**Appendix**

**A.1 The legislation on guild taxes**

This section discusses the legislation that regulated the guild tax in the 19th century, after Independence.[[1]](#footnote-1) Table A.1 reports the legislation that ruled the taxation on guilds.

On August 10 1826, a decree established a tax under the name of “contribution of guilds”.[[2]](#footnote-2) This decree established that no one could carry out a commercial or artisanal activity without having obtained a *patente* (license). Taxpayers would pay for a *patente* every six months. The decree established that the guild tax rate (levied on profits) should be similar for all people. For this purpose, taxpayers were divided into two categories, according to their size or estimated profits.[[3]](#footnote-3) People in the first category would pay more than those in the second category. For example, first-category *tenderos* would pay 100 pesos per year, and second-category *tenderos* would pay 40 pesos per year. In addition, first-category shoemakers would pay 12 pesos per year, and second-category shoemakers would pay 8 pesos per year.[[4]](#footnote-4)

Merchants, retailers, artisans and professionals had to pay about 4% of their net income in taxes.[[5]](#footnote-5) The government would collect taxes on profits through the guild tax in the capital cities of the departments (such as Lima, Arequipa, Trujillo, etc.), and through the industrial tax in the rest of the country.[[6]](#footnote-6)

In practice, the actual guild tax rate was not the same for every guild member. Since all guild members in the same category paid the same tax amount, but profits could vary within each category, the actual rate was higher than 4% of profits for some guild members, and less than 4% for others. Nevertheless, although the tax rate was not the same for every guild member, the differences in actual tax amounts across occupations seem to reflect (at least partly) the differences in profits. For example, *almaceneros* (a type of wholesale traders), who likely earned relatively large profits, were charged higher taxes than *manteras* (small retail street vendors): each *almacenero* was charged either 300 or 500 pesos in annual taxes, depending on the category,[[7]](#footnote-7) while each *mantera* paid either 8 or 12 pesos annually.

On December 1826, a new decree increased the number of categories from two to four.[[8]](#footnote-8) According to this decree, the tax structure established in August of the same year (with only two categories) did not reflect the variability of profits. More categories were needed to reduce the variation in actual tax rates.

A few weeks later, the government published the tax amounts for each guild.[[9]](#footnote-9) Denote $T\_{j,t}^{i}$ as the tax amount to be paid by each member of guild *i*, in category *j*, in year *t*. An analysis of the tax amounts shows that, for many guilds, tax amounts were characterized by $T\_{1,t}^{i}-T\_{2,t}^{i}=T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$. For example, the first, second, third and fourth categories of *almaceneros* paid 500, 400, 300 and 200 pesos per year, respectively. This relationship between $T\_{1,t}^{i}$, $T\_{2,t}^{i}$, $T\_{3,t}^{i}$ and $T\_{4,t}^{i}$ (i.e. $T\_{1,t}^{i}-T\_{2,t}^{i}=T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$) was observed in many guilds, but not in all. For example, the first, second, third and fourth categories of watch assemblers paid 50, 36, 28 and 20 pesos per year, respectively (so $T\_{1,t}^{i}-T\_{2,t}^{i}>T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$);[[10]](#footnote-10) while the annual taxes for the first, second, third and fourth categories of cigar makers were 180, 80, 50 and 30 pesos, respectively (so $T\_{1,t}^{i}-T\_{2,t}^{i}>T\_{2,t}^{i}-T\_{3,t}^{i}>T\_{3,t}^{i}-T\_{4,t}^{i}$).[[11]](#footnote-11)

The guild tax was abolished, replaced, and reinstated several times during the 1820s and 1830s. For example, in October 1827, the government abolished the guild tax, and established that all provinces would pay the industrial tax.[[12]](#footnote-12) In July 1829, the guild tax was reinstated and the industrial tax was abolished.[[13]](#footnote-13) A law of December of 1829 declared that all the laws and decrees issued by President La Fuente since June 5 1829 were null and void, with the exception of some legal norms that remained in force.[[14]](#footnote-14) In January 1830, a new decree specified the legal norms approved by La Fuente that were still valid; one of them was the decree of July 1829 (which had reinstated the guild tax).[[15]](#footnote-15) In February 1830, a new decree established that in order to operate a business, one had to hold a *patente* (license) and pay the appropriate tax.[[16]](#footnote-16) In March 1835, the guild tax was abolished once again.[[17]](#footnote-17) However, in August 1836, a decree reinstated this tax.[[18]](#footnote-18)

In addition, a review of tax reports in the 1830s and 1840s shows that the relationship between $T\_{1,t}^{i}$, $T\_{2,t}^{i}$, $T\_{3,t}^{i}$ and $T\_{4,t}^{i}$ also changed. Tax amounts were usually characterized by $T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}=0.5\left(T\_{1,t}^{i}-T\_{2,t}^{i}\right)$.[[19]](#footnote-19) For example, in 1843, the first, second, third and fourth categories of carpenters paid 42, 24, 15 and 6 pesos per year, respectively.[[20]](#footnote-20)

In 1852, a new method of calculating taxes was introduced. The tax amounts in the first and fourth categories were calculated as $T\_{1,t}^{i}=M\_{t}^{i} $ and$ T\_{4,t}^{i}=m\_{t}^{i}$, where $M\_{t}^{i}$ was the highest profit in the guild *i* in year *t*, and $m\_{t}^{i}$ was the lowest profit in the guild *i* in year *t*.[[21]](#footnote-21) The tax amounts in the second and third categories were then calculated as follows: $T\_{2,t}^{i} =0.04m\_{t}^{i}+\frac{2}{3}\left(M\_{t}^{i}-m\_{t}^{i}\right)$, and $T\_{3,t}^{i}=0.04m\_{t}^{i}+\frac{1}{3}\left(M\_{t}^{i}-m\_{t}^{i}\right)$.[[22]](#footnote-22) These formulas imply that $T\_{1,t}^{i}-T\_{2,t}^{i}=T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$. For example, the first, second, third and fourth categories of consignees had to pay 960, 680, 400 and 120 pesos, respectively; while the first, second, third and fourth categories of *chinganeros* had to pay 40, 30, 20 and 10 pesos, respectively.

In the 19th century, guild deputies played an important role in determining guild tax duties. Each guild elected two deputies from its members.[[23]](#footnote-23) Several decrees mention the role of guild deputies. For example, in August 1837, a decree mentioned that guild deputies were responsible for estimating profits.[[24]](#footnote-24) In March 1841, another decree mentioned that guild deputies were in charge of estimating profits, and choosing the category of each guild member.[[25]](#footnote-25) In 1846, three decrees related to the guild of consignees mentioned that its deputies were responsible for classifying consignees.[[26]](#footnote-26) In May 1852, a decree stated that the deputies of the guild had to report the maximum and minimum profits, and classify the guild members into four categories, according to their profits.[[27]](#footnote-27)

Government officials enforced the legislation on guild taxes.[[28]](#footnote-28) To that end, a decree in August 1826 established that prefects would appoint tax commissioners in each province of their departments.[[29]](#footnote-29) In the decades that followed, tax commissioners supervised the work of guild deputies. In December 1830, a decree stated that the sub-prefect of the province should warn guild deputies that they would be held responsible and fined if they miscalculated profits.[[30]](#footnote-30) In August 1837, a decree stated that the tax commissioner could accuse guild deputies before the prefect of the department for underestimating profits.[[31]](#footnote-31) In May 1852, a decree established that the sub-prefect and the tax commissioner would review the lists of guild members, drawn up by the guild deputies; the tax commissioner could make comments on the classification of guild members.[[32]](#footnote-32)

On the other hand, some guild members were tax exempt during this period. In 1837, for example, preceptors were exempt from taxes.[[33]](#footnote-33) In 1844, a decree exempted watercarriers (*aguadores*), donkey and foot loaders (*cargadores a burro y a pie*) and domestic carters (*carreteros del país*), because they were mostly slaves.[[34]](#footnote-34) The same decree also exempted ship rig makers (*aparejeros*), sawyers (*aserradores*), bath attendants (*bañeros por menor*), fourth-category grocery *cajoneros*, suitcase makers (*pelloneros*), leather dressers (*zurradores*) and crockery *tendejoneros*.[[35]](#footnote-35) Profits in these guilds were usually low.

More exemptions were introduced in the 1850s. In 1851, a law exempted artisans and people engaged in mechanical work who earned less than 200 pesos a year.[[36]](#footnote-36) In 1852, a decree specified 53 guilds that had been tax exempted by the 1851 law, such as watercarriers, masons, potters, carper makers, sawyers, and many others.[[37]](#footnote-37) However, the 1852 decree included a variety of occupations, not just artisans, in the list of exempted guilds. For example, the decree included *chinganeros* (who owned small restaurants called *chinganas*) in the list of tax-exempt guilds. Watercarriers and foot loaders were also included in the list. Some may find the inclusion of these guilds confusing. It is possible that the 1852 decree added guilds that were among the occupations covered by the 1851 law. It is also possible that the interpretation of mechanical work was very broad, and included not only artisans, but also other people who did manual work.

In addition, some may find it confusing that the 1852 decree listed some guilds in which only some members (but not all) earned less than 200 pesos per year. For example, according to the tax reports of 1852 and 1859, the fourth-category of blacksmiths and the fourth-category of dryers (both guilds included in the 1852 decree) were taxed less than eight pesos per year, which implies that their profits were less than 200 pesos per year. However, the first and second categories of these guilds were charged more than eight pesos. It is possible that the decree did not apply to all categories of these guilds, but only to the categories that would pay less than eight pesos per year. In any case, if there was a conflict between the law of 1851 and the decree of 1852, the law took precedence over the decree, so one would expect that those guild members who earned more than 200 pesos per year would have to pay taxes.

The tax reports of the 1850s should reflect the changes in legislation. However, the 1852 and 1859 tax reports included some of the 53 guilds listed as exempt in the 1852 decree. They also included some categories that were taxed less than eight pesos per year. For example, the 1852 and 1859 tax reports included the names of fourth-category upholsterers (*tapiceros*) and fourth-category muleteers, even though these two guilds were listed as tax exempt in the 1852 decree; moreover, the tax reports show that they were taxed less than eight pesos per year. In the dataset, a large percentage of observations in 1852 and 1859 were associated with annual taxes of less than eight pesos. The fact that these guild members appear in the tax reports does not necessarily mean that the state taxed people who earned less than 200 pesos. It is possible that guild deputies reported the tax liability of each guild member (even if it was less than eight pesos per year), and that the exemption was applied after the tax amount was calculated.

**INSERT TABLE A.1**

**A.2 The dataset**

This study is based on information from tax reports. In particular, the information was transcribed from the guild tax reports of 1838, 1843, 1852 and 1859. These reports are available at the National Archives of Peru (“Archivo General de la Nación”), Lima office.

These records include the names of the guild members in each category, the address of the store, factory or office, and the corresponding annual tax in pesos. Some individuals had more than one establishment or occupation; in these cases, their names appear more than once in the tax reports.

*Method of estimating profits*

Profits were estimated using information on guild taxes. As previously noted, guild members with higher profits tended to pay higher taxes. For example, *almaceneros* and other merchants paid much higher taxes than small retailers, such as *cajoneros* and *manteras*. In addition, the classification of guild members in categories depended on their profits. The richest members of a guild were placed in the first category, and the poorest members in the fourth.[[38]](#footnote-38)

If taxes were a proportion of profits, it would be possible to estimate profits as the amount of taxes divided by the corresponding tax rate. The legislation indicated that taxes were about 4% of profits. In practice, however, the tax rate was not the same for everyone: guild members paid the same amount of tax if they were in the same category, even if their profits were not necessarily the same. Thus, there were differences in the actual tax rates (as a proportion of profits) within each category. However, it is expected that large differences in taxes were associated with large differences in profits. Then annual profits were estimated as the annual tax amounts divided by 4%.[[39]](#footnote-39) Denote $π\_{k,t}^{i}$ as the estimated profits of establishment *k*, in guild *i,* in year *t*. Then, the following formula was used to estimate profits: $π\_{k,t}^{i}={T\_{j(k),t}^{i}}/{0.04}$, where $j(k)$ is the category of establishment *k*, and, as indicated above, $T\_{j,t}^{i}$ is the tax amount to be paid by each member of guild *i*, in category *j*, in year *t*.

Some changes in the method of calculating taxes occurred in 1852. A review of the tax reports in the 1830s and 1840s shows that $T\_{1,t}^{i}$ was less than 4% of the maximum profits in the guild.[[40]](#footnote-40) In comparison, according to the 1852 decree, $T\_{1,t}^{i}$ was calculated as 4% of the maximum profits in the guild.[[41]](#footnote-41) On the other hand, in the 1830s and 1840s, the tax amounts usually followed the rule $T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}=0.5\left(T\_{1,t}^{i}-T\_{2,t}^{i}\right)$. By comparison, the 1852 decree set $T\_{1,t}^{i}-T\_{2,t}^{i}=T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$ for all guilds. There may be some effect on the distribution of estimated profits within each guild.

Did the changes in the method of calculating taxes in 1852 have a large effect on the profit estimates? As explained earlier, the 1852 profit estimates were obtained using the tax amounts for all categories for all guilds.[[42]](#footnote-42) Denote these tax amounts as $T\_{j,1852}^{i}$. In addition, denote $π\_{k,1852}^{i}$ as the profits of establishment *k* in guild *i* in 1852, estimated using the methodology from this study, i.e. $π\_{k,1852}^{i}={T\_{j(k),1852}^{i}}/{0.04}$. To determine how the change in the method of calculating taxes in 1852 affected the profit estimates, the profits for 1852 were re-estimated using the method of calculating taxes in 1843.[[43]](#footnote-43)

The 1843 method of calculating taxes resulted in different tax amounts than the 1852 method. Denote $T\_{j,1852|T1843}^{i}$ as the tax amounts for 1852 that guild members would have paid using the 1843 method. These tax amounts were computed using the following formulas: $T\_{1,1852|T1843}^{i}=\left(0.025/0.04\right)T\_{1,1852}^{i}$,[[44]](#footnote-44) $T\_{2,1852|T1843}^{i}-T\_{3,1852|T1843}^{i}=T\_{3,1852|T1843}^{i}-T\_{4,1852|T1843}^{i}$, $T\_{3,1852|T1843}^{i}-T\_{4,1852|T1843}^{i}=0.5\left(T\_{1,1852|T1843}^{i}-T\_{2,1852|T1843}^{i}\right)$,[[45]](#footnote-45) and $T\_{4,1852|T1843}^{i}=T\_{4,1852}^{i}$.[[46]](#footnote-46)

Since $T\_{j,1852|T1843}^{i}\ne T\_{1,1852}^{i}$ for $j=\left\{1,2,3\right\}$, some establishments could move from one category to another. All guild members were re-categorized, assuming a uniform distribution of profits within each category in each guild.[[47]](#footnote-47) Denote $j\_{N}(k)$ as the new category of establishment *k*, and $T\_{j\_{N}(k),1852|T1843}^{i}$ as the tax amount that the establishment *k* would have paid in 1852 using the 1843´s method of computing taxes. Profits were estimated for each establishment *k* in 1852 using the 1843´s method of computing taxes as $π\_{k,1852|T1843}^{i}={T\_{j\_{N}(k),1852|T1843}^{i}}/{0.04}$.

Using this procedure, the average profit per establishment in class A in 1852 was estimated at 2,983 pesos. In comparison, with the original method of estimating profits used in this study, the average profit per establishment in this class was 3,298 pesos. Thus, the use of the new procedure reduces the average profits in class A by 9.6%. Meanwhile, the new procedure reduces the average profits per establishment in classes B, C, D and E by 5.8%, 4.2%, 11% and 5.6%, respectively. In general, the profits estimates are lower using the new procedure. However, there are no large differences in the variation of profits across social classes. Moreover, with the new procedure (as with the procedure used in the article), profits in class A were still far larger than those in the lower social classes.

*Biases in estimating profits*

This study relies on tax information. Several factors could affect the reliability of the tax data. Guild deputies may have had incentives to underreport profits in order to reduce the tax duties of guild members.[[48]](#footnote-48) In addition, government officials had limited capacity to monitor the work of guild deputies, and may have had incentives not to enforce the law. For these reasons, the estimates in this study may underestimate profits. However, the possibility of underestimating profits would not affect the main findings—that women earned significantly less than men, and benefited less from economic growth during the Guano Era—if there were no substantial differences in profit underestimation across guilds and over time.

Did the underestimation of profits vary by social class? There is reason to believe that the results of this study overestimate the inequality of profits. It was probably more difficult and costly (per dollar of tax revenue) for government officials to monitor the work of guild deputies in estimating the profits of small firms. As a result, profit underestimation would be more likely for these firms. However, there are also reasons to argue that the results underestimate profit inequality. Corruption leading to profit underestimation may have been more likely for large firms. For example, the largest firms had more resources to bribe guild deputies in order to underreport their profits; they could also exert more influence on government authorities in order to overlook the work of guild deputies.[[49]](#footnote-49)

The magnitude of profit underestimation for low-income guild members can be analyzed using alternative sources of information. Information on wages of laborers is useful. Some guilds in social class E grouped people with very low skills. Comparing profits of these guild members and the income of laborers would allow us to determine the importance of profit underestimation. For instance, a comparison between the earnings of watercarriers and laborers illustrates this issue. In 1843, watercarriers paid three pesos in annual taxes. Using the 4% guild tax, their estimated profits were 75 pesos. Assuming zero costs, revenues of watercarriers would be 75 pesos.[[50]](#footnote-50) In contrast, laborers earned around 200 pesos per year between 1841 and 1847.[[51]](#footnote-51) If watercarriers earned as much as a laborer, their profits would have been underestimated by 62.5%. Even if that were the case and the figures for watercarriers´ profits were corrected, significant differences in profits would still exist between merchants and watercarriers. More broadly, if the profits of guild members in class E increased by 167%,[[52]](#footnote-52) while the profits in class A remained the same, substantial differences in profits would still persist between classes A and E. According to this study´s estimates, in 1843 profits were 1,698 pesos in class A and 178 pesos in class E. Even with a 167% increase in class E profits, the results would still indicate that guild members in class A earned far more than those in class E.[[53]](#footnote-53) Therefore, even if profits in class A were not underestimated, large income disparities would remain between the richest and poorest guild members.[[54]](#footnote-54) Since profits in class A could also be underestimated, the evidence suggests that significant differences in profits existed between the upper and lower classes during this period, even after accounting for potential biases in profit estimation.

Did profit underestimation probably vary over time? There are reasons to suggest that the results could underestimate the increase in profit inequality during the Guano Era. As the Peruvian economy entered a commercial boom, the State had more resources, likely improving its capacity to enforce laws. With increased resources, government officials could more accurately supervise the work of guild deputies.[[55]](#footnote-55) Before the economic expansion, obtaining information about the profits of small firms was likely more challenging compared to large firms. As public finances and law enforcement improved, gathering data on small firms´ profits may have become easier. If the estimates were adjusted to account for the possible underestimation of small firms´ profits in the 1830s and 1840s, the results would likely indicate a lower increase (or a larger decline) in profits for the smallest firms.

As previously mentioned, the largest firms may have greater influence over guild deputies and government officials, allowing them to underreport their profits. As the Peruvian economy expanded, and profits increased (particularly for the largest firms), guild deputies may have had stronger incentives to underreport the profits of the largest firms.[[56]](#footnote-56) During the Guano Era, these firms also likely had more resources to exert influence over government officials to avoid strict law enforcement. If the estimates were adjusted to account for the higher likelihood of corruption among the largest firms in the 1850s, the revised results would indicate a greater increase in their profits and, consequently, a larger rise in profit inequality between the richest and poorest guild members.

As shown in the article, women were mostly members of the lower social classes. The results indicate that they earned significantly lower profits than men. The actual profit gap between men and women may be smaller than reported if profit underestimation was greater in the lower classes. However, even after adjusting for this underestimation, the substantial differences in profits between the upper and lower classes suggest that women still earned far less than men.[[57]](#footnote-57)

On the other hand, the estimates in this study indicate that women´s profit growth was lower than men´s, leading to increased profit inequality between men and women increased from 1838 to 1859. If profit underestimation was more significant for small firms in the 1830s and 1840s (due to limited fiscal resources), and more prevalent among large firms in the 1850s (due to bribery), then adjusting the results accordingly would show that women´s profit growth was even lower than men´s during this period. Therefore, the actual increase in profit inequality between men and women may have been faster between 1838 and 1859 than the estimates in this study suggest.

*Tax exemptions*

An important limitation of the data is the presence of tax exemptions, which make tax information incomplete. Some guild members, particularly from 1844, were exempt from taxes.[[58]](#footnote-58) As a result, the available information on guilds is significantly more limited in the 1850s. The trend is reflected in the number of observations, which declined notably in 1852 compared to 1843. The dataset includes 2,624 observations for 1838, 2,539 for 1843, 2,012 for 1852 and 2,514 for 1859. The decrease in observations between 1843 and 1852 stands in contrast to the population growth in Lima during this period.

The data must be adjusted to allow for a meaningful comparison of the distribution of guild members in 1838-43 with the distribution in 1852-59.[[59]](#footnote-59) One method of adjustment is to omit all guilds that were absent from at least one of the tax reports for 1838, 1843, 1852 and 1859. Some guilds underwent changes, such as name modifications, divisions into multiple guilds, or incorporations into other guilds. These guilds were retained in the subpopulation. By excluding observations with the lowest taxes, the results would offer a clearer representation of upper- and middle- income guild members.

*Descriptive statistics and social classes*

Table A.2 presents some statistics on the dataset, considering both the total population of guild members and the subpopulation of upper and middle-income guild members. In both cases, approximately 50% of the observations correspond to taxes of 10 pesos or less. Table A.3 provides descriptive statistics for annual taxes. The average tax was 19 pesos for the full population, and 21 pesos for the subpopulation. Taxes were higher for men, with an average of 18 pesos in the full population, compared to 7 pesos for women.

**INSERT TABLE A.2**

**INSERT TABLE A.3**

Following the work of Mark van Leeuwen and Ineke Mass, guild members were initially categorized into 11 classes (van Leeuwen and Mass 2011). However, some classes included very few people members at all. As a result, the original classification was consolidated into five broader classes. Classes A and B correspond to original classes 1 and 2, respectively. Original classes 3, 4 and 5 were combined into class C, while original classes 7 and 9 formed class D. Finally, original classes 10 and 11 were grouped into class E. No guild members were assigned to classes 6 and 8. Table A.4 presents the five social classes along with the guilds included in each category.

Some individuals were members of multiple guilds and, as a result, paid taxes for more than one guild. To determine each taxpayer´s total profits for a given year, the total guild taxes they paid were used in the calculation. If a guild member had occupations that spanning different social classes, he/she was included in the class that provided him/her the largest earnings.

INSERT TABLE A.4

**References**

*Primary sources (manuscripts)*

Archivo General de la Nación (AGN). Sección Republicana. Libro de matrícula de patentes de los distintos gremios de la ciudad de Lima, 1838.

Archivo General de la Nación (AGN). Sección Republicana. Libro de matrícula de patentes de los gremios de la ciudad de Lima, 1843.

Archivo General de la Nación (AGN). Sección Republicana. Libro padrón de gremios de la ciudad de Lima, 1852.

Archivo General de la Nación (AGN). Sección Republicana. Libro padrón de patentes de los distintos gremios de la ciudad de Lima, 1859.

*Secondary sources*

Córdova y Urrutia, José María. 1839. *Estadistica Historica, Geografica, Industrial y Comercial de Los Pueblos Que Componen Las Provincias Del Departamento de Lima*. Lima: Sociedad “Entre Nous.”

Gootenberg, Paul. 1991. “Population and Ethnicity in Early Republican Peru: Some Revisions.” *Latin American Research Review* 26(3):109–57. doi: https://doi.org/10.1017/S0023879100023955.

van Leeuwen, Mark, and Ineke Mass. 2011. *HISCLASS: A Historical International Social Class Scheme*. Leuven: Leuven University Press.

Oviedo, Juan. 1861. *Colección de Leyes, Decretos y Órdenes Publicadas En El Perú Desde El Año de 1821 Hasta 31 de Diciembre de 1859*. Vol. III. Lima: Felipe Bailly, Editor.

Oviedo, Juan. 1862. *Colección de Leyes, Decretos y Órdenes Publicadas En El Perú Desde El Año de 1821 Hasta 31 de Diciembre de 1859. Ministerio de Beneficencia, Instrucción Pública y Justicia*. Vol. IX. Lima: Felipe Bailly, Editor.

Oviedo, Juan. 1870. *Colección de Leyes, Decretos y Ordenes Publicadas En El Perú Desde El Año de 1821 Hasta 31 de Diciembre de 1859. Ministerio de Hacienda y Comercio*. Vol. XV. Lima: Manuel A. Fuentes.

**Table A.1**

|  |
| --- |
| **Legislation referring to guild taxes, 1826-52** |
| Type of legislation | Date | Description |
| Decree | August 10 1826 | It established that no one could carry out a commercial or artisanal activity without having obtained a *patente* (license). For tax purposes, there would be two types of *patentes*. |
| Decree | August 11 1826 | It imposed a tax rate of 4% on the "net production" of each person. |
| Decree | December 4 1826 | It increased the number of categories from two to four. It also set the tax amounts for all categories in each guild. |
| Decree | October 31, 1827 | It abolished the guild tax. All provinces would pay the industrial tax. |
| Decree | July 19, 1829 | It reestablished the guild tax, abolishing the industrial tax. |
| Law | December 17, 1829 | It abolished all laws and decrees from June 5 1829, with the exception of some “government provisions”. |
| Decree | January 3, 1830 | It pointed out that the decree of July 19, 1829 was among the "government provisions" mentioned in the law of December 17 1829. |
| Decree | February 10, 1830 | It established the need to obtain a *patente* (license) to conduct operations. |
| Decree | December 24 1830 | It established that the deputies of each guild would be responsible for any damage to the state caused by an erroneous calculation of taxes. |
| Decree | March 3 1835 | It abolished the guild tax. |
| Decree | August 3 1836 | It established the need to obtain a *patente* (license) to conduct operations. |
| Decree | June 28 1837 | It established that preceptors were tax exempt. |
| Decree | July 14, 1838 | It increased the guild taxes by 50%. |
| Decree | August 3, 1838 | It established that the 50% tax increase was only valid for one semester. |
| Decree | August 27, 1838 | It repealed the 50% increase in taxes. |
| Decree | October 3 1844 | It exempted watercarriers (*aguadores*), donkey and foot loaders (*cargadores a burro y a pie*) and domestic carters (*carreteros del país*), under the justification that they were mostly slaves. The decree also excluded ship rig makers (*aparejeros*), sawyers, bath attendants (*bañeros por menor*), fourth-category grocery *cajoneros*, suitcase makers (*pelloneros*), leather dressers (*zurradores*), and crockery *tendejoneros* (street vendors) under the justificacion that their activities provided incomes to barely support subsistence.  |
| Law | July 3 1851 | It exempted artisans and people engaged in mechanical work who earned less than 200 per year from paying income tax. |
| Decree | April 1 1852 | It specified the guilds that were tax exempted by the law of 1851.  |
| Decree | May 12 1852 | It indicated that, according to the legislation, the tax rate was 4%. It also indicated the method of calculating the taxes to be paid by each category. The first category would pay 4% of the maximum profits in the guild, and the fourth category would pay 4% of the minimum profits. The taxes of the second and third categories were equal to the tax paid by the fourth category plus 2/3 and 1/3 times the difference in taxes between the first and fourth categories, respectively. |
| Notes: The table shows the legislation on guild taxes. The sources of information are Oviedo (1861, 1862, 1870). |

**Table A.2**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Distribution of the dataset** |  |  |   |   |   |
|   |   |   | All guild |   |   |   |
|   |   |   | members |   |   | Subpopulation |
|   |   |   | N | % |   |   | N | % |
| Number of observations |   |   |   |   |   |   |
|   | Total | 9,689 | 100.0 |   |   | 8,165 | 100.0 |
|   | Annual taxes |   |   |   |   |   |   |
|   |   | Up to 5 pesos | 2,713 | 28.0 |   |   | 2,111 | 25.9 |
|   |   | From 5.1 to 10 pesos | 2,687 | 27.7 |   |   | 2,195 | 26.9 |
|   |   | From 10.1 to 15 pesos | 1,212 | 12.5 |   |   | 1,062 | 13.0 |
|   |   | From 15.1 to 20 pesos | 981 | 10.1 |   |   | 882 | 10.8 |
|   |   | From 20.1 to 25 pesos | 441 | 4.6 |   |   | 382 | 4.7 |
|   |   | From 25.1 to 30 pesos | 293 | 3.0 |   |   | 269 | 3.3 |
|   |   | More than 30 pesos | 1,362 | 14.1 |   |   | 1,264 | 15.5 |
|   | Owner of the establishment |   |   |   |   |   |
|   |   | Men | 7,679 | 79.3 |   |   | 6,322 | 77.4 |
|   |   | Women | 1,699 | 17.5 |   |   | 1,555 | 19.0 |
|   |   | Others 1/ | 311 | 3.2 |   |   | 288 | 3.5 |
|   | Year |   |   |   |   |   |   |
|   |   | 1838 | 2,624 | 27.1 |   |   | 2,065 | 25.3 |
|   |   | 1843 | 2,539 | 26.2 |   |   | 2,036 | 24.9 |
|   |   | 1852 | 2,012 | 20.8 |   |   | 1,787 | 21.9 |
|   |   | 1859 | 2,514 | 25.9 |   |   | 2,277 | 27.9 |
| *Notes*: The table reports the distribution of the dataset for the total population of guild members as well as for the subpopulation. *N* = number of observations. 1/ Non-identified individuals or companies with no identified owner.  |

**Table A.3**

|  |  |  |
| --- | --- | --- |
| **Annual taxes** |  |  |
|   |   |   | All guild |   |
|   |   |   | members | Sub population |
| Number of observations | 9,689 | 8,165 |
| Descriptive statistics of annual taxes (pesos) |   |
|   |   | Mean | 19.3 | 21.0 |
|   |   | Median | 9.4 | 10.0 |
|   |   | Standard deviation | 52.0 | 56.3 |
|   |   | Maximum | 960.0 | 960.0 |
|   |   | Minimum | 1.0 | 2.0 |
|   |   | Skewness | 11.7 | 10.9 |
|   |   | Kurtosis | 169.9 | 146.3 |
|   |   | Percentile 95 | 52.5 | 56.0 |
|   |   | Percentile 5 | 3.0 | 3.1 |
| Average taxes (pesos) |   |   |
|   | Owner of the establishment |   |   |
|   |   | Men | 18.1 | 19.6 |
|   |   | Women | 7.2 | 7.1 |
|   | Year |   |   |
|   |   | 1838 | 14.2 | 15.9 |
|   |   | 1843 | 13.0 | 14.3 |
|   |   | 1852 | 25.0 | 26.2 |
|   |   | 1859 | 26.5 | 27.4 |
| *Notes*: The table shows the average annual tax (in current pesos) in the total population of guild members and the subpopulation.  |

**Table A.4**

|  |  |
| --- | --- |
| **Social classes and guilds** |   |
| Type of occupation | Guilds |
| *Class A: Merchants and financiers* |
| Wholesalers | *Almaceneros*, *bodegueros*, *encomenderos* |
| Financiers | Lenders |
|   |   |
| *Class B: Professionals* |   |
| Law | Lawyers, notaries, solicitors of the Supreme Court and of the Superior Court. |
| Medicine | medical doctors, surgeons, dentists, pharmacists, optometrists, veterinaries |
| Arts | Architects, musicians |
|   |   |
| *Class C: Large and medium retailers, hospitality services and other services* |
| Retailers | *Pulperos*, *tenderos* |
| Restaurants | Coffee shops, *chinganeros*, *fonderos*, *picanteros* |
| Hostels | *Posaderos* |
| Others | Auctioneers, *balanceadores*, brokers, ecclesiastic employees, phlebotomists |
|   |   |
| *Class D: High and medium skilled artisans* |
| Manufacturing of foods and beverages | Bakers, brewers, ice-cream makers, millers, pastry makers, slaughterers |
| Textiles production | dressmakers, harness makers, hat makers, *saya* makers, shoe makers, tailors, upholsterers |
| Metal and wood Works | Beaters, boilersmiths, coach-body builders, silversmiths, smelters, tinsmiths, carpenters, coopers |
| Other high and medium skilled artisans | Lithographers, marble settlers, ship rigging makers, watch assemblers |
|   |   |
| *Class E: Small retailers and low skill occupations* |
| Small retailers | *Cajoneros*, *manteros*, *tendejoneros*, *repartidores* |
| Small food manufacturers and vendors | Butchers, *chicha* makers, chocolate makers, confectionery makers, distillers, juice makers, lard makers, *mazamorra* makers, pasta makers. |
| Several types of low-skilled artisans | Blanket makers, braid makers, button makers, carpet weavers, dyers, embroiderers, rope makers, suitcase makers, tanners, blacksmiths, chair makers, sawyers, candle makers, soap makers, wax makers, cigar makers, tobacco preparers, engravers, brush makers, fireworks makers, glass formers, masons, painters, perfume makers, potters, printers |
| Transportation and load services | *Angarilleros*, *capacheros*, *cargadores* or loaders, *carreteros*, *carretoneros*, *enfardeladores*, horse renters, muleteers, watercarriers |
| Farming and agriculture | Milk sellers |
| Others | Bath attendants, hairdressers |
| *Notes*: The table shows the guilds for each social class. Following the work of van Leeuwen and Mass (2011), occupations were initially divided into 11 classes. However, some classes were formed by a very few people (some classes had no guild members). The original classes were then grouped into five classes. Classes A and B were equivalent to original classes 1 and 2, respectively. Classes 3, 4 and 5 were grouped into class C, classes 7 and 9 formed class D, and classes 10 and 11 formed class E. No person belonged to classes 6 and 8. Van Leuuwen and Mass provide a system for classifying 21st century occupations. However, most 19th century occupations can be classified using the same system. In some cases, adjustments had to be made. For example, merchants were considered managers. For manufacturers, van Leuuwen and Mass distinguished between high skilled and low skilled occupations; this study followed their distinction to classify manufacturers (who were mostly artisans). On the other hand, in some cases, there was more than one guild for a particular occupation. For example, there were several guilds of *tenderos*. There was also more than one guild for *cajoneros*, *tendejoneros*, *angarilleros*, watercarriers, loaders, and *subastadores* (auctioneers), among others. |

1. The article uses information from guild tax records for 1838-59. However, in order to understand the tax legislation of the late 1830s, 1840s and 1850s, it is important to analyze the legislation of the 1820s. [↑](#footnote-ref-1)
2. Decree, August 10, 1826 (Oviedo 1870). [↑](#footnote-ref-2)
3. A review of tax reports shows that guild deputies (*diputados del gremio*) relied on proxies of profits (such as the size of the company) in order to classify guild members. They did not calculate the profits of each guild member to place them in a category. [↑](#footnote-ref-3)
4. The specific taxes of each guild in Lima appeared in a publication of the government of December 29 1826 (Oviedo 1870). [↑](#footnote-ref-4)
5. The decree of August 10 did not specify the guild tax rate. However, successive norms and other sources show that merchants, retailers, artisans and professionals had to pay around 4% of their profits in taxes. In August 11 1826, a decree established that people had to pay a contribution equivalent to 4% of the net product of their industry (i.e. net profits) and properties (Oviedo 1870). Similarly, in the late 1830s, in his statistical analysis of the department of Lima, José María Córdova y Urrutia mentioned that the guild tax was 4% (Córdova y Urrutia 1839). A review of tax reports shows that guild members paid around 4% of their profits. For example, according to the tax report of 1838, Carmen Noriega (the only owner of a machine to make chocolate) earned profits of 3,000 pesos, and her guild tax duties were 120 pesos, consistent with a 4% tax rate. Likewise, in May 12 1852, a decree stated that, according to the legislation, guild taxes were equivalent to 4% of profits (Oviedo 1870). [↑](#footnote-ref-5)
6. Industrial taxes were calculated based on the profits of each person, while guild taxes were calculated based on the category of each person. To determine the guild tax a person should pay, it was not necessary to compute his/her profits, but only his/her category, based on an approximation of his/her size. The government may have considered that in cities where there were large numbers of merchants, retailers, artisans and professionals, calculating the profits of each individual would be too costly. [↑](#footnote-ref-6)
7. An *almacenero* paid 500 pesos in annual taxes if he was in the first category, and 300 pesos if he was in the second category. [↑](#footnote-ref-7)
8. Decree, December 4 1826 (Oviedo 1870). [↑](#footnote-ref-8)
9. These taxes were published on December 29 1826 and January 26 1827 (Oviedo 1870). [↑](#footnote-ref-9)
10. $T\_{1,t}^{i}-T\_{2,t}^{i}=$ 14 and $T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}=$ 8. [↑](#footnote-ref-10)
11. Therefore, the relationship between $T\_{1,t}^{i}$, $T\_{2,t}^{i}$, $T\_{3,t}^{i}$ and $T\_{4,t}^{i}$ varied across guilds. No justification has been found for this variability. However, the relationship between $T\_{1,t}^{i}$, $T\_{2,t}^{i}$, $T\_{3,t}^{i}$ and $T\_{4,t}^{i}$ was probably intended to reflect the differences in the distribution of profits. For example, it is possible that the difference in profits between first-category cigar makers and other cigar makers (for which $T\_{1,t}^{i}-T\_{2,t}^{i}>T\_{2,t}^{i}-T\_{3,t}^{i}>T\_{3,t}^{i}-T\_{4,t}^{i}$) was relatively larger than the difference in profits between first-category *almaceneros* and other *almaceneros* (for which $T\_{1,t}^{i}-T\_{2,t}^{i}=T\_{2,t}^{i}-T\_{3,t}^{i}=T\_{3,t}^{i}-T\_{4,t}^{i}$). [↑](#footnote-ref-11)
12. Decree, October 31 1827 (Oviedo 1870). Until then, only the capital cities of the departments paid the guild tax. In the rest of the country, the industrial tax was in place. In October 4 1826, a decree reduced the industrial tax rate from 4% to 3% (Oviedo 1870, 303-04). In July 8 1829, another decree raised the industrial tax back to 4% (Oviedo 1870, 315). [↑](#footnote-ref-12)
13. Decree, July 19 1829 (Oviedo 1870). [↑](#footnote-ref-13)
14. Law, December 17 1829 (Oviedo 1861:342–43). [↑](#footnote-ref-14)
15. Decree, January 3 1830 (Oviedo 1861:343–44). [↑](#footnote-ref-15)
16. Decree, February 18 1830 (Oviedo 1870). [↑](#footnote-ref-16)
17. Decree, March 3 1835 (Oviedo 1870). [↑](#footnote-ref-17)
18. Decree, August 3 1836 (Oviedo 1870). In 1838, the guild tax rate was temporarily changed. Specifically, a decree of July 14 1838 established that guild members had to pay an additional 50% in taxes (Oviedo 1870). However, a decree of August 2 1838 stated that this increase in guild taxes would only be valid for one semester (Oviedo 1870). Furthermore, just a few weeks later, a decree of August 27 1838 repealed the decree of July 14 1838, and established that those who paid 50% more in guild taxes would be reimbursed by the government (Oviedo 1870, 386). [↑](#footnote-ref-18)
19. No document has been founded explaining why the relationship between $T\_{1,t}^{i}$, $T\_{2,t}^{i}$, $T\_{3,t}^{i}$ and $T\_{4,t}^{i}$ in 1838 and 1843 was not the same as in 1826. [↑](#footnote-ref-19)
20. In comparison, in 1826, the annual tax amounts of these four categories of carpenters were 50, 40, 30 and 16 pesos, respectively. [↑](#footnote-ref-20)
21. Guild deputies had to calculate the highest and lowest profits in their respective guilds. In the 1830s and 1840s, guild deputies also calculated the highest and lowest profits in their guilds. [↑](#footnote-ref-21)
22. Decree, May 12 1852 (Oviedo 1870). [↑](#footnote-ref-22)
23. An analysis of the tax reports shows that guild deputies were members of the guild. A decree of June 2 1852 confirms that guild deputies were chosen by the members of the same guild (Oviedo 1870). [↑](#footnote-ref-23)
24. Decree, August 12 1837 (Oviedo 1870). [↑](#footnote-ref-24)
25. Decree, March 24 1841 (Oviedo 1870). [↑](#footnote-ref-25)
26. Decrees, March 9 1846, May 1 1846, June 12 1846 (Oviedo 1870). [↑](#footnote-ref-26)
27. Decree, May 12 1852 (Oviedo 1870). [↑](#footnote-ref-27)
28. The sub-prefect of a province responded to the province of the department. These authorities were part of the executive branch. [↑](#footnote-ref-28)
29. Decree, August 11, 1826 (Oviedo 1870). [↑](#footnote-ref-29)
30. Decree, December 24 1830 (Oviedo 1870). [↑](#footnote-ref-30)
31. Decree, August 12 1837 (Oviedo 1870). [↑](#footnote-ref-31)
32. Decree, May 12 1852 (Oviedo 1870). [↑](#footnote-ref-32)
33. Decree, June 28 1837 (Oviedo 1862). [↑](#footnote-ref-33)
34. Decree, October 3 1844 (Oviedo 1870). [↑](#footnote-ref-34)
35. *Tendejoneros* were a type of street vendors. [↑](#footnote-ref-35)
36. Law, July 3 1851 (Oviedo 1870). [↑](#footnote-ref-36)
37. Decree, April 1 1852 (Oviedo 1870). [↑](#footnote-ref-37)
38. For example, the most and least profitable shoemakers were placed in categories 1 and 4, respectively. The same rule was valid for other guilds. [↑](#footnote-ref-38)
39. In 1838, taxes were temporarily raised by 50% for a few weeks. The tax records provide information on tax duties before and after the increase in the tax rate. Profits were estimated using the tax amounts calculated before the 50% increase. [↑](#footnote-ref-39)
40. For some guilds, the tax reports included information on the highest and lowest profits in the guild. A review of the 1843 tax report shows that the tax rate was usually ranged between 2% and 3%. Guild deputies probably recognized that the average profits in the first category were lower than the highest profits in the guild. [↑](#footnote-ref-40)
41. There was no change in the calculation of $T\_{4,t}^{i}$: tax reports for the 1830s, 1840s and 1850s show that $T\_{4,t}^{i}$ was calculated as 4% of the lowest profit in the guild$.$ [↑](#footnote-ref-41)
42. These tax amounts were obtained from the 1852 tax report. [↑](#footnote-ref-42)
43. The article reports profits per guild member, recognizing that a person could work in different guilds. In this section of the appendix, profits were calculated per establishment. [↑](#footnote-ref-43)
44. It was assumed that first category guild members paid 2.5% of the maximum profits in the guild. [↑](#footnote-ref-44)
45. The last two formulas were commonly observed in 1843. [↑](#footnote-ref-45)
46. It was assumed that fourth-category guild members paid 4% of the lowest profits in the guild. [↑](#footnote-ref-46)
47. Denote $\tilde{π}\_{k,1852}^{i}$ as the profits of establishment *k* in guild *i* in 1852, obtained under the assumption that profits followed a uniform distribution. It was assumed that $\tilde{π}\_{k,1852}^{i}\~U\left({0.5\left(T\_{1,1852}^{i}+T\_{2,1852}^{i}\right)}/{0.04,{T\_{1,1852}^{i}}/{0.04}}\right)$ in category 1, $\tilde{π}\_{k,1852}^{i}\~U\left({0.5\left(T\_{2,1852}^{i}+T\_{3,1852}^{i}\right)}/{0.04,{0.5\left(T\_{1,1852}^{i}+T\_{2,1852}^{i}\right)}/{0.04}}\right)$ in category 2, $\tilde{π}\_{k,1852}^{i}\~U\left({0.5\left(T\_{3,1852}^{i}+T\_{4,1852}^{i}\right)}/{0.04,{0.5\left(T\_{2,1852}^{i}+T\_{3,1852}^{i}\right)}/{0.04}}\right)$ in category 3, and $\tilde{π}\_{k,1852}^{i}\~U\left({{T\_{4,1852}^{i}}/{0.04},0.5\left(T\_{3,1852}^{i}+T\_{4,1852}^{i}\right)}/{0.04}\right)$ in category 4, where $X\~U\left(a,b\right)$ implies that the variable $X$ follows a uniform distribution between $a$ and $b$. Establishment *k* in guild *i* was placed in category 1 if $0.5\left(T\_{1,1852|T1843}^{i}+T\_{2,1852|T1843}^{i}\right)\leq 0.04 \tilde{π}\_{k,1852}<T\_{1,1852|T1843}^{i}$, in category 2 if $0.5\left(T\_{2,1852|T1843}^{i}+T\_{3,1852|T1843}^{i}\right)\leq 0.04 \tilde{π}\_{k,1852}<0.5\left(T\_{1,1852|T1843}^{i}+T\_{2,1852|T1843}^{i}\right)$, in category 3 if $0.5\left(T\_{3,1852|T1843}^{i}+T\_{4,1852|T1843}^{i}\right)\leq 0.04 \tilde{π}\_{k,1852}<0.5\left(T\_{2,1852|T1843}^{i}+T\_{3,1852|T1843}^{i}\right)$, and in category 4 if $T\_{4,1852|T1843}^{i}\leq 0.04 \tilde{π}\_{k,1852}\leq 0.5\left(T\_{3,1852|T1843}^{i}+T\_{4,1852|T1843}^{i}\right)$. [↑](#footnote-ref-47)
48. On March 9 1846, the government accused some leading consignees of being unwilling to report their actual profits. In response to the apparent underreporting of profits, the government estimated consignees´ profits, using a 5% profit rate on sales (Oviedo 1870). However, two months later, on May 1 1846, the government repealed the previous decree, and established that new guild deputies should be appointed in order to calculate profits and tax amounts (Oviedo 1870). [↑](#footnote-ref-48)
49. Firms could pay bribes to government officials, or could have connections with them. [↑](#footnote-ref-49)
50. A watercarrier did not employ anybody and did not rent a store. In contrast, a large merchant employed workers, rented a warehouse and in general faced a large cost for operating a business. [↑](#footnote-ref-50)
51. A *jornal* or salary per day of work was around 0.8 pesos in 1841-47. Assuming a laborer worked 250 days per year, the annual salary of a laborer would be 200 pesos (Zegarra, 2021). [↑](#footnote-ref-51)
52. 1/0.375=2.67, equivalent to an increase in 167% [↑](#footnote-ref-52)
53. The effect would be even lower if we assume positive costs for watercarriers. For example, assuming an annual cost of 25 pesos, the annual revenues of watercarriers would be 100 pesos. The underestimation of profits would be 50%. Increasing the profits of class E by 100% would still show that class A guild members earned far more than class E guild members. [↑](#footnote-ref-53)
54. Since class A profits may also have been underreported, it is not clear that the original estimates in this study overstate the differences in profits between the richest and poorest guild members. In any case, after correcting the profits for possible bias, class A guild members earned far more than class E guild members. [↑](#footnote-ref-54)
55. Some might argue that as the economy expanded over time, so did the number of merchants, retailers, artisans and professionals. Facing a larger number of taxpayers could have made it more difficult to monitor the compliance with the law. [↑](#footnote-ref-55)
56. The larger the profit, the larger the tax duty, thereby the larger the gain for underreporting profits. [↑](#footnote-ref-56)
57. Moreover, since the profits of the richest guild members (usually men) were also likely underreported, the differences in profits between men and women may be even greater than the estimates suggest. [↑](#footnote-ref-57)
58. In addition, errors in the process of handling and storage of tax records could result in the loss of information for some guilds. Some guilds do not appear in 1838 and 1843. For example, lawyers do not appear in the tax report of 1838, while beaters (*batihojas*) are missing from the 1843 report. However, according to calculations, the missing observations for 1838 and 1843 account for only 6% of the total number of guild establishments. This proportion was estimated under the assumption that the number of establishments remained the same in 1838 and 1843 if data was missing for one of these years, and that it was equivalent to the 1834 figures if information was missing for both years. [↑](#footnote-ref-58)
59. The population of Lima increased by around 2% per year in 1836-50 (Gootenberg 1991). [↑](#footnote-ref-59)