THE GDP PER CAPITA OF THE MEXICAN REGIONS (1895-1930): NEW ESTIMATES

José Aguilar-Retureta[∝]

July 2014

EL PIB PER CAPITA DE LAS REGIONES MEXICANAS (1895-1930): NUEVA ESTIMACIÓN

José Aguilar-Retureta [•]

RESUMEN

Hasta ahora, con la excepción de Appendini (1972) para 1900, no existían estimaciones de los PIBs estatales en México para el periodo anterior a 1930. El propósito de este trabajo es llenar este vacío presentando una nueva estimación del PIB per cápita estatal para los años de referencia seleccionados entre 1895 y 1930. En el trabajo se exponen la metodología y fuentes utilizadas para la estimación de la nueva serie, comparándola con las estimaciones previas disponibles, terminando con la presentación de una primera imagen en el largo plazo de los PIBs per cápita estatales en México (1895-2010).

Palabras clave: PIB Regional Mexicano, Desigualdades Regionales, Historia Económica, Crecimiento.

ABSTRACT

So far, apart from Appendini (1972) for 1900, there were no Mexican regional GDP estimates for the period before 1930. The aim of this paper is to fill this gap by presenting new Mexican regional GDP pc estimates for several benchmark years between 1895 and 1930. The paper presents the methodology and sources used to estimate the new series, compares them with the previous estimates, and offers a first long-term picture of Mexican regional pc GDPs (1895-2010).

Keywords: Mexican Regional GDP, Regional Inequalities, Economic History Growth.

[•] Universitat de Barcelona. Correo electrónico: jaguilre8@alumnes.ub.edu

THE GDP PER CAPITA OF THE MEXICAN REGIONS (1895-1930): NEW ESTIMATES[•]

1. Introduction

One of the most persistent characteristics in Latin America Economic History is the long-standing regional inequality within countries. The Mexican case is not an exception, since the country has been characterized by high regional inequality at least since the take off of modern economic growth during the *Porfiriato.* In this sense, although regional disparities have been well studied for recent years, there is very few evidence about the evolution of aggregate regional inequality in the very long term.[2]

In recent years, the available literature about the Mexican economic performance during the period in which the national market was integrated and modern economic growth emerged (1876-1930) has substantially increased. Nevertheless, the country's regional inequality has rarely been approached from a national perspective. In most cases, investigations with a regional scope are either descriptions of particular industries

[2] The regional inequality studies including years before 1940 were made, mostly, in the 1970s and early 1980s (Appendini, Murayama, and Domínguez, 1972; Unikel, Ruiz, and Garza, 1978; Hernández, 1980), with the exception of Ruiz Ochoa's work (Ruiz, 2007, 2010). In contrast, recent literature has been mostly concentrated on the period after 1940 and, especially, on the period of gradual opening of the economy that started in the early 1980s and was consolidated in 1994 when the NAFTA came into effect (see Mallick and Carayannis, 1994; Hernández, 1997; Esquivel, 1999; Cermeño, 2001; Sánchez-Reaza, and Rodríguez-Pose, 2002; Fuentes and Mendoza, 2003; Chiquiar, 2005; Jordaan and Sánchez-Reaza, 2006; Jordaan, 2008; Hernández, 2009). In addition, some recent studies have applied the New Economic Geography framework to the analysis of Mexican regional inequalities since 1940, during the transition from being a relatively closed economy to a very open one (see Hanson, 1996, 1998a, 1998b; Krugman and Livas, 1996; Jordaan and Rodriguez-Oreggia, 2012).

in particular regions, or studies of a specific economic sector across the country. This could respond, to some extent, to the lack of some of the most common indicators of regional economic activity, such as regional GDPs. This, in turn, has limited our understanding about the reasons for the persistent regional inequality in the country.

This paper seeks to fill this gap by providing a new estimation of the Mexican regional GDPs *per capita* for the benchmark years 1895, 1900, 1910, 1921 and 1930. For this purpose, I disaggregate the national GDP across the Mexican states by taking into account, depending on source availability, two different strategies. First, I give priority to regional direct production sources and, second, in those cases for which production data is unavailable, I apply the Geary and Stark (2002) methodology. After presenting the estimation results, I link the new regional GDPs to the existing estimations from 1940s to nowadays, in order to offer a first picture of the economic regional performance in the long-term (1895-2010). Thus, this new database attempts to set up the basis for further investigations, seeking to place the Mexican case into the international literature on the patterns and causes of regional inequality since the national markets consolidation.[3]

The structure of this paper is as follows. The next section presents in detail the methodology and sources used to estimate the new regional GDPs pc. Section III presents the new estimates, and a comparison with the available figures for 1900 (Appendini, 1972), and 1930 (Ruiz, 2007). In Section IV, a long-run picture of the evolution of the Mexican regional GDPs (1900–2010) is presented by linking the new series to previous estimates. Finally, Section V concludes.

2. Methodology and Sources

2.1 Mexican regional GDPs in the long term: previous estimations

The *Instituto Nacional de Estadística y Geografía (INEGI),* the Mexican official national institute of statistics, does not have any estimates of the states' GDP for the years before 1970 (INEGI, 1985). For previous years, scholars have commonly used the estimations made by Kirsten A. Appendini (1978), either to use them directly or as a base for new estimations (Esquivel, 1999; Germán-Soto, 2005; Ruiz, 2006, 2007, 2010). Appendini estimated regional GDPs for 1900, 1940, 1950 and 1960 on the basis

---

[3] See a useful survey of this literature in Kim (2009) and further studies by Monasterio and Reis (2008), Rosés, Martínez-Galarraga, and Tirado (2010), Henning, Enflo, and Andersson (2011), Felice (2011), Klein and Crafts (2012), Martínez-Galarraga (2012), Badia-Miró, Guilera, and Lains (2012), and Badia-Miró (2013), among others.

of a homogenous methodology (see Unikel, Ruiz-Chiapetto, and Garza, 1978).[4] The method used by Appendini (1978) consists of disaggregating, by taking different output indicators at the state level, the national output of each sector across states, according to the relative participation of each state in each output indicator.

More recently, Ruiz Ochoa (2007) has offered an alternative estimation of regional GDPs pc at the state level for the years 1930, 1940, 1950, 1960 and 1965. This author uses the series provided by K. Appendini (1978) as a basis for all his estimates, and applies a very similar estimation methodology (see Ruiz, 2006).

2.2 Methodology

As mentioned before, this research aims to estimate regional GDP per capita figures from 1895 to 1930.[5] As in previous studies, I disaggregate, for each sector, the national GDP across states on the basis of several indicators. This implies that, for each sector, the sum of all states' GDPs is equal to the national GDP. As mentioned before, priority is given to direct production sources. Only in those sectors for which there is no direct information, such as industry for the early years and most services for all the period, I apply the indirect methodology developed by Geary and Stark (2002).

Geary and Stark's methodology is an indirect estimation technique to distribute national GDP figures among regions, under the assumption of perfect factor mobility and integration of national markets. This method uses information on relative wages and sectoral shares of employment. In the authors' words: *"The variables we employ are labour force and productivity, grouped by sector and by country [region]. (…) We assume that each country's [region's] sectoral labour productivity is reflected in its sectoral wage, relative to the UK [national] sectoral wage. Sector output is sector labour force times sector labour productivity. GDP in each country [region] is the sum of its sector outputs"* (Geary and Stark, 2002: 921). This methodology has been used in

---

[4] The regional GDP presented in Appendini (1978), for 1900 and 1960 had been previously published in Appendini, Murayama and Domínguez (1972). Moreover, the methodology applied in Appendini (1978) for the years 1940 and 1950 is the same that had been previously applied in Appendini et al (1972) for 1900 and 1960.

[5] In 1893 the *Dirección General de Estadística* published, for the first time, the "Anuario Estadístico de la República" (Mexican Statistical Yearbook), which involved a substantial quality improvement in national statistics. Moreover, the first national Population Census ("Censo Nacional de Población" by *Dirección General de Estadística*) was published in 1895. In Sandra Kuntz's words: *"…[by 1890] not only a wider statistic information is available, but it was also published regularly and under a more uniform criteria"* (Kuntz, 2002:227, my translation). By contrast, the available information for previous years is much scarce and does not allow estimating regional GDPs figures.

many recent works with a historical scope (Crafts, 2005; Badia-Miró, 2008; Felice, 2009; Henning et al., 2011; Rosés et al., 2010; Klein and Crafts, 2012; Martínez-Galarraga, 2012; Badia-Miró, et al., 2012).[6] Following Geary and Stark (2002:933), regional GDP is defined as:

$$Y = \sum_{}^{i} Y_i$$

where, Y_i is the state GDP, defined as:

$$Y_i = \sum_{}^{j} y_{ij} \ L_{ij}$$

y_{ij} being the output per worker in state i and sector j, and L_{ij} the number of workers in each state and sector. As we have no data for y_{ij} this value is proxied by the product of the national sectoral output per worker (y_j) times the ratio between the state's sectoral wage and the Mexican average (W_{ij}/W_j), under the assumption that each state's labour productivity in each sector is proportional to that state's sectoral wage. Thus, regional GDP is given by:

$$Y_i = \sum_{}^{j} \left[y_j \ \beta_j \left(\frac{W_{ij}}{W_j} \right) \right] L_{ij}$$

where, Y_i is the GDP of the state i, y_j is the national output per worker of sector j, W_{ij} is the wage paid in the state i in sector j, and W_j is the national average wage in each sector j, with β_j defined as a scalar which preserves the relative state differences but scales the absolute levels so that the state totals for each sector add up to the known national total:

---

[6] Among these, it is important to highlight Crafts' (2005) research, which modified the original method by using tax data to allocate non-wage income across regions. Rosés et al. (2010) also did a modification to the original method. Those modifications prove the flexibility of this methodology, which facilitates its adaptation to each economy's specific characteristics and source availability.

$$\beta_j = \frac{Y_j}{\Sigma \left[\gamma_i \left(\frac{W_{ij}}{W_j} \right) \right] L_{ij}}$$

There is a potential problem to apply this method to the Mexican case, which is associated to the Mexican labour market structure at the time. According to Kuntz (2010): "[during the Porfiriato] *although both population and the monetized sector of the economy increased, thousands of people still remained in their rural communities or haciendas as indentured labourers, and rarely participating in the market. […] In the South, masses of workers were incorporated into coffee and henequen plantations under labour relations that combined some degree of extra-economic coercion with low wage pay. However, it is not possible to estimate the number of workers involved"* (Kuntz, 2010:327, my translation). This situation could distort the results due to the underestimation of labour productivity, which might introduce biases in the distribution of national GDP among regions. However, this problem seems to affect mostly the primary sector, which is precisely the sector for which direct output information is more abundant and, therefore, where I do not need to apply the Geary and Stark methodology. In the case of the secondary and tertiary sectors there is abundant evidence that proves the existence of labour market mobility across regions and sectors responding to economic incentives such as higher relative wages (Kuntz and Speckman, 2011:517). Aurora Gómez-Galvarriato has found, in the case of the textile industry (the most developed one during the Porfiriato), that*: "... In 1893-1896 there existed a strong relationship between these two variables [labour productivity and wages]. (…)"* (Gómez-Galvarriato, 2002:299). In this regard, I actually limit the application of the Geary and Stark methodology to the industrial and some of the service sectors, which may be assumed to be less seriously affected by labour market rigidities. To prove the robustness of applying this methodology in the estimation, Graph 1 and Graph 2 show the correlation between the states' shares in the 1930 manufacturing output that result from applying the direct production and the Geary and Stark (2002) methodology.[7] As can be seen, the correlation between both values is fairly high, suggesting that the use of this methodology for previous years may provide likely results.

---

[7] 1930 is the first year in which I can perform this exercise, because is the date of the first complete Industrial Census (the previous Industrial Census of 1902 had many information gaps). The figure is based on population data taken from the fifth Census of Population (1930), and industrial wages and output at the state level from the First Industrial Census. The shares for each state are presented in Table A.1. of the Appendix.

Another estimation problem is related with the changes in the Mexican administrative division. During the period under study (1895–1930), the current State of Quintana Roo (which was only established as an autonomous State in 1974) changed its status several times, being considered either as a Federal territory or as a part of the Yucatán State. For this reason, when data is not available for this State, I assume that Quintana Roo's economic activity was computed within the State of Yucatán. Furthermore, during this period, the Baja California peninsula (nowadays divided into two autonomous States: Baja California North and Baja California South) was one single Federal territory. Therefore, I consider, for the period 1895-1930, the peninsula of Baja California as a single unit of analysis.[8]

Graph 1
Manufacturing distribution by states in 1930

$R^2 = 0,9685$

Geary and Stark's Method (y-axis)

Industrial Output (x-axis)

---
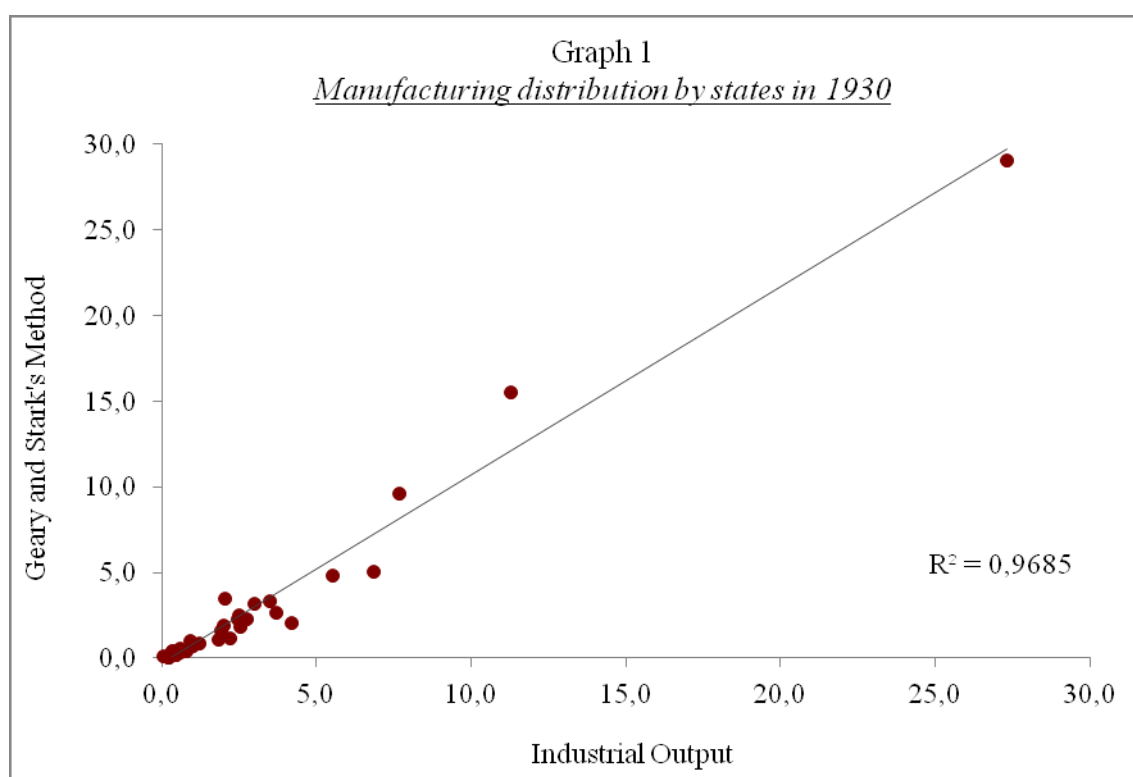
[8] This condition does not affect the overall results since the relative participation of both Quintana Roo's and Baja California's production in the national economy was very low (see the Appendix).

Graph 2
Manufacturing distribution by states in 1930
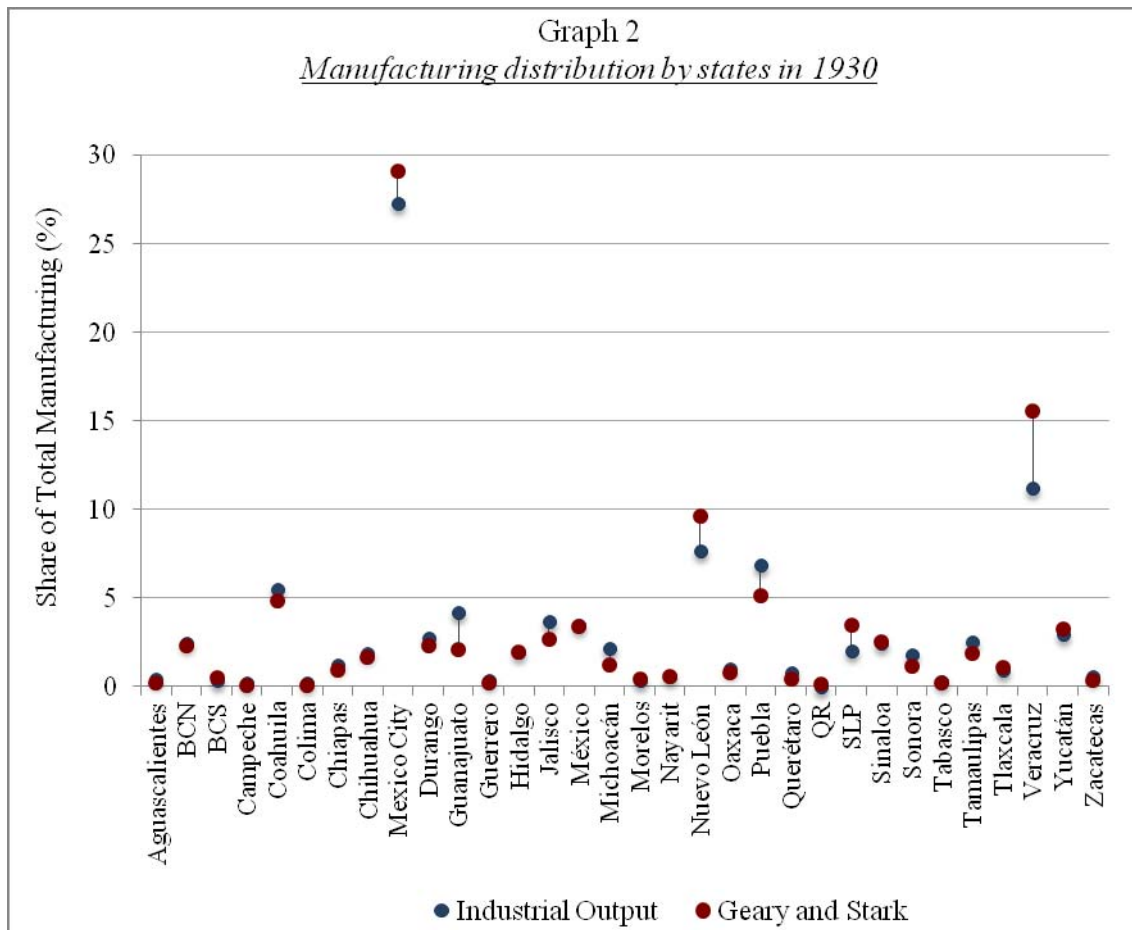
Source: See text.

2.3 Sources

There are two main series of Mexican aggregate GDP for the period under consideration, which were estimated by Enrique Pérez López (1960) and Mario Gutiérrez Requenes (1969) and cover the years 1895-1959 and 1895-1967 respectively. Both estimations have been repeatedly used in other works, and the National Institute of Geography and Statistic (INEGI) has reproduced Pérez López's estimation in the "Estadísticas Históricas de México" (2009). These, in turn, have been used by Angus Maddison (1992), and Barro and Ursúa (2008) in their databases. On the other hand, Leopoldo Solís used Gutiérrez Requenes' series in his work "La realidad económica mexicana: retrovisión y perspectivas", which has been widely used by Mexican and international scholars (Solís, 1970), and the Bank of Mexico has also included this series in its database.

As in the case of Appendini et al. (1972), I use the Gutierrez Requenes' (1969) national GDP series for my estimates, for two main reasons. First, Gutiérrez Requenes (unlike Pérez López), was explicit on both the methodology that he applied, and the sources he used for his aggregate GDP estimation. Secondly, Gutiérrez Requenes'

9

(1969) GDP is disaggregated into thirteen sectors (agriculture, livestock, forestry, fishing, mining, oil, manufacturing, construction, electric energy, transport, government, commerce, and others), while Enrique Pérez López's GDP is only disaggregated in seven subsectors (agriculture, livestock, mining, oil, manufacturing, transport, and other activities). Both reasons are important for this research since, whereas knowing the data and the method used by Gutiérrez Requenes to reconstruct the national GDP allows a more consistent estimation of regional figures, its higher disaggregation also allows a more precise distribution of national output.

As mentioned before, I distribute the different sectors of Gutiérrez Requenes' national GDP database among states following different procedures. Firstly, I distributed the sectorial production directly, on the basis of output indicators, for the cases of the primary sector (which includes Agriculture, Livestock, Forestry, Fishing-, Mining and Oil), and Commerce. By contrast, the Secondary sector (i.e. Manufacturing –with the exception of 1930-, Construction, and Electric Energy) and Services –with the exception of Commerce- (i.e. Transport, Government, and Others) are obtained by using the Geary and Stark (2002) method. [9] In the next lines I describe, in detail, the methodology and sources used for the estimation of each year and each economic sector.

a) *Primary sector*

   Agriculture

Agriculture is the sector for which quantitative information is more abundant during the period of analysis. For the years 1895, 1900, and 1910, the distribution of the national agriculture output among states is based on the production of twelve products: corn, bean, barley, wheat, sugar cane, cotton, henequen, coffee, tobacco, chickpea, vanilla, and rubber.[10] This sample includes those crops that were relatively important not only at the national level, but also at the state level. Thus, for instance, although the henequen production only accounted for a low share of the national production, it was extremely concentrated in one state (Yucatan). According to the *Estadísticas Económicas del Porfiriato: Fuerza de trabajo y actividad económica por sectores (1964)*, these products added up to 81.5%, 80.8%, and 79.9% of the total agricultural

---

[9] Table A.2 of the Appendix presents a summary of the methods used in each benchmark year and each economic sector.

[10] The 1910 estimates are based on state data for 1907, which is the last year of publication of the Mexican Statistical Yearbooks before 1910.

production in 1895, 1900, and 1910 respectively. The volume of production is taken from the Mexican Statistical Yearbooks published in those years, and prices come from the *Estadísticas Económicas del Porfiriato.* Corn, wheat and bean's prices are available at state level. For the rest, prices are at the national level.

For 1930, the national agricultural output is distributed according to the states' total agriculture production value, taken from the First Census of Agriculture and Livestock of that year. Finally, in the case of 1920 the quantity and quality of the available official statistical data is much worse, due to the Civil War's impact on the public institutions during the 1910s and 1920s. Therefore, there are no available data at the state level for most crops, and only some scattered information on some products such as corn, wheat and bean. For this reason, the agriculture values of 1921 are obtained by doing a lineal interpolation of the share corresponding to each state in 1910 and 1930.

I had to introduce some corrections on the raw data. In few cases, state-level prices of certain crops (such as corn, wheat or bean) were extremely high, distorting the general estimation. In those cases, I took the average prices of the Regional Division to which the state belonged.[11] Thus, in 1895 and 1900, I replaced the price of corn, wheat and bean in Chiapas and Oaxaca by the average prices of the South Pacific region, and, also in 1895, I replaced the price of corn in Veracruz by the average price of the Gulf of Mexico region. For 1910 I had to perform the same correction for the prices of corn in Sonora and Campeche, the price of wheat in Guerrero and Sonora, and the price of bean in Chiapas. Due to the absence of prices for Quintana Roo for 1910, I apply the same as in Yucatan. Finally, I have also replaced the production data of coffee, vanilla, and tobacco in Oaxaca for 1895 (which was unlikely high) by the average of the 1894 and 1896 figures, except in the case of vanilla, in which I take the 1898 figure, due to the absence of information for the in previous years. The final estimates of state agricultural output can be seen in Table A.3 of the Appendix.

Livestock

The only source that provides a complete livestock production database at the state level during the Porfiriato (1876-1910) is the 1902 Livestock Census, which is reproduced in the *Estadísticas Económicas del Porfiriato...*, and the main source for my

---

[11] I use the Regional Division proposed in the *Estadísticas Económicas del Porfiriato...* (1964).

estimates for 1895, 1900 and 1910.[12] In other words, and due to the scarcity of information for the years 1895-1910, I have to assume that the distribution of livestock production across states remained constant throughout the period. I only could take into account price differences among states, at least for some products. In my estimation I consider the production of cattle, pork and milk. Cattle and pork production is taken in kilograms (weighted in carcasses), and milk production is taken in litres. According to the *Estadísticas Económicas del Porfiriato...* these products represented 89.49%, 85.67% and 84.83% in 1897, 1902 and 1907 respectively of the total livestock production. Cattle and pork prices are available at the state level, but milk prices are only available at the national one.

The sources for 1921 and 1930 are the Statistical Yearbook of 1923-1924, and the First Census of Agriculture and Livestock (1930). For 1921 I take the total value of cattle, pork and goat (in current *pesos*) in 1924 to distribute the national livestock GDP across states.[13] In the case of 1930 I also consider poultry value. According to the mentioned sources, these products amounted to 79.5% and 83.3% of total production in 1921 and 1930 respectively. Table A.4 presents the new estimates of livestock production at the state level for all benchmark years.

Forestry and Fishing

Information on forestry is also available in the Statistical Yearbooks for the years 1895 to 1910. For 1895 I can only take tanning bark –in kilograms- as a *proxy* of the production for this sector, and for 1900 and 1910 I consider the production value (in gold *pesos*) of mahogany, cedar, mesquite, pine and oak. These products sum up to 74% and 73% of total forestry production in 1900, and 1907 respectively (*Estadísticas Económicas del Porfiriato...*). As in agriculture, no information is available for Forestry around 1920, and I assume the regional distribution of forestry production to be the same in 1921 and in 1930. The source for the 1930 estimation is the First Census of Agriculture and Livestock (1930), which provides the state Total Value of Forestry Production (in current *pesos*).

Fishing output at the national level is only available from 1921 onwards. This should not be a serious problem, since the share of this sector in the aggregate GDP is very low (0.04% in 1921 and 0.09% in 1930). As no statistical data is available for this

---

[12] The Statistical Yearbook does not take into account this sector at the regional level.

[13] Information before 1924 is too scarce to be used as basis for the estimation.

sector at the regional level, the fishing production of 1921 and 1930 was distributed across the coastal states, weighted according to each state's population. Table A.5 presents the estimates for both Forestry and Fishing.

Mining

Mining GDP is distributed among states on the basis of information on the output distribution of both 'mines in operation' and 'metal production' (excluding the iron and steel industry).[14] The source for 1895, 1900 and 1910 is the Statistical Yearbook series, which gives production data ("Metal Production Total Value" and "Mines Production Value") at the state level in gold *pesos*.[15] The estimation of 1921 involves two steps. First, the share corresponding to 'mines in operation' production is taken from the Mining Statistical Year Book of 1923 (*Anuario de Estadística Minera, 1923*). In this case, I sum the 'Production Value' in current *pesos* of gold, silver, lead and copper. These products account for around 85% of the total production of 'mines in operation' in 1923. Second, for the 'metal production', I carry out a lineal interpolation of the shares of the years 1910 and 1930.[16] For the 1930 estimation I use the First and Second Industrial Censuses, carried out in 1930 and 1935 respectively. Information on the output of the 'mines in operation' is obtained from the 1930 Census, and data on 'metal production' comes from the 1935 Census (I use the 'Total Value production' in current *pesos*).[17] Table A.6 presents the estimation results.

In some cases, the state shares within the national mining output undertook wide fluctuations that can be easily explained. For instance, the high share of Chihuahua in 1930 is explained by the huge production of silver and lead around that year. That share was not exceptional since, in 1927, Chihuahua produced 32% of the national mining production. On the other hand, the downtrend in Guanajuato in the 1920s and 1930s is explained by the deep mining crisis that took place in that state in those decades.

---

[14] 'Mines operated' production is the first step of the mining productive chain, and 'Metal production' correspond to any subsequent treatment received by metals. I add "Mines under operation" and "Metal production" on the basis of the indications of a working paper from the Bank of Mexico (1962) -where Gutiérrez Requenes developed his estimation-, and the Mining data presented in the First Industrial Census of 1930.

[15] For data availability reasons, I use information on 1898, 1899 and 1907 for 1895, 1900 and 1910. The only exception is Chihuahua in 1900, in which I use the 1900 figure due to the unlikely high level of the 1899 data.

[16] I assume that the ratio between the output of the 'mines in operation' and 'metal production' subsector was the average of the ratios of 1910 and 1930.

[17] To account for the effect of inflation, both values are converted to 1950 pesos by using the Requenes (1969) index prices.

Finally, the fluctuations in the Aguascalientes' share can be explained by the arrival of the Guggenheim company at the end of the 19th century, which established one of the most modern mining plants in America at a time when capital was fairly unevenly distributed across the Mexican states.

Oil

Oil production does not appear in national GDP until 1902 (with a very low participation in total production: 0.01%); therefore, I only consider this sector from 1910 onwards. Oil production at the state level, in barrel units, comes from E. DeGolyer (1993), the Statistical Yearbook of 1923–1924 and the First Industrial Census (1930), for the years 1910, 1921, and 1930 respectively. Table A.7 shows the oil production share at the state level; as can be seen there, oil production in those years was largely located in Veracruz.

b) *Secondary sector*

In the case of the secondary sector, I have applied the indirect Geary and Stark's (2002) method in order to distribute the national GDP across the regions, with the only exceptions of Manufacturing and Electric Energy in 1930. As mentioned before, this methodology requires, in addition to the national sectorial output, two main variables: labour force and wages, by economic sector and at the national and regional levels. In this sense, I have only considered male workforce data, due to the serious biases involved in the available industrial female labour figures.[18] This means, according to the Geary and Stark methodology, that I assume that the share (of the population) and the productivity of female workforce in each state is the same (relative to the national average) as that of male workforce.[19]

Manufacturing

---

[18] This bias problem is illustrated in Graph A.1 and Graph A.2, in the Appendix. These Graphs present the share between both the male workforce and female workforce on the total population at the state level, and show some large and unlikely differences across states.

[19] The same reasoning could be applied to the child labour.

For 1895, 1900 and 1910, manufacturing labour force data are obtained from the First, Second, and Third Mexican Population Censuses published by *Dirección General de Estadística*, and wages come from *Estadísticas Económicas del Porfiriato…* (1964). Actually, for these years wages are only available for the following macro-regions, which include several States: North, Gulf of Mexico, North Pacific, South Pacific, and Centre.[20] For the 1921 estimation, labour force comes from the Fifth Mexican Population Census and each State's relative wages are obtained as a weighted average of relative wages of 1910 and 1930 (the latter are taken from the First Industrial Census, 1930).[21] Finally, the regional GDP reconstruction of 1930 estimation is directly taken from the First Industrial Census (1930), which provides the total value of production and inputs. Table A.8 shows the estimates for this sector.

Construction and Electricity

Construction and Electricity sector estimates are obtained by applying the Geary and Stark methodology for all years, with the exception of the Electricity sector in 1930, in which I use production data coming from the First Industrial Census. The male workforce is taken from the Population Censuses of 1895, 1900, 1910, and 1940.[22] For 1921, I assume the same workforce structure across states as in 1910 (because the Population Census of 1920 does not has disaggregated data of these sectors). On the other hand, I assume wages in the Construction and Electricity sectors to be the same as in Manufacturing. Table A.9 shows both estimations.

c) *Services*

Government, Transport, Others

---

[20] The macro-regions are composed as follows. North: Coahuila, Chihuahua, Durango, Nuevo León, San Luis Potosí, Tamaulipas and Zacatecas. Gulf of Mexico: Campeche, Quintana Roo, Tabasco, Veracruz and Yucatán. North Pacific: Baja California, Sinaloa, Sonora and Tepic. South Pacific: Colima, Chiapas, Guerrero and Oaxaca. Centre: Aguascalientes, Distrito Federal, Guanajuato, Hidalgo, Jalisco, México, Michoacán, Morelos, Puebla, Querétaro and Tlaxcala. In the case of Nuevo León, I have always applied the wages of the highest-wage region, to account for the particular characteristics of that state's industry, which was one of the most modern in the country throughout the period (see, for instance: Haber, 1989; Cerutti, 1992; Marichal and Cerutti, 1997; and Kuntz, 2010).

[21] I give a two-thirds weight to the wages of 1910 and a one-third weight to the 1930's wages. This means that I assume that the structure of the manufacturing productivity in 1920 was more close to 1910 than 1930. This is based on recent evidence suggesting that the impact of the Revolution on the industrial sector was not destructive. Instead, with the exception of a few years of the 1910 decade, the modern industrial sector experienced a relatively intense and sustained growth between 1910 to 1930 (see Haber, 2010).

[22] The Population Census of 1930 does not offer, at state level, the workforce of Construction sector.

Government, Transport and Others Services' regional GDP are also obtained by applying the Geary and Stark methodology. The male workforce for the three subsectors comes from the corresponding Population Censuses (1895, 1900, 1910, 1921 and 1930). In the case of Government, I add the population employed in 'Public Services' and 'Armed Forces' for the years 1895, 1900 and 1910, while for 1921 and 1930 I take the 'Public Administration' workers. Government wages at state level comes from two sources: *Estadísticas Económicas del Porfiriato...* from 1895 to 1910 –for which I estimate a weighted average of 'Public Services' and 'Armed Forces' wages-, and the Statistical Yearbooks of 1930 for wages in 1921 and 1930 –in these years, I used wages in the 'Executive Power' sector.

For the Transport sector I use data on workforce in 'Communications and Transports', and the male workforce of Others services is the sum of 'Professionals' and 'Other Services' workers in 1895, 1900 and 1910, and the sum of 'Free Professions' and 'No Specific Occupations' workers in 1921 and 1930. As no wages data is available for these subsectors, I assume the wages to be the same in all regions. This means assuming equal labour productivity in those sectors across all states. The estimation results for these three subsectors are presented in Table A.10.

Trade

In the case of Trade –the only service subsector for which I have a direct production indicator-, I carry out a direct estimation on the basis of data on 'Declared Sales' at the state level. This information comes from the Fiscal Statistics Bulletins (1895, 1900 and 1910), and the Bulletins of National Statistics (1921 and 1930). The 'Declared Sales' data is based on the stamp duty –which was a federal tax with the same specifications across the states. Due to the scarcity of information, I use the 'Declared Sales' of 1918 and 1924 to estimate the 1921 and 1930 figures respectively. The final results are shown in Table A.11.

3. The Mexican regional GDPs pc, 1895-1930

3.1. The new estimates: a global overview

Map 1 shows the pc GDP estimates of the Mexican regions between 1895 and 1930. These results are fairly consistent with the economic history literature, and show that Mexican regional inequality was very high since the first stages of the process of national market integration. Regional disparities appear even clearer when the states are

grouped in macro-regions, showing the long-term differences between the north and the south of the country (see Table 1).

Map 1

Regional GDP per capita 1895-1930 (Mexico=1)

1895

1900

1910

1921

1930

GDP pc. Mx= 1

- ■ 4.40 - 1.52
- ■ 1.51 - 1.03
- ■ 1.02 - 0.82
- ■ 0.81 - 0.68
- □ 0.67 - 0.25
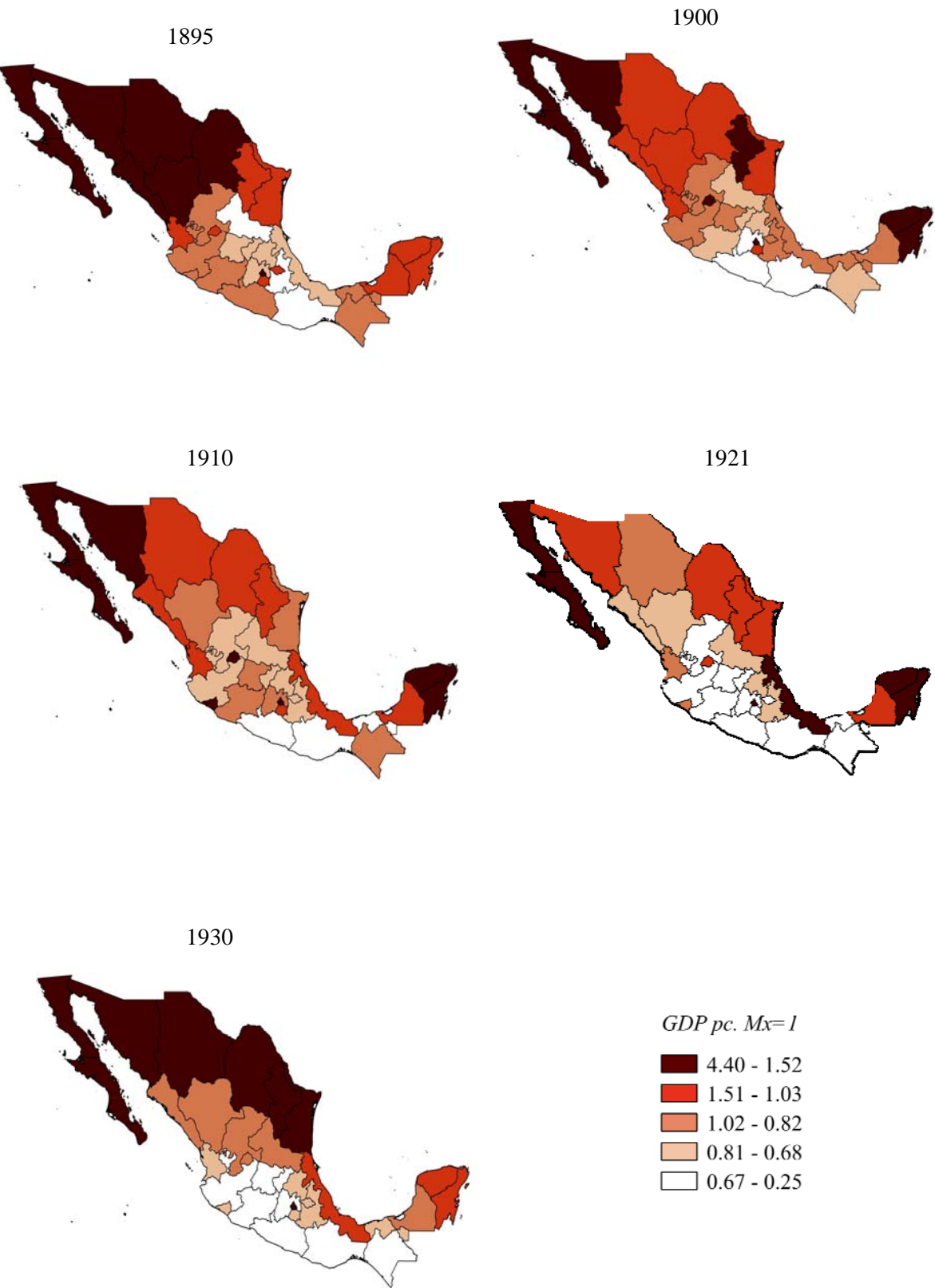
Table 1

Regional per capita GDP in Mexico, 1895, 1900, 1910, 1921 and 1930 (Mexico = 1)

	1895	**1900**	**1910**	**1910***	**1921**	**1921***	**1930**	**1930***
Mexico City	*2.68*	*2.61*	*2.46*	*2.47*	*2.53*	*2.99*	*2.71*	*2.83*
North	*1.94*	*1.71*	*1.53*	*1.54*	*1.48*	*1.67*	*2.21*	*2.27*
Baja California	3.63	3.11	2.28	2.29	2.79	3.09	4.40	4.54
Chihuahua	1.93	1.29	1.39	1.39	1.02	1.21	1.82	1.89
Coahuila	1.64	1.46	1.40	1.40	1.05	1.24	1.72	1.78
Nuevo León	1.25	1.60	1.28	1.28	1.28	1.51	1.66	1.71
Sonora	2.11	1.79	1.93	1.94	1.26	1.49	1.77	1.82
Tamaulipas	1.06	1.03	0.91	0.92	1.50	1.47	1.90	1.85
Pacific-North	*1.30*	*1.22*	*1.19*	*1.19*	*0.78*	*0.93*	*0.77*	*0.79*
Colima	1.02	0.91	1.52	1.52	0.89	1.06	0.80	0.82
Jalisco	0.95	0.98	0.71	0.71	0.61	0.73	0.55	0.57
Nayarit	1.38	1.51	1.42	1.42	0.84	1.00	0.78	0.80
Sinaloa	1.85	1.46	1.11	1.12	0.79	0.94	0.93	0.96
Centre-North	*1.13*	*1.25*	*1.23*	*1.23*	*0.83*	*0.96*	*0.89*	*0.91*
Aguascalientes	1.17	2.13	2.62	2.63	1.22	1.44	0.88	0.91
Durango	1.78	1.32	0.86	0.86	0.69	0.82	0.97	1.00
San Luis Potosí	0.65	0.68	0.71	0.71	0.73	0.78	0.84	0.83
Zacatecas	0.92	0.86	0.71	0.71	0.67	0.79	0.85	0.88
Gulf of Mexico	*1.04*	*1.14*	*1.31*	*1.30*	*1.55*	*1.29*	*1.03*	*0.97*
Campeche	1.41	0.98	1.11	1.11	1.21	1.43	0.88	0.91
Tabasco	0.91	0.83	0.62	0.63	0.46	0.54	0.68	0.70
Veracruz	0.71	0.97	1.03	0.99	2.66	1.00	1.26	0.91
Yucatán	1.11	1.77	2.47	2.48	1.85	2.17	1.30	1.34
Centre	*0.87*	*0.86*	*0.82*	*0.82*	*0.62*	*0.73*	*0.65*	*0.68*
State of Mexico	0.71	0.64	0.90	0.90	0.60	0.71	0.54	0.56
Guanajuato	0.78	0.82	0.83	0.84	0.57	0.68	0.62	0.65
Hidalgo	0.78	0.79	0.68	0.68	0.68	0.80	0.79	0.83
Puebla	0.66	0.87	0.73	0.73	0.68	0.81	0.70	0.72
Querétaro	0.78	0.76	0.76	0.77	0.66	0.78	0.51	0.53
Tlaxcala	1.13	0.84	0.79	0.79	0.61	0.72	0.68	0.70
Morelos	1.27	1.28	1.04	1.04	0.54	0.64	0.72	0.74
South	*0.75*	*0.60*	*0.70*	*0.70*	*0.42*	*0.50*	*0.40*	*0.41*
Chiapas	0.85	0.74	0.86	0.86	0.54	0.64	0.50	0.52
Guerrero	0.82	0.41	0.56	0.56	0.26	0.31	0.28	0.29
Michoacán	0.83	0.77	0.87	0.88	0.56	0.66	0.49	0.51
Oaxaca	0.48	0.46	0.51	0.51	0.32	0.38	0.31	0.32

Source: See text.   (*) Oil production removed.

In some regions, relative GDP pc experienced wide fluctuations over time. This is the case, for instance, of Aguascalientes, which started with a GDP pc of 1.06 in 1895 –considering always the national average as the unit of reference-, increased up to 2.65 in 1900, and ended with a GDP pc of 0.88 in 1930. Although such processes will be analysed and explained in detail in further research, the relative fast process of structural change in certain regions –such as the mining production areas-, and some external shocks (such as international demand fluctuations, or movements in the prices of some exportable agrarian and mining commodities) could largely explain those cases of relative instability.

Moving to the sector level, Table 2 shows the spatial distribution of the Mexican manufacturing GDP in 1895, 1900, 1910, 1921 and 1930. The spatial distribution of this sector has often been identified as one of the most important explanatory factors of the evolution of Mexican regional inequality at least since the middle of the 20th century. The table shows that, while the centre region went through a process of de-industrialization throughout the period, the north and the capital regions became more industrialized. The evidence suggests therefore that 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 the process of concentration of industry in Mexico City has been assumed to have started with the ISI policies. For instance, Krugman and Livas (1996:140) indicate that: *"The rough outline of Mexican economic history supports this view. Recent work by Hanson (1992) and Livas Elizondo (1992) shows that before the beginnings of import substitution Mexico City was far less dominant in Mexico's economy and manufacturing sector than it was later to become..."*. Nevertheless, my new estimates suggests that this process of manufacturing concentration began well before the import-substituting industrialization period (although it substantially accelerated after 1930, since in 1975 the "Capital" region accumulated 51.8% of total manufacturing production; see Hernández, 1980: 140).

Table 2

Spatial distribution of Mexican Manufacturing Gross Value Added (percentage)[23]

Region	1895	1900	1910	1921	1930	1940	1950	1960	1970	1975
Capital	17.5	15.9	17.1	23.2	28.8	35.4	33.2	48.0	52.5	51.8
North Gulf	4.2	3.9	5.3	8.2	10.8	6.8	15.5	11.2	11.6	12.5
North	3.0	5.1	5.6	5.2	8.0	19.5	10.6	8.7	6.6	5.9
North Pacific	7.0	6.6	7.9	7.5	8.0	5.6	6.6	6.5	5.4	4.5
Centre Gulf	5.0	5.7	7.0	9.0	13.0	8.2	12.7	6.7	3.9	3.9
Centre Pacific	21.1	21.0	15.5	12.5	5.3	5.3	5.4	5.9	6.5	7.4
Centre	28.0	26.0	22.6	19.9	13.4	8.1	7.7	6.6	8.8	9.8
Centre North	8.5	8.6	9.9	7.2	5.7	7.7	5.5	3.5	3.0	2.0
Peninsula	2.2	2.6	3.0	3.2	3.8	1.5	2.1	1.6	0.8	0.9
South Pacific	3.4	4.7	5.8	4.2	3.1	1.9	1.9	1.3	1.0	1.0

Source: From 1895 to 1930: Own estimates; from 1940 to 1975: Hernández, 1980.

3.2. Comparison with previous estimates

As mentioned before, there are no previous regional GDP figures available for Mexico for the years 1895, 1910, and 1921. On the other hand, the estimates by Appendini (1972) and Ruiz (2007) are, so far, the only Mexican regional GDPs pc available for the years 1900 and 1930 (see section II). Thus, I can only carry out a comparison of my estimates for those two years. Table 3 compares my figures for 1900 with Appendini's. Broadly speaking, the position and the values of each region are quite similar. Nevertheless, there are some remarkable differences in the cases of Baja California –in this case, the main difference is not the position but the GDP level-, Aguascalientes, Morelos, Jalisco, Tlaxcala, San Luis Potosí, and the State of Mexico. There are other less significant differences, such as the cases of Chihuahua, Sinaloa, Tamaulipas, Tlaxcala, and Guanajuato. In order to identify the reasons for the main differences, Table 4 compares Appendini's and my own estimates at the sectoral level.[24]

---

[23] The regions are composed by the following states. Capital: Estado de México, Mexico City; North Gulf: Nuevo León, Tamaulipas; North: Chihuahua, Coahuila; North Pacific: Baja California Norte, Baja California Sur, Sonora, Sinaloa, Nayarit; Centre Gulf: Veracruz, Tabasco; Centre Pacific: Jalisco, Michoacán, Colima; Centre: Guanajuato, Querétaro, Hidalgo, Tlaxcala, Puebla, Morelos; Centre North: Aguascalientes, Durango, Zacatecas, San Luis Potosí; Peninsula: Yucatán, Quintana Roo, Campeche; South Pacific: Guerrero, Oaxaca, Chiapas.

[24] I do not compare the shares of the primary sector because both estimations are based on fairly the same sources and methodology and, therefore, the resulting estimates are very similar.

When disaggregating the GDP at sectoral levels, the differences between both estimations increase significantly. As can be observed in the table, the main differences arise in both Mining and Manufacturing. The differences in the Mining sector come from the fact that, in the new estimation, I consider the production values of "Mines in operation" and "Metal Production" from the Statistical Yearbooks, whereas Appendini's estimates only take into account the distribution of the former, from the same source.

Table 3

Comparison of 1900 Regional GDP per capita
(Mexico=1)

New estimates		**Appendini (1972)**	
Baja California	3.11	Mexico City	2.68
Mexico City	2.61	Baja California	2.62
Aguascalientes	2.13	Morelos	2.01
Sonora	1.79	Durango	1.98
Yucatán	1.77	Sonora	1.9
Nuevo León	1.60	Yucatán	1.88
Nayarit	1.51	Chihuahua	1.85
Sinaloa	1.46	Nuevo León	1.7
Coahuila	1.46	Coahuila	1.56
Durango	1.32	Aguascalientes	1.53
Chihuahua	1.29	Nayarit	1.44
Morelos	1.28	Sinaloa	1.18
Tamaulipas	1.03	Veracruz	1.14
Jalisco	0.98	Tlaxcala	1.06
Campeche	0.98	Colima	1.04
Veracruz	0.97	Zacatecas	1.01
Colima	0.91	Campeche	0.94
Puebla	0.87	Tamaulipas	0.92
Zacatecas	0.86	Puebla	0.87
Tlaxcala	0.84	Tabasco	0.84
Tabasco	0.83	San Luis Potosí	0.81
Guanajuato	0.82	Jalisco	0.79
Hidalgo	0.79	México	0.76
Michoacán	0.77	Hidalgo	0.68
Querétaro	0.76	Querétaro	0.65
Chiapas	0.74	Guanajuato	0.65
San Luis Potosí	0.68	Chiapas	0.64
México	0.64	Michoacán	0.61
Oaxaca	0.46	Guerrero	0.39
Guerrero	0.41	Oaxaca	0.33

Source: See text

Table 4

Percentage of Sectoral GDP, 1900. Comparison between Appendini's estimation and my own figures

	Mining		Manufacturing		Services	
	New estimates	Appendini	New estimates	Appendini	New estimates	Appendini
Aguascalientes	7.2	0.62	1.4	0.73	0.83	0.72
Baja California	4.7	1.87	0.3	0.29	0.95	1.25
Campeche	0	0	0.7	0.22	0.85	1.00
Coahuila	4.1	5.96	3.7	2.50	3.36	3.47
Colima	0	0	0.3	0.24	0.52	0.62
Chiapas	0.1	0.22	0.8	0.29	1.50	1.28
Chihuahua	10	25.14	1.4	0.36	2.91	3.28
Mexico City	0	0	11	10.82	18.91	21.11
Durango	12.5	15.56	2	9.26	2.70	2.72
Guanajuato	4.2	3.74	9.9	2.67	5.37	4.47
Guerrero	0.5	0.39	0.7	0.50	1.16	1.06
Hidalgo	8.9	8.23	3.8	0.91	3.34	3.31
Jalisco	2.3	2.67	12.2	4.80	6.90	5.15
México	2.2	1.98	4.9	10.39	3.80	3.81
Michoacán	0.3	0.57	8.5	1.92	4.30	3.62
Morelos	0.2	0.16	0.7	3.57	1.47	1.90
Nayarit	0.7	0.74	1.4	0.96	1.02	1.00
Nuevo León	11.3	1.18	3	12.48	4.89	3.04
Oaxaca	0.6	0.83	3.2	1.42	3.00	2.78
Puebla	0.6	1.01	7.8	7.15	5.98	6.38
Querétaro	0.2	0.10	2.2	0.88	1.39	1.38
San Luis Potosí	7.5	5.12	2.7	5.88	3.07	3.03
Sinaloa	5.9	6.24	3.2	1.88	2.66	2.55
Sonora	7.7	9.27	1.7	2.29	2.65	2.57
Tabasco	0	0	0.6	0.39	1.12	0.99
Tamaulipas	0.1	0.07	0.9	0.05	2.28	2.20
Tlaxcala	0	0	1.6	2.04	1.07	1.17
Veracruz	0	0	5.1	9.86	6.82	8.38
Yucatán	0	0	1.9	1.68	2.56	3.12
Zacatecas	8.2	8.32	2.5	3.58	2.62	2.64
TOTAL	*100*	*100*	*100*	*100*	*100*	*100*

Source: See text.

In the case of Manufacturing, differences can be explained because, whereas for the new estimate I applied the Geary and Stark (2002) method, Appendini (1972) used the industrial production data from the Industrial Census of 1902 (DGE, 1903) to distribute the national Manufacturing output among states. The main problem of using

the Industrial Census is that it seems to be highly biased due to the exclusion of the traditional manufacturing production, and the absence of many industrial establishments. In other words, the representativeness of this Census is rather inconsistent, causing high distortions at the regional level. As is pointed out in the introductory part of the Census:

> *"The industry in Mexico is very widespread; there is a great amount of self-employed persons working at a very small scale, and this has undoubtedly caused that it was not possible to obtain enough data, and that countless cases of concealing happened, so only limited data supplied by some important industrial establishments were available. (…) For these reasons, it will be seen that only the data that have been possible to collect are published, and surely there are many more industrial establishments than the ones enumerated in this work…"* (DGE, 1903: ii, my translation).[25]

This problem also shows up when observing the industrial workforce registered in the Industrial Census. According to the Population Census of 1900, only 24% of total industrial workforce, at the national level, was taken into account in the Industrial Census. This clearly involves biases at the state level. For instance, the manufacture workforce listed in the 1902 Industrial Census for the states of Guanajuato and Nayarit correspond to 6.2% and 92.45% respectively of that registered in the Population Census of 1900.

By contrast, differences in the share of Services between the two estimates are minor. This is because the weight of Commerce within the Services sector is very high (around 51%) and, for this sub-sector, both Appendini and I have used the same proxy ("Declared Sales") to distribute the national Commerce output across states.[26]

Finally, a comparison with the 1930 figures proposed by Ruiz (2007: xxix) is shown in the Table 5. Once again, the differences are minor when total state values are considered. Ruiz's data allow comparing the two estimates for the industrial sector

---

[25] The original text is as follows: *"La industria en México está muy diseminada; pues hay infinidad de personas que en muy pequeña escala trabajan por cuenta propia, y esto indudablemente ha hecho que no se obtengan datos suficientes y que se hayan dado innumerables casos de ocultaciones, por lo que sólo se dispuso de los escasos datos que ministraron algunos establecimientos de importancia. (…) Por lo expuesto se verá que sólo se publica lo que se ha podido reunir; pues con toda seguridad existen muchos más establecimientos industriales que los enumerados en la presente noticia…"* (DGE, 1903:ii).

[26] Appendini (1976) used this proxy to distribute all the national "Service" sector output across states. This is the reason why, in Appendini's estimation, cities with relative high commercial activity have more portion of total Services, such as Mexico City (D.F.), and the State of Veracruz (in which one of the biggest Mexican ports is located).

(Table 6). As shown in the table, while manufacturing estimates are fairly close, the construction subsector presents wider differences. This could be explained because Ruiz assumed equal productivity across the states, while I applied the Geary and Stark method (see previous section).

Table 5
GDP per capita, 1930. Comparison between Ruiz's and my own figures (Highest value=100)[27]

New estimates		Ruiz (2007)	
Baja California	100.0	Baja California N	100.0
Mexico City	38.4	Mexico City	33.9
Tamaulipas	25.2	Sonora	25.0
Chihuahua	24.9	Tamaulipas	24.7
Sonora	24.8	Nuevo León	20.7
Coahuila	23.9	Coahuila	20.0
Nuevo León	22.0	Baja California S	19.6
Veracruz	17.8	Yucatán	17.2
Yucatán	16.8	Chihuahua	16.5
Mexico	**13.9**	Quintana Roo	15.0
Durango	13.8	Veracruz	13.9
Sinaloa	13.1	Sinaloa	13.5
Aguascalientes	12.7	Durango	11.8
Zacatecas	11.8	**Mexico**	**11.4**
Colima	11.6	Hidalgo	11.2
Campeche	11.5	Colima	9.8
San Luis Potosí	11.4	San Luis Potosí	9.7
Nayarit	11.0	Morelos	8.9
Hidalgo	10.6	Nayarit	8.2
Puebla	10.0	Campeche	7.2
Morelos	10.0	Puebla	6.5
Tabasco	9.5	Jalisco	6.5
Tlaxcala	9.4	Zacatecas	6.5
Guanajuato	8.9	Aguascalientes	6.5
Querétaro	8.0	Tabasco	6.0
Jalisco	7.6	State of Mexico	5.9
State of México	7.5	Guanajuato	5.8
Michoacán	6.9	Tlaxcala	5.7
Chiapas	6.6	Chiapas	5.3
Oaxaca	4.2	Michoacán	4.8
Guerrero	4.0	Querétaro	4.4
		Guerrero	2.8
		Oaxaca	2.2

Source: See text.

---

[27] The comparison is presented in this form because there is no other figure available in Ruiz (2007).

Table 6
Percentage of Sectoral GDP, 1930. Comparison between Ruiz's estimation and my own figures[28]

	Manufacturing		**Construction**	
	New estimates	Ruiz	New estimates	Ruiz
Aguascalientes	0.4	0.45	0.2	1.08
Baja California	3.5	3.65	2.4	0.65
Campeche	0.2	0.20	0.1	0.60
Coahuila	5.9	6.27	4.1	3.10
Colima	0.2	0.17	0.1	0.50
Chiapas	1.7	1.96	0.5	3.72
Chihuahua	2.1	1.63	2.2	3.06
Mexico City	25.4	25.01	48.00	20.87
Durango	2.7	3.00	0.7	1.32
Guanajuato	3.7	3.80	1.3	3.65
Guerrero	0.3	0.28	0.2	1.38
Hidalgo	2.3	1.80	1.7	2.99
Jalisco	3.1	3.21	2.8	8.64
México	3.4	3.25	2.7	4.03
Michoacán	2	1.89	0.9	5.22
Morelos	0.3	0.35	0.7	0.87
Nayarit	0.6	0.67	0.4	1.18
Nuevo León	8.7	8.98	9.4	3.84
Oaxaca	1.1	1.23	0.3	2.25
Puebla	5.7	5.89	5.2	7.27
Querétaro	0.5	0.45	0.3	0.94
San Luis Potosí	1.9	2.07	2.6	3.58
Sinaloa	2.3	2.49	1.6	1.97
Sonora	1.6	1.33	1.3	1.97
Tabasco	0.2	0.22	0.2	0.74
Tamaulipas	2.1	1.88	1.4	2.07
Tlaxcala	0.9	1.06	0.7	1.27
Veracruz	12.8	12.28	6	5.97
Yucatán	3.6	3.84	1.8	3.45
Zacatecas	0.7	0.46	0.2	1.80
TOTAL	*100*	*100*	*100*	*100*

Source: See text.

---

[28] The high Mexico City's share in Construction (48%) in 1930 is consistent with this region having 83.2% of the total Construction output in 1960, according to the VII Industrial Census (1960).

4. The regional GDP pc in Mexico. A long-term picture (1900-2010)

In order to present a long-term picture of the regional pc GDPs of Mexican regions, data for the years 1950, 1980 and 2010 are shown together with my new estimates for 1900 and 1930.[29] Figures for 1950 and 1980 are taken from Esquivel (2002), and data for 2010 is taken from the National Institute of Statistic and Geography (INEGI). It is important to stress that there has been a particular treatment for oil production in both cases. While in Esquivel (2002) oil production is redistributed among states on the basis of their mining output, the 2010 figures directly exclude it. Once again, these adjustments are made due to the bias that this economic activity generates at the regional level. Table 7 presents both the states' GDP pc, and the average values of the main regions.

Table 7

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

	1900	1930	1950	1980	2010		1900	1930	1950	1980	2010
Mexico City	_2.61_	_2.83_	_1.91_	_1.94_	_2.39_	_Gulf of Mexico_	_1.14_	_0.97_	_1.23_	_0.77_	_0.95_
						Campeche	0.98	0.91	0.46	0.48	1.17
North	_1.71_	_2.27_	_1.58_	_1.35_	_1.27_	Tabasco	0.83	0.70	0.49	0.69	0.71
Baja California	3.11	4.54	2.58	1.51	1.08	Quintana Roo	n.d.	n.d.	3.03	1.18	1.35
Baja California S	n.d.	n.d.	1.97	1.50	1.16	Veracruz	0.97	0.91	1.17	0.71	0.67
Chihuahua	1.29	1.89	1.85	1.31	1.09	Yucatán	1.77	1.34	1.00	0.78	0.88
Coahuila	1.46	1.78	1.11	1.24	1.37						
Nuevo León	1.60	1.71	1.27	1.60	1.97	_Centre_	_0.86_	_0.68_	_0.67_	_0.74_	_0.80_
Sonora	1.79	1.82	1.18	1.11	1.11	Guanajuato	0.82	0.65	0.63	0.66	0.88
Tamaulipas	1.03	1.85	1.07	1.16	1.08	Hidalgo	0.79	0.83	0.64	0.66	0.64
						Morelos	1.28	0.74	0.95	0.74	0.81
Pacific-North	_1.22_	_0.79_	_0.85_	_0.85_	_0.92_	Puebla	0.87	0.72	0.77	0.69	0.73
Colima	0.91	0.82	0.68	0.83	1.06	Querétaro	0.76	0.53	0.58	0.90	1.20
Jalisco	0.98	0.57	0.99	1.04	1.06	State of Mexico	0.64	0.56	0.58	0.99	0.76
Nayarit	1.51	0.80	0.89	0.68	0.69	Tlaxcala	0.84	0.70	0.52	0.54	0.55
Sinaloa	1.46	0.96	0.85	0.84	0.90						
Centre-North	_1.25_	_0.91_	_0.84_	_0.72_	_0.89_	_South_	_0.60_	_0.41_	_0.57_	_0.52_	_0.53_
Aguascalientes	2.13	0.91	0.64	0.91	1.16	Chiapas	0.74	0.52	0.54	0.51	0.44
Durango	1.32	1.00	1.02	0.82	0.90	Guerrero	0.41	0.29	0.51	0.54	0.55
San Luis Potosí	0.68	0.83	0.85	0.62	0.83	Michoacán	0.77	0.51	0.66	0.61	0.66
Zacatecas	0.86	0.88	0.87	0.53	0.66	Oaxaca	0.46	0.32	0.56	0.41	0.48

Source: See text.

---

[29] These time-cuts not only match with the different economic models that Mexico has experienced in the last century, but also coincide with moment of significant statistical changes in the trend and levels of Mexican GDP (see Márquez, 2010:552).

Table 7 shows the high persistence of the states ranked in the extreme positions, specially in the case of the poorest ones which, in turn, are concentrated in the Centre and South of the country. In contrast, Mexico City and the North regions have always remained at the top income extreme. Although this pattern will be explained in detail in forthcoming research, this persistence may be mainly explained by the economic specialization of each state.

On the other hand, the graph also shows that regional inequality started relatively high in the late 19th century and reached its maximum during the 1930s, to undertake thereafter a process of gradual decline from 1940 to 1980. This, however, was reversed again from 1980 onwards.

Graph 3
Standard Deviation of State's GDP pc in the long-term, 1895 - 2010.
Mexico=1 (*)
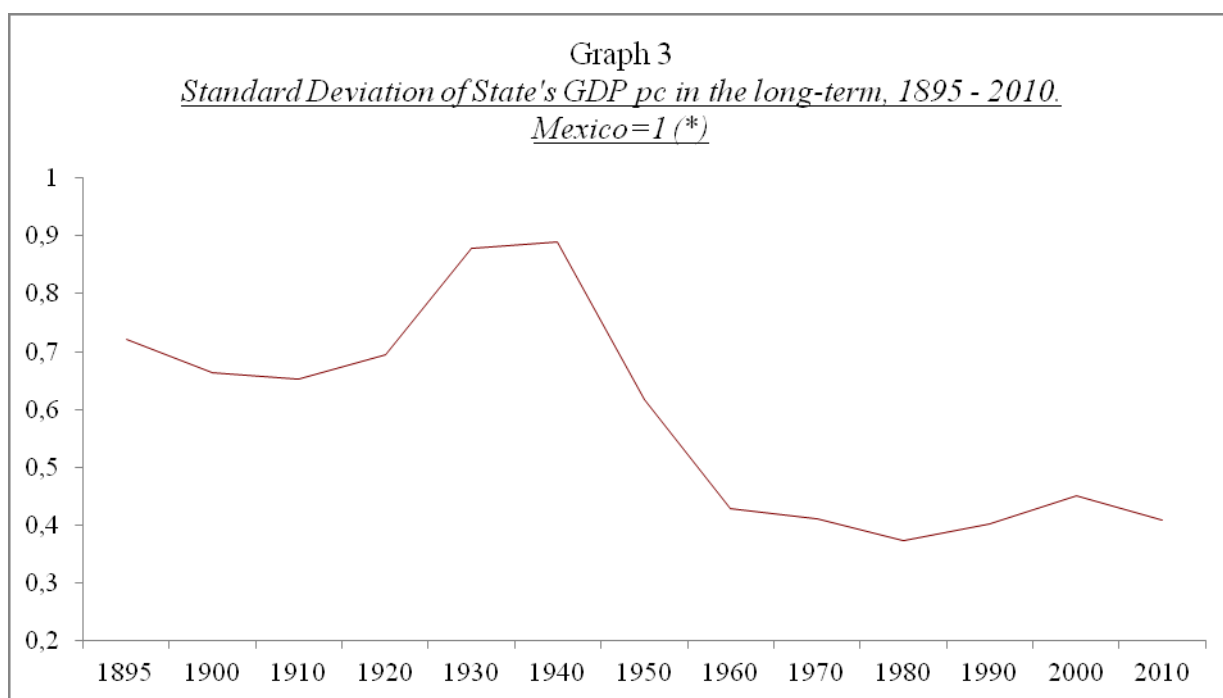
Source: See text.

5. Conclusion

So far, the only available estimates of Mexican regional GDPs for the period before 1940 were those of Appendini (1972) for 1900 and Ruiz (2007) for 1930. This paper has presented the methodology, sources and results of a new regional GDP pc estimation in Mexico for the benchmark years 1895, 1900, 1910, 1921 and 1930. The new evidence suggests that the regional disparities between the north and south of the

country can be traced back at least to the early stages of the national market integration. Those disparities widened between 1895 and 1930 due to the progress in the industrialization of the capital and northern regions, and the de-industrialization of the centre regions. As a result, it was during the 1930s, at the end of the export-led growth episode of Mexican history, when the country's regional inequality reached the maximum level.

Future research will focus on the patterns and causes of spatial inequalities in Mexico over the long term. Even though regional inequality has been well studied, scholars have focused on recent periods (and specially in the transition from a relatively closed economic model to an open one, between 1980 and the present). My new estimates will allow to study the inverse process that took place since the Interwar period, i.e. when the economy went from a relatively open model to a relatively closed one.

Moreover, these analyses will provide us with the necessary tools to answer some relevant questions on Mexican economic history, such as: What happened with regional income inequality in Mexico during the period of national market integration and early industrialization? Does the theoretical assumptions of the New Economic Geography apply for the Mexican case in the long term? Is the Williamson's hypothesis of a regional inverted-U confirmed for a primary exporter economy? Were regional disparities persistent throughout the whole modern period in Mexico? Has regional convergence taken place in Mexico in the very long-term? All the answers to these questions may contribute to the international literature on historical regional inequality, providing evidence in this case on an economy out of the western core.

5. Bibliography

5.1 Official publications

Bank of Mexico (1962), "Producto Nacional Bruto por Actividades año de 1961 por Trimestres", Documento del Departamento de Estudios Económicos, PN(E)/62/5.

Departamento de la Estadística Nacional, "Anuario Estadístico. Censo y Demografía, Vida Económica, y Vida Social y Moral. 1923 – 1924".

Departamento de la Estadística Nacional, *Bulletin of National Statistics: 1921, 1930.*

Dirección General de Estadística (1956), "Estadísticas Sociales del Porfiriato 1877-1910", *Secretaria de Economía.*

Dirección General de Estadística*, Statistical Year Book*: *1893, 1895, 1900, 1905, and 1907.*

Dirección General de Estadística, *Industrial Census: 1930, 1935, 1960.*

Dirección General de Estadística, *Population Census: 1895, 1900, 1910, 1921, 1930, 1940.*

Dirección General de Estadística (1903), "Estadística Industrial de 1902".

Dirección General de Estadística, *First Census of Agriculture and Livestock*, (México, 1930).

Instituto Nacional de Estadística y Geografía (1985), "Sistema de Cuentas Nacionales. Estructura Económica Regional, Producto Interno Bruto: 1970, 195, 1980".

Instituto Nacional de Estadística y Geografía (2009), *Estadísticas Históricas de México.*

Instituto Nacional de Estadística y Geografía, *Mapa Digital de México V5.0,* available in: http://gaia.inegi.org.mx/mdm5/viewer.html.

Secretaría de Estado y del Despacho de Hacienda y Crédito Público, *Fiscal Statistics Bulletins: 1895, 1900, 1910*.

Secretaría de Industria, Comercio y Trabajo, *Mining Statistical Year Book: 1923, 1927.*

5.2 Articles and Books

Appendini, K., Murayama D., and Domínguez (1972), "Desarrollo desigual en México, 1900-1960", *Demografía y Economía*, No.16, pp. 1-40.

Appendini, K. (1978), "Producto interno bruto por entidades federativas 1900, 1940, 1950 y 1960", El Colegio de Mexico, mimeographed.

Badía-Miró, Marc (2013) "La evolución de la localización de la actividad económica en Chile en el largo plazo, un caso de extrema concentración" Unpublished Document.

Badia-Miró, M., Guilera, J., and Lains, P. (2012), "Regional Incomes in Portugal: Industrialisation, Integration and Inequality, 1890-1980", *Revista de Historia Económica (New Series), Vol. 30,* 02, pp. 225-244.

Barro, R. and Ursúa, J. (2008), *Macroeconomic crisis since 1870*, mimeo, Harvard University.

Cermeño, Rodolfo (2001), "Decrecimiento y convergencia de los estados mexicanos. Un análisis de panel", *El Trimestre Económico*, 272, pp. 603-629.

Cerutti, M. (1992), "Burguesía, capitales e industria en el Norte de México: Monterrey y su ámbito regional, 1850-1910", *Alianza*, México.

Chiquiar, Daniel (2005), "Why Mexico's regional income convergence broke down", *Journal of Development Economics*, 77, pp. 257-275.

Crafts, N. and Mulatu, A. (2005), "What explains the location of industry in Britain, 1871–1931?" *Journal of Economic Geography,* 5, pp. 499–518.

El Colegio de México (México, 1964), *Estadísticas Económicas del Porfiriato: Fuerza de trabajo y actividad económica por sectores*

E. DeGolyer (1993), "Production of the Mexican Oil Field, 1901-1920" In: Brown, Jonathan C. Oil and Revolution in Mexico.

Esquivel, G. (1999), "Convergencia Regional en México, 1940-1995", *El Trimestre Económico, LXVI,* 264, pp. 725-761.

Esquivel, G. (2002), "New Estimates of Gross State Product in Mexico, 1940-2000", Mimeo. El Colegio de México.

Felice, E. (2009), "Regional value added in Italy (1891-2001): estimates, elaborations", *Working Papers in Economic History*, Universidad Carlos III de Madrid.

Felice, E. (2011), "Regional value added in Italy, 1891-2001, and the foundation of a long-term picture", *The Economic History Review,* 64, 3, pp. 929-950.

Fuentes, N. and Mendoza, E. (2003), "Infraestructura pública y convergencia regional en México", *Comercio Exterior*, 53, pp. 178-187.

Geary, F. and Stark, T. (2002), "Examining Ireland's Post-Famine Economic Growth Performance", *The Economic Journal*, 112, 482, pp. 919-935.

Germán-Soto, Vicente (2005), "Generación del Producto Interno Bruto mexicano por entidad federative, 1940-1992", *El Trimestre Económico*, LXXII, 287, pp. 617-653.

Gómez-Galvarriato, A. (2002), "Measuring the Impact of Institutional Change in Capital-Labor Relations in the Mexican Textile Industry, 1900-1930". In J. Bortz and S. Haber (Eds.), *The Mexican Economy, 1870-1930. Essays on the Economic History of Institutions, Revolution, and Growth.* (pp. 289-323).

Gutiérrez Requenes, M. (1969), *Producto Interno Bruto y Series Básicas 1895-1967*, mimeo, Banco de México.

Haber, S. (1989), *Industry and Underdevelopment: The Industrialization of Mexico, 1890-1940*, Stanford University Press.

Haber, S. (1993), "La industrialización de México: Historiografía y Análisis", *Historia Mexicana,* XLII: 3, pp. 649-688.

Haber, S. (2010), "Mercado Interno, Industrialización y Banca, 1890-1929", In *Historia Económica General de México: de la Colonia a nuestros día,* Kuntz, Sandra (coord.), El Colegio de México.

Hanson, G. (1996), "Localization economies, vertical integration and trade", *American Economic Review,* 86, pp. 1266–1278.

Hanson, G. (1998a), "Regional adjustment to trade liberalization", *Regional Science and Urban Economics*, 28, pp. 419–444.

Hanson, G. (1998b), "North American economic integration and industry location", *Oxford Review of Economic Policy,* 14, pp. 30–44.

Henning, M., Enflo, K., Andersson, F. (2011), "Trends and cycles in regional economic growth. How spatial differences shaped the Swedish growth experience from 1860-2009", *Explorations in Economic History,* 48, pp. 538-555.

Hernández, D. (2009), "Liberalización Comercial y Localización Industrial en México", PhD. Dissertation, University of Barcelona, Spain.

Hernández, E. (1980), "Economías externas y el proceso de concentración regional de la industria en México", *El Trimestre Económico*, 47, pp. 119-157.

Hernández, E. (1997), "Perspectivas del desarrollo regional en México frente la globalización", *Economía, Teoría y Práctica*, 7, pp. 79-106.

Jordaan, J.A. and Sanchez-Reaza, J. (2006), "Trade liberalization and location: Empirical evidence for Mexican manufacturing industries 1980-2003", *The Review of Regional Studies*, 36 p. 279-303.

Jordaan, J.A. (2008), "State characteristics and the locational choice of foreign direct investment: Evidence from regional FDI in Mexico 1989-2006", *Growth and Change*, 39p. 389-413.

Jordaan, J.A., and Rodriguez-Oreggia (2012), "Regional growth in Mexico under trade liberalisation: how important are agglomeration and FDI?", *The Annals of Regional Science*, 48, pp. 179-202.

Kim, S. (2009), "Spatial Inequality and Economic Development: Theories, Facts, and Policies", Working Paper (No. 16), *Commission on Growth and Development*, The World Bank.

Klein, A. and Crafts, N. (2012), "Making sense of the manufacturing belt: determinants of U.S. industrial location, 1880–1920", *Journal of Economic Geography,* 12, pp. 775-807.

Krugman, P., and Livas-Elizondo, R. (1996), "Trade policy and the third world metropolis", *Journal of Development Economics*, 49, pp. 147–150.

Kuntz, S. (2002), "Nuevas series del comercio exterior de México, 1870-1929*", Revista de Historia Económica*, XX, 2, pp. 213-270.

Kuntz, S. (2010), "De las Reformas Liberales a la Gran Depresión, 1856 - 1929", In *Historia Económica General de México: de la Colonia a nuestros día,* Kuntz, Sandra (coord.), El Colegio de México.

Kuntz, S. and Speckman, E. (2011)., "El Porfiriato", In *Nueva Historia General de México,* Erik Velásquez García … [et al.], El Colegio de México.

Maddison, A. (1992)., *La economía mundial en el siglo XX. Rendimiento y política en Asia, América Latina, la URSS y los países de la OCDE.*

Mallick, R. and Carayannis, E. (1994), "Regional economic convergence in Mexico", *Growth and Change*, 25, pp. 325-34.

Marichal, C. and Cerutti, M. (comps.) (1997), "Historia de las grandes empresas en México, 1895-1930", Fondo de Cultura Económica, Universidad Autónoma de Nuevo León, México.

Márquez, G. (2010), "Evolución y estructura del PIB, 1921-2010", In *Historia Económica General de México: de la Colonia a nuestros día,* Kuntz, S. (coord.), El Colegio de México.

Martínez-Galarraga, J. (2012), "The determinants of industrial location in Spain, 1856–1929", *Explorations in Economic History,* 49, pp. 255-275.

Moasterio, L., and Reis, E. (2008), "Mudanças na concentraçao especial das ocupaços nas atividades manufatureiras no Brasil, 1872-1920", Working Paper, No. 1361, *Instituto de Pesquisa Economica Aplicada.*

Pérez López, E. (1960), "El producto nacional" en *México: cincuenta años de revolución"*, vol. 1, pp. 571-592.

Rosés, R., Martínez-Galarraga, J., and Tirado, D. (2010), "The upswing of regional income inequality in Spain (1860-1930)", *Explorations in Economic History*, 47 pp. 244-257.

Ruiz Ochoa, W. (2006), "Alcance del método de asignación geográfica relativa del producto, para construir una visión retrospectiva del crecimiento regional en México", *Análisis Económico*, XXI, pp. 328-353.

Ruiz Ochoa, W. (2007), "Convergencia Económica Interestatal en México, un Enfoque de Largo Plazo, 1900-2004", PhD dissertation, Universidad Autónoma de Madrid.

Ruiz Ochoa, W. (2010), "Convergencia económica interestatal en México, 1900-2004", *Análisis Económico,* XXV, pp. 7-34.

Sánchez-Reaza, J. and Rodríguez-Pose, A. (2002), "The impact of trade liberalization on regional disparities in Mexico", *Growth and Change*, 33, pp. 72-90.

Solís, L. (1970), *La economía mexicana, retrovisión y perspectivas*, México, Fondo de Cultura Económica.

Unikel, L., Ruiz-Chiapetto, C., and Garza, G. (1978), *México: Desarrollo urbano e implicaciones futuras,* El Colegio de México.

Williamson, J. (1965), "Regional inequality and the process of national development: a description of the patterns", *Economic Development and Cultural Change*, 13:4, pp. 3-84.

Appendix

Table A.1

Manufacturing distribution by states in 1930 (percentage)

	Industrial Census	**Geary and Stark Method**
Aguascalientes	0.44	0.21
Baja California Norte	3.23	2.33
Baja California Sur	0.30	0.48
Campeche	0.18	0.07
Coahuila	5.87	4.83
Colima	0.18	0.06
Chiapas	1.68	0.91
Chihuahua	2.07	1.64
Mexico City	25.39	29.12
Durango	2.72	2.29
Guanajuato	3.66	2.10
Guerrero	0.26	0.21
Hidalgo	2.30	1.97
Jalisco	3.15	2.69
México	3.36	3.37
Michoacán	2.03	1.19
Morelos	0.30	0.41
Nayarit	0.59	0.59
Nuevo León	8.68	9.62
Oaxaca	1.12	0.77
Puebla	5.75	5.10
Querétaro	0.49	0.44
Quintana Roo	0.02	0.15
San Luis Potosí	1.93	3.48
Sinaloa	2.30	2.53
Sonora	1.61	1.13
Tabasco	0.23	0.19
Tamaulipas	2.15	1.85
Tlaxcala	0.91	1.08
Veracruz	12.81	15.58
Yucatán	3.59	3.22
Zacatecas	0.73	0.37
TOTAL	*100*	*100*

Source: See text.

Table A.2

Methods used for the new regional GDP estimation in each year and sector

	1895		1900		1910		1921		1930	
	Direct Approach	*Geary and Stark (2002)*	*Direct Approach*	*Geary and Stark (2002)*	*Direct Approach*	*Geary and Stark (2002)*	*Direct Approach*	*Geary and Stark (2002)*	*Direct Approach*	*Geary and Stark (2002)*
Primary										
Agriculture	X		X		X		X		X	
Livestock	X		X		X		X		X	
Forestry	X		X		X		X		X	
Fishing*	n.d.		n.d.		n.d.		n.d.		n.d.	
Mining	X		X		X		X		X	
Oil	n.d.		n.d.		X		X		X	
Industry										
Manufacturing		X		X		X		X	X	
Construction		X		X		X		X		X
Energy		X		X		X		X	X	
Services										
Commerce	X		X		X		X		X	
Government		X		X		X		X		X
Transports		X		X		X		X		X
Others		X		X		X		X		X

Source: Own elaboration.

* For the method used to estimate this sector, see Section 2.

Table A.3
Regional Agriculture GDP (percentage)

	1895	1900	1910	1921	1930
Aguascalientes	0.13	2.11	0.36	0.32	0.29
Baja California	0.30	0.07	0.09	2.81	5.03
Campeche	1.43	0.05	0.51	0.49	0.47
Coahuila	5.18	2.72	2.71	4.72	6.37
Colima	0.30	0.40	1.93	1.11	0.44
Chiapas	2.77	3.86	6.35	4.78	3.49
Chihuahua	5.37	0.86	1.85	2.49	3.02
Mexico City	0.83	0.63	0.58	0.72	0.84
Durango	6.50	3.72	2.06	2.50	2.85
Guanajuato	7.37	7.96	7.68	5.83	4.32
Guerrero	7.22	1.64	4.39	2.96	1.79
Hidalgo	2.71	2.75	2.56	3.09	3.53
Jalisco	10.24	8.66	4.83	5.32	5.72
México	5.06	5.81	9.15	6.57	4.45
Michoacán	7.45	4.93	7.14	5.95	4.99
Morelos	2.75	2.74	1.85	1.68	1.54
Nayarit	1.49	3.35	1.87	1.86	1.85
Nuevo León	1.25	1.10	0.79	1.12	1.38
Oaxaca	6.04	2.99	5.59	4.93	4.39
Puebla	5.09	10.40	4.42	5.55	6.46
Querétaro	1.08	0.83	1.18	1.03	0.90
Quintana Roo	0.00	0.00	0.02	0.03	0.05
San Luis Potosí	1.97	1.24	1.16	1.80	2.33
Sinaloa	5.15	2.10	1.26	3.59	5.50
Sonora	2.21	2.01	1.22	2.42	3.40
Tabasco	0.91	0.93	0.64	1.60	2.38
Tamaulipas	0.46	0.74	0.85	1.42	1.88
Tlaxcala	1.32	1.22	1.05	1.48	1.84
Veracruz	3.25	13.33	9.98	9.78	9.61
Yucatán	2.92	9.43	14.78	10.86	7.65
Zacatecas	1.25	1.41	1.17	1.20	1.23
TOTAL	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.4
Regional Livestock GDP (percentage)

	1895	1900	1910	1921	1930
Aguascalientes	0.8	0.9	0.9	0.8	0.5
Baja California	2.2	2.1	2.1	1.1	1.2
Campeche	0.9	0.9	0.7	0.3	0.5
Coahuila	2.5	2.4	2.6	3.1	3.5
Colima	0.6	0.6	0.6	1.2	0.4
Chiapas	3.3	2.8	3.2	3.7	4.0
Chihuahua	5.8	5.3	4.9	3.6	6.0
Mexico City	4.4	4.8	4.5	1.6	1.4
Durango	4.1	3.5	3.5	1.1	2.7
Guanajuato	4.4	4.2	4.3	3.6	5.5
Guerrero	3.1	3.2	3.0	3.5	2.7
Hidalgo	2.6	2.5	2.4	2.8	2.9
Jalisco	10.1	9.8	9.2	11.3	8.6
México	4.6	4.3	4.7	6.3	5.5
Michoacán	7.1	6.8	6.9	9.3	6.9
Morelos	1.3	1.5	1.4	0.2	0.8
Nayarit	2.0	1.9	1.9	1.6	1.4
Nuevo León	2.8	2.5	2.6	3.2	3.4
Oaxaca	4.3	5.1	4.4	4.4	3.5
Puebla	4.0	4.0	4.1	4.2	4.8
Querétaro	1.1	1.2	1.1	3.3	1.2
Quintana Roo	0.0	0.0	0.0	0.0	0.0
San Luis Potosí	2.7	2.7	2.5	2.7	2.7
Sinaloa	4.8	4.6	5.1	3.4	2.8
Sonora	4.5	3.8	5.0	2.9	5.3
Tabasco	1.5	1.4	1.4	0.7	2.1
Tamaulipas	2.6	2.6	2.6	1.8	2.4
Tlaxcala	0.7	0.7	0.7	0.2	0.8
Veracruz	3.6	4.8	5.5	10.1	10.9
Yucatán	3.4	5.0	4.7	3.8	1.7
Zacatecas	4.3	3.9	3.7	4.4	3.8
TOTAL	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.5
Regional Forestry and Fishing GDP (percentage)

	Forestry					Fishing	
	1895	**1900**	**1910**	**1921**	**1930**	**1921**	**1930**
Aguascalientes	0.0	0.1	0.1	0.1	0.1	0.0	0
Baja California	0.0	0.5	0.6	0.2	0.2	0.9	1.2
Campeche	0.0	2.7	2.0	11.2	11.2	1.1	1.1
Coahuila	0.8	2.1	1.9	0.6	0.6	0.0	0
Colima	1.4	0.0	0.0	0.3	0.3	1.3	0.8
Chiapas	0.6	1.4	1.3	6.0	6.0	5.9	6.6
Chihuahua	6.7	6.8	5.5	8.3	8.3	0.0	0
Mexico City	0.0	0.0	0.0	0.5	0.5	0.0	0
Durango	8.0	10.2	8.7	13.1	13.1	0.0	0
Guanajuato	1.4	2.2	2.2	1.3	1.3	0.0	0
Guerrero	14.2	1.2	1.9	0.9	0.9	7.9	8
Hidalgo	3.5	2.2	0.7	0.1	0.1	0.0	0
Jalisco	19.1	5.1	7.8	7.6	7.6	16.7	15.6
México	0.6	5.7	3.6	9.2	9.2	0.0	0
Michoacán	6.8	22.0	18.4	9.5	9.5	13.2	13.1
Morelos	1.5	0.7	0.6	0.1	0.1	0.0	0
Nayarit	5.1	2.1	3.4	0.8	0.8	2.3	2.1
Nuevo León	4.2	3.5	1.3	1.1	1.1	0.0	0
Oaxaca	9.8	1.1	2.8	3.0	3.0	13.7	13.5
Puebla	0.0	10.6	5.0	4.9	4.9	0.0	0
Querétaro	0.0	0.1	0.1	0.2	0.2	0.0	0
Quintana Roo	0.0	0.0	0.3	4.9	4.9	0.0	0
San Luis Potosí	0.1	0.5	0.7	1.6	1.6	0.0	0
Sinaloa	0.8	0.5	0.5	1.0	1.0	4.8	4.9
Sonora	4.3	6.9	8.3	0.1	0.1	3.9	3.9
Tabasco	0.1	1.8	1.5	1.5	1.5	3.0	2.8
Tamaulipas	0.2	1.5	1.2	0.5	0.5	4.0	4.3
Tlaxcala	0.0	0.2	0.0	0.3	0.3	0.0	0
Veracruz	1.6	7.7	18.6	8.2	8.2	16.3	17.2
Yucatán	0.0	0.0	0.0	2.3	2.3	5.2	4.9
Zacatecas	9.3	0.7	0.9	0.6	0.6	0.0	0
TOTAL	*100*	*100*	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.6
Regional Mining GDP(percentage)

	1895	1900	1910	1921	1930
Aguascalientes	4.2	7.2	14.5	4.1	0.4
Baja California	4.8	4.7	0.5	1.7	2.5
Campeche	0.0	0.0	0.0	0.0	0.0
Coahuila	4.0	4.1	6.3	2.3	5.2
Colima	0.0	0.0	0.0	0.0	0.0
Chiapas	0.2	0.1	0.0	0.0	0.0
Chihuahua	6.7	10.0	10.6	14.6	25.9
Mexico City	0.0	0.0	0.0	4.0	2.1
Durango	13.2	12.5	6.6	5.8	6.5
Guanajuato	4.7	4.2	4.6	2.6	1.2
Guerrero	0.4	0.5	1.8	0.9	1.2
Hidalgo	7.0	8.9	5.2	13.0	11.4
Jalisco	2.5	2.3	0.7	2.8	1.3
México	1.9	2.2	7.6	3.9	0.6
Michoacán	0.4	0.3	6.4	2.7	2.2
Morelos	0.2	0.2	0.0	0.0	0.3
Nayarit	0.5	0.7	0.6	0.1	0.0
Nuevo León	13.0	11.3	10.5	15.0	7.1
Oaxaca	0.3	0.6	0.3	0.1	0.1
Puebla	0.2	0.6	1.7	0.4	0.9
Querétaro	0.3	0.2	0.3	0.0	0.0
Quintana Roo	0.0	0.0	0.0	0.0	0.0
San Luis Potosí	7.1	7.5	5.0	3.1	7.5
Sinaloa	8.6	5.9	3.3	1.6	1.3
Sonora	11.8	7.7	10.0	11.8	11.2
Tabasco	0.0	0.0	0.0	0.0	0.0
Tamaulipas	0.1	0.1	0.4	0.0	0.0
Tlaxcala	0.0	0.0	0.0	0.0	0.0
Veracruz	0.0	0.0	0.0	0.0	0.0
Yucatán	0.0	0.0	0.0	0.0	0.0
Zacatecas	8.0	8.2	3.2	9.4	11.2
TOTAL	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.7
Regional Oil GDP (percentage)

	1910	1921	1930
Aguascalientes	0.0	0.0	0.0
Baja California	0.0	0.0	0.0
Campeche	0.0	0.0	0.0
Coahuila	0.0	0.0	0.0
Colima	0.0	0.0	0.0
Chiapas	0.0	0.0	0.0
Chihuahua	0.0	0.0	0.0
Mexico City	0.0	0.0	0.0
Durango	0.0	0.0	0.0
Guanajuato	0.0	0.0	0.0
Guerrero	0.0	0.0	0.0
Hidalgo	0.0	0.0	0.0
Jalisco	0.0	0.0	0.0
México	0.0	0.0	0.0
Michoacán	0.0	0.0	0.0
Morelos	0.0	0.0	0.0
Nayarit	0.0	0.0	0.0
Nuevo León	0.0	0.0	0.0
Oaxaca	0.0	0.0	0.0
Puebla	0.0	0.0	0.0
Querétaro	0.0	0.0	0.0
Quintana Roo	0.0	0.0	0.0
San Luis Potosí	0.0	1.4	3.1
Sinaloa	0.0	0.0	0.0
Sonora	0.0	0.0	0.0
Tabasco	0.0014	0.0	0.0
Tamaulipas	0.0	3.3	7.2
Tlaxcala	0.0	0.0	0.0
Veracruz	99.999	95.3	89.7
Yucatán	0.0	0.0	0.0
Zacatecas	0.0	0.0	0.0
TOTAL	*100*	*100*	*100*

Source: See Section 2.

Table A.8
Regional Manufacturing GDP (percentage)

	1895	**1900**	**1910**	**1921**	**1930**
Aguascalientes	1.5	1.4	1.4	0.9	0.4
Baja California	0.4	0.3	0.4	0.9	3.5
Campeche	0.6	0.7	0.6	0.5	0.2
Coahuila	1.6	3.7	3.1	3.1	5.9
Colima	0.2	0.3	0.5	0.5	0.2
Chiapas	0.9	0.8	1.0	1.1	1.7
Chihuahua	1.4	1.4	2.5	2.1	2.1
Mexico City	11.6	11.0	12.4	19.9	25.4
Durango	1.5	2.0	2.5	2.0	2.7
Guanajuato	10.3	9.9	8.1	6.2	3.7
Guerrero	0.4	0.7	0.9	0.6	0.3
Hidalgo	3.1	3.8	2.6	2.3	2.3
Jalisco	12.7	12.2	8.7	7.5	3.1
México	5.9	4.9	4.7	3.3	3.4
Michoacán	8.2	8.5	6.3	4.5	2.0
Morelos	0.8	0.7	0.8	0.3	0.3
Nayarit	2.5	1.4	1.9	1.5	0.6
Nuevo León	3.4	3.0	4.2	5.5	8.7
Oaxaca	2.1	3.2	3.9	2.5	1.1
Puebla	8.4	7.8	7.7	8.3	5.7
Querétaro	2.5	2.2	1.7	1.3	0.5
Quintana Roo	0.0	0.0	0.1	0.0	0.0
San Luis Potosí	2.7	2.7	3.7	2.9	1.9
Sinaloa	2.4	3.2	2.6	2.7	2.3
Sonora	1.7	1.7	3.0	2.3	1.6
Tabasco	0.5	0.6	0.6	0.7	0.2
Tamaulipas	0.8	0.9	1.1	2.7	2.1
Tlaxcala	2.9	1.6	1.7	1.6	0.9
Veracruz	4.5	5.1	6.4	8.4	12.8
Yucatán	1.6	1.9	2.3	2.7	3.6
Zacatecas	2.8	2.5	2.3	1.5	0.7
TOTAL	**100**	**100**	**100**	**100**	**100**

Source: See Section 2.

Table A.9
Regional Construction and Electricity GDP(percentage)

	Construction					Electricity				
	1895	**1900**	**1910**	**1921**	**1930**	**1895**	**1900**	**1910**	**1921**	**1930**
Aguascalientes	1.0	1.1	0.9	0.2	0.2	0.5	0.5	1.3	0.3	0.4
Baja California	0.5	0.3	0.6	2.0	2.4	0.0	0.0	0.0	0.0	1.6
Campeche	1.0	1.1	0.9	0.3	0.1	0.0	0.0	0.0	0.0	0.1
Coahuila	1.1	2.9	2.6	3.9	4.1	1.7	1.8	2.8	4.5	3.6
Colima	0.3	0.4	0.5	0.1	0.1	0.1	0.2	0.2	0.0	0.2
Chiapas	0.7	0.7	0.9	0.4	0.5	0.1	0.2	0.0	0.0	0.4
Chihuahua	1.0	1.6	2.3	0.5	2.2	0.1	0.1	0.7	0.6	6.7
Mexico City	18.3	18.2	20.5	37.6	48.0	2.0	1.9	13.1	26.4	36.9
Durango	1.3	1.7	2.5	2.7	0.7	2.7	2.8	2.0	2.3	1.0
Guanajuato	7.9	6.4	6.9	2.8	1.3	8.9	8.7	8.1	3.6	5.3
Guerrero	0.4	0.5	0.9	0.2	0.2	0.1	0.2	0.4	0.1	0.1
Hidalgo	4.1	3.2	2.9	2.4	1.7	9.9	9.7	6.6	6.0	6.1
Jalisco	11.2	14.2	8.7	3.1	2.8	10.8	10.5	3.5	1.4	4.2
México	5.2	4.8	5.2	4.4	2.7	31.9	31.3	25.9	24.2	3.9
Michoacán	5.7	5.8	5.0	1.2	0.9	3.7	3.6	2.2	0.6	4.7
Morelos	1.2	0.9	1.0	0.9	0.7	0.3	0.3	0.4	0.4	0.1
Nayarit	2.0	1.3	1.9	0.6	0.4	1.2	0.9	1.1	0.4	0.3
Nuevo León	2.7	2.8	3.1	7.9	9.4	0.2	0.2	0.1	0.3	2.5
Oaxaca	1.2	1.7	2.2	0.6	0.3	4.2	6.2	7.3	2.3	0.7
Puebla	9.9	9.1	7.3	6.5	5.2	11.0	10.8	10.3	10.0	6.0
Querétaro	2.0	1.9	1.7	0.7	0.3	0.7	0.7	1.6	0.7	0.8
Quintana Roo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
San Luis Potosí	3.0	2.4	3.3	3.6	2.6	0.6	0.7	2.4	2.8	0.4
Sinaloa	2.0	2.3	1.9	1.2	1.6	5.3	4.3	0.6	0.4	0.9
Sonora	1.9	1.9	2.8	1.3	1.3	0.1	0.1	0.1	0.0	0.3
Tabasco	0.6	0.8	0.6	0.2	0.2	0.1	0.1	0.0	0.0	0.3
Tamaulipas	0.6	0.6	0.8	0.7	1.4	0.1	0.1	0.1	0.1	4.0
Tlaxcala	4.1	2.2	1.9	1.5	0.7	0.5	0.4	4.7	4.0	0.1
Veracruz	4.4	4.2	4.7	8.7	6.0	1.9	2.2	4.0	8.2	5.4
Yucatán	2.5	3.0	3.4	3.4	1.8	0.4	0.4	0.2	0.2	2.0
Zacatecas	2.5	2.0	2.0	0.4	0.2	0.9	0.9	0.6	0.1	1.2
TOTAL	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.10
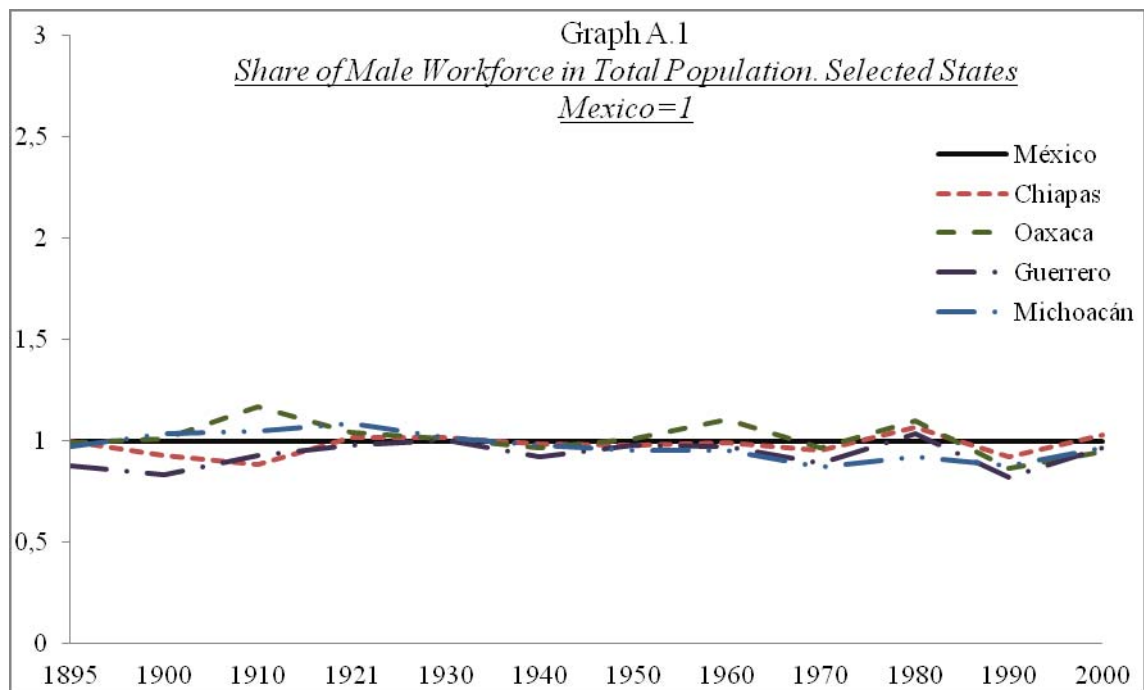*Regional Government, Transport and Other services GDP (percentage)*

	Government					Transport					Other services				
	1895	1900	1910	1921	1930	1895	1900	1910	1921	1930	1895	1900	1910	1921	1930
Aguascalientes	0.6	0.7	0.6	0.4	0.3	1.3	1.2	1.1	1.4	1.3	0.9	0.9	1.0	1.4	1.8
Baja California	0.8	0.8	1.2	3.7	4.8	0.8	0.9	1.5	1.0	0.7	0.5	0.4	0.6	0.8	1.2
Campeche	2.3	1.0	0.6	1.8	0.9	0.5	1.3	2.4	2.1	1.0	1.1	0.5	0.4	0.6	0.5
Coahuila	2.1	1.6	2.4	1.7	1.6	6.3	3.5	2.3	4.2	4.8	1.7	3.3	3.2	4.7	4.8
Colima	0.6	0.4	0.5	0.0	0.5	0.5	0.5	0.5	1.2	0.5	0.5	0.4	0.5	0.8	0.2
Chiapas	1.0	1.1	1.7	0.9	1.3	1.0	0.8	0.8	0.8	1.2	3.5	2.0	1.7	1.2	0.6
Chihuahua	2.5	2.4	2.8	4.1	3.9	1.2	1.2	2.1	1.5	2.9	2.4	2.5	3.7	3.4	5.0
Mexico City	16.4	18.1	22.5	11.5	11.4	10.0	8.9	11.1	16.3	22.7	16.6	16.1	22.7	24.0	34.1
Durango	1.0	1.5	1.2	1.4	1.0	1.9	2.3	2.0	1.6	2.1	2.2	2.8	2.3	1.2	1.4
Guanajuato	8.1	6.0	2.8	4.6	3.8	7.0	8.9	10.2	6.3	5.5	7.6	6.5	5.4	2.8	5.1
Guerrero	2.3	2.5	4.0	1.7	1.4	0.8	0.4	0.7	0.5	0.6	1.3	1.3	1.2	1.0	1.5
Hidalgo	6.6	4.1	3.0	6.3	5.9	3.9	4.6	3.6	2.2	2.0	3.5	3.1	3.2	4.1	1.2
Jalisco	5.4	7.7	4.1	7.5	7.6	10.1	12.7	8.8	10.6	7.2	7.9	9.4	5.7	6.4	4.3
México	4.6	2.7	3.6	5.0	4.8	6.9	5.5	5.7	3.1	3.4	4.3	3.7	5.3	5.8	3.9
Michoacán	3.5	4.9	3.7	5.6	3.7	10.0	10.0	9.5	8.7	6.0	5.4	4.9	4.4	2.6	1.7
Morelos	3.1	1.5	2.1	0.2	0.8	0.7	0.6	0.4	0.2	0.3	0.9	0.7	0.9	0.4	0.3
Nayarit	1.3	1.4	2.3	1.0	0.8	2.1	1.8	1.9	1.7	0.9	1.1	1.0	1.5	0.8	0.4
Nuevo León	2.8	3.1	2.3	1.3	1.6	1.2	0.9	1.8	2.6	3.4	2.8	8.6	2.7	2.0	4.7
Oaxaca	4.0	4.3	4.5	2.7	2.9	2.2	2.0	2.5	2.0	2.3	3.4	3.5	3.5	1.4	1.0
Puebla	5.2	8.0	6.4	8.7	4.3	8.4	9.1	6.8	7.9	4.3	5.2	4.7	5.0	4.6	6.0
Querétaro	1.3	1.1	0.9	0.1	0.9	1.8	1.6	1.4	1.8	0.9	1.9	1.4	1.3	0.7	1.0
Quintana Roo	0.0	0.0	1.4	1.0	0.6	0.0	0.0	0.6	0.4	0.2	0.0	0.0	0.6	0.8	0.1
San Luis Potosí	1.3	1.7	1.9	1.8	1.5	2.2	2.6	2.8	2.4	4.2	3.7	3.3	3.7	2.2	2.5
Sinaloa	2.7	2.7	1.8	0.4	3.6	2.0	4.6	1.7	1.7	2.1	2.1	2.8	1.6	2.6	0.6
Sonora	2.7	5.8	4.1	3.2	4.3	0.6	1.1	2.0	1.7	2.1	1.9	3.0	3.5	2.1	3.2
Tabasco	1.6	1.3	1.6	0.7	2.7	0.6	1.3	1.1	1.2	0.8	0.9	1.3	0.7	0.3	0.4
Tamaulipas	3.4	3.5	3.2	4.7	4.7	0.9	0.9	1.2	3.2	3.7	3.5	2.5	2.0	5.1	5.5
Tlaxcala	0.6	0.8	1.0	1.1	1.3	6.2	3.0	1.8	1.1	1.0	1.8	0.7	0.7	1.0	0.9
Veracruz	6.5	5.4	5.6	8.4	7.7	4.6	3.4	6.9	6.1	6.6	6.0	4.5	5.8	6.8	2.0
Yucatán	2.9	1.1	2.7	7.4	7.6	2.7	2.3	2.8	2.9	3.3	2.3	1.7	2.6	6.6	1.8
Zacatecas	2.8	2.7	3.2	1.1	1.8	1.5	2.0	1.8	1.8	2.1	3.4	2.7	2.4	2.1	2.3
TOTAL	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Table A.11
Regional Trade GDP (percentage)

	1895	**1900**	**1910**	**1921**	**1930**
Aguascalientes	0.6	0.7	0.9	0.9	0.8
Baja California	1.3	1.3	1.1	1.0	2.2
Campeche	1.1	1.0	0.9	1.1	0.6
Coahuila	2.9	3.6	3.8	2.4	3.5
Colima	0.8	0.6	0.5	0.5	0.5
Chiapas	1.3	1.3	1.0	1.3	1.0
Chihuahua	3.6	3.5	3.3	2.2	2.7
Mexico City	24.0	22.4	25.0	37.1	36.5
Durango	2.6	2.8	2.0	1.2	1.2
Guanajuato	4.7	4.0	4.2	2.7	3.3
Guerrero	1.0	1.0	1.3	0.1	0.6
Hidalgo	3.6	3.2	2.5	2.0	2.5
Jalisco	3.0	4.2	3.8	3.3	2.8
México	4.6	3.8	3.6	2.1	2.4
Michoacán	2.9	3.0	3.1	2.2	2.3
Morelos	2.3	2.1	1.6	0.2	0.5
Nayarit	1.4	0.9	1.2	0.8	0.6
Nuevo León	2.1	3.2	2.3	2.2	2.3
Oaxaca	1.5	2.7	2.0	2.2	2.3
Puebla	5.0	6.1	6.5	6.3	5.0
Querétaro	1.3	1.4	1.4	1.2	0.8
Quintana Roo	0.0	0.0	0.0	0.0	0.0
San Luis Potosí	2.7	3.2	3.3	2.5	2.4
Sinaloa	2.3	2.3	2.1	1.0	1.5
Sonora	2.6	2.3	2.1	2.1	1.7
Tabasco	1.2	1.0	0.9	1.0	0.7
Tamaulipas	2.2	2.3	2.0	3.9	7.6
Tlaxcala	0.9	1.0	0.9	0.4	0.6
Veracruz	9.2	9.1	11.0	9.8	8.1
Yucatán	3.5	3.3	3.7	5.7	2.3
Zacatecas	3.6	2.7	1.9	0.6	0.8
TOTAL	*100*	*100*	*100*	*100*	*100*

Source: See Section 2.

Graph A.1
Share of Male Workforce in Total Population. Selected States
México=1

Legend: México, Chiapas, Oaxaca, Guerrero, Michoacán

Source: Own elaboration with data taken from the INEGI.

Graph A.2
Share of Female Workforce in Total Population. Selected States.
México=1

Legend: México, Chiapas, Oaxaca, Guerrero, Michoacán

Source: Own elaboration with data taken from the INEGI.