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Regional income distribution in Mexico: new long-term evidence, 1895-2010

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Abstract: In the last years, Economic History literature has paid close attention to the long-term changes undertaken by regional income inequality in different countries after the integration of their domestic markets. Nevertheless, this literature has mainly focused on developed economies (US and Europe). New evidence is required from peripheral economies, where economic growth has had different features, and income inequality may have been dominated by other forces and followed different trends. The aim of this paper is to analyse several dimensions of the long-term evolution of Mexican regional income inequality, from the early stages of domestic markets integration to the present (1895–2010). This analysis may be taken as basis for further explanatory analysis and may contribute to the emergence of new hypothesis to explain the long-term changes in regional inequality in peripheral economies.

JEL Codes: N16, N96, R11.

Keywords: Economic History, Regional Inequality, Economic Growth.

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1. Introduction

In the last years, the evolution of regional income distribution and its determinants has been paid close attention in the Economic History literature. Scholars have mainly focused on core economies, for which the available evidence suggests that spatial inequality has commonly followed an inverted-U shape in the long term.¹ This was the consequence of a process of regional income divergence during the first stages of domestic markets integration, and a further decrease in disparities as economic growth and national market integration continued moving forward.² These findings are consistent with some of the predictions of the New Economic Geography (NEG), and also fit with the seminal Williamson's (1965) 'inverted-U' trend proposal. The NEG framework suggests that the interaction between the fall in transport costs, increasing returns and market potential can first lead to economic activity agglomeration, increasing therefore regional income inequalities (Krugman, 1991). However, firms may gradually become sensitive to congestion costs if trade costs continue falling, causing a subsequent dispersion of the economic activity (Puga, 1999). Thus, market integration might eventually lead to regional income convergence. On the other hand, the 'inverted-U' pattern described by Williamson (1965) could be understood as an extension of the Kuznets' curve at the regional level, implying that in the early stages of industrialization regional inequalities within countries tend to increase, to decrease thereafter from the moment when industrialization spreads across most regions. In both theoretical

¹ While several studies (e.g. Geary and Stark, 2002; Crafts and Mulatu, 2005; Rosés, Martínez-Galarraga, and Tirado, 2010; Combes, Lafourcade, Thisse, and Toutain, 2011; Felice, 2011; Henning, Enflo, and Andersson, 2011; Martínez-Galarraga, 2012; Badia-Miró, Guilera, and Lains, 2012; Martínez-Galarraga, Rosés, and Tirado, 2013; Enflo and Rosés, 2014; Geary and Stark, 2015) focus on several European countries; Kim (1998, 1999), and Klein and Crafts (2012), analyse the US case.

² The Italian and Swedish cases are an exception to this pattern (Felice, 2011 and Enflo and Rosés, 2014, respectively).

frameworks regional income inequality is determined, essentially, by the location decisions of industrial activity.

Nevertheless, very little evidence is available on developing countries, in which the patterns and causes of the long-term evolution of spatial economic distribution may have been far different from those of the industrialized countries. Actually, the analysis of peripheral economies may provide new hypothesis and perspectives on the forces behind regional economic growth and regional inequality. Recently, Badia-Miró (2014), has pointed out that the characteristics and determinants of long term Chilean regional income inequality (1890–2000) do not match those found in industrialised economies. To start with, the Chilean case does not follow the ‘inverted-U’ pattern described above; instead, there was sustained regional convergence in Chile over the period of the study. Moreover, the author points out that, despite the extremely high economic activity concentration in the Santiago region (Chile’s administrative capital), this did not result in higher income productivity relatively to the rest of the country, suggesting that agglomeration economies could not have been the main determinant behind Chilean’s regional inequality trend. Similarly, Caruana-Galizia (2013) shows that Indian regional income inequality experienced β - and σ - convergence during the first stages of domestic market integration (1875-1911), which contrasts with the divergence process suggested for the core economies in the same historical period.

The long-term evolution of Mexican regional inequality has not been analysed yet from an Economic History perspective. Historians have instead focused on particular regions and/or the regional distribution of particular sectors,³ and the

³ Kuntz (2010, 2014) has widely studied the impact of the export-activity on the spatial economic performance. Likewise, Mario Cerutti has contributed to the understanding of the historical economic development in the northern states (see Cerutti, 1992). On the other hand, Haber (1989) provides a

aggregate study of regional inequality, which has often been approached through β -convergence and σ -convergence analyses, has usually been restricted to the most recent decades (see Esquivel, 1999; Sánchez-Reaza and Rodríguez-Pose, 2002; Chiquiar, 2005; Rodríguez-Oreggia, 2005; Carrion-i-Silvestre and German-Soto, 2007; Ruiz, 2010; Brock and Germán-Soto, 2013).⁴ Moreover, even though these convergence studies are useful to understand regional inequality trends, they provide a highly simplified view of the historical evolution of regional income distribution process, as they totally ignore the spatial location component (Yamamoto, 2008). For instance, convergence analyses do not take into account the possible impact that a relatively rich region may have on the nearby areas (*spatial clustering*), or how the shapes of income distribution evolve over the long run. These dimensions of regional income disparities are highly relevant in the long run. For example, in the Mexican case, it would be essential to understand the impact of Mexico City on its closest states or the effect of the US on the northern states.⁵

In this regard, the present article aims to analyse multiple dimensions of the Mexican regional income inequality evolution in the long term, since the period in which domestic markets got integrated to nowadays (1895–2010). Firstly, I present some conventional indicators of regional inequality, such as the Coefficient of Variation (CV), the Gini coefficient, and the Theil, Williamson and Herfindahl-Hirschman indexes. Secondly, I estimate Kernel distributions of regional income, in order to provide a picture of the shape and modality of spatial income distribution in

detailed description of the industrialisation process during the primary-export model, from 1890 to 1930.

⁴ This literature has been concentrated, due to the lack of a GDP per capita database at state level, on the decades after 1940 and, specially, the period after the opening of the economy since the middle of the 1980s.

⁵ These two facts have been pointed out as one of the most important causes of the regional economic growth in Mexico both during the ISI period and the subsequent stage of economic openness, especially since the North America Free Trade Agreement (NAFTA) came into effect in 1994 (Jordaan and Sanchez-Reaza, 2006).

the long term. Thirdly, I analyse regional income mobility through the Spearman rank and the Kendall's τ -statistic. Last but not least, I use the Moran's I coefficient to study the intensity of spatial clustering of regional incomes per capita. All these indicators aims at complementing the available evidence of the Mexican regional income disparities over the long term, and at contributing to the international literature on historical regional inequality, by providing evidence on an economy that did not belong to the western core.⁶

The long-term perspective adopted in this paper allows a detailed analysis of the evolution of regional income inequality across the different economic models that have been adopted in Mexico since the start of modern economic growth. More specifically, the period under analysis includes the agro-export model of the first international globalisation (1895–1930), the State-Led Industrialization period (1930–1980) and the current model of high economic openness (1980–2010). The long-term study of Mexican spatial inequality may be of interest for economic policy-makers, since the presence of North-South economic development polarization is yet to be resolved. According to the National Council for Evaluation of Social Development Policy (CONEVAL), 43 per cent of the total population living in extreme poverty in 2010, was located in 4 Southern States: Chiapas, Guerrero, Oaxaca and Veracruz. Moreover, in a recent publication, the ECLAC (2014: 73) has pointed out that Mexico had, ca. 2010, the second highest income ratio between the richest and the poorest region among Latin America countries, only after Ecuador.

⁶ Recent literature has applied similar techniques to explain multiple dimensions of regional per capita income disparities within different countries, see Bosch, et al. (2003), Aroca, et al. (2005), Yamamoto (2008), Germán-Soto and Escobedo (2011), Herranz-Loncán and Martínez-Galarraga (2013), Badia-Miró (2014), and Tirado and Badia-Miró (2014). Moreover, a distribution dynamics analysis among the OECD countries in the long-term can be found in Epstein et al. (2003).

The article is structured as follows. Next section offers a brief summary of the Mexican economic growth process since the late 19th century. Section 3 presents a long-run description of Mexican regional income distribution, on the basis of several indicators. In section 4, spatial econometrics is used to test the presence of spatial income autocorrelation among Mexican states. Conclusions are presented in section 5.

Map 1
Mexican administrative division



Source: Own elaboration, using QGIS. The map was taken from: www.divas-gis.org

2. Regional economic growth in Mexico in the long run

The economic growth of the Mexican regions has been affected in the long-term by the economic model adopted in each historical period. First, the primary-export boom, that took place from the late nineteenth century to the 1929 Great Depression, caused important changes in the country's economic structure. The introduction of the railways was crucial not only to enhance exports but also to

integrate national markets, bringing about a boost in regional economic specialization.⁷ Indeed, historians have pointed out that it was at this moment that Mexico embraced the capitalist system (Kuntz, 2010). Besides, during this period the country went through an important process of economic modernization, largely associated to the expansion of industry and, specially, the mining sector. According to Stephen Haber, “the first wave of modern Mexican industrialization” extended from the 1890’s to the 1930’s (Haber, 1989:3), and it was largely a consequence of export growth (Haber, 2010). During this period, both the domestic market and national production developed, and the railroads played a crucial role in the process of economic regional specialization (Dobado and Marrero, 2005; Kuntz, 1999).

The industrial, mining, and agro-exporter sectors were the main forces behind the transformation of the national economic structure (Kuntz, 2010:321). Whereas these sectors accounted for a growing share of total GDP, agriculture for domestic consumption gradually fell behind. According to Pérez López (1960), the participation of manufacturing and mining in total GDP grew from 9.1% to 13.2%, and from 4.9% to 9.5% respectively between 1895 and 1929.⁸ Instead, the share of agriculture within GDP decreased from 23.8% in 1895 to 13.9% in 1929. This process of structural change is essential to understand the increase in differences among regions throughout the period. The states in which industry and mining were located had a much higher dynamism than the rest. As Aguilar-Retureta (2015) has pointed out, Mexico City, the northern region, and some particular states (Veracruz

⁷ Together with the rail expansion, the effective elimination of the *alcabalas* (tax on domestic commerce) in the late 1890s had a relevant impact on domestic market integration; see Kuntz (2010:315). See Dobado and Marrero (2005) for commodity market integration, and Kuntz and Speckman (2011) for labour market integration.

⁸ Furthermore, since the liberal reforms the mining sector undertook a process of modernization, which increased both its value added and productivity (especially from 1890, when some US companies moved its production plants to Mexico due to the US protectionist policy in this sector, together to a strong Mexican fiscal stimulus).

and Yucatán) were the best performing areas during this period. Yucatán benefitted from the most successful agro-export activity: the henequen.⁹ On the other hand, the industrial activity was concentrated in Mexico City, Veracruz and the north (specially Nuevo León). According to my estimates, the participation of these three states in the country's total manufacturing activity increased from 19.5% in 1895, to 46.9% in 1930.¹⁰ By contrast, the mining sector experienced an increasing geographic dispersion during this period (although it was also mostly concentrated in the north and north-centre regions). This dispersion might have partially overcome the effects of industrial concentration on regional income inequality, as happened in the Chilean case (Badía-Miró, 2013). However, the estimates presented in Aguilar-Retureta (2015) clearly show that both, the Mexico City economic dynamism and the north/south division of the country, started at least in the late nineteenth century.

After the primary-export boom, Mexico undertook a process of accelerated industrialization based on domestic markets' growth (1930-1985). This period is commonly known in Latin America as the Import Substitution Industrialization (ISI) period. The main features of this model were the shift to industrialization as the engine of economic development and a strong State intervention in the economy (Bértola and Ocampo, 2010:151). The ISI period is generally considered as a closed-economy model, due to the strong commercial protectionist strategy adopted in those years. It was during this period when the Mexican economy experienced the greatest growth rates since the consolidation of domestic markets, having an annual average GDP growth rate of 5.24% and 6.38% during the years 1932-1949 and 1949-1981

⁹ In fact, this was the only non-mining successful export commodity during the First Globalisation (Riguzzi, 1995:174).

¹⁰ Therefore, the process of manufacturing concentration in the capital and the north started at least in the last years of the 19th century. This would partially contradict some recent research, in which industrial concentration in Mexico City is assumed to have started with the ISI policies; see, for instance, Krugman and Livas (1996:140). My estimates suggest that this process began well before the ISI period, although it substantially accelerated after 1930, since in 1975 the "Capital" region accumulated 51.8% of total manufacturing production (see Hernández, 1980: 140).

respectively (Márquez, 2010: 553). The low level of international integration had strong economic implications at the regional level, and it especially encouraged the intensification of economic concentration. Although, during this period, various political programs attempted to de-centralize different economic activities and the industrial sector in particular, the latter was greatly concentrated in Mexico City and the surrounding areas (especially the State of Mexico), together with a few other states such as Jalisco and Nuevo León.¹¹

The concentration of industrial activity in Mexico City has been theoretically explained on the basis of New Economic Geography's predictions. Krugman and Livas (1996) explain why industrial activity during this period tended to concentrate in the largest market in the country (Mexico City). In general terms, the authors show that this agglomeration responded, under a closed economy model, to the emergence of strong forward and backward linkages in the biggest market, in order to supply the goods demanded there.¹² As a consequence, according to Germán-Soto (2005), Mexico City, together with the State of Mexico, represented 36.14% of Mexico's total GDP in 1980. Nevertheless, despite the high concentration of economic activity in Mexico City, the literature has also identified a reduction of regional income disparities during this period. Following Sánchez-Reaza and Rodríguez-Pose (2002:77), this can be explained, for the late years of the ISI period, by the oil production boom of the 1970s and 1980s, which was mostly located in the Southeast of Mexico, and, secondly, by the rapid out-migration from the southern states to the rest of the country and the US.

By the middle of the 1980s, the Mexican economy started a process of

¹¹ During the ISI period, the government tried to encourage the dispersion of industrial activity, for example, by promoting the creation of industrial parks in different states. Nevertheless, those political efforts were not successful (Aguilar, 1993:341).

¹² See Hernández, E. (1980) for a narrative confirming the NGE hypothesis for the Mexican case during the ISI period.

increasing openness and decreasing state intervention. The debt crisis and the downfall of the oil price are the main factors behind the collapse of the ISI model. The new Mexican export-promotion strategy started with the adhesion of Mexico to the General Agreement on Tariffs and Trade (GATT) in 1986, and continued with a deepening in regional international integration in 1994 through the signature of the North American Free Trade Agreement (NAFTA). According to the World Bank, Mexican openness rate was 24% in 1980 and 61% in 2010 respectively (World Bank, 2014). The process of economic openness and regional international integration has significantly affected the patterns and trends of regional growth in Mexico during the last twenty years, specially benefitting the north-border states. Rodríguez-Oreggia (2005: 219) has pointed out that, in general, the regions that were catching up in 1970-1985 (under a closed economy), lagged behind since the opening of the economy. On the other hand, the states that were falling behind during the last years of the ISI period (namely, some of the north border states) became the winners afterwards. Once again, the NEG framework is useful to explain these changes. Krugman and Livas (1996:150) describe how, after the process of economic liberalization, there was no longer enough dependence on the domestic market (namely, Mexico City) to make the backward and forward linkages strong enough to support the large concentration of production in Mexico City. Thus, because of the trade liberalization policies, the firms have increasingly found these linkages in the international market (mainly in the US), and therefore, have tended to move closer to this market, at the north-border regions. In 2012, the north-border states (6 out of 32) account for 52.87% of the total exports value.¹³ Meanwhile, Mexico City and the State of Mexico, for instance, only represent 6.3% of national exports (INEGI,

¹³ 77.6% of total exports were destined to the US in the same year.

2014).¹⁴ Hanson (1998a, 1998b) has observed the same trend in manufacturing employment: free trade in North America has boosted, on the one hand, the expansion of manufacturing labour force in the north-border states and, on the other hand, the contraction of this sector in Mexico City.

Following this historical review, the next section presents several measures of Mexican regional income disparities in the long run, beyond the well-known β -convergence and σ -convergence analyses that have been the object of most previous literature.

3. The long-run trends of regional income disparities in Mexico, 1895-2010

In order to present the trends and patterns of regional income inequalities in Mexico since the late nineteenth, I use the GDP per capita estimated by Aguilar-Retureta (2015). Table 1 shows these figures, in benchmark years from the early 20th century to the present. As it can be noted, there is a marked persistence of the high pc GDP levels of both Mexico City and the North region and, on the other side, a poor income performance of the Centre and South regions in relation to the national average over the long run. On the basis of these data, the next section presents several indicators that allow approaching the different dimensions of the long-term evolution of Mexican regional income disparities.

¹⁴ Thanks to oil exports, Campeche and Tabasco were the origin of 13.77% of the national exports value.

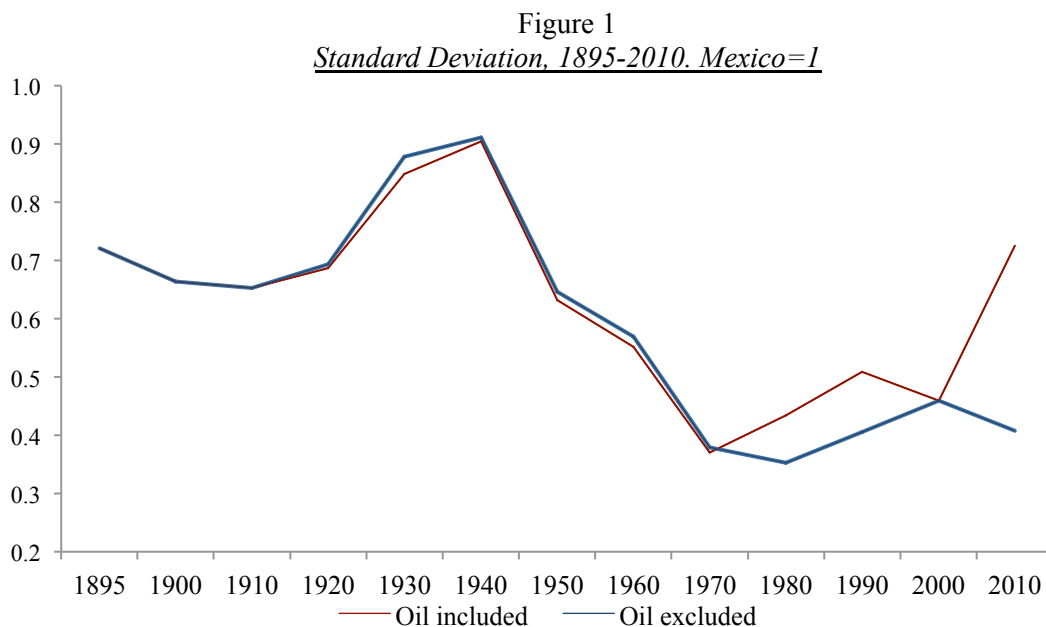
Table 1
Regional per capita GDP in Mexico: 1900, 1930, 1950, 1980, and 2010 (Mexico = 1)

	1900	1930	1930*	1950	1950*	1980	1980*	2010	2010*
<i>Mexico City</i>	<u>2.61</u>	<u>2.71</u>	<u>2.83</u>	<u>2.63</u>	<u>2.71</u>	<u>1.91</u>	<u>2</u>	<u>2.27</u>	<u>2.39</u>
<i>North</i>	<u>1.71</u>	<u>2.21</u>	<u>2.27</u>	<u>1.59</u>	<u>1.64</u>	<u>1.19</u>	<u>1.25</u>	<u>1.22</u>	<u>1.27</u>
Baja C. North	3.11	4.4	4.54	2.87	2.96	1.28	1.34	1.03	1.08
Baja C. South	n.d.	n.d.	n.d.	1.18	1.22	1.27	1.33	1.11	1.16
Chihuahua	1.29	1.82	1.89	1.41	1.45	0.94	0.99	1.04	1.09
Coahuila	1.46	1.72	1.78	1.28	1.33	1.15	1.2	1.31	1.37
Nuevo León	1.6	1.66	1.71	1.57	1.62	1.58	1.65	1.9	1.97
Sonora	1.79	1.77	1.82	1.56	1.61	1.08	1.14	1.05	1.11
Tamaulipas	1.03	1.9	1.85	1.28	1.31	1.03	1.08	1.12	1.08
<i>Pacific-North</i>	<u>1.22</u>	<u>0.77</u>	<u>0.79</u>	<u>0.81</u>	<u>0.84</u>	<u>0.85</u>	<u>0.89</u>	<u>0.88</u>	<u>0.93</u>
Colima	0.91	0.8	0.82	0.83	0.85	0.91	0.95	1.01	1.06
Jalisco	0.98	0.55	0.57	0.71	0.74	1.01	1.06	1.01	1.06
Nayarit	1.51	0.78	0.8	0.74	0.77	0.71	0.74	0.65	0.69
Sinaloa	1.46	0.93	0.96	0.95	0.98	0.76	0.79	0.85	0.9
<i>Centre-North</i>	<u>1.25</u>	<u>0.89</u>	<u>0.91</u>	<u>0.62</u>	<u>0.64</u>	<u>0.64</u>	<u>0.67</u>	<u>0.85</u>	<u>0.89</u>
Aguascalientes	2.13	0.88	0.91	0.46	0.48	0.79	0.83	1.1	1.16
Durango	1.32	0.97	1	0.75	0.78	0.72	0.76	0.86	0.9
San Luis Potosí	0.68	0.84	0.83	0.7	0.71	0.58	0.61	0.79	0.83
Zacatecas	0.86	0.85	0.88	0.55	0.57	0.47	0.49	0.63	0.66
<i>Gulf of Mexico</i>	<u>1.14</u>	<u>1.03</u>	<u>0.97</u>	<u>1.1</u>	<u>1.06</u>	<u>1.18</u>	<u>0.82</u>	<u>1.72</u>	<u>0.96</u>
Campeche	0.98	0.88	0.91	0.84	0.87	0.76	0.8	4.39	1.17
Tabasco	0.83	0.68	0.7	0.57	0.59	2.51	0.58	1.41	0.71
Quintana Roo	n.d.	n.d.	n.d.	1.93	1.99	1.2	1.25	1.28	1.35
Veracruz	0.97	1.26	0.91	1.28	0.97	0.72	0.73	0.68	0.67
Yucatán	1.77	1.3	1.34	0.87	0.90	0.72	0.75	0.84	0.88
<i>Centre</i>	<u>0.86</u>	<u>0.65</u>	<u>0.68</u>	<u>0.5</u>	<u>0.52</u>	<u>0.73</u>	<u>0.76</u>	<u>0.76</u>	<u>0.8</u>
Guanajuato	0.82	0.54	0.65	0.46	0.48	0.65	0.68	0.84	0.88
Hidalgo	0.79	0.62	0.83	0.43	0.45	0.66	0.69	0.61	0.64
Morelos	1.28	0.79	0.74	0.79	0.81	0.77	0.8	0.77	0.81
Puebla	0.87	0.7	0.72	0.53	0.55	0.65	0.68	0.69	0.73
Querétaro	0.76	0.51	0.53	0.41	0.43	0.86	0.9	1.14	1.2
State of Mexico	0.64	0.68	0.56	0.51	0.53	0.97	1.02	0.72	0.76
Tlaxcala	0.84	0.72	0.7	0.37	0.38	0.55	0.58	0.53	0.55
<i>South</i>	<u>0.6</u>	<u>0.4</u>	<u>0.41</u>	<u>0.4</u>	<u>0.41</u>	<u>0.59</u>	<u>0.52</u>	<u>0.51</u>	<u>0.53</u>
Chiapas	0.74	0.5	0.52	0.4	0.42	0.87	0.5	0.44	0.44
Guerrero	0.41	0.28	0.29	0.4	0.41	0.53	0.56	0.52	0.55
Michoacán	0.77	0.49	0.51	0.42	0.44	0.55	0.58	0.63	0.66
Oaxaca	0.46	0.31	0.32	0.36	0.37	0.4	0.42	0.45	0.48

Source: Aguilar-Retureta (2015)

(*) Oil production excluded.

To start with, Figure 1 depicts the standard deviation of the GDP per capita (with and without oil production) at the state level, which can be seen as an analysis of σ -divergence.¹⁵ As can be seen, Mexican regional inequality has followed a ‘N’ trend in the long-term. The reasons for the inequality increase of the early decades, which lasted until the 1940s (and was especially intense during the 1920s), can be understood by looking at the income per capita estimates. During the primary-export period, the North region and Mexico City had an extraordinarily good performance relative to the national average. Mexico City started with a GDP per capita 2.63 times as large as the national one in 1895, and increased up to 2.83 in 1930. In the North region, the equivalent figures were 1.94 and 2.27. At the same time, other regions lost positions relative to the national average. This was the period in which the North/South income division was consolidated, since the south region lagged behind and would never significantly converge again with the national average (see Table 1).



Source: See text

¹⁵ All inequality indices used in this section reflect σ -convergence, since their aim is to measure regional dispersion of income among states.

From the 1940s onwards, coinciding with the ISI model consolidation, an accelerated process of regional income convergence took place. This tendency continued until the economic liberalization of the 1980s. From then on, regional divergence has been a constant –with the exception of the 2000s. This recent divergence can be explained because, while the poorest states (mainly the south) have remained far below the national average income, the north-border region has kept its income advantage and some particular states, such as Guanajuato (Centre-north region), Querétaro (Centre region), and Quintana Roo (Gulf of Mexico region), have improved their income performance (Rodríguez-Oreggia, 2005). In addition, Mexico City’s GDP per capita experienced an upswing pattern during this period (from 2.00 to 2.54 times the national average between 1980 and 2000).

The oil sector did not have any significant impact on regional disparities before the 1970s first oil boom. As Figure 1 depicts, when oil production is considered, the reversal of the convergence process begins around 1970, only a few years before the breakpoint of the data when oil production is excluded. The highest impact of the oil industry took place during the oil production boom of the last decade of the analysis (2000-2010). As a consequence, the inequality trend is totally different between both series during this decade. If oil production is included, the series shows a strong process of regional divergence (up to a level close to those of 1950). However, when oil is excluded, this was a period of slight income convergence among the states. From now on the analysis will be limited to the series without oil.¹⁶

¹⁶ The literature on Mexican regional disparities has often warned against the bias associated to oil production. See, for instance, Esquivel (1999), Sánchez-Reaza and Rodríguez-Pose (2002), and Aroca et al. (2005). Due to its extremely high spatial concentration, the oil industry production could cause a *distorted* picture of some regions’ incomes per capita, given that those regions may not really benefit from oil incomes.

These results are consistent with the interpretations suggested in previous analysis, with the only difference that, due to the scarcity of data, previous research had completely overlooked the first regional income disparity upswing (1895-1930). Rather, as mentioned before, most analyses have so far focused either on the convergence period under way from the 1940s onwards or, even more, on the inequality increased that took place after the economic liberalisation which started in the 1980s. Sánchez-Reaza and Rodríguez-Pose (2002), for instance, observe that, after controlling for possible biases related to the inclusion of oil-producing and *maquiladora*-based states, the economic openness period that started in 1985 appears to have led to a divergence process, in which the states closest to the US market have been the most benefited. This hypothesis is also supported in Chiquiar (2005), who focus his analysis on the post-NAFTA period. The author stresses that the winners of the divergence process that was triggered by liberalization were those states that had a higher initial endowment of human and physical capital. These were mainly located in the North, and they could also have benefited from its proximity to the US market (Chiquiar, 2005: 258).

As has been indicated, previous literature has been mainly based on the traditional β -convergence analysis, missing therefore some significant dimensions of the long-term evolution of regional income disparities.¹⁷ Figure 2 presents several alternative income inequality measurements to the standard convergence analysis, such as the Williamson Index, the Gini coefficient, the Theil index, and the Coefficient of Variation. The former is especially useful, since takes into account the effect of each state's population on regional income disparities, by weighting deviations with population shares. Thus, less populated regions have a minor impact

¹⁷ One exception is Aroca et al. (2005), in which the authors employ techniques taken from the spatial economics literature to describe the regional income growth in Mexico for the period 1985-2002 (see Section 5).

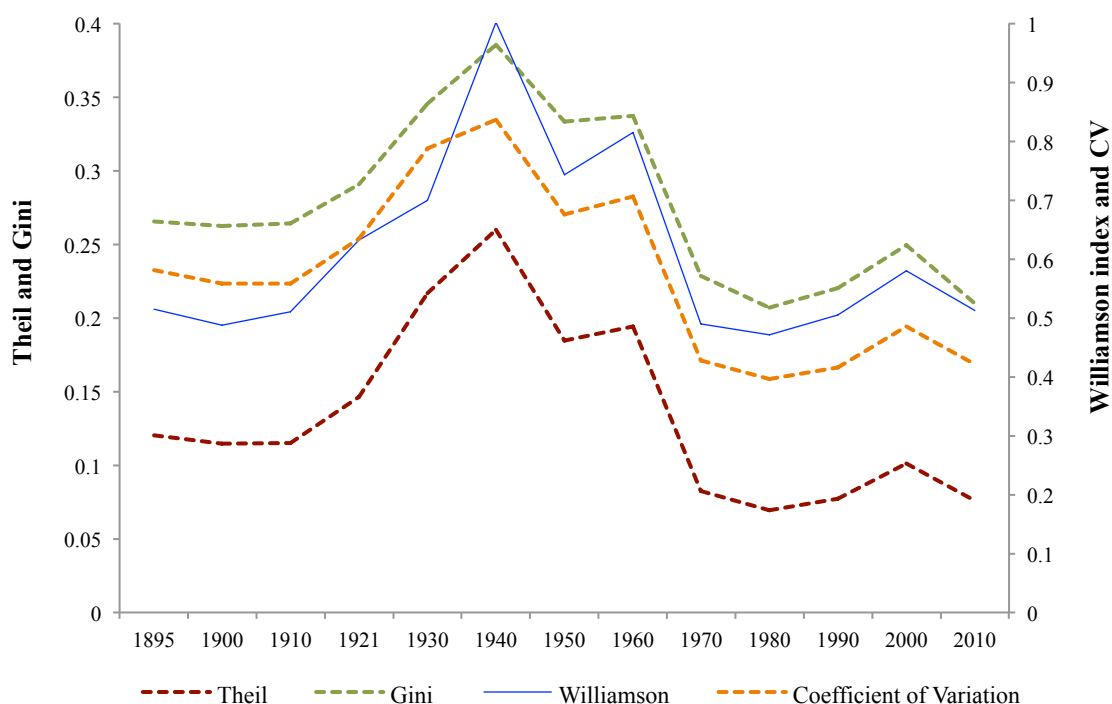
in the index (and *vice versa*).¹⁸ Although the general trend is still the same as in the standard deviation, this index would suggest a slightly interruption of the convergence process during the 1950s. This may be explained for two main reasons. The first one is the comparatively good performance of Mexico City, by far the most populated region of the country (it concentrated 11.8% and 14.0% of national population in 1950 and 1960 respectively), and whose GDP per capita, relative to the national average, increased from 2.71 in 1950 to 2.76 in 1960. The second reason is the low population density of some of the rich states that were performing worse than the national average, such as Baja California Norte (with 0.8% and 1.4% of the national population in 1950 and 1960), Baja California Sur (0.2% in both years), and Quintana Roo (with 0.10% and 0.14% of the national population in 1950 and 1960). These states went from having a relative GDP per capita of 2.96, 1.22, and 1.99 in 1950 to 1.89, 0.96 and 0.50 in 1960, respectively. By contrast, during the 1960s Mexico City's GDP per capita converged with the national average (from 2.76 in 1960 to 1.95 in 1970), as did other highly populated rich states, such as Nuevo León, which had a relative GDP per capita of 2.13 in 1960, and 1.69 in 1970.

¹⁸ The Williamson index, proposed in Williamson (1965), is calculated as follows:

$$WI = \sqrt{\sum_{i=1}^n \left(\frac{y_i}{y_m} - 1\right)^2 \frac{p_i}{p_m}}$$

where y is income per capita, p is population, and i and m refer to the i -region and the national total, respectively.

Figure 2
Inequality index: Theil, Gini, Williamson and Coefficient of Variation, 1895-2010.



Source: See text

Both the Gini coefficient and the Theil index increase with income inequality, and their values range from 0 to 1. Once again, a N-shape pattern emerges in the long run. In fact, the trend shown by both indices is very similar, and follows closely the evolution of the Williamson Index. The earlier twentieth century remains as the period of fastest regional income divergence, and the maximum levels of inequality were reached in 1940, much later than in most industrialized economies or Spain but earlier than in other European peripheral countries, such as Italy or Portugal.¹⁹ The levels of the Gini and Theil indices in Mexico are relatively high in comparison with those found in the international literature. For instance, the maximum value of the Gini index in Italy, Spain and Portugal in the long term was around 0.21, i.e. half of

¹⁹ In Spain, the Gini index of regional inequality reached its maximum in 1920, in Italy in 1950 and in Portugal in 1970 (Herranz-Loncán and Martínez-Galarraga, 2013:7).

the maximum value reached in the Mexican case. The Theil index offers similar results: while the maximum value in the Mexican case was close to 0.25, the Italian, Spanish and Portuguese maximum values were 0.07, 0.09, and 0.08 respectively (Herranz-Loncán and Martínez-Galarraga, 2013:7).²⁰ It is also interesting to mention that while in Mexico the inequality peak is observed in 1940, in the industrialised countries, this peak has been observed during the 19th century. In this sense, the Mexican case could slightly match with some peripherals European economies such as Italy and Spain (Herranz-Loncán and Martínez-Galarraga, 2013). Finally, the trend followed by the Coefficient of Variation is also the same as in the other indicators. The international comparison of the CV levels reinforces the idea that Mexico had higher levels of regional income inequality than the core economies. Following Crafts (2005), Britain's CV values, which have been regularly used as a reference for the core economies, ranged between 0.10 and 0.25 in the long term (1871-2001). Meanwhile, in the Mexican case CV values have ranged from 0.39 to 0.83.

Figure 3 shows the Herfindahl-Hirschman Index (HHI) of Mexican regional incomes and the share of Mexico City within the national total GDP. The HHI offers an alternative approach to the regional income disparities, since does not take into account the state relative GDP per capita, but the share of each state within national GDP, measuring therefore the level of spatial concentration of national income. The HHI is defined as:

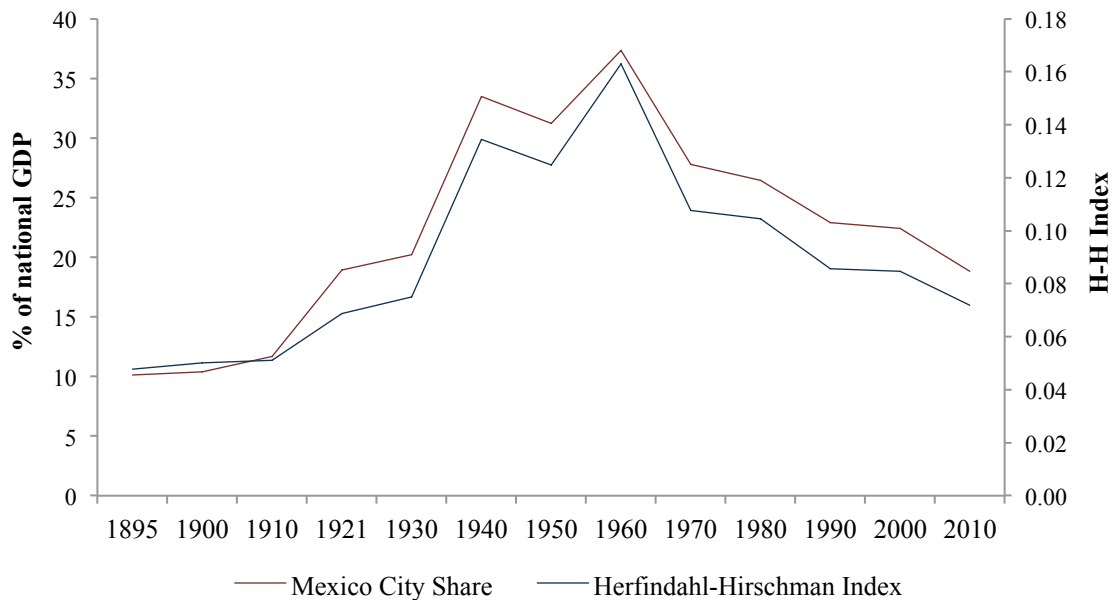
²⁰ Differences in the number and scale of the spatial units in each country are a potential limitation in this comparison. However, the number of Mexican states (36) lies in between the number of Spanish provinces (50) and the number of Portuguese districts (18) and Italian regions (19).

$$H_j^C = \sum_{i=1}^N \left(\frac{X_{ij}}{\sum_{i=1}^n X_{ij}} \right)^2 \quad (1)$$

where X_{ij} is the GDP for region i and sector j .

This index ranges from 1 (when all activity is concentrated in one region) to $1/n$ (when the activity is equally distributed among the n regions of a country). In Mexico, the index follows an ‘inverted-U’ pattern, in which the divergence process of the period 1980-2010 is missing. In addition, the initial process of increasing concentration extends until the 1960s, and not until the 1940s as in the case of the previous indices. Both differences respond to one fact: the economic importance of Mexico City, the biggest economic centre of the country. As Figure 3 shows, there is a close correlation between both series.²¹

Figure 3
Herfindahl-Hirschman Index, 1895-2010 and the Share of Mexico City GDP in national GDP



Source: See text

²¹ This is rather usual in countries in which one economic centre concentrates a large part of total GDP. See, for instance, the case of Chile and its capital Santiago (Badia-Miró, 2014).

The trend displayed by the HHI, together with Mexico City's GDP share, complements the description made in Section 2. Previous literature has insisted that the ISI model (1930-1980) boosted the concentration of economic activity in Mexico City. However, the figure shows that this process started earlier, in the 1910s, during the export-led growth model. Concentration in the capital reached its maximum in 1960, and the sudden decrease of the HHI and the Mexico City's GDP share during the 1960s can be partially explained by the behaviour of the State of Mexico, which was by then becoming, to a large extent, an extension of Mexico City. So, while Mexico City lost 10.7 percentage points of participation in the national GDP from 1960 to 1970, the State of Mexico won 4.8 points in the same period.²²

Things were completely different from 1980s onwards, when both Mexico City's and the State of Mexico's GDP shares fell. From 1980 to 2010, they lost 7.6 and 1.2 percentage points of participation in national GDP, respectively. On the contrary, the 'winners' in this period, as mentioned before, have been those states that could benefit most from the economic openness policy. The main ones were the north border states, led by Nuevo León, which won 2 points of national GDP since 1980, and also some central and southern states, such as Guanajuato, Querétaro and Quintana Roo, which won 1.2, 0.9 and 1.2 percentage points of participation in national GDP from 1980 to 2010. In Guanajuato and Querétaro, large foreign investment has contributed to the development of the capital-intensive industrial sector, whereas the Quintana Roo case has benefited from the development of tourism.

Summing up the evidence in Figure 1 to 3, it is interesting to observe that the increasing concentration of economic activity in Mexico City was accompanied, at

²² The rest of the Mexico City's GDP share lost was distributed among several states, causing marginal changes in their GDP shares. The only exception to this pattern was the state of Jalisco, which won 2.5 points within national GDP in the same period.

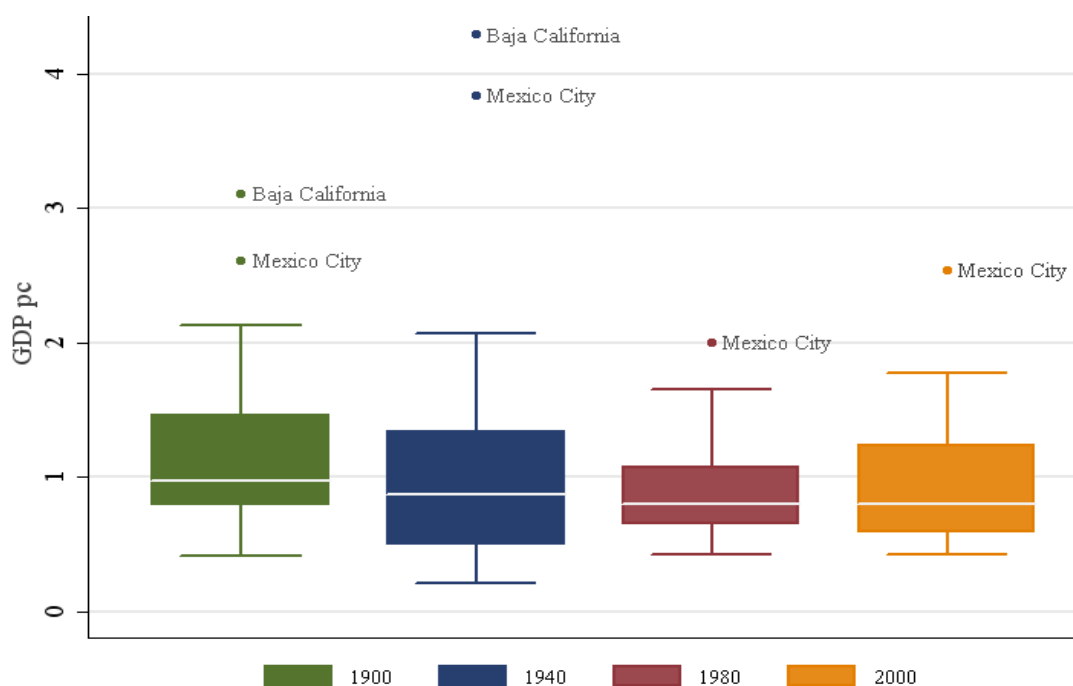
least since 1940, by a regional convergence process, which brought the southern regions close to Mexico City in terms of average productivity. There are two potential explanations of this convergence. Firstly, the concentration of industry in Mexico City boosted the agglomeration of other activities with low productivity levels, mainly within the service sector. Secondly, productivity in the primary sector of the southern regions increased substantially, due to large migration flows to the rest of the country. By contrast, the dispersion of industrial activity since the opening of the economy has not been accompanied by income convergence, as in most Western core economies, but by divergence, since industry tended to move towards regions with relatively higher income per capita levels.

All the indices estimated so far have shown the evolution of regional income inequality in Mexico in the long run. Nevertheless, as Quah's (1993) seminal work stressed, the classical convergence approach (Barro, 1991, and Barro and Sala-i-Martin, 1992) is unable to capture some crucial features of regional inequality, such as distributional dynamics. To address this issue, I present in the next paragraphs some indicators of the regional distribution of economic activity in Mexico. To start with, Figure 4 depicts a box-plots graph of regional GDP per capita figures. This graph offers a very illustrative pattern of regional income distribution for those years in which there was break in the evolution of regional income inequality (1900, 1940, 1980, 2000).²³ For instance, during the early divergence process occurred between 1900 and 1940, the interquartile range increased, driven by the relatively poorer states becoming even poorer. In fact, both the median income and the lower values

²³ Box-plot has three main components: the box, the whiskers, and the outliers (or the extreme values). The box is the interquartile range (IQ), being the distance between the 25th and 75th percentiles. The line within the box represents the median income. The whiskers represent the upper and lower values: the upper/lower value is the largest/smallest data point less/greater than or equal to the 75th/25th percentile value plus 1.5*(IQ). The values out of the whiskers are considered extreme values, and are plotted individually (i.e., these values are not considered in the percentiles).

dropped in relative terms. On the other hand, quite surprisingly, the upper value, together with the 75th percentile, remained fairly the same. The only group of states that actually increased the income level were the top extreme values (Baja California and Mexico City), which achieved, as mentioned before, values up to 3 or 4 times the national average.

Figure 4
Box-plots estimates: 1900, 1940, 1980 and 2000. (Mexico=1)



Source: See text

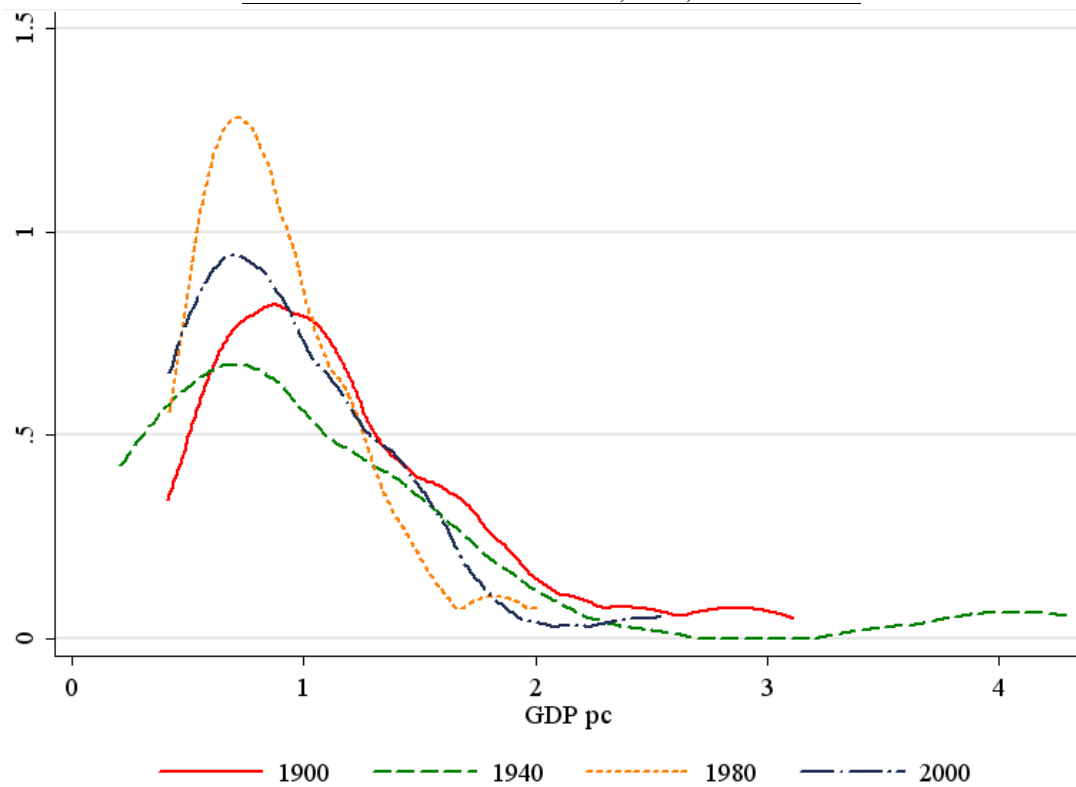
Later on, the strong process of convergence between 1940 and 1980 is also reflected in the main components of the 1980's box-plot. Not only the interquartile range is the narrowest over the long run, but also the lowest and upper values, including the extreme values (in which only Mexico City remains), tended to concentrate around the national average. This suggests that σ -convergence was driven by both the poorer states improving their economic performance and the

richer states falling towards the national income average.²⁴ Finally, during the divergence period that started in 1980, the interquartile range increased again, mostly because of the rich states and Mexico City moving farther away from the national average, where the incomes of the poorer states remained rather stable in relative terms.

Figure 5 shows the Kernel distributions for each of those years, as a complement of the box-plot analysis. The shapes of the curves are also in line with the income inequality trends describe in Figure 2. So, the year with the greatest income inequality (1940) is also the year in which the peak of the distribution was lower, reflecting a very wide dispersion of regional income per capita figures. Instead, when regional disparities achieved its minimum (1980), the distribution was much more concentrated and, therefore, had a highest peak. It is interesting to observe that in 1900 and 2000 the shape of the distribution was very similar, which is consistent with the very similar levels of inequality in those two years (see Figure 2). Finally, an examination of the 1940 and 1980 density curves, suggests that the income convergence process that took place between those years was led by the rich states (namely, the north-border states and Mexico City) falling towards the national average, and in a lesser degree to an improvement in some non-rich states, such as the southern and some central regions.

²⁴ It is worth noticing that, as mentioned in Section 3, this was the period in which Mexico achieved its fastest economic growth over the long term. Therefore, as the values are presented in relative terms, having the richest states falling towards the national mean does not imply that those states became poorer.

Figure 5
Kernel distribution estimates: 1900, 1940, 1980 and 2000



Source: See text

The Kernel distributions also show that a few states always had levels of income significantly higher than the rest of the country, causing the rise, though in different degrees throughout the period, of the twin peaks described in Quah (1997). This was specially marked in 1940 (the year of the highest level of income inequality), in which the GDP per capita of Mexico City and Baja California reached their maximum relative value (3.84 and 4.29 times the national GDP per capita, respectively). This is reflected in a long right-tail of the distribution, which was accompanied by a relatively long left-side, suggesting that 1940 was also the year in which the poorest states' relative position was worst. By contrast, although it is also clearly bi-modal, the 1980 distribution is the narrowest. Once again, this reflects the relative high level of the GDP per capita of Mexico City. The new divergence

process from the 1980s onwards is once more reflected in a lower peak and an increasing dispersion of the right tail of the distribution.

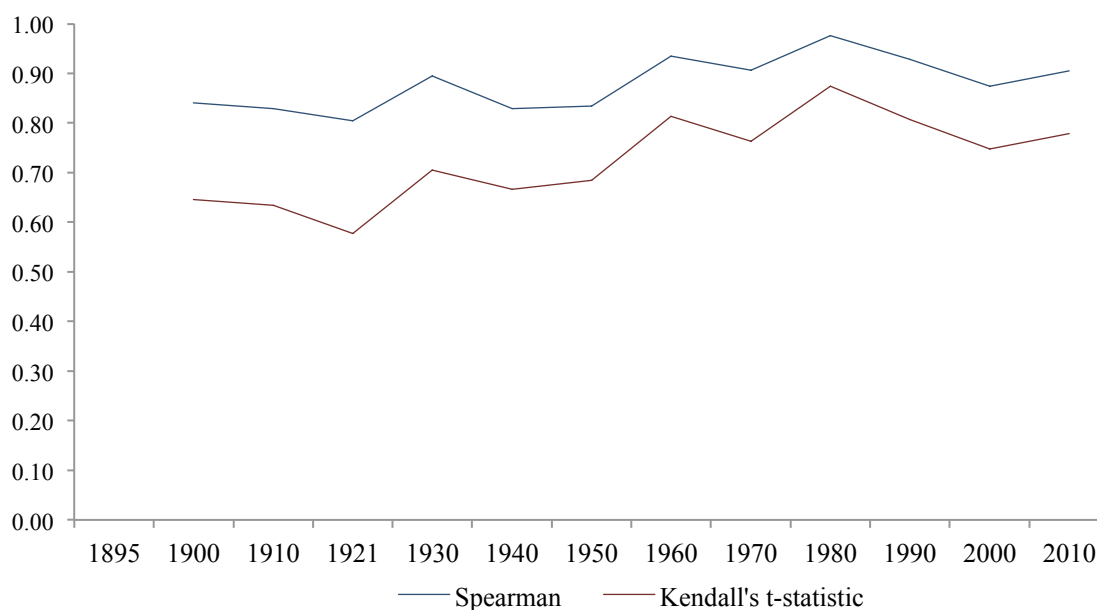
Kernel densities provide relevant information for a complete understanding of income distribution, but they do not give information on the transition from one snapshot to another (Aroca et al., 2005:349). It would be important, for instance, to know if the states at the end of the right tail of the distribution were always the same, or whether there is a random behaviour, with states moving up and down the distribution. In order to provide an insight of the states' rank mobility, Figure 6 presents the Spearman and Kendall's τ -statistic.²⁵ The Spearman correlation and the Kendall's τ -statistic range from -1 to 1. In both cases, the higher the coefficient, the lower the rank mobility (being 1 the value representing no mobility).²⁶ In the Mexican case, rank mobility was very low in the long run, which is consistent with the general picture provided in Table 1, and supports the idea of a persistent north-south regional income division. Furthermore, there is not a clear correlation between the periods of σ -convergence or divergence and the evolution of rank mobility. While all income dispersion indices confirm the N-shape trend in the long run, both the Spearman and Kendall τ -statistics experience a constant increase. The only exception is the period of stagnation or slight decrease of the indices from the 1980s to the 2000s, which could be related to the process of economic openness and the

²⁵ The Spearman coefficient of correlation is calculated as: $\rho = 1 - \frac{6 \sum d^2}{n(n^2-1)}$, where n is the size of the sample, and d is the difference between the rank scores of two variables X and Y (in our case, the income rank in two different periods). Kendall's τ -statistic considers the degree of concordance in the rankings of all pairs of observations for two variables. In the context of regional income mobility, the first variable would be the regional incomes for the initial year, while the second would be the incomes in the end year of the interval period. If two regions have the same relative rankings in both periods that pair is said to be concordant. However, if the relative rankings of the two switch over the interval, then the pair is discordant. Kendall's τ -statistic is measured as: $\tau = \frac{N_c - N_d}{(n^2 - n)/2}$, where n is the number of observations, N_c is the number of concordant pairs, and N_d the number of discordant pairs. With n observations there are $(n^2 - n)/2$ pairwise comparisons to be made.

²⁶ In the Spearman coefficient, having a $d^2=0$ leads to a $\rho = 1$, while in the Kendall's τ -statistic, having a $N_c=(n^2 - n)/2$, and therefore a $N_d=0$, means a value of $\tau=1$.

cases of successful states that might be affecting the national ranking (such as Guanajuato, Querétaro, Quintana Roo, and some north border states which were ‘falling-behind’ during the ISI period).

Figure 6
Spearman and Kendall's τ -statistic, 1895-2010



Source: See text

4. A spatial-econometrics analysis: Moran's I

This section aims at testing, through the estimation of the Moran's *I* statistic, whether the distribution of regional income has been characterized by statistically significant spatial autocorrelation over the period under study. High spatial correlation would be associated to a high level of spatial *clustering* of either rich or poor regions. When there are significant levels of spatial clustering, it means that the income observed in one state is relatively close to the income of the neighbouring states. In the opposite case, in the absence of statistical significant correlation, the

incomes of neighbouring states are randomly distributed. The global Moran's I -statistic is calculated as:²⁷

$$I_t = \frac{n}{S} \frac{\sum_{i=1}^n \sum_{j=1}^n w_{ij} z_i z_j}{\sum_{i=1}^n z_i^2}, \forall t = 1, 2, \dots, T \quad (2)$$

where n is the number of states, w_{ij} are the elements of a binary contiguity matrix (that take the value 1 if the states i and j are neighbours by sharing a common border, and 0 otherwise), S is the sum of all the elements of w_{ij} , and z_i and z_j are normalized vectors of the log of per capita GDP of states i and j .

I_t is actually an average of N "local" Moran indicators (equation 3), measured at the state level and which allows analysing spatial clustering among neighbouring states:

$$I_i = \frac{z_i \sum_j w_{ij} z_j}{\sum z_i^2 / n} \quad (3)$$

Moran's *I-statistic* allows analysing whether the north/south persistent income division observed in the Mexican case has encouraged the development of spatial clusters in the long term, i.e., whether these patterns have gone hand in hand with a statistically significant income spatial autocorrelation among the rich/poor states. In the Mexican case, Aroca et al. (2005), and Germán-Soto and Escobedo (2011), have used these techniques for the most recent decades. While Aroca et al. aim to analyse the impact of economic openness on spatial distribution (1970-2002), Germán-Soto and Escobedo extend their research to 1940-2005. Both studies share the same conclusion: there has been a persistent low-income cluster in the south of

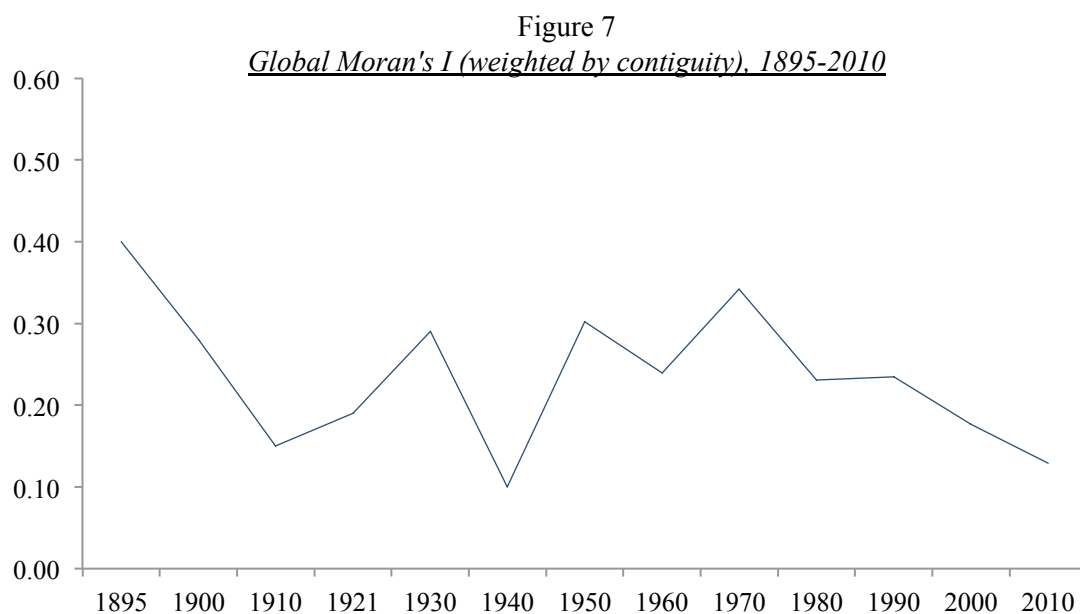
²⁷ For a detailed description of Moran's *I-statistic* and other spatial statistics techniques applied to economic growth see Rey (2001), and Anselin, Floraz and Rey (2004).

the country during the entire period under study. Nevertheless, Aroca et al. (2005) do not find statistically significant spatial autocorrelation in other areas of the country, while Germán-Soto and Escobedo observe the existence of high-income clusters of some northern and central states. This difference might be explained by the different GDP per capita database used by those authors. Aroca et al. (2005) introduced several corrections to the INEGI database, mainly related to the allocation of oil production, and also to the population data of some particular states in some years. Instead, Germán-Soto and Escobedo (2011) used the database presented in Germán-Soto (2005), in which, as mentioned before, there was no correction for oil production.

In this paper, I extend the time span further to cover all the period 1895-2010. In addition, I use a different database, which excludes oil production for the entire period by applying a homogenous methodology (see Aguilar-Retureta, 2015). The results are shown in Figure 7 (global Moran's I estimate) and Map 2 (local Moran's I –clustering-).²⁸ As can be seen in the figure, the global level of spatial autocorrelation decreased at the beginning of the period to remain rather constant from 1910 onwards. The relatively high value of the global Moran's I in 1895 can be explained, essentially, by the presence of a cluster of high-income states in the north (Baja California Norte, Sonora and Sinaloa) which has disappeared from 1900 on. After 1900 no other significant high-income cluster of states appeared in Mexico, and the levels of spatial autocorrelation remained rather low, being mainly explained by similarities among neighbouring (poor) southern states, see Map 2. Unlike what

²⁸ As my state GDP per capita estimates for the period from 1895 to 1930 consider both Baja California territory (North and South) as a single state, as well as Yucatan and Quintana Roo (see Aguilar-Retureta, 2015), I have removed, from the Moran's I analysis, the Baja California South and Quintana Roo states for that period. The other alternative is to assign the same income values to Baja California North and Baja California South, and to Yucatan and Quintana Roo. This strategy, however, could bias the Moran's I results, since it would artificially impose perfect spatial income autocorrelation between two pairs of neighbouring states.

has happened with income inequality, the low level of autocorrelation was not significantly affected by changes in the economic policy model over the long term.



Source: See text

In order to illustrate spatial autocorrelation, Map 2 plots the statistically significant income clusters for the following benchmark years: 1900, 1940, 1980 and 2000. The maps confirm that, despite their relatively good economic performance, north-border states have not been consolidated as a rich cluster through the entire period. For a north-border income cluster to emerge it would have been necessary, due to the contiguity technique used as the basis of the spatial weighting matrix, not only to have a significant spatial income autocorrelation across the north-border states themselves, but also with their neighbouring states, namely the ‘second-line’ northern states (Sinaloa, Durango, Zacatecas and San Luis Potosí). This condition was not met during the period under study. Instead, spillovers from the north-border states to the ‘second line’ northern states has not been strong enough to boost a statistically significant high-income cluster in the northern region. On the contrary,

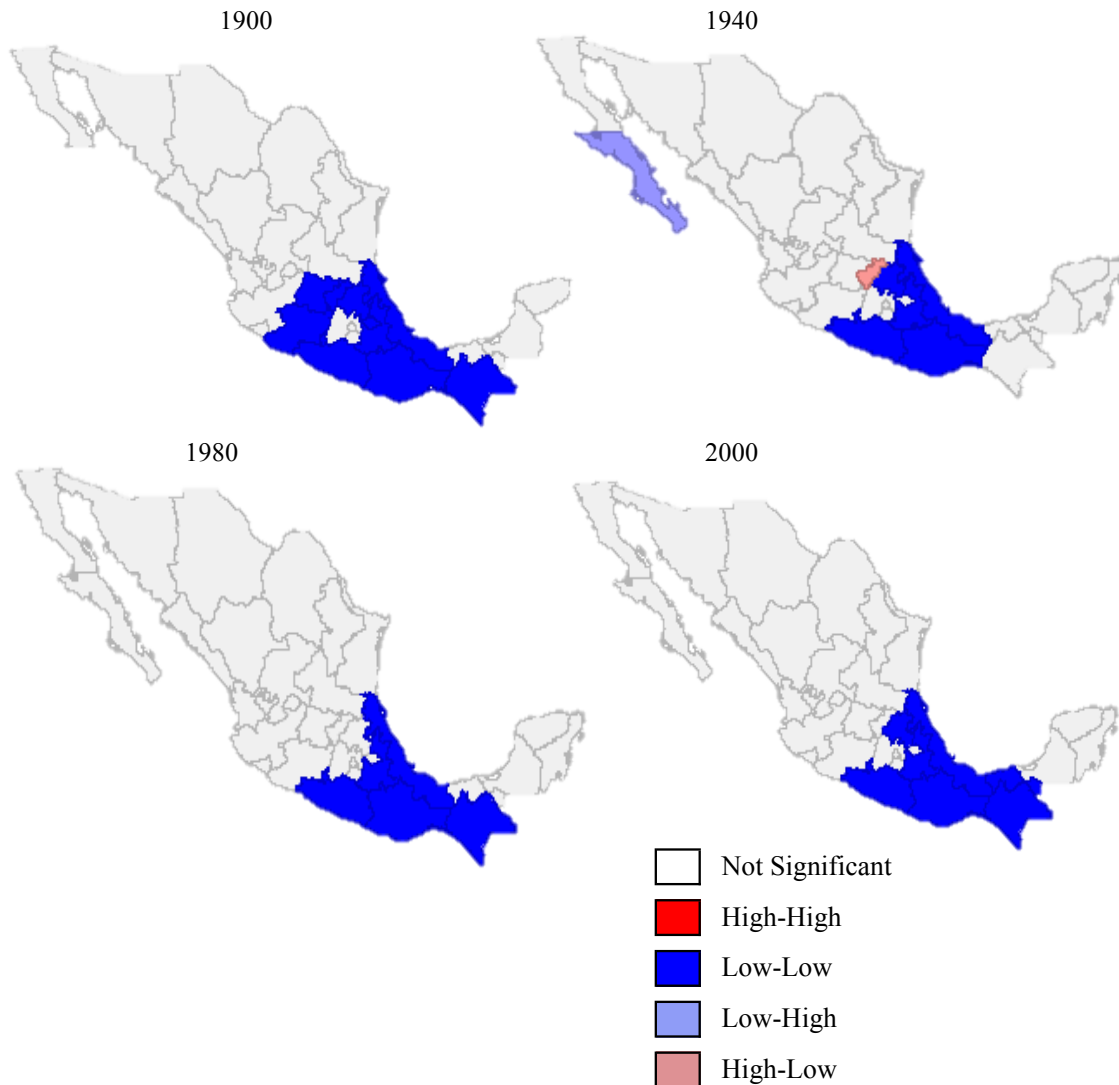
income levels decreased rapidly with the distance from the border (See Table 1), which is consistent with the fact that the relatively good economic performance of the north-border states is largely related to their integration with the US market. In this sense, Hanson (2001), using data on the 10 major Mexican-US border-city pairs, has observed that the growth of export manufacturing in Mexico can account for a substantial portion of employment growth in US border cities between 1975 and 1997.²⁹ In other words, the backward and forward linkages of the main economic activity of northern regions (manufacturing) have been largely located in the US market, especially since the increase in economic openness that started in the mid-1980s.

By contrast, the existence of a persistent poor income cluster formed by the southern states is unquestionable.³⁰ This finding is consistent with Aroca et al.'s (2005) suggestions for the early years of economic openness (1985–2002). These authors consider the consistently poor income of the southern cluster as the central element behind the divergence process that has taken place since the beginning of the liberalization process and, especially, since the signature of NAFTA (Aroca et al., 2005: 372). However, Map 2 indicates that the poor-income clustering of the southern states has not been associated to a particular economic model but has been a persistent feature of the country's regional distribution, in which the southern region seems to be trapped in a long run dynamic of poor economic performance.

²⁹ By contrast, the author did not find statistically significant correlation between local employment in the U.S. interior cities and Mexican export production (Hanson, 2001: 285).

³⁰ The case of Querétaro in 1940 (light-red state) is a particular case of one rich state (Querétaro) surrounded by very poor states. By 1940, Querétaro had a GDP *per capita* 1.16 times as the national one. On the other hand, its neighbouring states: Hidalgo, San Luis Potosí, Guanajuato and the State of Mexico had: .51, .56, .50, and .49, respectively.

Map 2
*Local Moran's I. Significant Clustering Maps: 1900, 1940, 1980 and 2000*³¹



Source: Own elaboration, using GeoDa

Map 2 also shows that Mexico City, despite its historical economic dynamism, has been unable to foster the formation of a statistically significant cluster in the centre of the country. In other words, Mexico City's economic dynamism has not been strong enough to spread to the neighbouring states, not even

³¹ These clusters are derived from the local Moran's I- statistic and are statistically significant at the 5 per cent.

during the ISI period, when economic concentration in Mexico City achieved its maximum (see Figure 3). Similarly, the recent dynamism of Quintana Roo has not affected its neighbouring states (Yucatán and Campeche).³² These examples, together with the north-border states experience, suggest that, in the Mexican case, having rich neighbours does not involve a greater chance of being prosperous.³³

5. Concluding remarks

This paper has offered new evidence of the evolution and dynamics of regional inequality in Mexico over the long run (1895-2010). The evolution of spatial disparities in Mexico has some specific features that distinguish it from previous analyses of the core economies. .

Mexican regional inequality has been characterized by a long-lasting north-south regional income division. Against this persistent background, over time Mexican regional inequality has followed an ‘N’-shape trend, which largely matches the different economic models that have been adopted in Mexico. Thus, the years of export-led growth, from the late 19th to the 1930s, were characterized by a strong regional divergence process. By contrast, during the ISI period (1940-1980), there was intense convergence among the Mexican regional economy and, finally, in the context of increasing international integration that started in the 1980s, divergence has again been the norm. Beyond those fluctuations, and regardless the historical period under consideration, regional inequality in Mexico has always been comparatively high.

³² This is largely a consequence of the location-specific character of tourism, which is the main engine behind Quintana Roo’s economic growth.

³³ Recently, Tirado and Badia-Miró (2014) have also used this technique for the Iberian case from an historical perspective. The authors conclude that, unlike Mexico, Iberia has experienced an increasing spatial correlation in the long run, which can be seen in the permanent increase in the values of both the global and the local Moran’s *I* statistics (led by the expansion of both rich and poor regions). However, they also find an administrative capital effect with no diffusion to the closest regions, as in the case of Mexico City.

The Herfindahl-Hirschman Index indicates that Mexico City's economic performance has been the main behind the spatial concentration of economic activity in the country. The gradual increase in concentration started in the early 1900s and reached its maximum ca. 1960, during the ISI period, the maximum level of economic concentration. Interestingly enough, and unlike what happened in the core economies, increasing concentration during the ISI decades was accompanied by strong regional income convergence, which would contradict both the Williamson curve and the NEG predictions.

As shown by the box-plot analysis, the early process of Mexican regional divergence, from the late 19th century to ca. 1940, was driven not only by the richest states becoming richer, but also by the poorest regions becoming relatively poorer. By contrast, the subsequent convergence was mainly associated to the rich states falling towards the national average income levels and, to a much lesser degree, to the improvement of the poorest states' positions. The Kernel densities confirm these conclusions, and suggest the rise of twin peaks explained in Quah (1997) during the entire period. Finally, the Spearman and Kendall's τ -statistics show a very low mobility throughout the period, which would be consistent with the idea of persistent spatial income distribution.

Such persistence has been confirmed by the Moran's I statistic of spatial autocorrelation, which show a permanent statistically significant income cluster of poor southern states. By contrast, the presence of spatial clustering in the northern region is rejected by the tests, which indicates that the relatively good income dynamic of the north-border states, clearly associated to their integration with the US market, has not spread to the neighbouring region. Likewise, the high income of

Mexico City has not radiated to other central states, not even during the ISI period, in which economic activity greatly tended to concentrate around this city.

This first approach to regional inequality will be the basis for further explanatory analysis, and the test of several hypotheses that may explain the particular features of regional economic inequality in Mexico and other peripheral economies. What role has played the industrialisation process and its location in the evolution of regional inequality? Is there a structural differential driving this tendency? Or, are agglomeration economies significant in this process? These are some of the questions that will be addressed in future research.

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