Online Appendices for

“Income Inequality in Mexico, 1895–1940:

Industrialization, Revolution, Institutions”

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This is a collection of appendices for the article “Income Inequality in Mexico, 1895–1940” by Diego Castañeda Garza and Erik Bengtsson. The appendices are intended for online publication only. Appendix A provides background information on the data used and detailed references for the archives. Appendix B provides discussion of the 18 social groups and information about the more fine-grained income data for 1930 and 1940. Appendix C provides a robustness check on the per capita income implied by our social tables, compared to data from the Maddison Project on GDP per capita. Appendix D provides alternative estimates of inequality with two different social groups classifications: with the HISCO major groups classification, and with the social groups classification used in Arroyo Abad and Astorga’s study of Mexican inequality since 1830. Appendix E provides a robustness check using different estimates for the incomes of large landowners and *ejidatarios* in 1930 and 1940.

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# Appendix A. Description of the sources

Social tables constitute an effective tool for the reconstruction of past income distributions. Covering the whole of the population, they allow comprehensive inequality measures like the Gini index and other synthetic indicators to be calculated. However, social tables do have important limitations. A first limitation is that as each occupational category is assigned its mean income, the within-group inequality is underestimated. To mitigate the underestimation that comes from assuming the mean income for all members of a category, it is necessary to produce as many categories as possible. The more disaggregated the occupational categories are, the less of a problem within-group inequality becomes. Especially for 1930 and 1940 in addition to the main social tables, it is possible to produce very fine-grained social tables, with around 100 groups. This would minimize the within-group variation problem. However, to make our estimates comparable over time, we stick to the 18 groups classification for all years. Since the 1930 and 1940 data are so much richer than the 1895 and 1910 data, however, the discussion of the sources here is divided into a section on 1895 and 1910 and a section on 1930 and 1940.

## The 1895 and 1910 social tables

To construct our 1895 and 1910 social tables, we started with the 1895 and 1910 official censuses produced by the General Directorate of Statistics of the Díaz’s government (Dirección General de Estadística). The censuses are available on the INEGI site and can be requested on digital format. From this census, we extracted the population and occupational categories that provide the core structure of the 1895 social table.

The first official census was produced in 1895 by the General Directorate of Statistics (Dirección General de Estadística). Two more censuses were conducted under the Díaz government, in 1900 and 1910. While the censuses of 1895 and 1910 possess the same structure, registering 149 occupational categories, the 1900 census is different, reporting more aggregated categories; hence it is less precise. Furthermore, the questionnaires are different, and the general quality and depth of information is inferior. For both 1895 and 1910, there is information of the number of women working in each category, but incomes are not differentiated. So, in practical terms we cannot distinguish gender differences in incomes, but only in participation, however, as Goldsmith (1992) points out, about a third of all working women from 1910 to 1940 were domestic workers and a large share of the rest performed mostly unpaid house chores. Working women represented between 70% and 80% of all domestic workers, therefore the domestic worker category reflects female wages, this gives us a rough idea of the deep gender disparity regarding paid work. The 1895 and 1910 years are suitable for this study, because 1895 was the middle point of Diaz’s long rule and 1910 was the last year of his administration and the year that the Mexican Revolution begun. However, because there is no income information for each category, we have to collapse the occupational categories of the census into 18 occupational categories that broadly represent the employment structure, for example, manufacturing workers, peasants, the military and so forth.

From the 1895 and 1910 censuses we get the division of the population into our 18 occupational groups. To calculate the average income for each group we need other sources. The available sources that contain incomes are scarce and not of the best quality, the Social Statistics from the Porfiriato (SSP) and Mexico Historical Statistics (MHS) are the more readily available sources as can be requested from INEGI (the Institute of National Statistics, Geography and Information). For this reason, these are the first sources from which to obtain occupational incomes. However, the incomes registered in these sources only correspond to general descriptions such as manufacturing workers, construction workers, peasants, military and only for wage jobs not upper-class occupations like businesspeople and landowners. Both the SSP and MHS have further problems. The SSP suffers from the problem of having an unknown methodology for their construction. The MHS, on the other hand, has been developed by INEGI based on the work of Rosenzweig (1965) and therefore has less methodological issues; however, it still suffers from the fact that the data were collected only at the main cities at the time, not the whole country. We employ the MHS as our main source.

To complement it, we used a combination of primary historical sources and secondary historiographic sources. For the salaries of the bureaucracy and other professionals, we followed Rodríguez Weber (2014, 2016) and used the statistical yearbooks of 1893 to 1907, the payrolls from government offices such as the payroll of the General Directorate of Statistics and crosschecked with the federal budgets for some occupational categories. We also used private hiring advertisements such as the one from the Engineers’ School of Guadalajara (Escuela de Ingenieros de Guadalajara), available from the National Newspaper Archives (Hemeroteca Nacional de México), yearbooks of 1893 and 1894 published by the General Directorate of Statistics and available at INEGI, and payrolls from private organizations available at the National Newspaper Archives in the UNAM at Mexico City (Hemeroteca Nacional de México). The yearbooks helped us check the MHS data for some categories and the payrolls from the Guadalajara School of Engineering to obtain the incomes from professionals and service workers such as domestic ones.

The top incomes, those corresponding to the *hacendado*, large owners and merchant financier categories were constructed employing a combination of primary and secondary sources. We should note that measuring top incomes are notoriously difficult in the social tables approach. For example Arroyo Abad and Astorga (2017, p. 353) have no information about capital incomes at all in their study of Latin American income inequality. They point out that their approach still is an advance compared to the Williamson ratio (labourer wage/GDP per capita), and while this is true, it is also true that our more detailed and precise approach is a neew step forward for Mexican income inequality estimates.

For the *hacendados*, we relied on both the Social Statistics from the Porfiriato and Mexico’s Historical Statistics account of the number of *hacendados*, around 830-850 men and their families, and the number of *haciendas* (large estates) under their control. We knew that land was highly concentrated and most of the fertile land was owned by this class. We made the conservative assumption that 50 per cent of the production value of the land was produced on these large estates to approximate the income of the *hacendados*; it is a conservative assumption, given that several historiographic sources describe their incredible wealth (Coatsworth 1976; Markiewicz 1985; Haber 1989, 1992; Katz 1998; Márquez 2018).[[3]](#footnote-3)

We employ the data from the Francisco I. Madero Archive at the National Palace in Mexico City and the Madero Family Digital Fund (Fondo Digital de la Familia Madero) available at the Ministry of Finance inside the National Palace.[[4]](#footnote-4) The archive contains the correspondence, bookkeeping records and financial transactions of Francisco I. Madero, one of the richest men in the Mexico of his time and his family, one of the most prominent *hacendado* families. The archives show a yearly income close to our estimates and in some years up to twenty per cent higher. Wasserman’s (1985) study of Enrique C. Creel, one of the most powerful and wealthy men of the time, suggests that the income of the *hacendado* class could be above our estimates. As an additional check on the data for *hacendado* category, we employed a sample from the will inventory published by *El Colegio de* Sonora from the years 1895 to 1910 finding the *hacendados* on the sample to have streams of income roughly on the same level*.* Historiographic sources such as Aguilar Camín (1996), Voss (1982) and Torres Mora (1987) also report *hacendado* incomes in the Sonora and Sinaloa region to be close to our estimates.

Initially, we considered that the 830-850 hacendado families account for most of the fertile land in the country and therefore made the assumption that 50 per cent of the agricultural production divided among the members of the families was a reasonable estimate. The data from the Francisco I. Madero Archive gave us a number that closely matched that assumption, and therefore we adopted the Madero income as our benchmark for the hacendado occupational category.

The work by Wasserman (1985) studying the life of Enrique C. Creel, another of the most powerful and wealthy individuals of the time suggest that our chosen value for the *hacendado* class is reasonable. In addition, the account of Friedrich Katz (1998) about Luis Terrazas and his family, one of the richest men of his time, closely matches our estimates. We realize that Madero and Creel are among the very richest which might give us an upward bias in our estimate of the wealth of the hacendados, but a related study of wills from Sonora state 1871 – 1910 (Castañeda Garza and Krozer 2023) strengthens our conviction that our estimates are reasonable. The wills collected by El Colegio de Sonora’s team contain very rich and detailed information for the standard of living of all the population strata. The database contains 495 wills from the period 1871-1910 with a large share from the Sonoran political and economic elites, the wills reveal a large concentration of wealth at the top of the distribution, with fortunes closely matching those of the wealthiest hacendado families of the time, for example will number 1300 from year 1897 exhibits wealth stream of 861,578 pesos of the time, will 878 from year 1896 of 160,000 pesos of the time, will 599 from year 1894 of 468,690 pesos of the time, Castañeda Garza and Krozer (2023) find a rising trend in wealth inequality throughout the whole period, a finding that is in line with those of the recent preindustrial inequality studies such as Alfani and Di Tullio (2019) and that is strongly correlated with rising income among the top. Even more telling than the wealth streams, the historiographic sources, for example Aguilar Camín (1996), register that individuals such as Ramón Corral had streams of incomes of 600,000 pesos in 1897, large numbers like these can also be found for individuals in the states of Sinaloa, Yucatán, Veracruz and Mexico City. Employing the notaries archives from Mexico City we have registers from the earnings of rich merchants from the capital and from the port city of Veracruz, and the city of Puebla, these archives show that vertical integrated business from the hacienda economy to merchants and manufactures commanded large incomes not very far in range from those of the Madero, Creel or Terrazas families. For those reasons we believe that the estimates we employed are a reasonable representation of the level of income among the economic elites.

For the merchant financiers also known as *barcelonetes*, we combined the data from Haber (1989) reconstruction of the rates of return on the company shares of the principal firms active in Mexico in the period 1890-1940. Once we had the rate of returns, we needed the value of capital owned by these individuals. The number of individuals and the value of their capital was obtained from another archive, Mexico’s City Historical Archive of Notaries (Archivo Histórico de Notarías de la Ciudad de México) which contains registers of the firms legally created, their owners and their salaries and company shares. Knowing their salaries, the value of capital they have invested in the company and combining them with the rates of return from Haber (1989) we can derive an income for our social tables for 1895 and 1910.

Low-income groups pose further problems. We still needed to find sources for the non-wage earner classes, especially those groups whose subsistence production was not priced on the market, and to find a way to account for the in-kind income that some occupations such as the peasants and the military obtained. If we do not take into account the in-kind income we would be biasing the inequality levels upwards. For this type of problems, the best possible sources are fiscal registers as employed by Lindert and Williamson (2016). Unfortunately, there are not available for the period. There is, however, ample anecdotal evidence of the harsh living conditions for peasants and agrarian workers in the 1895 to 1910 period. In the main text we have used Karl Kaerger’s report from 1902; another report from about the same time is the report in *El Economista Mexicano*, a weekly newspaper dedicated to economics and finance, on May 7, 1904, that wages were so low that the rural population, in a bad harvest year, could not afford clothing.

We are grateful to the Federal Government of Mexico for granting access to the archives inside the National Palace. To the government of Mexico City for access to the Notaries records. Finally, to INEGI for the digital access to all the statistical sources mentioned in this article.

## The 1930 and 1940 Social Tables

For the 1930 and 1940 social tables, we build on the work done for the 1895 and 1910 pair. For example, the work that was done before for the merchant financiers or *barcelonetes* provided us with the estimates for these tables as the Haber (1989) series of the rate of returns runs up until 1938 (we project the series to 1940 using the existing trend) and the data from Mexico’s City Historical Archive of Notaries contains information for the same period.

As regards the large landowners, the *hacendados* group was modified due to the dispersion of the elite and the formation of a new elite after the Mexican Revolution, but we follow the process described above, employing the agrarian census to classify this population by the number of hectares they owned and the average land production value. As an important consideration, after the revolution many *hacendados* were able to return to their lands (Katz 1998, Aguilar Camín 1996, Wasserman 2015). Although most of the land probably fell into new hands, either to a new elite or redistributed to the landless population, the expropriated *hacendados* could choose the land they were going to keep. For this reason, we assume that they chose the land with the highest production value; we use this assumption to calculate their incomes.

From the decade of 1930 and moving forward in time, statistical data for incomes is of much better quality and availability. We have statistical sources such as the population censuses of 1930 and 1940 from which we obtain fine-grained occupational categories that consist of 98 and 101 groups, respectively. For this large number of groups, we have very detailed data regarding their incomes. The data comes from the first and second industrial censuses of 1930 and 1940, the agrarian censuses of 1930 and 1940, the *ejidal* censuses of 1935 and 1940, and the yearbooks of 1938, 1941 and 1946-1950. All these sources produced by the General Directorate of Statistics (Dirección General de Estadística) and now available under request at INEGI. These sources have several significant advantages, one of them is that they match each other in occupational groups and the incomes related to those groups which allow us to cross-check and reduce the possible margin of error that is common when constructing social tables.[[5]](#footnote-5)

Wages for many worker categories are derived, following Rodríguez Weber (2014, 2016), from the statistical yearbooks for the years 1930, 1938, 1941 and 1946 and make it possible to assign mean incomes to most of the categories. To crosscheck these incomes and to complement missing ones we employ the industrial censuses of 1930 and 1940 that contain data from industries and the agrarian censuses of 1935 and 1940.

After the Mexican Revolution and the agrarian reform of the 1920s, a new agrarian class emerged: the *ejidatarios*, a type of communal or collectivist landowner. These were studied in special censuses in 1935 and 1940. There we can locate the number of ejidatarios and the value of the products of their land from which we can derive their mean income, this group is included in the small landowner category but is presented in the expansive 1930 and 1940 social tables in Appendix B. From the agrarian census of 1930, we can obtain a new number of large landowners now defined as owning more than 5 hectares of land and of the small landowners who owned less than 5 hectares of land. We derive the mean income in these categories from the average value of production of each type of property.

For the domestic workers we used Goldsmith (1992) wage estimates and for the group with no occupation we followed the same logic as in the construction of the 1895 and 1910 social tables.

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# Appendix B. 100+ groups versions of the 1930 and 1940 social tables

For our benchmark years 1930 and 1940 the census and income data are very detailed, which facilitate the making of very fine-grained social tables. However, to make our social tables consistent and comparable for all four benchmark years, we use the 18 group table in the paper. In this Appendix alternative constructions the 1930 and 1940 social tables – 98 and 101 groups, respectively – are shown in Appendix B Tables 1 and 2. We then show how we merged the more fine-grained groups into larger groups for a homogenous classification of 18 social groups over time.

**Appendix B.Table 1. 1930 Social Table**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Occupational Group** | **Population**  **Share** | **Income 1930**  **(1990 USD)** |
| 1 | Large landowners | 0.000291477 | 190431.6393 |
| 2 | Very high government bureaucracy | 2.14552E-07 | 99721.69811 |
| 3 | Businessmen | 0.001192266 | 94748.15904 |
| 4 | Cattle owners | 0.005329901 | 35954.55507 |
| 5 | High government bureaucracy | 2.18128E-05 | 34902.59434 |
| 6 | Professionals (lawyers, teachers) | 0.000366526 | 18466.98113 |
| 7 | Government bureaucracy | 0.000195385 | 12963.82075 |
| 8 | Small landowners | 0.003862937 | 10425.19268 |
| 9 | Medics | 0.001051019 | 10363.66981 |
| 10 | Electric machines makers | 7.824E-05 | 8262.28302 |
| 11 | Forestry | 0.001014903 | 6583.193655 |
| 12 | Management employees | 0.000944529 | 5669.996907 |
| 13 | Printing and lithography workers | 0.000608541 | 5280.321753 |
| 14 | Government workers | 0.004437365 | 4986.084906 |
| 15 | Metal manufacturing workers | 0.000831246 | 4813.263655 |
| 16 | Electricity workers | 0.001185757 | 4537.040892 |
| 17 | Science, Artistic and Literature professionals | 0.002121705 | 4432.075472 |
| 18 | Chemical industry workers | 6.79415E-05 | 4305.160239 |
| 19 | Oil industry workers | 0.000344213 | 4305.160239 |
| 20 | Paper industry workers | 0.000125155 | 4249.550936 |
| 21 | Edification workers | 0.004385014 | 4058.699612 |
| 22 | Metallurgy industry workers | 0.000492969 | 3949.985199 |
| 23 | Mining workers | 0.003235087 | 3840.319528 |
| 24 | Glass industry workers | 2.36722E-05 | 3800.435031 |
| 25 | Cigar industry workers | 0.000182369 | 3768.979027 |
| 26 | Cigarettes industry workers | 0.000201107 | 3768.979027 |
| 27 | Photography and cinematography employees | 0.000160199 | 3735.101949 |
| 28 | Oil industry workers (exploration) | 0.000133094 | 3571.514151 |
| 29 | Pharmaceutical industry workers | 4.73445E-05 | 3570.606776 |
| 30 | Crystal industry workers | 9.61908E-05 | 3553.995996 |
| 31 | Wood industry workers | 0.000191094 | 3328.557175 |
| 32 | Rubber manufacturing workers | 6.1791E-05 | 3316.851141 |
| 33 | Coffe toasters | 0.000178436 | 3277.881564 |
| 34 | Bank employees | 5.87157E-05 | 3219.549549 |
| 35 | Salt mining workers | 0.000228999 | 3177.908915 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Occupational Group** | **Population**  **Share** | **Income 1930**  **(1990 USD)** |
| 36 | Sand mining workers | 6.77984E-05 | 3177.908915 |
| 37 | Beer and Wine industry workers | 0.000528728 | 3162.125203 |
| 38 | Bread bakers | 0.002855759 | 3145.565819 |
| 39 | Non-specified industry workers | 0.000228641 | 3102.45283 |
| 40 | Land transport carriers | 0.006945907 | 3047.051887 |
| 41 | Cooking oil and vegetal butter industry workers | 0.000133666 | 2977.711149 |
| 42 | Customs employee | 5.49968E-05 | 2954.716981 |
| 43 | Matchsticks makers | 0.00013009 | 2901.472244 |
| 44 | Soap industry workers | 0.000342425 | 2868.061973 |
| 45 | Ice and ice-cream industry workers | 0.00021069 | 2794.884097 |
| 46 | Glue industry workers | 5.93594E-06 | 2686.48408 |
| 47 | Military | 0.005565193 | 2585.377358 |
| 48 | Smiths and smelters | 0.002214177 | 2452.415094 |
| 49 | Tiler makers | 0.000148041 | 2452.415094 |
| 50 | Shredders of cotton and other fibers | 0.000874371 | 2390.782002 |
| 51 | Air transport carriers | 1.31592E-05 | 2382.240566 |
| 52 | Hair combs and buttons makers | 4.84172E-05 | 2295.925903 |
| 53 | Upholsterers | 4.33395E-05 | 2293.257543 |
| 54 | Canned food industry workers | 6.87282E-05 | 2287.371389 |
| 55 | Entertainment industry workers | 0.000122009 | 2278.825472 |
| 56 | Dry cleaning workers | 0.000909057 | 2226.895246 |
| 57 | Boudoir workers | 0.001320496 | 2226.895246 |
| 58 | Policemen and firefighters | 0.000746713 | 2216.037736 |
| 59 | Flours, starches, pastes and starches workers | 0.000274627 | 2208.201294 |
| 60 | Yarns, fabrics and prints workers | 0.00407799 | 2141.593305 |
| 61 | Tanners and taxidermists | 0.000534091 | 2131.158226 |
| 62 | Hosiery, stockings, shirts workers | 0.000375895 | 2120.520478 |
| 63 | Dairy industry workers | 0.000139602 | 2090.127971 |
| 64 | Shoemakers | 0.003418886 | 2016.7964 |
| 65 | Manufacture of cardboard and cardboard artifacts workers | 6.76554E-05 | 2011.569782 |
| 66 | Manufacturing of construction materials workers | 0.000602748 | 2005.04477 |
| 67 | Trimmings and galleries workers | 2.96797E-05 | 1961.531723 |
| 68 | Paints, varnishes and inks workers | 3.81187E-05 | 1949.086642 |
| 69 | Servants | 0.013327899 | 1946.419811 |
| 70 | Clothing, hats and clothing for women makers | 0.003319334 | 1874.54686 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Occupational Group** | **Population**  **Share** | **Income 1930**  **(Mexican Pesos of 1930)** |
| 71 | Postmen, telegraphists and telephone operators | 0.000273268 | 1846.698113 |
| 72 | Sweets, chocolate and syrups workers | 0.000305951 | 1844.329164 |
| 73 | Jornaleros | 0.32394169 | 1832.786682 |
| 74 | Carpenters | 0.004605788 | 1832.784649 |
| 75 | Yarns, fabrics and twists of hard fibers workers | 0.001792654 | 1798.230351 |
| 76 | Sellers | 0.01907632 | 1725.554717 |
| 77 | Butchers | 0.000969203 | 1718.101164 |
| 78 | Sea transport carriers | 0.00042374 | 1717.429245 |
| 79 | Jewelry makers | 0.000320898 | 1717.214987 |
| 80 | Furniture makers | 0.000180081 | 1672.954944 |
| 81 | Service sector employees (hotels, restaurants) | 0.000272338 | 1662.028302 |
| 82 | Other industries | 0.000117503 | 1610.501762 |
| 83 | Saddlers | 0.000484244 | 1604.39687 |
| 84 | Vehicle manufacturing workers | 0.000311673 | 1572.323314 |
| 85 | Domestic workers | 0.02128298 | 1107.945 |
| 86 | Hunters and fishers | 0.000443264 | 1551.226415 |
| 87 | Tonic makers | 0.000237867 | 1528.758599 |
| 88 | Occupations not sufficiently specified | 0.014731928 | 1503.212264 |
| 89 | Clothing and hats for men (excluding palm hats) makers | 0.001646687 | 1500.787357 |
| 90 | Brooches, brushes, brooms, sieves makers | 7.50217E-05 | 1446.883237 |
| 91 | Attendants | 0.001167091 | 1429.34434 |
| 92 | Oils and greases for industrial use makers | 2.52456E-05 | 1413.679245 |
| 93 | Manufacture and repair of scientific and precision apparatus workers | 1.57338E-06 | 1171.334232 |
| 94 | Dough, tamales, tortillas and atole makers | 0.00100961 | 1159.457565 |
| 95 | Ejidatarios (peasants with communal property rights) | 0.038275507 | 1139.666454 |
| 96 | Explosives, gunpowder, pyrotechnics or rocketry makers | 0.000244446 | 1125.236203 |
| 97 | Potters | 0.001088923 | 941.9723162 |
| 98 | Manufacture and repair of musical instruments | 9.29725E-06 | 531.4386791 |
| 99 | Manufacture of art objects. | 4.29819E-05 | 462.4671025 |
| 100 | Sugar, alcohol and brown sugar or brown sugar | 0.004058037 | 450.7168594 |
| 101 | People without occupation | 0.42101020027706 | 463.8463052 |

*Source: Authors’ own calculation.*

**Appendix B. Table 2. 1940 Social Table**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Occupational Group** | **Population Share** | **Income 1940  (1990 USD)** |
| 1 | Businessmen | 0.001143969 | 85007.69394 |
| 2 | Very high government bureaucracy | 1.65753E-07 | 70147.22021 |
| 3 | High government bureaucracy | 3.81231E-06 | 49098.14433 |
| 4 | Large land holders | 0.01121601 | 32315.73992 |
| 5 | Cattle owners | 0.004257631 | 22072.49649 |
| 6 | Explosives, gunpowder, pyrotechnics or rocketry makers | 1.57465E-05 | 11179.61729 |
| 7 | Small land holder | 0.024439993 | 8782.831964 |
| 8 | Government bureaucracy | 0.000369904 | 6719.431753 |
| 9 | Medics | 0.000220782 | 6403.790621 |
| 10 | Oil industry workers (exploration) | 0.001295688 | 5438.394152 |
| 11 | Professionals (lawyers, teachers) | 0.000247634 | 5174.595623 |
| 12 | Bank employees | 0.000579195 | 4822.58166 |
| 13 | Postmen, telegraphists and telephone operators | 0.000443001 | 4766.298517 |
| 14 | Electricity workers | 0.000579858 | 4449.614628 |
| 15 | Management employees | 0.00104739 | 4383.991143 |
| 16 | Air transport carriers | 6.22125E-05 | 4322.622519 |
| 17 | Customs employee | 2.45314E-05 | 4287.901142 |
| 18 | Manufacture and repair of musical instruments | 3.86756E-07 | 4219.393225 |
| 19 | Pharmaceutical industry workers | 0.000106468 | 3981.996788 |
| 20 | Science, Artistic and Literature professionals | 0.002112627 | 3945.400626 |
| 21 | Metallurgy industry workers | 0.001042252 | 3743.407118 |
| 22 | Manufacture of art objects (from ivory, tortoiseshell, bone, horn, shell, feather, etc.) | 1.10502E-06 | 3739.818144 |
| 23 | Crystal industry workers | 0.000136691 | 3735.006952 |
| 24 | Printing and lithography workers | 0.000442891 | 3731.076413 |
| 25 | Yarns, fabrics and prints workers | 4.29299E-05 | 3601.364041 |
| 26 | Cigarettes industry workers | 0.000229844 | 3463.01978 |
| 27 | Land transport carriers | 0.005219824 | 3459.872161 |
| 28 | Metal manufacturing workers | 0.000894788 | 3334.230942 |
| 29 | Electric machines makers | 4.735E-05 | 3328.559256 |
| 30 | Rubber manufacturing workers | 0.000165532 | 3323.781416 |
| 31 | Clothing, hats and clothing for women makers | 5.74609E-06 | 3254.424266 |
| 32 | Photography and Cinematography employees | 0.000543945 | 3225.174306 |
| 33 | Mining workers | 0.003154105 | 3224.890911 |
| 34 | Chemical industry workers | 0.000610411 | 3158.496703 |
| 35 | Glass industry workers | 0.000241943 | 3143.562278 |
|  | **Occupational Group** | **Population Share** | **Income 1940  (1990 USD)** |
| 36 | No specified industry workers | 0.00124005 | 3047.185719 |
| 37 | Dry cleaning workers | 0.00124005 | 3047.185719 |
| 38 | Government workers | 0.00398436 | 2991.912165 |
| 39 | Sellers | 0.026705664 | 2868.673776 |
| 40 | Paper industry workers | 0.000276365 | 2851.296021 |
| 41 | Manufacture of cardboard and cardboard artifacts workers | 0.000276365 | 2851.296021 |
| 42 | Hair combs and buttons makers | 2.49734E-05 | 2849.283259 |
| 43 | Upholsterers | 4.16039E-05 | 2825.580873 |
| 44 | Clothing and hats for men (excluding palm hats) makers | 3.4145E-05 | 2816.05916 |
| 45 | Other industries | 0.000114867 | 2808.167674 |
| 46 | Vehicle manufacturing workers | 3.29848E-05 | 2780.411142 |
| 47 | Entertainment industry workers | 0.000654667 | 2722.525491 |
| 48 | Matchsticks makers | 0.000110888 | 2715.208379 |
| 49 | Beer and Wine industry workers | 0.000442836 | 2700.291306 |
| 50 | Trimmings and galleries workers | 1.44757E-05 | 2656.475045 |
| 51 | Potters | 2.24871E-05 | 2581.379609 |
| 52 | Dairy industry workers | 3.79573E-05 | 2578.859203 |
| 53 | Soap industry workers | 0.000210395 | 2551.113326 |
| 54 | Yarns, fabrics light fibers | 0.004265421 | 2510.532013 |
| 55 | Paints, varnishes and inks workers | 3.67971E-05 | 2492.00717 |
| 56 | Tiler makers | 9.16059E-05 | 2472.382868 |
| 57 | Forestry | 0.001030373 | 2451.264388 |
| 58 | Edification workers | 0.000544773 | 2378.685945 |
| 59 | Ice and ice-cream industry workers | 7.71302E-05 | 2371.334735 |
| 60 | Hosiery, stockings, shirts workers | 8.74621E-05 | 2332.727091 |
| 61 | Servants | 0.010002061 | 2298.0422 |
| 62 | Tanners and taxidermists | 0.000172659 | 2294.57616 |
| 63 | Saddlers | 0.000172659 | 2294.57616 |
| 64 | Jewelry makers | 1.873E-05 | 2283.894584 |
| 65 | Cooking oil and vegental butter industry workers | 0.000139453 | 2249.817576 |
| 66 | Flours, starches, pastes and starches workers | 0.000143652 | 2235.89239 |
| 67 | Manufacture and repair of scientific and precision apparatus workers | 2.81779E-06 | 2154.998019 |
| 68 | Sea transport carriers | 0.000216694 | 2127.372302 |
| 69 | Tonics | 0.00013763 | 2097.752344 |
| 70 | Furniture makers | 3.75153E-05 | 2075.653135 |
| 71 | Manufacturing of construction materials workers | 0.000177963 | 2071.94085 |
| 72 | Bread bakers | 0.000581294 | 2003.484611 |
| 73 | Carpenters | 0.000217744 | 1974.199113 |
| 74 | Wood industry workers | 2.67414E-05 | 1947.488523 |
|  | **Occupational Group** | **Population Share** | **Income 1940 (1990 USD)** |
| 75 | Yarns, fabrics and twists of hard fibers workers | 0.000291338 | 1945.6189 |
| 76 | Canned food industry workers | 0.000133155 | 1926.251875 |
| 77 | Military | 0.005525085 | 1921.649485 |
| 78 | Sweets, chocolate and syrups workers | 0.000125254 | 1893.947894 |
| 79 | Sand mining workers | 5.92842E-05 | 1890.940702 |
| 80 | Glue industry workers | 4.25432E-06 | 1868.816602 |
| 81 | Oils and greases for industrial use makers | 4.25432E-06 | 1868.816602 |
| 82 | Cigar industry workers | 2.75702E-05 | 1829.448819 |
| 83 | Boudoir workers | 0.000951475 | 1753.795673 |
| 84 | Sugar, alcohol and brown sugar or brown sugar | 0.000965564 | 1741.517827 |
| 85 | Policemen and firefighters | 0.000702238 | 1729.484536 |
| 86 | Oil industry workers (refining) | 4.97258E-07 | 1729.057503 |
| 87 | Coffee toasters | 2.22661E-05 | 1557.027224 |
| 88 | Domestic workers | 0.01982746 | 1560.860943 |
| 89 | Service sector employees (hotels, restaurants) | 0.000768539 | 1492.85074 |
| 90 | Smiths and smelters | 3.61893E-05 | 1430.364391 |
| 91 | Jornaleros | 0.1760057 | 1359.603281 |
| 92 | Occupations not sufficiently specified | 0.020303306 | 1325.649897 |
| 93 | Brooches, brushes, brooms, sieves makers | 1.873E-05 | 1298.354822 |
| 94 | Shoemakers | 0.000164648 | 1261.166305 |
| 95 | Hunters and fishers | 0.000507534 | 1106.389691 |
| 96 | Ejidatarios (peasants with communal property rights) | 0.067563999 | 1096.803617 |
| 97 | Salt mining workers | 0.000134757 | 1014.864929 |
| 98 | Butchers | 0.000412061 | 872.4590125 |
| 99 | Dough, tamales, tortillas and atole makers | 0.000879428 | 664.2157237 |
| 100 | People without occupation | 0.52969193 | 463.3003967 |

*Source: Authors’ own calculation.*

## The merging of categories to create 18 social groups

Appendix B Figure 1 gives an example of how categories were aggregated for the 1895 and 1910 social tables:

**Appendix B Figure 1. Examples of aggregated occupational categories.**

*Source:* Author’s own elaboration

To address the fact that for some occupational categories wage information was not available to the same level of detail, we aggregated categories from occupations belonging to the same aggregate sectors.

For the 1930 and 1940 categories two occupational categories were created. First, *ejidatarios*, employing as the source the ejidatal and agrarian censuses. Second, the category” people without occupation” was aggregated from the “unemployed” and the “people without productive occupation” in the population census.

In order to make the 4 benchmark years comparable among each other and be able to analyze the distributional changes between groups for the whole period it was necessary to compress the 1930 and 1940 tables from around 100 groups to just 18. To do it we follow a straightforward logic, we aggregated groups that could be part of the same sector of the economy for example industrial jobs were aggregated together, small service and retail business together and so forth. In the following table there is the key to how groups were aggregated:

**Appendix B Table 3. Key to the 1930 compressed social table.**

|  |  |
| --- | --- |
| **1930 reduced Occupational Group** | **OC to be compressed by group (number identifies the group in the larger social table)** |
| Hacendados | 1 |
| Merchants-Financiers/Businessmen | 3 |
| Government top bureaucracy | 2+5 |
| Medium size landowners | 4 |
| Small businesses (includes *comerciantes*) | 55+56+38+59+63+72+74+76+81+87+94+97+99 |
| Professionals (lawyers, medics, teachers, etc) | 6+9+17+27+34+42 |
| Small-medium cattle owners | 8+77 |
| Small landowners (includes ejidatarios) | 11+95 |
| Government bureaucrats | 14 |
| Transports and communications | 40+51+71+78 |
| Manufacturing workers | 10+13+15+16+18+19+20+22+24+25+26+29+30+31+32+33+37+41+43+44+45+46+48+50+52+53+54+57+60+61+62+64+65+68+70+75+79+80+82+83+84+89+90+92+93+96+98+100 |
| Business dependents | 12+7+91 |
| Miners (includes oil extraction) | 23+28+35+36 |
| Domestic workers | 67+69 |
| Construction workers | 21+49+66 |
| *Jornaleros* | 73+86 |
| Military | 47+58 |
| Without occupation | 39+88+101 |

**Appendix B Table 4. Key to the 1940 compressed social table.**

|  |  |
| --- | --- |
| **1940 reduced Occupational Group** | **OC to be compressed by group (number identifies the group in the larger social table)** |
| Hacendados | 4 |
| Merchants-Financiers/Businessmen | 1 |
| Government top bureaucracy | 2+3 |
| Medium size landowners | 5 |
| Small businesses (includes *comerciantes*) | 22+37+39+47+51+52+66+69+72+73+78+89+99 |
| Professionals (lawyers, medics, teachers, etc) | 11+9+12+17+20+32 |
| Small cattle owners | 5+98 |
| Small landowners (includes ejidatarios) | 57+96 |
| Government bureaucrats | 8 |
| Transports and communications | 13+27+68+16 |
| Manufacturing workers | 6+14+18+19+21+23+24+26+28+29+30+31+34+35+40+41+42+43+44+45+48+49+53+54+55+60+62+63+64+65+67+70+74+75+76+80+81+82+83+84+86+90+93+94 |
| Business dependents | 15 |
| Miners (includes oil extraction) | 33+79+97+10 |
| Domestic workers | 50+61+88 |
| Construction workers | 56+58+71 |
| *Jornaleros* | 91+95 |
| Military | 77+85 |
| Without occupation | 100+92+36 |

# Appendix C. Robustness check: per capita incomes from the social tables compared with those from the Maddison project

The focus of our paper is to estimate income inequality in Mexico, not the level of incomes per se. However, of course building social tables also implies estimating the per capita income of the society under study, as we estimate both the occupational structure and the income for each occupational group. Therefore, a robustness check on the construction of the social table is to compare the implied per capita incomes from the social tables, to estimates of per capita incomes made with other methods and based on other sources.

Appendix C Table 1 provides such a robustness check, comparing the per capita incomes that we have estimated for 1895, 1910, 1930 and 1940 with the per capita incomes from the well-known Maddison project, the gold standard of international GDP comparisons. The column “social table upper bound (preferred)” presents the income estimate from our baseline estimate, and the “social table lower bound” column presents results when we do not include people without stated occupation in our social table.

**Appendix C, Table 1. Comparison between the per capita income from social tables vs the per capita income from Maddison estimates**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Income: social table upper bound (preferred)** | **Income: social table lower bound** | **Income per capita: Maddison project** | **Difference upper bound (preferred) with Maddison** | **Difference lower bound with Maddison** |
| 1895 | 1 749 | 2 303 | 1 093 | + 60% | +210% |
| 1910 | 2 041 | 2 941 | 1 694 | +20% | +73.5% |
| 1930 | 1 928 | 2 992 | 1 618 | +19% | +84% |
| 1940 | 1 835 | 3 380 | 1 852 | -1% | +82.4% |

Source: Author’s own calculation and Bolt et al (2018). Incomes in 1990 US dollars.

Overall, our preferred estimates of per capita income align quite well with those of the Maddison Project, which is reassuring. In 1910, 1930 and 1940, differences are very minor. In 1895 the difference is large, however, with our estimate 60 per cent higher. Given the very large differences in methodology it is not surprising that we get different results, but the 1895 deviation is a bit worrying. However, Mexico in this time was a mostly agrarian economy with a large subsistence sector, so any estimate of GDP/capita and national income will to a large degree build on assumptions made for subsistence groups who did not live in a very monetized economy.

The divergence is especially driven by our decision to impute the unoccupied category with the equivalent at the time of 400 US dollars of 1990 following Milanovic, Lindert and Williamson (2011). This pushes the per capita income up, as this category contains a significant amount of people, particularly for 1895 with 24.9% of the population. Lowering their income to 0 reduces the difference among the per capita income estimates down to 43% for 1895 and -3 % for 1910. However, it seems quite harsh an assumption. This can be seen as a lower bound for the income per capita.

This exercise shows that the assumptions especially for the peasant group and the without occupation group are quantitatively important for inequality estimates in Mexico. We believe that the assumptions made in the main estimates – 250 workdays for peasants and domestic workers, and 400 Dollars income for those without occupation – are the most realistic ones, but the analysis here shows the need for further research on the living standards of subsistence peasants and for those without a stated occupation by using other sources like probate inventories or other studies of material living standards. This would be labour intensive and is beyond the scope of this paper, but could be a significant contribution to our understanding of Mexican living standards and political economy in the twentieth century. One could follow previous studies such as Lindert and Williamson’ (2016) important study of the United States, where they can triangulate their income estimates vis-a-vis probate-based studies by Alice Hanson Jones (1980) and others.

# Appendix D. Robustness check: estimates following HISCO or Arroyo Abad and Astorga’s social groups

In our main estimates, we use a detailed social table with 18 groups, adjusted to the Mexican society that we study. We believe that this social table is a good representation of Mexico in the period, balancing detail with tractability. Using a relatively large number of social groups is important, since the social table approach by definition ignores within-group inequality. Thus, if one uses too large and differentiated social groups in one’s classification, then one will miss important dimensions of inequality. (Modalsli 2015 discusses this problem in a historical context.) To make estimates as precise and representative as possible, in the social tables literature the precise design and number of groups can always be discussed. In Appendix B we showed social tables for 1930 and 1940 with much more detailed classifications, using around 100 social groups. In this Appendix we instead show robustness checks in the shape of calculations with coarser social group classifications. First, we show an alternative set of calculations using HISCO’s seven major groups. Then, we compare our estimates with the previous study by Arroyo Abad and Astorga (2017).

## Comparison with HISCO

We collapse our 17 groups (not counting the unoccupied population) and force them into one of the 7 HISCO major groups. In this process inevitably we lose the owner classes or landed classes since HISCO major group classification does not consider property owners such as capitalists, hacendados, financiers, etc. This is the reason that we do not use this HISCO classification in the main body of our paper: we lose detail at the top and at the bottom of the social structure, which will lead to imprecise and underestimated inequality estimates. With the HISCO major groups classification, we have 7 groups. The result is presenting in the following figure and table, Appendix D Figure 1 and Table 1.

**Appendix D, Figure 1. Gini coefficient with HISCO major group classification**

Note. Data as in our main estimates. Social groups classification as in Appendix D, Table 1.

**Appendix D, Table 1. Inequality using HISCO Major Groups.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **1895** | | | **1910** | | |
|  | Pop | Pop share | Income | Pop | Pop share | Income |
| 0 and 1 Professional, technical and related | 44575 | 0.0105 | 7499 | 64663 | 0.0123 | 10314 |
| 2 Administrative and managerial | 23680 | 0.0056 | 5757 | 57520 | 0.0109 | 6347 |
| 3 Clerical and related | 58309 | 0.0137 | 4654 | 106859 | 0.0203 | 6187 |
| 4 Sales | 247465 | 0.0581 | 2516 | 290699 | 0.0553 | 2967 |
| 5 Service | 232754 | 0.0547 | 1159 | 245156 | 0.0466 | 1108 |
| 6 Agricultural | 2957932 | 0.6948 | 1581 | 3550760 | 0.6751 | 1920 |
| 7, 8 and 9 Production, transport and labourers | 692697 | 0.1627 | 3013 | 943770 | 0.1794 | 2993 |
| Gini | 0.18114 | | | 0.18381 | | |
|  | | | | | | |
|  | **1930** | | | **1940** | | |
|  | Pop | Pop share | Income | Pop | Pop share | Income |
| 0 and 1 Professional, technical and related | 51105 | 0.0110 | 7347 | 67487 | 0.0142 | 4206 |
| 2 Administrative and managerial | 62046 | 0.0134 | 4986 | 6695 | 0.0014 | 6719 |
| 3 Clerical and related | 107360 | 0.0231 | 3256 | 107613 | 0.0226 | 3946 |
| 4 Sales | 32258 | 0.0070 | 4142 | 18957 | 0.0040 | 4384 |
| 5 Service | 245156 | 0.0529 | 1108 | 235679 | 0.0496 | 1561 |
| 6 Agricultural | 3534305 | 0.7620 | 2540 | 3495177 | 0.7353 | 2079 |
| 7, 8 and 9 Production, transport and labourers | 606035 | 0.1307 | 2513 | 821566 | 0.1728 | 2808 |
| Gini | 0.07149 | | | 0.08941 | | |

Note. The classification follows HISCO’s major groups classification. This is available from <https://historyofwork.iisg.nl/major.php>

The results follow the same general trend as our main estimates, that is an increase of inequality between 1895 and 1910, a decrease in 1930 and then an increase in 1940. However, the levels are nonsensical and would suggest Porfirian Mexico was one of the most equal societies to ever exist, sharing the same levels as the prehistoric communities that inhabited the valley of Oaxaca (as in Kohler and Smith 2018.) What explains this uncommon result is the exclusion of the capitalist and property-owning groups at the top of the social pyramid and the unclassified/informal workers at the bottom of the pyramid, and the underestimation of within group inequality following the imposition of a coarse social groups schedule. Since HISCO requires the aggregation of groups to fits its Major Groups it inevitable will lose information by averaging incomes.

Von Fintel, Links and Green (2023) have recently contributed to the discussion of the social tables methodology, investigating especially the number of social groups used and the coarseness of the top and bottom groups. In a comparison of 108 recently published social table-based inequality estimates, they stress that coarsely measured bottom classes lead to an underestimation of inequality (von Fintel, Links and Green 2023, pp. 14–15). In our context, this is tantamount to ignoring the informal workforce and not differentiating *jornaleros* from other groups. However, we believe that they underestimate the importance of precision and finely defined groups at the top. We will now show the importance of this issue – more specifically in our Mexican context, measures for *hacendados* – in a comparison with Arroyo Abad and Astorga’s (2017) previous study.

## Comparison with Arroyo Abad and Astorga

Arroyo Abad and Astorga (2017) as we mention in the paper follow a strategy similar to the construction of a social table, but with a crude classification of occupational classes, employing only 4 of them: Employers, managers & professionals, Technicians and administrators, Semi-skilled workers and Rural workers and personal services. As Arroyo Abad and Astorga (2017, 365) themselves state: “Our estimates cannot fully capture income disparities throughout the income distribution, especially within groups and at the top.”

To explore the similarities and differences between our data, where we use 18 groups in our social tables, and Arroyo Abad and Astorga’s data, we have compressed our 18 groups into their 4 to reproduce their method with our data. The results are shown in Tables 2 to 5 in this Appendix.

**Appendix D, Table 2. Arroyo Abad and Astorga method for year 1895**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| 1 Employers, managers & professionals | 132 607 | 0.0352 | 11 905 | 0.3623 | 0.3590 |
| 2 Technicians and administrators | 610 233 | 0.1622 | 3221 |  |  |
| 3 semi-skilled workers | 170 596 | 0.0453 | 1718 |  |  |
| 4 rural workers and personal services | 2 848 928 | 0.7572 | 1047 |  |  |

**Appendix D, Table 3. Arroyo Abad and Astorga method for year 1910**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| 1 Employers, managers & professionals | 93 092 | 0.0203 | 18684 | 0.3219 | 0.3329 |
| 2 Technicians and administrators | 848 750 | 0.1847 | 3361 |  |  |
| 3 semi-skilled workers | 235 833 | 0.0513 | 2064 |  |  |
| 4 rural workers and personal services | 3 417 740 | 0.7437 | 1286 |  |  |

**Appendix D, Table 4. Arroyo Abad and Astorga method for year 1930**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| 1 Employers, managers & professionals | 535 909 | 0.1227 | 10 159 | 0.3341 | 0.2887 |
| 2 Technicians and administrators | 590 029 | 0.1351 | 2 297 |  |  |
| 3 semi-skilled workers | 211 315 | 0.0484 | 3 259 |  |  |
| 4 rural workers and personal services | 3 029 604 | 0.6938 | 1 788 |  |  |

**Appendix D, Table 5. Arroyo Abad and Astorga method for year 1940**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| 1 Employers, managers & professionals | 735 731 | 0.1792 | 7 223 | 0.3601 | 0.2482 |
| 2 Technicians and administrators | 649 480 | 0.1582 | 2 851 |  |  |
| 3 semi-skilled workers | 392 337 | 0.0956 | 2 509 |  |  |
| 4 rural workers and personal services | 2 327 770 | 0.5670 | 1 380 |  |  |

Second, to show the importance of counting with more fine-grained data, especially at the top of the distribution, we added the hacendado group and obtained the following results, shown in Appendix D, Tables 6 through 9.

**Appendix D, Table 6. Arroyo Abad and Astorga method for year 1895 with Hacendados**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| Hacendados | 830 | 0.0002 | 883 852 | 0.4240 | 0.8233 |
| Employers, managers & professionals | 132607 | 0.0352 | 11 905 |  |  |
| Technicians and administrators | 610233 | 0.1622 | 3221 |  |  |
| Semi-skilled workers | 170596 | 0.0453 | 1 718 |  |  |
| rural workers and personal services | 2848928 | 0.7571 | 1 047 |  |  |

**Appendix D, Table 7. Arroyo Abad and Astorga method for year 1910 with Hacendados**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| Hacendados | 850 | 0.0002 | 1 760 399 | 0.4142 | 1.0617 |
| Employers, managers & professionals | 93 092 | 0.0203 | 18 684 |  |  |
| Technicians and administrators | 848 750 | 0.1847 | 3 361 |  |  |
| Semi-skilled workers | 235 833 | 0.0513 | 2 064 |  |  |
| Rural workers and personal services | 3 417 740 | 0.7436 | 1 286 |  |  |

**Appendix D, Table 8. Arroyo Abad and Astorga method for year 1930 with Hacendados**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| Hacendados | 2 957 | 0.0007 | 190 432 | 0.3611 | 0.4088 |
| Employers, managers & professionals | 535 909 | 0.1226 | 10 159 |  |  |
| Technicians and administrators | 590 029 | 0.1350 | 2 297 |  |  |
| semi-skilled workers | 211 315 | 0.0484 | 3 259 |  |  |
| rural workers and personal services | 3 029 604 | 0.6933 | 1 788 |  |  |

**Appendix D, Table 9. Arroyo Abad and Astorga method for year 1940 with Hacendados**

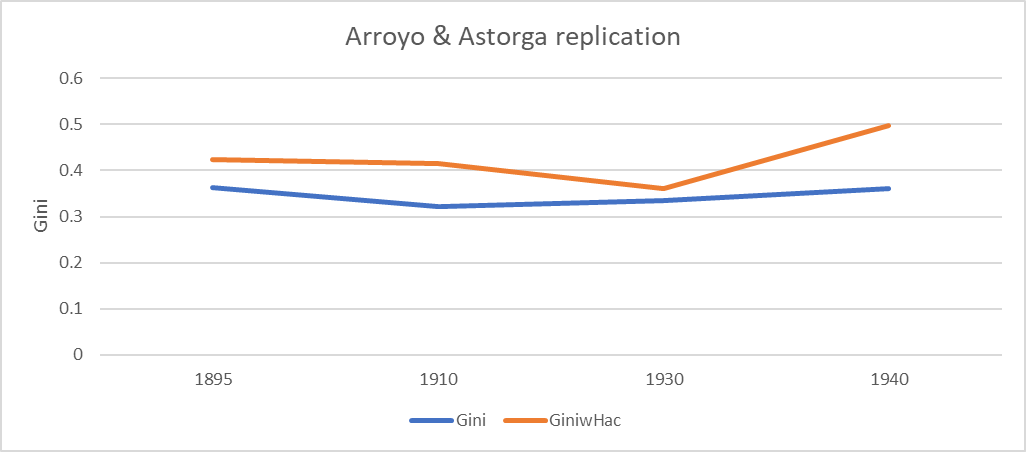
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupational class | Population | Population share | Income 1990 international dollars | Gini | Theil |
| Hacendados | 133 319 | 0.0315 | 32 316 | 0.4964 | 0.5661 |
| Employers, managers & professionals | 735 731 | 0.1736 | 7 223 |  |  |
| Technicians and administrators | 649 480 | 0.1532 | 2 851 |  |  |
| semi-skilled workers | 392 337 | 0.0926 | 2 509 |  |  |
| rural workers and personal services | 2 327 770 | 0.5492 | 1 380 |  |  |

The inequality estimates of Tables 2 through 9 are summarized in Table 10. We show there both the estimates following Arroyo Abad and Astorga’s classification (from Tables 2 through 5) and the estimates adding the Hacendados group (from Tables 6 through 9).

**Appendix D, Table 10. Summary of Arroyo Abad and Astorga replication**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Gini | Theil | Gini with Hacendados | Theil with Hacendados |
| 1895 | 0.3623 | 0.3590 | 0.4240 | 0.8233 |
| 1910 | 0.3219 | 0.3329 | 0.4142 | 1.0617 |
| 1930 | 0.3341 | 0.2887 | 0.3611 | 0.4088 |
| 1940 | 0.3601 | 0.2482 | 0.4964 | 0.5661 |

Note. The series “Gini” and “Theil” are the estimate from Tables 2 through 5 in this Appendix. The series “Gini with Hacendados” and “Theil with Hacendados” are the estimates from Tables 6 through 9 in this Appendix.

**Appendix D, Figure 2.** **The importance of top incomes**

Note. The series “Gini” shows the series “Gini” from Table 10 in this Appendix. The series “GiniwHac” shows the series “Gini with Hacendados” from the same table.

Figure 2 and tables 2 to 9 on this appendix show the consistency of our results, even if we follow a different methodology, we obtain a similar inequality trend. Furthermore, it showcases the importance of having a more disaggregated estimate to reduce the within inequality underestimation and the importance of counting with top incomes data, when we introduce to Arroyo Abad and Astorga methodology our data about *hacendado* incomes inequality (expectedly) increases and closes on our estimates. The direct comparison between the estimates with and without hacendados, all else being equal, in Table 10 shows that it is crucial to have fairly precise estimates of top income groups in social tables contexts. This Mexican example shows the limitation of the argument of von Fintel, Links and Green (2023) that precision for bottom groups is more important than precision for top groups. In historical contexts such as Mexico from 1895 to 1940 as studied here, to make realistic estimates of inequality it is crucial to include top-end as well as bottom-driven differences between various social groups. This is why we in our main estimates in the main body of the paper use or 18 groups classification rather than cruder social groups classifications such as the HISCO major groups classification.

# Appendix E. Robustness check: estimates using Bartra and Otero large landowners and ejidatarios average earnings.

As we have seen in Appendix D, accounting well for the incomes of top and bottom groups is in a social tables setting crucial for producing reliable inequality estimates. In this Appendix we will vary the estimates for two important groups, the rich *hacendados* group and the poor *ejidatarios* group, based on previous research, to ascertain that our inequality estimates are robust to various assumptions on and estimates for these groups.

Roger Bartra and Gerardo Otero (1988) in an attempt to explain the agricultural stagnation of the 1960s employ a Marxist methodology adapted from Bartra (1974), Coello (1975) and Otero (1978) to account for the process of accumulation for the different landowners in the country since 1940. Desegregating the agrarian structure of Mexico, they arrive at estimates of the land rents and average earnings for small landowners (less than 5 hectares), ejidos and large landowners (more than 5 hectares), See Bartra and Otero (1988) Cuadro 1.

For ejidos they arrive to the number of 902.4 million pesos of 1960 and for large landowners of 1289.8 million pesos. We take those numbers and divide them between the estimates of for each class *ejidatarios* and large landowners (*hacendados* in our terminology). At the end we arrive to the values of an average income of 678 pesos of 1990 for the *ejidatorios* and 4,182 pesos for the *hacendados*. The values are approximate 1/2 the value of our estimate for *ejidatarios* and 1/8 of the *hacendados*.

**Appendix E, Table 1. Income differences between the estimates for *hacendados* and *ejidatarios*.**

|  |  |  |  |
| --- | --- | --- | --- |
| Our estimate | Income 1990 USD | Bartra & Otero (1988) | Income 1990 USD |
| *Hacendados* | $32,316 | *Hacendados* (large landowners) | $4,182 |
| *Ejidatarios* | $1117 | *Ejidatarios* | $678 |

Sources: this study (2022) and Bartra and Otero (1988).

In our estimates we have the concern that a possible underestimation of the income from the *hacendado* class could significantly change our results. For that reason, we employ the estimates derived from Bartra and Otero (1988) to construct an alternative social table for 1940, obtain an estimate of the Gini coefficient and see if the overall trend of inequality changes. In Appendix E Figure 1 we show the trend for the Gini coefficient 1895–1940 when we use Bartra and Otero’s figures for hacendados and ejidatarios instead of our baseline estimates.

**Appendix E, Figure 1. Trend with Bartra and Otero (1988) estimates**

Note: Upper and lower bound represent 95% confidence intervals constructed using the jackkniffe procedure.

As expected, the estimated Gini coefficient in 1940 is smaller when using the income estimates of Bartra and Otero. In our original estimate the Gini coefficient for 1940 is 62; when using the income estimates from Bartra and Otero (1988), in Appendix E Figure 1, the Gini coefficient is 56. Although the lower *hacendado* class income does have an impact on the level of inequality, a slightly rising trend is preserved. From this result we can conclude that our estimates represent the overall trend of rising and stable inequality at the end of the revolutionary period.

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3. As reported by Márquez (2018) in a letter from Abraham Gónzales, the governor of the state of Chihuahua to President Madero, the property of Luis Terrazas, the richest man in the country had a value of 9,156, 610.80 pesos in 1912, equivalent to more than 63 million dollars at 1990 prices. According to Márquez (2018), in the same year Terrazas owed 128,869.82 pesos in property taxes alone, equivalent to 896,000 dollars in 1990. [↑](#footnote-ref-3)
4. Physical access was granted for the Francisco I. Madero, Madero Familiy Digital Found and Mexico’s City Historical Archives of Notaries in December 2018 and January 2019 during a brief visit of one of the authors. [↑](#footnote-ref-4)
5. Compared to the 18 groups tables for 1895, 1910, 1930 and 1940 the expansive social tables, available for 1930 and 1940 add very fine-grained categories for different types of workers in the manufacturing and service sectors, e.g. printing and lithography workers; workers in yarns, fabrics and prints; those in the cigarette industry; land transport carriers; metal manufacturing workers; dry cleaning workers; potters; dough, tamales, tortillas and atole makers). See Appendix B for the more complex social tables for these years. [↑](#footnote-ref-5)