*Online Appendices*

*Appendix A*

PROOFS OF THE CONCEPTUAL FRAMEWORK

*Proof of Proposition 1:*

If *j = X*:

If *j = P*:

If *j = X*:

If *j = P*:

If *j = X*:

If *j = P*:

Summing-up 1a, 1b, and 1c, it follows that:

If *j = X*:

If *j = P*:

*Proof of Proposition 2:*

I. Correlation of State Industrialization with the Share of Unskilled Workers “*l*” by Religious Group (Christians “C” and Muslims “M”) and Industry (Textiles “X” and Transportation “P”):

Define each group’s share of unskilled workers:

And the changes in each group’s share of unskilled workers (with industrialization) are given by:

.

Finally, the change in the Christian-Muslim differential is:

* If *j = X*:
* If *j = P*:

II. Correlation of State Industrialization with the Share of Artisans “*s*” by Religious Group (r= Christians “C” and Muslims “M”) and Industry (j = Textiles “X” and Transportation “P”):

* If *j = X*:
* If *j = P*:

III. Correlation of State Industrialization with the Share of White-Collar Workers “*h*” by Religious Group (r= Christians “C” and Muslims “M”) and Industry (j = Textiles “X” and Transportation “P”):

* If *j = X*:
* If *j = P*:

*Appendix B*

*Data Appendix*

*1. Coding Occupational Titles in the Egyptian 1848 and 1868 Census Records and Constructing the Social Status Index (SSI)*

The 1848 and 1868 Egyptian individual-level census records provide the earliest comprehensive lists of occupational titles in Egypt and perhaps in the Middle East at large. An important phase of the digitization project of the Egyptian census records consists of the coding of the occupational titles, to make it usable in quantitative analysis. To this end, in the data entry phase of the digitization project, occupational titles were first entered in full text in Arabic exactly as they appeared in the census manuscripts. In the post-data entry phase, I coded the occupational titles in the digitized samples manually according to Historical International Standard Classification of Occupations (HISCO). In this Appendix, I document the process of the manual coding of the occupational titles and the construction of the Social Status Index (SSI). In particular, I point out the challenges and difficulties of coding the Egyptian historical occupational titles, and the decisions that I had to make in the manual coding process. It has to be emphasized, however, that any occupational coding is by its very nature arbitrary, and thus that this manual coding is merely *one possible* coding scheme out of many possible schemes. Yet, an important advantage of the current coding scheme is that it follows the HISCO system, and will hence make the future harmonization of the Egyptian census records with the North Atlantic Population Project (NAPP) historical census records from North Atlantic populations relatively straightforward.

In the absence of an Egyptian dictionary of occupational titles in the nineteenth century, I had to rely on the available historical sources on guilds and occupations in nineteenth century Egypt (Baer 1964; Raymond 1973; Ghazaleh 1999), besides historians’ advice[[1]](#footnote-1) in understanding the Egyptian occupational titles. I then had to search for the closest English translation of the Egyptian occupational title in order to assign to the title the HISCO code of the corresponding English-language title. HISCO scheme provides a brief description of the tasks of each occupational code. Thus, the HISCO coding phase can be considered as a first step towards building a dictionary of occupational titles for nineteenth century Egypt. Finally, I created new codes for the occupational titles for which I did not find a close English counterpart (Table 2), based on my understanding of the HISCO major (and minor) groups. For the few titles that I could not understand, I coded them using the five-digit scheme with the first two digits being “xx”, followed by three-digit serial number. Fortunately, the individuals with unknown occupations represented less than 1 percent of the population with recorded occupational titles in 1848 and 1868. These observations are not included in the empirical analysis and they are treated as having “missing” occupational titles.

Although the coding process is in principle a straightforward one, several challenges and difficulties arose, which I summarize as follows:

1. Difficulty of distinguishing production from commercial activity in some occupational titles: The problem mainly arises because of the peculiarity of the Arabic language, where the occupational title is merely *relating* the individual to the product he/she is producing/selling. For example, strictly speaking, the title “*hariri*” merely relates the individual to the “silk” product and could possibly mean that the individual is *manufacturing* silk or is rather merely *selling* silk. This causes confusion on the proper classification of the occupational title in the HISCO scheme. Nevertheless, according to Raymond (1973, 1:213), many of these occupational titles in fact involved *both* manufacturing and trade activities, where the artisan was actually selling his products. Hence, I chose to classify the occupational title as a “production” title if it was possible to produce the product in a workshop in the geographical location of the individual. For example, the title “*tabban*” which relates the individual to the “hay” product does not involve a production activity since the title existed only in the cities where making hay was not feasible, and hence I coded it as a sales occupation.
2. Omitted occupational titles where the establishment of work or employer is mentioned: In a few cases, the census scribe did not mention the occupational title of the individual and merely mentioned the work establishment or the employer of the individual. In most of these cases, however, it is possible to infer the occupational title from the information mentioned on the establishment of work. For example, an individual may be recorded as (working) in a specific military battalion, which implies that he is a “soldier.” Also, an individual might be mentioned as (working) in a government manufactory or a workshop, where I infer that the individual is a “factory worker.” This also applies to most of the students in the public schools, the religious elementary schools *kuttabs*, and the higher religious institutes such as Al-Azhar, where the word “student” is not mentioned explicitly, and only the educational establishment is mentioned.
3. Primary and secondary jobs: In a few cases, there is more than one occupational title mentioned for the individual because the individual has two jobs. In these cases, I always coded the first mentioned occupational title unless one occupational title is a specialization (or a further explanation) within the other “general” occupation. Hence, for example an individual who is recorded as a “farmer and guard” is coded as farmer. But, specialized military personnel, such as a lieutenant engineer, were classified according to their specialization (engineer), *regardless* of the order of the occupational titles.
4. Change in occupation or in labor force participation status: In a few cases, the individual has recently changed jobs (or has recently become unemployed) and both the past and present jobs are recorded (with an indication of the timing). In these cases, I always take the *present* occupation unless the current status is “unemployed,” where I take the *past* occupational title instead. This is motivated by my interest in the occupation the individual is *generally* working in rather than in his exact status at the time of the census.
5. Vague occupational titles: For some occupational titles, I used other information to determine the exact meaning of the title. For example, the title *tabe’* (follower) is coded based on the individual’s legal status. Free followers are coded as domestic servants, but slave followers are coded as slaves. Another vague title is *khaddam* (servant), which could possibly mean a free domestic servant, a slave servant, or a free employee employed by the “master/employer.” In all these cases, I had to combine other information on household relationships and legal status in order to classify the title into one of these categories. For all the vague occupational titles, I *created* occupational codes to explicitly code them such as: *khaddam* (employee), *mustakhdim* (employee), *shaghaal* (manual worker), *mo’awen* (assistant - nonmanual), *mosa’ed* (assistant - manual).

Constructing the Social Status Index (SSI)

Based on the HISCO coding of occupational titles, I assigned values for social status standing of each occupational code following the HISCLASS measure described in van Leeuwen and Maas (2005). HISCLASS is based on classifying occupational titles according to four dimensions: manual versus non-manual, skill level, supervisory versus non-supervisory role, and primary versus non-primary sector. The authors use the 1965 Dictionary of Occupational Titles (DOT) of the USA in order to define and to classify the HISCO occupational titles/codes along the aforementioned dimensions. Table (1) shows the dimensions of HISCLASS with the modification that I made by extending the HISCLASS value of (6) to include unskilled non-manual workers. Three notes are in order: First, the information used in the HISCO coding or in HISCLASS is the information on occupational title *only*. The information on establishment of work is not used in the coding except in the very few cases when the occupational title is itself missing. Second, for the new occupational codes that I created and thus do *not* exist in the HISCO scheme, I had to assign values for HISCLASS. Table (2) shows the decisions that I made in this regard, which are based on my understanding of the nature and skill content of these occupational titles (either from direct knowledge and/or from the aforementioned historical sources). Third, for the occupational titles that exist in the HISCO scheme, I used the original HISCLASS values that are available through the website of History of Work Information System (http://historyofwork.iisg.nl/). In order to construct the SSI, and to account for the fact that occupations in nineteenth century Egypt may have had quite *different* social class standing from the occupations in 1965 United States of America, as reflected in the DOT, I revised the original HISCLASS values, that are based on van Leeuwen and Maas (2005). Throughout the paper, this revised measure is the one that I am using in all the empirical analysis, the SSI. As a robustness check, however, I used the original HISCLASS measure that is purely based on the U.S. classification, to replicate all the results. The results are not altered. Moreover, the correlation coefficient between the original HISCLASS and the constructed SSI is 0.87.

*2. Constructing the State Industrialization Dummy*

I constructed the state industrialization dummy variable (*StateInd*) that takes the value of one if the individual is employed in a state production project. Fortunately, the census takers are usually keen on distinguishing between the individuals who are employed by the state (*miri*) and those who are working in the private sector (*barrani*). The reason for this interest on part of the census takers lies, perhaps, in the growing central power of the state over the nineteenth century. For most of the individuals employed by the government, the name of the establishment of work was recorded in the occupation field. I constructed a dataset of state projects, by project’s name, industry, and location, among other information on dates of construction and closure, number of machines, and number of workers, in both 1848 and 1868, based on information from both secondary historical sources (Sami 1928; Al-Gritli 1952; Fahmy 1954; Al-Hitta 1967) and the digitized census samples. I then combined the list with the individual census records in order to construct the individual-level state industrialization measure.[[2]](#footnote-2)

Perhaps, an example is helpful in illustrating the procedure of creating both the *Social Status Index* and the *StateInd* variables. Suppose an individual is recorded in Cairo’s census manuscripts as a “carpenter in *Bulaq*’s arsenal.” I first enter this information in full in Arabic, and I then code the occupational title *independently* from the establishment of work. On the one hand, I manually code the occupational title “carpenter” according to the HISCO scheme with the code “95410” which corresponds to “Carpenter, general.” Following HISCLASS, I assign the value “6” to this title on the ladder of the SSI which corresponds to “medium-skilled non-supervisory manual workers in the non-primary sector.” On the other hand, based on the secondary dataset of state production projects that I constructed, I know that Bulaq’s arsenal is one of the state production projects in the military industries. Hence, this individual takes one in the state industrialization dummy variable. Importantly, if the individual is recorded as a carpenter *only*, i.e., employed in the traditional sector, then he would have been assigned the *same* occupational code and the same SSI as the carpenter in the state projects.

*3. Constructing the Industrial Affiliation Variable*

I classified each worker into one of five industries: textiles, transportation, military, other targeted industries, and non-targeted industries. The first four categories exhaust all the industries in the state projects, while the last category includes all the industries for which there is no state project operating. Workers, for whom the establishment of work is known, including all workers in state projects, are classified based on the industrial affiliation of the establishment they are working at regardless of their occupational title. The industry of the individuals for which only the occupational title is known is inferred from their title. For example, a weaver and a merchant of cloth in the traditional sector with no further information mentioned are classified into the “textiles” industry. A scribe in a state textiles manufactory is classified in the “textiles” industry too. An animal-driver in the traditional sector and a scribe in the state transportation enterprises both belong to the “transportation” industry.

*4. Other Variables in the Empirical Analysis*

1. Religion: This is recorded directly in the 1848 census manuscripts either in each individual record or in the tabulation that follows each street or village section. In 1868, it is mostly unrecorded, but is still to be inferred from names.
2. Age: This is recorded in years as of the next birthday. Individuals who are not enumerated often have missing age (Saleh 2013).
3. Slave: This is a dummy variable that takes the value of one if the individual is a slave or an emancipated slave.
4. Black: This is a dummy variable that takes the value of one if the individual is Sudanese, Nubian, or Abyssinian.
5. Foreigner: This is a dummy variable that takes the value of one if the individual is recorded as “Outside government’s control” or is of “Protégé” status.
6. Migrant: This is a dummy variable that takes the value of one if the individual is recorded as born outside the province of residence.

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Table (B.1)

DIMENSIONS OF HISCLASS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Manual/ Non-manual | Skill | Supervision | Sector | Class labels | HISCLASS |
| Non-manual | Higher skilled | Yes | Other | Higher managers | 12 |
|  |  |  | Primary |  |  |
|  |  | No | Other | Higher professionals | 11 |
|  |  |  | Primary |  |  |
|  | Medium skilled | Yes | Other | Lower managers | 10 |
|  |  |  | Primary |  |  |
|  |  | No | Other | Lower professionals, clerical and sales personnel | 9 |
|  |  |  | Primary |  |  |
|  | Lower skilled | Yes | Other |  |  |
|  |  |  | Primary |  |  |
|  |  | No | Other | Lower clerical and sales personnel | 8 |
|  |  |  | Primary |  |  |
|  | Unskilled | Yes | Other |  |  |
|  |  |  | Primary |  |  |
|  |  | No | Other | Unskilled non-manual workers | 7 |
|  |  |  | Primary |  |  |
| Manual | Higher skilled | Yes | Other |  |  |
|  |  |  | Primary |  |  |
|  |  | No | Other |  |  |
|  |  |  | Primary |  |  |
|  | Medium skilled | Yes | Other | Foremen | 7 |
|  |  |  | Primary |  |  |
|  |  | No | Other | Medium-skilled workers | 6 |
|  |  |  | Primary | Farmers and fishermen | 5 |
|  | Lower skilled | Yes | Other |  |  |
|  |  |  | Primary |  |  |
|  |  | No | Other | Lower-skilled workers | 4 |
|  |  |  | Primary | Lower-skilled farm workers | 3 |
|  | Unskilled | Yes | Other |  |  |
|  |  |  | Primary |  |  |
|  |  | No | Other | Unskilled workers | 2 |
|  |  |  | Primary | Unskilled farm workers | 1 |

*Source*: van Leeuwen and Maas (2005). I made two modifications on their scheme. First, I added the category “unskilled non-manual workers” with the corresponding value “7” which is the same as that of “foremen.” Second, I reversed the values of the HISCLASS index, when constructing the SSI, so that higher values indicate higher social status.

Table (B.2)

OCCUPATIONAL TITLES IN THE EGYPTIAN CENSUS RECORDS THAT DO NOT EXIST IN HISCO SCHEME AND THEIR ASSIGNED HISCO CODES AND HISCLASS VALUES

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Occupational title and description | Definitional notes | HISCLASS | Source |
| -11 | Student or apprentice |  | Out of labor force |  |
| -10 | Student in a public or military school |  | Out of labor force |  |
| -8 | Child |  | Out of labor force |  |
| -6 | Student in Al-Azhar or other higher education religious institute (*mugawir*) |  | Out of labor force |  |
| -5 | Unemployed; without occupation |  | Out of labor force |  |
| -2 | Student in a religious elementary school (*kuttab*) |  | Out of labor force |  |
| -1 | Retired |  | Out of labor force |  |
| 12510 | Legal representative (*Wakeel*) |  | 4 |  |
| 12610 | Petition Writer (*'Ardh'algi*) |  | 6 |  |
| 13600 | *Fiqi* (*Kuttab* teacher and/or general religious worker) |  | 6 |  |
| 13800 | Higher Religious Institutes Teachers |  | 2 |  |
| 17155 | Singers of poems praising the Prophet |  | 11 |  |
| 21250 | *Waqf* manager |  | 3 |  |
| 31010 | Governmental scribe |  | 4 |  |
| 33115 | Banker |  | 4 |  |
| 36050 | Ticket conductor on trains and trams (*kumsari*) |  | 5 |  |
| 39910 | Private scribe |  | 4 |  |
| 49040 | Traders in slaves (*galslab* and *yasirji*) |  | 5 |  |
| 49050 | Broker (*simsar*) |  | 5 |  |
| 53260 | Coffee and tea waiter (*qahwaji*) | Serves tea and coffee in an oriental coffeeshop | 9 |  |
| 54070 | Slave |  | 11 |  |
| 54075 | Eunuch; Head of female slaves |  | 11 |  |
| 54080 | Emancipated slave |  | 11 |  |
| 55250 | Water tanks filler in public buildings (*malla’*) |  | 9 |  |
| 58410 | Headmen (*sheikhs*) of villages and urban quarters |  | 3 |  |
| 59300 | General-purpose assistant or servant (*khaddam*) | May serve in domestic households or in businesses or in public establishments. Chosen if product or industry cannot be inferred. | 5 |  |
| 59400 | *Shader* makers and organizers (*shawadri*) |  | 9 |  |
| 59500 | Shoe Polishers (*bouyaji*) |  | 9 |  |
| 59910 | Water porters (*saqqa*) |  | 9 |  |
| 62130 | Farm Slaves |  | 12 |  |
| 65000 | Nomads, Bedouins, dwellers (*‘orbaan*) |  | 12 |  |
| 94400 | Weighters and measurers, specialization unknown |  | 7 |  |
| 95980 | Railways construction workers |  | 11 |  |
| 99940 | Beggar |  | 11 |  |
| 99950 | Assistant, unspecified manual work (*Mosa'ed*) | Chosen if product or industry cannot be inferred. | 11 |  |
| 99960 | Assistant, unspecified non-manual work (*Mo'awen*) | Choose if product or industry cannot be inferred | 5 |  |
| 99970 | Employee, unspecified (*Mostakhdim*) |  | 5 |  |
| 99980 | Laborer or manual worker (*Shaghaal*) |  | 11 |  |

*Note*: I reversed the HISCLASS values when constructing the SSI.

*Source*: See the text.

1. I am particularly indebted to Dr. Emad Hilal at the National Archives of Egypt (NAE) for his help in this respect. [↑](#footnote-ref-1)
2. *StateInd* is independent from the *Social Status Index* (SSI). The criteria for the SSI, including primary sector vs. non-primary, are inferred from the occupational title *only*. Information on work establishment that is used to construct the state industrialization index is not used in constructing the SSI. Thus, a livestock worker in a textiles manufactory is given the same SSI value as a livestock worker on a farm, although the former is working in the state projects while the latter is in the traditional sector. [↑](#footnote-ref-2)