DOCUMENTOS DE TRABAJO
ISSN 2174-4912

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DT-AEHE N°1608
www.aehe.es

Marzo 2016

asociación española de historia económica

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JEL: N16, N96, R11

ABSTRACT

Economic Historians have paid close attention to the long term evolution of regional inequality. Nevertheless, so far research has largely focused on industrialised economies, neglecting to a large extent the experience of low- and middle-income countries. This paper aims to provide, using a new regional labour productivity database, evidence on the determinants of regional income inequality changes in Mexico from 1900 to the present. Different forces have driven regional inequality in each historical period. During the primary-export led-growth period of the first globalization (1900-1930) differences across regions in the intensity of structural change caused an increasing divergence. From 1930 to 1980, during the State-led Industrialisation, internal migrations contributed to a strong process of regional convergence in productivity, both in the within and the between-sector components of regional inequality. Finally, the increasing regional divergence that has taken place from 1980 onwards has been mainly an effect of the operation of labour productivity differentials within each sector.

Keywords: Economic History, Economic Growth, Regional Income Inequality, Mexico.

RESUMEN

En los últimos años, la Historia Económica ha prestado mucha atención a la evolución de las desigualdades regionales en el largo plazo. No obstante, esta literatura ha estado principalmente enfocada en el estudio de la experiencia de los países industrializados, dejando a un lado los casos de países de ingreso medio y bajo. Este artículo tiene como objetivo brindar, a través de una nueva serie de productividades laborales a nivel regional, evidencia sobre las desigualdades regionales en México en el periodo 1900-2000. En este trabajo se argumenta que distintas fuerzas, según el modelo de desarrollo económico adoptado, han determinado las tendencias de las desigualdades regionales en México en el largo plazo. Durante el periodo agro-exportador (1900-1930), un proceso desigual de cambio estructural entre las regiones causó un incremento de las desigualdades regionales. Durante el modelo de la Industrialización Dirigida por el Estado (1930-1980), intensas migraciones laborales internas contribuyeron a una rápida convergencia de las productividades laborales entre las regiones de México (dentro de cada sector económico, y entre la estructura económica de éstas). Por último, el periodo de divergencia regional experimentado a partir de 1980, ha sido resultado del incremento de los diferenciales de productividad laboral dentro de cada sector económico.

Palabras clave: Historia Económica, Crecimiento Económico, Desigualdades Regionales, México.

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EXPLAINING REGIONAL INEQUALITY FROM THE PERIPHERY: THE MEXICAN CASE, 1900-2000[1]

1.- Introduction

There is a growing economic literature dealing with the reasons of regional income inequality. Different theoretical approaches have suggested alternative explanations on how regional inequality evolves, and on the mechanisms behind its trends. In general, most research seems to predict an intrinsic 'self-correcting' process of regional disparities over the long term. To start with, the Neoclassical Growth model (on the basis of the Solow model), under the assumption of diminishing returns to both physical and human capital, predicts regional convergence as a result of the reduction of the differentials of capital-labour ratios across regions. Factor mobility makes capital-scarce regions to accumulate capital at a higher speed than those regions with a higher initial capital-labour ratio, causing a convergence in capital-labour ratios and therefore in labour productivity (Barro and Sala-i-Martín, 1992). [2] Secondly, the Heckscher-Ohlin neoclassical trade theory suggests that regional disparities are determined by differences among regions in factor endowments and relative input prices. In that context, economic integration and factor mobility generates convergence through the equalization of factor prices, and the reduction in factor endowment differences (Slaughter, 1997).[3]

By contrast, Endogenous Growth Theory and New Economic Geography (NEG), based on the assumption of increasing returns are much less optimistic about the impact of market integration on convergence. In fact, both of them predict an initial process of

[1] This paper is part of my PhD dissertation, carried out under the supervision of Alfonso Herranz-Loncán and Marc Badia-Miró. This research has been funded by the CONACyT scholarships for PhD studies abroad program. I also want to acknowledge the financial support received from the Institut Ramon Llull (Generalitat de Catalunya), the research project ECO2012-39169-C03-02 financed by the Spanish Ministry of Economy and Competitiveness, and the Xarxa de Referència d'R+D+I en Economia i Polítiques Públiques financed by the Catalan government. I am in debt to Alfonso Herranz-Loncán and Marc Badia-Miró for their constant support during my PhD research. I also thank the participants at the seminar "Desigualdad Económica Regional en Perspectiva Histórica: Europa y Latinoamérica", held at the University of Valencia, Spain. I wish to thank Julio Martínez-Galarraga, Daniel Tirado and Joan Rosés for their very useful comments on this paper.

[2] Following Barro, Mankiw and Sala-i-Martín (1995), this theory predicts higher rates of convergence in an open-economy model. Note that, as this model assumes that regions produce identical goods, trade has almost no impact on regional convergence.

[3] Using the same H-O theoretical framework, economic integration in the presence of different factor endowments could lead to regional divergence due to regional specialization and differences in regional economic structures. As M. Slaughter (1997) has pointed: "…even if trade is leading to convergence of factor prices according to the FPC theorem, per capita income can still diverge if endowments across countries are becoming sufficiently dissimilar" (Slaughter, 1997: 196).

regional divergence. Endogenous Growth models note that, due to increasing returns and factor mobility, regions with high initial capital-labour ratios may always grow faster than regions with low ratios (Romer, 1986). Similarly, NEG predicts that the interaction between transport cost reduction, increasing returns to scale and market potential leads to economic concentration and divergence in labour productivity levels, as activities with increasing returns benefit from agglomeration externalities (Krugman, 1991).[4]

Finally, some researchers have highlighted the importance of structural change as a source of regional income convergence (see, among others, Williamson, 1965; Caselli and Coleman, 2001). The basic idea is that, considering the reallocation of resources from low-productivity to high-productivity sectors as a source of growth, convergence would result from low-income regions' undertaking a fast process of structural change. According to this approach, some regions achieved structural change sooner than other, specialising in sectors with high productivity.[5] At some point, regions initially specialised in low productivity sectors start their own process of structural change (from low value-added sectors towards higher value-added ones) due to the reduction of labour reallocation costs (such as transport costs and the costs of acquiring non-agricultural skills), as well as increasing interregional factor mobility.[6] This process of structural change leads to regional income convergence, since productivity growth is higher in low-income regions. Williamson's (1965) seminal work suggests that regional inequality, driven by structural change, tends to follow an inverted-U trend over the long term. At early stages of modern economic growth and market integration, regional inequality is expected to increase, together with regional specialisation (spatially uneven structural change). However, as industrialisation continues advancing and spreads across the territory, regional inequality tends to decrease.

In this context, Economic History has recently provided increasing evidence on regional inequality trends and its determinants from the period in which domestic markets got integrated to nowadays, which allows testing the different theoretical predictions. This literature has mostly focused on high-income economies, such as the European countries and the US, for which industrial location has been the central factor driving regional disparities.[7] Generally speaking, one may conclude that, in the long run, there has been neither a common trend (although several of those economies have experienced

[4] An extension of this model predicts a possible further decrease of economic concentration. Puga (1999) argues that firms gradually become sensitive to congestion costs (high-income regions have higher wages) when trade costs continue falling and workers do not move across regions (responding to income differentials), which leads to a subsequent dispersion of industrial activity.

[5] Structural change is typically explained by two mechanisms: "1) an income elasticity of the demand for farm products less than one, and 2) faster TFP growth in farming relative to other sectors in the economy, (…) since fewer workers are needed to produce the same amount of farm goods" (Caselli and Coleman, 2001: 586).

[6] Even though the model proposed in Caselli and Coleman (2001) does not rely on interregional factor mobility, there is large evidence suggesting that this condition has played an important role in the process of structural change (see Williamson, 1965; Enflo and Rosés, 2015).

[7] The main findings of the different European case studies can be seen in Wolf and Rosés (2015).

the inverted-U pattern suggested by Williamson), nor a unique explanatory factor behind regional income inequality.

For instance, Kim (1998), Combes, Lafourcade, Thisse and Toutain (2011), Badia-Miró, Guilera and Lains (2012) and Martínez-Galarraga, Rosés, and Tirado (2013), identify an inverted-U trend in regional inequality over the long run in the US, France, Portugal, and Spain, respectively.[8] Crafts (2005) also finds that British regional inequality followed an inverted-U pattern from 1871 to 1931. However, Geary and Stark (2015) have recently questioned Crafts' results, suggesting that regional inequality decreased in the UK from 1861 to 1914.[9] For Italy, Felice (2011) notes a persistent north/south income division , along with a convergence process between the northern and central regions. Finally, Enflo and Rosés (2015) find sustained income convergence among the Swedish regions from 1860 to 2000.

These trends have been driven by different forces. While Kim (1998) has explained the regional inequality trend in the US on the basis of neoclassical trade and growth models, Klein and Crafts (2012) argue that market potential (through linkages and scale effects) largely explains industrial location in the US from 1880 to 1920. Among the European cases, Crafts and Mulatu (2005), suggest that regional inequality in Britain can be explained on the basis of H-O factor endowments. By contrast, according to Combes, Lafourcade, Thisse and Toutain (2011), agglomeration economies have driven regional inequality in France in the long run. In other cases, the available evidence suggests that both neoclassical (diminishing returns to capital) and NEG (increasing returns to capital) factors could be jointly affecting industrial location decisions. For instance, Martínez-Galarraga (2012) and Wolf (2007) suggest that both H-O and NEG forces affected the location of industrial activity during the early stage of the integration of domestic markets in Spain and Poland, respectively. Finally, Enflo and Rosés (2015) find that the structural change interpretation of regional income differences matches well with the evolution of Swedish regional inequality.

A few recent works have also shed some light on the long-run trends of regional income inequality in peripheral economies, especially from Latin America and Asia. Badia-Miró (2015) shows that regional disparities in Chile have been closely correlated to the exploitation of natural resources (mining cycles), which, in turn, has depended on the evolution of international demand. Aráoz and Nicolini (2015) offer new GDP per capita estimates for Argentina's regions in 1914, and link them with the figures available for 1953. These authors confirm the persistence of the leading role of the Buenos Aires

[8] Each economy reached its peak of regional inequality in different years, mainly depending on the dynamics of each country's industrialisation process and changes in the location of industrial activity. In most cases, the peak of regional inequality took place in the early 20th century, with the exception of Portugal, where it did not arrive until the 1970s. In the Mexican case, the peak (observed during the 1930s) was not only related to the industrial location across the regions, but also to institutional changes (see Section 4).

[9] The difference between both estimates comes from Crafts' (2005) modification of the methodology proposed by Geary and Stark (2002) to estimate regional GDP. According to Geary and Stark (2015), Crafts' (2005) modification has not been tested, nor is testable. Instead, in their more recent paper, Geary and Stark's method is restated and tested against modern data.

region during this period (driven by agglomeration effects), and suggest that comparative advantages (primary activities) explain to a large extent the rank of the next three richest regions. In the Uruguayan case, García, Martínez-Galarraga, and Willebald (2014) show a persistent process of regional GDP *per capita* convergence between 1908 and 1961, mostly driven by the process of industrial decentralisation that took place during the State-led industrialisation model. For the Brazilian case, Reis (2014) shows a secular persistence of differences in regional income *per capita* and labour productivity from 1872 to 2000. This author suggests that regional convergence in Brazil was relatively slow in comparison to the experiences of high-income economies. In Brazil, while phases of export-led growth boosted regional divergence, relative convergence took place during the State-led Industrialisation period. Finally, for the Asian economies, Caruana-Galizia (2013), and Caruana-Galizia and Ma (2015), offer regional GDP *per capita* during the First Globalisation for India (1875-1911) and China (1873-1918), respectively. In the first case, the author observe regional income convergence, whereas Caruana-Galizia and Ma (2015) find a U-form trend in Chinese regional income disparities, which could be explained by both institutional and geographical forces.

It seems clear that there are significant differences between low and middle-income economies and industrialised ones that must be considered when explaining the evolution and causes of regional inequality in the long run. Firstly, unlike what happened in industrialised economies, the location of manufacturing and high value-added services and the presence of agglomeration economies, might not be the main source of regional income disparities in low-income countries. Instead, primary activities, the exploitation of natural resources, or FDI location may perform a central role over the long term. Secondly, small peripheral countries usually have a greater dependency on the international economy (through the demand and/or price fluctuations of commodities), which has important spatial implications.[10] Furthermore, low and middle-income economies tend to have, compared to industrialised ones, higher differences in economic structure across regions, which makes the analysis of regional development more complex.[11] Taking into account these differences, it is clear that the explanatory factors driving regional disparities may be fairly dissimilar in low-income economies and in high-income/industrialised economies, and that more evidence on low-income regions should be acquired to obtain a more complete picture on the determinants of long term regional inequality.

[10] In this regard, Rodríguez-Pose and Ezcurra (2013) have shown a positive association between the degree of economic openness and the magnitude of within-country regional disparities. Moreover, the authors show that the effect of economic globalisation on regional disparities is greater in low and middle-income countries.

[11] This is relevant to the Economic Growth literature because, as has been pointed out by Barro, Mankiw and Sala-i-Martin (1995:103), so far most empirical support for convergence has been derived from economies with similar regional structures, such as the US and the European countries. Thus, more evidence on long run experiences of economies with uneven spatial structures could be very illustrative in order to test some of the main theoretical predictions on the evolution of regional inequality.

Map 1
Mexican macro-regions[12]

Source: Own elaboration using QGIS software.

This paper aims at contributing to this literature by providing new evidence on another peripheral country: Mexico. The Mexican case has already been analysed by the literature on regional inequality, mainly because of two factors that makes it highly relevant. First, it is an emerging country that, in a relatively short period, during the 1980s, dramatically shifted from being a closed economy with high State intervention, to a very open one. Second, it is a middle-income country sharing a long border with the US, the biggest market in the world. This has attracted the interest of several scholars (Krugman and Livas-Elizondo, 1996; Esquivel, 1999; Hanson, 1997, 1998a, 1998b, 2001; Sánchez-Reaza and Rodríguez-Pose, 2002; Rodríguez-Oreggia, 2005; Jordaan and Rodríguez-Oreggia, 2012; Rodríguez-Pose and Villarreal, 2015).[13] Nevertheless, these works have mainly focused on the period starting in 1980. Instead, in this paper I use a new long run database of regional labour productivity, which allows tracing the evolution and explanatory forces of Mexican regional inequality since the early 20th century. In the next pages, I show that regional inequality in Mexico has followed a N-form trend in the long

[12] The definition of the macro-regions identified in Map 1 is based on both geographical and economic characteristics (see Table 1) and has already been used in previous research on Mexican regional inequality (Esquivel, 1999). The macro-regions are composed by the following states. *North*: Baja California Norte, Chihuahua, Coahuila, Nuevo León, Sonora, and Tamaulipas. *North-Pacific:* Baja California Sur, Colima, Jalisco, Nayarit and Sinaloa. *Centre-North:* Aguascalientes, Durango, San Luis Potosí and Zacatecas. *Gulf of Mexico*: Campeche, Tabasco, Quintana Roo, Veracruz and Yucatán. *Centre*: Guanajuato, Hidalgo, Morelos, Puebla, Querétaro, State of Mexico and Tlaxcala. *South:* Chiapas, Guerrero, Michoacán and Oaxaca. Mexico City, due to its population size, is considered as an additional macro-region.
[13] The main results and conclusions of these works are discussed in Section 4.

run which, in turn, has been closely correlated to the main institutional changes adopted in Mexico from 1900 onwards. In addition, following the convergence decomposition proposed by Caselli and Tenreyro (2004), I show that structural change and neoclassical forces have determined the evolution of Mexican regional inequality during the 20th century.

The rest of the paper is structured as follows. Section 2 presents the new regional GDP per worker database (1900 – 2000) and the main features of the long-term evolution of Mexican regional inequality. In Section 3, I study the determinants of regional disparities through an analysis of convergence decomposition into three components: within-industries inequality, labour reallocation, and between-industries inequality. On the basis of this analysis, in section 4, I suggest some explanatory factors of the process of regional convergence (or its absence) during the 20th century. Finally, section 5 concludes.

2.- Mexican regions' labour productivity by sector: A new database, 1900-2000

Using a GDP *per capita* database, Aguilar-Retureta (forthcoming) describes several dimensions of regional income disparities in Mexico from 1895 to 2010. That paper shows that, despite a persistent north-south division (reflected in very low mobility indicators), regional income inequality has followed a N-form trend over the long term. This has been closely related with the different development models adopted in Mexico since the early stages of national market integration. Thus, regional disparity increased during the periods of higher international integration (the primary-export-led growth model from 1895 to the 1930s, and the most recent period of economic openness starting in the 1980s), and decreased during the State-led Industrialisation period of that took place between 1930s and the 1970s. In contrast with the experience of high-income countries, in Mexico regional convergence was accompanied by a process of spatial concentration of industrial activity. On the other hand, the results of a spatial correlation analysis of income levels suggest a statistically significant clustering of poor southern states, while the richest regions (Mexico City and the northern states) did not develop any high-income cluster around them. This reflects the close connections between the northern states' growth and the US market, as well as the powerful capital effect associated to the growth of Mexico City.

In this regard, in Mexico market potential has exerted a strong influence on industrial location in the long run. During the State-led industrialisation period (1930-1980), industrial activity was highly concentrated in Mexico City, the largest domestic market. However, during the subsequent process of economic openness industrial activity has tended to be reallocated to the north border states. This change has been explained by some scholars on the basis of NEG arguments. Krugman and Livas-Elizondo (1996) have argued that, during the State-led industrialisation period, industrial activity tended to concentrate in Mexico City as a consequence of the emergence of strong forward and backward linkages in this market. The same forces could explain the reallocation of

industrial activity to northern regions during the most recent period of economic openness. In this case, forward and backward linkages between the Mexican firms and the US economy have led industrial activity to move closer to that market.

In order to analyse the determinants of Mexican regional disparities from a longer perspective, in this paper I present a new database of labour productivity (GDP per worker) at the state level.[14] Labour productivity figures have been constructed as follows. Firstly, national GDP, taken from the Maddison project database (Maddison, 2013), has been distributed among states in each benchmark year, on the basis of my own state GDP shares for 1900-1930 (Aguilar-Retureta, 2015) and Germán-Soto's (2005) estimates for 1940 to 2000. I have then disaggregated each regional GDP figure into five economic sectors: agrarian activities, mining, oil, industry, and services. In this sense, the oil sector includes the extraction of crude oil and natural gas. This sector has been removed from the analysis in this paper, to avoid distortions in the study of regional disparities. This is because oil production, which is extremely concentrated in certain areas, account for a significant share of these areas' GDP over time, but very little impact on their local economic development (OECD. 1997). Sector shares have been taken from Aguilar-Retureta (2015) for 1900-1930, Appendini (1976) for 1940-1960,[15] and INEGI (1985, 2002) for 1970-2000.[16] Finally, I have divided each sectoral GDP figure at the state level by the amount of labour force in that state and sector, estimated from Population Censuses.

[14] Mexican states are the equivalent to NUTS 2 according to the European classification. Throughout this paper, *state* and *region* are treated as synonyms.
[15] As Appendini (1976) estimation does not include the distribution of the secondary sector between mining, oil and industry, I use Ruiz's (2007) estimate of mining, oil and industry production to distribute the Appendini's data.
[16] INEGI (2002) provides data for 1993. I assume that sector shares were the same in 1990 and 1993.

Table 1. Labour Productivity at the state level: 1900-2000 (Mexico=1)[17]

	Overall				*Agriculture*				*Mining*				*Industry*				*Services*			
	1900	**1930**	**1980**	**2000**	**1900**	**1930**	**1980**	**2000**	**1900**	**1930**	**1980**	**2000**	**1900**	**1930**	**1980**	**2000**	**1900**	**1930**	**1980**	**2000**
Mexico City	*2.62*	*3.61*	*1.63*	*2.12*	1.7	0.9	0.9	1.3	0.0	1.6	0.8	2.0	1.0	1.6	1.3	2.4	1.3	1.3	1.2	1.7
North	*1.73*	*2.27*	*1.21*	*1.30*	*1.6*	*2.5*	*1.9*	*2.1*	*1.7*	*2.2*	*1.6*	*1.9*	*1.2*	*2.5*	*1.0*	*1.1*	*1.5*	*1.3*	*1.1*	*1.3*
Baja California	2.77	4.13	1.31	1.29	3.0	6.7	1.7	1.7	1.5	0.5	1.5	3.5	1.5	6.3	1.2	1.0	1.9	1.8	1.1	1.3
Chihuahua	1.26	1.99	1.07	1.38	1.2	1.5	1.6	2.6	1.1	1.9	1.6	0.6	0.8	1.1	0.8	0.9	1.6	1.3	1.0	1.6
Coahuila	1.39	1.86	1.26	1.32	1.4	2.3	1.5	2.9	0.8	0.7	1.1	1.2	0.9	2.1	1.2	1.3	1.1	1.1	1.0	1.2
Nuevo León	2.01	1.83	1.22	1.6	1.0	1.0	2.0	1.7	3.9	8.8	1.6	1.5	1.3	3.5	0.7	1.4	1.8	1.0	1.5	1.5
Sonora	1.93	1.83	1.36	1.18	2.2	2.3	3.3	2.1	1.7	1.0	2.1	1.3	1.4	1.0	1.1	1.0	1.0	0.9	1.0	1.2
Tamaulipas	1.04	1.97	1.06	1.03	0.9	1.2	1.6	1.7	0.9	0.0	1.4	3.5	0.9	1.0	1.0	1.0	1.5	1.9	1.0	1.0
Pacific-North	*1.13*	*0.76*	*1.01*	*0.87*	*1.4*	*1.3*	*1.8*	*1.6*	*0.7*	*0.2*	*1.2*	*1.6*	*1.1*	*0.6*	*0.9*	*0.7*	*0.8*	*0.7*	*0.9*	*0.8*
Baja California S	n.d.	n.d.	1.4	1.09	nd	nd	2.7	2.0	nd	nd	2.0	2.5	nd	nd	1.1	0.7	nd	nd	1.1	1.0
Colima	0.83	0.81	0.92	0.92	0.9	1.2	1.6	1.4	0.0	0.0	1.0	2.0	0.6	0.3	0.9	1.1	0.9	0.8	0.8	0.8
Jalisco	0.89	0.56	1.02	0.93	1.0	0.9	1.8	1.9	0.7	0.4	1.3	1.7	1.0	0.4	0.8	0.8	0.6	0.6	0.9	0.9
Nayarit	1.41	0.74	0.77	0.59	2.2	1.5	1.4	1.2	0.7	0.0	0.5	0.7	1.4	0.5	0.9	0.5	0.8	0.6	0.9	0.6
Sinaloa	1.4	0.93	0.92	0.8	1.5	1.7	1.7	1.6	1.5	0.4	1.0	1.0	1.4	1.1	0.9	0.7	1.0	0.7	0.9	0.8
Centre-North	*1.25*	*0.93*	*0.79*	*0.91*	*1.3*	*0.8*	*1.2*	*2.0*	*1.9*	*1.0*	*0.8*	*0.6*	*0.9*	*0.8*	*0.7*	*0.8*	*1.1*	*0.9*	*0.9*	*0.9*
Aguascalientes	1.94	1.01	0.86	1.2	2.2	0.6	1.4	2.0	4.6	0.5	0.5	0.4	1.1	0.4	0.7	1.1	0.8	1.0	0.9	1.1
Durango	1.46	0.96	0.89	0.92	1.6	1.1	1.5	2.7	1.2	1.1	0.9	0.6	0.8	1.6	1.0	0.8	1.3	0.7	0.9	0.8
San Luis Potosí	0.69	0.85	0.73	0.81	0.4	0.7	0.8	0.9	1.2	1.3	0.7	0.6	0.9	0.7	0.8	1.0	0.9	0.9	0.8	0.8
Zacatecas	0.89	0.88	0.69	0.72	0.8	0.7	1.2	2.4	0.5	1.2	1.0	0.7	0.9	0.4	0.5	0.4	1.2	0.9	0.9	0.7
Gulf of Mexico	*1.12*	*0.97*	*0.89*	*0.76*	*1.4*	*1.6*	*1.1*	*0.5*	*0.0*	*0.0*	*1.4*	*1.3*	*0.9*	*0.8*	*0.9*	*0.6*	*1.3*	*0.9*	*1.0*	*0.9*
Campeche	0.9	0.92	0.9	0.65	0.6	1.3	1.6	0.7	0.0	0.0	1.4	0.0	0.9	0.3	0.8	0.3	1.2	1.0	1.2	0.8
Tabasco	0.89	0.75	0.69	0.57	0.9	1.6	0.8	0.5	0.0	0.0	1.7	0.0	0.9	0.3	0.8	0.7	1.4	0.9	0.9	0.6
Quintana Roo	n.d.	n.d.	1.25	1.28	nd	nd	1.4	0.3	nd	nd	1.4	2.8	nd	nd	0.8	0.4	nd	nd	1.1	1.4
Veracruz	1.01	0.9	0.8	0.59	1.2	1.1	0.8	0.5	0.0	0.0	1.0	1.4	1.0	1.7	1.1	0.9	1.5	0.9	0.9	0.6
Yucatán	1.66	1.3	0.82	0.73	2.9	2.4	0.6	0.7	0.0	0.0	1.3	2.5	0.9	1.1	0.9	0.6	1.2	0.9	0.9	0.8
Centre	*0.86*	*0.64*	*0.78*	*0.80*	*0.9*	*0.8*	*0.9*	*1.0*	*0.8*	*0.4*	*0.6*	*0.9*	*1.0*	*0.7*	*0.9*	*0.9*	*1.0*	*0.8*	*0.9*	*0.8*
Guanajuato	0.8	0.63	0.83	0.83	0.8	0.8	1.1	1.3	0.3	0.3	0.5	0.5	1.1	0.5	0.7	0.7	0.7	0.8	1.0	0.9
Hidalgo	0.78	0.8	0.62	0.65	0.6	0.7	0.5	0.7	0.7	0.9	0.7	0.6	1.0	0.9	1.1	0.8	0.8	0.9	0.8	0.7
Morelos	1.24	0.66	0.94	0.84	1.6	1.2	1.5	1.8	0.5	0.6	0.8	0.9	1.0	0.8	0.9	0.9	1.7	0.6	0.8	0.7
Puebla	0.89	0.72	0.62	0.71	1.0	0.8	0.5	0.5	2.8	0.6	0.5	0.9	1.0	0.7	0.8	0.8	0.9	1.1	0.9	0.9
Querétaro	0.77	0.49	0.9	1.22	0.6	0.6	1.0	1.3	0.7	0.1	0.4	0.3	1.0	0.4	1.1	1.3	0.7	0.8	1.0	1.1
State of Mexico	0.67	0.55	1.05	0.81	0.7	0.7	0.8	1.3	0.7	0.2	0.7	1.2	1.0	0.7	1.3	1.0	0.8	0.7	0.8	0.6
Tlaxcala	0.9	0.66	0.48	0.56	0.8	1.1	0.5	0.6	0.0	0.0	0.8	1.6	1.0	0.5	0.6	0.5	1.1	0.8	0.8	0.6
South	*0.60*	*0.39*	*0.55*	*0.55*	*0.8*	*0.7*	*0.7*	*0.7*	*1.4*	*0.3*	*1.0*	*1.7*	*0.8*	*0.3*	*0.7*	*0.5*	*0.9*	*0.7*	*0.9*	*0.7*
Chiapas	0.79	0.48	0.47	0.47	1.2	1.0	0.7	0.4	3.2	0.0	0.7	2.1	0.6	0.7	1.1	0.7	1.2	0.6	0.8	0.7
Guerrero	0.46	0.28	0.67	0.62	0.6	0.4	0.6	0.7	1.1	0.8	0.7	0.7	0.6	0.2	0.7	0.4	1.0	0.8	1.0	0.8
Michoacán	0.71	0.49	0.64	0.65	0.8	0.8	0.9	1.3	0.9	0.4	1.8	3.0	1.1	0.4	0.6	0.6	0.6	0.6	0.9	0.6
Oaxaca	0.45	0.3	0.4	0.47	0.5	0.5	0.5	0.5	0.3	0.1	0.6	0.8	0.6	0.2	0.5	0.4	1.0	0.8	0.9	0.7
Mexico (GK 1990 $)	***4440***	***5604***	***20513***	***22060***	***2140***	***1856***	***5577***	***7526***	***12756***	***56270***	***29425***	***30808***	***6448***	***9689***	***22721***	***21604***	***16668***	***21435***	***31474***	***26545***

[17] Oil sector excluded.

Population census data have been subjected to several corrections. First, the 1921 Population Census does not provide sectoral labour force at the state level, but just at the national one. To distribute the national data among states, I use a weighted average of the state sectoral labour shares of 1910 and 1930.[18] Furthermore, the sectoral classification of the labour force in the 1980 Population Census is biased due to the large size of the category "insufficiently specified activities".[19] Thus, I have used a weighted average of labour productivity levels in 1970 and 1990 to estimate the sectoral labour force at the state level in 1980.[20] The final result of these calculations is a database of regional GDP per worker disaggregated into five economic sectors for the final year of each decade between 1900 and 2000, expressed in 1990 International Geary-Khamis dollars.[21]

Table 1 shows the different sectors' labour productivity at the state level relative to the national average, as well as the macro-regions' average, for four selected benchmark years. Oil sector has been removed. The table indicates that Mexico City and the northern regions have always had the highest levels of labour productivity, whereas the central and southern regions have been at the other end of the ranking, which is consistent with pc GDP evidence provided by Aguilar-Retureta (forthcoming). Some extremely high relative levels of labour productivity stand out, such as those of Baja California North and Nuevo León in 1900 and 1930, in the agriculture and mining sectors respectively, as well as those for the industrial sector in Baja California and Nuevo León in 1930. Broadly speaking, these figures reflect the very high land-labour and capital-labour ratios in those states and sectors. Table 1 also shows the drop in the average industrial and services labour productivity from 1980 to 2000, when they came closer to the national level of overall labour productivity. This can be explained due to the poor economic performance of those sectors in most states, with only a few exceptions, such as Mexico City, Nuevo León, Aguascalientes, Querétaro, Colima and Quintana Roo. The decrease in these sectors' labour productivity, which was especially intense in the Gulf of Mexico and the South, has been well studied in previous research. For instance, Romero, Puyana and Dieck (2005) have shown that

[18] The 1910 shares' weight is twice as large as that of the 1930 ones. This means that the distribution of the national labour force among states in 1921 is assumed to be closer to that of 1910 than to that of 1930. This is based on recent evidence suggesting that the impact of the Revolution (started in 1910) on economic performance was moderate (See Haber, 2010: 432) and the need to account for relatively intense economic change during the 1920s

[19] For instance, according to the 1980 Population Census, Mexico City had 1,241,602 workers in this category, while in the 1970 and 1990 Censuses the equivalent numbers were just 62,023 and 115,572, respectively. Similar situations can be observed in the rest of the states.

[20] The 1970 shares' weight is twice as large as that for 1990. This tries to account for the increasing economic openness and profound institutional reforms that took place in Mexico since the mid-1980s. Thus, I assume that states' sectoral labour productivity structure in 1980 was more similar to that of 1970 than to that of 1990.

[21] All details and the complete database can be seen in Appendix A.

national GDP *per capita* growth from 1982 to 2000 was the effect of a rise in activity rates, rather than a reflection of increases in overall labour productivity.[22]

Interestingly enough, the period in which the northern bordering states had a relatively better industrial performance (compared with the national one), was during the agro-export led-growth decades (1900-1930) and not, as might be expected, during the most recent stage of economic openness (1980-2000). There is a recent body of literature that highlights the benefits, in terms of GDP *per capita*, that these states have obtained from recent economic openness (Esquivel, 1999; Jordaan and Rodríguez-Oreggia, 2012; Sánchez-Reaza and Rodríguez-Pose, 2002; Rodríguez-Oreggia, 2005; Chiquiar, 2005). However, my estimation shows that, when considering labour productivity, in the last decades of the 20th century, all northern states sectors had, a rather steady performance, compared with the national average.[23] Instead, Mexico City's labour productivity has substantially increased since the 1980s, especially in the mining and industrial sectors.[24]

Figure 1 shows the evolution of σ-convergence (measured through the standard deviation) of state GDP *per capita*, labour productivity and activity rates from 1900 to 2000. It clearly shows that labour productivity is the main variable explaining changes in Mexican regional income inequality over the long run. In both cases, maximum inequality was reached at the end of the first globalization period (in 1940 in the case of pc GDP and in 1930 in the case of labour productivity). From then on, both regional GDP pc and labour productivity tended to converge across states until 1980, to start a new period of divergence thereafter. By contrast, regional inequality in activity rates has remained almost constant over the entire period.[25]

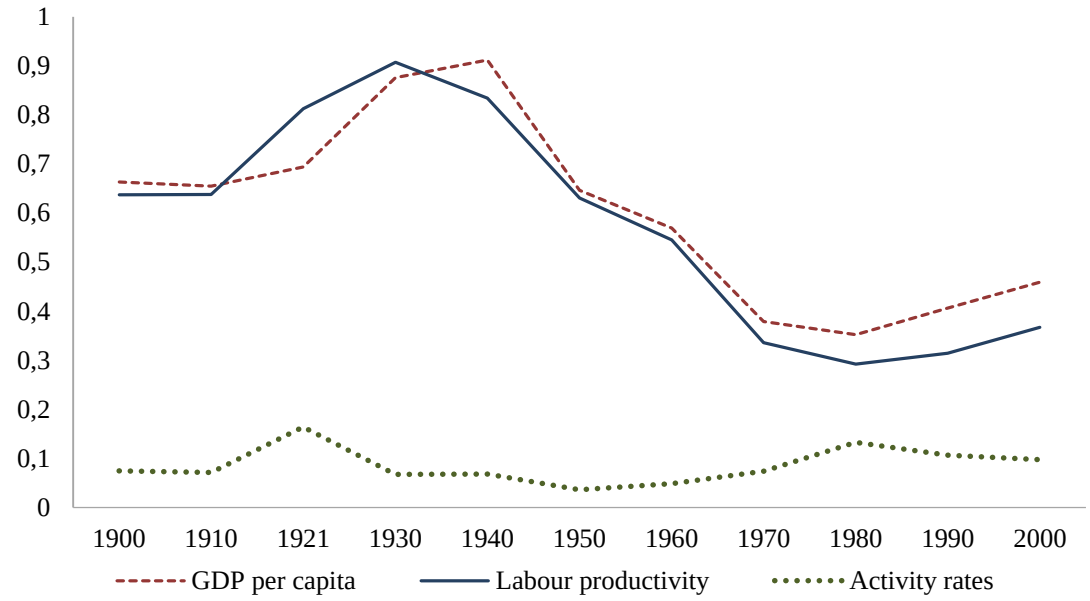
[22] GDP per capita can be decomposed into labour productivity and the activity rate: $\frac{Y}{P} = \left(\frac{Y}{L}\right)\left(\frac{L}{P}\right)$, where Y is total production, P is population, and L is the labour-force. GDP per capita and labour productivity are often treated as synonyms in the economic history literature, but they may follow different paths in certain cases (see Duro and Esteban, 1998).

[23] This is in line with evidence provided by Leon (2004).

[24] Section 4 presents some explanatory factors for these changes.

[25] The 1921 peak in regional inequality of activity rates is due to the spatially uneven impact of the Mexican Revolution on population and labour force across states (see Kuntz, 2010:338). Nevertheless, this peak barely modifies the general picture of stability. On the other hand, the uneven pattern of labour productivity and GDP *per capita* inequality between 1930 and 1940 is caused by Mexico City. While Mexico City's labour productivity got closer to the national average in this period (from 3.61 times in 1930 to 3.38 times in 1940), GDP *per capita* figures increased from 2.82 times the national level in 1930 to 3.84 times in 1940, due to a rapid increase in the activity rates of the capital district (due to migration).

Figure 1
Standard deviation of Mexican states' GDP per capita, labour productivity and activity rates (Mexico=1)[26]

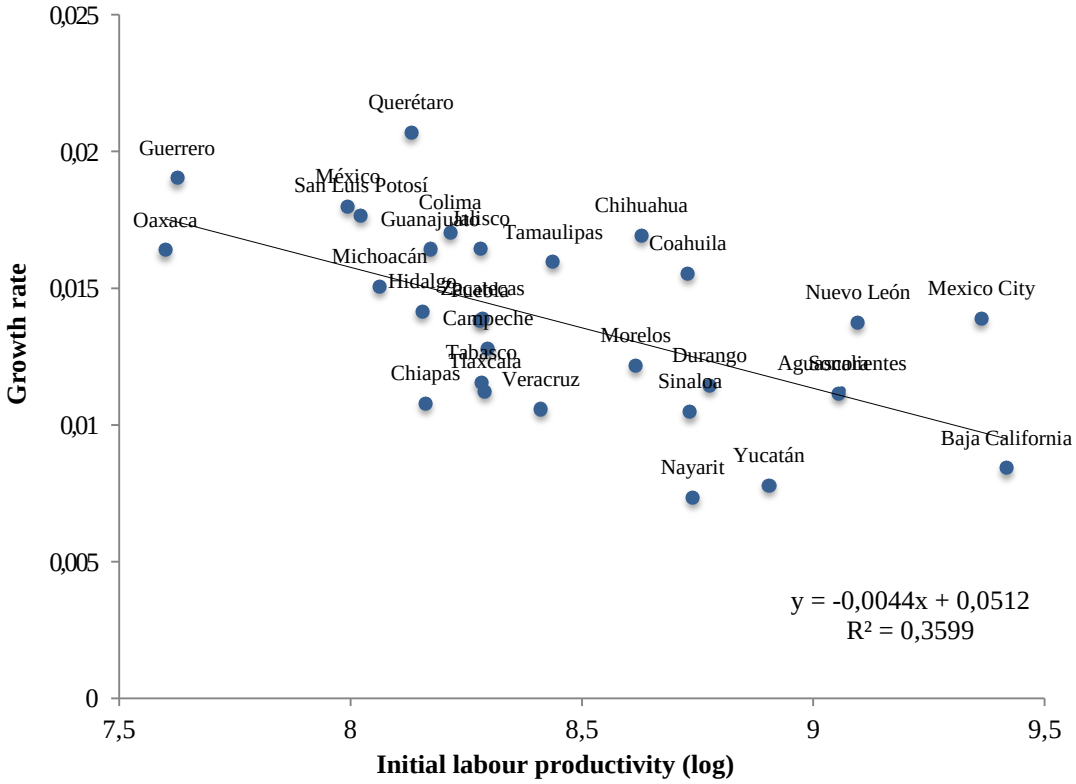


Source: See text.

Taking the whole period 1900-2000 together, Figure 1 seems to indicate that the Mexican states tended to converge in the very long run. However, since σ-convergence is not a necessary condition for ß-convergence,[27] Figure 2 provides evidence on unconditional ß-convergence of overall labour productivity for the Mexican states from 1900-2000. Although the degree of fit is not high, the picture would be consistent with the presence of unconditional ß-convergence in labour productivity among the Mexican states during the 20th century. As this figure depicts, southern and central states, which started with the lowest labour productivity levels, had the highest growth rates over the long run, while the opposite happened with the northern bordering states and Mexico City. The next section aims at exploring the main determinants of this long-term convergence trend, an also the different short-term episodes of convergence and divergence among the Mexican states, through a decomposition exercise for the entire period, as well as for the following sub-periods: 1900-1930, 1930-1980, and 1980-2000.

[26] Oil sector excluded.
[27] Unconditional β convergence is defined as a negative correlation between the income per capita growth rate and the initial level of income per capita for a sample of economies in a particular interval of time (Barro and Sala-I-Martín, 1991).

Figure 2
Unconditional ß-convergence of Mexican labour productivity at the state level (1900 – 2000)



Source: See text.

3.- The determinants of convergence: a decomposition analysis

As has been mentioned above, Mexican regional inequality has closely followed the evolution of disparities in labour productivity. This section presents the results of a decomposition analysis of changes in labour productivity inequality, following Caselli and Tenreyro (2004).[28] These authors decompose total convergence into three components within-sector convergence, labour reallocation and between-sector convergence. While the former is roughly associated to technological catching-up effects (Enflo and Rosés, 2015:205), labour reallocation and between-sector convergence capture the effects of structural change on regional disparities.[29] Using this method, Caselli and Tenreyro find that capital accumulation and structural transformation have been the main forces behind the convergence of Southern European countries with Northern ones in labour productivity from 1960 to 2000. This methodology has recently been applied by Enflo and Rosés (2015) to the case of Sweden over the long run (1860-2000), for which they find that convergence has

[28] This method is actually an extension of that presented in Caselli and Coleman (2001).
[29] Both components are closely correlated. In fact, if both of them are added, the result will be the same as the "Between-sector" component of certain inequality indices, such as the decomposed Theil index proposed in Akita and Kataoka (2003).

mainly been driven by structural change forces. This process was only replaced, from 1980 onwards, by an increasing regional divergence, led by labour reallocation and increasing regional disparities in labour productivity within sectors.

In this paper, I apply the methodology proposed by Caselli and Tenreyro (2004) to the Mexican case. This is the first time this methodology is used to analyse the long-term determinants of regional inequality in a developing country. In this paper, I use Mexico City as the reference region. This choice is based on historical arguments. . As can be seen in Table 1, this region has had the highest levels of labour productivity in all economic sectors, relative to the rest of the macro-regions, over the entire period.[30] Therefore, using Mexico City's labour productivity levels as 'benchmark region' will allow capturing the forces behind regional convergence trends.[31]

Thus, this paper presents the sources of convergence between the Mexican macro-regions (*i)* and the 'benchmark region' (Mexico City; from now on, *Mx).*[32] Following Caselli and Tenreyro (2004: 492), the decomposition of convergence can be formally expressed as follows. Total value added per worker (labour productivity) can be seen as the weighted sum of sectoral labour productivities:

$$LP_t^i = \sum_{j=1}^{J} S_{jt}^i \; LP_{jt}^i \tag{1}$$

where *LP* is labour productivity, *S* is the share of employment, *i* denotes the region, *j* the sector (primary, mining, industry and services), and *t* is time.

Thus, labour productivity convergence to the benchmark region can be measured by:

$$\Delta \frac{LP_t^i - LP_t^{Mx}}{LP_t^{Mx}} = \frac{LP_t^i - LP_t^{Mx}}{LP_t^{Mx}} - \frac{LP_{t-1}^i - LP_{t-1}^{Mx}}{LP_{t-1}^{Mx}} \tag{2}$$

[30] Taking Mexico City as reference may introduce some bias in the convergence decomposition analysis, as it has lower labour productivity than other regions in certain sectors such as agriculture and mining. However, the contribution of these sectors seem to play a secondary role in convergence over the long term. In fact, my results (see below, Table 2 and 3) show the minor role of these sectors, at least, in the within-sector component. Moreover, an alternative estimation using the North region (the most productive in agriculture and mining) as reference, provide very similar results (see Table B.1 in Appendix B).

[31] Oil sector (production and labour force) is not considered in this analysis.

[32] As were presented before, the macro-regions are: North, North-Pacific, Centre-North, Gulf, Centre, South, and Mexico City (the benchmark regions).

This measure of convergence can be decomposed into three channels of convergence: within-industry, labour reallocation, and between-industry. To start with, the following term (3) is added and subtracted to equation (1), obtaining equation (4)

$$\sum_{j=1}^{J} S_{jt}^{i}\, LP_{jt}^{Mx} \tag{3}$$

$$LP_{t}^{i} = \sum_{j=1}^{J} S_{jt}^{i}\left(LP_{jt}^{i} - LP_{jt}^{Mx}\right) + \sum_{j=1}^{J} S_{jt}^{i}\, LP_{jt}^{Mx} \tag{4}$$

Then:

$$LP_{t}^{i} - LP_{t}^{Mx} = \sum_{j=1}^{J} S_{jt}^{i}\left(LP_{jt}^{i} - LP_{jt}^{Mx}\right) + \sum_{j=1}^{J}(S_{jt}^{i} - S_{jt}^{Mx})LP_{jt}^{Mx} \tag{5}$$

$$\frac{LP_{t}^{i} - LP_{t}^{Mx}}{LP_{t}^{Mx}} = \sum_{j=1}^{J} S_{jt}^{i}\left(\frac{LP_{jt}^{i} - LP_{jt}^{Mx}}{LP_{t}^{Mx}}\right) + \sum_{j=1}^{J}(S_{jt}^{i} - S_{jt}^{Mx})\frac{LP_{jt}^{Mx}}{LP_{t}^{Mx}} \tag{6}$$

Finally, taking first differences and grouping terms conveniently I obtain the equation for the convergence decomposition:

$$\begin{aligned}\Delta\frac{LP_{t}^{i} - LP_{t}^{Mx}}{LP_{t}^{Mx}} = &\sum_{j=1}^{J}\overline{S_{jt}^{i}}\;\Delta\left(\frac{LP_{jt}^{i} - LP_{jt}^{Mx}}{LP_{t}^{Mx}}\right) + \\ &+\sum_{j=1}^{J}\overline{\left(\frac{LP_{jt}^{i}}{LP_{t}^{Mx}}\right)}\Delta S_{jt}^{i} - \sum_{j=1}^{J}\overline{\left(\frac{LP_{jt}^{Mx}}{LP_{t}^{Mx}}\right)}\Delta S_{jt}^{Mx} \\ &+\sum_{j=1}^{J}\left(\overline{S_{jt}^{i}} - \overline{S_{jt}^{Mx}}\right)\Delta\left(\frac{LP_{jt}^{Mx}}{LP_{t}^{Mx}}\right)\end{aligned} \tag{7}$$

where: $\Delta x_{jt} = x_{jt} - x_{jt-1}$; and $\overline{x_{jt}^{i}} = \frac{x_{jt}^{i} + x_{jt-1}^{i}}{2}$

Thus, "total convergence" is the quantity on the left-hand side in equation (7). This is the convergence of each macro-region's overall labour productivity to that of the benchmark (*Mx*). "Within–sector convergence" is the quantity on the first line of the right-hand side, and it captures the convergence of each sector's labour

productivity with its level in *Mx*, weighted by the average labour share in that sector. As Enflo and Rosés (2015:205) have noted, when assuming perfect competition and fully employed resources, within-industry convergence could be attributable to the catching-up of both regional differences in capital-labour ratios and technological differences across states (through the neoclassical mechanisms of convergence). However, this component could be reflecting not only these but also other types of convergence sources. For instance, as economic sectors are heterogeneous, factor mobility within each sector (from lower towards higher labour productivity sectors, such as the move of factors from traditional agriculture to agro-export production) could also lead to an upswing of within-industry convergence.

The second line in equation (7) represents the labour reallocation component. This component, which is weighted by the relative labour productivity of each sector, measures the share of convergence due to inter-sectorial workforce movements. As Caselli and Tenreyro point out (2004: 493), in the special case where there are no within-industry labour productivity gaps ($LP_{jt}^{i} = LP_{jt}^{Mx}$) , labour reallocation contributes to convergence if and only if region *i* transfers a larger share of the labour force than does *Mx* towards the high-productivity sectors. If there are within-industry labour productivity gaps, this effect may be diminished. More specifically, if sector *j* in *Mx* is much more productive than in region *i*, labour reallocation may lead to divergence even if *Mx* is moving fewer workers towards this sector. Finally, the third line of the equation represents the between-sector convergence component. This measures the contribution to convergence of inter-sectorial labour productivity convergence. Then, if labour productivity of sector *j*, in which region *i* had a relatively high share of the labour force, converges to the overall productivity of *Mx*, this component will contribute to global convergence. The last two components are therefore closely related to the process of regional structural change.

Table 2 presents the sources of the Mexican macro-regions' labour productivity convergence with *Mx* for the entire period (1900-2000). Generally speaking, and with the exception of the Gulf macro-region, which tended to diverge from *Mx* in the long-run, the results indicate a low rate of regional convergence. The main determinant of this convergence has been the between-sector component. This indicates that labour productivity has grown more in those sectors that had a higher presence in regions with lower productivity than *Mx*. It is surprising to see that the contribution of labour reallocation to convergence has been negative for most regions. The only exceptions are the North (because of the intense modernization of its economic structure during the entire period) and the Gulf (due to the evolution of Quintana Roo, with a huge transfer of labour from agriculture to mining and services). In all other cases, either *Mx* has reallocated relatively faster its labour force from low to high productivity sectors, or the productivity gaps between the macro-regions and *Mx* has made the reallocation of labour from low to high productivity sectors in the former insufficient to contribute to convergence. This could particularly describe the cases of the North-

Pacific and South regions, where labour reallocation has actually had a large negative impact on overall convergence.

On the other hand, the North-Pacific has been the only region where the within component has had a positive influence on convergence with *Mx*. This is explained by the convergence in the productivity of agriculture and services productivity with their levels in Mexico City. By contrast, industrial labour productivity in all macro-regions has diverged from *Mx*, due to the dynamism of Mexico City's industrial activity since the end of the 19th century (see Haber, 1989; Cerutti, 1992; Marichal and Cerutti, 1997).[33]

Table 2
Convergence decomposition, 1900-2000

	Total	**Within-industry**					**Labour reallocation**	**Between-industry**
		Overall	Agriculture	Mining	Industry	Services		
North	0.035	-0.281	0.082	-0.071	-0.153	-0.139	0.102	0.215
	100%	-795%	-29%	25%	54%	50%	288%	607%
North-Pacific	0.026	0.021	0.072	-0.011	-0.160	0.121	-0.136	0.141
	100%	80%	342%	-53%	-762%	574%	-514%	535%
Centre-North	0.031	-0.173	0.104	-0.090	-0.126	-0.062	-0.017	0.221
	100%	-568%	-60%	52%	72%	36%	-55%	723%
Gulf	-0.117	-0.361	-0.041	0.000	-0.108	-0.212	0.121	0.124
	100%	309%	11%	0%	30%	59%	-103%	-106%
Centre	0.068	-0.096	0.048	-0.018	-0.152	0.026	-0.015	0.179
	100%	-140%	-50%	19%	158%	-27%	-21%	262%
South	0.034	-0.037	0.059	-0.003	-0.109	0.016	-0.088	0.159
	100%	-110%	-159%	9%	292%	-42%	-259%	469%

Source: See text.

The next section presents the same decomposition for 3 sub-periods, which coincide with the main phases of overall regional convergence or divergence and also with the alternation of different development models in Mexican economic policy.[34] The first period (1900-1930) correspond to the last stage of the primary export-led growth model and to a process of divergence of all regions from *Mx*. Divergence was mainly led by the labour reallocation component, i.e., by a spatially unequal process of structural change between *Mx* and the rest of macro-regions. The next period (1930-1980), characterized by State-led Industrialisation, is the only phase of generalized convergence, led by both the within-sector and between-sector components. Finally,

[33] The northern state of Nuevo León has also had a very dynamic industrial sector since the late 19th century. However, this has not been enough to pull the overall macro-region's productivity up to the levels of Mexico City.

[34] This periodization has widely been used in Latin American literature for the years since the First Globalisation to nowadays; see for instance Bértola and Ocampo (2013).

from 1980 to 2000, increasing economic openness has been accompanied by divergence. This has been largely the result of the within-sector component, since both labour reallocation and the between-sector component have contributed to convergence with *Mx*. The next section aims at linking these results with some of the main features of the evolution of the Mexican economy over the 20th century.

4.- Explanatory factors behind regional labour productivity inequality

4.1 The export-led growth period: 1900-1930

Since the late 19th century, the Mexican economy undertook substantial transformations and started modern economic growth (Kuntz, 2010). The construction of the railroad network, together with several institutional changes (such as the elimination of domestic taxes on trade), boosted the integration of the domestic market and the internationalization of the economy. As in many Latin American economies, primary export activities, such as mining and agro-export sectors, explain the Mexican economic dynamism until the 1929 Great Depression.[35] In fact, export-led growth is assumed to have been the main cause behind the first industrialisation wave that took place in Mexico before the 1930s (Haber, 2010). The growth of exports intensified regional specialisation and structural change both the whole national economy and the different regional economies (Aguilar-Retureta, 2015). This process was complemented with an increase in national and international investment, which enlarged the prevailing interregional disparities in capital-labour ratios. This is particularly true for *Mx* (Mexico City),[36] which had a yearly rate of labour productivity growth of 1.8% during this period, much higher than the national average of 0.7% .

As mentioned above, Table 3-A shows that all regions diverged from *Mx* during this period. The North had, by far, the lowest rate of divergence, thanks to its relative specialization in high-value added activities, not only those linked to the international markets, such as mining, cattle, rubber and cotton, but also industry (Aguilar-Retureta, 2015; Kuntz, 2014). In fact, it was the only region in which industrial productivity converged to *Mx* levels. The industrial sector in the North was prompted by both local capital accumulation (derived from mining, agriculture, and commerce), and the arrival of foreign capital (particularly from the US to Nuevo León) (Haber, 2010: 422). By contrast, in other regions the negative sign of the within-sector

[35] Although the mining sector had been very dynamic since colonial times, after the liberal reforms it undertook a process of modernization, increasing both its value added and productivity. This was especially intense from 1890 when, encouraged by a strong Mexican fiscal stimulus and US protectionism, some US companies moved its production plants to Mexico, largely increasing the capital-labour ratios of the sector.

[36] Another illustrative case is Aguascalientes which had, after the arrival of the Guggenheim Company at the end of the 19th century, one of the most modern mining plants in America. For a detailed analysis of the industrial and capital sectors in Mexico during this period see Haber (1989, 2010).

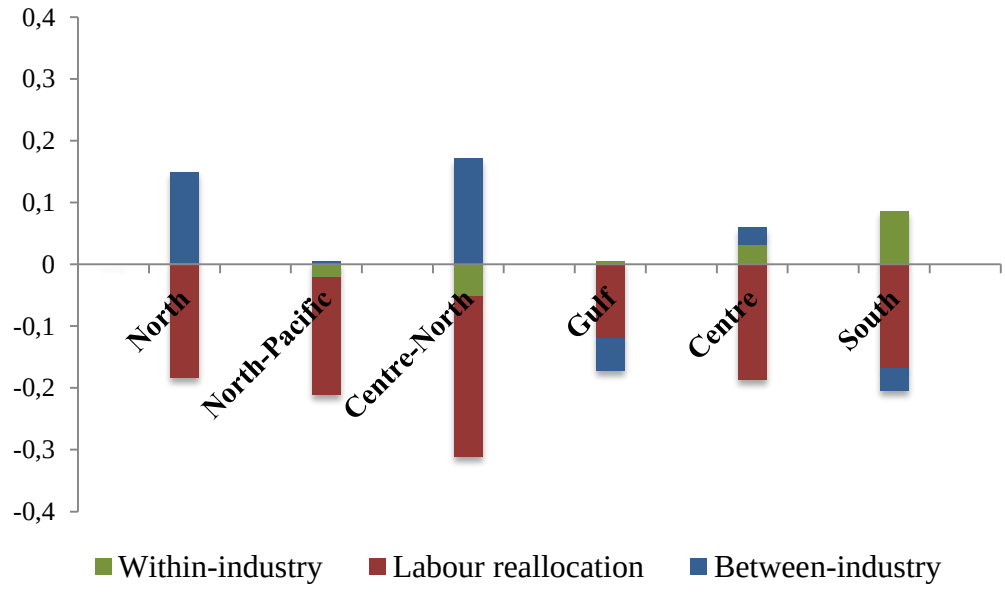
component in the case of industry can be explained by the increasing capital-labour ratio differentials between *Mx* and the rest of the country.[37]

Table 3-A
Convergence decomposition, 1900-1930

	Total	Within-industry					Labour reallocation	Between-industry
		Overall	Agriculture	Mining	Industry	Services		
North	-0.034	0.003	0.115	-0.098	0.020	-0.033	-0.184	0.147
	100%	-10%					543%	-433%
North-Pacific	-0.206	-0.021	0.087	-0.046	-0.070	0.008	-0.190	0.005
	100%	10%					92%	-3%
Centre-North	-0.141	-0.051	0.110	-0.109	-0.032	-0.020	-0.260	0.171
	100%	36%					185%	-122%
Gulf	-0.166	0.005	0.074	0.000	-0.008	-0.061	-0.120	-0.052
	100%	-3%					72%	31%
Centre	-0.126	0.032	0.123	-0.052	-0.048	0.010	-0.187	0.028
	100%	-26%					148%	-22%
South	-0.118	0.087	0.148	-0.013	-0.042	-0.005	-0.168	-0.037
	100%	-74%					143%	31%

Source: See text.

Figure 3-A
Convergence decomposition, 1900-1930

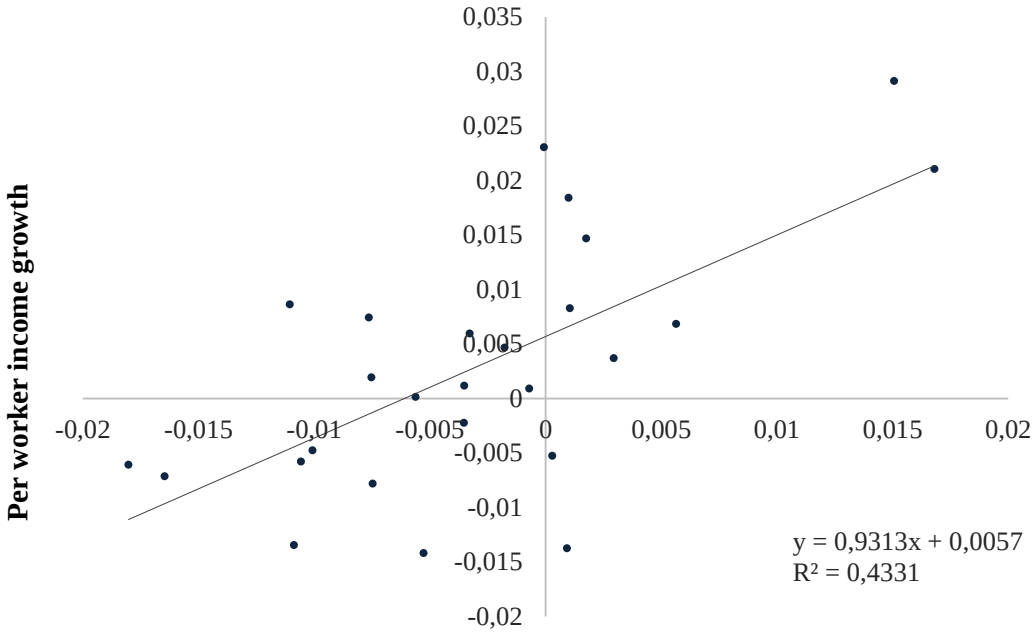


Source: See text.

[37] In the case of the mining sector, divergence with *Mx* is associated to the low size of this sector in Mexico City during the first part of this period and the further growth of metal processing activities in the capital. In the historical mining regions (North, North-Pacific and Centre-North), productivity growth was very high before 1900 but slowed down thereafter, which explains the negative sign of the mining within-sector component in these regions.

The components that made the largest contribution to divergence from 1900 to 1930 were those related to structural change, and especially labour reallocation. This means that the reallocation of labour towards the most productive economic activities was much more intense in *Mx* than in the rest of the country, which was, to a large extent, the result of the prominent role played by *Mx* in the first wave of the modern Mexican industrialisation (Aguilar-Retureta, forthcoming: 9). In addition, the emergence of a modern services sector (the most productive sector in Mexico City during this period) also attracted a high amount of workers from other sectors. In order to illustrate the role of structural change on labour productivity growth during this period, Figure 4 shows the simple correlation between these variables. As expected, this figure indicates that the spatially uneven structural change, concentrated in those regions that could take advantage of the first globalisation, had a central role in the divergence pattern observed during this period.

Figure 4
Structural change and labour productivity growth (1900-1930)
Industrial labour reallocation[38]



Source: See text

[38] The states of Coahuila, Yucatán, Chiapas, and Guerrero have been removed from the graph, because of some specific features that make them outliers. First, in Coahuila and Yucatán the growth of income per worker was relatively high thanks to mining and agro-export activities respectively. By contrast, Chiapas and Guerrero had a very low growth rate of productivity despite the significant increase in their industrial labour share, which can be explained by the very low level of this share at the beginning of the period.

Another interesting result is the fact that, in the Gulf macro-region, labour productivity in agriculture did not contribute at all to convergence. This may be surprising, given the importance in this macro-region of some primary exports such as vanilla, coffee, sugar, and the most successful one, henequen. However, these products were very sensitive to external conditions, changes in international demand and prices volatility, and the estimates in the table reflect the significant fall in the demand and price of some export commodities that took place at the end of the period (Kuntz, 2014: 99).

This was a period when regional development was completely off the economic policy agenda, leaving the market as the main explanatory force for economic activity location. Moreover, although there were some migration flows, these were limited by the relatively high (economic and social) costs of migration, hindering therefore labour productivity growth in poor regions (such as the Centre, the Gulf and the South).[39] These conditions dramatically changed in the following period, in which migration flows seem to have been at the core of regional income convergence.

4.2 State-led industrialisation: 1930-1980

After the 1929 Great Depression, most Latin American economies changed their economic development model. The export-led growth model was replaced by an inward-oriented one, focused on industrialisation and State intervention (Bértola and Ocampo, 2013: 170). [40] Mexico was not an exception. After 1929, Mexican industrialisation made substantial progress in the context of intense government interventionism and commercial protectionism. During this period, Mexico experienced its highest rates of yearly GDP growth in history, reaching 5.24% from 1932 to 1949 and 6.38% from 1949 to 1981 (Márquez, 2010: 553). This process had significant effects on the country's economic geography, as it encouraged an intense process of concentration of activity in in Mexico City.[41] However, as can be seen in

[39] Although substantial political efforts were addressed to the national (cultural) integration, they were only partially successful. For instance, 16% of national population still used their native language as the main communication tool by 1910. This percentage was much higher in the southern and Gulf states, such as Chiapas, Oaxaca and Yucatán, where 33%, 50% and 65% of population respectively used their native language as their main communication tool in 1910. Something similar occurred in literacy, with southern states (such as Chiapas, Guerrero and Oaxaca) having a literacy rate around 9% (Kuntz and Speckman, 2011: 532). This represented a strong limitation for the population in poor regions to migrate no only across regions but also to relatively more skilled economic activities.

[40] This model is commonly known as ISI (Import Substitution Industrialisation). However, recent literature has argued that import substitution was not a central element during this period. Instead, the most important defining feature was a strong process of industrialisation led by state intervention. See Cárdenas, Ocampo and Thorp (2003), and Bértola and Ocampo (2013).

[41] Industrial concentration in Mexico City has been explained with New Economic Geography arguments. According to Krugman and Livas-Elizondo (1996), it was associated to the significant forward and backward linkages that emerged around the need to supply the biggest market of the country, in the context of a closed economy model.

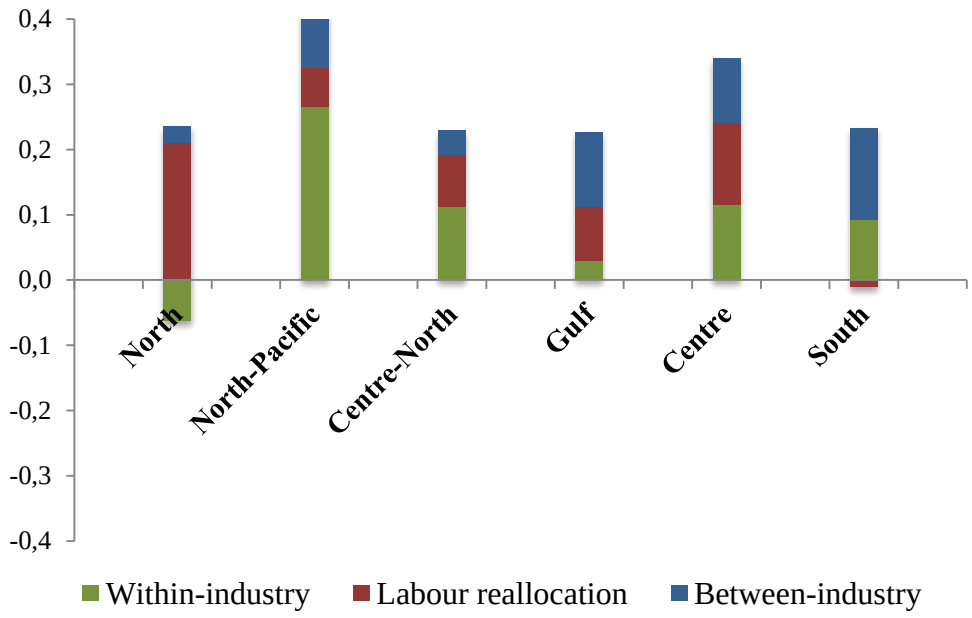
Figure 1, this was accompanied by a significant convergence in regional labour productivity levels.

Table 3-B
Convergence decomposition, 1930-1980

	Total	Within-industry					Labour reallocation	Between-industry
		Overall	Agriculture	Mining	Industry	Services		
North	0.174	-0.062	0.031	0.028	-0.119	-0.002	0.211	0.025
	100%	-35%					121%	14%
North-Pacific	0.418	0.266	0.060	0.029	0.045	0.132	0.059	0.093
	100%	64%					14%	22%
Centre-North	0.229	0.112	0.029	0.031	0.004	0.048	0.080	0.037
	100%	49%					35%	16%
Gulf	0.228	0.029	-0.036	0.020	-0.009	0.054	0.083	0.115
	100%	13%					37%	51%
Centre	0.341	0.116	-0.012	0.025	0.057	0.045	0.125	0.099
	100%	34%					37%	29%
South	0.223	0.093	-0.015	0.020	0.019	0.069	-0.010	0.140
	100%	42%					-5%	63%

Source: See text

Figure 3-B
Convergence decomposition, 1930-1980



Source: See text

Figure 3-B shows that all macro-regions converged to Mx during the state-led industrialisation period. In general terms, as can be seen in Table 3-B, all three components had a positive contribution to convergence. However, the contribution of each component to convergence varied among the macro-regions. In the North,

convergence with Mx was driven by structural change (labour reallocation) and, more specifically, to the movement of labour from mining and agro-export sectors to industry after the decline of the export-led growth model (see Table A.12 in Appendix). On the other hand, the North's rate of convergence was the lowest in Mexico, since it was the region that had the lowest productivity gap with Mx before 1930. At the same time, the North was the only region where the within-sector component provoked divergence, due to the evolution of the industrial sector. This can be largely explained by the fact that this region was, only after Mexico City, the main recipient of migrants from 1930 to 1980.

In contrast, in the North-Pacific states, the within-industry component was the most relevant factor of convergence. This was mainly the result of the economic performance of one single city, Guadalajara, the capital of Jalisco. This city accomplished, only after Mexico City, Nuevo León and the State of Mexico, the most intense process of industrialisation in the country. Industrial labour force in the state of Jalisco was 12.2% of the total labour force in 1930 and 33.6% in 1980 (Table A.12). This phase of industrialisation was accompanied by a strong productivity convergence in the services sector. The productivity of industry and services in Jalisco grew by 3.3% and 1.7% respectively per year, while the equivalent rates in Mx were 1.2% and 0.4% respectively (see Tables A.3-A.9). However, this remarkable process of industrialisation was not representative for all North-Pacific states and, as a result, the labour reallocation component had a small contribution to convergence in the region.

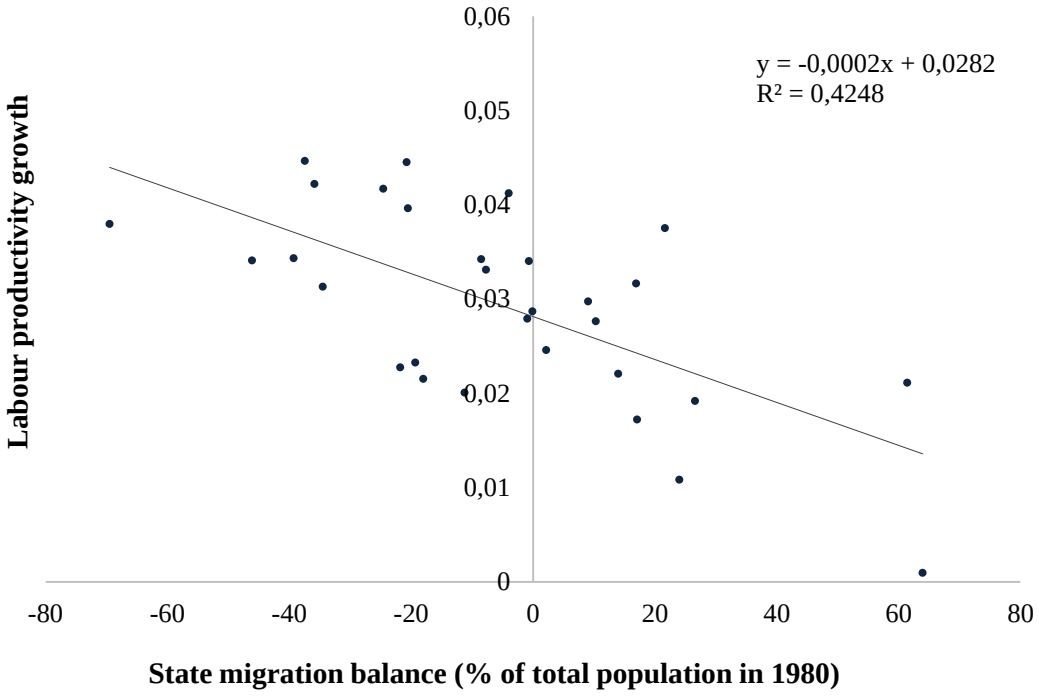
Labour reallocation made a great contribution to convergence in the North states, due to the intense labour reallocation to high value-added activities in this region, especially in Baja California and Nuevo León. Agricultural labour force in those two states represented 62.9% and 70.8%, respectively, of the total active population in in 1930, and just 25.1% and 5.3% in 1980. In the Centre region, labour reallocation had also a significant contribution to convergence. This reflects its proximity to Mexico City, and the diffusion of the industrial growth of the capital to the State of Mexico and Morelos. In all other regions, convergence was the joint outcome of all three components, which can in turn be related to the intensity of interregional migration during this period, as is reflected in Figure 5.

Figure 5 presents the correlation between labour productivity growth and migration balances (as the share of total population in 1980) at the state level from 1940 to 1980.[42] In a context of high expectations of improving the living standards and decreasing (economic and social) migration costs, migration from the poor to the most developed regions of the country grew to unprecedented levels. As a result, it was during this period when the Mexican urban population became larger than the rural one, increasing from 6.9 millions in 1940 to 44.2 millions in 1980 (Márquez and Silva, 2014:145). The main sources of migrants were the central and southern states, and the

[42] Contrary to the previous period, structural change is not correlated to labour productivity growth during the state-led industrialisation period. See Figure A.1 in the Appendix.

main destinations were the North and Mexico City and its surrounding states (State of Mexico and Morelos); see Table A.23 in the Appendix.[43] In Mexico City, for instance, immigrants represented 24%, of its 1980 population, and in Baja California, they accounted for an impressive 64% of its 1980 population. On the contrary, out-migrants (from 1940 to 1980) in southern states as Guerrero, Michoacán and Oaxaca represented 20.7%, 35.9% and 37.4%, respectively, of their 1980 population.

Figure 5
Labour productivity growth and migration: 1940-1980[44]



Source: Own estimates for labour productivity growth and INEGI (2000) for migrations figures.

Migration flows were closely correlated to labour productivity growth rates. Thus, Guerrero, Michoacán and Oaxaca had, only after the State of Mexico, the highest rates of labour productivity growth from 1940 to 1980. By contrast, México City had, together with Baja California, the lowest yearly rates: 1.08% and 0.10%, respectively,

[43] The direction of migration flows in the State of Mexico was reversed since the 1960s, when congestion costs in Mexico City pushed out a great amount of population. The state of Mexico had a net balance of -86,368 migrants from 1940 to 1960, but received 3,354,078 people from 1960 to 1980 (INEGI, 2000). On the other hand, Quintana Roo was the only state out of the North and the area of Mexico city that attracted migration in significant numbers. It had been a pole of attraction of migrants since the 1930s, and especially since the 1970s, due to the expansion of tourism. Given its low demographic density at the beginning of the period, migrants represented 61.5% of the total population in 1980.

[44] Durango and the State of Mexico excluded. Migration flows from 1930 to 1940 are not available.

well below the national average of 2.95%.[45] Those regions with higher out-migration had a faster labour productivity growth because the size of the less productive activities within each sector decreased substantially, while in those regions that attracted migrants, technical change and productivity growth were jeopardized by the massive labour force inflow. As a result, the concentration of activity in the regions that received migrants was accompanied by an overall process of labour productivity convergence among regions.[46]

By contrast, unlike what happened with industry (with the exception of Gulf) and services, the agriculture within-sector component made a negative contribution to convergence in Gulf, Centre and South regions. This can be explained because the productivity of traditional agriculture activities stagnated during this period (Cárdenas, 2010), which had a particularly negative impact on the central and southern regions, since they had the largest portion of labour force working in those activities. On the other hand, the capital-labour ratio in the agricultural sector of the northern regions experienced a huge increase during this period because of the Green Revolution (Sonnenfeld, 1992), which enhanced labour productivity relative to the rest of the regions (See Table 1).

4.3 Economic openness, 1980-2000

After the debt crisis of the early 1980s, Mexico was gradually transformed from a closed economy with high government intervention to an open one with very limited government involvement.[47] In 1986 Mexico joined the General Agreement on Tariffs and Trade (GATT) and in 1994 it started a profound international regional integration through the signature of the North American Free Trade Agreement (NAFTA). As result, Mexican openness rate, which was 24% in 1980, reached a level of 61% in 2010 (World Bank, 2014). This change has had large implications in regional income performance, which has been specially reflected in the increasing importance of the North at the expense of Mexico City.[48] In the latter, while 38% of labour force was

[45] Despite the intense decentralisation policies that were applied during this period, and which aimed at stopping the spatial concentration of both economic activity and migration in the so-called "special areas" (Mexico City, Monterrey and Guadalajara), these policies had a very limited impact. For instance, trying to encourage the industrial activity, the government promoted the creation of industrial parks in several states, but this strategy, as many others, completely failed (Aguilar, 1993).

[46] The impact of migration on Mexican regional income convergence during this period had already been suggested by Sánchez-Reaza and Rodríguez-Pose (2002).

[47] Moreover, economic policy after the 1980s has not been oriented by regional redistribution criteria. Rodríguez-Oreggia and Rodríguez-Pose (2004) have shown that the regional allocation of public investment since 1970 neither has affected regional growth, nor has followed regional income redistribution criteria. Rather, pork-barrel policies are more likely to explain the distribution of public investment.

[48] In this regard, Hanson (1997) has shown that trade reform was determinant in the reallocation of industrial activity from Mexico City to the northern bordering states. Furthermore, he also argues that nominal wages are higher near industrial centres. However, he found that the reduction in regional wage differentials between Mexico City and Northern states started during the State-led industrialisation

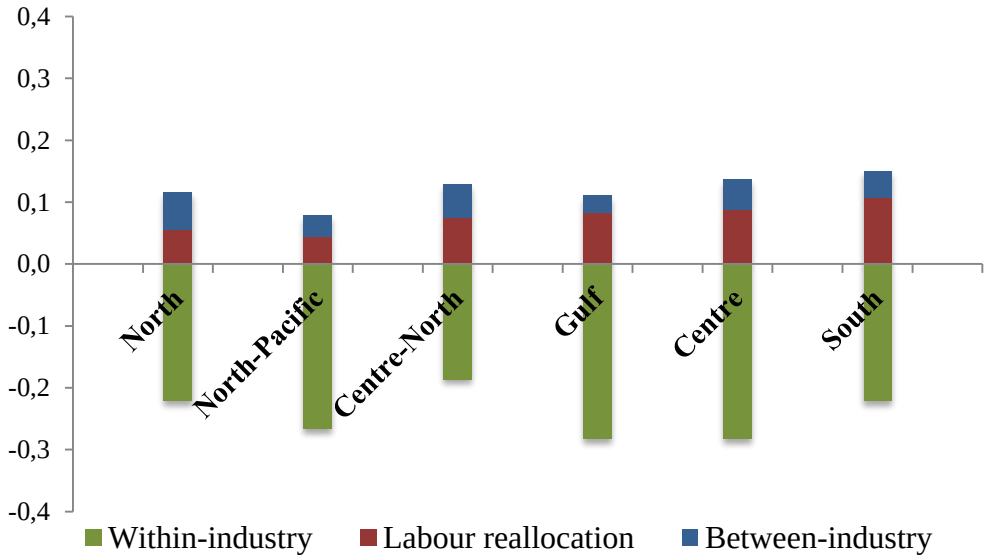
employed in the industrial sector in 1980, this percentage had fell down to 21.8% in 2000. By contrast, and with the exception of Nuevo León (see Table A.12), the opposite process took place in the Northern border states. This has been mainly due to the expansion of *maquiladora* production.[49]

Table 3-C
Convergence decomposition, 1980-2000

	Total	**Within-industry**					**Labour reallocation**	**Between-industry**
		Overall	Agriculture	Mining	Industry	Services		
North	-0.105	-0.220	-0.003	-0.014	-0.117	-0.085	0.055	0.060
	100%	210%					-53%	-57%
North-Pacific	-0.186	-0.266	-0.015	-0.003	-0.126	-0.121	0.044	0.035
	100%	143%					-24%	-19%
Centre-North	-0.058	-0.186	0.011	-0.021	-0.086	-0.090	0.075	0.054
	100%	323%					-130%	-93%
Gulf	-0.170	-0.282	-0.041	0.004	-0.118	-0.128	0.082	0.029
	100%	166%					-48%	-17%
Centre	-0.146	-0.282	-0.007	-0.004	-0.168	-0.103	0.087	0.050
	100%	193%					-60%	-34%
South	-0.071	-0.221	-0.027	-0.003	-0.074	-0.117	0.107	0.043
	100%	312%					-151%	-61%

Source: See text

Figure 3-C
Convergence decomposition, 1980-2000



Source: See text

(around the 1960s), and not as a consequence of the opening of the economy (the study includes only the first three years of the trade reform, from 1985 to 1988).

[49] Hanson (1997) has shown that the largest increases in Mexican border regions' manufacturing employment during the first stage of the openness period have taken place in textiles and metal products, which are the two main *maquiladora* industries.

There has been substantial research on the evolution of Mexican regional income inequality since the 1980s, although it has mainly focused on income per capita levels, rather than labour productivity disparities. Among this literature, Jordaan and Rodriguez-Oreggia (2012) suggest that FDI and agglomeration economies have had an important impact on regional income growth. Human and physical capital endowments have also been pointed out as determinants of regional income disparities during this period (Sánchez-Reaza and Rodríguez-Pose, 2002; Rodríguez-Oreggia, 2005; Chiquiar, 2005). Broadly speaking, these authors stress that Mexico City and the north-border states have taken advantage of these factors, while the rest of the states have fallen behind.

In the same line as the previous literature, Table 3-C shows that all regions have diverged from *Mx* in labour productivity during this period. This has happened despite the positive contribution to convergence of Structural change forces (especially labour reallocation), due to the initial conditions of Mx, which had a very small margin to reallocate work force towards industrial activity. However, this positive contribution has been overcome by the negative impact of the within-sector component, particularly in the case of industry and services. In the case of industry, Mexico City has suffered a huge contraction of its manufacturing labour force share during this period (Table A.20-A.22) and, at the same time, has received substantial FDI flows, accounting for nearly 65% of Mexican FDI inflows from 1989 to 2000 (Jordaan and Rodríguez-Oreggia, 2012:182). This has significantly increased the capital-labour ratio and labour productivity in *Mx* compared with the rest of the country.[50] Together with this process, labour productivity in services also experienced a relatively good performance in Mexico City (especially in the financial and commercial sectors), compared to the national average. So, even though, the northern states are usually considered as the winners of this process, my result seems to point to a different direction, and to stress the importance of FDI and agglomeration economies (as suggested by Jordaan and Rodríguez-Oreggia, 2012), as well as regional differentials in human and physical capital endowments (Sánchez-Reaza and Rodríguez-Pose, 2002; Rodríguez-Oreggia, 2005; Chiquiar, 2005), on the productivity advantage of Mexico City.

In the same line, the North's divergence process looks surprising at first sight. However, as can be seen in Tables A.9-A.11, industrial labour productivity has stagnated in the north-border states (with the exception of Nuevo León), due to the specialisation of the region in *maquiladoras*, a sector with very low value-added.[51] The north-border states had the largest portions of labour force employed in *maquiladoras* during the 1990s, led by Chihuahua, Baja California and Tamaulipas. On the other hand, in the case of services, the negative contribution of the within-

[50] During this period, FDI reached unprecedented levels, and the stock of FDI capital increased from 8.5% of GDP in 1990 to 27% in 2006 (Jordaan and Rodríguez-Oreggia, 2012:182).
[51] Nuevo León (North region), has not been an important centre for *maquiladoras* production. In fact, this state had fewer workers in this sector in 1994 than some states in the South of the country, such as Oaxaca and Michoacán (OECD, 1997: 49).

sector component is due to the increase in informal activities with very low labour productivity in the poorest regions. For instance, in the Southern states of Chiapas, Guerrero, Michoacán and Oaxaca labour productivity in services decreased by 35%, 35.4%, 40.5 and 39.6% respectively (Tables A.9 – A.11).[52] Moreover, neither domestic nor international outmigration flows have contributed significantly to labour productivity growth during this period, probably due to the increase in international migration as a factor overcoming the effects of domestic migration.

The Centre-North is the region that has had the lowest divergence rate, thanks to advances in industrialization. At the start of period, in 1980, all Centre-North states had a industrial labour share lower than the national average (29%). By contrast, in 2000, 3 out of 4 states of the region had a higher share than the national one (28.3%). More concretely, in Aguascalientes and Durango, industrial labour share went from 28.9% and 18.6% in 1980, to 35.9% and 30.5% in 2000 respectively. Nevertheless, this process was not enough to allow for convergence with Mx because, as in the rest of the regions, the within-sector component had a very high contribution to divergence.

5.- Concluding remarks

This paper aims at contributing to the historical literature on the determinants of regional inequality in peripheral countries by providing evidence on the Mexican case. I have analysed the main determinants of the long-term evolution of Mexican regional inequality in labour productivity between 1900 to 2000 through a convergence decomposition exercise. This is the first time that such a long-term analysis has been undertaken for the Mexican case. I have decomposed changes in convergence into a 'within-sector' component, 'labour-reallocation' and a 'between-sector' component, on the basis of a new labour productivity database.

Several stages can be distinguished in the evolution of Mexican regional inequality, which largely coincide with the main periods of recent Mexican Economic History. To start with, the last decades of the export led-growth period (1900–1930) were characterized by intense regional divergence. This trend was reversed during the State-led Industrialisation period (1930–1980), but a new divergence phase started from 1980 onwards. The main forces explaining those convergence and divergence trends have also changed over time and across space. Broadly speaking, the early divergence observed until the 1930s was driven by structural change forces, and especially by differences in the intensity of labour reallocation among regions. By contrast, during the State-led Industrialisation period, domestic migration flows from poor to rich regions led to a strong process of regional convergence, based on the reduction in productivity differences among regions. Finally, after 1980, the increasing

[52] In recent decades, regional income disparities have increased in several countries, especially high-income ones. This process has been driven by the growth of metropolitan areas, thanks largely to the concentration there of knowledge-intensive services and industries, which are the new engines of economic growth (Enflo and Rosés, 2015: 2014).

divergence has been driven by neoclassical forces and, more specifically, by labour productivity differentials within each sector, which were boosted by the spatially uneven introduction of FDI, and by the spatial concentration of high value-added services in Mexico City. Thus, it seems that the openness of the economy has benefited just a few states, causing stagnation in labour productivity growth in most regions.

This paper sheds some light on the explanations of domestic disparities in peripheral economies. For instance, the Mexican case illustrates the importance of differences in social structures, which could jeopardize labour mobility and therefore development in the poorest regions. The analysis of Mexican regional inequality, therefore, points at the importance of collecting new historical evidence on middle- and low-income countries, in order to get a better understanding of the causes of regional inequality. These countries not only have greater levels of inequality in comparison to the developed ones, but also have an uneven economic structure that makes the study of this issue more complex, and allows testing different interpretations of regional disparities.

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APPENDIX A

Labour productivity (GDP per worker) per sector at regional level, 1900-2000

As mentioned in Section 2, this papers is based on a new database of GDP per worker of the Mexican states. In the following lines I present the estimation methods and the main characteristics of this database. Regional GDP is obtained by distributing the national GDP taken from the Maddison's project database (http://www.ggdc.net/maddison/maddison-project/home.htm). In order to distribute the national GDP among states, I use Aguilar-Retureta's (2015) estimates for 1900-1930 and Germán-Soto's (2005) shares for 1940-2000. The number of regions is the main difference between these estimates. While Aguilar-Retureta (2015) presents a database with 30 regions (merging Yucatán and Quintana Roo, and Baja California Norte and Baja California Sur), Germán-Soto (2005) offers a database with the actual 32 states.

State GDP figures are disaggregated into 5 economic sectors: agrarian, mining, oil, industrial, and services. Each sector's production for each region and year was obtained from several sources. From 1900 to 1930 all data come from Aguilar-Retureta (2015). From 1940 to 1960 each sector's production comes from Appendini (1978). However, Appendini's industrial sector includes the mining and oil sectors, and I used Ruiz's (2010) estimates to disaggregate Appendini's industrial sector into mining, oil and industry (which includes manufacturing, construction and electricity). Data from 1970 to 2000 come from the INEGI (1985, 2002).

Each sector's labour force has been estimated on the basis of Population Census data. For the period 1900-1940, domestic service figures (which, unlike those from the 1950 and subsequent Population Censuses, was not yet divided between paid and unpaid workers), 'unspecified occupations' and 'unproductive occupations' were not considered. From 1950 to 2000, unpaid domestic workers and 'unspecified occupations' were excluded. The 1921 Population Census does not offers sectoral labour force figures at the regional level but only at the national one. Therefore, I have used a weighted average of the 1910 and 1930 sectoral labour shares to distribute the national data among the states. I have given a two-thirds weight to the 1910 share and a one-third weight to the 1930 one. Thus, I assume that the 1921 labour force structure was closer to the 1910 one than to that of 1930. This is based on recent literature suggesting that the 1910 Revolution's impact on economic activity was not totally destructive (Haber, 2010: 432). Estimates for 1930 are based on the VI Population Census. Data for 1980 are a weighted average of the 1970 and 1990 estimates, with weights of two-thirds and one-third respectively, due to the problems of the 1980 Population Census figures, which include too large amounts of "insufficiently specified services". I adopt a higher 1970 weight on account of the significant effects that the economic reforms adopted since the mid-1980s had on the labour productivity structure at the regional level.

As 1990 is the only year for which there are data available on the regional distribution of the oil sector labour force I have estimated each state's share of the

national labour force for all the remaining years. National oil labour force (i.e. the amount of workers employed in the extraction of crude oil and natural gas) has been taken from Rubio (2002: 309) for 1921-1980 and has been distributed among states on the basis of each state's share of national oil production in each benchmark year. Thus, oil workers' productivity is assumed to be the same across states. The estimated oil labour has been removed from the mining labour force given in the Population Censuses. For 1990, the oil labour force has been taken directly from the Population Census of this year. Finally, for the year 2000 I assume that interregional differences in oil labour productivity were the same as in 1990.

The complete database is presented in Tables A.1 – A.11, while Tables A.12 – A.22 offer each sector's labour force figures for the benchmark years.

Table A.1
Sectoral labour productivity, 1900 (1990 Int. GK$), Oil excluded

	Primary	**Mining**	**Industries**	**Services**	**TOTAL**
Aguascalientes	4692	58190	6992	13308	8626
Baja California	6362	19337	9555	31424	12299
Campeche	1337	0	6075	20617	4011
Coahuila	2992	10623	6007	18859	6178
Colima	1961	0	3625	15190	3697
Chiapas	2465	40409	4062	19249	3506
Chihuahua	2486	14564	5276	27080	5590
Mexico City	3732	0	6611	21132	11649
Durango	3470	15009	5379	21553	6476
Guanajuato	1746	4273	6850	11375	3542
Guerrero	1301	14194	4128	16549	2050
Hidalgo	1281	8311	6728	13009	3481
Jalisco	2232	8573	6560	9738	3952
México	1529	8782	6209	14069	2964
Michoacán	1639	11063	7047	10472	3174
Morelos	3384	6860	6438	28716	5520
Nayarit	4744	9088	9144	13162	6245
Nuevo León	2181	49437	8615	29808	8921
Oaxaca	1026	4051	4129	16791	1998
Puebla	2156	35211	6324	14215	3942
Querétaro	1267	8562	6766	11914	3398
San Luis Potosí	911	15762	5803	15122	3049
Sinaloa	3180	18989	9244	16642	6208
Sonora	4704	21558	9269	16823	8557
Tabasco	2016	0	5674	22595	3955
Tamaulipas	1947	11492	5944	25180	4616
Tlaxcala	1795	0	6431	18757	3985
Veracruz	2596	0	6661	24977	4497
Yucatán	6101	0	5868	19691	7363
Zacatecas	1719	6557	5958	20145	3967
MEXICO	***2140***	***12757***	***6449***	***16668***	***4441***

Table A.2
Sectoral labour productivity, 1910 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	2013	168424	9879	17810	13933
Baja California	6041	5331	14321	34304	10865
Campeche	2242	0	7652	24788	5305
Coahuila	3088	31646	7722	23676	7454
Colima	6493	0	6158	20319	7753
Chiapas	4345	0	6216	19561	5247
Chihuahua	3122	26227	7980	31686	7883
Mexico City	3443	0	8044	27249	14650
Durango	1901	22612	7675	21395	4482
Guanajuato	2375	9826	8498	13995	4584
Guerrero	2180	90401	5992	22923	3227
Hidalgo	1518	11437	8793	17983	3925
Jalisco	1934	5459	8386	11590	3699
México	2838	30939	8634	18303	5097
Michoacán	2474	44686	8448	13896	4459
Morelos	3022	6856	8331	27873	5315
Nayarit	3643	36155	15824	19052	6796
Nuevo León	1598	135910	14593	18242	7155
Oaxaca	1684	4125	6626	18094	2824
Puebla	1603	22760	8547	19446	4283
Querétaro	1538	43748	8325	17499	3804
San Luis Potosí	962	57410	8617	20156	3897
Sinaloa	2847	27195	17218	25823	6034
Sonora	4183	38354	14227	22520	10198
Tabasco	1868	0	8133	23377	3823
Tamaulipas	2126	91260	10471	27997	5092
Tlaxcala	1973	0	8477	23104	4440
Veracruz	2421	0	8571	31700	5024
Yucatán	12510	0	7894	23066	13410
Zacatecas	1819	7394	9178	22270	4218
MEXICO	***2518***	***27054***	***8686***	***21132***	***5467***

Table A.3
Sectoral labour productivity, 1921 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	1202	127552	7441	23833	7379
Baja California	8687	29113	25764	33797	15521
Campeche	1734	0	7563	36594	6550
Coahuila	3026	21479	9593	25228	7302
Colima	3809	0	7057	29983	7109
Chiapas	2271	0	5466	19014	3403
Chihuahua	1973	70058	7868	26388	6855
Mexico City	1276	128223	14298	34005	20656
Durango	1114	45313	8034	14896	3292
Guanajuato	1236	15076	8304	11146	3184
Guerrero	1143	59936	4338	10698	1652
Hidalgo	1136	58563	8979	23086	4519
Jalisco	1552	45737	8259	15445	3862
México	1632	37890	8141	17957	3701
Michoacán	1674	33780	7227	13495	3303
Morelos	1420	0	4613	7347	2104
Nayarit	2328	11694	13314	14923	4796
Nuevo León	1392	508099	20062	17166	7809
Oaxaca	1012	3065	4940	15741	1953
Puebla	1209	10764	11159	23899	4437
Querétaro	1738	9378	7796	16370	3654
San Luis Potosí	870	56008	8487	16485	3230
Sinaloa	2368	26119	15892	22371	5145
Sonora	2569	81147	13416	19826	8351
Tabasco	1585	0	9118	22198	3537
Tamaulipas	1448	0	20075	49110	8905
Tlaxcala	1344	0	9714	20081	3880
Veracruz	1862	0	11960	32125	5118
Yucatán	6033	427	9361	46160	12178
Zacatecas	1354	49464	7092	15708	3940
MEXICO	***1665***	***55681***	***10185***	***23730***	***5218***

Table A.4
Sectoral labour productivity, 1930 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	1062	28931	3834	22190	5634
Baja California	12410	27749	61242	37581	23127
Campeche	2344	0	2461	21409	5141
Coahuila	4225	39823	19916	24103	10426
Colima	2248	0	3322	16093	4540
Chiapas	1774	0	6366	11993	2705
Chihuahua	2762	106807	10788	27548	11159
Mexico City	1661	89156	15314	28809	20238
Durango	1963	59078	15317	15051	5397
Guanajuato	1404	15327	5272	17350	3556
Guerrero	819	46070	1539	17311	1579
Hidalgo	1301	48143	8777	18578	4509
Jalisco	1635	24917	3547	12410	3125
México	1382	8288	6869	14208	3069
Michoacán	1507	21147	3590	12008	2752
Morelos	2293	32275	7613	13187	3686
Nayarit	2730	1458	5218	13703	4134
Nuevo León	1828	495494	29591	21901	10263
Oaxaca	944	3186	1890	16687	1705
Puebla	1497	31197	6862	22847	4052
Querétaro	1139	7731	3693	16001	2743
San Luis Potosí	1272	73017	6637	18877	4736
Sinaloa	3140	21001	10884	15006	5219
Sonora	4303	58027	9853	20207	10234
Tabasco	2895	0	3087	19798	4192
Tamaulipas	2199	0	9871	41503	11060
Tlaxcala	2006	0	4897	16839	3724
Veracruz	2092	0	16410	18705	5024
Yucatán	4385	2288	10467	18138	7308
Zacatecas	1365	69790	3492	18736	4956
MEXICO	***1856***	***56270***	***9689***	***21435***	***5604***

Table A.5
Sectoral labour productivity, 1940 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	2733	0	29748	7541	7947
Baja California	8152	3009	64690	45345	25916
B. C. Sur	3969	11131	8211	7767	6380
Campeche	5343	0	6808	5655	5603
Coahuila	5471	15519	25261	15254	10911
Colima	3035	12039	20753	13160	7813
Chiapas	1705	0	8896	7892	2570
Chihuahua	3299	26579	18218	13107	8194
Mexico City	5823	3513	18277	25317	21715
Durango	3510	14214	37444	16406	9117
Guanajuato	1646	8611	7072	7865	3228
Guerrero	1432	12107	5087	11644	2314
Hidalgo	1084	23192	7571	7684	3261
Jalisco	1950	9707	6070	9615	4035
México	1623	9383	13000	6798	3170
Michoacán	1602	12859	4475	4890	2426
Morelos	3147	0	15881	13309	5454
Nayarit	2952	15011	6051	7217	4039
Nuevo León	2467	1132	25525	25754	11571
Oaxaca	945	12115	2995	4223	1386
Puebla	1107	585	7896	6892	2618
Querétaro	3784	27223	17597	21907	7269
Quintana Roo	13524	0	7963	3430	11038
San Luis Potosí	1683	17471	4868	10406	3767
Sinaloa	2750	7811	9780	17365	5981
Sonora	4718	11383	9050	21564	9250
Tabasco	3946	0	5875	8608	4648
Tamaulipas	3091	4284	11899	30529	10898
Tlaxcala	1870	0	7488	4856	2843
Veracruz	2247	0	7974	11390	4199
Yucatán	2413	31558	10235	17950	6750
Zacatecas	1693	16877	4201	6648	3098
MEXICO	***2143***	***14720***	***13115***	***16491***	***6422***

Table A.6
Sectoral labour productivity, 1950 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	2191	5240	3974	8270	4243
Baja California	11053	2056	27276	40557	23795
B. C. Sur	3321	19357	20229	17554	10428
Campeche	4505	280067	5809	10995	7166
Coahuila	5452	11201	17718	19355	11458
Colima	4748	32383	4834	11642	6673
Chiapas	2819	1000	2674	7555	3391
Chihuahua	4755	34957	33941	14949	12665
Mexico City	3488	577	14979	26466	21009
Durango	3772	20698	18288	10465	6576
Guanajuato	2173	18874	5671	9602	3958
Guerrero	2192	42631	6577	8700	3394
Hidalgo	2007	7599	11250	5912	3618
Jalisco	2953	8592	8223	13736	6152
México	1977	4975	18866	6963	4452
Michoacán	2349	32502	6172	7974	3707
Morelos	3207	878	17246	12735	6483
Nayarit	5409	0	4554	10676	6235
Nuevo León	4722	49258	23903	18821	13985
Oaxaca	2220	4736	3699	8352	2961
Puebla	1735	1177	8225	11845	4285
Querétaro	1516	16061	7720	9981	3558
Quintana Roo	15717	16315	19257	15864	16111
San Luis Potosí	2586	29573	15837	10748	5875
Sinaloa	4653	24237	13096	19847	8430
Sonora	5943	7411	17907	27880	13327
Tabasco	3645	0	4827	14848	5321
Tamaulipas	5772	673	10079	22895	10866
Tlaxcala	2126	0	5934	5706	3139
Veracruz	4486	0	21305	14428	8151
Yucatán	2785	16769	12945	15849	7274
Zacatecas	2579	21275	19133	9543	4915
MEXICO	***3135***	***17278***	***13536***	***18046***	***8237***

Table A.7
Sectoral labour productivity, 1960 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	3036	6317	6981	8522	5418
Baja California	9533	4039	15181	36320	20845
B. C. Sur	6237	17662	20453	14341	10402
Campeche	4733	1596	12440	11867	7949
Coahuila	5468	28374	20734	20241	13847
Colima	5808	5134	8772	9280	7249
Chiapas	3181	3029	6150	8815	4104
Chihuahua	8595	61009	12299	18722	14046
Mexico City	4610	1966	22658	29858	26202
Durango	4664	21258	16250	8144	6705
Guanajuato	2286	7496	8410	15914	5765
Guerrero	2698	32119	8706	13383	4520
Hidalgo	2571	8549	11755	6751	4358
Jalisco	2774	4023	10856	13487	7293
México	2177	2092	26996	7199	7912
Michoacán	2085	4333	7328	8230	3550
Morelos	2603	5637	13411	16095	7466
Nayarit	4172	11623	7805	11964	6030
Nuevo León	4487	90346	22935	34109	21352
Oaxaca	1586	4542	6346	5932	2389
Puebla	1930	3660	9962	8191	4212
Querétaro	1999	3989	9783	10414	4397
Quintana Roo	3312	1613	16979	6238	5157
San Luis Potosí	2194	22098	11468	10347	5066
Sinaloa	5614	3037	22496	23132	11611
Sonora	10034	5836	14159	24229	14854
Tabasco	4042	0	6423	12122	5739
Tamaulipas	4833	2516	10481	16357	9343
Tlaxcala	2133	0	7122	3851	3208
Veracruz	5551	15385	15378	12512	8257
Yucatán	5432	5735	15522	11335	8453
Zacatecas	3089	12688	8130	8679	4307
MEXICO	***3565***	***18541***	***16846***	***20026***	***10429***

Table A.8
Sectoral labour productivity, 1970 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	7592	17344	12987	26240	15763
Baja California	9999	10596	30647	37843	29115
B. C. Sur	15016	51267	29262	30819	25604
Campeche	9132	9708	15830	23804	15019
Coahuila	7169	29243	28075	32956	23390
Colima	8652	13996	16618	24549	15672
Chiapas	3892	3028	25292	25952	8903
Chihuahua	7532	63516	20207	28433	19821
Mexico City	3464	5965	26040	32666	29313
Durango	6578	28758	25340	29065	15260
Guanajuato	5888	13103	16239	32740	14597
Guerrero	3208	22641	16416	32507	10967
Hidalgo	2651	21959	24033	27147	10677
Jalisco	9095	31768	20001	29038	19237
México	4027	12993	34476	24906	21310
Michoacán	4461	33348	13064	31505	11502
Morelos	6891	23326	20658	25331	15738
Nayarit	6993	10871	24038	27868	14147
Nuevo León	12635	50104	11936	50486	28666
Oaxaca	2340	11562	10797	29604	6824
Puebla	2844	6141	19338	27492	11421
Querétaro	5282	12752	25568	27522	15208
Quintana Roo	10480	18310	21124	28231	17439
San Luis Potosí	3401	19927	15410	26738	11513
Sinaloa	9164	30723	22539	29424	17366
Sonora	19483	71518	25681	33043	26951
Tabasco	4453	0	17666	26066	10986
Tamaulipas	8193	8838	22729	31278	20937
Tlaxcala	1817	12565	12215	26700	9062
Veracruz	5288	21889	27248	28426	14836
Yucatán	2727	18050	24712	31708	13615
Zacatecas	4988	33388	10904	31010	11361
MEXICO	***5504***	***25698***	***23210***	***31293***	***18555***

Table A.9
Sectoral labour productivity, 1980 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	7851	15750	14880	27064	17743
Baja California	9615	42964	27101	36103	26938
B. C. Sur	14810	60116	25351	33271	28638
Campeche	8973	40372	17301	39181	18428
Coahuila	8184	31512	27549	31677	25807
Colima	8745	29457	19793	25461	18901
Chiapas	3700	22058	23872	26636	9669
Chihuahua	8765	48444	19106	31349	21923
Mexico City	5167	24105	29294	36981	33515
Durango	8517	25372	23308	28717	18293
Guanajuato	6225	13655	15031	30909	17110
Guerrero	3551	21826	15274	31066	13726
Hidalgo	3034	21035	24141	26596	12747
Jalisco	9940	38873	19303	29205	20996
México	4521	20614	29612	24137	21545
Michoacán	5250	52793	12509	28781	13129
Morelos	8402	24941	20353	25429	19333
Nayarit	7545	14633	21016	27150	15880
Nuevo León	10911	48382	16033	47912	24945
Oaxaca	2794	16278	11811	29155	8262
Puebla	3042	13416	18691	27821	12782
Querétaro	5465	11887	24760	30137	18424
Quintana Roo	7897	41089	18141	33783	25689
San Luis Potosí	4292	19825	17116	26053	14878
Sinaloa	9675	30617	19708	28995	18839
Sonora	18172	60545	25252	32530	27960
Tabasco	4513	51169	19037	29747	14194
Tamaulipas	9150	41841	22018	30000	21697
Tlaxcala	2726	24655	13212	26086	9943
Veracruz	4688	29182	25662	27321	16378
Yucatán	3383	37483	20863	29471	16768
Zacatecas	6523	29593	10244	29507	14138
MEXICO	***5577***	***29425***	***22721***	***31474***	***20513***

Table A.10
Sectoral labour productivity, 1990 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	8370	12536	18665	28712	22081
Baja California	8845	107631	20010	32625	25953
B. C. Sur	14399	77769	17529	38173	30441
Campeche	8655	102037	20242	69935	38535
Coahuila	10214	36048	26498	29121	25996
Colima	8932	60372	26142	27285	23093
Chiapas	3315	66165	21033	28005	12361
Chihuahua	11231	18294	16905	37182	25047
Mexico City	8572	60380	35803	45614	42666
Durango	12396	18593	19244	28021	21025
Guanajuato	6899	14758	12614	27247	17161
Guerrero	4237	20189	12991	28186	16452
Hidalgo	3800	19188	24358	25493	16727
Jalisco	11631	53082	17908	29539	22880
México	5509	35853	19885	22599	20047
Michoacán	6828	91675	11397	23333	14602
Morelos	11425	28149	19744	25626	21012
Nayarit	8648	22118	14972	25714	16947
Nuevo León	7462	44928	24226	42765	32929
Oaxaca	3700	25707	13841	28258	12547
Puebla	3437	27956	17396	28481	16126
Querétaro	5832	10155	23144	35366	25139
Quintana Roo	2731	86579	12171	44885	30788
San Luis Potosí	6075	19618	20529	24684	17556
Sinaloa	10696	30367	14047	28138	19015
Sonora	15551	38586	24393	31504	26094
Tabasco	4635	153145	21778	37110	21926
Tamaulipas	11065	107809	20596	27446	22700
Tlaxcala	4543	48616	15206	24857	15634
Veracruz	3487	43767	22489	25112	15677
Yucatán	4696	76298	13164	24996	16511
Zacatecas	9593	22000	8923	26502	15976
MEXICO	***6321***	***33486***	***21028***	***31917***	***22848***

Table A.11
Sectoral labour productivity, 2000 (1990 Int. GK$), Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	15426	12532	24582	29436	26573
Baja California	12819	107676	21366	35465	28553
B. C. Sur	14678	77758	15125	27534	23942
Campeche	5119	0	5703	22106	14421
Coahuila	21483	36048	27957	30786	29222
Colima	10716	60368	24086	20252	20330
Chiapas	3315	66224	15465	17292	10311
Chihuahua	19618	18294	19719	42456	30357
Mexico City	9494	60392	51442	45660	46712
Durango	20630	18593	16813	22359	20319
Guanajuato	9552	14759	14128	23997	18313
Guerrero	5351	20188	8896	20081	13754
Hidalgo	4927	19189	17905	17309	14333
Jalisco	14467	53075	16960	23570	20491
México	9756	35855	21216	16839	17906
Michoacán	10135	91692	12439	17105	14310
Morelos	13351	28146	19831	19282	18627
Nayarit	9011	22112	10144	16103	13037
Nuevo León	13116	44932	29326	40556	35272
Oaxaca	3676	25706	9616	17601	10295
Puebla	3601	27959	16825	23012	15695
Querétaro	9540	10155	28377	29091	26955
Quintana Roo	2410	86625	9586	36278	28336
San Luis Potosí	6700	19619	22121	20386	17865
Sinaloa	12394	30372	14643	21553	17704
Sonora	15986	38587	22328	31004	26067
Tabasco	3414	0	14109	17062	12561
Tamaulipas	12619	107797	20605	25859	22784
Tlaxcala	4579	48611	11258	16474	12261
Veracruz	3770	43798	18580	16943	12958
Yucatán	5329	76348	13485	20757	16032
Zacatecas	18412	21999	7966	18693	15912
MEXICO	***7526***	***30808***	***21604***	***26545***	***22061***

Table A.12
Sectoral labour force, 1900 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	63.9	4.4	18.3	13.3	100
Baja California	62.7	18.2	5.5	13.6	100
BCS	nd	nd	nd	nd	nd
Campeche	76.0	0.0	13.4	10.6	100
Coahuila	60.9	5.1	20.2	13.8	100
Colima	76.7	0.0	11.7	11.6	100
Chiapas	88.2	0.0	6.3	5.5	100
Chihuahua	76.2	8.2	7.9	7.7	100
Mexico City	27.2	0.0	32.8	40.1	100
Durango	69.5	10.0	11.4	9.0	100
Guanajuato	72.2	3.7	13.6	10.5	100
Guerrero	92.0	0.3	3.8	3.9	100
Hidalgo	73.3	7.0	9.5	10.1	100
Jalisco	70.5	0.9	15.2	13.4	100
México	82.3	1.1	9.3	7.3	100
Michoacán	77.9	0.1	12.2	9.8	100
Morelos	84.6	0.7	7.2	7.5	100
Nayarit	76.4	2.0	10.1	11.5	100
Nuevo León	67.6	3.5	13.7	15.2	100
Oaxaca	86.8	0.6	8.1	4.5	100
Puebla	76.8	0.1	13.0	10.2	100
Querétaro	72.8	0.3	14.6	12.3	100
Quintana Roo	nd	nd	nd	nd	nd
San Luis Potosí	79.5	3.4	8.5	8.6	100
Sinaloa	71.8	4.1	11.7	12.5	100
Sonora	65.1	7.0	9.5	18.5	100
Tabasco	84.3	0.0	7.7	8.1	100
Tamaulipas	82.2	0.2	7.5	10.1	100
Tlaxcala	75.6	0.0	15.8	8.6	100
Veracruz	84.7	0.0	8.3	7.0	100
Yucatán	80.1	0.0	10.4	9.5	100
Zacatecas	72.1	11.3	9.6	7.0	100
MEXICO	**75.2**	**2.3**	**11.8**	**10.6**	**100**

Table A.13
Sectoral labour force, 1910 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	65.9	5.2	15.6	13.4	100
Baja California	66.1	11.4	7.3	15.2	100
BCS	nd	nd	nd	nd	nd
Campeche	77.7	0.0	11.5	10.8	100
Coahuila	68.6	3.9	15.1	12.4	100
Colima	77.6	0.0	13.0	9.4	100
Chiapas	89.2	0.0	5.6	5.2	100
Chihuahua	72.6	7.6	11.2	8.6	100
Mexico City	25.8	0.0	33.6	40.6	100
Durango	80.7	4.2	9.0	6.1	100
Guanajuato	74.1	3.2	12.2	10.5	100
Guerrero	92.7	0.3	3.8	3.3	100
Hidalgo	79.3	5.5	7.0	8.2	100
Jalisco	77.5	0.8	11.3	10.4	100
México	81.6	1.9	8.6	7.9	100
Michoacán	80.7	1.0	9.6	8.7	100
Morelos	85.1	0.1	7.2	7.7	100
Nayarit	78.4	0.6	8.7	12.3	100
Nuevo León	75.5	1.6	11.0	11.9	100
Oaxaca	87.1	0.6	7.8	4.5	100
Puebla	77.6	0.5	12.3	9.6	100
Querétaro	80.0	0.2	10.7	9.1	100
Quintana Roo	nd	nd	nd	nd	nd
San Luis Potosí	81.0	1.0	9.5	8.5	100
Sinaloa	83.9	2.7	6.3	7.1	100
Sonora	68.5	7.0	10.6	13.9	100
Tabasco	86.4	0.0	6.4	7.2	100
Tamaulipas	84.9	0.1	5.8	9.2	100
Tlaxcala	76.9	0.0	16.5	6.6	100
Veracruz	84.4	0.0	8.4	7.1	100
Yucatán	73.7	0.0	12.3	13.9	100
Zacatecas	77.9	7.2	8.0	6.9	100
MEXICO	**77.6**	**1.8**	**10.6**	**9.9**	**100**

Table A.14
Sectoral labour force, 1921 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	69.0	1.4	14.1	15.4	100
Baja California	69.2	4.4	8.6	17.8	100
BCS	nd	nd	nd	nd	nd
Campeche	77.2	0.0	10.8	12.0	100
Coahuila	71.0	1.5	13.5	14.0	100
Colima	76.7	0.0	12.1	11.1	100
Chiapas	87.9	0.0	6.6	5.5	100
Chihuahua	77.7	2.7	9.5	10.0	100
Mexico City	22.4	0.2	31.6	45.8	100
Durango	83.2	1.4	8.3	7.1	100
Guanajuato	77.6	0.9	10.7	10.8	100
Guerrero	93.0	0.1	3.6	3.3	100
Hidalgo	83.4	1.9	6.5	8.2	100
Jalisco	78.5	0.3	10.4	10.8	100
México	83.5	0.6	7.5	8.5	100
Michoacán	82.4	0.4	8.5	8.7	100
Morelos	85.6	0.0	6.2	8.2	100
Nayarit	79.3	0.2	8.5	12.0	100
Nuevo León	74.6	0.4	11.8	13.2	100
Oaxaca	88.4	0.2	6.9	4.5	100
Puebla	79.6	0.2	10.9	9.4	100
Querétaro	81.5	0.1	9.1	9.3	100
Quintana Roo	nd	nd	nd	nd	nd
San Luis Potosí	81.6	0.5	8.8	9.2	100
Sinaloa	84.0	0.9	7.1	8.0	100
Sonora	72.9	2.8	9.3	15.1	100
Tabasco	86.9	0.0	5.7	7.4	100
Tamaulipas	80.0	0.0	7.1	12.9	100
Tlaxcala	78.9	0.0	13.6	7.5	100
Veracruz	83.6	0.0	8.5	7.9	100
Yucatán	73.5	0.1	12.1	14.3	100
Zacatecas	83.0	2.3	7.3	7.3	100
MEXICO	**78.7**	**0.6**	**9.9**	**10.8**	**100**

Table A.15
Sectoral labour force, 1930 (%). Oil excluded

	Primary	Mining	Industries*	Services	TOTAL
Aguascalientes	65.1	1.0	15.6	18.3	100
Baja California	62.9	7.8	9.1	20.2	100
BCS	nd	nd	nd	nd	nd
Campeche	71.6	0.0	13.9	14.6	100
Coahuila	68.6	2.8	11.8	16.8	100
Colima	70.7	0.0	13.9	15.5	100
Chiapas	86.9	0.0	7.3	5.8	100
Chihuahua	75.7	4.7	7.9	11.7	100
Mexico City	15.3	0.2	33.7	50.7	100
Durango	81.9	2.4	6.6	9.1	100
Guanajuato	77.7	0.7	11.5	10.1	100
Guerrero	92.1	0.4	4.1	3.4	100
Hidalgo	82.8	3.1	6.9	7.3	100
Jalisco	76.6	0.4	12.2	10.8	100
México	81.8	0.6	8.4	9.2	100
Michoacán	81.7	0.9	9.0	8.5	100
Morelos	85.4	0.5	5.2	8.9	100
Nayarit	78.6	0.5	10.4	10.5	100
Nuevo León	70.8	0.3	13.0	15.8	100
Oaxaca	87.3	0.1	8.2	4.3	100
Puebla	78.6	0.2	12.7	8.5	100
Querétaro	81.8	0.1	8.9	9.2	100
Quintana Roo	nd	nd	nd	nd	0
San Luis Potosí	79.1	1.6	9.0	10.4	100
Sinaloa	80.2	1.3	8.5	10.0	100
Sonora	70.2	5.5	8.6	15.7	100
Tabasco	86.3	0.0	6.1	7.6	100
Tamaulipas	67.9	0.0	11.8	20.2	100
Tlaxcala	76.9	0.0	14.3	8.8	100
Veracruz	81.1	0.0	9.1	9.8	100
Yucatán	71.0	0.0	13.8	15.2	100
Zacatecas	81.8	3.1	7.7	7.3	100
MEXICO	***76.0***	***1.0***	***11.0***	***12.1***	100

Table A.16
Sectoral labour force, 1940 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	54.9	0.0	13.7	31.4	100
Baja California	55.7	1.9	10.8	31.6	100
BCS	50.7	14.8	9.6	25.0	100
Campeche	63.6	0.0	12.7	23.8	100
Coahuila	58.0	5.8	13.2	23.0	100
Colima	61.7	0.4	12.0	25.9	100
Chiapas	86.8	0.0	4.7	8.5	100
Chihuahua	65.1	7.9	8.0	19.0	100
Mexico City	6.6	0.8	30.3	62.3	100
Durango	74.3	2.8	11.2	11.8	100
Guanajuato	73.1	1.4	12.6	12.9	100
Guerrero	88.6	1.0	4.4	6.1	100
Hidalgo	77.1	4.4	6.2	12.3	100
Jalisco	66.5	0.5	13.7	19.4	100
México	79.5	1.0	7.4	12.1	100
Michoacán	76.7	1.2	8.6	13.5	100
Morelos	78.9	0.0	6.5	14.6	100
Nayarit	75.1	1.5	7.7	15.8	100
Nuevo León	59.5	1.2	16.7	22.6	100
Oaxaca	85.6	0.7	7.0	6.7	100
Puebla	75.6	0.2	11.2	13.0	100
Querétaro	78.7	0.2	8.8	12.4	100
Quintana Roo	72.6	0.0	6.1	21.3	100
San Luis Potosí	73.9	3.6	8.1	14.4	100
Sinaloa	71.9	2.6	8.3	17.3	100
Sonora	62.1	8.2	8.1	21.6	100
Tabasco	81.6	0.0	5.7	12.7	100
Tamaulipas	60.5	5.1	9.1	25.3	100
Tlaxcala	77.7	0.0	11.7	10.6	100
Veracruz	75.5	0.0	8.4	16.1	100
Yucatán	67.0	0.1	10.5	22.5	100
Zacatecas	80.0	5.4	5.7	8.8	100
MEXICO	***67.3***	***1.7***	***11.4***	***19.6***	**100**

Table A.17
Sectoral labour force, 1950 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	52.6	0.4	19.0	28.0	100
Baja California	48.6	0.6	16.7	34.2	100
BCS	53.3	8.9	11.4	26.4	100
Campeche	59.6	0.4	18.3	21.8	100
Coahuila	52.2	4.2	18.1	25.5	100
Colima	60.4	0.3	12.6	26.7	100
Chiapas	79.8	0.2	7.5	12.4	100
Chihuahua	58.0	4.9	13.9	23.2	100
Mexico City	5.1	0.6	36.0	58.3	100
Durango	72.9	2.4	9.5	15.1	100
Guanajuato	69.0	0.9	15.4	14.6	100
Guerrero	82.3	0.6	7.4	9.7	100
Hidalgo	73.0	2.5	9.6	14.9	100
Jalisco	61.5	0.3	17.0	21.2	100
México	75.8	0.6	10.8	12.8	100
Michoacán	75.3	0.6	10.2	13.9	100
Morelos	70.2	0.2	10.3	19.3	100
Nayarit	72.6	0.0	10.1	17.3	100
Nuevo León	45.2	0.8	25.1	28.9	100
Oaxaca	79.3	0.4	11.1	9.2	100
Puebla	69.3	0.4	14.3	16.1	100
Querétaro	72.9	0.3	11.8	15.0	100
Quintana Roo	65.1	0.1	10.1	24.6	100
San Luis Potosí	71.1	2.0	10.8	16.2	100
Sinaloa	70.7	0.5	10.2	18.5	100
Sonora	57.3	2.9	14.0	25.9	100
Tabasco	78.6	0.0	7.2	14.2	100
Tamaulipas	56.1	3.7	12.5	27.7	100
Tlaxcala	72.7	0.0	14.9	12.4	100
Veracruz	70.7	0.0	11.0	18.2	100
Yucatán	62.1	0.2	15.9	21.8	100
Zacatecas	80.7	3.5	6.1	9.8	100
MEXICO	***61.1***	***1.1***	***15.5***	***22.4***	**100**

Table A.18
Sectoral labour force, 1960 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	50.2	0.5	22.0	27.3	100
Baja California	41.7	0.5	19.7	38.2	100
BCS	58.2	4.8	10.1	27.0	100
Campeche	55.6	0.6	19.0	24.9	100
Coahuila	46.2	4.1	20.3	29.3	100
Colima	55.1	1.2	13.6	30.1	100
Chiapas	80.1	0.3	6.7	12.9	100
Chihuahua	50.6	3.6	16.5	29.4	100
Mexico City	2.7	0.7	38.6	58.0	100
Durango	70.7	1.9	9.6	17.9	100
Guanajuato	64.6	1.0	16.8	17.6	100
Guerrero	81.5	0.6	5.7	12.1	100
Hidalgo	71.2	1.9	11.0	15.9	100
Jalisco	52.2	0.6	20.5	26.6	100
México	61.6	0.9	19.5	18.0	100
Michoacán	74.3	0.7	10.0	15.1	100
Morelos	60.7	0.5	14.2	24.5	100
Nayarit	70.9	0.7	9.7	18.6	100
Nuevo León	32.4	0.7	31.9	34.9	100
Oaxaca	82.1	0.5	7.4	9.9	100
Puebla	67.2	0.5	14.2	18.1	100
Querétaro	69.9	0.9	11.4	17.8	100
Quintana Roo	69.3	0.5	9.0	21.2	100
San Luis Potosí	69.0	1.9	11.0	18.1	100
Sinaloa	64.8	0.5	11.6	23.2	100
Sonora	53.7	1.8	14.2	30.4	100
Tabasco	72.1	0.0	9.7	18.1	100
Tamaulipas	50.5	1.3	17.1	31.0	100
Tlaxcala	68.9	0.0	16.5	14.6	100
Veracruz	66.3	0.4	12.3	21.0	100
Yucatán	59.1	0.6	15.3	25.0	100
Zacatecas	80.2	3.5	5.4	10.8	100
MEXICO	***54.8***	***1.0***	***17.9***	***26.4***	**100**

Table A.19
Sectoral labour force, 1970 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	40.0	0.8	22.3	37.0	100
Baja California	24.0	0.5	26.3	49.1	100
BCS	36.5	3.8	15.2	44.5	100
Campeche	49.2	0.5	18.9	31.5	100
Coahuila	31.6	4.3	25.6	38.4	100
Colima	47.8	1.0	14.8	36.4	100
Chiapas	76.5	0.5	7.7	15.3	100
Chihuahua	38.8	3.1	19.2	39.0	100
Mexico City	2.3	0.8	37.4	59.5	100
Durango	59.1	2.5	13.9	24.5	100
Guanajuato	52.5	1.5	22.8	23.2	100
Guerrero	66.8	0.6	11.9	20.8	100
Hidalgo	64.9	2.2	14.5	18.3	100
Jalisco	36.3	0.5	28.6	34.7	100
México	32.6	0.6	34.4	32.4	100
Michoacán	63.8	0.5	14.9	20.8	100
Morelos	47.0	0.5	19.5	32.9	100
Nayarit	63.4	0.3	11.5	24.8	100
Nuevo León	18.2	0.6	38.7	42.4	100
Oaxaca	75.6	0.5	11.0	12.9	100
Puebla	58.8	0.6	17.8	22.8	100
Querétaro	51.7	2.8	20.5	25.0	100
Quintana Roo	55.8	0.1	12.3	31.8	100
San Luis Potosí	56.8	2.8	15.7	24.7	100
Sinaloa	54.9	0.5	13.8	30.9	100
Sonora	40.8	1.8	16.8	40.6	100
Tabasco	65.6	0.0	10.7	23.7	100
Tamaulipas	36.5	1.0	19.9	42.7	100
Tlaxcala	57.9	0.2	22.2	19.8	100
Veracruz	57.5	1.8	14.3	26.4	100
Yucatán	58.6	0.4	15.0	26.0	100
Zacatecas	67.9	4.0	10.4	17.8	100
MEXICO	***42.0***	***1.1***	***23.0***	***34.0***	**100**

Table A.20
Sectoral labour force, 1980 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	29.5	1.1	28.9	40.5	100
Baja California	25.1	0.1	28.0	46.8	100
BCS	24.5	4.5	16.6	54.5	100
Campeche	53.6	0.1	20.8	25.5	100
Coahuila	19.3	4.7	32.1	43.8	100
Colima	35.5	6.9	16.0	41.6	100
Chiapas	72.5	0.6	11.2	15.7	100
Chihuahua	30.2	3.4	26.1	40.4	100
Mexico City	1.6	0.3	38.0	60.1	100
Durango	46.0	3.7	18.6	31.7	100
Guanajuato	34.1	3.2	30.3	32.3	100
Guerrero	55.3	2.0	12.4	30.4	100
Hidalgo	55.7	2.9	23.0	18.4	100
Jalisco	25.6	0.7	33.6	40.1	100
México	22.8	0.5	34.5	42.3	100
Michoacán	52.4	0.5	21.2	25.9	100
Morelos	26.0	0.6	32.9	40.5	100
Nayarit	51.0	0.4	19.9	28.7	100
Nuevo León	5.3	0.3	65.9	28.5	100
Oaxaca	69.1	0.6	15.1	15.3	100
Puebla	51.8	0.3	23.6	24.3	100
Querétaro	38.4	3.0	31.8	26.9	100
Quintana Roo	22.3	0.2	14.9	62.6	100
San Luis Potosí	39.5	2.2	27.4	30.9	100
Sinaloa	42.9	0.4	20.1	36.6	100
Sonora	26.5	3.3	23.3	46.8	100
Tabasco	53.9	0.1	18.3	27.7	100
Tamaulipas	30.2	0.1	25.5	44.2	100
Tlaxcala	55.6	0.1	24.4	19.8	100
Veracruz	47.0	1.2	19.5	32.3	100
Yucatán	41.6	0.2	21.7	36.5	100
Zacatecas	49.7	5.4	20.5	24.4	100
MEXICO	***32.42***	***1.13***	***29.05***	***37.41***	**100**

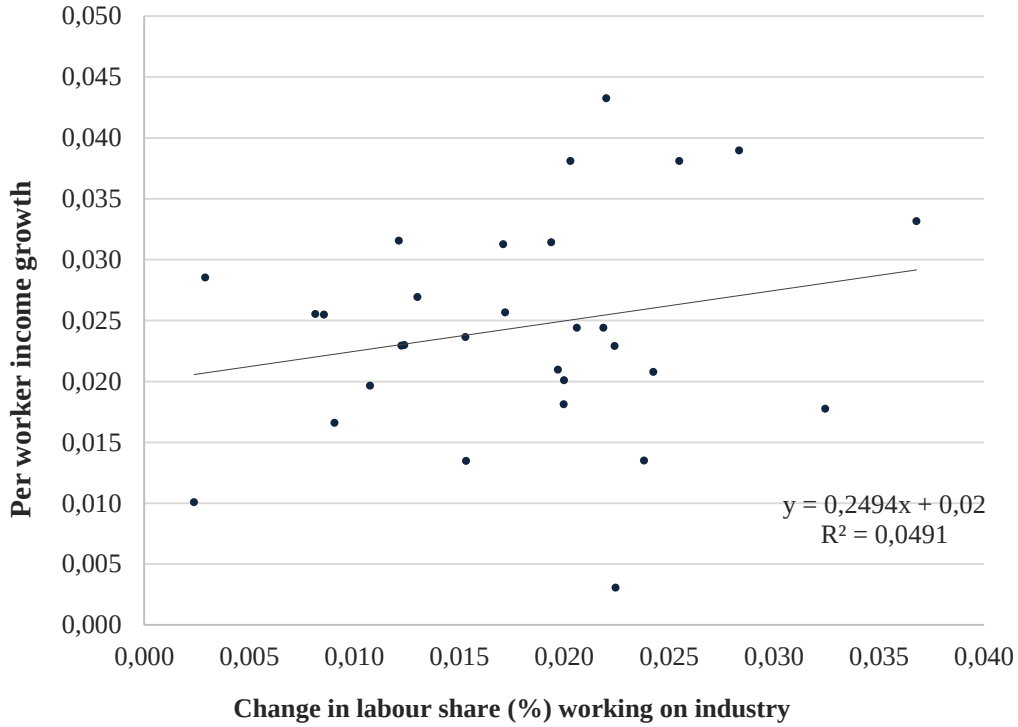
Table A.21
Sectoral labour force, 1990 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	15.3	0.4	34.4	49.9	100
Baja California	10.8	0.1	32.9	56.3	100
BCS	19.0	1.3	18.1	61.6	100
Campeche	36.7	0.1	18.1	45.2	100
Coahuila	12.5	2.7	36.0	48.8	100
Colima	24.8	1.8	20.0	53.4	100
Chiapas	60.3	0.1	11.2	28.4	100
Chihuahua	17.7	1.3	36.0	45.0	100
Mexico City	0.7	0.1	27.6	71.7	100
Durango	29.4	1.8	25.5	43.4	100
Guanajuato	24.0	0.5	35.2	40.4	100
Guerrero	38.0	0.4	17.2	44.5	100
Hidalgo	38.8	1.2	24.4	35.6	100
Jalisco	15.6	0.2	33.6	50.5	100
México	9.0	0.1	37.8	53.0	100
Michoacán	36.0	0.2	24.3	39.6	100
Morelos	20.9	0.3	28.2	50.6	100
Nayarit	39.9	0.2	18.1	41.7	100
Nuevo León	6.4	0.2	41.0	52.4	100
Oaxaca	54.7	0.2	15.8	29.3	100
Puebla	38.2	0.3	25.2	36.3	100
Querétaro	18.5	0.6	37.8	43.1	100
Quintana Roo	20.9	0.1	16.4	62.6	100
San Luis Potosí	32.3	1.1	25.6	41.0	100
Sinaloa	38.2	0.2	17.5	44.1	100
Sonora	23.4	1.3	24.7	50.6	100
Tabasco	39.4	0.1	16.7	43.7	100
Tamaulipas	17.3	0.1	29.3	53.2	100
Tlaxcala	29.1	0.1	34.4	36.4	100
Veracruz	41.6	0.3	19.1	39.0	100
Yucatán	27.6	0.1	24.8	47.5	100
Zacatecas	41.1	2.5	19.7	36.7	100
MEXICO	***23.6***	***0.4***	***27.8***	***48.1***	**100**

Table A.22
Sectoral labour force, 2000 (%). Oil excluded

	Primary	Mining	Industries	Services	TOTAL
Aguascalientes	7.6	0.4	35.9	56.1	100
Baja California	6.7	0.1	38.6	54.7	100
BCS	12.2	1.0	20.3	66.5	100
Campeche	26.1	0.0	19.8	54.1	100
Coahuila	5.4	2.3	41.7	50.5	100
Colima	17.1	2.4	19.4	61.1	100
Chiapas	48.4	0.1	13.4	38.2	100
Chihuahua	9.1	0.9	43.0	46.9	100
Mexico City	0.6	0.1	21.8	77.6	100
Durango	15.3	2.2	30.5	52.0	100
Guanajuato	13.6	0.5	37.2	48.7	100
Guerrero	27.4	0.3	20.4	51.8	100
Hidalgo	25.6	1.2	28.5	44.7	100
Jalisco	10.4	0.1	32.8	56.8	100
México	5.4	0.2	32.3	62.0	100
Michoacán	24.4	0.1	25.4	50.2	100
Morelos	13.9	0.3	26.5	59.4	100
Nayarit	28.3	0.1	17.8	53.8	100
Nuevo León	3.4	0.3	38.9	57.4	100
Oaxaca	41.8	0.7	19.3	38.2	100
Puebla	28.5	0.2	29.0	42.3	100
Querétaro	8.9	0.6	37.8	52.7	100
Quintana Roo	10.7	0.1	16.4	72.8	100
San Luis Potosí	21.8	1.4	27.1	49.8	100
Sinaloa	29.1	0.2	17.4	53.2	100
Sonora	16.4	1.1	29.5	53.0	100
Tabasco	29.4	0.0	16.5	54.1	100
Tamaulipas	9.6	0.0	34.5	55.9	100
Tlaxcala	18.6	0.0	38.5	42.9	100
Veracruz	32.7	0.0	19.2	48.1	100
Yucatán	17.4	0.1	28.4	54.1	100
Zacatecas	21.1	2.3	26.1	50.5	100
MEXICO	**16.3**	**0.4**	**28.3**	**55.0**	**100**

Figure A.1
Structural change and labour productivity growth (1930-1980): Industrial labour reallocation



Source: See Appendix A

Table A.23
Migration balance 1940-1980 (% of 1980 total population)

	24.0
Mexico City	
Baja California	64.0
Nuevo León	26.6
North	
Chihuahua	2.2
Coahuila	-18.0
Sonora	10.3
Tamaulipas	17.1
North-Pacific	
Baja California S	21.7
Colima	14.0
Jalisco	-4.0
Nayarit	-8.5
Sinaloa	-0.1
Centre-North	
Aguascalientes	-11.2
Durango	-36.6
San Luis Potosí	-39.3
Zacatecas	-69.5
Gulf	
Campeche	9.1
Tabasco	-0.9
Quintana Roo	61.5
Veracruz	-0.6
Yucatán	-21.8
Centre	
Guanajuato	-24.6
Hidalgo	-46.1
Morelos	16.9
Puebla	-20.5
Querétaro	-19.3
State of Mexico	43.2
Tlaxcala	-34.5
South	
Chiapas	-7.7
Guerrero	-20.7
Michoacán	-35.9
Oaxaca	-37.4

Source: INEGI (2000) for migrations figures.

APPENDIX B

Table B.1
Convergence decomposition, 1900-2000. Sub-periods
Considering the North macro-region as benchmark

	Total	**Within-industry**					**Labour reallocation**	**Between-industry**
1900-1930		*Overall*	Agriculture	Mining	Industry	Services		
DF	0.103	0.017	-0.061	0.004	-0.106	0.179	0.323	-0.237
	100%	17%					314%	-231%
North-Pacific	-0.328	-0.219	-0.065	-0.041	-0.165	0.052	-0.008	-0.102
	100%	67%					2%	31%
Centre-North	-0.212	-0.126	-0.034	-0.001	-0.087	-0.003	-0.133	0.047
	100%	59%					63%	-22%
Gulf	-0.254	-0.218	-0.103	0.000	-0.044	-0.071	0.114	-0.149
	100%	86%					-45%	59%
Centre	-0.194	-0.121	-0.016	-0.031	-0.121	0.047	-0.002	-0.072
	100%	62%					1%	37%
South	-0.188	-0.098	0.004	-0.010	-0.101	0.010	0.030	-0.120
	100%	52%					-16%	64%
1930-1980								
DF	-0.426	0.255	-0.005	-0.005	0.268	-0.004	-0.353	-0.328
	100%	-60%					83%	77%
North-Pacific	0.493	0.594	0.047	0.036	0.251	0.259	-0.266	0.166
	100%	120%					-54%	34%
Centre-North	0.206	0.275	0.008	0.005	0.153	0.109	-0.224	0.155
	100%	133%					-109%	75%
Gulf	0.197	0.154	-0.096	0.027	0.104	0.119	-0.224	0.268
	100%	78%					-114%	136%
Centre	0.388	0.356	-0.046	0.027	0.265	0.109	-0.162	0.194
	100%	92%					-42%	50%
South	0.258	0.246	-0.055	0.025	0.141	0.136	-0.376	0.388
	100%	95%					-146%	150%
1980-2000								
DF	0.228	0.377	0.000	0.003	0.165	0.209	-0.083	-0.066
	100%	165%					-36%	-29%
North-Pacific	-0.159	-0.154	-0.018	0.007	-0.068	-0.075	-0.017	0.012
	100%	97%					11%	-7%
Centre-North	0.017	-0.031	0.019	0.007	-0.013	-0.045	0.026	0.022
	100%	-180%					150%	130%
Gulf	-0.161	-0.238	-0.067	0.013	-0.087	-0.098	0.038	0.039
	100%	148%					-24%	-25%
Centre	-0.113	-0.179	-0.014	0.006	-0.107	-0.065	0.044	0.022
	100%	158%					-39%	-19%
South	-0.038	-0.187	-0.048	0.004	-0.038	-0.105	0.073	0.077
	100%	497%					-192%	-204%

Source: See text.