution of Latin American public finances was primarily based on the Argentinean, Brazilian and Mexican experiences (Cortés-Conde, 2006). During the last few years, the interest in the fiscal history of other Latin American countries has increased, involving both high-income economies such as Chile (Wagner, Jofré and Lüders, 2000), and low-income countries such as Guatemala (ICEFI, 2007). In most cases, historical narratives on the topic have been accompanied by detailed long-term databases (Junguito and Rincón, 2004; Azar *et al*., 2009). The present chapter adds a new case-study to this growing literature by analyzing the Bolivian case and offering detailed long-term series of both public revenue and expenditure. This section presents the main sources, concepts and methods used in the estimation of this database.

The new dataset is based on an exhaustive archival research both in Bolivia and abroad, which has allowed identifying the main primary and secondary sources on the long-term evolution of Bolivian public revenues and expenditures.[3] The estimation, however, has been affected by some data

[3] In Bolivia, data were gathered from the following archives and libraries: Archivo y Biblioteca del Honorable Congreso Nacional, Biblioteca del Banco Central de Bolivia, Fundación Flavio Machicado and Archivo y Biblioteca Nacional de Bolivia. Several collections have also been consulted in Spain: Fons Casa Amèrica (Universitat de Barcelona), Fons de la Cambra de Comerç (Universitat Pompeu Fabra), and Fons d'Estadística (Universitat Autónoma de Barcelona). Finally, some data have also been

restrictions. For example, the initial year of each series -1882 in the case of revenues and 1900 in the case of expenditures- is determined by the availability of data. Furthermore, the finding of substantial differences between actual and budgeted flows for those years for which both data are available has prevented me from using budget information -even in those few years for which no data on the actual flows could be found.[4] Hence, unlike previous work (Barragán and Peres-Cajías, 2007), my database is always based on *actual* revenue and expenditure flows. In this regard, since there are no systematic data for the *actual* revenues and expenditures of either the Departments or the Municipalities between 1882 and 1989, my series only include the public finances of the *Central* Government. More concretely, my database provides the composition of Bolivian Central Government's finances from 1882 to 2007, and the composition of Bolivian General Government's finances –i.e. the aggregate figure of Central, Departmental and Municipal Governments- just from 1990 onwards. [5]

In those cases in which different sources offered different data, higher priority has been given to those sources that had: *a)* a longer time-span; *b)* more detailed data; and *c)* higher methodological transparency (see Appendix 1 for a detailed discussion on the sources of the estimation). The distribution of revenue and expenditure among different categories has followed the most widely accepted international definitions (IMF, 2001). Expenditures have been allocated to each category according to the Ministry in charge. As for revenues, when the nature of a specific revenue was not clear, I have based its classification on the analysis of tax and

collected in the US, specifically at the Cecil Green Library (Stanford University) and the Library of Congress (Washington).

[4] For instance, a comparison between *actual* and *budgeted* revenues of the Bolivian Central Government between 1885 and 1959 shows persistent differences between them, which were substantial -often higher than 25%- and random over time.

[5] The final year of both databases (2007) is also determined by data availability. Although the "Dossier Estadístico" at the UDAPE's website presents fiscal data from 2008 to 2011, these data have not been incorporated in my database since –as is further justified in Appendix 1- I base the analysis from 1990 onwards in data coming exclusively from international sources. Accordingly, the final year of both databases is determined by the absence (at least until August 5th, 2013) of detailed data for Bolivia at the IMF's Government Statistics database from 2007 onwards, as well as the absence of Central Government data at the ECLAC website from 2008 onwards. The lack of these observations, nevertheless, does not affect the main conclusions of the analysis.

income legislation.[6] Because of data availability constraints, the series include *total* (current plus capital) expenditure, but only *current* (and not capital) revenues. Hence, the database is organized according to an adapted version of the IMF *functional* classification (IMF, 2001) which considers five categories and three sub-categories in the case of expenditures and three general categories with several sub-categories in the case of revenues (Table 1).

Table 1. Current Revenue and Total Expenditure classification

Current Revenue	Taxes	Direct	Income, profits and capital gains
			Payroll and workforce
			Property
		Indirect Internal	General
			Excises
			On the use of goods
		Indirect External	Custom duties
			Export taxes
			Exchange profits and taxes
	Non-tax revenues	Property Rents	
		Sales of Goods and services	
		Other non-tax revenues	
	Social Contributions		
Total Expenditure	General Administration		
	Defense		
	Economic		
	Social Public Expenditure	Education	
		Health	
		Well-being	
		Others	
	Others		

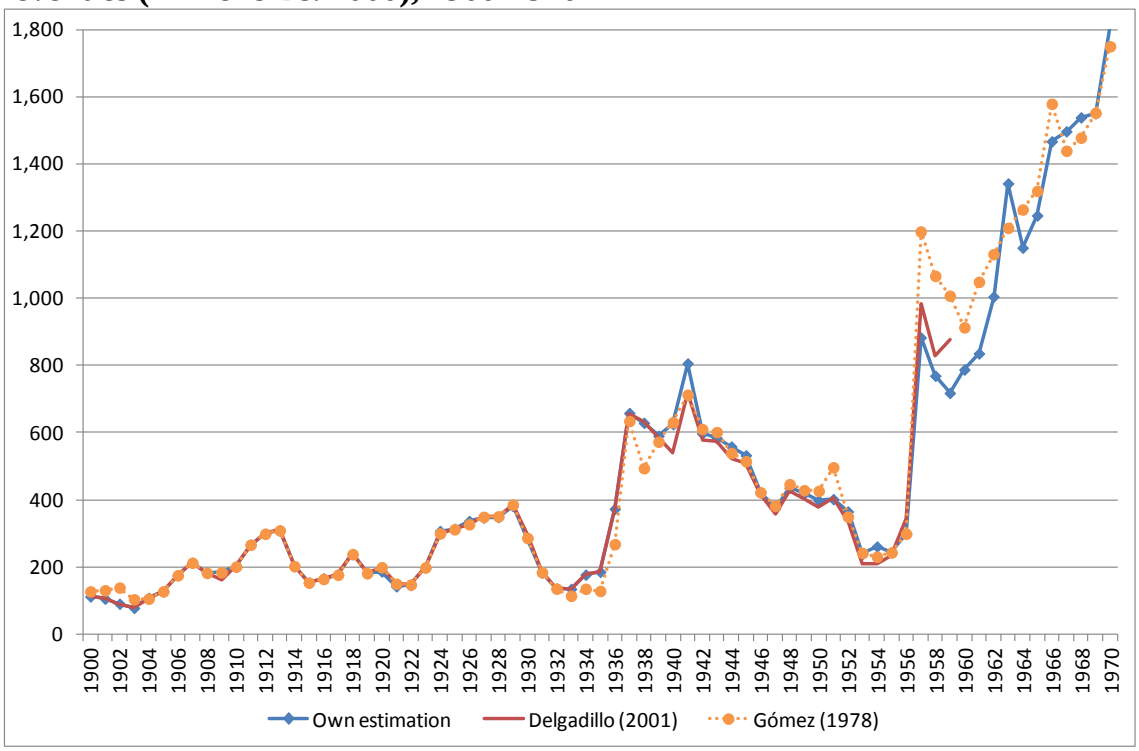
Sources: Own elaboration based on IMF (2001) and Comín (1996).

[6] Legal information comes from the CD-database *Legislación Boliviana 1825-2007*, made available by the Biblioteca y Archivo del Honorable Congreso Nacional, and from different tax and revenue compilations: Mc Queen (1925), *Presupuesto de la República de Bolivia 1931*, Banco Minero de Bolivia (1941), Pando (1941) and UDAPE (1985).

The new database represents a substantial progress over the previously available evidence, both in accuracy and in time coverage. In the case of revenues, for instance, whereas Delgadillo (2001) offers aggregate data for 1900-1960 and Gómez (1978) for 1900-1970, my revenue estimation provides detailed data from 1882 to 2007.[7] As shown in Graph 1, my figures are identical to those previous estimations from 1900 to 1937. After this year some differences emerge among the series, which are not surprising given the higher uncertainty of the public finance statistics that are available for that period –see the discussion on this issue in Appendix 1. The highest differences are found between 1957 and 1963, and can be explained by the fact that Gómez's data includes donations, a category which was particularly important during those years but has been deliberately removed from my estimation, which focuses in current revenues. In fact, after 1964, once the relative importance of donations started to decrease, both estimations tend to converge again.

[7] Likewise, the IMF International Statistics or the United Nations yearbooks only provide information since 1950.

Graph 1. Alternative estimates of Bolivian Central Government's revenues (millions Bs. 2000), 1900-1970



Sources: Delgadillo (2001), Gómez (1978) and my own figures.
Notes: The three series have been deflated using the price index presented in Chapter 1.

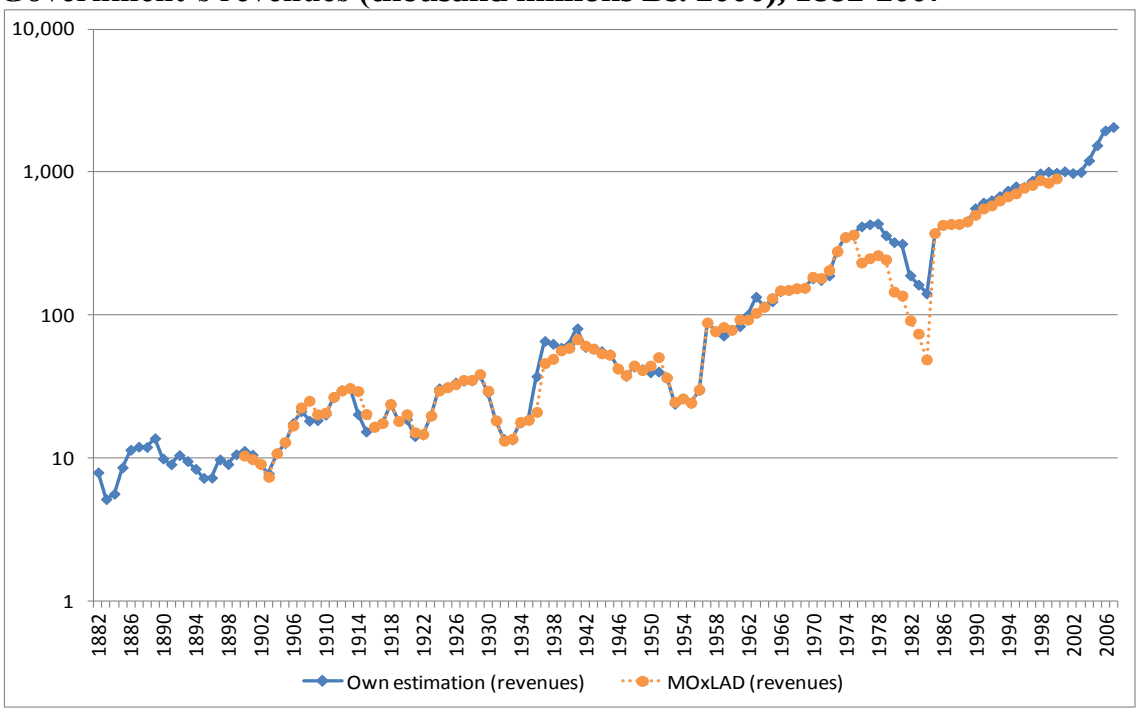
Graphs 2 and 3 compare my estimation with the equivalent figures reported by the widely utilized MOxLAD database. The similarity between both revenue series (Graph 2) is only broken during the late 1970s because of a decrease in MOxLAD series that is difficult to explain.[8] In the case of expenditures (Graph 3), some level differences are occasionally identifiable from 1900 to 1985 which are also difficult to explain, but might be the result of differences in either the unit of observation or the primary sources used in the estimation.[9] These differences disappear from 1985 onwards,

[8] According to the MOxLAD series, Bolivian public revenues started to decrease in 1976, but this is difficult to believe, given the economic dynamism of that year –with a GDP growth rate of 6.1%. In contrast, my series suggest that Bolivian public revenues started to decrease in 1979, which is consistent with the simultaneous crisis of the economy –the growth rates of GDP and GDP per capita being -0.02% and -2.33%, respectively. The information provided by local sources (UDAPE, 1986) is in line with my estimation.

[9] From 1900 to 1985 the MOxLAD revenue and expenditure series are based on Mitchell (2003). The origin of the series offered by this author is not clear. For instance, he offers data on Bolivian public expenditure from 1888 to 1895 based on an estimation whose source is not clarified. In relation to this, despite I have consulted several primary sources, I was not able to find any series of Bolivian public expenditure during this period

when both series are based on the IMF statistics. In addition to its higher reliability and time span, as has been indicated, my database provides disaggregated figures for different categories of both public revenues and expenditures. To date and to my knowledge, this is the first disaggregated estimation with such a long time-span and, as is discussed later in detail, it constitutes an essential instrument to get an adequate understanding of the role of the State in the Bolivian economy since the late 19th century.

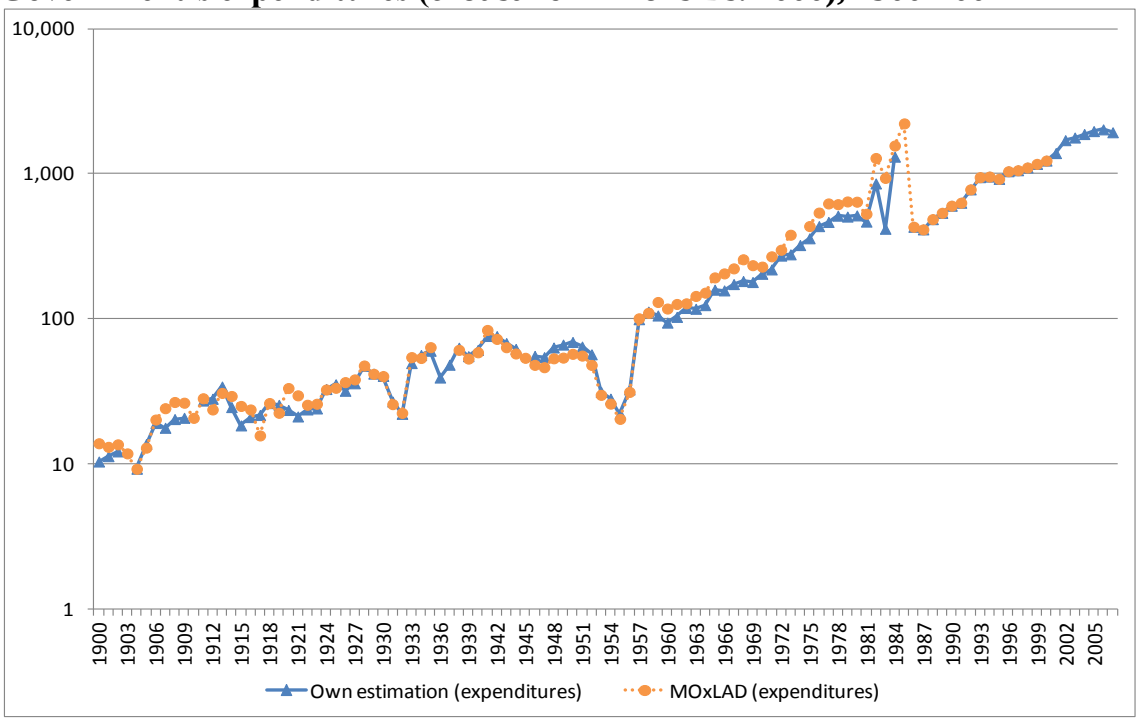
Graph 2. MOxLAD and my estimates of Bolivian Central Government's revenues (thousand millions Bs. 2000), 1882-2007



Sources: MOxLAD database: http://moxlad.fcs.edu.uy/, and my own figures.
Notes: Both series have been deflated using the price index presented in Chapter 1.

of time. Likewise, Mitchell's data from 1896 to 1970 refers to Federal [sic] Government. Since the Bolivian State has never had a federal organization, it is difficult to know what is exactly measured by the author. Anyway, if Mitchell wants to refer to the Bolivian Central Government, the level differences between his estimates and my series may be reflecting differences in primary sources. From 1900 to 1972, Mitchell got the information from the so-called "Boletín Estadístico", whereas my estimates are based on the sources presented in Appendix 1. From 1973 to 1984, he got the information from the so-called "Bolivian en cifras", whereas my estimation comes from the original data published and revised by the IMF.

Graph 3. MOxLAD and my estimates of Bolivian Central Government's expenditures (thousand millions Bs. 2000), 1900-2007



Sources and notes: See Graph 2.

Nevertheless, it must be kept in mind that public finances are only part of the Public Sector and of the whole set of instruments of State intervention. From a statistical point of view, they belong to the "Non Financial Public Sector", which consists of national, state and local finances and public companies (IMF, 2001). In Bolivia, public finances were the most important tool of State intervention between independence and the interwar period, when public companies emerged as an alternative instrument. The first public firms were the national oil company, established in 1936 ("Yacimientos Petrolíferos Fiscales"), and the "Corporación Boliviana de Fomento", established in 1942. However, as has often been highlighted by the Bolivian historiography (Zondag, 1966: 99), it was not until the nationalization of the three largest mining companies and the foundation of the "Corporación Minera de Bolivia" (COMIBOL) in 1952 that public companies replaced public finances as the most important tool of State intervention. Since then, and despite the deep privatization process of the late 1980s and 1990s (Grebe, Chávez and Corrales, 1998), public companies have remained as a very important component of the Bolivian Public Sector (Table 2). Thus, when analyzing the database, it must be kept

in mind that, from 1952 onwards, and especially during the 1950s, 1960s and 1970s, my government revenue and expenditure series are less representative of the action of the Bolivian Public Sector than in other periods, not only because they do not provide information on the subcentral governments before 1990 but, mainly, because they do not include the activity of the Bolivian public companies.

Table 2. Non Financial Public Sector in Bolivia (%GDP), 1882-2007

	Current revenues				Total Expenditure			
	Central Government	Departmental Governments	Municipal Governments	Public Companies	Central Government	Departmental Governments	Municipal Governments	Public Companies
1882	2.70	1.16	N.a	0.00	N.a	0.68	N.a	0.00
1895	2.11	0.79	N.a	0.00	N.a	N.a	N.a	0.00
1902	2.48	0.98	0.96	0.00	3.35	N.a	N.a	0.00
1913	6.13	0.73	N.a	0.00	6.78	0.73	N.a	0.00
1920	3.28	0.47	0.27	0.00	4.25	N.a	N.a	0.00
1923	3.36	0.71	N.a	0.00	4.08	0.71	N.a	0.00
1930	4.01	0.80	N.a	0.00	5.66	0.80	N.a	0.00
1940	6.93	N.a	N.a	0.00	6.35	0.44	0.06	0.00
1942	6.06	0.43	0.44	N.a	7.71	N.a	N.a	N.a
1949	3.69	N.a	N.a	N.a	4.61	0.36	0.55	N.a
1958	6.89	N.a	N.a	22.53	10.04	N.a	N.a	24.66
1966	9.32	N.a	N.a	24.51	9.83	N.a	N.a	24.51
1980	9.43	1.79	*a*	28.87	20.86	2.07	*a*	25.38
1990	15.20	1.53	1.24	11.08	16.38	2.47	2.28	12.80
1995	18.18	0.72	2.21	8.34	21.10	0.81	2.48	9.48
2007	26.51	2.65	2.41	10.37	24.77	3.15	2.73	11.40

Sources: a) *Nominal GDP*: for 1882-1949 see Chapter 1; for 1950-2007: ECLAC database: www.eclac.cl. b) *Current revenue and total expenditure*: for the Central Government, my own estimations (see text); for the Departmental and Municipal Governments in 1882, *Memoria del Ministerio de Hacienda, 1882*; in 1895 and 1902: *Censo General de Población, Tomo 2. Resultados definitivos* (1904:XLV-XLVII); in 1913, 1923, and 1930: *Presupuestos Departamentales*; in 1920: Mc Queen (1925); in 1942, *Boletín Estadísitico Nº 83 del Ministerio de Hacienda*; in 1940 and 1949, Gallo (1991), taken from the Keenleyside Report (1951: 7); in 1980, Otálora (1995: 136-141); in 1990-2007: "Boletín Estadístico UDAPE": www.udape.gob.bo; for Public Companies in 1958 and 1966, *USAID-Estadísticas Económicas*; in 1980, Otálora (1995: 136-141); in 1990-2007, subtracting my estimates on General Government's statistics from SPNF estimates by Pereira, Sheriff and Salinas (2012).

Notes: N.a.: Not available; (*a*): data for Departmental Governments actually include both Departmental and Municipal revenues; data for Departmental Governments in 1895, 1913, 1923, and 1930 are *budget* data; data for Municipal Governments in 1940 and 1949 refer to the nine capital cities; data for public companies refers to total revenues and expenditures

Despite these coverage limitations, the new database constitutes, for several reasons, a reasonably good approximation to the main features of the history of public finances in Bolivia from the last quarter of the 19th century onwards. Firstly, the Law of November 21, 1872, divided Bolivian public finances in three different administrations -the National Treasury, the Departmental Treasuries and the Municipal Treasuries- and officially recognized the end of the Central Government's dependence on the indigenous capitation tax and the consolidation of trade taxes as the main revenue source. This shift in the Central Government's revenue composition and the political stability achieved after the Bolivian defeat in the Pacific War (1879) against Chile fostered a State-building process (Klein, 2011) that may be approached through the evolution of Central Government's revenues since the early 1880s.

Secondly, the focus on Central Government's statistics allows studying the most important part of Bolivian public finances during most of the time analyzed by the present work. It is true that after the Law of 1872 none of the three fiscal administrations had a clear prominence over the others. For example, as may be seen in Table 2, in 1882 the Departments' revenues were equivalent to 40% of the Central Government's revenues.[10] Likewise, by 1902 Central Government's revenues were still not significantly higher than 50% of the total public income. However, starting with the transfer of education and police services from the Departments to the Central Government (Barragán and Peres-Cajías, 2007), a progressive centralization process took place since the mid 1900s. Hence, not surprisingly, in 1913 the size of the Departments' budgets had decreased to ca. 10% of the Central Government's revenues and expenditures.

The Great Depression and the lost of the Chaco War (1932-1935) against Paraguay reinforced this centralization process. Centralization was reflected both in legislation (Barragán, 2007) and in the structure of public finances: between the 1930s and the 1980s the Departments' budgets represented, on

[10] Moreover, the interdependence among the three levels of the public administration was very high. As was already been pointed out before by some authors Platt (1982), I could confirm through my research that departmental subsidies accounted sometimes for a non negligible share of the revenues of the National Treasury. For instance, the Cuenta General of 1883 states that Departmental subsidies accounted for 13% of the total revenue of the Central Government of that year.

average, 5% of the Central Government's revenues and expenditure (Wilkie, 1969; Otálora, 1995; Barragán and Peres-Cajías, 2007). Centralization was only temporarily interrupted in the 1940s by an incipient devolution process to the Municipalities as a consequence of which, in 1949, the expenditures of the nine capital cities of the Bolivian Departments represented 10% of the Central Government's spending (see Table 2). However, this process was reversed with the victory of the National Revolution in 1952 and the implementation of the so-called State's Capitalism. Hence, since they represented more or less 90% of the total Bolivian public finances between the 1930s and the mid-1980s, Central Government statistics may be considered a good proxy of the total revenue and expenditure of Bolivian public administrations during most of the 20th century.

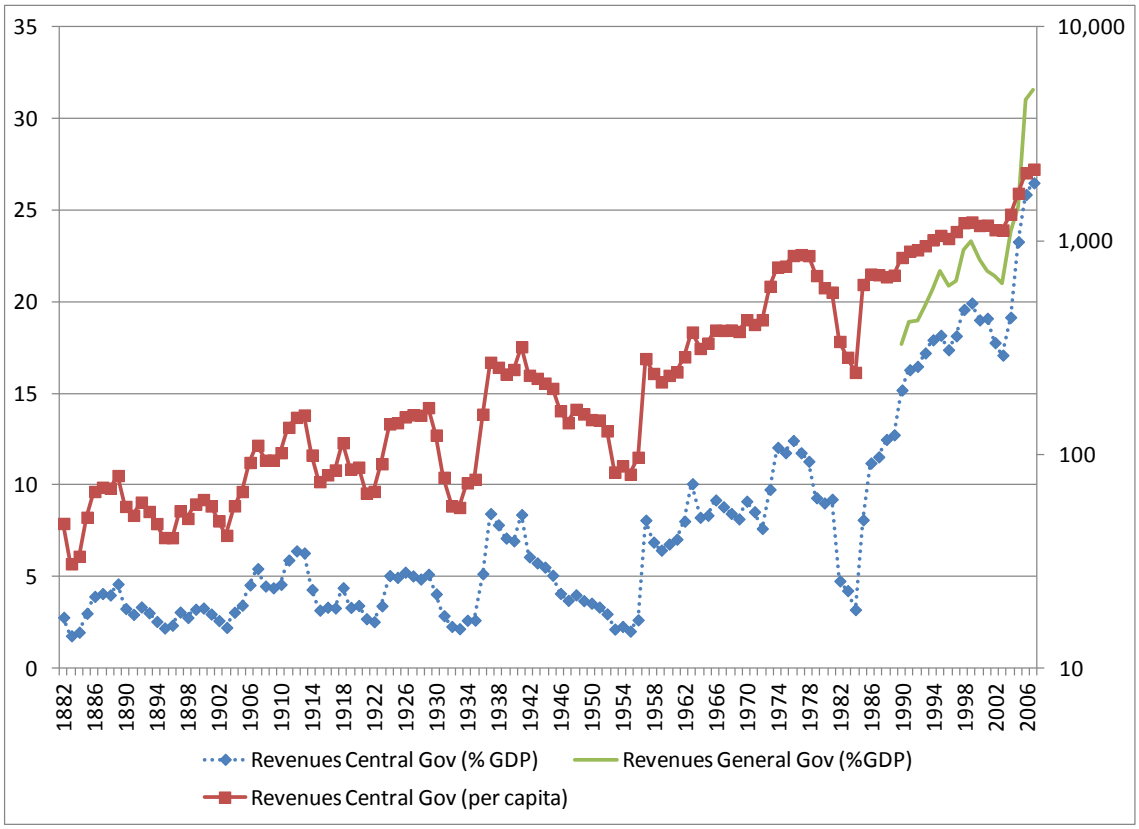
Departmental and Municipal finances regained relevance from the late 1980s onwards. To start with, the tax reform of 1987 established that public revenues collected by the Central Government had to be reallocated to different administrations: 75% to the Central Government, 10% to the Departments, 10% to the Municipalities and 5% to the universities (Otálora, 1995: 107). These shares and the functions of the different administrations were subsequently modified by the *Ley de Participación Popular* (Popular Participation Act, 1994), the *Ley 1654 de Descentralización Administrativa* (Administrative Decentralization Act, 1995) and the most recent legislation on oil and gas activities (2005) (Pereira, Sheriff and Salinas, 2012). As a result of these processes, both Department and Municipal resources increased their relative importance as a share of the Bolivian GDP (Table 2). However, as is highlighted in the next section, the implications of these changes can be easily analyzed thanks to the availability of General Government's statistics from 1990 onwards.

2. Bolivian Public Revenues and Expenditures, 1882-2007: some stylized facts

The present section uses the new database to describe some of the most important stylized facts of the history of Bolivian public finances since the

late 19th century.[11] The first one is the low level of the ratio between public revenues and GDP until recent decades (Graph 4). Between 1882 and the late 1950s, Central Government's revenues were, on average, around 5% of GDP. Thereafter and until the first half of the 1980s, they increased slightly but –with the exception of some years- remained below 10% of GDP. They only surpassed that level in the second half of the 1980s and kept growing later on, up to a level of more than 25% of GDP in 2007. Differences between Central Government's revenues and General Government's revenues were not significant until 2005, when Departmental and Municipal revenues increased their relevance as a result of the new legislation on oil and gas activities.

Graph 4. Bolivian Central and General Government's revenues as a share of GDP (%, left axis) and per capita (Bs. 2000, right axis), 1882-2007



Sources: For GDP, population and prices see Chapter 1; for revenues see text.

[11] See Appendix 2 for a general presentation of the new dataset.

A regional comparison confirms the low level of Bolivian Central Government's revenues for most of the period under study (Table 3). Indeed, during the last quarter of the 19th century, whereas Bolivian revenues remained around 3% of GDP, Chilean figures were around 8% of GDP. During the first half of the 20th century, Bolivian public revenues moved around 4.5% of GDP, a figure more or less similar to the Colombian and Peruvian ones, but far away from the ratios in Chile and Uruguay -which were around 11% of GDP. From 1952 to 1985 –i.e. during State's Capitalism- Bolivian public revenues reached on average around 7% of GDP, one of the lowest figures in Latin America, even behind Guatemala –around 9% of GDP. Thus, it was not until the 1990s when Bolivian public revenues started to converge with the regional average. Nowadays, the Bolivian ratio between Central –as well as General- Government's revenues and GDP is among the highest in the region.

Table 3. Latin American Central Governments' revenues as a share of GDP (%, 10 years average), 1882-2007

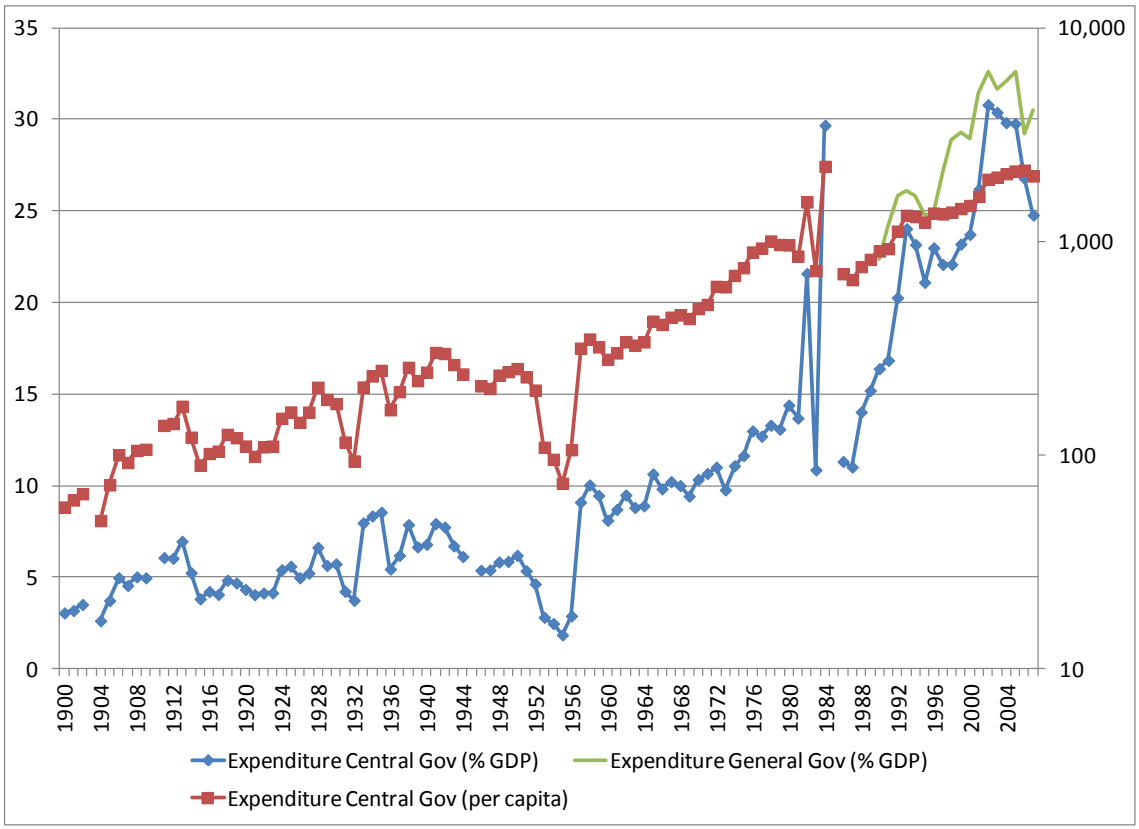
	Bolivia	Chile	Colombia	Guatemala	Peru	Uruguay
1882-1889	3.27	7.59	N.a.	N.a.	N.a.	N.a.
1890-1899	2.88	8.26	N.a.	N.a.	N.a.	N.a.
1900-1909	3.65	9.46	5.04	N.a.	4.35	11.90
1910-1919	4.51	7.87	3.87	N.a.	4.35	10.22
1920-1929	4.24	10.80	3.69	N.a.	4.55	11.05
1930-1939	4.52	12.70	4.72	N.a.	6.08	12.94
1940-1949	5.33	14.19	6.07	9.08	8.38	12.14
1950-1959	4.04	15.29	7.78	8.18	13.63	13.61
1960-1969	8.32	17.49	8.47	8.21	15.13	14.28
1970-1979	10.37	26.22	10.95	9.25	15.41	15.72
1980-1989	8.66	27.09	12.02	8.66	12.46	17.21
1990-1999	17.64	21.24	9.03	10.43	14.40	17.60
2000-2007	20.98	22.88	11.91	12.48	15.55	20.46

Sources: a) *Bolivia*, see text; b) other countries from 1900 to1989; *Chile*: Base de datos EH CLIO LAB, Iniciativa Científica Milenio Mideplan; *Colombia*: Kalmanovitz (2011); *Guatemala*: ICEFI (2007); *Peru*: Portocarrero, Beltrán and Romero (1992); *Uruguay*: Azar *et al* (2009); c) other countries from 1990 to 2007 from ECLAC database: www.eclac.cl.
Notes: N.a.: Not available.

Expenditures were generally higher than revenues, but the ratio between public expenditures and GDP was also low until recent decades (Graph 5).

Bolivian Central Government's spending was around 5% of GDP until the late 1950s, when it started growing steadily. Despite that increase, Central Government's spending was still below 15% of GDP in the late 1970s. During the early 1980s, Central Government's spending soared, which led to a serious macroeconomic disorder that was only controlled in the last months of 1985. Some important reforms were implemented thereafter and Central Government's spending started to grow again on sounder bases up to ca. 25% of the GDP in 2007. Differences between Central Government's expenditures and General Government's expenditures during the 1990s were somehow higher than in the case of revenues, but still modest until the mid-2000s.

Graph 5. Bolivian Central and General Government's expenditures as a share of GDP (%, left axis) and per capita (Bs. 2000, right axis), 1900-2007



Sources: For GDP, population and prices see Chapter 1; for revenues see text.

Beyond the low level of both Bolivian public revenues and expenditures until recently, the graphs also stress the intense fluctuations in the evolution of both variables. In the case of public revenues per capita, growth started

in 1903 but was interrupted by the First World War, and Bolivian public revenues remained very unstable in per capita terms from 1914 to 1956. Later on, they increased steadily up to 1978, but the beginning of the external debt crisis reversed again the process and revenues per capita decreased until 1985. Thereafter, by contrast, and with the single exception of the 1999-2003 period, Bolivian public revenues could finally grow steadily.

Broadly speaking, the evolution of expenditures per capita was smoother than in the case of revenues. Nevertheless, their process of growth also had significant fluctuations. Indeed, after a decade of constant increase, spending per capita stopped growing because of the First World War. A more or less constant growth path was recovered in the 1920s, but it stopped again suddenly in 1929. The Great Depression fuelled a downward trend on public expenditures per capita that was reversed in 1932 because of the Chaco War against Paraguay (1932-1935). Expenditures per capita went on growing for a few years after the war, but remained more or less stagnant during most of the 1940s and early 1950s. The National Revolution of 1952 broke this process and expenditures per capita decreased substantially, to start growing again from 1957 until the early 1980s, when they soared. Macroeconomic stability was recovered in 1985 and allowed a more steady growth trend thereafter.

The intensity of the aforementioned fluctuations can be measured by the volatility of both revenues and expenditures (Table 4). In general terms, the volatility of both variables tended to decrease over time and to be higher in the case of revenues. However, during the 1930s, 1950s and 1980s, volatility levels sharply increased compared to the previous decades and, moreover, during the 1950s and 1980s volatility became higher in expenditures than in revenues. Since the 1990s, by contrast, volatility levels of both public revenues and expenditures undertook a significant decrease and reached the minimum levels in the history of Bolivian public finances.

Table 4. Public revenue and expenditure volatility, 1880-2007 (10-year averages)

	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2007
Revenue volatility	0.27	0.18	0.19	0.24	0.19	0.37	0.16	0.40	0.12	0.16	0.38	0.06	0.11
Expenditure volatility	N.d.	N.d.	0.17	0.20	0.16	0.36	0.12	0.45	0.10	0.07	0.54	0.08	0.07

Sources: Own estimation.
Notes: N.d.: no data.Volatility has been calculated as the standard deviation of ln (X_t / X_{t-1}), being X income or expenditure in real terms; see Jacks, O'Rourke and Williamson (2011).

Summing up, the previous evidence shows that Bolivian public finances were particularly restricted for a long time by its small size relative to the aggregate economy as well as by the volatility of its resources. In order to understand the reasons for the persistence of these restrictions as well as the driving forces of the recent changes, the next section analyzes the composition of both public revenues and expenditures.

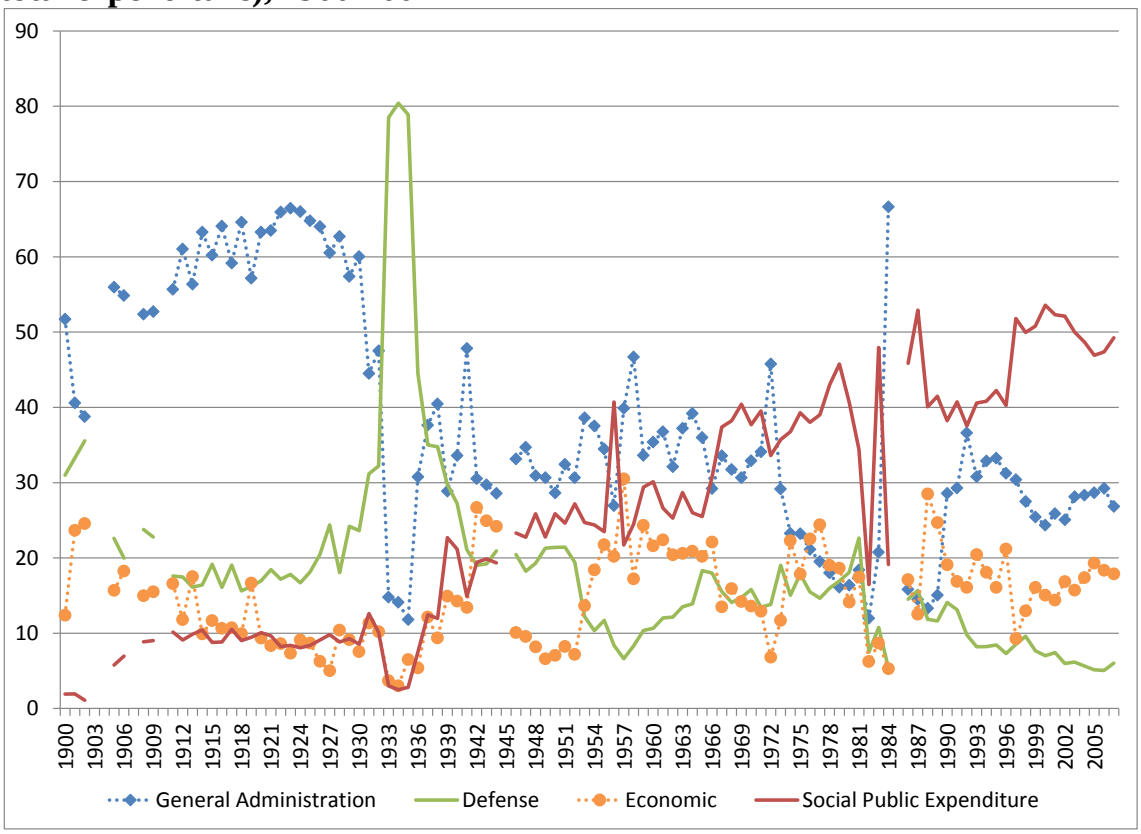
3. Bolivian public spending: Where was it allocated and how was it financed?

The present section focuses on the composition of Bolivian public finances throughout the period under study. In the case of expenditures, Graph 6 shows that, at the beginning of the 20th century, the Bolivian Central Government was still concentrated on the typical tasks of small liberal States: general administration[12] and defense. However, during the second half of the 1900s, the share of social expenditure within Central Government spending started increasing up to 10%, i.e. the same ratio as economic expenditures. This structure remained stable until the Chaco War (1932-1935), when defense soared up to 80% of total spending. After the war, the relative importance of defense expenditures decreased significantly, whereas social public expenditure started increasing again. The relative importance of the latter grew once more after 1956, in a process that, despite some oscillations, lasted until the beginning of the 21st

[12] General administration includes the spending made by the Executive, the Legislative, Foreign Affairs, Justice, Police and Public Debt payments.

century, when it reached a level of around 50% of Central Government spending.[13]

Graph 6. Central Government's expenditure composition (share of total expenditure), 1900-2007



Sources: Own estimation (see text).

Hence, one of the most important features of the history of Bolivian public finances is the increasing relevance of social public expenditure over time. The initial push at the beginning of the 20th century was associated with the centralization of education and the educational reform embraced by the liberal governments (Cajías, 2011). Whereas in 1903 (before centralization), the *budgeted* education expenditure of the Departmental and the National Treasuries were Bs. 263,213 and Bs. 128,320 respectively, ten years later (once centralization and educational reform were underway) the equivalent figures were Bs.137,850 and Bs. 2,447,950, respectively. In other words, the total public expenditure in education was multiplied by a factor of six in just one decade.

[13] The ratio is similar in the case of General Government's expenditures.

Further increases were driven by the centralization of health spending during the years of the so-called Military-Socialist regimes (1936-1939) as well as by an important increase in education spending during the 1940s (Barragán and Peres-Cajías, 2007). These changes may be linked with the emergence of new economic and political groups (such as urban middle classes or the mining and urban workers) and the response to their political demands by some of the governments that hold power after the Chaco War (1932-1935) (Dunkerley, 2003; Klein, 2011: 178-208). Indeed, according to Wilkie (1969), the expansion of social public expenditure during Gualberto Villarroel's term (1943-1946) can be seen as another example of this President's strategy towards the consolidation of sustainable political alliances with urban, mining and rural workers.

The Revolution of 1952 represented a new landmark in the prioritisation of social spending. The revolution brought about an aggressive redistribution of land, the nationalization of the three largest mining companies and the establishment of universal suffrage. These changes, in turn, involved a considerable increase in the intervention of the State in the economy (Table 2). This process was justified as the best way to achieve two of the main goals of the Revolution: economic redistribution and the diversification of the economy. Both objectives were deemed as indispensable for development, in a context of high inequalities in land property, education and health access, and a comparatively low degree of structural diversification. Under these circumstances and the constant pressure from the social movements which made the revolution possible –namely urban and rural workers- social spending grew substantially once the initial macroeconomic imbalances provoked by the revolution were corrected (Dirección Nacional de Informaciones, 1962). Although some of the priorities of the revolution were radically modified during the time of military dictatorships (1964-1982), and beyond the ideological differences among these different military governments,[14] social public expenditure and, particularly, education spending went on increasing during the 1960s and 1970s.

Once democracy was restored (1982), the expansion of social public expenditure was not only driven by education spending but also by health

[14] Whereas most military governments were right-wing, some had a left-wing orientation.

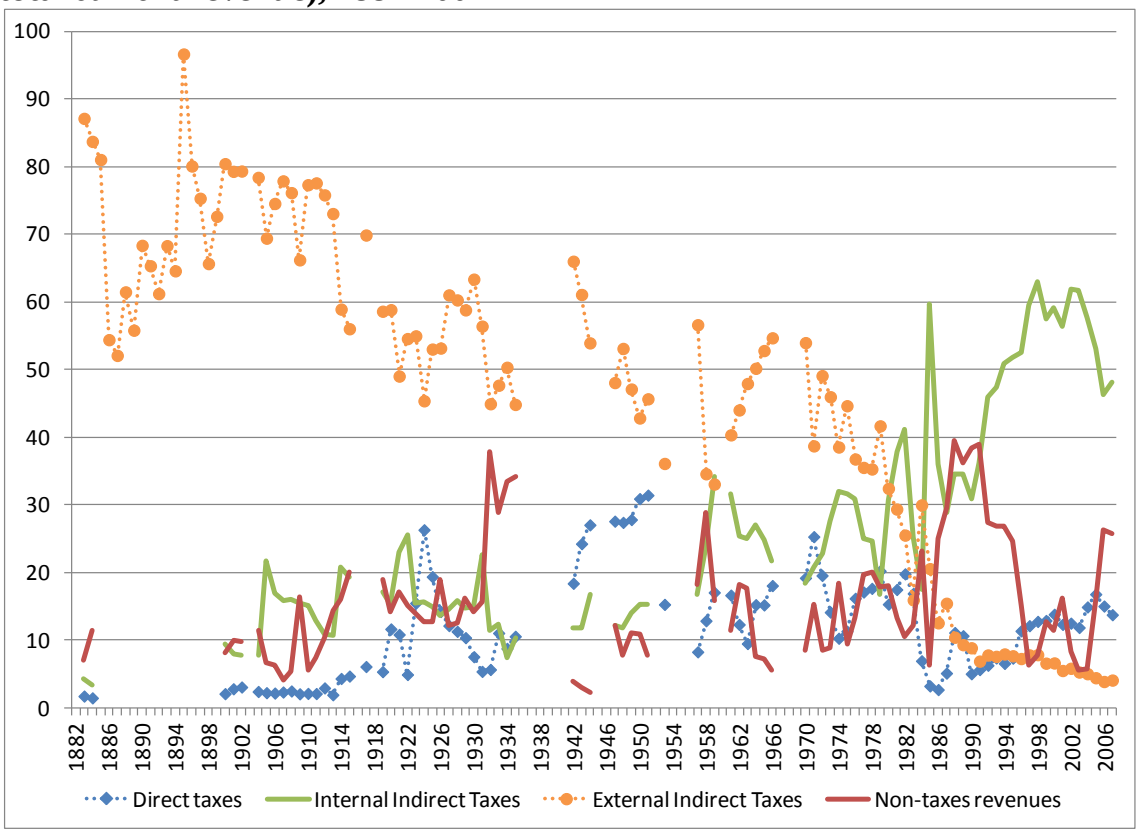
and well-being expenditures. From 1985 to the early 2000s, this increase was related with the implementation of a new economic model which, following the Washington Consensus guidelines (Williamson, 2004), gave particular attention to social public spending. Moreover, a substantial share of these expenditures was largely associated with the conditionality implicit in most international aid donations received by the country (Pereira, Sheriff and Salinas, 2012). In contrast, the expansion of social public expenditure from the mid-2000s onwards is associated with the interest of Evo Morales' Administration –which explicitly rejects the Washington Consensus paradigm- in the expansion of social services across the entire country (PNUD, 2010).

Therefore, contrary to the conventional wisdom, the expansion of social public expenditure arises as one of the most important policies of the Bolivian Government during most of the 20th century. Actually, the current importance of social public expenditure should be understood as the accumulation of policies applied by different governments which very often embraced antagonist ideologies. The impact of the increasing fiscal priority of social public expenditure on the evolution of Bolivian social indicators is studied in detail in Chapter 4. In the next few paragraphs I try instead, by looking at the composition of public revenues, to analyze the difficulties that the successive Bolivian governments had to face in order to finance the increases in social spending.

Graph 7 shows that trade taxes were the most important revenue source of Bolivian Central Government from the last quarter of the 19th century to the early 1980s. Thus, in contrast with the experiences of countries such as Argentina, Brazil or México (Cortés- Conde, 2006), indirect *internal* taxes accounted for a significant share of Bolivian public revenues only from the late 1980s onwards. These taxes represent nowadays more than half of total *current* revenue. Meanwhile, and particularly since 2004, non-tax revenues have become important for both the Central and the General Government. By contrast, with the only exception of the 1940s, direct taxes have always had a minor importance and, similarly, Social Contributions have always represented less than 10% of *current* revenue.[15]

[15] Modern Social Security was introduced in Bolivia through the unification of all social security services in a single unit -the "Caja Nacional de Seguridad Social"- by the *Código*

Graph 7. Central Government's revenue composition (percentage of total *current* revenue), 1882-2007



Sources: Own estimation (see text).

The centrality of trade taxes in the history of Bolivian public finances may be highlighted through a regional comparison (Table 5). As has often been claimed (Coatsworth and Williamson, 2004), the table shows that external trade taxes were the most important revenue source in Latin America until the Great Depression. However, the table also indicates that the fiscal dependence on external trade taxes was higher in the case of small economies such as Bolivia or Costa Rica, and that there were different patterns of fiscal transition from external to indirect internal taxes (Cortés-

de Seguridad Social enacted in December 14th, 1956 (Aponte *et al.*, 2008). The law fostered an important increase in the system coverage (Dirección Nacional de Informaciones, 1962; Zondag, 1966). Despite this increase, coverage rates remained low; for instance, at the end of the 1980s, the system only covered 20% of total population (Evia and Fernández, 2004). This low coverage and the State's inability to collect these revenues (Zondag, 1966; Evia and Fernández, 2004) explain the low relative importance of Social Contributions. This conclusion is based in the analysis of the point estimations offered in Dirección Nacional de Informaciones (1962) for the period 1956-1962, and the Social Security revenue series available since 1983 in the IMF statistics.

Conde, 2006). Indeed, whereas indirect external taxes were lower than 15% of total current revenue already in the 1940s in big economies such as Brazil or Argentina, the ratio was still around 25% during the 1960s in other mid-sized Latin American economies such as Colombia or Uruguay. In the case of the smaller economies, such as Bolivia or Guatemala, external taxes still represented one third of total current revenues in the 1970s. Therefore, the Bolivian Government's persistent dependence on external taxes until the early 1980s may be interpreted as an extreme case of the external tax dependence that prevailed in the Latin American poorer economies.[16]

Table 5. Indirect external taxes in Latin America (share of Central Government's *current* revenue, 10-year averages), 1900-2007

	Argentina	Brazil	Colombia	Peru	Uruguay	Bolivia	Costa Rica	Guatemala
1900-1909	49.92	52.22	N.a.	51.23	61.21	75.73	63.01	N.a.
1910-1919	46.63	43.42	64.93	40.49	53.32	68.40	52.39	N.a.
1920-1929	48.88	37.68	49.89	39.83	46.64	54.91	59.21	N.a.
1930-1939	33.57	32.80	45.87	29.92	41.91	51.26	57.17	N.a.
1940-1949	13.06	14.63	23.16	29.25	29.12	54.88	41.94	38.35
1950-1959	4.54	6.90	28.36	29.28	21.33	41.48	N.a.	48.48
1960-1969	2.29	7.75	25.46	20.21	27.46	48.32	N.a.	36.57
1970-1979	20.84	7.22	15.92	22.91	16.18	42.02	N.a.	31.34
1980-1989	13.07	3.85	14.51	21.85	15.44	22.27	N.a.	21.93
1990-1999	5.65	1.16	10.16	9.86	7.20	8.37	11.60	17.68
2000-2007	13.64	2.16	7.28	7.62	6.05	5.62	7.19	11.50

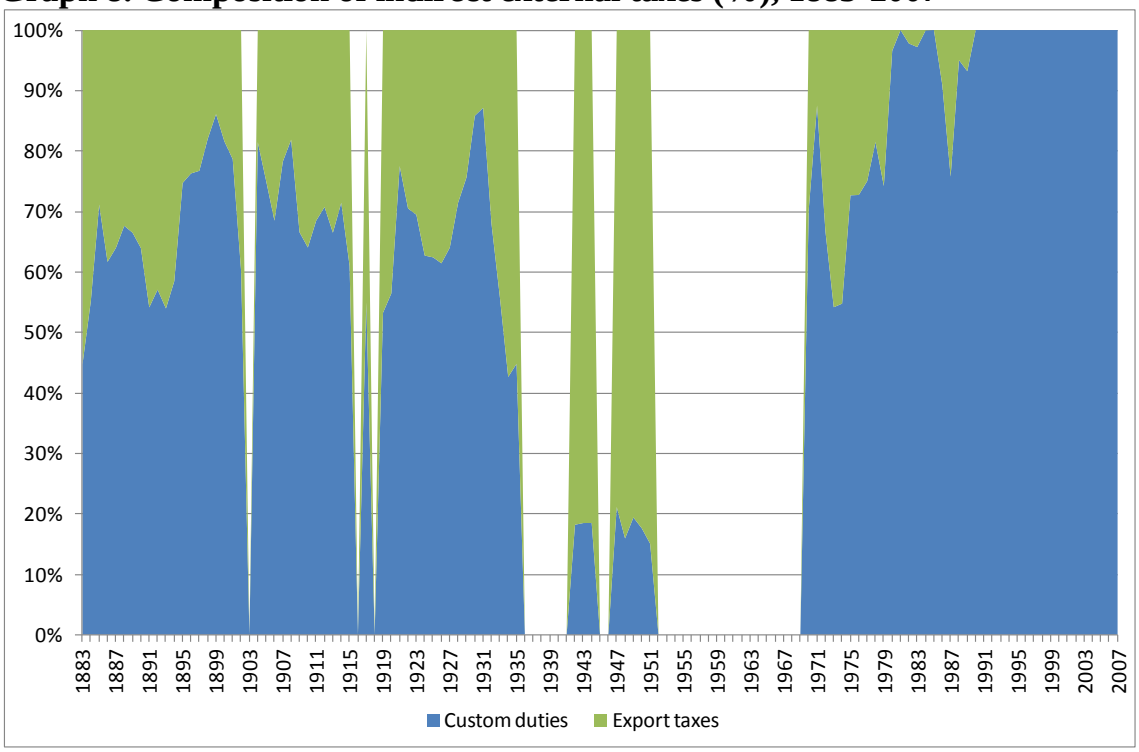
Sources: a) *Bolivia*, see text; b) *Guatemala*: ICEFI (2007); c) *Costa Rica* from 1900 to 1948 from Román (1995); d) Rest of countries from 1900 to 2000 and Costa Rica from 1992 to 2000 from MOxLAD database: http://moxlad.fcs.edu.uy/; e) All countries from 2001 to 2007 from ECLAC database: www.eclac.cl.
Notes: N.a.: Not available.

Graph 8 shows, however, that this dependence was not necessarily based in the same type of taxes over time. Indeed, as in other Latin American cases such as Brazil or Chile (de Paiva Abreu and Tamega, 2006), export taxes played an important role in several episodes of Bolivian economic history. For instance, export taxes accounted for 40% of external trade taxes from

[16] After the External Debt crisis, external taxes lost ground throughout the region. The Argentinean case since 2002 is the only major exception to this trend.

1883 to 1893. This share decreased during the years of the silver crisis, but gradually recovered thereafter thanks to the increase in tin exports and several tax modifications (Banco Minero de Bolivia, 1941). Due to the new circumstances brought by the Great Depression and the Chaco War (1932-1935), export taxes increased substantially -both in relative and absolute terms- and consolidated as the main revenue source of the Bolivian Central Government (Contreras, 1990; Gallo 1991). This situation lasted until 1956, when the Stabilization program reduced export taxes in order to grant the profitability of the new national mining company (Gómez, 1978). The importance of export taxes increased again in the 1970s thanks to several tax modifications, the growth in commodity prices and the expansion of gas exports, but lost ground again in the early 1980s because of the external debt crisis. Export taxes were subsequently eliminated with the consolidation of the Washington Consensus policies during the late 1980s and early 1990s.

Graph 8. Composition of indirect external taxes (%), 1883-2007



Sources: Own estimation (see text).

Therefore, between the last quarter of the 19th century and the early 1980s, the Bolivian Central Government was sometimes dependent on custom

duties and others on export taxes. This distinction is not irrelevant since it implies substantial differences in tax bases. Tax dependence on custom duties made the government to rely on those economic agents more closely related with imports which, as in the rest of Latin America, can be broadly identified with urban elites and middle classes (see Chapter 3). By contrast, given the concentration levels of Bolivian exports, a higher tax dependence on export taxes implied a close fiscal relationship between the Bolivian Government and few economic agents. This phenomenon was especially extreme from the early 1930s to the early 1950s, when taxes paid by three "Tin Barons" –which accounted for 75% of Bolivian exports- represented the bulk of Bolivian public revenues.[17]

The identification of the relevant tax bases and taxpayers also provides interesting information in the case of direct taxation. Indeed, according to Gallo (1991: 76-83), thanks to the control of both the Congress and local institutions, landowners elites were able to resist any increase on rural direct taxation throughout the first half of the 20th century.[18] By contrast, during the same period of time, the Bolivian Central Government tried to consolidate a profit tax on mining activities and, after some failed experiences, this goal was finally achieved in 1923, when, thanks to the pressure of international lenders,[19] tax collection increased substantially. Later on, mining producers were able to reduce tax pressure on their activities (Drake, 1989: 205-206; Gallo, 1991:108-109) and, as a consequence, the relative importance of direct taxation returned to the levels it had before the fiscal reform of 1923. Direct taxes increased again in the 1940s and, regardless of the conservative or progressive nature of Bolivian governments, became the second most important revenue source throughout that decade. These taxes, however, came overwhelmingly from very specific sources –mining and bank utilities- and, therefore, did not necessarily represent an expansion of the social groups that constituted the

[17] Considering tin exports elasticity Gómez (1978), the share of Bolivian exports in the tin market (Peñaloza, 1985) and the evolution of international prices, it may be assumed that tin producers could not transfer additional tax pressures to international consumers (Gutiérrez Guerra, 1940: 88-93; Pando, 1941: 62; Banco Minero de Bolivia, 1941: XXVI; Gallo, 1991: 97-118).

[18] At least until the early 1920s, the responsibility on direct taxation regulation was partially in the hands of Departments and Municipalities (Mc Queen, 1925: 83-84).

[19] See Contreras (1990) and the following section.

main government's tax bases. The lack of detailed information prevents any analysis of the nature of Bolivian direct taxes during the 1950s and 1960s. During the 1970s, direct taxation increased again thanks to the increase in income taxes both from individuals and companies (UDAPE, 1985: 11-13), but its relative importance remained below that of indirect external and internal taxes.

Tax bases were also rather narrow in the case of indirect internal taxes. Indeed, until the late 1920s there was not any general consumption tax and all indirect internal taxes were excises. Most of these were obtained from specific agents or economic flows and, therefore, their individual contribution to total revenues was small (Mc Queen, 1925: 36). For instance, taxes on foreign alcohol represented no more than 1% of total *current* revenue from 1909 to 1913. Likewise, the new excises created during the 1930s and 1940s did not increase the relative importance of indirect internal taxes but the complexity of a system that was criticized by the high number of different and marginal taxes (Banco Minero de Bolivia, 1941: XX-XXIII, Pando 1941: 1). Excises still represented the bulk of indirect internal taxes from the 1950s to the early 1980s, although their contribution to total revenues increased since the early 1970s thanks to the rationalization of the system (UDAPE, 1985: 69-87). Anyway, as has been previously suggested by the literature (Gallo, 1991: 100; Barragán and Peres-Cajías, 2007: 140-146), the prevalence of excise taxes during most of the 20th century would indicate that the Bolivian governments' taxing ability was limited to some easily identifiable economic activities.

Indirect internal taxation did not represent a clear alternative to trade taxes until the initial years of the Washington Consensus reforms when, beyond the immediate positive effects of macroeconomic stabilization on tax collection,[20] the 1986 tax reform established a new system with fewer taxes but broader tax bases (Otálora, 1995: 113; Pereira, Sheriff and Salinas, 2012: 57-59). Indeed, driven by the consolidation of a new Value Added Tax, the tax reform brought along the transition from a fiscal system based on external trade taxes to a new one mainly financed through indirect internal taxes. This process, in turn, allowed increasing public revenues and reducing its volatility, two achievements which were further consolidated

[20] Basically, through an inverse Olivera-Tanzi effect (Otálora, 1995).

through different reforms aimed at improving tax administration (Pereira *et al.*, 2012: 74, 113-121).

Meanwhile, taxes and non-tax revenues coming from oil and gas activities have gained a new critical role in Bolivian public finances. On the one hand, non-tax revenues from oil and gas production were critical for the initial recovery of Government's revenues in 1986, when the price of gasoline was increased by 833% and a transfer scheme from YPFB to the Central Government was established (Pereira *et al.*, 2012: 57). These measures are behind the increase in non-tax revenues during the 1986-1995 years (Graph 7). On the other hand, the increasing relevance of several taxes on oil and gas activities, which were established when the sector was privatized in the 1990s –the 1194 Law in 1990, and the *Impuesto Especial a los Hidrocarburos* in 1994- has allowed using the domestic price of gasoline as an instrument to curb fiscal deficits –the so-called *gasolinazos* (Pererira *et al*., 2012: 62, 74-76, 107). Finally, the new law on gas and oil activities enacted in May 2005 introduced the *Impuesto Directo a los Hidrocarburos* with a tax rate equivalent to 32% of total production. The combination of this new tax with those existing before increased the oil and gas tax burden up to 50% of total production (Pereira *et al.*, 2012: 111).

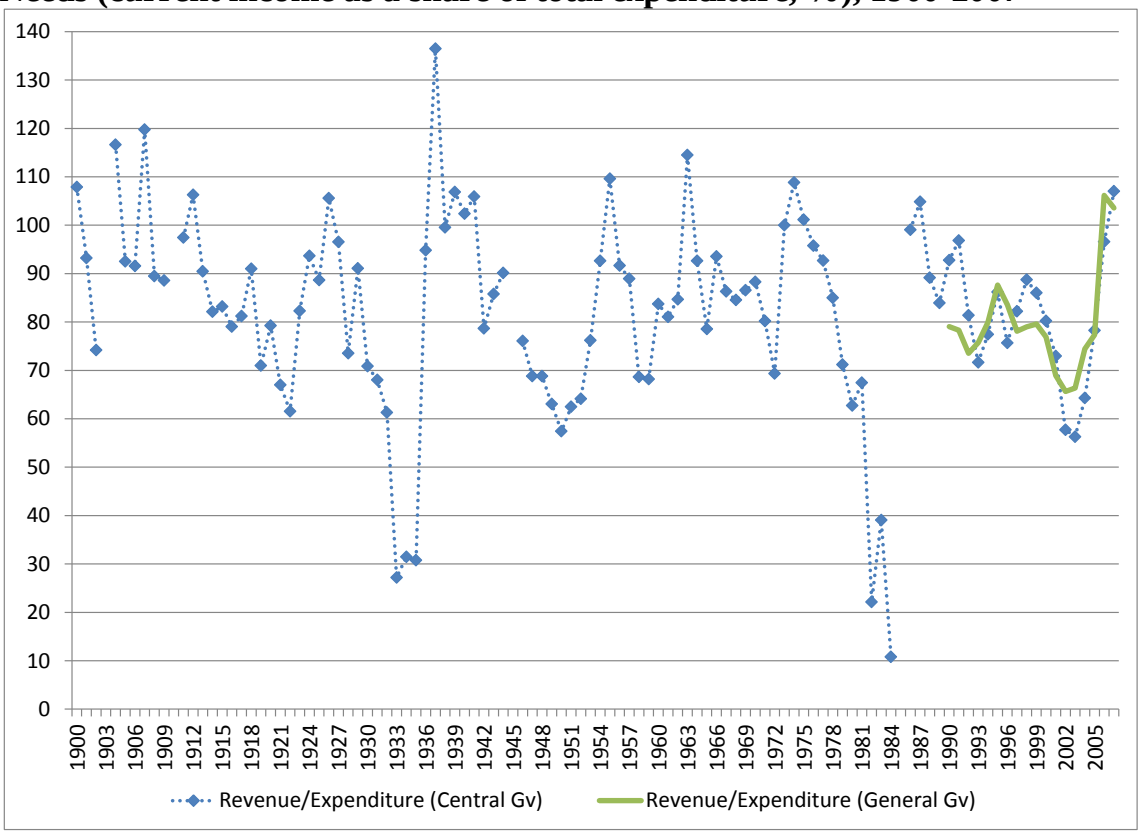
Therefore, whereas the extreme dependence of Bolivian public finances on narrow revenue bases was partially reduced since the mid-1980s, the relevance acquired recently by taxes and non tax revenues coming from oil and gas activities has stopped this process. The importance of this phenomenon is not negligible since, as is further explored in the next section, an extreme dependence on specific revenues may increase the vulnerability of State intervention to external shocks which, in turn, may generate negative externalities on the rest of the economy.

4. A first assessment of Bolivian public finances: a macroeconomic perspective

The analysis of fiscal deficits may be taken as a first indication on the vulnerability of Bolivian public finances throughout the period under study. Since the database consists of *current* revenue and *total* expenditure data,

here, strictly speaking, it is not possible to use the standard definition of fiscal deficit. However, as a substitute, it is possible to calculate the evolution of "State Financial Needs", a definition of fiscal deficit commonly used in Latin America in the 1980s (Otálora, 1995: 90). The State Financial Needs indicate to what extent current revenue can finance total expenditure and, as a consequence, the government's position as creditor or debtor. In this regard, the Bolivian data shows that, on average, *current* revenue could only cover 80% of total spending. Actually, in some periods, the gap between both variables was significantly higher than 20% (1919-1922; 1944-50; 2000-2004) or even 40% (1932-1935; 1979-1985) (Graph 9).

Graph 9. Central Government's and General Government's Financial Needs (current income as a share of total expenditure, %), 1900-2007



Sources: Own estimation.

During the last quarter of the 19th century and the first decade of the 20th century, fiscal deficits were not very large, and could actually be covered by internal borrowing (Mc Queen, 1925; Huber, 2001). During the First World War, expenditures continued growing, but revenues remained

stagnant. As had happened before, this imbalance was mostly covered by internal borrowing. Indeed, the State issued internal bonds in 1914 and sold three series of short-time notes pledging future custom revenues (McQueen, 1925: 50). However, the situation worsened once the First World War finished. On the one hand, regional demands pushed up expenditures and budgets were systematically passed under significant deficits (Mc Queen, 1925: 14, 17; Barragán and Peres-Cajías, 2007: 163-166). On the other hand, the commodity market crisis led to an important fall in total exports and, given the dependence of revenues on external trade, to a public revenue shortfall. Hence, in 1922, *current* revenues were equivalent to just 60% of total expenditure.

In this context, the Bolivian Central Government had to ask for external borrowing and obtained the Stiefel Nicolaus loan (US$ 29 million).[21] In order to ensure the debt repayment, international lenders required a major fiscal reform. This was enacted in 1923 and implied both the increase in the tax rate of external trade taxes and the creation of new taxes on other activities (Mc Queen, 1925).[22] International lenders also asked for the control of those sources of public revenues that were pledged to the debt repayment through the formation of the "Fiscal Permanent Commission".[23] While these fiscal changes represented a clear undermining of the Bolivian State sovereignty, they allowed increasing the Central Government's revenues from 2.5% of GDP in 1922 to 5% between 1924 and 1929.

Given the Government's dependence on indirect external taxes, the 1929 external shock made Bolivian public finances unsustainable and current revenues fell down in 1931 to just 2.8% of GDP. However, total expenditures were more rigid and, as a consequence, fiscal deficits

[21] The loan was requested for railway construction, but also for the payment of the internal debt issued in 1914, the payment of other external loans and the reduction of the fiscal gap (Mc Queen, 1925: 41).

[22] Indeed, President Bautista Saavedra used international pressure as an argument to justify an important increase in the fiscal burden on the mining sector (Contreras, 1990).

[23] These taxes included: all the shares of the Banco de la Nación Boliviana belonging to the State; all revenues representing dividends payable upon those shares; mining patents; alcohol monopoly; the tax on dividends of corporations; the tax on net profits of banks; the tax on income derived from mortages; the tax on net profits of mining companies; all import duties; surcharge on import duties; all export duties; and a first mortage on both the Atocha-Villazón railway and the Potosi-Sucre railway (Mc Queen, 1925).

widened; indeed, *current* revenue in 1931 could only cover 68% of total expenditure. Because of these fiscal troubles and the closure of international capital markets, the Bolivian Government had no option but to default its external debt payments in September 1931. One year later, defense expenditures boosted because of the Chaco War and total expenditure arrived to 8% of GDP in 1933. In order to finance these additional expenditures, the Government increased the fiscal burden on the mining sector. For instance, thanks to the tin market reorganization after the crisis, it could get loans from mining producers (Contreras, 1990; Gallo, 1991: 44).[24] It also imposed new taxes on mining, which were justified by war efforts (Banco Minero de Bolivia, 1941: XVIII). Furthermore, the State established a new heterodox tax: "the control of foreign exchange".[25] These measures, however, were insufficient and the Government had to resort to internal borrowing from the recently created Bolivian Central Bank (1928). This last measure had a clear incidence on inflation rates, which remained around 25% yearly from 1932 to 1935.

The Military-Socialist regimes, which controlled the Bolivian Government from 1936 to 1939, tried to maintain a high fiscal burden on mining activities. To that purpose, they confirmed the special tax laws enacted during the Chaco War, and also increased the rates on the foreign exchange tax. For example, in 1937 tin producers were forced to sell the State

[24] Oversupply characterized the tin market during the Great Depression. As a consequence, the most relevant producer countries created the International Board of Tin (1931). The aim of this cartel was to control tin supply through the allocation of production quotas for each country. This mechanism operated all along three successive periods: 1931-1934; 1934-1936 and 1937-1941 (Jordán, 1999: 228-229). The Bolivian quota was initially established on the basis of the 1929 production levels and was managed by the Bolivian Government. Since the Government decided the composition of the quota, it fuelled an "intra-oligopolistic" competition among Bolivian mining producers (Gallo, 1991: 41). Thus, the crisis increased the bargaining power of the Bolivian Government and forced loans were one of the most salient examples of this new situation.

[25] Mining producers were forced to sell the State a share of their foreign exchange gains at an overvalued exchange rate. Selling these foreign currencies at market rates, the State obtained a seigniorage gain. This implicit tax gained importance at the end of 1934, when the share of the foreign exchange gains that had to be sold to the Government was increased up to 42% and the difference between official and market exchanges rates was widened (CEPAL, 1958: 34).

between 9% and 46% of its foreign currency gains.[26] Driven by this "*sui generis* tax" (Banco Minero de Bolivia, 1941: XXXI), total revenues jumped to ca. 7% of GDP between 1937 and 1939. Additional resources, in turn, were to a large extent devoted to promote social public spending, which in 1939 had increased up to 22% of total expenditures.

In June 1939, President German Busch decreed that mining producers had to sell 100% of its foreign exchange gains to the government. President Busch committed suicide after some difficulties in the implementation of the new tax rate and the measure became ephemeral. However, the Bolivian government's attitude towards mining producers did not change and the mandatory sale of foreign exchange gains and high export tax rates for the mining sector remained as one of the most salient features of Bolivian tax policy during the 1940s (CEPAL, 1958: 33-35; Gallo, 1991: 123-128).[27] This policy was reinforced by the Bolivian economy's inability to increase its food production and the growing political relevance of poor urban consumers, which provoked the reduction of tariffs on foodstuff and, because of their relative importance on total imports, of overall import taxes (Gallo, 1991: 67-74). However, the increasing fiscal burden on mining activities was sometimes insufficient to cover total expenditures and the Bolivian government had often to rely on credits from the Central Bank, which made the domestic price level to climb.

During the initial years of the Revolution (1952-1956), the new leaders had to confront the same fiscal dilemma that had been faced by former Bolivian governments: how to raise public revenues in the short run in order to curb growing political demands. The solution, once again, did not vary in relation with previous experience and the *Movimiento Nacionalista Revolucionario* (Revolutionary Nationalist Movement) applied a multiple exchange rate regime to take advantage of the foreign exchange gains made by the mining sector (Gómez, 1978). The measure had some positive

[26] In 1937, the exchange rate for these sales was set at Bs. 50 per sterling pound for tin producers with a production lower than 2,000 tons and at Bs. 60 per sterling pound for tin producers with a production higher than 2,000 tons. Both exchange rates were below the market rate -Bs. 80 per sterling pound (Decreto Supremo del 08/07/1937).

[27] In 1939, President Carlos Quintanilla reduced the share of foreign exchange that had to be sold to the Government to a range between 32 and 45% and confirmed a tax rate of 41.43% on tin exports (Decreto Ley de 01/10/1939).

effects. For instance, thanks to the reallocation of mining foreign exchange gains, Bolivia completed a process of oil import substitution by 1954 (Zondag, 1966). However, it also reduced sharply the revenues of the new mining public company (COMIBOL) while its expenditures were growing rapidly. Indeed, the new government decided that COMIBOL had to increase social contributions to its employees and had to hire all those miners who had lost their jobs during the 1950-1951 crises (Zondag, 1966). As a consequence, COMIBOL ran into increasing losses, which were paid by the Central Government with credits from the Bolivian Central Bank. For example, between 63% and 85% of all State obligations in the Central Bank came from the mining sector from 1952 to 1956 (CEPAL, 1958: 70-71). These decisions had again clear macroeconomic effects: yearly inflation soared to 245% in 1953 and remained around 100% in 1954, 1955 and 1956.

Under this critical situation, the revolutionary government -in close collaboration with the IMF and the US- implemented an aggressive Stabilization Plan at the end of 1956, involving the removal of previous policies and a new tax reform. The stabilization plan eliminated the multiple exchange rate system, price controls, credits from the Central Bank to the Government, and the subsidies to mining workers. The restoration of macroeconomic stability and the tax reform spurted *current* public revenues, but fiscal deficits persisted. This time, however, these were financed through US donations, which represented 25% of the *total* (current plus capital) revenues of the Bolivian Government (Wilkie, 1969; Sandoval *et al.*, 2003). Moreover, the support of the US involved the renegotiation of the external debt service and allowed a new access to international capital markets (Pacheco, 2001). Therefore, fiscal deficits in the 1960s were financed through US donations initially and through long-term bilateral credits thereafter (Pacheco, 2001), which allowed controlling the evolution of the price level.

During the 1970s, external borrowing grew massively and, despite some tax diversification, Bolivian public revenues were still dependant on external trade taxes.[28] Hence, not surprisingly, external shocks led to dramatic fiscal

[28] External capital flows were mainly –but not only- composed by short-term loans with variable interest rates from international banks. These flows were driven by external

changes. To start with, the fall in tin exports from 1978 to 1981 (Luna, 1995: 152-155) generated a reduction in *current* public revenues from 11% to 9% of GDP. This reduction was not followed by a similar reduction in total expenditure because of its rigidity. Then, the rise in global interest rates and the maturity of most commercial external credits led to an increase in external debt payments (Otálora, 1995: 122). Thus, fiscal deficits widened and, by 1981, *current* revenues could only finance 67% of total expenditure (Graph 9).

The fiscal gap became unsustainable from 1982 onwards, when Bolivia lost the possibility of borrowing from international capital markets. As a consequence, the government financed the gap again with internal borrowing from the Bolivian Central Bank (Morales and Sachs, 1990) and, as a result, yearly inflation soared to 123%. One year later, *current* public revenues fell to just 4% of GDP because of a new reduction in tin exports and the Olivera-Tanzi effect on public revenues (Otálora, 1995: 96-101). Furthermore, the return of democracy in 1982 fuelled an important increase in political demands. For instance, in order to compensate for inflation losses, public employees asked for wage increases. Given the political fragility of the government, this request –among others- was accepted. Together with the increase in external debt payments, these measures raised total government expenditure up to 30% of GDP in 1984; i.e. almost ten times the size of current revenues. The government's short-term solution was both to spend the international reserves and to ask for additional Central Bank credits, but the consequence was hyperinflation: from May 1984 to September 1985 the annual variation of prices was around 1,700%, one of the highest records in world history.

Despite important recent improvements in the tax system, fiscal deficits and the sustainability of public finances have remained as great concerns for Bolivia during the last decades. Indeed, the 1996 pension reform had a great impact on government expenditures -around 4% of GDP according to Pereira, Sheriff and Salinas Maceda (2012)- which, in combination with the economic stagnation provoked by the Asian recession, brought about a new

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factors (international capital abundance and high commodity prices) but also by internal factors: oil export growth and the beginning of gas production. The use of these credits was far from optimal. See Villegas (2001) for a good survey on these issues.

episode of fiscal crisis at the beginning of the 2000s (Graph 9). This crisis did not foster other macroeconomic unbalances thanks to sounder fiscal and monetary policies and the funding of the fiscal gap mainly through donations and external credits, and particularly with soft credits from multilateral organizations.[29]

During the most recent years, fiscal deficits have been substantially reduced, up to the point that some years have ended up with fiscal surpluses. These achievements are undoubtedly linked with the increasing fiscal burden on oil and gas activities and with the high price of these commodities in world markets. In this context, whereas fiscal surpluses represent a positive change, given the poor historical records of Bolivian public finance, its dependence on taxes and non-tax revenues coming from natural resources have generated some criticism. Some scholars argue, for instance, that the current fiscal burden on gas and oil activities hampers the long-term sustainability of the sector. Others add that the current dependence of public revenues on natural resources increases the vulnerability of the public surplus to the evolution of the global economy.[30] Indeed, the history of Bolivian public finances proves that the potential negative consequences of this vulnerability must not be underestimated.

Conclusions

Throughout the 20th century, the Bolivian government's priorities have moved from the general tasks of the small liberal states –administration and defense- to social public expenditure, especially after the defeat in the Chaco War (1932-1935). Meanwhile, there has been a tendency to finance these expenses through the expansion of very specific sources of revenues, especially trade taxes and revenues obtained from the exploitation of natural resources. Most of the time, these revenues have been insufficient and, as a consequence, the Bolivian government has presented constant and chronic fiscal deficits. This fiscal gap could initially be financed with

[29] Internal borrowing had acquired some relevance during the late 1990s, but did not come from the Central Bank. See Villegas (2001)), Pereira, Sheriff and Maceda (2012) and the "Public debt database" at the *Fundación Jubileo* web site: http://www.jubileobolivia.org.bo/deuda.

[30] See the different annual reports made by Fundación Milenio for a discussion on these issues: http://www.fundacionmilenio.com

external resources, either external borrowing or donations. However, when these were unavailable, the Bolivian government resorted to credits from the Bolivian Central Bank. This solution fostered several macroeconomic unbalances, of which the hyperinflation process from May 1984 to September 1985 is by far the most salient example.

Bolivian public finances have gained a more solid base during the last decades. Indeed, the fiscal reform of 1986 permitted to increase tax bases which, in turn, allowed increasing current revenues and converging steadily and smoothly with the Latin American average. Likewise, during the most recent years, the increasing fiscal burden on oil and gas activities has permitted to reach some fiscal surpluses. Whereas these achievements represent good news for the Bolivian economy, some caution is still needed. Specifically, the recent dependence on oil and gas taxes may increase the vulnerability of the system to external shocks which, as has been proved in this chapter, may have important negative consequences on the rest of the economy.

Appendix 1. Sources for the estimation of Bolivian public revenues and expenditures

Because of data scarcity, the reconstruction of *actual* public revenues during the last quarter of the 19th century was made by combining different sources. Since the availability of detailed data was restricted to two single years -*Memorias del Ministerio de Hacienda* for 1883 and 1884-, except for external trade taxes, whose detail is available for the whole period in the 1900 National Census (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica, 1904: XLV), it has been necessary to use Gamarra (2007: 142) to reconstruct aggregate revenues from 1882 to 1899. The *Memorias* presented an exhaustive list of all revenues collected by the Bolivian Central Government. The information was organized in two main groups: "Ingresos presupuestos" and "Ingresos no prespuestos". My database includes only the first group of revenues, because the second consists exclusively of financial revenues and is therefore beyond the scope of the present work. Data in the *Memorias* was presented in three columns: "presupuesto", "rendimiento" and "recaudado", and I have used the second one -revenue collection during the fiscal year. This information matches with the data presented in the National Census, which does not include all revenues collected, but just custom duties and export taxes.

For the first third of the 20th century, it has been possible to find an exhaustive list of all revenues collected by the Bolivian Central Government in different sources: the *Cuentas Generales de la República de Bolivia* (1900-1918), (Mc Queen 1925) (1919-1923), *Memorias de la Comisión Fiscal Permanente* (1924-1929) and (Palenque 1933) (1930-1931).[31] The linkage of these different sources did not generate any methodological problems since the figures were exactly the same in those years in which the sources coincided. For those years for which it has not been possible to find any information (1903, 1907, 1916 and 1917) the aggregate data were reconstructed using Gamarra (2007: 142) and Delgadillo (2001).

[31] Despite its longer coverage, the estimation of Palenque (1933) has not been used for the years before 1930 because of its lower degree of detail. Palenque (1933) has only been used for 1930 and 1931 due to the inability to find other primary sources

A priori one would expect that both the availability and quality of primary sources would increase over time. This is clearly false in the case of Bolivian public revenues, for which it has not been possible to identify a single primary source which periodically submitted detailed information on public revenues from 1932 to 1972. Furthermore, most information is restricted to budgeted flows, which, as has been stated in the first section of this chapter, may generate considerable biases in the analysis.[32] Therefore, the estimation is based on different primary sources which -albeit their lower level of disaggregation and their lack of continuity- present some data on actual public revenues.

In this case, however, the linkage of different sources has required a lot of caution. A previous contrast between the information presented by Delgadillo (2001), Gómez (1978) and MOxLAD pointed to considerable differences among secondary sources and to the existence of different primary sources with different information. For instance, in the case of Delgadillo's sources, the Bolivian Central Bank Yearbooks covered, among the four main official categories or public revenues, just those generated by the "Renta Aduanera" and "Impuestos Internos", ignoring therefore the "Renta de Comunicaciones" and the "Renta Consular".[33] Similarly, in the case of Mitchell's data –which is the main source of the MOxLAD database- revenues generated by foreign exchange controls are ignored from 1936 to 1939 and from 1952 to 1956. In the following paragraphs I specify the sources that I finally used in my estimation and all the corrections made on the original figures.

Figures for the period 1932-1935 are based on the *Memoria del Banco Central de 1936*, which was the only source that presented disaggregated

[32] Wilkie (1969:53) indicates that the Bolivian government stopped publishing actual public and tax revenues from 1934, and that his estimation of Bolivian public expenditures is based on several accounting books located at the warehouse of the Ministry of Finance. Despite the visit to several archives, it has not been possible to find these books to use them in the present research.

[33] Those four categories were used in the Bolivian public finance accounts from the late 1930s to the early 1980s: see Finanzas (1942), Estadística Financiera (1959), Estadística Financiera (1963), Informe de Labores (1966-1967) and Otálora (1989).

data for those years.[34] Two sporadic publications which displayed detailed information on Bolivian public revenues were used for the estimation of disaggregated revenues from 1942 to 1944: *Finanzas 1942-1943* and Anexo Nº 1 of the *Memoria del Ministerio de Hacienda*.[35] Estimates for the period 1947-1951 are based on the *Memoria del Banco Central de 1951*. However, in order to consider all the revenues collected by the Central Government, those coming from the "Renta Consular" and "Renta de Comunicaciones" -available in *Boletín Estadístico Nº 83 del Ministerio de Hacienda* (1959)- were added to the original source. Finally, aggregate data for other years are based on Delgadillo (2001) for 1936 and 1937 and the *Boletín Estadístico Nº 83 del Ministerio de Hacienda* (1959) for the remaining years.

Two different types of sources were available for the period 1952-1963: the UN Statistical Yearbooks and some scattered publications of the Ministry of Finance. Whereas both groups of documents may be useful for reconstructing the structure of public revenues, my database is mainly based on the former, since the information is organized there according to the international standards that have been adopted in this research. For those years for which disaggregated data were not available (1952, 1954 and 1960), aggregate figures were taken from the *Boletín Estadístico Nº 83 del Ministerio de Hacienda* (1959). There are some years of this period for which the information available is very different in the different sources. In those cases I have given preference to UN data.

The UN yearbooks no longer present detailed Bolivian public finance data after 1963. Therefore, aggregate revenues for the period 1964-1969 were reconstructed on the basis of the International Financial Statistics published by the IMF. The UDAPE's (1986) survey allowed a disaggregated reconstruction of public revenues for 1970-1972. The linkage between these two sources was not problematic since they presented more or less the same aggregate figures.

[34] The sum of all revenue categories did not match with the aggregate figure presented in this source for 1934. Therefore, I increased the amount of "Gravámenes a la Industria Nacional", which was a clear outlier during that year.

[35] Again, the sum of all revenue categories did not match with the aggregate figure presented in this source for 1942, and I therefore assumed the difference to correspond to the "Derechos arancelarios", whose amount was not reported in the source.

From the 1970s onwards, two long series are available which display disaggregated data of Central Government's revenues. The first is the aforementioned survey made by UDAPE (1986), which covers the period 1970-1985. The second is the IMF Government Finance Statistics, which presents disaggregated data from 1973 onwards. My database is based in the latter for two reasons: a) the greater length of the series, b) its higher adaptation to the international standards. However, there is not any significant difference among those two sources.

The reconstruction of the revenue structure for both the Central and the General Government from 1990 to 2007 benefits from the availability of on-line information Moreover, this information is displayed by three different institutions: UDAPE, the Economic Commission for Latin America (ECLAC) and the IMF (although the IMF data on the General Government only starts in 2002). Despite this data abundance, it is still necessary to make a careful analysis of the different sources, because not all of them display the information in the same way. For instance, the structure of revenues in the UDAPE website is based on a Bolivian idiosyncratic classification and, therefore, requires a complete reallocation of the different revenues to adapt them to the international criteria. In addition, the statistical information provided by the three sources does not match perfectly. A comparison between the three sources indicates that UDAPE tends to overestimate tax revenues, by classifying as taxes some revenues that can hardly be considered as such by international standards. I have finally relied on the ECLAC series, because they organize the information according to the international classifications, and have a higher time span in the case of the General Government statistics than the IMF. Moreover, since the aggregate figures of both ECLAC and IMF are very similar, the link of the ECLAC data with the estimates for previous period does not involve any difficulty.

As for public spending, I have used the *Cuentas Generales de la República de Bolivia* for the reconstruction of each ministerial expenditure from 1900 to 1909. This information has been linked with (Palenque 1933), which is also based on the *Cuentas Generales* for 1911-1931. For the period 1932-66 I have used the disaggregated data provided by (Wilkie 1969). The linkage between Palenque's and Willkie's series is not problematic since

differences between both series are always lower than 1% in those years in which both series coincided (1930 and 1931). On the other hand, my series is ca. 2% higher than Wilkie's because I included earmarked expenditures ("Gastos destinados"; those expenditures that were directed to very specific destinations and were financed through very specific taxes) among "Other expenditures". For 1967-1972, I used the information available in *Estadísticas Económicas de USAID*, which presents the same data as Wilkie, but with a higher degree of aggregation. Finally, the 1973-2007 period has been reconstructed by using the IMF *Government Financial Statistics* CD-database. In contrast with revenues, I did not use ECLAC since 1990 because of the lack of disaggregated expenditure information in the latter's website.

Chapter 3.

The debate on Bolivian tariffs, 1850s-1930s. Always protectionist, never protected?

One of the most widespread claims of the Bolivian historiography states that, at least during the last quarter of the 19th century, Bolivian Governments continuously applied "…free trade policies and generated a wide opening of the national market to foreign products without any tariff or custom restriction" (Rodríguez, 2012: 315; my translation). Furthermore, according to this traditional view, the general liberalization of trade and the consolidation of liberal policies had negative consequences on particular products which had a central role in the economic evolution of certain Bolivian regions. Hence, the negative impact of trade policy on products such as wheat from Cochabamba or Potosi, or sugar and rice from Santa Cruz, might have provoked those regions' economic stagnation (Platt, 1982; Rodríguez, 1994, 2012).[1]

This literature has also suggested that the persistence of free-trade policies, among other elements, fuelled the economic disintegration between the markets of the east and the west of the country that prevailed from the late 19th century to the early 1950s. For instance, according to Sandoval et *al*. (2003: 3), "…the factors which determined the closure of Bolivian Andean markets to products from Santa Cruz were: a) the construction of railway lines between the Bolivian Andean regions and the Pacific Ocean, b) **free-trade policies** and, c) the limits of the internal market" (translation and bolds are mine). In summary, this widespread view of the Bolivian historiography would indicate that Bolivian trade policy from the last quarter of the 19th century to the first decades of the 20th century was dominated by free-trade policies, which negatively affected both the growth potential of several regions and the economic integration of the country.

[1] Furthermore, these products, alongside with coca leaf from the Department of La Paz and maize from the Department of Cochabamba, accounted for the bulk of monetary agrarian exchanges during most of the 19th century (Rodriguez, 1994).

Despite its widespread acceptance, however, this view raises some caveats. For instance, the study made by Barragán (2012) suggests that some of the usual assumptions on the links between liberal policies and economic stagnation are sometimes extremely vague. As for trade policy, to the best of my knowledge, no quantitative evidence -either point estimates or long-term series- has been presented to support the idea of tariff liberalization. This lack of quantitative evidence is not irrelevant, since Coatsworth and Williamson (2004) have proved that the average tariffs of several Latin American countries were among the highest in the world between independence and the late 1920s.[2] Furthermore, under the assumption that the average tariff rate is the most representative protection indicator for those years, those authors have suggested that Latin America was the most protectionist region in the world during this period.

Given these contradictions between the Bolivian and the global historiography, this chapter aims at filling this lack of quantitative evidence by presenting and discussing new data on the evolution of Bolivian tariffs. Indeed, thanks to the detailed fiscal evidence presented in the previous chapter and a careful analysis of Bolivian foreign trade statistics, which have been obtained from different primary sources, this chapter offers for the first time an estimation of the Bolivian average tariff ratio from 1895 onwards. Opposite to the traditional view, the new evidence suggests that, broadly speaking, the level of Bolivian tariffs from the 1890s to the 1930s was not low in international terms, and, probably, not very different from that prevailing in the mid-19th century.

However, in line with previous historiography, this chapter also stresses that the high level of tariffs did not necessarily protect the different Bolivian regional economies. This hypothesis is based on several contributions of previous research. First of all, it starts from Rubio's (2006) idea that the protective implications of Latin American high tariffs must not be taken for granted, at least, during the belle époque (1890-1912).[3]

[2] According to those authors, the high level of Latin American tariffs was the consequence of two main facts: the dependence of Latin American public finances on import duties and, from the 1890s onwards, the spread of industrial protectionism across the region.

[3] Rubio (2006) shows that Latin American imports per capita from 1890 to 1912 were clearly higher than in other regions of the world in which tariff rates were much lower.

Secondly, it takes into account that nominal tariffs are not always a good indicator of protection levels, particularly in those contexts where transport costs and the external exchange rate are also relevant (Sabate, Fillat and Gracia, 2011). In this regard, transport costs could be more important than tariffs in the determination of trade volumes during the First Globalization (Estevadeordal, Frantz and Taylor, 2003). Finally, I also consider Nenci and Pietrobelli's (2008) finding that there was not any statistically significant relationship between tariff changes and import growth in Latin America from 1900 to the early 1960s.[4]

Taking into account these antecedents, this chapter suggests several explanations to reconcile the high level of tariffs and the inability of tariff policy to protect some of the products which represented the main economic activity of certain Bolivian regions. First of all, I suggest that the initial fragility of the Bolivian State-building process and the defeat in the Pacific War (1879) can explain the signature of different treaties with neighboring countries which had two negative consequences: a) the prevalence of a dual system of tariffs which undermined the autonomy and effectiveness of Bolivian tariff policy; b) the increase in the competitiveness of several imports which competed directly with local producers. Secondly, whereas these trade agreements were modified during the mid 1900s and Bolivia applied a more active tariff policy thereafter, I suggest that, even with these changes, Bolivian trade policy was not always able to overcome the negative effects of the country's geographical diversity and the uneven pattern of railway construction on domestic transport costs and, therefore, on the competitiveness of certain domestic productions.

Therefore, although Bolivian trade policy was never as liberal as traditionally assumed, in this chapter I suggest that it may contribute to explain the crisis of several Bolivian regional economies through those two factors (i.e. the disadvantageous trade agreements with neighboring countries up to the mid 1900s and the inability of tariff policy to overcome the negative effects of geographical diversity and the pattern of railway

[4] It is particularly important their suggestion that tariff policy would be relevant for the evolution of Latin American trade only if it were accompanied by a wider process of multilateral or regional trade agreements.

expansion). In the last sections of the chapter I provide some evidence to support these hypotheses, although a complete test would require a detailed comparison between the productivity of Bolivian regions and the neighboring countries, which will be the object of future research.

The rest of the chapter is organized as follows. Next section discusses some methodological issues related to the use of Bolivian foreign trade statistics. The second section presents the estimation of the Bolivian average tariff ratio and compares it with other international experiences. The third and fourth sections focus on the potential impact of tariffs and trade policy on some economic activities which were the economic engine of certain Bolivian regions. The last section concludes.

1. Bolivian foreign trade statistics during the First Globalization

The time span of this chapter goes from the 1850s to the 1930s, since this was the period when the driving forces of the First Globalization determined the evolution of the Bolivian economy. To start with, thanks to the arrival of new investments and the sharp decrease in mercury prices, silver production in the old mining center of Potosí increased during the late 1850s and pushed up Bolivian exports after its post-independence stagnation (Mitre, 1981; Klein, 2011: 123-125).[5] This process was subsequently reinforced during the 1860s thanks to the continuous increase in silver production in Potosí, as well as to the discovery and exploitation of guano and nitrates in the coast (Pérez, 1994). During the 1870s, the Bolivian economy consolidated its integration in the global economy thanks to the elimination of the State's monopsony in silver production, the arrival of foreign investments and the subsequent leap of Potosí silver production (Mitre, 1981; Klein, 2011: 136-138).

Despite some further modifications in the composition of exports as well as in trade legislation, it was not until the Great Depression when the forces

[5] Whereas during the 1830s and 1840s both copper and quinine exports achieved some importance, silver was by far the most important Bolivian export (Dalence, 1851). Likewise, whereas a share of this production may have been directed to neighboring countries (Mitre, 1986), most of it was destined to the global economy (Prado, 1995).

which prompted the integration of Bolivia into the global economy started changing radically. The Great Depression meant a shock on Bolivian exports which became particularly serious in 1931, when real exports decreased by 15%. As a consequence, Bolivia defaulted most of its external debt obligations and devaluated its currency.[6] These changes were contemporaneous to the Bolivian defeat in the Chaco War against Paraguay (1932-1935), which brought about a radical transformation in Bolivian politics (Klein, 1993; Dunkerley, 2003). Given the importance of those two shocks, my analysis of the Bolivian tariffs ends in the mid 1930s.

Before presenting the main findings of the analysis, however, it is necessary to underline some restrictions related with Bolivian foreign trade statistics. First of all, the available statistics for the period 1850-1894 are extremely scarce, being limited to some fragmented data in the Yearly Reports of the Ministry of Finance.[7] The availability of data becomes higher since 1895, the year when official trade statistics started being published (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica, 1904: LXXVII; República de Bolivia, 1925: 471). Those publications, however, were still restricted to aggregate figures, and it was not until 1912 when the national customs office published a complete statistical compilation of import and export data, organized according to the guidelines of the Brussels Convention (Dirección General de Aduanas, 1912).

Due to these restrictions, my estimation of the Bolivian average tariff ratio starts in 1895. The estimation has been elaborated as the quotient between total import duties collected by the Bolivian Central Government, taken from my reconstruction of the composition of government's revenues (Chapter 2), and the value of imports displayed in Bolivian official trade statistics. This methodology is the most common in this kind of works

[6] See Huber (2001) for an analysis of the Bolivian external debt during the First Globalization.

[7] This scarcity is not exclusive of Bolivia, but can be found in many other developing economies. This is why some researchers have tried to reconstruct the external trade statistics of developing economies by using the statistical sources of their main trade partners –generally, the US and European countries. However, this strategy has been proved to be of limited utility in the Bolivian case due to the landlocked character of the country (Rubio et *al*., 2010; Carreras-Marín and Badia-Miró, 2008). In fact, the only reliable alternative to the use of the (scarce) Bolivian foreign trade statistics is to resort to the foreign trade statistics of neighbouring countries.

(Coatsworth and Williamson, 2004; Clemens and Williamson, 2012) and my estimations matches with those figures which were occasionally provided by the Yearly Reports of the Ministry of Finance or by the reports of the national customs office.

Due to the lack of additional information, my estimation relies exclusively on import duties collected by the Central Government. This may generate some downward bias in my average tariff ratio estimates because, during most of the period under study, Bolivian imports had to pay both national and municipal taxes (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica, 1904: LXXIV; Mc Queen, 1925). The relevance of the latter can be inferred from a report of the national customs office which deplored the ability of the most important municipalities of the country to establish independent customs offices and tariffs, that ended up modifying the national tariff policy (Dirección General de Aduanas, 1917: 4-5).[8] Thus, the misreport of municipal tariffs could affect my estimation particularly from 1895 to the early 1900s, a period when the relative importance of municipal taxes in Bolivian public finances was substantial (see Chapter 2).

Likewise, the use of Bolivian official trade statistics may generate some bias since Bolivian imports were registered using official values until 1918 (League of Nations, 1927: 139). The use of official values and their differences with the market values of Bolivian imports was a matter of concern for Bolivian authorities during this period. In the early 1900s, for instance, the Government observed that "…the real and effective amount of Bolivian imports is twice as high as the figures displayed by official values" (Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica, 1904: LXXVIII; my translation). Whereas the importance of this problem was substantially reduced by the update of official values enacted by the *Codigo de Avalúos de 1905*, it reappeared during the years of the First World War, when the national customs office stressed the substantial underestimation of import flows derived from the use of official values. On the basis of the information provided by the Bolivian customs office, the League of Nations (1927: 139) pointed out that the market value of

[8] This report showed, for instance, that tariffs set by the municipalities of Cochabamba, La Paz, Oruro, Potosí, Santa Cruz de la Sierra and Sucre for ten different food imports were higher than the national ones in 1916.

Bolivian imports was higher than their official value by 50% in 1917, 100% in 1918 and 79% in 1919. Accordingly, my estimates of the average tariff ratio would be seriously upward biased during the late 1910s.

However, the implications of this bias would be partially mitigated by the downward bias resulting from the exclusion of municipal tariffs from the estimates, especially during the first years of the period under analysis. In addition, as is shown below, whereas both sources of potential biases must be kept in mind when examining my estimates of the Bolivian average tariff ratio, they would not alter the main conclusions of this chapter.

The Bolivian average tariff ratio was affected by the fact that most Bolivian tariffs set by the Central Government were specific, rather than ad-valorem.[9] As a consequence, abrupt changes in prices would change "…import values in the denominator, but not the legislated duty in the numerator, thus producing big equivalent *ad valorem* or percentage rate changes" (Coatsworth and Williamson, 2004) in the average tariff ratio. Anyway, this effect is only captured by my estimates from 1919 onwards, since this was the first year when Bolivian imports were valued at market prices.

Likewise, it is true that due to the low importance of non-tariff trade barriers during most of the period under analysis, the evolution of the Bolivian average tariff might be interpreted as a fair indicator of the evolution of protection levels. However, when tariffs mainly consist of specific duties, their protection effects could be mitigated or enhanced by external exchange rate movements (Coatsworth and Williamson, 2004).[10] Graph 1 presents the evolution of the Bolivian exchange rate with the

[9] See McQueen (1925) for a description of Bolivian tariffs from the early 1910s to the early 1920s.

[10] For instance, a devaluation of the Bolivian currency would increase import prices but, if duties are specific, this increase in prices would cause a decrease in the average tariff ratio. Whereas the first effect would imply a protection increase, the second would represent a decrease, and a detailed analysis is necessary to identify the net effect of both movements. In a slightly different way, Irigoin (2009:569) suggests that, if custom duties were paid with depreciated currency, financial and monetary policies may end up affecting the protection level of the economy.

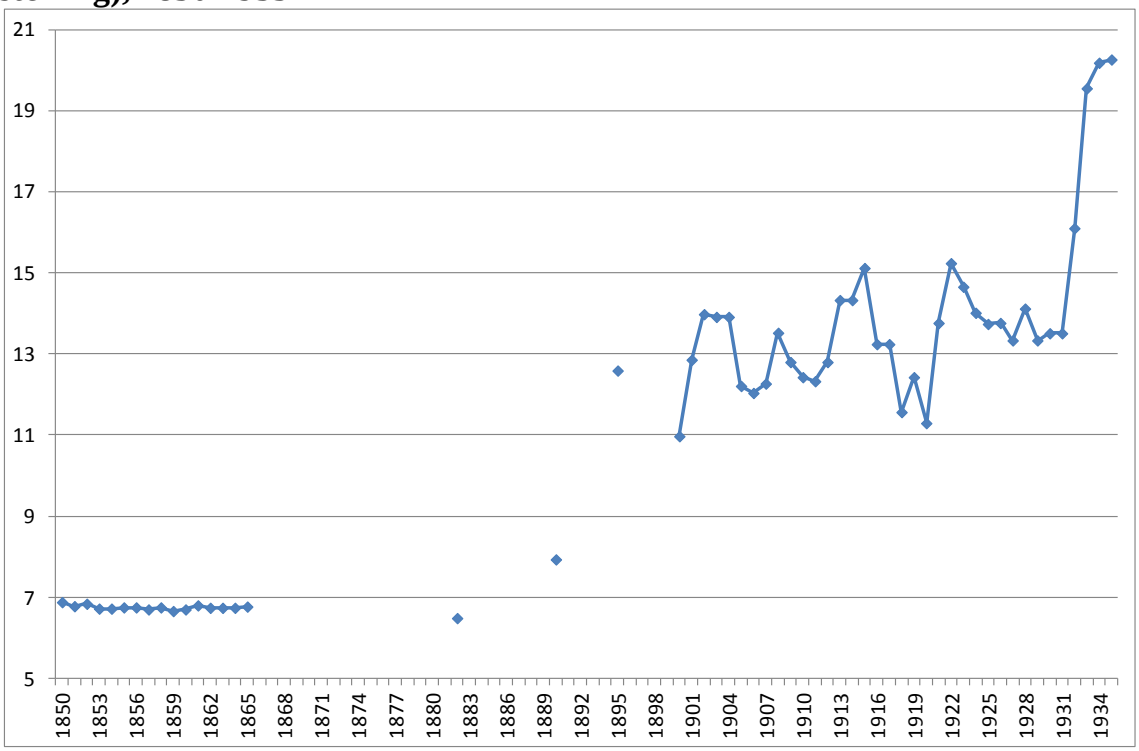
pound sterling in order to assess the relevance of this phenomenon.[11] On the one hand, it shows the long-term depreciation of the Bolivian currency during the last quarter of the 19th century.[12] On the other hand, it stresses that, beyond some oscillations in particular years, the process of depreciation of the Bolivian currency stopped during the first third of the 20th century, which is clearly related with the decision of the Bolivian government to join the gold standard, although its effective membership was sporadic (from 1908 to 1914 and from 1928 to 1931).[13]

[11] See Prado (1995) and Irigoin (2009) for an analysis of the Bolivian exchange rate with the neighboring countries.

[12] Being a silver producer, Bolivia was part of the silver standard regime at the time of its independence (1825). Due to currency shortages driven by trade deficits, the Bolivian State started issuing debased coins four years after independence. These were initially issued in small quantities but became predominant during the late 1840s, which provoked the international depreciation of the Bolivian currency. Whereas this process was more or less under control between the late 1850s and the late 1870s, the disintegration of the silver standard (Eichengreen, 1996) and the drop in silver international prices (Mitre, 1981) accelerated the depreciation of the Bolivian currency, which was especially acute since the early 1890s, once the United States left the silver standard

[13] As was previously stated, the loss of value of the Bolivian currency was resumed in 1931, once the Bolivian government decided to abandon the gold standard by devaluating its currency and defaulting on most of its external debt.

Graph 1. Evolution of the Bolivian exchange rate (Bs. per pound sterling), 1850-1935



Sources: Own elaboration based on: Pacheco (2011: Apéndice 3) for 1850-1865; Gamarra Téllez (2007: 142) for 1882-1925; and Dirección General de Estadística (1936) for 1925-1936.

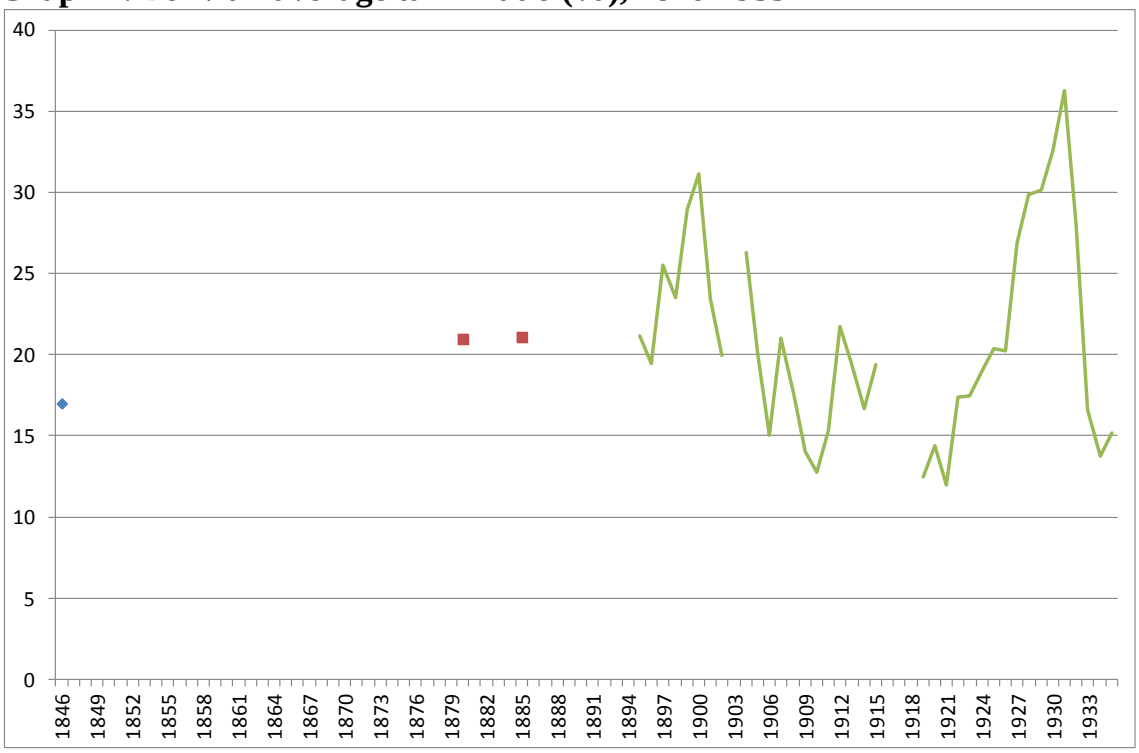
To sum up, whereas measuring protection exclusively on the basis of the average tariff ratio may be somehow problematic during the last quarter of the 19th century, this ratio could instead be interpreted as a fair indicator of the evolution of overall protectionism in Bolivia during the first third of the 20th century -although the aforementioned biases coming from the use of official values must always be kept in mind. Taking into account these caveats, the next section presents the evolution of the Bolivian average tariff ratio, estimated on the basis of the available information.

2. The evolution of the Bolivian average tariff ratio

This section analyzes the evolution of Bolivian tariffs from the late 1840s to the mid 1930s on the basis of new quantitative evidence, which is displayed in Graph 2. The graph presents a yearly series of the Bolivian average tariff rate (the ratio between total import taxes and the official import value) since

1895, together with a few point estimates for previous years. The first point estimate, for 1846, was obtained using import taxes from Huber (1991: Apéndice IV) and the value of total imports presented by Dalence (1851: 268). The average tariff rate for 1880 was calculated on the basis of the information provided by the 1882 Yearly Report of the Ministry of Finance, and refers exclusively to those imports coming from Europe, United States and Peru that were introduced in the country through the "Aduanas del Norte" (Northern Customs). The average tariff for 1885 refers instead to the "Rendimiento Aduanero General" (general tariff returns), as stated in the 1885 Yearly Report of the Ministry of Finance (pp. 12-13).[14]

Graph 2. Bolivian average tariff ratio (%), 1846-1935



Sources: See text.

As has been indicated, before 1919 the figures in the graph would be affected by several biases. The main one results from the use of official values, which would introduce an upward bias of ca. 100% around 1900, although this is partially overcome by the inability to account for municipal tariffs in the series. This upward bias might have been reduced during the

[14] This source also provides the average tariff rates in the customs offices of La Paz (19.71%), Oruro (26.9%), Tupiza (18.97%), Tarija (26.92%) and Santa Cruz (17.79%).

first years of the twentieth century through the successive revisions of the official values, although the inflation of the First World War would have brought it again to values close to 100%, as was pointed out by the League of Nations (1927). These biases must be kept in mind when analyzing the levels and movements of the series and when comparing it with other countries.

The graph shows that the average tariff rates of 1846 (16.56%), 1880 (20.97%) and 1885 (21.09%) were not very different from those reached in the following decades (23.71% in 1895-1899; 20.95% during the 1900s; 17.47% during the 1910s; and 21.46% during the 1920s). This would seem contradictory with the efforts of the Bolivian government to liberalize both exports and imports from the late 1850s onwards (Mitre, 1981: 45; Klein, 2011: 128; Barragán, 2012).[15] For instance, during the early 1860s the government enacted a new tariff policy which reduced tariff rates in order to fight against smuggling (Rojas, 1915: 200-201), and during the early 1870s liberalization continued through the elimination of the silver monopsony, which was replaced by the establishment of a tax on exports (Mitre, 1981: 67-70). However, a backlash took place in this policy in the case of imports in 1878, when the government introduced both specific and ad-valorem taxes which, at least in the case of cotton and other textiles, were higher than those established by the former legislation (Rojas, 1915: 314-316). This turning point would explain the relatively high values of the Bolivian average tariff ratio in 1880 and 1885.

According to the graph, and despite the existence of some fluctuations (and the changing biases involved in the use of official values), the Bolivian tariff ratio seem to have been kept relatively high by the successive tariff

[15] The first Bolivian President, Simón Bolívar, decided to reduce tariffs on European products from 16% to 8% in 1825. Liberalization went on one year later, when President José Antonio Sucre decided to reduce the tariff rate to 2% on all those products which were introduced in the country through the port of Cobija. This measure, however, led to a considerable increase in imports and, given the stagnation of silver production, in trade deficits (Pacheco, 2011). In order to reduce this deficit as well as to protect some industries, tariffs were subsequently increased. Whereas a selective protection scheme was applied in the 1830s, a more general increase of tariffs took place in the 1840s (Huber, 1994; Pacheco, 2011:39-42). This protectionist scheme ended with the arrival of José Linares' administration during the late 1850s and liberalization policies were resumed since then.

changes that took place from 1895 to 1913.[16] This persistence would be the result of the relative importance of import taxes which, on average, accounted for more than half of the Bolivian Central Government's total revenues, but it could also be interpreted as an explicitly protectionist policy. Indeed, by 1905 the Yearly Report of the Ministry of Finance stated that "…the new tariff is based in the protectionist system, so necessary to our country in order to stimulate our industry that is seriously affected by foreign concurrence" (1905: XL; my translation).

After the decrease in the rate during the First World War (which would be probably higher if market instead of official values were used in the estimation), the Bolivian average tariff tended to increase. The upsurge was the result of the update of Bolivian tariff rates in 1920, 1922, 1923 (McQueen 1925: 26) and 1927 (Presupuesto Nacional de 1931: 53), which accompanied the new valuation of Bolivian imports at market prices. This post-war increase can be explained by different reasons. Firstly, it might have been a reaction by the Bolivian government to the generalized increase in protectionism across the world (Estevadeordal, Frantz and Taylor, 2003). Alternatively, it might also have been a response to the growing pressure from the local elites of the centre and east of the country, which asked for protectionist measures (Rodríguez, 1994).

However, there is no doubt that this tariff increase was also clearly linked with the substantial growth in Bolivian external debt that took place in the 1920s (Contreras, 1990; Huber, 2001). Indeed, the arrival of the Stifel-Nicolaus loan of US$ 29 million in 1922 involved as a compensation a fiscal reform which, among other measures, increased import taxes that were explicitly "…pledged to the service of the refunding loan" (McQueen, 1925: 26). Later on, the Bolivian Central Government acquired two new loans from Dillon, Read and Company for US$ 14 million (1927) and US$ 27 million (1928). Both credits increased external debt payments up to one

[16] The main legal changes were the creation of the "Código de Avaluos" (Valuation Code) in 1894 (Memoria del Ministerio de Hacienda, 1898: 68-70) its modification in 1901 (Memoria del Ministerio de Hacienda, 1900: 18-19) and its replacement by the "Código de Avaluos" of 1905 (Memoria del Ministerio de Hacienda de 1905: IV-X). The fluctuations in the ratio may be explained by the changes in tariff legislation, but also by changes in the composition of imports or by political instability –i.e. the Civil War of 1898-1899 and the Acre War against Brazil in 1903.

third of total public expenditures. Since the Bolivian government agreed not to alter export taxes,[17] this new fiscal pressure had to be addressed through the only reliable short-term alternative, i.e. import taxes.

During the Great Depression, the Bolivian average tariff ratio became highly unstable. Since tariffs did not suffer major legal modifications until the late 1930s,[18] the change in the ratio could be explained by changes in import prices –both deflation and inflation-, changes in import composition and the economic instability derived from the Chaco War (1932-1935). Meanwhile, the use of multiple exchange rates gained increasing importance, which would significantly reduce the centrality of tariffs in the configuration of Bolivian trade policy from the late 1930s onwards.[19]

From a comparative point of view, Table 1 shows that my estimates of the Bolivian average tariff ratios are similar to the equivalent figures of the most developed economies of Latin America, and much higher than the ratios of Asian countries. The Bolivian average tariff ratio would also be similar to the ratio in the US, which is usually described as a closed economy (Coatsworth and Williamson, 2004; Rubio, 2006), and significantly higher than those of Western Europe and Scandinavia. However, as has been repeatedly indicated, the use of official values from 1895 to 1918 would involve an underestimation of the real value of Bolivian imports and an overestimation of the average tariff ratio. The actual Bolivian rates before 1919 would probably have been significantly lower than those reported in the table, with a likely maximum bias of 100%. In other words, before 1919 the actual Bolivian average tariff rate would have been between ca. 10% and 20% approximately, i.e. in the lower ranks of the Latin American countries presented in the table but still higher than most Asian and Western European countries. And the protection upsurge of

[17] The largest mining producers reacted quickly to the increase in mining taxes derived from the Fiscal Reform of 1923. In 1925 they created the "Asociación de Industriales Mineros" (Mining Producers Association) in order to centralize their demands. Using this instrument and taking advantage of the Kemmerer Mission's arrival, they obtained the government's commitment that export taxes would not be altered in the following five years (Drake, 1989: 205-206). See also Chapter 2.

[18] See Decreto Supremo 1/06/1936; Decreto Supremo de 30/09/1938; and Decreto Supremo de 30/06/1939.

[19] See Gutiérrez Guerra (1940) for an analysis of the use of multiple exchange rates in Bolivia during the 1930s.

the 1920s would bring the Bolivian rate close to the Latin American average. Therefore, in contrast with the traditional claims of the Bolivian historiography, my estimation suggests that Bolivian tariffs were not low by international standards during the First Globalization.

Table 1. Average tariff levels by period (%), 1870-1938

	1870-1899	1900-1913	1919-1938
Bolivia	23.7 (*)	19.8	21.6
Argentina	26.1	23.4	18.0
Brazil	34.5	40.0	23.4
Chile	19.4	18.3	22.1
Colombia	33.5	47.4	29.3
Cuba	22.5	25.6	26.2
Mexico	16.6	21.9	21.2
Peru	32.4	23.2	16.3
Uruguay	29.7	33.3	19.6
Burma	4.0	11.3	22.5
Ceylon	6.2	7.3	13.3
China	3.2	3.3	11.3
Egypt	11.0	14.2	26.3
India	3.4	4.7	17.3
Indonesia	4.9	5.2	10.0
Japan	6.2	7.7	5.9
Philippines	10.3	21.2	8.1
Siam	3.6	7.4	15.1
Turkey	7.4	9.5	30.7

Sources: For Bolivia: my estimation; for the rest of Latin American and Asian countries: Clemens and Williamson (2012: Table 4).
Notes: (*) 1895-1899.

Nevertheless, since the evolution of tariffs was strongly correlated with the Bolivian government's fiscal needs at least until the late 1920s, the aforementioned findings do not necessarily indicate that the Bolivian State was applying a deliberate protectionist policy. But, intentionally or not, Bolivian producers might have benefitted from a high protection level. The next two sections address this issue by analysing the potential impact of tariffs and trade policy on the different Bolivian regional economies.

3. Bolivian tariffs from the 1850s to the 1900s: the role of institutional fragility and geography

This section focuses on the potential impact of tariffs and trade policy on certain Bolivian regional economies from the 1850s to the early 1900s. In order to understand this impact, it is necessary to take into account some of the structural determinants which conditioned the evolution of the Bolivian economy since independence. Bolivia emerged as an independent country in 1825, limited by the former borders of the colonial "Audiencia de Charcas". As in the rest of the region, the first task of the new State was to secure its national borders against its neighboring countries, an objective which became very painful in the Bolivian case. Indeed, whereas the country could define its borders with Argentina and Peru during the first half of the 19th century, its frontiers with Chile, Brazil and Paraguay were not consolidated until the Bolivian defeats in the Pacific War (1879), the Acre War (1903), and the Chaco War (1932-1935), respectively.

Beyond external relationships, it was also necessary to reach some internal stability in order to restrict the use of violence and allow the functioning of the State (North, Weingast and Wallis, 2009). Once more, however, if the number of constitutions and its modifications is accepted as a valid stability measure, the Bolivian case emerges as one of the most unstable in the region: Bolivian constitutions were created or changed in ten opportunities between 1820 and 1880, a much higher figure than in most neighboring countries.[20]

In addition, the economy was also largely stagnated during the first decades after independence. As was indicated in Chapter 1, the long crisis of the mining district of Potosi led to the stagnation of silver exports and -because of their relative weight- of overall Bolivian exports (Mitre, 1981). Meanwhile, manufacturing production –particularly textiles- suffered a long-term crisis, largely provoked by the high productivity and low prices of British imports (Huber, 1994). Furthermore, des-urbanization and des-

[20] The only neighboring country that had a similar number of constitutions and constitutional modifications during this time was Peru. By contrast, Brazil had only one constitution. Likewise, the original constitutions of Argentina and Chile were only modified in two and three opportunities, respectively (Dye, 2006: 178-179).

monetization were the main features of the internal market for several decades after independence (Langer, 2004; Klein, 2011: 102-105). Hence, economic resurgence had to wait until the late 1850s, when some external shocks and the arrival of new investments to Potosi allowed increasing silver exports.

Geography also put some constraints on Bolivian development. Whereas Bolivia had sovereign access to the Pacific Ocean from its Independence to 1879 -the year in which its coastal areas were lost to Chile due to the Pacific War- it always had difficulties to fully exploit this advantage. For instance, in spite of having its own ports at the Pacific Ocean –Cobija and Mejillones- a non negligible share of Bolivian trade was moved through the Peruvian port of Arica, due to the lower distance between this port and some of the most important Bolivian cities and to the lack of transport facilities in Bolivia. In addition, at least until the 1850s, population density in the coastal Department of Litoral was lower than 1 inhabitant per square kilometer (Dalence, 1851).[21] Furthermore, during the 1860s and 1870s the Bolivian Central Government had considerable difficulties to consolidate its sovereignty over this territory. The Treaty of 1866 with Chile –which is explained in more detail below- and the frequent cases in which international capitalists operating in the area did not recognize the Bolivian jurisdiction stand out as the most clear examples of this situation (Pérez, 1994).

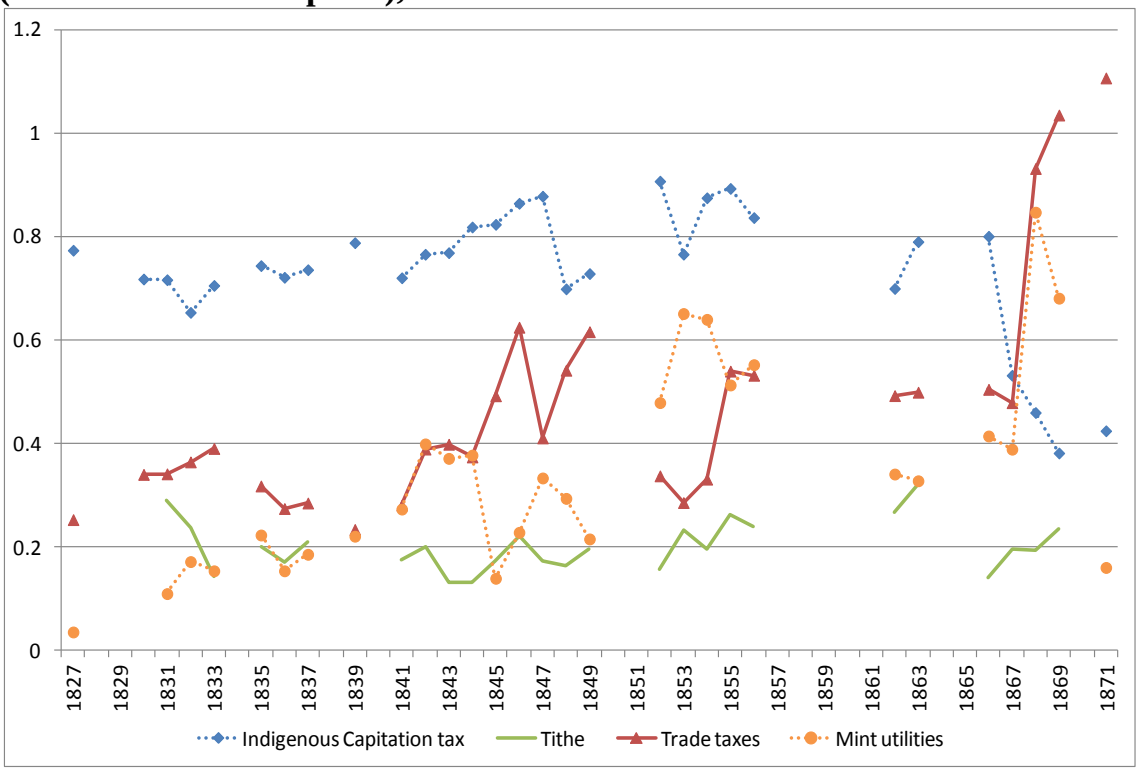
The aforementioned restrictions are critical to understand the relative stagnation of Bolivian Central Government's revenues from independence to the mid-nineteenth century (Graph 3). This stagnation was largely the result of the government's extreme dependence on the indigenous capitation tax (Huber, 1991),[22] which in turn, may be explained by the low

[21] Most Bolivian population was concentrated in the highlands or in the valleys in the west and center of the country. For instance, in 1846 more than 80% of Bolivian population lived in the Departments of La Paz, Oruro, Potosí, Cochabamba, Chuquisaca and Tarija (Dalence, 1851); these territories, in turn, represented less than 35% of the total national surface (Oficina Nacional de Inmigración, 1904: XXIV).

[22] The indigenous capitation tax was reintroduced in Bolivia in 1827, the year when the fiscal reform proposed by Sucre failed. This reform involved the implementation of: *a)* an annual flat tax of 3 *pesos* for every men aged between 18 and 60; *b)* an urban and rural property tax; *c)* a revenue tax on industrial earnings. All the affected agents, including the indigenous population, rejected this project (Huber, 1991).

commercial development and the difficulties to consolidate foreign trade taxes as a secure and reliable source of revenues. Fiscal scarcity was such that the government had no option but to use monetary policy as a fiscal instrument in which currency debasement (1829) worked as a shade tax on mining, as may be seen in the evolution of Mint utilities in Graph 3.[23] Furthermore, whereas these fiscal shortages became lighter during the late 1860s thanks to the recovery of silver exports and the consolidation of foreign trade taxes as the most important revenue source, the fragility of Bolivian public finances was still substantial throughout this period (Huber, 1991; Klein, 2011: 134).

Graph 3. Bolivian Central Government's main public revenues (millions of Bolivian pesos), 1827-1871



Sources: Huber (1991: Apéndice IV).

The Bolivian State's fiscal vulnerability as well as its difficulties to impose its sovereignty in the coast must be kept in mind in order to understand the reasons which brought Bolivia to sign different treaties with its

[23] See the debate in Prado (1995) and Platt (1996) for a deeper analysis of the effects of monetary policy on the mining fiscal burden.

neighbouring countries.[24] The first of these treaties was signed with Peru in 1865 and, besides the elimination of trade taxes between both countries, it stated that all foreign products which were destined to Bolivia had to pay taxes in the Peruvian port of Arica –and not in Bolivia- according to the Peruvian legislation on tariffs. Moreover, in order to prevent arbitrage, the treaty also established that tariffs at the Bolivian port of Cobija could not be lower than the Peruvian ones. In return, Peruvian authorities committed to give an annual subsidy of 450,000 pesos to Bolivia (Rojas, 1915: 207), an amount which may have accounted for a non negligible share of the Bolivian government's revenues –between 15 and 20%.[25]

The second treaty was signed with Chile in 1866 and was aimed at solving a border controversy.[26] The treaty officially recognized a new border line at Parallel 24º but also stated that all the benefits from guano exploitation, as well as export taxes from the mining production originated in the coast and between Parallels 23º and 25º, had to be shared between the Bolivian and Chilean governments. Moreover, Bolivian authorities accepted that mining production originated between Parallels 24º and 25º, as well as all imports which came from Chile, had to be free of taxes at the port of Mejillones (Rojas, 1915). These concessions undermined the Bolivian sovereignty but also prevented a violent clash with Chile.

[24] Bolivian historiography, however, often explains these treaties by making reference to the foolishness and "lack of patriotism" of the Bolivian President Mariano Melgarejo (Rojas, 1915: 210).

[25] Percentages calculated on the basis of the Bolivian government revenues as estimated by Huber (1991). The original amount was changed in 1870 (Rojas, 1915: 280); and the official records indicate that this item was the second most important revenue source of the Bolivian Central Government in 1875, accounting for 20% of total revenues. See "Cuadro de Liquidación definitiva del Presupuesto" at the Yearly Report of the Ministry of Finance of 1875.

[26] The problem arose in the late 1850s, with the discovery of nitrate deposits in the Bolivian region of Mejillones –between Parallels 24º and 25º- and the development of the port of Antofagasta, which were exclusively the result of Chilean and British capitalists' initiative (Klein, 2011: 129). Thereafter, the Chilean Government extended its territorial claims to include the Mejillones nitrate fields and did not recognize the jurisdiction of Bolivian justice in 1863, when the Bolivian authorities intended to judge a Chilean and British financed mining company for arbitration. As a consequence of this conflict, and as an alternative to a violent clash, Bolivian authorities decided to sign the treaty (Klein. 2011: 131-132). For general information on the evolution of the border conflict between Bolivia and Chile see http://www.diremar.gob.bo/.

Beyond its causes, if we define tariff autonomy as the freedom to set tariff levels independently from other states' military and political power (Clemens and Williamson, 2012: 15), the existence of these treaties clearly suggests that, in the case of Bolivia, political independence did not granted tariff autonomy.[27] Indeed, for Bolivia these treaties were equivalent to a virtually free-trade agreement with Peru and Chile, which radically affected the potential protective effect of tariffs (Klein, 2011: 135). The treaties, for instance, eliminated the positive discrimination which previously prevailed towards the Bolivian imports arriving through the port of Cobija. Likewise, the new scenario increased the competitiveness of several Peruvian products in the western areas of the country, affecting thus the local production of several items, particularly sugar and alcohol beverages (Rojas, 1915: 208). Similarly, the increase of imports of Chilean wheat was also noticeable due to its free entry and higher quality (Platt, 1982: 70).

This process continued thereafter through the signature of new treaties with both Peru (1870) and Chile (1874) (Rojas, 1915: 280-281). During the late 1870s, however, the Bolivian government looked for some modifications in its commercial relationships with Peru and signed a new treaty (1878). Whereas the new agreement maintained the previous virtual free trade between both countries in most cases, it imposed a tax of 50 cents per gallon for all Peruvian exports of alcoholic beverages into Bolivia and accepted the Bolivian right to tax its imports. In return, Bolivia committed not to apply lower tariffs than the Peruvian ones, as well as to pay an ad-valorem tax of 5% for transit rights. This situation persisted once Bolivia lost its coastal Department, thanks to the signature of a new treaty (1880) which eliminated the ad-valorem tax of 5% for transit rights while maintaining free trade for almost all products. In the case of Chile, no major modifications took place and Chilean exports could maintain its free trade prerogatives in Bolivia through the signature of the ceasefire of 1884 and its complementary protocol of 1885 (Rodríguez, 2012: 216).

[27] The Bolivian Government signed similar trade treaties with Argentina and Brazil (Rojas, 1915: 210-211). Its economic implications, however, seem to have been less important than those generated by the trade treaties signed with Peru and Chile. See Langer and Conti (1991) for an analysis of trade relationships between Bolivia and Argentina.

Undoubtedly, the new treaties with Peru as well as the promulgation in 1878 of the first Bolivian tariff code (Rojas, 1915: 313-316) represented a step forward towards tariff independence. Thanks to these changes, for instance, import taxes consolidated as the most important revenue source of the Bolivian Central Government (see Chapter 2) and the average tariff ratio increased up to 20%. Meanwhile, however, the persistence of free trade agreements with Peru and Chile until the mid-1900s determined that a non negligible share of Bolivian imports were still free of taxes. In 1905, for instance, most, if not all, Chilean imports were free of taxes, and tax-free imports coming from Peru and Chile accounted for 18% of total Bolivian imports (Table 2).[28]

Table 2. Import origin and tax pressure (Bs.), 1905

	Imports taxed (A)	Imports free of tariffs (B)	Total (C=A+B)	Percentage of B on C	Percentage of C on total imports
Germany	3,021,280.99	534,879.79	3,556,160.78	15.04	17.52
England	3,088,829.83	254,619.21	3,343,449.04	7.62	16.47
Chile	89,140.31	2,411,494.72	2,500,635.03	96.44	12.32
Peru	1,090,845.95	1,215,653.87	2,306,499.82	52.71	11.36
United States	987,224.46	726,123.74	1,713,348.20	42.38	8.44
Argentina	864,349.04	189,901.03	1,054,250.07	18.01	5.19
France	663,581.72	83,921.16	747,502.88	11.23	3.68
Italy	723,930.78	2,767.26	726,698.04	0.38	3.58
Belgium	612,767.31	62,157.44	674,924.75	9.21	3.32
Others	321,549.99	58,745.40	380,295.39	15.45	1.87
Unknown procedence	1,490,878.62	1,804,128.10	3,295,006.72	54.75	16.23
Total	**12,954,379.00**	**7,344,391.72**	**20,298,770.72**	**36.18**	

Sources: Own elaboration based on the Yearly Report of the Ministry of Finance (1906:52).

Hence, during the last quarter of the 19th century and the first years of the 20th century, most Bolivian tariff revenues were originated in the trade

[28] Despite the lack of similar data for previous years, an indirect analysis suggests that this share is not an outlier. Indeed, taking into account the relative importance of Peruvian and Chilean imports on total imports and assuming that all these trade flows were free of taxes, 15 to 25% of total Bolivian imports would not have been affected by the Bolivian tariff legislation from 1895 to 1905. The relative importance of Chilean and Peruvian imports comes from the Yearly Reports of the Ministry of Finance and Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica (1904: LXXVII-LXXXII).

flows between Bolivia and non-neighbouring countries, which were defined by Bolivian official records as *ultramarine* imports. For instance, although it has not been possible to find information from all customs offices, Table 3 allows observing that most import taxes in 1880 came from *ultramarine* imports which, furthermore, were mainly constituted by manufactures. The table also suggests a dual system in which the same product or the same group of products –such as haberdashery- might face different fiscal burden depending on its origin.

Table 3. Imports and import taxes for *ultramarine* and Peruvian products at the *Aduanas del Norte* (Bs), 1880

	Value of imports	Taxes	Taxes/Imports
Ultramarine imports			
Cotton products	170,844.06	39,400.26	23.06
Whool products	137,437.58	29,890.92	21.75
Linen goods	19,166.20	2,677.56	13.97
Silk goods	13,956.64	3,038.64	21.77
Furniture	33,135.23	10,747.98	32.44
Haberdashery	109,249.06	24,326.17	22.27
Stores and species	20,452.41	6,065.12	29.65
Wines and liquors	52,251.84	17,146.26	32.81
Medicins	5,715.03	1,793.52	31.38
Free entry products	12,078.11	173.68	1.44
Total	**574,286.16**	**135,260.11**	**23.55**
Peruvian imports			
Raw cotton	2,858.06	51.35	1.80
Whool	7,986.49	136.95	1.71
Furniture	80.00	0.80	1.00
Haberdashery	9,491.81	139.48	1.47
Stores and species	78,090.80	2,106.70	2.70
Wines and liquors	38,921.94	1,015.61	2.61
Alcoholic beverages	24,623.69	16,690.30	67.78
Shoes	153.30	0.05	0.03
Silver	3,000.00	0.05	0.00
Total	**165,206.09**	**20,141.29**	**12.19**

Sources: Own elaboration based on the Yearly Report of the Ministry of Finance of 1882.

Given this context and not by coincidence, Bolivian official records reckoned that, because of both the Pacific war and the inexistence of

uniform trade agreements, there was not a unique Bolivian system of tariffs, but several systems in which the tariff rates of neighbouring countries often prevailed.[29] Bolivian authorities complained, for instance, that because of the virtual free-trade agreement with Chile, beet sugar imports from Europe were introduced in Bolivia as Chilean products and did not pay taxes.[30] Likewise, since all Bolivian imports which were moved through Arica –a Chilean territory after the Pacific War- had to pay the Chilean import taxes, the potential for trade arbitrage increased for those products for which the Chilean tariffs were lower than the Bolivian ones.[31] Therefore, beyond the existence of a high average tariff rate, Bolivia was hardly enjoying a true autonomy on tariff policy, a fact that was explicitly lamented by Bolivian authorities:

> "…it is not possible to establish a tariff which defines the government's policy due to our pacts with neighboring countries (…) the fact that tariffs in Arica are determined by the Chilean tariff destroys completely our tariff sovereignty, which, truly speaking, has been totally lost…" (Yearly Report of the Ministry of Finance of 1898: 56; my translation).

Besides its effects on tariff autonomy, the prevalence of free-trade agreements with Peru and Chile highly affected the prices of imports relative to local production. This relationship, moreover, was further modified by the railway connection of the western areas of the country with the Pacific Ocean, which started with the connection of the port of Antofagasta with Uyuni (1889) and Oruro (1892).[32] The economic impact of railways on exports was straightforward: for instance, by 1900, whereas the cost of moving one quintal of tin between Oruro and Antofagasta by mule was around ten pence, it was just around two pence by railway (Mitre,

[29] See the Yearly Reports of the Ministry of Finance (1885: 15; 1886: 6; 1890: 72-91; 1891:41-57; 1898: 68-70).
[30] See the Yearly Report of the Ministry of Finance (1895: 66-67).
[31] This was the case of matches, for instance, a product that was exclusively introduced through Arica given the lower rates of Chilean tariffs. See the Yearly Report of the Ministry of Finance (1898: 57).
[32] Uyuni is at the heart of the mining district of Potosi and Oruro is the capital city of the second most relevant mining district in the country. Likewise, the inauguration of the railway line between La Paz and Guaqui (1905) permitted to reach the Pacific Ocean through Peruvian ports. This route consisted of combining the use of the aforementioned railway, the connection between Guaqui and Puno through steamships which traversed the Titicaca Lake and the use of the Peruvian railway from Puno to Mollendo.

1993: 74).[33] Railways, however, also increased the competitiveness of imports and reduced the natural protection which Bolivian producers had enjoyed since independence.[34]

Therefore, free trade agreements and the expansion of railways may have ended up displacing the domestic production which had traditionally supplied the urban and mining markets of the western areas of the country. Moreover, as has been suggested by the Bolivian historiography, the negative impact of this trade policy on certain products might have led to economic stagnation in some regions. Both ideas are hardly testable since the lack of quantitative evidence prevents a conclusive analysis on the casual relationship between Chilean or Peruvian imports and national production or the macroeconomic evolution of Bolivian regions. Nevertheless, the availability of data on Chilean and Peruvian exports to Bolivia c. 1900 allows identifying, at least, which Bolivian sectors could be threatened by the free-trade agreements as well as the magnitude of this threat.

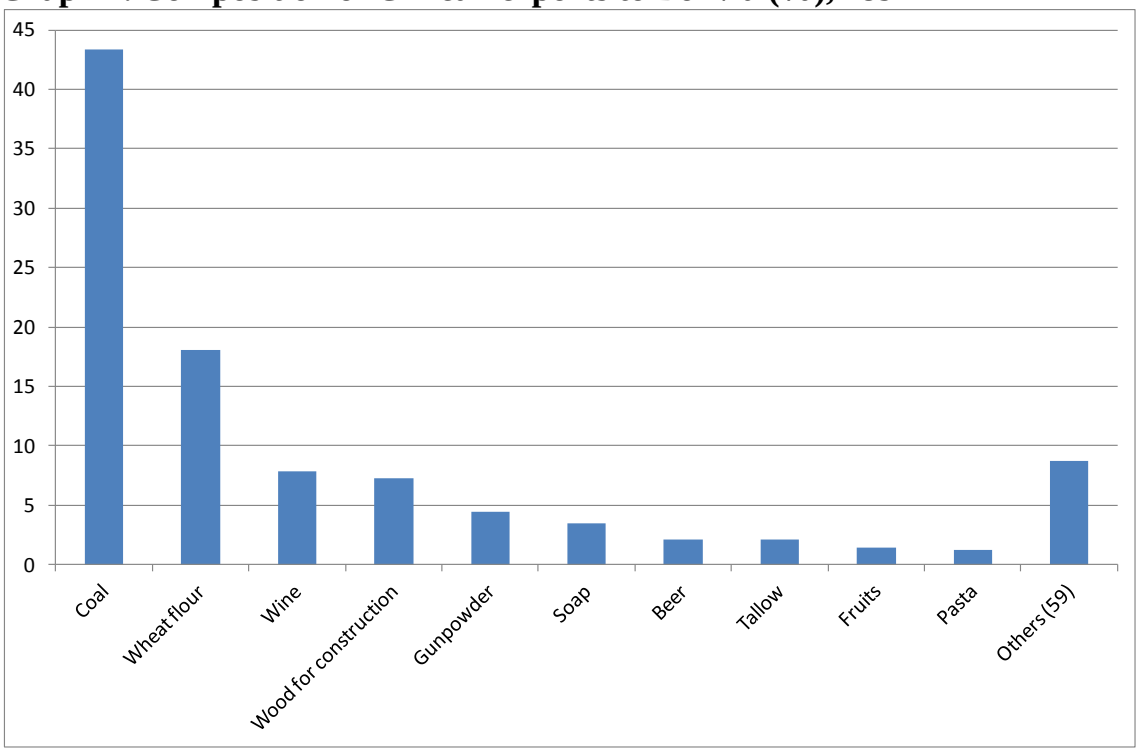
On the one hand, Graph 4 shows that more than two thirds of Bolivian imports from Chile consisted of three single products: coal, wheat flour and wine. Whereas coal was unavailable in Bolivia, wheat flour and wine imports could affect those Bolivian producers who had previously supplied the urban and mining markets of the western areas of the country. This is particularly plausible in the case of wheat flour, whose imports increased from 713.1 metric tons in the early 1860s (Rodríguez, 2012: 317) to 2,095.5

[33] Before railway construction, mining exports were sent to the world economy through three different routes which were either rather long but flat or short but uneven (Mitre, 1981: 159). Bolivian minerals could reach European markets through the Atlantic port of Buenos Aires after a land journey of more than ten thousand kilometers. The second option involved a shorter distance -Potosi and Cobjia- but had to overcome two big natural barriers: the Andes and the Atacama Desert. The last option was to send the mineral from Potosí to Arica, but it required passing through mountains with an altitude higher than 4,000 meters.

[34] The concentration of the Bolivian population far away from the coast restricted the arrival of foreign products during most of the 19th century. For instance, during the early 1840s the average freight paid to move a ton from England to several Latin American countries was more or less similar, but the cost of moving it from the port to the capital city significantly varied; in the Bolivian case, this figure was around 19.3 sterling pounds, the second highest in the region (Prados de la Escosura, 2009: 291).

in 1902, according to the Chilean official trade statistics.[35] On the other hand, Graph 5 suggests that competition from the Peruvian free-tax imports was not restricted to sugar or alcoholic beverages (Rojas, 1915), but also involved other traditional sectors of the Bolivian economy such as tocuyos -textile products used by the indigenous population- or rice. All this evidence helps to understand why some Bolivian authorities complained that free trade agreements, together with railway connection, had negatively affected the production of sugar in Santa Cruz, that of cotton and wine in Mizque (in the center of the Department of Cochabamba) or that of rice in Zongo (close to La Paz).[36]

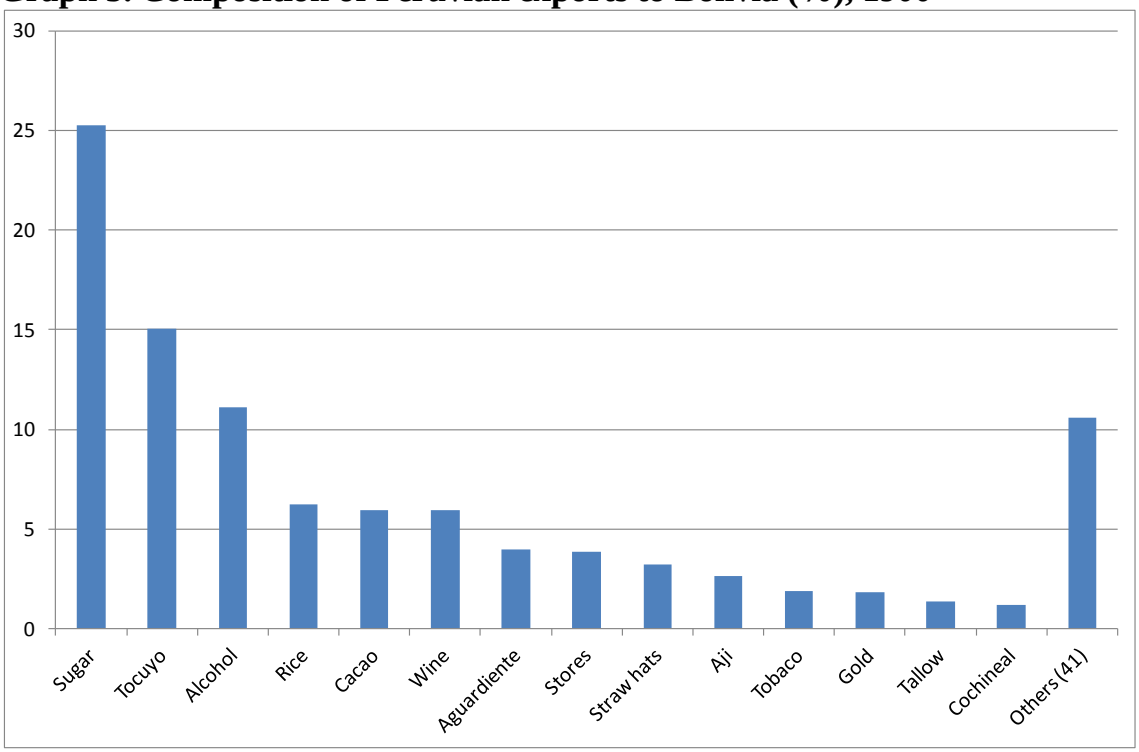
Graph 4. Composition of Chilean exports to Bolivia (%), 1897



Sources: Chilean official foreign trade statistics.

[35] Notice that the yearly growth rate of wheat flour imports from 1862 to 1902 was 2.7%, a much higher rate than that of Bolivian population (0.45%).
[36] See the Yearly Report of the Ministry of Finance (1896: 76).

Graph 5. Composition of Peruvian exports to Bolivia (%), 1900



Sources: Peruvian official trade statistics.

Hence, the previous evidence suggests that Bolivian trade policy during the last quarter of the 19th century might have affected some of the most relevant economic activities of different Bolivian regions. However, in contrast with the traditional assumptions of the Bolivian historiography, this process should not be understood as the consequence of a general liberalization of the economy, but as an outcome of free trade agreements with Chile and Peru and the railway connections between the western areas of the country and the Pacific Ocean. The relevance of the latter element is further explored in the next section.

4. Tariffs from the 1900s to the mid 1930s: the role of geographical diversity and railways

This section introduces into the debate an element which was advanced in the previous section: the impact of both the geographical diversity of Bolivia and railway expansion on domestic transport costs. To begin with, Map 1 shows that while the west side of the country is characterized by the

presence of two mountain systems (the Cordillera Occidental and the Cordillera Real) and a high plateau between them, the north and most of the east are dominated by lowlands and tropical forests. Map 1 allows identifying also the ruggedness and the diversity of ecological systems over relatively short distances between these two main geographical zones. In the same vein, while the west is characterized by the presence of two large lakes connected by a big river, the east is endowed with a dense network of navigable rivers.

Map 1. Physical map of Bolivia

Sources: Own elaboration using Googlemaps. The map displays the present national borders.

In this context of geographical diversity, whereas the sharp reduction in international ocean freights that took place from the 1850s to the First World War (Isserlis, 1938; Estevadeordal, Frantz and Taylor, 2003) certainly affected the evolution of Bolivian trade, the decrease in internal transport costs could have been of even higher importance. A possible way to illustrate this is by analyzing the price of moving rubber from Cachuela

Esperanza, in the producing areas in the east of the country, to the port of Antofagasta (Table 4). The calculations show that the cost of moving 100 kilograms of rubber per kilometer at the eve of the 20th century was several times cheaper in the Oruro-Antofagasta section of the route (where the railway was operating) than in the rest, where rubber was transported by river or using animal traction. Secondly, since the journey from Cachuela Esperanza to Oruro represented 84% of the total transport cost, figures in the table also illustrate the substantial costs implicit in the transit of products from the eastern lowlands to the high mountains of the west during this period of time. These differences in transport costs –as well as the distance to the European markets- may help to understand, in turn, why most Bolivian rubber was not exported through Antofagasta, but using two alternative routes which were longer but less difficult from a geographical point of view. [37]

Table 4. Transport costs for 100 kilograms of rubber, c. 1900

From	To	US dollars	Kms	US dollars /km
Cachuela Esperanza	Santa Cruz	18.4	820	0.022
Santa Cruz	Cochabamba	9.6	493	0.019
Cochabamba	Oruro	3.36	205	0.016
Oruro	Antofagasta	5.6	924	0.006

Sources: Own elaboration based on: Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica (1903: 281-282).
Notes: Transport costs were originally expressed in Bolivianos. These were converted to US dollars using an exchange rate of 2.5 Bs per US dollar. Distances from Cachuela Esperanza to Santa Cruz and from this city to Cochabamba are linear distances. Distances from Cochamba to Oruro and from this city to Antofagasta are railway distances, which were obtained from Sanz (1998).

During the early 20th century, the aforementioned unbalance in domestic transport costs tended to persist. In fact, with the inauguration of the

[37] The most usual route for rubber exports connected Villa Bella –near Riberalta- with the Brazilian city of Manaus through the Madera river in a journey of around 1,500 kilometers. Afterwards, the Bolivian rubber was sent to the Brazilian port of Pará in a journey of around 1,800 kilometers. Hence, the Bolivian rubber could reach the Atlantic Ocean after a journey of around 3,300 kms; a higher distance than between Cachuela Esperanza and Antofagasta (around 2,442 kms.). Another option was to reach Puerto Suárez –located in the border with Brazil, near to Corumbá- and follow the Paraguay and Paraná rivers until Buenos Aires or Montevideo, after a journey of around 2,800 kilometers. See Oficina Nacional de Inmigración, Estadística y Propaganda Geográfica (1904: LXXXV-LXXXVIII).

railway line between La Paz and Arica in 1913, there was another alternative route available to reach the Pacific Ocean. In addition, in 1917 the largest western cities became fully integrated among them thanks to the construction of several internal lines.[38] Moreover, thanks to the completion of the Atocha-Villazón line (1925) and its connection with the Argentinean railway system, the old route for mining production from Potosí to Buenos Aires could be made by train.

Meanwhile, not surprisingly, the local elites of the center and east of the country lobbied against what they defined as a railway regionalism biased towards the interests of the west (Rodríguez, 1994: 47-54; Barragán and Peres-Cajías, 2007). Their most important claim was the expansion of railways towards the east, which, however, had uneven results: whereas the railway-line between Oruro and Cochabamba was concluded in 1917, the connection between Potosí and Sucre was not finished until the late 1930s, and the railway between Cochabamba and Santa Cruz was never finished. Therefore, despite the increasing pressure from local elites, railway expansion mainly reduced the level of domestic transport costs in the western areas of the country.

By claiming the persistence of free trade policies throughout the First Globalization, the Bolivian historiography implicitly assumes that the Bolivian government did not use its trade policy to counteract the effect of transport improvement. Once more, however, this assumption fails to recognize some important modifications in Bolivian trade and tariff policies at the eve of the 20th century. First of all, after twenty years of the ceasefire agreement, the Bolivian and Chilean Governments signed a peace treaty in 1904.[39] Besides the specification of new border lines and specific issues related with railway construction, the treaty established that Bolivian imports could freely transit through the Chilean territory and remarked that each country could impose import taxes on those products which came from the other country, the only major restriction being the most favoured nation

[38] These lines connected Oruro with Viacha (1908); Uyuni with Río Mulatos and Potosí (1913); Uyuni with Atocha (1913); and Viacha with La Paz (1917). See Sanz (1998) and Gómez (2006) for the dates of construction of each railway.

[39] The peace treaty is available online at www.diremar.gob.bo/. The validity of this treaty is highly controversial in Bolivia. For a general overview on this, see FUNDEMOS (2004).

clause. One year later, Bolivia signed a new agreement on trade and customs with Peru. This established the free transit of products throughout the Mollendo-La Paz route as well as the possibility to impose taxes on bilateral trade flows, with the only exception of a number of goods in certain amounts which benefited the small towns located at the border line.[40]

Furthermore, as was previously underlined, the 1905 tariff code explicitly reclaimed new tariff measures aimed at protecting the internal economy. Specifically, it asked for: *a)* the general instauration of ad-valorem taxes; *b)* the elimination or reduction of tariffs for the raw materials which were used by the national industry; *c)* an extra tax for all products which competed against the national industry; *d)* a higher tax for all imports of luxury goods; *e)* prohibitionist taxes for all products which should be removed from the domestic market for different reasons; *f)* zero taxes for those products which were necessary for the economy, such as mining machinery.[41]

The estimation of the ad-valorem tariff of different groups of imports in the following years suggests that this defense of a new, more rational, tariff structure was not just a rhetorical claim. Table 5 uses the information provided by the first detailed report made by the national custom office in 1912 and organizes it according to the Standard International Trade Classification (SITC) (left column). The exercise shows that whereas drinks and tobacco were highly taxed, machinery and transport equipment were not so. Likewise, the fiscal pressure on food, animals and chemical products was several times as high as in the case of raw materials and fuels, and finished textiles were more taxed than intermediate textiles. A look at the ad-valorem tax of the first ten imports (right column) confirms the low tax pressure on key input products such as coal or gunpowder, or on products that could not be domestically produced or were not available in the country, such as iron manufactures or horses. Likewise, the exercise suggests that the ad-valorem tariff of sugar, finished textiles and alcoholic

[40] These negotiations did not finish during those years. For instance, during the early 1910s Bolivian authorities were still bargaining new agreements on traffic procedures with Chile and Peru. See the Yearly Report of the Ministry of Finance (1910: XXIII-XXIV).

[41] See the Yearly Report of the Ministry of Finance (1905: XLI; 150-159), for the presentation and defense of this tariff structure.

beverages was rather high. Therefore, looking either at general groups or at individual items, Table 5 suggests the existence of a cascading tariff structure in which capital goods (such as machinery and transport equipment) were less taxed than raw materials or intermediate goods which, in turn, were less taxed than finished goods.[42]

Table 5. Ad-valorem tariffs by import groups, 1912

Standard International Trade Classification (SITC)	Ad-valorem tariff	Ten most important imports	Ad-valorem tariff
Food and animals	26.46	Iron manufacures	7.72
Drinks and tobacco	51.63	Cotton textiles	29.34
Non comestible raw materials, excluding fuels	2.53	Sugar	20.97
Fuels and mineral oils	1.57	Wheat flour	10.05
Animal and vegetal oils	21.27	Whool textiles	28.19
Chemical products	26.29	Guns and munitions	2.54
Machinery and transport equipment	1.26	Coal	0.00
Textiles (finished)	29.53	Alcoholic beverages	67.75
Textiles (intermediate)	16.47	Horses	3.28
Other manufactures	16.70	Gunpower	0.11
Number of products			**169**
General Average Tariff Ratio			**21.76**

Sources: Own elaboration based on Dirección General de Aduanas (1912).
Notes: The first column is an adaptation of the Bolivian data to the Standard International Trade Classification (SITC, Rev. 3). The first sixth items of the column correspond to the first sixth sections (0-5) of the SITC classification; the seventh item corresponds to Section 7; the eight item corresponds to the Section 6 of the SITC classification, after excluding chapter 65; the ninth item, corresponds to chapter 65 of the SITC classifications; the last item corresponds to Sections 8 and 9 of the SITC classification.

Interestingly enough, the comparison of this information with the 1937 tariff structure –which, given the political context of the time, could be a priori labeled as a protectionist one- reflects relatively small changes (Table 6). As for the SITC classification, the most remarkable modification is the increase in the ad-valorem tariff on non-edible raw materials and fuels. As for the ten most important products, between 1912 and 1937 there was a substantial increase in the gap between the ad-valorem tariffs on those

[42] The use of official values and its potential misreport of the real value of Bolivian imports may affect the likelihood of the tariff level of each category or product presented in Table 7. However, if we assume that the inability to fairly account for Bolivian import values was uniform across each category or product, the structure of Bolivian tariffs would remain in place and, consequently, the aforementioned conclusions.

products which were not domestically produced (trucks, mining machines, machinery, guns) and on those which could be produced domestically (raw wheat, sugar, gasoline and wheat flour).[43]

Table 6. Ad-valorem tariffs by import groups, 1937

Standard International Trade Classification (SITC)	Ad-valorem tariff	Ten most important imports	Ad-valorem tariff
Food and animals	31.73	Cows	0.16
Drinks and tobacco	114.47	Raw wheat	59.36
Non comestible raw materials, excluding fuels	17.53	Sugar	55.36
Fuels and mineral oils	23.44	Trucks	3.67
Animal and vegetal oils	31.73	Mining machines	2.06
Chemical products	23.46	Guns and munitions	0.89
Machinery and transport equipment	6.51	Raw cotton	0.90
Textiles (finished)	67.89	Gasoline	40.89
Textiles (intermediate)	14.63	Wheat flour	66.54
Other manufactures	22.41	Machinery	4.04
Number of products			**540**
General Average Tariff Ratio			**25.03**

Sources: Own elaboration based on Dirección General de Aduanas (1937).
Notes: See Table 7.

This evidence would suggest, therefore, that Bolivian tariff policy since 1905 was not as passive as previously assumed. This can also be seen by looking at the different evolution of the tariff rate of two of the products that were mentioned in the previous section: wheat flour and sugar. Indeed, whereas the ad-valorem tariff on wheat flour imports decreased from around 10% to around 4% between the early 1910s and 1925, in the case of sugar it remained stable around 20% –with the exception of 1920, due to the slow adaptation of the tariff to price changes (Table 7). Moreover, the absence of significant differences among the tariff rates applied to products coming from different countries also shows the elimination of the previous trade advantages enjoyed by the neighbouring economies. Hence, during the first third of the 20th century, the evolution of tariffs on products that had previously been competing with domestic production was not as uniform and persistent as has usually been assumed by the Bolivian historiography.

[43] However, there were exceptions, such as the low tax pressure on cows and raw cotton, two products which could be supplied by Bolivian producers.

Table 7. Ad-valorem tariffs for Bolivian wheat flour and sugar imports by country of origin, 1912-1925

	Wheat flour				Sugar			
	1912	1917	1920	1925	1912	1917	1920	1925
Argentina	10.01	9.93	8.07	3.93	21.21	21.67	11.93	14.45
Brazil	9.94	9.77	1.68	2.05	22.21	21.59	4.94	10.73
Chile	10.05	10.00	3.61	3.82	22.71	21.67	5.96	19.32
United States	9.69	7.01	2.18	4.31	26.81	21.67	10.35	24.34
United Kingdom	9.95	10.00	4.18	2.52	21.64	20.69	13.23	18.40
Peru	9.80	10.00	4.70	5.07	20.97	21.57	7.02	24.65

Sources: Own elaboration based on official trade statistics.

Given this tariff policy heterogeneity, the protective impact of Bolivian trade policy might also be expected to be different among products. It is beyond the scope of the present chapter to analyze those different protectionist scenarios, on which more research is needed. For instance, given the changes in tariff policy that have just been described and the simultaneous stability of the Bolivian exchange rate, it could be interesting to analyze the impact of tariff policy on the timid upsurge of Bolivian industrialization since the mid-1920s (see Chapter 1).

Nevertheless, there is no doubt that the probability of success of protectionist measures was clearly lower in the case of products of low productivity and high domestic transports costs. This can be illustrated by analyzing the retail price of sugar in the Bolivian cities. Sugar is an interesting example due to the geographical location of the industry, which was mostly concentrated in the eastern Department of Santa Cruz. Table 8 indicates that in the capital cities of the eastern departments (Santa Cruz, Trinidad and Cobija), the retail price of sugar was approximately two times as high as in the western capitals (La Paz, Oruro and Potosí) during the 1940s and early 1950s, when sugar imports had already been liberalized (Law of November 21st 1940).[44] The magnitude and persistence of these price differences reflect the fact that, during this period of time, sugar from Santa Cruz was mainly sold in nearby markets, while imports constituted most of sugar consumption in the western areas of the country (CEPAL, 1958: 40; Sandoval et *al.*, 2003: 15). Likewise, the higher price of sugar in

[44] The earliest observation in the table is 1940s due to the absence of data for all capital cities for previous years.

Santa Cruz than in the western markets –where sugar prices would be the sum of foreign production costs and transport charges- shows the scarce competitiveness of national production. According to this evidence, tariffs would have only been able to protect the Santa Cruz sugar industry if tariff rates had been high enough to double the price of imports, and also compensate the transport cost between the east and west of the country.

Table 8. Annual average retail price of sugar in Bolivian capital cities (Bs per kg.), 1942-1963

	La Paz	Oruro	Potosí	Cochabamba	Sucre	Tarija	Santa Cruz	Trinidad	Cobija
1942	1.5	1.5	1.8	1.4	1.8	2.2	4.0	4.0	3.5
1950	12.4	12.0	13.2	13.2	12.6	23.4	23.6	26.2	30.0
1963	2,000	2,033	2,250	2,000	2,200	2,342	2,042	2,917	3,958
1942	100	100	120	90	120	147	267	267	233
1950	100	96	106	106	101	188	189	210	241
1963	100	102	113	100	110	117	102	146	198

Sources: Own elaboration based on Dirección Nacional de Estadística y Censos (1942, 1959, 1963).

Price differences between Santa Cruz and the capital cities of the western Departments disappeared in 1963. This reflects the consolidation of the sugar industry in Santa Cruz after the Revolution of 1952, as a result, not only of increasing tariff protectionism, but of a wider strategy which allowed: a) reducing transport costs thanks to the construction of the national road between Cochabamba and Santa Cruz; b) the modernization of the industry on the basis of soft credits from the State and international aid; c) taking advantage of the higher supply of labour generated by the Agrarian Reform of 1952 (Zondag, 1966).

To sum up, Bolivia clearly changed its trade relationship with neighboring countries since the mid 1900s, and, in contrast with the traditional assumptions of the Bolivian historiography, tariff policy became much more active thereafter. Further research is required in order to identify which sectors of the economy could benefit from this shift in trade policy. However, given the evolution of transport facilities in the country and the prevailing geographical constraints, the economic impact of trade policy was probably extremely unbalanced from a regional perspective. This fact and the low productivity of several sectors of the Bolivian economy must

be kept in mind when analyzing the long term stagnation of several Bolivian regions throughout the first half of the 20th century.

Conclusions

This chapter has presented for the first time quantitative evidence on the evolution of Bolivian tariffs from the 1850s to the mid-1930s. In contrast with the previous assumptions of the Bolivian historiography, Bolivian tariff policy was rather active. Moreover, the average level of Bolivian tariffs from 1895 onwards was fairly similar to that of the most developed countries of Latin America and, henceforth, relatively high from a world perspective.

However, the protective effect of these high average tariffs on certain products, which represented the most relevant economic activities of several Bolivian regions during this period, might have been restricted for several reasons. First of all, the initial fragility of the Bolivian State-building process and the defeat in the Pacific War may help to understand the signature of different treaties with neighbouring countries which had two main negative consequences: a reduction in the autonomy of Bolivian tariff policy and the elimination of tariffs for those products which competed directly with local producers. Secondly, whereas these treaties were eliminated during the mid-1900s, tariff policy could be sometimes insufficient to overcome the effects that geographical fragmentation and the regional unbalanced expansion of railways had on domestic transport costs.

In this regard, the chapter opens the door for further research. On the one hand, it would be necessary to analyze in detail the effectiveness of the cascading tariff structure established since the mid 1900s on fostering Bolivian industrial production. On the other hand, the example of sugar has pointed out the need to examine in more detail those productivity differences which may have fuelled the displacement of the national production by foreign concurrence during the First Globalization.

Chapter 4.

The expansion of mass education in Bolivia: did the Revolution overcome the colonial legacy?

Being the "most unequal region" in the world (De Ferranti *et al.*, 2004), inequality has a central role in the explanation of Latin American long-term development. A widespread view suggests that the current high levels of inequality are not anything new but one of the most salient features in the region since colonial times.[1] According to this literature, Latin American countries inherited very unequal societies in terms of wealth, political power and human capital at the time of their independence. Furthermore, it is argued that, given this initial level of inequality, the new Latin American States became rapidly controlled by small elites that did not have any interest in tax collection (Sokoloff and Zolt, 2006) –since this would imply taxing themselves- or education spending (Engerman, Mariscal and Sokoloff, 2009) –which would involve a redistribution of resources. By assuming the existence of institutional path dependence, these authors finally suggest that a fiscal equilibrium with low taxation and low spending in education persisted in the region until very recent decades, with only minor changes.

Further research has shown that the relatively low interest of Latin American governments in the promotion of public education prevailed during most of the 20th century. For instance, Lindert (2010) indicates that, in contrast with developed economies, Latin American governments have invested in education less than what would be expected given its GDP per capita. Moreover, this author stresses that most public expenditure was devoted to tertiary education, restricting thus the redistributive impact of education spending. Likewise, Frankema (2009) points out that the higher priority of tertiary education also holds when the region is compared with other developing economies. He also affirms that, whereas Latin America has undertaken significant progress in terms of primary education

[1] See e.g. Acemoglu, Johnson and Robinson (2002) or or Engerman and Sokoloff (2012). For criticisms of this view, see, e.g. Coatsworth (2008).

enrollment, the region's achievements are not outstanding by international standards and are negatively affected by the absence of quality increases.

Taking into account these antecedents, this chapter aims at analyzing if educational spending in Bolivia, either fits well into this regional description up to present times or, by contrast, changed radically and took distance from the regional pattern after the 1952 Revolution. The former hypothesis would seem a priori more likely, given that some of the main determinants of education spending expansion –such as economic growth or political voice (Lindert, 2004; Espuelas 2012) - showed very bad records during several episodes after the revolution. In the same vein, on the basis of the economic literature which suggests a negative relationship between ethnic diversity and public spending,[2] or taking into account Dell's (2010) study for Peru, the Bolivian colonial legacy might be assumed to have restricted the expansion of education services towards the Bolivian indigenous population, a sector which constitutes a substantial share of total population -between 40 and 60%, according to the 2001 national census (INE, 2001).[3]

Nevertheless, it cannot be ignored that the 1952 Revolution represented a considerable shock in Bolivian history which fuelled some radical long-term redistributive changes (Grindle and Domingo, 2003; Klein, 2011: 209-222).[4] As for education policies, moreover, the reform that was applied in 1953-1955, which met considerable consensus, was intended to reflect "…the new correlation of economic and social forces arising from the revolution" (Contreras, 2003: 262). In relation to this, Chapter 2 has presented some evidence which suggests that these changes generated a substantial increase in social public spending from the 1950s onwards. In the same line, Klein (2011b) has stressed that these modifications in public policies are critical to understand the continuous political empowerment achieved by the indigenous population during the second half of the 20th

[2] See Go and Lindert (2010) for an historical test of this hypothesis.
[3] See the INE webpage for a description of the different indicators used for the identification of the Bolivian indigenous population.
[4] FUNDACIÓN TIERRA (2007), for instance, has suggested that the 1953 Agrarian Reform allowed the recovery and total expulsion of former *terratenientes* in the west side of the country by the Aymara population –the most important indigenous group in that region.

century (Zavaleta Mercado, 2011; Calderón, 2010).[5] Additionally, previous researches have stressed that, during the last decades, and beyond the persistence of considerable inequalities, the Bolivian population has benefited from public education spending as an efficient instrument for social mobility (Andersen, 2003; PNUD, 2010: 58).

Therefore, the impact of the 1952 revolution on public education spending is far from obvious. On the basis of the information presented in Chapters 1 and 2, this chapter addresses this issue and offers for the first time a long-term and comparative analysis of Bolivian education spending.[6] To begin with, following the framework proposed by Booth (2007) and Frankema (2011), the chapter stresses that, after the 1952 Revolution, the Bolivian Central Government moved from a "minimal state" fiscal equilibrium to a "benign state" one in which relatively low tax collection levels coexisted with substantial investments –by Latin American standards- in public education. Looking at the evolution of education spending per capita, however, it becomes clear that this paradoxical fiscal equilibrium did not necessarily grant the sustainability of educational expenses. Furthermore, following Lindert's (2010) suggestions, this chapter shows that the post-revolutionary increase in education spending did not imply any significant change in the tax support given to primary education. By contrast, the relative importance of primary over tertiary education spending was not different from the rest of the region and, more strikingly, today is relatively low even by Latin American standards. Therefore, apart from its increase as a share of the GDP, the 1952 Revolution does not seem to have fuelled any significant differentiation of Bolivia from the rest of the region in terms of education spending.

Anyway, it could still be assumed that, despite these limitations, the increase in Bolivian education spending since the Revolution was enough to foster substantial modifications in educational outputs. Rather than measuring the profitability of public expenditure, in the last section of this chapter I address this issue through an indirect short-cut, by analyzing if the

[5] Undoubtedly, the most salient example of this progressive political empowerment is the arrival of Evo Morales to the Bolivian presidency in 2006, the first and the only indigenous Latin American president.

[6] Notice that previous analyses on the impact of the 1952 Revolution have focused mostly on education outputs, such as literacy or enrollment rates (Contreras, 1999, 2003).

increase in education spending was contemporaneous of any significant changes in several educational outputs. The analysis of the available "quantity indicators" seems to confirm the pessimistic assessment previously offered by other authors, such as Contreras (2003). And, in the case of "quality indicators", Bolivia was often in the lowest ranks of the region, which illustrates the limited impact of the public efforts in the educational area.

1. The puzzle: the Bolivian paradoxical equilibrium between low taxation and human capital investment

During the last decades, public finances have increasingly been considered as an instrument to understand the evolution of the implicit fiscal pact between the State and society. This approach has been used by political scientists (Lieberman, 2002), economists focusing on the analysis of developing economies (Brautigam, Fjeldstad and Moore, 2008) or international organizations such as the World Bank. These have suggested, for example, that the size and composition of public finances reflect the institutional equilibrium achieved by each State, given the economic, political and social restrictions it must face (De Ferranti *et al.*, 2004; OECD, 2009; CEPAL 2010). Economic historians have also used this approach as an efficient tool to assess, for instance, the institutional framework established by European colonial powers both in South East Asia (Booth, 2007) and Sub-Saharan Africa (Frankema, 2011).

This section uses this approach to depict the plausible evolution of the Bolivian fiscal pact from the first decades of the 20th century onwards. My analysis is based on Frankema (2011), who identifies four different types of institutional equilibriums on the basis of the relationship between tax pressure and a (human and physical) capital expenditure ratio. According to this author, those countries where both tax collection and the fiscal priority of capital investment are small are in a "night-watchman" equilibrium -i.e. under a minimal State. The "extractive" scenario corresponds, in turn, to those cases where tax collection is high but is not reinvested in capital formation. If capital investment is high but tax collection is low, the equilibrium is characterized as a "benign State" one. Finally, a

"developmental equilibrium" is reached when both tax collection and public capital formation are high.

In my case, I analyze the relationship between tax pressure levels[7] and the fiscal priority of human capital spending (namely education and health) exclusively, and consider those four institutional equilibrium categories as implicit fiscal pacts. My analysis is limited to human capital investment, firstly, because the main interest of this chapter is education spending and, secondly, because (especially during the ISI period), public investment in physical capital was carried out not only by the Central Government (which is the object of this research) but also by public companies. In order to distinguish between those four different fiscal pacts, I assume that the minimum ratio required for a *potential* positive impact of State intervention in the economy is around 20% of GDP for tax pressure and 6% of GDP for human capital investment.[8]

Graph 1 compares the Bolivian experience throughout the 20th century with two of the most *developmental* States in Latin America (Chile and Uruguay; see Azar and Fleitas, 2012). As a reference, it also shows the evolution of France, Spain and the United States from 1960 onwards.[9] As might be expected, during the second half of the 20th century Latin American governments have had both lower revenue levels and less human capital spending than France and the US. Indeed, during most of the period under analysis, tax pressure levels and public expenditure in human capital in both Chile and Uruguay did not exceed 20% and 6% of GDP, respectively. By

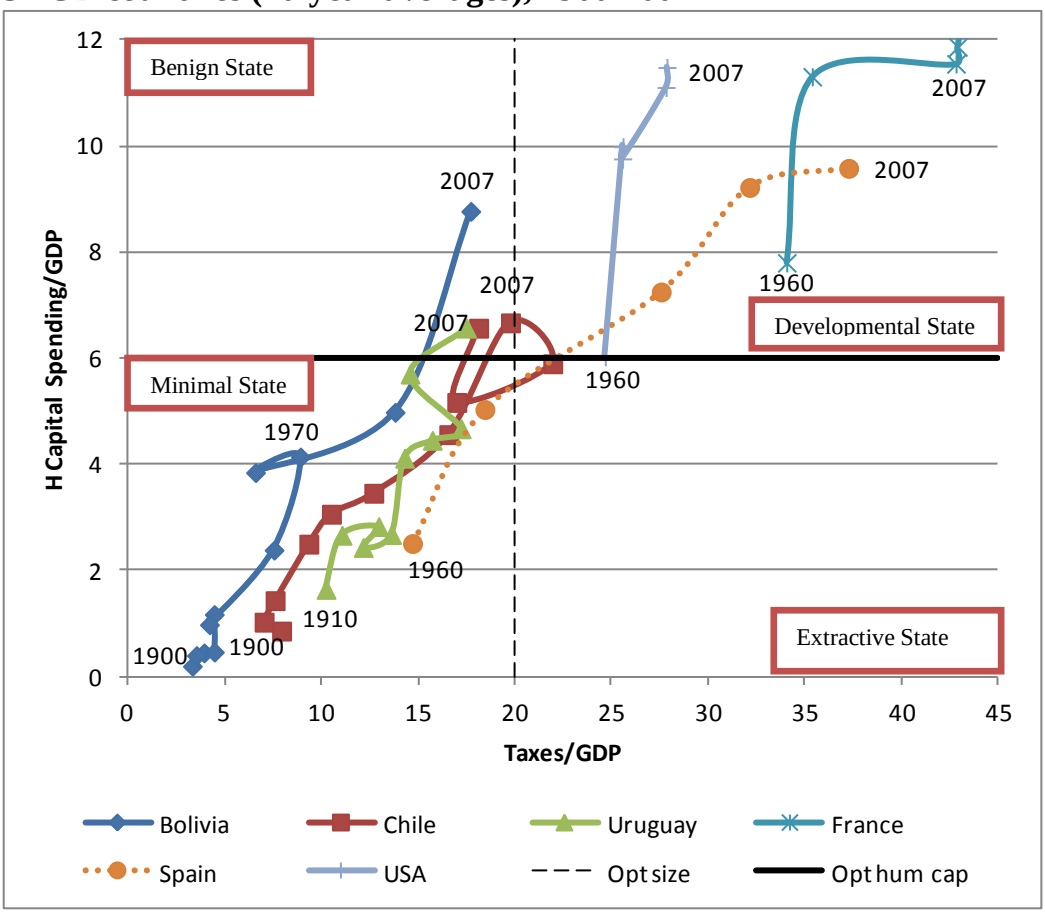
[7] Tax revenues represent the most relevant part of Latin American *current* revenues and, consequently, fairly reflect the evolution of overall public revenues throughout the period under study. Moreover, since taxes are a transfer of money from citizens with neither proportional nor instantaneous counterparts from the government (IMF, 2001) political scientists consider that the higher the government's dependence on tax revenues, the higher the incentives to negotiate and respond to the citizens' demands (Lieberman, 2002; Moore, 2007). Therefore, the study of the tax pressure may be used as an instrument to analyze the evolution of both the government size and the government's legitimacy in the public opinion.

[8] These are arbitrary figures, but they represent a good reference point of the experience of the most developed economies in the second half of the 20th century (Lindert, 2004).

[9] France and the United States have been chosen because they are representative examples of the so-called European and Anglo-Saxon Welfare States, respectively, and the Spanish case is introduced in the analysis as an example of a country that caught up recently with the European Welfare State (Lindert, 2004; Comín, 1996).

contrast, those levels were surpassed both in the US and France already in the 1960s.[10] Likewise, whereas tax pressure and public expenditure in human capital in Spain were fairly similar to those of Chile and Uruguay during the 1960s, Spanish indicators converged steadily with the US and French ratios thereafter.

Graph 1. Evolution of the fiscal pact in some Latin American and OECD countries (10-year averages), 1900-2007



Sources: a) *Bolivia*, see Chapter 2; b) *Chile*: from 1900 to1989, Base de datos EH CLIO LAB, Iniciativa Científica Milenio Mideplan; from 1990 to 2007, ECLAC database: www.eclac.cl.; c) *Uruguay*: Azar *et al* (2009); d) OECD countries data come from Peter Lindert web page (http://lindert.econ.ucdavis.edu/), from Sergio Espuelas web page (https://sites.google.com/site/sergio1espuelas/) and from the OECD database (www.oecd.org).

[10] From the 1960s to 2007, whereas the evolution of tax pressure diverged -it remained more or less constant in the US while it expanded in France- public expenditure in human capital reached levels above 10% of GDP in both countries.

In the case of Bolivia, both tax collection and human capital investment were particularly small until the first half of the 20th century. However, from the 1960s to the 1980s, the human capital ratio tended to converge with the Chilean and Uruguayan ones, despite the fact that tax pressure remained well below 10% of GDP. Later on, from the 1980s onwards, whereas Bolivian tax pressure levels have become similar to those of Chile and Uruguay, the ratio between human capital spending and GDP has approached the Spanish one. Hence, during the second half of the 20th century the Bolivian State has moved from a "minimal-State" equilibrium to a "benign-State" one in which human capital expenditure had a relatively high fiscal priority, at least by Latin American standards.

Tables 1 and 2 expand the previous comparison by incorporating other Latin American cases. To begin with, Table 1 shows the evolution of tax pressure in some of the most developed countries of the region, as well as in some of the poorest ones. The table confirms, once more, the small size of the Bolivian government and the persistence of a tax pressure gap with several countries of the region until very recent decades. Indeed, whereas tax revenues represented around 7% of GDP in Chile during the 1880s and 1890s, they amounted to ca. 3% of GDP in Bolivia, i.e. less than half the Chilean figure. During the first half of the 20th century, tax pressure in Bolivia reached a level similar to Colombia and Peru, but still well below the Chilean and Uruguayan figures.[11] The 1952 Revolution did not change this and, until the 1980s, Bolivian tax levels remained similar to those of Colombia and Guatemala, and much lower than those of Chile, Peru, Uruguay and even Brazil –a country with relatively low Central Government revenues due to its federal structure. It was not until the 1990s when Bolivian tax levels started to converge with the regional average.

[11] Bolivian tax levels were similar to those of Brazil, one of the biggest economies in the region. However, Brazil is a federal country and, therefore, the underestimation of Brazilian total tax revenues –defined as tax collection of General Government- are higher than in the case of non-federal countries.

Table 1. Latin American Central Governments' tax revenues as a share of GDP (%, 10 years average), 1882-2007

	Bolivia	Brazil	Chile	Colombia	Guatemala	Peru	Uruguay
1882-1889	3.14	N.a.	7.06	N.a.	N.a.	N.a.	N.a.
1890-1899	2.74	N.a.	6.96	N.a.	N.a.	N.a.	N.a.
1900-1909	3.30	8.89	7.92	5.04	N.a.	4.10	11.90
1910-1919	3.91	6.57	7.01	3.87	N.a.	3.89	10.22
1920-1929	3.51	5.37	7.58	3.69	N.a.	3.95	11.05
1930-1939	4.44	6.88	9.33	4.31	N.a.	5.10	12.94
1940-1949	4.44	8.46	10.50	4.29	6.58	6.91	12.14
1950-1959	4.19	10.17	12.69	6.72	7.74	7.59	13.61
1960-1969	7.53	12.46	16.57	6.85	7.40	10.82	14.28
1970-1979	8.89	18.34	19.76	8.14	8.50	14.09	15.72
1980-1989	6.57	17.69	21.95	7.45	7.26	12.68	17.21
1990-1999	13.79	18.96	16.98	8.18	9.40	12.82	14.57
2000-2007	17.71	22.36	18.12	11.76	11.81	13.37	17.49

Sources: a) *Bolivia*, Chapter 2; b) other countries from 1900 to1989: *Brazil*: IBGE. Estadísticas Históricas do Século XX; *Chile*: Base de datos EH CLIO LAB, Iniciativa Científica Milenio Mideplan; *Colombia*: Kalmanovitz (2011); *Guatemala*: ICEFI (2007); *Peru*: Portocarrero, Beltrán and Romero P. (1992); *Uruguay*: Azar *et al.* (2009); c) other countries from 1990 to 2007 from ECLAC database: www.eclac.cl.
Notes: N.a.: Not available. Because of the lack of total tax collection from 1882 to 1899 and from 1936 to 1939, the Bolivian averages in the 1880s, the 1890s and the 1930s have been calculated by using total current revenue figures.

As for human capital spending, because of data restrictions the comparison considers just three other Latin American cases: Chile, Peru and Uruguay (Table 2).[12] The analysis shows that, until the first half of the 20th century, both education and health spending in Bolivia were lower than 1% of GDP, well below their level in the rest of countries. From the 1960s to the 1980s, whereas the relevance of health spending remained below 1% of GDP, Bolivian public spending in education increased substantially. Hence, in contrast with tax pressure levels, public spending in education as a share of the GDP was higher in Bolivia than in Uruguay already in the 1970s. This

[12] Despite the limited coverage of the exercise, these countries may be considered as a good reference. On the one hand, Uruguay and Chile were among the earliest supporters of social public expenditure in Latin America (Azar and Fleitas, 2012). On the other hand, Peru shares with Bolivia some common historical features, such as its ethnic diversity. Argentina, Brazil and Mexico are not considered in the sample since, due to its federal nature, Central Government statistics may underestimated the size of human capital spending.

process continued thereafter, and the Bolivian education ratio became higher than in the rest of the sample during the 1990s. Actually, at the eve of the 21st century, the Bolivian ratio was twice as high as the Peruvian and Uruguayan ones.

Table 2. Latin American Central Governments' spending in education and health as a share of GDP (%, 10 years average), 1900-2007

	Bolivia		Chile		Peru		Uruguay	
	Education	Health	Education	Health	Education	Health	Education	Health
1900-1909	0.21	N.a.	0.86	N.a.	N.a.	N.a.	N.a.	N.a.
1910-1919	0.44	0.02	1.03	N.a.	N.a.	N.a.	1.09	0.56
1920-1929	0.40	0.02	1.36	N.a.	N.a.	N.a.	1.30	1.36
1930-1939	0.37	0.10	1.94	0.56	0.82	0.23	1.56	1.27
1940-1949	0.90	0.28	2.11	0.95	1.28	0.50	1.48	0.95
1950-1959	0.81	0.17	2.15	1.31	2.04	0.47	1.56	1.12
1960-1969	2.07	0.31	2.91	1.65	3.94	1.00	2.82	1.30
1970-1979	3.15	0.99	4.16	2.51	6.10	1.67	2.65	1.80
1980-1989	3.05	0.80	3.18	2.72	2.09	0.82	2.38	2.29
1990-1999	3.94	1.04	2.90	2.27	2.28	1.17	2.44	3.27
2000-2007	6.07	2.70	3.69	2.87	2.89	1.39	3.03	3.54

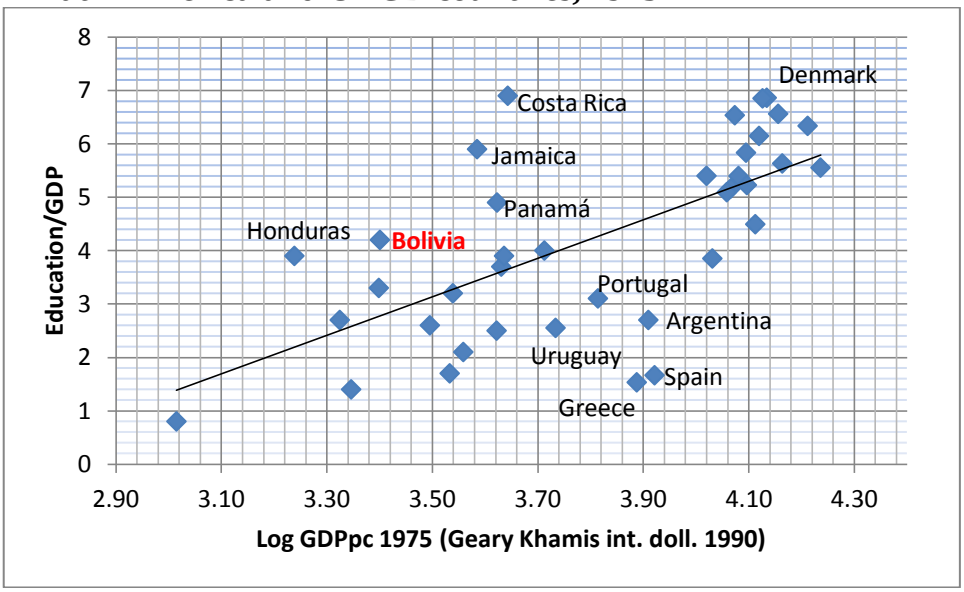
Sources: See Table 1.

Therefore, over the second half of the 20th century the ratio between Bolivian public spending in education and GDP has converged and then surpassed the equivalent figures in some of the most developmental countries of Latin America. The importance of Bolivian public spending in education is further illustrated by Graph 2 that, following Lindert (2010), relates the ratio between education spending and GDP with the log of pc GDP in different Latin American and OECD countries. According to the graph (and in contrast with Lindert's original thesis),[13] Bolivian education spending by the 1970s was relatively high given the country's GDP per capita.[14]

[13] As was stated in the introduction, Lindert (2010) suggests that Latin American Governments have systematically invested in education much less than would a priori be expected given its level of economic development.

[14] In the same vein, Figure 5 in Lindert's paper (2010: 385) shows that, considering the Latin American standards, the reading and math test scores achieved in Bolivia at the eve of the 21st century are not necessarily bad given the Bolivian per capita GDP.

Graph 2. Public spending in education as a share of GDP and GDP pc in Latin America and OECD countries, 1975



Sources: a) *GDP per capita*: New Madisson Project Database. b) *Public spending in education as a share of GDP*: for Bolivia and Uruguay, see Table 2; for the rest of Latin American countries: Frankema (2009: Table A3); for Australia, Germany, Sweden, Switzerland and US: Peter Lindert's webpage (http://lindert.econ.ucdavis.edu/); for Spain and Portugal: Sergio Espuelas' webpage (https://sites.google.com/site/sergio1espuelas/); for the rest of OECD countries: UNESCO Institute of Statistics webpage (http://www.uis.unesco.org/).

Actually, given the relative small investment in public education in the Mediterranean countries until the mid-1970s, Lindert's hypothesis would not be applicable only to Latin America. By contrast, the graph also shows that the high level of Bolivian education spending (relative to its pc GDP) has been shared by other poor Latin American countries, such as Honduras, which indicates that the Bolivian experience would not be necessarily a Latin American exception, and asks for further research on the long-term efforts in human capital spending carried out by the poorest Latin American economies.[15]

Given this evidence and the fiscal vulnerability of the Bolivian government until, at least, the mid-1980s, the next sections offers different indicators which search to clarify to what extent Bolivia was an exceptional case in the Latin American context. This, in turn, would offer some insights on the

[15] In this context, Cuba would be an extreme case, because public spending in education as a share of the GDP has been systematically higher than 6% since the 1959 Revolution.

main question of the chapter: did public education in Bolivia reach a new role after the 1952 Revolution, allowing overcoming the educational restrictions inherited from the colonial and postcolonial periods?

2. The evolution of public spending in education: was Bolivia a special case in the Latin American context?

The goal of this section is to offer a first assessment of the Bolivian pattern of public spending in education. More specifically, given the low level of Bolivian taxes until the 1980s, I analyze to what extent the Bolivian convergence in education spending that has been described in the previous section was affected by a limitation that can often be found in Latin America: the conflict between the presence of good policy objectives and the absence or instability of internal resources to achieve those objectives. According to some authors (Morales and Sachs, 1990; Dornbusch and Edwards, 1989; Weyland, 1998), this conflict may end up affecting negatively in the long run previous public policy achievements. In this context, the following paragraphs analyze how the fiscal vulnerability of the Bolivian government affected the sustainability of education expenditure.

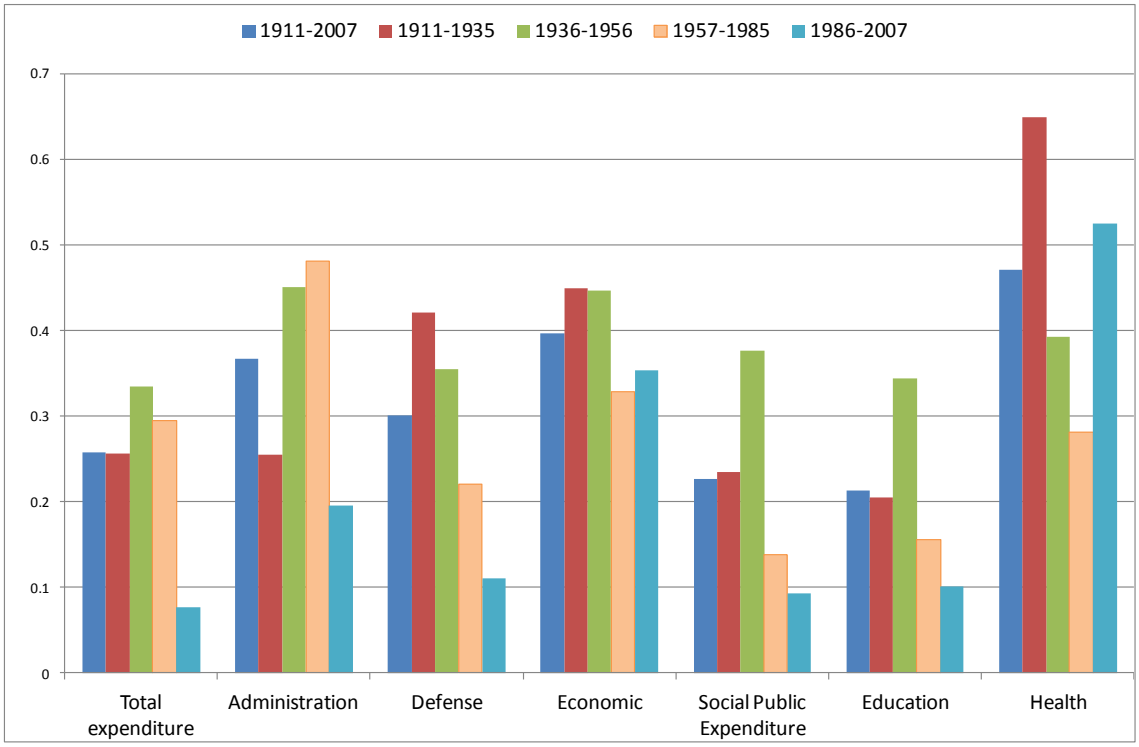
Graph 3 presents the long-term volatility of each category of Bolivian public spending, as well as two of the main sub-categories of social expenditure: education and health. The analysis follows the methodology proposed by Jacks, O'Rourke and Williamson (2011)[16] and covers the entire period of analysis (1911-2007), as well as at some specific sub-periods.[17] Overall, the exercise provides three results which are more or less consistent over time: *a)* the volatility of each category of expenditure was rather high until the early 1980s; *b)* health spending has been the most volatile category throughout the entire period; *c)* education spending has always been among the less volatile expenditures. Hence, this would

[16] See the notes to the graph. Similar results are obtained, with the variables expressed in real and log terms, by calculating the standard deviation of the cyclical component obtained through the application of the Hodrick-Prescott filter. The results are similar using either Lambda=6.25, as suggested by Ravn and Ublig (2002), or Lambda=100, as suggested by Hodrick and Prescott (1997).

[17] The milestones of these periods are the end of the Chaco War (1935), the beginning of State's Capitalism (1956) and the beginning of the so-called neoliberal era (1986).

suggest that, in the long-term, education spending has been less affected than the rest of expenditures by the vulnerability of the Bolivian government's revenues.

Graph 3. Long term volatility of Bolivian public expenditures, 1911-2007



Sources: See Chapter 2.
Notes: Volatility has been calculated as the standard deviation of ln (X_t/X_{t-1}), being X expenditure in real terms; see Jacks, O'Rourke and Williamson (2011).

An alternative way to analyze this issue is to look at the effects of the public revenue cycles on the evolution of public expenditures. This analysis is presented in Table 3, which displays the annual average growth rates of public revenues and each category of public expenditure in those periods when *current* revenues rose or fell. Regarding the former ones, the table indicates that the jump in current revenues from 1904 to 1913 generated a more than proportional increase in the different categories of expenses, with the exception of defense. By contrast, during the 1922-1929 years, the expansion of expenses was less than proportional than revenue growth. During the Chaco War (1932-1935) and after, while general administration spending grew less than current revenues, economic expenses grew at the same rate and social public expenditure at an even higher rate. From 1956

to 1978, once again general administration expenditures grew more slowly than current revenues, whereas economic and social public expenditure grew at the same rate and both education and health spending grew at higher rates. And, finally, whereas in 1986-99, all expenses –with the exception of defense- grew more than current revenues, the opposite effect took place from 2003 to 2007.

Table 3. Growth rates of Bolivian public revenues and expenditures in real terms, 1900-2007 (%)

	Periods of increase in current revenues							
	Total revenues	Total expenditure	General administration	Defense	Economic	Social Public Expenditure	Education	Health
1904-1913	5.07	6.29	7.55	2.65	5.46	15.36	15.36	(a)
1922-1929	5.96	3.53	2.67	5.66	3.89	4.28	3.94	1.81
1933-1941	9.72	2.34	8.70	-4.80	9.33	11.03	8.76	18.96
1956-1978	5.30	5.44	4.65	6.72	5.32	5.55	6.00	7.62
1986-1999	2.86	3.33	4.92	1.21	3.13	3.68	3.69	5.68
2003-2007	7.89	0.91	0.40	0.70	2.32	0.74	1.48	0.79
	Periods of decrease in current revenues							
1913-1922	-3.62	-1.76	-1.00	-1.45	-5.18	-2.63	-2.76	-1.53
1929-1933	-11.31	1.81	-12.90	14.59	-7.99	-10.45	-9.35	-1.57
1941-1956	-2.88	-2.46	-4.12	-5.13	-1.27	0.46	-0.02	-3.50
1978-1986[b]	-0.13	-0.96	-1.66	-1.49	-1.53	-0.61	-3.25	-9.43
1999-2003	-0.06	4.54	5.63	2.13	4.29	4.37	5.64	14.52

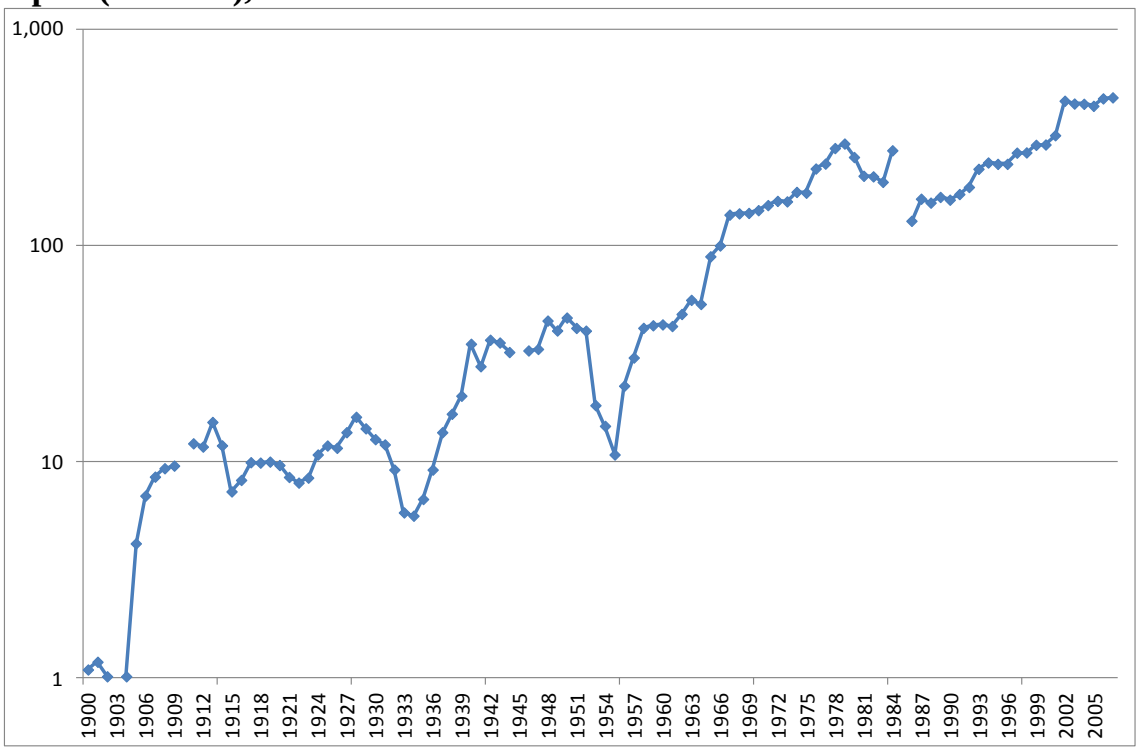
Sources: Own estimation (see text).
Notes: (a) disaggregated data for health expenditure are available just from 1911 onwards; (b) the public revenues cycle which began in 1978 finished in 1985, but the analysis has been extended to1986 because of the lack of detailed data for each category of expenditure in 1985.

What happened in those periods when current revenues decreased? During the unstable years of the First World War and the postwar years, the reduction of revenues was in line with a general reduction -at different rates- of all expenses. This was also the case during the post-Great Depression years –defense expenditures being the exception because of the Chaco War. The persistent reduction in real revenues that took place from the early 1940s to 1956 fuelled the reduction of general administration, defense and economic expenditure, but not that of social public expenditure. Later on, during the years of the external debt crisis, by contrast, education and health spending were among those expenditures

which decreased more than current revenues. Finally, the slight reduction in revenues of 1999-2003 did not generate a similar stagnation or decrease in any category of expenditures.

Therefore, focusing on the period after the 1952 Revolution, whereas education spending was particularly benefited from the expansion of public revenues from 1956 to 1978, it was also among those spending categories that were more affected by the subsequent public revenue crisis. The impact of these fluctuations can be observed in Graph 4, which shows the evolution of education spending per capita in real terms.

Graph 4. Bolivian Central Government's education spending per capita (Bs. 2000), 1900-2007



Sources: For expenditures, see Chapter 2; for prices, see Chapter 2.

Graph 4 shows the considerable increase in real spending in education per capita at the eve of the 20th century, which was derived from the centralization of education and the liberal educational reform. According to Contreras (1999: 486-487), this process can be understood as the government elites' effort to change the main characteristics of the educational public system by taking advantage of ideas and methods

developed in Europe.[18] In this context, the stability of education spending per capita from the early 1910s to the late 1920s can be interpreted as an indication of the stability of the new model of public education. However, beyond this political commitment with educational spending, the effects of both the Great Depression and the Chaco War on public revenues ended up affecting the evolution of education expenses per capita, which decreased substantially from 1930 to 1935.

Immediately after the war and until 1940, education spending grew spectacularly in per capita terms. In contrast with the previous experience, this increase was driven by the new role assigned by the Military-Socialist regimes to public education –the instrument to *build the Nation*-, as well as by the demands from indigenous and popular classes, which identified education as an efficient tool to better defend its long-term claims towards the Central State (Contreras, 1999: 488-489). However, in the aftermath of the 1952 Revolution, although these elements remained, education spending per capita decreased again until 1955, because of the macroeconomic disorders generated by the revolutionary process.

Thanks to the educational reform of 1953-1955 and the stabilization program of 1956, education spending increased steadily from 1957 to the late 1970s. Several determinants may explain this expansion. On the one hand, foreign aid, initially, and the steady growth of the Bolivian economy, thereafter, allowed the growth of government expenses (see Chapter 2). On the other hand, the increase in education spending was also a government response to the dramatic expansion of the Bolivian population during this period. In addition, from a political point of view, the growth in education spending until 1964 was closely related with the revolutionary goals and the willingness to expand educational services across the entire country (Dirección Nacional de Informaciones, 1962). The expansion went on during the military dictatorships, as a result of the military government's intentions to consolidate the so-called Military-Peasant pact[19] through the expansion of education services to the rural areas (Klein 2011: 222-228), while the widespread idea that more education investments were needed in

[18] See also Cajías (2011) for an analysis of the main characteristics of this educational reform.
[19] This pact can be understood as an indirect consequence of the 1952 Revolution. It implied the political support of peasants to military governments in exchange of the maintenance of those changes brought by the Agrarian Reform.

order to foster human capital accumulation in the country also played a significant role (Ministerio de Educación, 1967: 14-22; PNUD, 2010: 106).

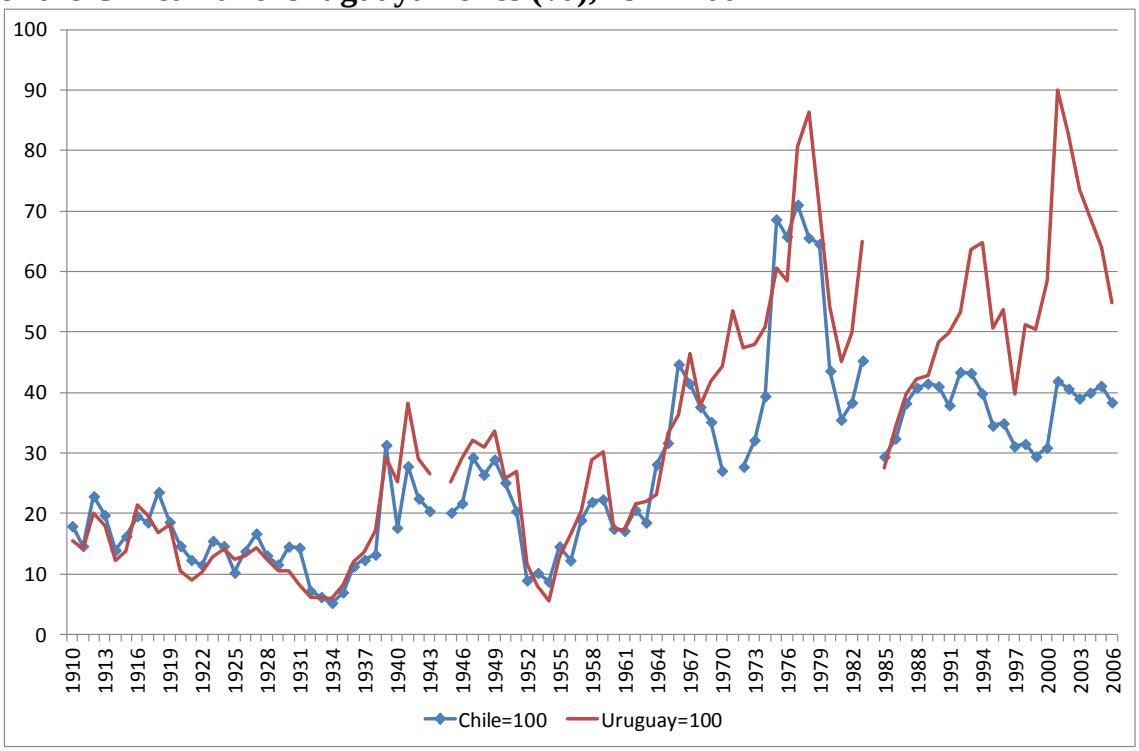
That long-term expansion was followed by a new crisis in education spending per capita during the early 1980s, provoked by the macroeconomic disorders of that period and made worse by the acceleration of demographic growth. The relevance of this crisis and the previous ones is not negligible. Indeed, Table 4 shows that, whereas the volatility of education spending in Bolivia was not significantly different from the Chilean or Uruguayan ones in some decades (1920s, 1960s, 1970s, 1990s), substantial differences are noticeable during the 1930s, 1950s and 1980s. These fluctuations seriously affected the convergence of Bolivian education spending per capita with these countries. More concretely, whereas education spending per capita in Bolivia, once the initial revolutionary disorders had been overcome, quickly converged with Chile and Uruguay up to 70% of the level of education spending per capita in those countries, it decreased to just 30% during the first half of the 1980s (Graph 5).

Table 4. Volatility of education spending in Latin America, 1910-2007

	Bolivia	Chile	Peru	Uruguay
1900-1950	0.34	0.15	0.19	0.13
1950-2007	0.21	0.18	0.43	0.16
1910-2007	0.21	0.17	0.39	0.15
1900-1909	0.70	0.12	N.a.	N.a.
1910-1919	0.23	0.15	N.a.	0.13
1920-1929	0.14	0.13	N.a.	0.14
1930-1939	0.31	0.23	0.15	0.10
1940-1949	0.19	0.14	0.20	0.13
1950-1959	0.41	0.23	0.12	0.14
1960-1969	0.17	0.08	0.26	0.26
1970-1979	0.11	0.33	0.43	0.13
1980-1989	0.17	0.13	1.00	0.11
1990-1999	0.07	0.04	0.13	0.15
2000-2007	0.14	0.05	0.05	0.09

Sources: See Table 2.
Notes: N.a.: Not available. Volatility has been calculated as in Graph 2.

Graph 5. Public spending in education per capita in Bolivia as a share of the Chilean and Uruguayan ones (%), 1911-2007



Sources: Own estimation (see text).
Notes: For education spending, see Table 2. These figures have been expressed in 1990 Geary Khamis international dollars and divided by total population. GDP and population series have been taken from the New Madisson Project Database.

Education spending increased more steadily from 1986 onwards. Initially, this was the consequence of macroeconomic stabilization and the educational reform of 1994. According to Contreras (1999: 491-493; 2003: 271-282) the goal of this reform was to expand education services both in quantity and quality across the country, in order to consolidate education as an efficient instrument for social mobility and economic growth.[20] This reform was contemporaneous to similar changes in neighboring countries and received strong support from international organizations such as the World Bank or the Interamerican Development Bank. Later on, Evo Morales' administration (2006 onwards) made a new educational reform and showed a particular interest in the expansion of educational services towards the most disadvantaged groups of the Bolivian population –see Paz Arauco *et al.*, 2013. Overall, all these changes fuelled the expansion of education spending as a share of GDP up to very high levels, even by

[20] See also Contreras and Talavera (2005).

worldwide standards (Contreras, 1999: Table 2). However, in per capita terms, Bolivian education spending is still low compared with the Chilean or Uruguayan figures.

Therefore, although the long-term volatility of education spending has been lower than in the case of other public expenses, this category of expenditure has clearly been affected by the fiscal fragility of the Bolivian government at least until the mid 1980s. Indeed, during those decades in which the main revenues of the Bolivian Central Government -external taxes, external borrowing or external donations- decreased, education spending also decreased substantially. Likewise, despite the considerable increase in education spending as a share of GDP after the 1950s, education spending per capita is still far away from the levels reached by some of the most developmental States in the region. Altogether, these elements suggest that the post-revolutionary Bolivian fiscal efforts in education spending were not necessarily outstanding by Latin American parameters. This idea is further explored in the next section by looking at the distribution of expenditure.

3. Was the distribution of education spending revolutionary?

Any analysis concerned with the long-term consequences of the 1952 Revolution on education spending must be able to answer one critical question: did the expansion of public expenditure benefit the poor? Whereas this question is commonly answered through incidence analysis, the lack of micro data restricts the use of this methodology in the Bolivian case until the mid-1990s. As a consequence, this section analyses the potential redistributive impact of the 1952 Revolution through several indicators, which were originally designed to provide indirect evidence about who benefited most from education spending.

To begin with, given that primary education tends to benefit a higher share of the population, the literature has suggested that the higher the support to primary education the higher the potential positive impact of education spending on the poor. A first indication of this potential bias is the tax support provided by the government to primary education in relation to the

population's ability to pay. Lindert (2010: Table 2) has estimated this indicator for some Latin American countries from 1960 to 2002, showing that they have invested less in primary education than countries with similar incomes in other world regions.[21]

In order to asses if the Bolivian case fits into this description, I have estimated the tax support ratio for primary education as follows: [22]

$$Tax\ support\ ratio\ for\ primary\ pupils = \frac{Subsidies/Attending\ student}{Income/Total\ population}$$

Table 5 shows the evolution of this ratio in Bolivia and other Latin American countries from 1950 onwards. The table indicates that, during most of the period under study, the support to primary education by the Bolivian government was similar to the rest of the region. In addition, and more surprisingly, the Bolivian tax support ratio fluctuated around the same level (13%) before and after the 1952 Revolution. The Bolivian ratio decreased substantially during the late 1980s, which reflects the negative impact of the external debt crisis on the sustainability of education expenditure. And, finally, the 2010 figure appears as exceptionally high, which would suggest that the efforts carried out by Morales' administration to expand educational services have effectively modified the amount of public money invested in primary education. Although this represents an important change, it is still soon to fairly evaluate its long-term implications.

[21] By suggesting that the rate of return of education investment has always been higher at the earlier levels of education throughout this period, Lindert (2010) stresses that lower investment in primary education has not been driven by demand-side factors but by a supply-side discrimination.

[22] Lindert uses adult (instead of total) population in the denominator. However, the trends are the same if total population is used instead (Lindert, 2010: 390).

Table 5. Primary school support ratios in Latin America (%), 1950-2010

	1950	1965	1970	1975	1980	1986	1990	1996	2000	2006	2010
Bolivia	13.03	9.95	11.57	11.14	13.33	6.05[a]	7.00[b]	12.49	12.34	13.66	20.82
Chile	6.09	5.77	N.a.	5.59*	10.93	12.97[c]	10.66	N.a.	13.67	10.56	14.77
Peru	5.50*	10.90	11.17	10.97	6.76*	2.74	N.a.	3.21*	6.93	7.13	8.47
Uruguay	N.a.	11.32	12.40	N.a.	7.89	3.77	6.67	6.72	7.21	8.71	N.a.

Sources: Own elaboration based on: a) *GDP per capita in national currency*: see Table 1. b) *Public spending in primary school education*: UNESCO Statistical Yearbooks of 1963, 1973, 1994 and 1998. Data for 2000 onwards were taken directly from UNESCO Institute of Statistics webpage (http://www.uis.unesco.org/).
Notes: N.a.: Not available. (*) Values may be underestimated either because they only consider data from the Ministry of Education or because "other expenditures" or "non-distributed expenditures" represented a substantial share of total expenditure. (a) In 1988; (b) in 1989; (c) in 1985.

As was pointed out in the introduction, another criticism to the allocation of education expenditure in Latin America stresses the existence of a systematical favoritism towards tertiary over primary education. Authors like Frankema (2009) or Lindert (2010) have used the following indicator to test this claim:

$$Primary\ tertiary\ double\ ratio = \frac{(Subsidy/student)\ in\ primary\ education}{(Subsidy/student)\ in\ tertiary\ education}$$

I have reconstructed this ratio for Bolivia, most Latin American countries and some other countries which may constitute a good reference from 1965 to 2007 (Table 6).[23] Lindert (2010: 390-395) suggest that the optimal level of this indicator would be at least 50%. Although very few countries reached that level in the mid-1960s, France or South Korea caught-up rapidly with this figure during the 1970s. Among developing economies, while some African countries, such as Botswana or Zambia, still have very low ratios, some Asian countries, such as Thailandia, have recently converged to that ideal level. The same applies in the Latin American case: whereas most countries were far away from the ideal value of 50% before

[23] No data is presented from the mid 1980s to the late 1990s because UNESCO statistical yearbooks do not offer detailed information for tertiary education spending in Bolivia.

the 1980s -being Honduras the only main exception- many of them (including some poor countries, like Guatemala) have reached it during the 2000s.

Table 6. Primary education support ratio over tertiary education support ratio in Latin America and other selected countries, 1965-2007

	1965	1970	1975	1980	2000	2007
France	10.82	19.12	19.79	34.39	59.42	50.72
United States	41.53(*)	63.66(*)	86.53(*)	62.15(*)	66.84	101.42
Korea, Republic of	16.93	27.04	24.77	54.23	220.05	188.20
Thailand	5.14	3.75	11.51	18.96	49.44	93.09
Botswana	N.a.	N.a.	1.38	N.a.	N.a.	4.92
Zambia	N.a.	N.a.	5.59	N.a.	4.36	N.a.
Argentina	22.30	11.02	13.54	19.74	72.06	93.90
Bolivia	9.62	27.10	22.58	14.49	26.22	29.75
Brazil	0.22(a)	N.a.	18.07(*)	13.96(*)	19.25	58.34
Chile	3.30	N.a.	8.55(a)	10.13	74.41	103.90
Colombia	3.09(a)	3.99(a)	19.56(a)	11.58	40.10	47.61
Costa Rica	13.38	21.14	13.32	16.1(a)	N.a.	N.a.
Cuba	N.a.	N.a.	N.a.	37.37(a)	29.80	117.51
Dominican Rep	2.11	6.12	8.89(a)	5.96(b)	N.a.	N.a.
Ecuador	2.21	17.41	22.86	22.62(a)	N.a.	N.a.
El Salvador	5.59	4.63	8.56	8.31	96.18	57.96
Guatemala	9.13	13.11	9.41	12.12(a)	N.a.	54.24
Haiti	6.00	N.a.	3.27	N.a.	N.a.	N.a.
Honduras	6.19	N.a.	10.97	66.65	N.a.	N.a.
Jamaica	2.85(a)	9.08(b)	N.a.	5.10	18.97	N.a.
Mexico	6.13(a)	12.51(b)	15.56(b)	9.04(b)	37.78	35.78
Nicaragua	13.17	18.39	20.65	30.13	N.a.	N.a.
Panama	20.21	12.29(a)	23.02(a)	39.22	43.92	N.a.
Paraguay	7.00	7.43	11.97	N.a.	23.09	41.36
Peru	11.94(a)	109.17(b)	148.58(b)	139.65(a)	32.95	66.32
Puerto Rico	24.63(*)	39(*)	54.7(*)	N.a.	N.a.	N.a.
Trinidad and Tobago	N.a.	3.97	5.06	13.02	18.01	N.a.
Uruguay	13.85	N.a.	N.a.	29.20	47.46	47.00
Venezuela	6.86	8.32	5.47(a)	5.76(a)	N.a.	N.a.

Sources: Own elaboration based on UNESCO Statistical Yearbooks of 1973 and 1980. Data for 2000 and 2007 were taken directly from UNESCO Institute of Statistics webpage (http://www.uis.unesco.org/).

Notes: N.a.: Not available. (a) Probably underestimated because the share of "other expenditures" or "non-distributed expenditures" was higher than 20% of total expenditure; (b) the original source indicates that expenditure in either first or third education was underestimated; (*) the original data adds in one single figure the expenditure made in both primary and secondary education. The 2000 figure in Jamaica, Mexico, Peru, Trinidad and Tobago and United States actually refers to 2001 and to 1999

in the case of Korea. The 2007 figure in Colombia and Thailand refers to 2008 and to 2006 in the case of Peru and Uruguay.

In the case of Bolivia, during the mid-1960s the priority of primary over tertiary education was similar to the Latin American average. Likewise, the increase in the ratio in the early 1970s suggests that the initial expansion of education spending under the military dictatorships tended to benefit primary education more than tertiary education. However, this change would be temporary since the ratio decreased again between 1975 and 1980. More strikingly, the low levels of the ratio in the 2000s indicate a relative lack of support to primary education, that is particularly noticeable even by Latin American standards.

This last idea is further illustrated by two fiscal incidence analysis that were made during the "neoliberal" era and the years of Morales' administration (Breceda, Rigolini and Saavedra, 2009; Paz Arauco *et al.*, 2013). These works have proved that in-kind transfers in education have a great positive redistributive impact on the Bolivian poorest population. However, both studies indicate that this redistribution is generated by the revenue side –i.e. by the fact that the amount of services that the poorest families receive is several times higher than the amount of taxes that they pay. By contrast, both studies show that the allocation of education spending is fairly flat across quintiles or deciles. Looking at Paz et al.'s (2013) results and according to Lustig, Pessino and Scott (2013), this characteristic would be explained by the high relative importance of tertiary education and its lower progressivity. Therefore, not by coincidence, both studies claim the need to foster pro-poor education spending in order to improve the redistributive impact of Bolivian public education expenditures.

The previous evidence would indicate that the 1952 Revolution did not have any long-term impact on the distribution of educational expenditure. The first indicator shows that there was no major change in the support ratio to primary education from 1950 to the mid 2000s. The second indicator suggests that, if there was a change in the prioritization of primary over tertiary education, this was hardly sustainable over time. Finally, even in the most recent years the relevance of tertiary over primary education spending is highly noticeable, and much higher than in several Latin

American countries.[24] Therefore, whereas it is not possible to say that Bolivian public spending in education since 1952 has not benefitted the poorest, it cannot be stated either that it was particularly pro-poor.

4. Were the educational achievements revolutionary?

It could be argue that, whereas restricted, public investment in primary education from the 1950s onwards was enough to improve Bolivian educational outputs. This section does not measure the profitability of education spending, but analyses if the increase in education spending was contemporaneous to a similar increase in both quantity and quality indicators of educational output. To begin with, Table 7 shows the evolution of both the Bolivian literacy rate and the gross enrollment ratio in primary school throughout the 20th century. The table shows that no more than 20% of total population was able to write and read at the eve of the century. Although literacy rates increased thereafter, their growth rate was certainly low –around 1.1% per year, on average. Likewise, whereas literacy rates increased at a higher pace after the 1952 Revolution -2% per year, on average- a non negligible share of the Bolivian population was still unable to write and read at the eve of the 21st century. As a consequence of this restriction, the Morales' administration enacted the so-called "Yo si puedo" program, an aggressive alphabetization project exclusively oriented to the elderly. Hence, it was not until 2008 when the UNESCO could finally declare that Bolivia was a territory free of analphabetism (PNUD, 2010: 167).

[24] See Contreras (1999, 2003) and Rodriguez (1998) in order to better understand the political economy factors which determine the allocation of a considerable share of expenditures in tertiary education.

Table 7. Literacy rates and gross enrollment ratio in primary schooling (%), 1900-2001

Literacy rate		Gross enrolment ratio in primary schooling	
1900	18.5		
1920	22.5		
1930	24.9	**1930/5**	25.8
1940	27.9	**1940/5**	35.7
1950	32.1	**1950/5**	47
1966	44.1	**1960**	67
1975	56	**1970**	68
1985	67.4	**1980**	84
1992	79.99	**1990**	95
2001	86.72	**2000**	115

Sources: Own elaboration based on: a) *Literacy rates*: from 1900 to 1985 obtained from Contreras (1999: Cuadro 1), from 1992 and 2001 obtained from the website of the Bolivian National Institute of Statistics (http://www.ine.gob.bo/indice/EstadisticaSocial); b) *Gross enrolment ratio*: Frankema (2009: 366-367).

Table 7 also presents Frankema's (2009) estimates of the evolution of the gross enrollment ratio in primary education. Beyond the low levels of the ratio in the mid- 20th century, the table suggests that the growth rate of enrollment was similar before and after the 1952 Revolution, confirming thus one of the main claims by Contreras (2003: 264).[25] Likewise, it was not until the 1990s when Bolivia achieved a full primary school enrollment, with a substantial delay both by regional and international standards.[26]

As for the analysis of the quality of educational services, the Bolivian literature offers some partial evidence which suggests that no major change took place after the Revolution. For instance, Contreras (2003: 266) quotes the claims by Fernando Díez de Medina –Minister of Education at the time- which in 1958 regretted the restricted impact of the Revolution on a system in which pedagogical practices were still dominated by archaic methods. In this regard, the curricula of 1948 survived in both primary and secondary education, at least, until the late 1960s (Ministerio de Educación, 1968). In

[25] The growth rate estimated by Contreras is around 5.8%, which is much higher than that obtained using Frankema's estimates, which is around 3.3%.

[26] The only Latin American countries which evolved similarly to Bolivia were Guatemala and El Salvador. By contrast, countries like Zambia, Peru or Ecuador achieved full primary enrollment already in the 1970s (Frankema, 2009: Table 4).

the same vein, Contreras (2003: 270) quotes several studies which regretted the low productivity of educational expenditure as well as the considerable magnitude of dropout and repetition rates throughout the 1970s and 1980s.

The evolution of this last problem can be indirectly analyzed through the use of the methodology developed by Frankema (2008). Taking advantage of UNESCO statistical yearbooks, which presents the enrollment distribution per grade in both primary and secondary education, the author identifies the distribution of students enrolled by using the following formulas:

$$\frac{X_p}{X_p + X_s} * g_{pi}$$

$$\frac{X_s}{X_p + X_s} * g_{si}$$

Where, Xp and Xs refer to the number of students enrolled in primary and secondary, respectively, and gpi and gsi, refer to the percentage share of students enrolled in the ith grade of primary and secondary, respectively (Frankema, 2008: 440).

Following this methodology, I have estimated the evolution of the enrollment distribution during the twelve years of school in Bolivia from 1965 to 2005. As in the case of developing economies, my 1965 estimations show a distribution considerably skewed towards the first degrees of school –i.e. most of the students enrolled in primary and secondary education were concentrated in the first three grades. Other variables constant, this skewed distribution would be reflecting that a non-negligible share of Bolivian children "…was either repeating one or more years or dropping out before reaching the higher grades." By looking at the 1975 estimations and Frankema's Figure 1, repeating and drop out problems in Bolivia seem to have been more severe than in Ghana or Syria, or as bad as in Colombia. In the same line, whereas the skewness of the distribution tended to decrease over time, the 1998s estimations for Bolivia are similar to the figures reached in South Korea in the early 1970s.

Table 8. Distribution of grade enrollment in Bolivia in primary and secondary schooling by grade (%), 1965-2005

	1	2	3	4	5	6	7	8	9	10	11	12
1965	32.53	17.19	12.91	9.05	6.87	5.20	5.64	3.57	2.67	1.88	1.36	1.05
1975	23.52	15.68	13.07	9.58	8.71	6.10	6.10	4.36	4.64	3.61	2.58	2.06
1984	19.67	14.54	12.83	10.26	9.41	7.70	5.99	5.13	5.21	3.91	3.04	2.46
1998	13.79	12.11	11.42	10.44	9.55	8.70	7.39	6.27	6.46	5.25	4.39	3.71
2005	11.47	10.23	9.90	9.42	8.99	8.96	8.56	7.62	7.66	6.46	5.77	4.95

Sources: Own elaboration based on: from 1965 to 1984: UNESCO Statistical Yearbooks (1973, 1980, 197); from 1998 to 2007 from UNESCO Institute of Statistics webpage (http://www.uis.unesco.org/).

These distributional distortions would also reflect that children enrolled in primary education had a low probability to finish primary education and to graduate up to secondary education. The magnitude of this problem, which is certainly a current restriction in the Bolivian educational system (Contreras, 2003: 279) and particularly identifiable in the case of rural (Urquiola and Calderón, 2006) or poor families (PNUD, 2010: 169) can be measured by looking at the grade distribution ratio. This indicator has been estimated by Frankema (2008) and shows the probability of the children who enter to the school had to reach the sixth grade –i.e. the probability to finish primary. Table 9 presents these estimations for a selected sample of countries which share some common features with Bolivia: poor countries of delayed demographic transition (El Salvador, Honduras, Nicaragua); small countries in which education spending was high by Latin American standards (Costa Rica, Cuba, Panama, Jamaica); or small countries in which the indigenous population represents a non-negligible share of total population (Guatemala, Ecuador).

Table 9. Grade distribution ratio 6-1 (%), 1960-2005

	1960/1965	1970/1975	1980/1985	1990/1995	2000/2005
Bolivia	0.32	0.44	0.47	0.63	0.83
Costa Rica	0.41	0.68	0.85	0.79	0.9
Cuba	0.34	0.54	0.98	0.99	1
Ecuador	0.35	0.54	0.64	0.71	0.81
El Salvador	0.29	0.46	0.54	0.67	0.7
Guatemala	0.26	0.33	0.39		0.49
Honduras	0.2	0.33	0.39	0.56	0.61
Jamaica		0.69	0.92	0.96	0.94
Nicaragua	0.18	0.35	0.32	0.41	0.59
Panama	0.57	0.59	0.79	0.8	0.83

Sources: Frankema (2008: 445, 452).

This ratio shows again the restrictions of Bolivian educational outputs. During the early 1960s, the Bolivian indicator was not very different from other countries (with the exception of Panama). However, whereas countries like Cuba, Costa Rica, Jamaica and even Panama, made substantial progress until the 1980s, the Bolivian ratio did not improve. And, once more, it was not until recent years when the Bolivian indicator tended to converge to better records. Therefore, the analysis of both quality and quantity indicators suggests that education spending and educational achievements did not present any significant correlation from the 1952 Revolution onwards.

Conclusions

Taking advantage of the quantitative evidence presented in Chapter 1 and 2, this chapter has offered for the first time a long-term and comparative analysis of education spending in Bolivia. The chapter has shown that, whereas tax collection levels remained among the lowest in the region until the 1980s, education spending as a share of GDP converged to the levels of Chile and Uruguay -two of the most developmental States in Latin America- after the 1952 Revolution. This paradoxical fiscal equilibrium, however, did not imply a substantial modification of the quality and redistributive character of the Bolivian education system. Three main findings support this claim: public spending in education was hardly sustainable over time; the inexistence of a substantial support to primary

education may have reduce the redistributive impact of education spending; and education outputs, either in quantity or quality terms, were often among the worse in the region.

Undoubtedly, some relevant questions require further research. For instance, it is still necessary to identify the main determinants of education spending as well as a plausible explanation of the structural limits which restricted the efficacy of public education expansion. Anyway, the particularities of the Bolivian case may give additional clues to understand the evolution of public education in Latin America throughout the 20th century. Likewise, the historical analysis of education spending may help to enrich the current debate in Bolivia, in a period in which a new educational reform is under discussion. In this line, two policy implications arise. On the one hand, beyond the police-makers' good desires, human capital spending may be hardly sustainable in the long run unless tax bases are extended. On the other hand, as is suggested by the literature, there is still large room for more aggressive pro-poor educational policies.

Conclusiones

Gracias a la revisión de diferentes archivos y bibliotecas en Bolivia, España y Estados Unidos, la presente tesis doctoral ha sido capaz de ofrecer nueva información cuantitativa que permite cubrir algunas lagunas significativas en la historiografía boliviana. El capítulo 1 ha ofrecido una estimación del PIB y su estructura sectorial, y del PIB per cápita entre 1846 y 1950. En el capítulo 2 se ha presentado una estimación desagregada de los ingresos del Estado Central boliviano entre 1882 y 2007, así como una estimación desagregada de sus gastos entre 1900 y 2007. En el tercer capítulo se ofrece nueva información relacionada con el comercio exterior boliviano y, en particular, con la evolución de los aranceles a lo largo de la Primera Globalización (1850-1930s). Finalmente, el cuarto capítulo ha brindado una estimación del gasto público en educación y de su distribución desde 1950 hasta la actualidad.

Más allá de la discusión de las anteriores estimaciones, la nueva información cuantitativa ha sido utilizada para ofrecer explicaciones alternativas a algunos de los problemas centrales en el debate historiográfico latinoamericano y boliviano. En primer lugar, la estimación del PIB ha permitido ver que, lejos de un escenario general de estancamiento económico, el crecimiento económico boliviano se ha caracterizado por la sucesión de diversos ciclos, en los que, en términos generales, una considerable expansión del producto vino precedida de una significativa crisis económica. En sintonía con este fenómeno, se ha podido apreciar que la evolución de la posición relativa de la economía boliviana frente a Estados Unidos y otros países de América Latina, se ha caracterizado por procesos de divergencia pero también de convergencia económica. Ello sugiere que, lejos de un marco conceptual monolítico, la compresión de las raíces del subdesarrollo boliviano requiere de un marco interpretativo flexible y capaz de abarcar la heterogeneidad de resultados previamente comentados.

En segundo lugar, se ha resaltado que la actual expansión del gasto social no es un fenómeno nuevo, sino una de las características más significativas

de la hacienda pública boliviana desde finales de la década de 1930. En sintonía, se ha observado la persistente dependencia de los ingresos públicos de bases tributarias relativamente estrechas y la continuidad de déficits fiscales, muchos de éstos de significativa magnitud. Dados estos resultados, la investigación sugiere que el éxito de la intervención estatal en Bolivia no se ha halla meramente condicionado por la forma en la cual son asignados los gastos, sino también por la necesidad de asegurar un flujo más o menos constante de ingresos públicos. Lo contrario implicaría el riego de repetir la traumática historia de la hiperinflación de principios de la década de 1980, uno de los procesos inflacionarios más importantes registrados en la historia económica mundial.

El tercer capítulo ha subrayado las inexactitudes históricas de la hipótesis que explica la crisis de las economías regionales y la desintegración del mercado nacional a partir de una hipotética liberalización de la economía. La nueva información cuantitativa ha mostrado que los niveles arancelarios no fueron necesariamente bajos durante la Primera Globalización y, además, que la política arancelaria tuvo una complejidad mucho mayor que la supuesta previamente. En este sentido, la crisis de las economías regionales y la desintegración de la economía boliviana se podrían explicar por otros factores. Por un lado, por la estipulación de diversos tratados comerciales con países vecinos –firmados como consecuencia de las debilidades iniciales del Estado boliviano y de la derrota en la guerra del Pacífico- que abarataron las importaciones de productos que competían directamente con la oferta nacional. Por otro lado, por la dificultad de la política arancelaria a la hora contrarrestar los efectos generados por la diversidad geográfica del país y la construcción ferroviaria sobre los costos de transporte internos.

Finalmente, la disponibilidad de nuevas series de gasto en educación ha permitido evaluar si la Revolución de 1952 generó efectos de largo plazo sobre la evolución de esta variable. El análisis ha mostrado que la inversión pública en educación como porcentaje del PIB se incrementó de forma notoria desde la década de 1960, una vez corregidos los desórdenes macroeconómicos inicialmente generados por la Revolución. Sin embargo, la investigación ha demostrado también que este incremento no permitió superar otras dos restricciones estructurales: la escasa sostenibilidad del

gasto educativo y la relativamente baja financiación a la educación primaria. En tiempos de debate sobre una nueva reforma educativa, estos hallazgos sugieren dos elementos a considerar: la importancia de asegurar la sostenibilidad del gasto público educativo y la necesidad de impulsar políticas educativas orientadas a los más desfavorecidos.

Sin lugar a dudas, la historiografía regional, la historiografía nacional e incluso el debate político-económico podrán cuestionar las hipótesis y explicaciones previamente mencionadas. Igualmente, no será raro encontrar nuevas investigaciones que, basadas en la información cuantitativa presentada en estas páginas, ofrecerán explicaciones e hipótesis diametralmente opuestas a las comentadas precedentemente. Al menos por ello, la presente tesis doctoral habrá cumplido su objetivo más básico: revitalizar el debate en torno a la evolución histórica de la economía boliviana.

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