

# *Growth and living standards: evidence from post-revolutionary Mexico*<sup>1</sup>

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## **Introduction**

In the last decade economists and other social scientists have increasingly used the Human Development Index (HDI) as a measure of well-being. Series extending from 1980 to the present have facilitated international comparisons and guided policy recommendations worldwide. Similarly, economic historians and development economists have estimated HDI series for historical periods and confronted them to traditional GDP per cápita analysis to identify driving forces behind economic development. However, often lack of reliable data and incomplete series hinder historical comparisons. Even more difficulties arise with analyses focusing at more disaggregated levels.

This paper applies a methodology to approximate a measure of well-being at state level in Mexico for 1930. Disaggregated data is at best fragmentary for the first half of the XX century and therefore most of the economic studies account for general trends only, with scattered references to regional disparities. According to a recent analysis the growth in GDP during the late Porfiriato (1876-1911) was accompanied by an overall increase in the living standards. However, the leaders in such improvements were the Northern states, the Yucatan peninsula and the Federal District. Our estimates for 1930 show increases in the well-being measures despite the reduction in the GDP growth rates in the post-revolutionary period while the regional differences featured the same pattern. The

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<sup>1</sup> I thank comments by Raymundo Campos-Vázquez and excellent research assistant by María del Ángel Molina and Francisco Méndez. All errors are my own. Preliminary and incomplete please do not quote without author's permission. Comments welcome [gmarquez@colmex.mx](mailto:gmarquez@colmex.mx).

following section describes the long run economic performance from the Porfiriato to 1930. Section two introduces an alternative measure of the HDI and explains its components as developed by Raymundo Campos-Vázquez and Roberto Vélez-Grajales.<sup>2</sup> Section three presents the results of our estimation for 1930. The last section summarizes our findings and points at future research questions.

## **1. Mexico's growth trends, 1890-1930**

After of a prolonged period of stagnation in the decades following Independence in 1821, Mexico initiated a sustained economic growth in the last quarter of the XIX century. A series of institutional changes ignited economic expansion in crucial areas of the Mexican economy. Commercial, mining and banking codes in addition to the liberal reforms on land tenure regimes all secured a better definition of property rights and made possible large investments in railroads, modern manufacturing and mining in the period known as Porfiriato (1876-1911).<sup>3</sup> Domestic and foreign investors reacted positively to the economic reforms and capital hovered to export-oriented sectors as well as areas producing for the domestic market. The globalization process in the world markets provided favorable conditions such as rising demand for raw materials and growing capital and portfolio funds in search for profitable ventures outside the North Atlantic economies. Mexico achieved GDP annual per cápita growth rates of 2.5% between 1877 and 1910, which contrasts with dismal performance in the decades following Independence. Although the growth

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<sup>2</sup> Raymundo Campos-Vázquez and Roberto Vélez-Grajales, "Did Population well-being improve during Porfirian Mexico? A regional analysis using a quasi-index of human development," forthcoming

<sup>3</sup> Of course, institutional change faced serious challenges and sometimes reforms failed to overcome the obstacles to growth. The dictatorship of Porfirio Díaz and its supporters concentrated the political power and many privileges prevailed through the grant of monopolies, non-competitive practices and restrictions to the expansion of labor markets. For an analysis of the pace and extent of institutional transformations see Paolo Riguzzi, "From globalization to Revolution? The Porfirian political economy: an essay on issues and interpretations," *Journal of Latin American Studies*, vol. 41, 2009.

accelerated after the recovery from the effects of the Baring crisis in 1891-1892 and until the hit of the 1907 international crisis, accounts on economic progress were already apparent in the mid- 1880s as noted by the British Consul-General in Mexico City,

[Mexico's] population estimated in 1865 in 8,200,000 is now supposed to be about 10,500,000. The railways, which then scarcely 100 miles in length, now cover fully 6,000 kiloms., and a system of telegraphs measuring 80,000 kiloms. has simultaneously sprung into existence. Foreign trade has nearly doubled, and with it the customs receipts; whilst other branches of the revenue have grown at a corresponding pace. In short, in every direction much still remains to be done before Mexico can occupy the place she is entitled to hold amongst civilized nations, no one can deny that, during the last 20 years her progress has been of a remarkable nature.<sup>4</sup>

The external shock caused by the 1907 crisis and bad harvests in 1909-1910 deteriorated the economic situation in the closing years of the Porfiriato but industrial output and foreign trade performed relatively well.

In November 1910 Francisco I. Madero launched an armed opposition to the Diaz regime. Soon many disaffected groups throughout the country joined the Revolution. After a series of defeats, Diaz renounced to the presidency in May 1911 and initiated his European exile. Elections ensued and Madero became constitutional president with enormous challenges that included the pacification of country and the obligation to cater the demands of those who rebelled against Diaz. Political differences soon appeared and the new regime found itself into a political turmoil full of contradictions. Victoriano Huerta's coup in early 1913 stirred the opposition of Francisco Villa and Venustiano Carranza from the northern states and Emiliano Zapata from the southern state of Morelos. In defeating

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<sup>4</sup> Edward Jenner "Mexico. Report on the financial condition of Mexico", U.K. Foreign Office, *Diplomatic and Consular Reports on Trade and Finance*, n. 28, Annual Series, 1886, p. 1.

Huerta serious differences amongst revolutionary armies emerged as their motives, goals and programs differed considerably. A generalized civil war lasted until 1916 when Carranza rose as the leader of the victorious faction and with the capacity to summon Congress to draft a new Constitution. In February 1917, the Constitution came to light with important provisions on property regulations, labor rights, land reform, and the economic role of the State, thus responding to some of the demands of the contending parties. Carranza became constitutional president and remained in power until 1920 when ousted from power by a faction of his former allies. In the 1920s two presidents were elected but political instability continued, including regional uprisings and a large scale rebellion in the Bajío region (center and center-west states) against the anti-religious policies launched by the Federal government and the assassination of Obregon then president-elect. Yet, the elected authorities succeeded in defeating all of rebellious forces and two presidents completed their terms in office.

As noted by John Womack, the effects of the Revolution on the economy varied substantially by regions and sectors, and the warfare timing also imprinted differentiated consequences. Thus, oil exports boomed while sugar production areas decay, strengthening of local markets took place in the midst of a monetary disorder caused by the emission of paper money by several revolutionary factions, warfare disrupted railroad lines but entire areas of the country saw no violence.<sup>5</sup> More recently, Alan Knight has argued that in the short run the Revolution produced severe disturbances (demographic decline, reduction in

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<sup>5</sup> John Womack, "The Mexican economy during the Revolution, 1910-1940: historiography and analysis," in *Marxist perspectives*, 1 (4), 1978. Jean Meyer concurs with the differentiated effects of the Revolution: "those years, and above all 1914-1918, were the times of destruction and bankruptcy, but in variable degrees depending on the regions and above all the economic sectors." See Jean Meyer, *La Revolución Mexicana*, México, Tusquets, 2004, p, 136.

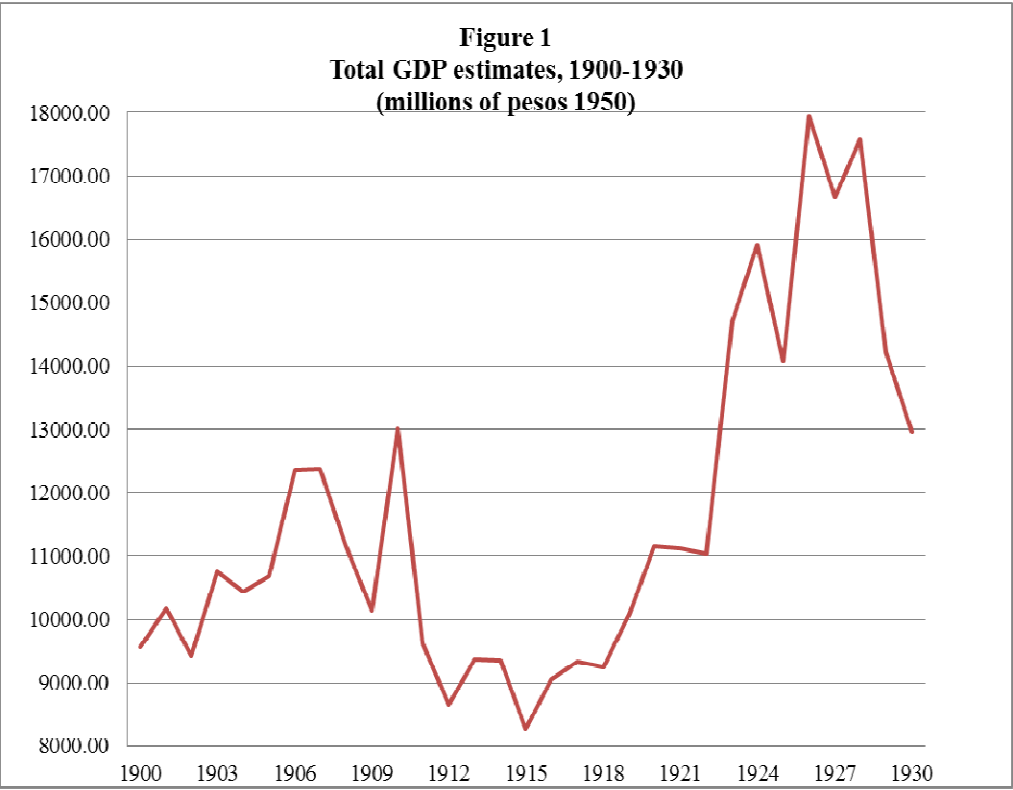
savings, deterioration of the productive capacity, credit shortages, currency crisis, spread of diseases, among other foes), but a profound and lasting economic transformations also took place.<sup>6</sup>

Although GDP estimates for the period 1895-1938 feature annual series disaggregated in 8 sectors, data from 1911 to 1920 is missing altogether. Furthermore, disaggregation by state is only available by decade from 1940 onwards. Work in progress reconstructs total GDP figures for the missing this ten-year gap.<sup>7</sup> As shown in Figure 1, the Mexican economy declined initiated in 1910 and continued until 1915 as consequence of aggravated civil strife as well as the impact of WWI. Beginning in the 1916 growth resumed but the recovery of the output levels of 1910 materialized until the mid-1920s.

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<sup>6</sup> Alan Knight, “La revolución mexicana: su dimensión económica, 1900-1930”, p. 487.

<sup>7</sup> The reconstruction of GDP figures for 1910-1920 has followed the same estimation methods used by the original series published by the Bank of Mexico in the late 1960s. See Graciela Márquez, “Evaluación y análisis de las series históricas del PIB de México”, unpublished manuscript, 2011.



According to our GDP estimates, total output declined as a result of the initial upheaval against Diaz, a trend further aggravated as the uprising turned into a civil war in 1913. The depressing effects of WWI drove the economy to a rock bottom two years later. Recovery of positive growth rates coincided with the social reforms set in motion by the victorious faction led by Carranza. A more ambitious program of economic and social changes emerged from the new Constitution promulgated in early 1917. Such agenda required strengthening the fiscal capacity of the government, the reconstruction of financial system, the emergence of new institutions, but resistance to such changes soon emerged and joined those with political grievances. Although military uprisings and violence continued throughout the 1920s, the Federal government managed to resolve some of the most pressing demands, industrial output grew, the Central Bank and private banks normalized operations. Yet uncertainty on the application of Constitutional provisions regarding subsoil rights alienated mining and oil interests (mostly foreign), debt restructuring negotiations with the International Committee of Bankers failed twice and recessionary signs were noticeable since 1927. On average, growth trends of total GDP in the 1920s fell behind the performance of the late Porfiriato and just slightly above the rate of the armed phase of the Revolution, only reaching a modest 1.71% (see Table 1).

Table 1  
GDP Annual growth rates

<b>Period</b>	<b>%</b>
<b>1900-1910</b>	3.13
<b>1911-1920</b>	1.67
<b>1921-1930</b>	1.71

Source: Márquez, 2011.

Despite a difficult recovery, institutional changes and pressing demands from different groups forced the Mexican government to launch social policies amidst fiscal penury and limited resources. A contemporary observer commenting on the failed negotiations with the International Bankers Committee noted,

There can be no doubt that the foreign creditors of Mexico will, in the end, get a larger proportion of that is due them if they will show an appreciation of the peculiar difficulties with which the Mexican government is confronted in its efforts to consolidate the social gains of the revolution of 1910-1920 and at the same time to achieve the reconquest of its former high credit above.<sup>8</sup>

In the 1920s achieving a minimum balance between the exigencies of various groups while fostering and economic recovery was, indeed, the most difficult task faced by the post-revolutionary governments.

## **2. Measuring well-being**

Economists and historians have used income to provide an approximation of the well-being across time, regions and countries. Thus GDP estimates are the key variable to explain how societies develop and their differences in time and space. However, in recent decades social scientists questioned whether material progress was sufficient to explain the improvement in the lives of individuals. Based upon the seminal work of Amartya Sen, a new approach proposed a wider perspective in which income entered only as one dimension of human well-being, whereas the capabilities to interact in a given social environment should also be taken into account. This multidimensional approach provides an insightful framework for examining the process of development from an historical perspective.

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<sup>8</sup> Edgard Turlington, *Mexico and her foreign creditors*, New York, Columbia University Press, 1930, p. 340.



Since 1990 the United Nations Development Program (UNDP) has computed the Human Development Index (HDI) for a sample that in 2011 reached 187 countries and has published the results in the *Human Development Report* on an annual basis. The HDI includes income per cápita, but also incorporates literacy, life expectancy as other dimensions of human well-being. The original formulation utilized a simple average of three sub-indexes (income, education and health), but since 2010 the computation changed to a geometric mean.<sup>9</sup> Mexico has figured in all of the UNDP estimations for the period 1980-2000, whereas indices at sub national levels were reported in the *Human Development Report 2002* and two other independent studies produced indexes that span from 1950 onwards and the National Council of Population published the HDI at municipality level for 2000.<sup>10</sup>

The HDI has also proved useful for comparative historical analysis of Latin American countries. Pablo Astorga, Ame Bergés y Valpy Fitzgerald examined living standards for 20 countries for the period 1900-2000 whereas Luis Bértola, María Camou, Silvana Maubrigades y Natalia Melgar focused their research on Argentina, Brazil and Uruguay in a comparative perspective with France, Germany, Great Britain and the United States. In both cases the basis of the analysis was a Historical Human Development Index (HHDI) with income, education and health components similar to those included in the

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<sup>9</sup> For the original formulation see Human Development Report 1990, <http://hdr.undp.org/en/reports/global/hdr1990/chapters/>.

<sup>10</sup> The HDI for 187 individual countries, including Mexico, from 1980-2011 can be found at <http://hdr.undp.org/es/datos/tendencias/>. Other studies include Carlos M. Jarque and Fernando Medina, *Índices de desarrollo humano en México, 1960-1990*, Santiago de Chile, Cepal, 1998; Rodrigo García Verdú, "El índice de desarrollo humano y su aplicación a las entidades federativas de México" en *Gaceta de Economía*, 10(2), Mexico, Conapo, *Índices de Desarrollo Humano 2000*, [http://www.conapo.gob.mx/index.php?option=com\\_content&view=article&id=50&Itemid=195](http://www.conapo.gob.mx/index.php?option=com_content&view=article&id=50&Itemid=195).

contemporary series of the HDI, but the formula of each study varies due to different assumptions on the nature and interaction of the variables.<sup>11</sup>

Historical estimates of the HDI for Mexico at a greater level of disaggregation faces difficulties as data is scarce or incomplete. Although GDP estimates go back to 1895, disaggregation at state level is only available from 1940 onwards. Social indicators are even more difficult to gather since census and other statistics often lack consistency. Raymundo Campos and Roberto Vélez-Grajales tackled these problems by proposing a methodology that closely follows the premises of the HDI formula, but the actual computation of each of the three components is based on different variables.<sup>12</sup> They constructed point estimates for 1895, 1900 and 1910 with proxy variables to produce a Quasi Human Development Index (QHDI) to analyze the evolution of well-being in the late Porfiriato. The QDHI differs from a standard HDI on the health and income components. First, health is captured through the number of physicians per 10,000 people instead of life expectancy. Second, income is proxied with an urbanization measure (share of population living in places with more than 2,500 inhabitants). The third component of the QHDI, education incorporates literacy rates and enrollment rate, same variables applied to the HDI. Campos-Vázquez and Vélez-Grajales conducted consistency tests and concluded that the QHDI offers a good approximation to the HDI.

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<sup>11</sup> Pablo Astorga, Ame R. Bergés and Valpy FitzGerald, “The standard of living in Latin America during the twentieth century,” *Economic History Review*, 48(4), 2005; Luis Bertola, María Camou, Silvana Maubrigades y Natalia Melgar, “Human development and inequality in the twentieth century: Mercosur countries in a comparative perspective,” in R. Salvatore, J. Coatsworth and A. Challú (eds.)m *Living Standards in Latin American History. Height, Welfare and Development, 1750-2000*, Cambridge, Mass, The David Rockefeller Center, Harvard University, 2010.

<sup>12</sup> Raymundo Campos-Vázquez and Roberto Vélez-Grajales, forthcoming.

### 3. The QHDI for Mexico in 1930

Data for each of the three components as well as the formula to obtain the QHDI in 1930 follows the methodology proposed by Campos-Vázquez and Vélez-Grajales since one of our aims is to compare the evolution of well-being from the late Porfiriato to the post-revolutionary period. Our sample includes 28 states and three Federal Territories (Baja California Sur, Nayarit and Quintana Roo) and the Federal District.

#### *Health*

We used the number of physicians per 10,000 inhabitants and fixed the maximum and minimum values of 35 and 0, respectively.<sup>13</sup> Thus, the health sub-index is

$$HI_{i,30} = NP/35 \quad (1)$$

where HI is Health Sub-index for 1930,  $i$  each of the states, Federal territories and the Federal District. The number of physicians reported in our estimation corresponds to the figures of the mid-1930s since earlier data is unavailable.

#### *Income*

The proxy for income is the urbanization rate defined as the share of population living in localities with more than 2,500 inhabitants and it enters into the QHDI as

$$II_{i,30} = UR \quad (2)$$

where II is the Income Sub-index for 1930,  $i$  each of the states, Federal territories and the Federal District.

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<sup>13</sup> The maximum value of 35 corresponds to the number of physicians in Switzerland in 2001 as this country held the highest life expectancy in 2001.

### ***Education***

The education component is a weighted index of the literacy rate for individuals older than ten years and the school enrollment rate of children between 6 and 14 years.<sup>14</sup> The weights of the index follow the criteria used in the HDI.

$$EI_{i,30} = [\phi_1 LR_{i,30} + \phi_2 ER_{i,30}] / 3 \quad (3)$$

where EI is the Education Sub-index for 1930,  $i$  each of the states, Federal territories and the Federal District. LR is literacy rate and ER enrollment rate.  $\phi_1=2$  and  $\phi_2=1$ .

Equation (4) defines the QHDI as a simple average of the components. A high correlation (0.98) was reported by Campos-Vázquez and Vélez-Grajales with an alternative estimation using the geometric mean.<sup>15</sup>

$$QHDI_{i,30} = [\alpha_1 HI_{i,30} + \alpha_2 II_{i,30} + \alpha_3 EI_{i,30}] / [\alpha_1 + \alpha_2 + \alpha_3] \quad (4)$$

As mentioned before, Campos-Vázquez and Vélez-Grajales performed consistency and robustness tests on the QHDI. First, they obtained the correlation and the Spearman's rank correlation of the QHDI and the HDI for 1970 and 2000. Estimates for 1970 yielded a correlation of 0.58 and a Spearman's rank correlation of 0.57. For 2000 the correlation increased to 0.91 and the Spearman's rank correlation to 0.90. Second, they compare the rankings using different weight in the QHDI formula and computed a repetition rate. The repetition rate reached 50% or above for the rankings for the 1895, 1900 and 1910 QHDI.

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<sup>14</sup> Campos-Vázquez and Vélez-Grajales obtained an enrollment rate using a larger age span to include students from 6 to 25 years of age. For 1930 data on such range is unavailable.

<sup>15</sup> See Campos-Vázquez and Vélez-Grajales, 2012, p. 24.

Column 1 in Table 2 shows the estimation of the QHDI for 1930 according to equation (4) including 28 states, 3 Federal territories and the Federal District. The next column, QHDI-geom, results from applying a geometric average to the components of the index. The other three columns, QHDI-health, QHDI-edu, QHDI-income, are alternative measures featuring only two of the components (assuming a zero weight to the third component). Comparing the ranking obtained for each column yielded a repetition rate of 79% or above, indicating that all components of the QHDI adequately reflect the general trends in welfare and thus confirms the consistency of the estimation.<sup>16</sup>

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<sup>16</sup> For an explanation of the repetition rate and the results see Appendix A.

Table 2  
QHDI estimates, 1930

State	QHDI	QHDI geom	QHDI health	QHDI Edu	QHDI Income
Aguascalientes	0.34	0.14	0.50	0.56	0.23
Baja California N	0.54	0.46	0.69	0.76	0.53
Baja California S	0.38	0.27	0.54	0.43	0.39
Campeche	0.32	0.22	0.45	0.50	0.25
Chiapas	0.17	0.12	0.23	0.21	0.16
Chihuahua	0.33	0.20	0.47	0.37	0.33
Coahuila	0.43	0.30	0.60	0.60	0.38
Colima	0.35	0.20	0.51	0.47	0.30
Distrito Federal	0.68	0.61	0.87	1.22	0.56
Durango	0.26	0.14	0.39	0.25	0.28
Guanajuato	0.21	0.13	0.30	0.36	0.14
Guerrero	0.14	0.11	0.20	0.19	0.14
Hidalgo	0.17	0.11	0.24	0.19	0.17
Jalisco	0.28	0.18	0.40	0.43	0.22
México	0.19	0.11	0.27	0.23	0.18
Michoacán	0.20	0.15	0.29	0.30	0.17
Morelos	0.29	0.22	0.41	0.32	0.32
Nayarit	0.32	0.21	0.45	0.40	0.30
Nuevo León	0.39	0.26	0.56	0.47	0.38
Oaxaca	0.15	0.09	0.21	0.20	0.13
Puebla	0.21	0.14	0.30	0.31	0.18
Querétaro	0.14	0.06	0.21	0.20	0.12
Quintana Roo	0.34	0.29	0.44	0.41	0.38
San Luis Potosí	0.23	0.15	0.33	0.30	0.21
Sinaloa	0.27	0.21	0.37	0.31	0.30
Sonora	0.37	0.29	0.50	0.47	0.37
Tabasco	0.21	0.13	0.30	0.21	0.23
Tamaulipas	0.40	0.31	0.56	0.53	0.39
Tlaxcala	0.23	0.16	0.32	0.31	0.20
Veracruz	0.24	0.19	0.32	0.35	0.22
Yucatán	0.33	0.24	0.47	0.54	0.26
Zacatecas	0.21	0.14	0.30	0.27	0.20
Average	0.29	0.20	0.41	0.40	0.27
Std Deviation	0.12	0.11	0.15	0.20	0.11

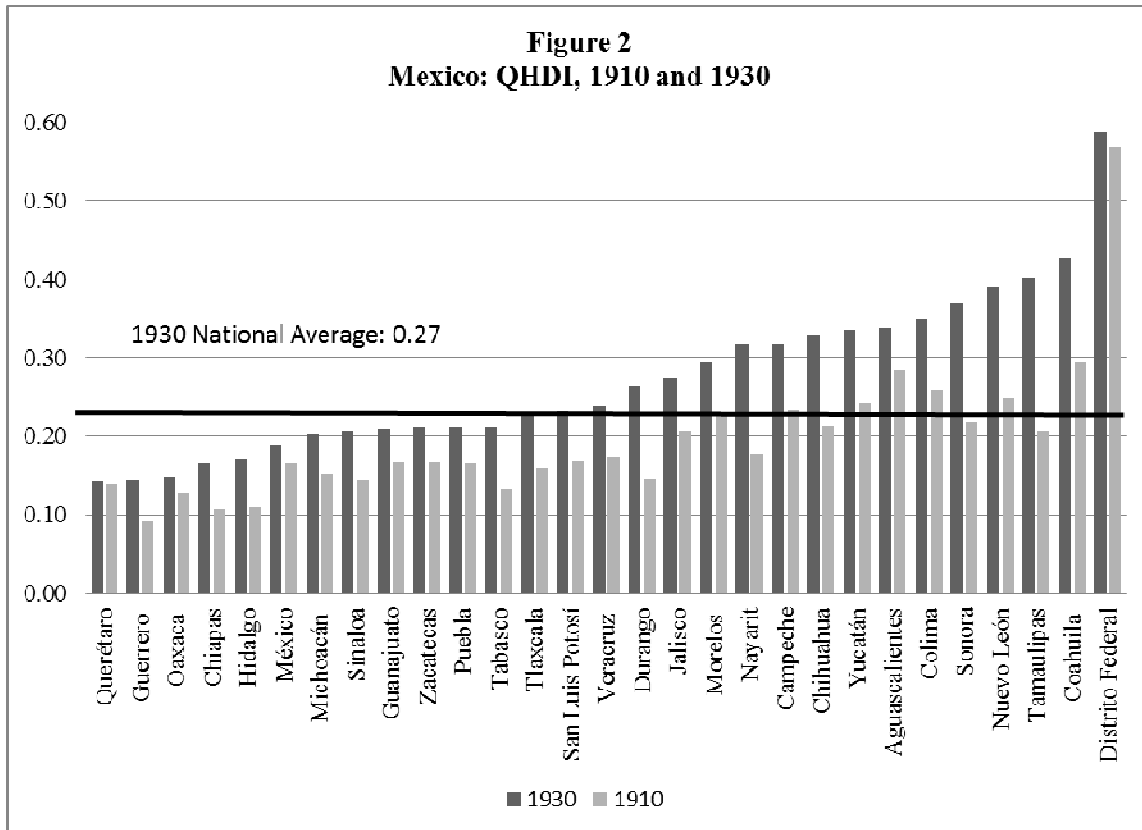


Figure 2 compares the QHDI estimations of 1910 and 1930. Remarkably, for the 29 observations the index grew, indicating an increase in the well-being levels from the late Porfiriato to the post-revolutionary period.<sup>17</sup> Such result confirms that despite a sluggish GDP growth, improvements in education and health systems launched since the early 1920s had a positive effect on the general living standards. Regarding education, Article 3 of the 1917 Constitution declared that all the State should provide free, compulsory and secular elementary schooling. To achieve such goals in 1921 the Federal government created the

<sup>17</sup> In this comparison did not include three Federal territories (Baja California Norte, Baja California Sur and Quintana Roo) because the QHDI for 1910 was not available.

Ministry of Education (*Secretaría de Educación Pública, SEP*) and together with municipal and state government agencies were responsible to implement and finance an ambitious plan of expanding elementary school throughout the country. School construction ensued in urban and rural areas accompanied by a system of public libraries, increases in teacher's salaries and literacy campaigns while a school breakfast program offered additional benefits to students. On health improvements the Constitutional text was less explicit on the duties of public authorities on the provision of health services. Nonetheless, at Federal level the General Sanitary Department (*Departamento de Salubridad General*), created in 1917, regulated sanitary policies throughout the country and was in charge of vaccination campaigns, education programs, food inspections and the eradication typhus and other epidemics. Such actions complemented the state and local government own health policies. In 1922 the Federal Government established the School of Public Health (*Escuela de Salubridad Pública*) with the mission of preparing professionals and specialists in this area. Also, private endeavors promoted public health initiatives such as the Rockefeller foundation's campaign against venereal diseases in 1927.

A generalized increase in the QDHI indicates that despite low income growth during the armed phase of the Revolution and its aftermath, the institutional reforms and policy shifts in health and education were strong enough to elevate the well-being of the population by the end of the 1920s.<sup>18</sup> This result is partially at odds with the findings of Moramay López Alonso whose anthropometric analysis led her to conclude that “in terms of stature there was no significant change for cohorts born in the early part of the twentieth

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<sup>18</sup> This is compatible with general evolution of living standards in 20<sup>th</sup> century Latin America, “Progress in health and education appears to have been largely independent of economic growth as such, depending rather on public intervention and urbanization, and thus on fiscal and industrial structures.” See Astorga, Berges and Fitzgerald, *op. cit.*, p. 784.



century until the 1930s,” and added “there is, however, an increase in heights of cohorts who were laboring after the end of the 1930s.”<sup>19</sup> In our perspective, however, the improvements in social welfare were already present a decade earlier even before the massive land reform and other social programs launched during Lázaro Cárdenas presidency (1934-1940). Historian Jean Meyer has underlined the radical transformation in public education in the early 1920s, not only the Federal and local governments channeled more resources to this area but also the Ministry of Education emphasized literacy campaigns, primary schooling and developed specific programs for rural and poor urban areas.<sup>20</sup>

Advancements in living standards throughout the country exhibited a clear regional pattern. Higher levels of the 1930 QHDI concentrated predominately on states in Northern border and the Yucatán peninsula plus Nayarit and Colima on the Pacific coast, Aguascalientes in the center of the country and the Federal District (see Map1). Perhaps more interesting is that this pattern replicates the regional behavior observed in 1910 (Map 2). Ten out of twelve states with the highest QHDI in 1910 repeated in the upper end rank in 1930.<sup>21</sup> Similarly, six out of eight states that featured the lower living standards at the end of the Porfiriato remained in the same group in the post-revolution: Guerrero, Oaxaca, Chiapas, Tabasco, Hidalgo, and Querétaro. In addition, four states joined them in the bottom of the distribution (Michoacán, Puebla, Estado de México, Zacatecas and Guanajuato). The continuities of the regional pattern in the post-revolutionary period suggests that disruptions caused by the revolutionary uprising of 1910 and its aftermath or

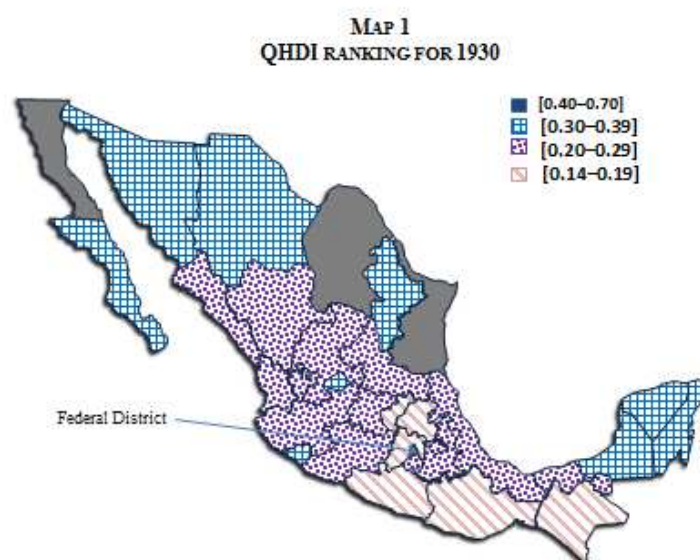
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<sup>19</sup> Moramay López Alonso, “Growth with inequality: living standards in Mexico, 1850-1950”, p. 103.

<sup>20</sup> Meyer, *La Revolución Mexicana*, p. 139.

<sup>21</sup> Map 1 shows three Federal territories (Baja California Norte, Baja California Sur and Quintana Roo) not included in the estimation of 1910.

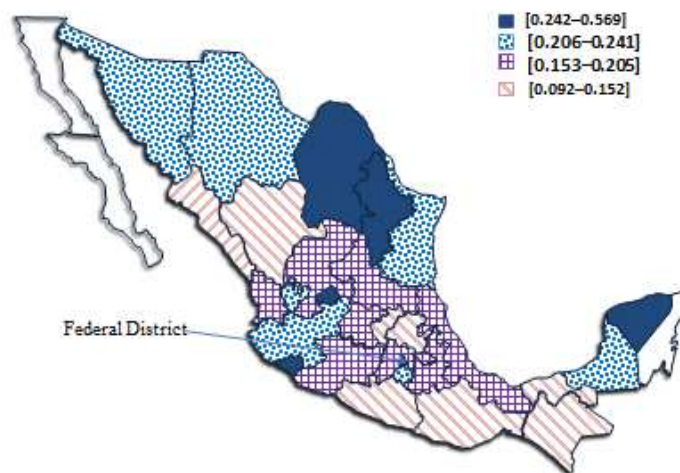
international shocks produced by WWI did little to alter the long run development trends. Even at lower income growth, Northern states fared better and the center and south regions of the country. Institutional changes and social policies might have catered the demands of revolutionary factions and political forces without closing the gap between South and Center states and those in the North. The prevalence of an export-oriented model of growth in the 1920s maintained regional differences despite the achievements in the living standards. Researchers focusing on later periods found convergence on the HDI for the period 1950-1980.<sup>22</sup>



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<sup>22</sup> See Gerardo Esquivel, Luis Felipe López-Calva and Roberto Vélez-Grajales, *Crecimiento económico, desarrollo humano y desigualdad regional en México 1950-2000*, p. 24.

MAP 2  
QHDI RANKING FOR 1910



Higher levels of education and the provision of basic health services appeared to be crucial components of the social policies promoted by Revolutionary governments. Politicians often referred to the accomplishments in these areas and their plans to fully comply with the Constitutional mandate of offering compulsory and free primary education in public schools.<sup>23</sup> But more than discourses budget funds became available to finance these areas. As never before, expenditure related to welfare policies entered as one of the priorities of the Federal, state and municipal governments. However, other Latin American countries also expanded education and health services but their motivation was not rooted in demands of revolutionary factions. Thus, impulses from the incorporation of germ theory of disease and the importance assigned to education of the laboring classes complemented the

<sup>23</sup> For example, president Álvaro Obregón stated “The Executive of the Union have devoted, and will continue to do so, special attention to popular education because this is the most important and far-reaching function of the Public Power, the most noble institution in the current times, and at the same time, extremely fruitful for the social and economic well-being of our citizens...” Álvaro Obregón, “Informe de labores. 1° Septiembre de 1921” in México. Secretaría de la Presidencia y Secretaría de Educación Pública, *México a través de los informes presidenciales. La educación pública*, vol. XI, México, Talleres Gráficos de la Nación, 1976, p. 149.

shift in the policy orientation produced by the institutional change in the post-revolutionary period. The correlation of public expenditure of state governments and the QHDI yields 0.477, an expected result given the increasing attention that social policy, and particularly education and health initiatives, received by post-revolutionary governments.<sup>24</sup>

#### **4. Final remarks**

During the Porfiriato the Mexican economy resumed sustained growth after decades of economic decay and stagnation. An export boom coupled with institutional reforms drove the diversification and modernization of the country. However, the impact of the macroeconomic performance on living standards was obscured by accounts of an authoritarian regime that promoted only a privileged class. In contrast, recent estimates of the QHDI at state level demonstrated that living standards rose from 1895 to 1910. Borrowing the methodology proposed by Campos-Vázquez and Vélez-Grajales this paper produced estimates QHDI estimates for 1930. All states exhibited a higher QHDI despite sluggish GDP growth in the 1920s. Nonetheless, the regional pattern in 1930 resembled pretty much the behavior observed at the closing years of the Porfiriato: Northern states, the Yucatan peninsula and the Federal District exhibited higher living standards while southern states fall in the lower end of the distribution. Convergence on the welfare statues seems to be a story of the middle decades of the XX century.

The Mexican Revolution propelled institutional changes that did not impact growth immediately (land reform, labor laws, subsoil property rights), but shifted the emphasis on

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<sup>24</sup> The correlation coefficient remains virtually the same, 0.473 instead of 0.477, by substituting QHDI for an estimation that only considers the health and education component of the index.

other policy areas such as health and education. During the 1920s increasing fiscal funding supported the goals set by the post-revolutionary governments increasing expenditure in public education and health. Yet, other countries in Latin America adopted a similar agenda for improvements on sanitary conditions and education. Thus both influences were at work in the achievement of higher living standards in Mexico reported in the QHDI for 1930.

An alternative measure of the living standards, the QHDI, offers a useful tool to examine long run trends of Mexican performance in the early XX century. Future research should refine the QHDI estimates, perhaps with calculations of life expectancy rates by states. Also, comparative studies with analysis at subnational level would yield new perspectives on the evaluation of Latin American development before the industrialization.

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