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Estimating the sectoral shares of the labor force in Egypt, 1897–2017, with special focus on female labor

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INTRODUCTION

In published studies on the economic history of nineteenth- and twentieth-century Egypt, attention has been paid primarily to the topics of industrialization. In the inter-war era, for example, focus was on the relationships between the rise of industries and the state's protectionism, and at the time of Nasser on issues of public ownership in the modern sector, massive controls and import substitution were predominant. In more recent years since 1980, the attention has shifted on to topics such as liberalization and globalization have come to the fore (Hansen 1992; Issawi 1954, 1966, 1980; Mabro 1974; Mabro and

Radwan 1976; Mead 1967; Owen and Pamuk 1998). However, surprisingly few attempts have been made to estimate the size of the labor force and its distribution between sectors and sub-sectors as well as their changes over time (except perhaps for Saleh's working paper 2015). Also noticeable from those works on women is the lack of due attention to data problems when using government statistics on women. The problems are generally worse for females in many countries but in Egypt since the end of the nineteenth century, as will be discussed later, the quality of their enumeration has been surprisingly poor for a prolonged period.

There are two sources from which the sectoral shares of the labor force may be calculated: Population Censuses and Labor Force Surveys (LFSs hereafter). The first modern Egyptian census of population was conducted in 1897. Up to the latest census of 2017, the Egyptian censuses (the decennial published census reports of 1897, 1907, 1917, 1927, 1937, 1947, 1960, 1976, 1986, 1996, 2006, and 2017) provide us with rich information, not just about population but occupational distribution by sector and sub-sector as well[1]. This long-run series is a rare statistical source available outside the European countries, documenting empirical facts about male and female labor force participation from 1897 to 2017, the latest census records on occupation. The other type of information was taken as a national LFS for the first time in 1957, one year after the Nasser's Revolution[2]. Since then, it has been conducted every year, serving as an official database for national economic planning.

Despite the wealth of data available, the use of these two types of data as sources

[1] The latest census is that of 2017. However, the sections related to employment in that census are not published yet.

[2] The first Labor Force Sample Survey was conducted in November 1959. See United States Department of Labor 1964: 103; Shafei 1960.

for the long-term evaluation of sectoral changes in the labor force has remained challenging. First, the national LFSs cover only after 1957. Second, for both censuses and LFSs, there is an inherent problem of frequent and sometimes abrupt changes in the ways in which occupations were enumerated. This is particularly so for women: while the majority of them are mostly engaged in "home duties", there are grey zones between those housekeeping types of tasks and the waged or money-earning forms of employment.

The question of underreporting of females in the labor force has been repeatedly raised by scholars and experts (Wells 1910: 579; Issawi 1947: 83; Nassef 1970: 173; Tucker 1985: 90; Hansen 1991: 41; Saunders and Mehenna 1986: 112; Beinin 2010: 68-69; Hammad 2016: 86; Chalcraft 2004)[3]. The ways in which female domestic works were counted varied census by census and were ad hoc depending on the census concerned, making the tracking of female labor force participation difficult.

Several efforts were made to estimate women's participation by changing ways in which their domestic works were reported in the censuses and LFSs. In the early 1980s Anker (1983) raised the need to improve the contemporary definitions of, and data collection methods for measuring women's work. Thus, the Egyptian Labor Force Sample Survey made a conscious effort to improve reporting of women in the labor force, by specifically training interviewers to be aware of unpaid family labor, particularly labor on family farms (Anker and Anker 1989). As a result of these efforts made at that time, the labor force participation rate for women reported in the official LFSs jumped from 5 or 6

[3] As early as 1910, in a paragraph explaining the increase of textile workers during the census years of 1897 and 1907, Sidney Wells, who was general director of agricultural administration and technical education, noted: "Il est plus sage de ne tenir compte que des hommes seulement en raison du manque de precision dans la répartition des femmes d' après les professions, fournie par le recensement de 1897" (Wells 1910: 579).

percent to 13 percent in 1983 (Anker 1983; Langsten and Salme 2010: 5-6). Nonetheless, the contemporaries' judgement was that "further improvement in data collection [was] both possible and necessary" (Anker and Anker 1989: 515).

This paper aims to address these issues of the undercounting of female employment and presents a consistently constructed and sectorally distributed series of estimates for both men and women since 1897, by using the population censuses and the LFSs of Egypt. This enables us to track labor force participation patterns for both men and women in relation to the structural change in the Egyptian economy from the end of the nineteenth century onwards. Given the commonly accepted view that Egypt's macro-economy entered a new period in the early twentieth century, followed by a state-led phase of industrialization and then transformed by the Sadat administration's "open door" policy in the 1970s,[4] the new estimates allow us to see how the sectoral change in the labor force took place in relation to the macro-economic transformations, and to ask whether those phase-specific changes eventually altered the place of Egyptian women in the contemporaneous labor economy, especially in the post-1970 era.

[4] See Issawi (1961), according to which Egypt entered the phase of an export-oriented economy that lasted until the 1930's. During this period export grew considerably, but this did not lead to a parallel growth in other sectors as they failed to attract enough investment. Surely foreign capital was not reinvested in Egypt. Radwan (1974: 217-19), moreover, distinguishes three phases of industrial development: (1) from the early 1890s to the late 1920s when export-oriented industrialization proceeded, generating small enterprises in wide-ranging industries from the processing of export goods to the making of consumer goods; (2) from 1930 to the early 1950s, characterized by the emergence of large enterprises, the import substitution mainly for consumer non-durables, and the appearance of new products ranging from synthetic fibers to the building materials partly in response to the pressures from urbanization and population growth; and (3) from the mid-1950s to the end of the 1960s with increased government intervention under a planned economy regime.

I. A LITERATURE REVIEW

Against the backdrop of a stereotyped view that the Egyptian women did not work, archivally-documented research in gender history of Egyptian labor began to appear in the late 1970s. Earlier works demonstrated that from the nineteenth to the early twentieth century women's contribution was non-negligible in various occupations. For instance, it is documented that in the nineteenth century there were diverse ways in which female workers were involved in productive works, demonstrating that they generally worked not only in traditional agriculture and the making and selling of processed food and other agricultural products, but were also mobilized in irrigation construction and textile industries especially in Muhammad Ali's statist industrialization phase from the 1820s to the 1850s (Tucker 1976: 7-8).

According to Tucker (1985), women were even recruited for corvée labor. At the end of the nineteenth century when the burden of corvée labor was reduced, women and children were exempted from that obligation but their labor was mobilized by the government whenever there was special need[5]. Women were thus viewed as a pool of surplus labor in agriculture to be utilized on the family plot as well as capitalist farms for cotton production in the nineteenth century (Tucker 1985: 40-42). Tucker argued that the gender division of labor grew pronounced as the capitalist land estate came to dominate Egyptian agriculture. In normal times, women and men performed agricultural task along the gender line of labor division. Anthropological works published in the 1980s help us delineate the pattern of the gender division of labor in Egyptian agriculture at the end of

[5] In 1909, for example, when the cotton worm threatened a large area under cultivation, women and children were mobilized to pick the contaminated leaves (Tucker 1985: 42).

nineteenth century. According to Lynch and Fahmy (1983) who documented the gender division of labor in Kerdassa village, men were responsible mostly for planting, hoeing, transplanting, weeding, and ploughing crops while women were more involved in planting, harvesting and helping men with hoeing and weeding (Lynch and Fahmy 1984: 17). Saunders and Mehenna (1986) reported that many women also worked in animal husbandry, processing dairy products, and raising poultry based on their fieldwork in 1962 and 1978 (Saunders and Mehenna 1986: 109)[6]. In time of labor shortage, however, women assumed the tasks reserved for men. With the growing domination of land estate agriculture, the gender division of labor within family agriculture was transferred to the division between capitalist and family agriculture: it was men who worked as service tenants or waged workers, while women tended to remain on the family farm (Tucker 1985: 42-43).

Tucker also pointed out that Egyptian women's participation in paid work grew along the gendered line of labor division. Unlike Japanese or European textile industries in the nineteenth and the early twentieth centuries who relied predominantly on the female labor force, textile factory workers in Egypt were mainly male, recruited from peasant, artisanal, and of European background in case of skilled laborers (Tucker 1985: 79)[7]. Except for the Tarbush factory which employed exclusively women and girls, mechanized

[6] "Men market buffalo, cows, goats, donkeys and sheep which women have raised, while women sell chickens, fowl, and eggs. Either men or women may shear sheep and sell wool, but women clean (card) wool and spin it, and may also sell it". (Lynch and Fahmy 1984: 17).

[7] Female workers constituted a significant presence and a majority in the textile workforce in many countries. Notable exceptions are textile mills in the nineteenth century Mexico, India until the 1920s (Hunter and Macnaughtan 2010: 705). Egypt and Ottoman Empire were not listed as exceptions, nor as countries with significant female presence, although there were chapters on Egypt (Beinin 2010) and Ottoman Empire (Quatert 2010).

factories recruited male workers (Tucker 1985: 89)[8]. Male workers were also recruited to work in the cotton ginning factories that grew in numbers to export ginned and pressed cotton mainly to England (Beinin 2010: 180; Owen 1969: 295). In these cotton ginning factories, women and children sorted the incoming cotton while men operated the ginning machines.

Women continued to shoulder the tasks that were thought to be theirs in home-based industries (carding and spinning), while new mechanized job were given to male workers (Tucker 1985: 84-91)[9]. Thus, as the industry became mechanized, women workers were replaced by men who were trained for jobs which utilized new skills. It is argued that this marginalization of female labor was not attributable to cultural values, but brought by colonialization: "Anglo-Egyptian officials tended to impose their version of the family economy, man as wage-earner and woman as housekeeper, on the Egyptian reality" (Tucker 1985: 90). Thus, in a process somewhat different from that of early industrialization in Europe, argued Tucker, that the advantages of utilizing cheap female

[8] Tarbush factory in Fuwwah is a unique case where most of the labor was performed by women who carded and spun the wool which was then noted into tarbush by young girls (Tucker 1985: 87). Beinin (2010: 179) pointed out that the dominance of women in the tarbush factory maybe due to this being a new industry in Egypt so that it did not violate the established gender division of labor.

[9] See also an interesting remark made by Fahmy (1954) in relation to how women were involved in the industrial labor in the industrialization in the early nineteenth century along gender relation in Egypt: "Le gouvernement égyptien a eu recours à la main-d'oeuvre féminine, dans l'industrie de la filature du lin et du coton la sériciculture et le tissage de la soie, ainsi que pour la fabrication des fez à l'usine de Foueh. Le gouvernement n'a pas voulu les faire travailler dans les fabriques, mais il leur a permis de travailler chez elles selon les traditions du pays". He interestingly contrasted this with the European pattern of female labor, saying： "Dans la même période en Europe, les femmes qui étaient employées dans les différentes industries étaient très exploitées et elles travaillai'ent dans de mauvaises conditions sanitaires. Elles se plaignaient de la longue durée des heures de travail et leurs salaires étaieAt très bas, .contrairement à la femme égyptienne qui était bien traitée au double point de vue social et économique (Fahmy : 93-94)

labor in nascent industries were outweighed by the ready supply of abundant male workers (Tucker 1976: 8)[10].

Gender studies have made it clear, however, that women were not moved out of the labor force but became "invisible" because of a male bias inherent in conceptual and statistical practices of the day (Langsten and Salem 2008: 283). Many anthropological studies based on the field work revealed that women's work was socially devalued unless women held skilled or formal jobs; women's productive activities in agriculture, crafts, and services are often performed as part of a family enterprise (Lobban 1998; Lynch and Fahmy 1984; Saunders and Mehenna 1986).

As mentioned earlier, the labor force surveys taken after the 1980s use improved methodology to measure women's work: from 1998 on, the Economic Research Forum in Cairo, conducting Egypt's Labor Market Survey, began to take the economic activities for household consumption (Krafft and Assaad eds. 2022)[11]. As to the period before 1980, on the other hand, estimates concerning the female labor force have not been updated yet. Women in the past remained invisible in statistics, because they worked only at home or because they did not report themselves as workers. There are much more to do to quantitatively evaluate the contribution of female labor in the process of industrialization.

Articles published in *l'Egypte Contemporaine*, an early twentieth-century

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[10] According to Tucker (1976), it is thought that the pattern of Egyptian economic history operated to keep women out of the labor force in a particularly forceful manner. First, the availability of males for agricultural wage-labor distanced women from commercial agriculture and thus from the wage-labor system in general. Secondly, after the early decline of home industry displaced women workers were not able to get involved in the transition to the factory system that finally took root in the 1950s (Tucker 1976: 8).

[11] "The extended labor force" definition of economic activity includes those who were involved in the production or processing of primary commodities for own household consumption, sometimes referred to as subsistence work (Krafft, Assaad and Keo 2023: 26).

predominantly French-language journal, provide rich information about various craft industries located in Lower and Upper Egypt at that time, such as textiles, leather, pottery, basket-making, mats, marquetry, paper, and furniture.[12] Most of them are thought to have declined by the beginning of the twentieth century. Cotton spinning and weaving did give way to the European imports, but the making of cotton, wool, linen, and silk products (such as silk veils) and basket weaving continued to be produced for local markets[13] (Chalcraft 2004: 94). Some of these craft industries seem to have increased over the period from c.1890 to the 1920s, especially in the provincial areas outside Cairo and Alexandria (Wells 2010; Maunier 1912; Issawi 1982: 152, Beinin 2010; Chalcraft 2004)[14]. Rural clothing and dress making (tailoring, seamstressing, shoemaking, and shirt-making) also continued to hire a substantial number of female workers throughout the period from the nineteenth to the early twentieth century. Rural women played a crucial role to keep these craft industries going. Interaction was at work in such a way that one historian called all these industries "feminized and ruralized" textile production (Beinin 2010: 181).

Those articles and reports in the early twentieth century give us an idea about how women participated in the small textile industries: many craft industries were home-based and hence located in the villages in contrast to the large-scale textile factories

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[12] Maunier (1912), writing about l'Exposition des industries égyptiennes, wrote about the diverse industries in Egypt. See also Wells (2010, 2011a) for the survey done in 2010.

[13] Chalcraft 2004:174: Whereas numbers employed as a proportion of the overall population had probably only held their own in the 1860s and 1870s, in the 1890s and 1900s it is possible that employment in small-scale crafts actually increased as a proportion of the overall workforce with economic expansion and differentiation, the beginnings of overall urbanization, and deepening commercialization.

[14] Surveys and reports published at the time acknowledged the variety of textile crafts. Survey undertaken by Commission du commerce et de l'industrie (Gouvernement Égyptien, 1922: 110), Issawi (1982: 152) and many other reports and research reported the increase of workers in craft industries from 1897 to 1907, 1917. See also Wells (1910; 1911a; 1911b).

outside Cairo and Alexandria hiring textile workers of both men and women from the villages[15]. Usually, the latter were run only by men and boys, and works at home were done by men with their wives and children[16]. "Women cleaned and spun cotton and wool and dyed and wound yarn for the handloom factories, but performed these tasks at home rather than inside the factories" (Hammad 2016: 83).

Recent studies in social history, which have started to utilize local historical documents, reveal that while they did not appear in statistics, women did play an important role not only in agriculture, but also in factories, especially in textiles the largest labor absorbing sector of the day. According to Hammad's study on female labor in Mahalla Kubra, the largest city of the textile center in Egypt at the time, many large-scale factories were established by the Bank Misr[17] in the 1920s and 1930s; her account of a

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[15] Shearer (1910), director of Assiout Model Workshop, noted that weaving of cotton in all the workshops were performed by men and boys.

[16] Chenouda (1911), who was a director of technical school at Abu Tig in Assyut in Upper Egypt noted that weaving of cotton, silk, wool, and sometime linen imported from Europe were performed at home: "in all the villages, there is 2 to 10 men with their wives and some of their children in charge of weaving wools and sometimes cotton and linen" (Chenouda 1910: 189). Report on the textile industry in the provinces of Qalyubiya, Fayoum, and Daqhaliya by Wilson published in an article by Wells (1911a) noted that "weaving of wool, cotton, linen were performed by old men and women" in Qalyubiya (Wells 1911a: 55), weaving of wool, cotton, and indigenous silk is done by men and women who were too old to do other tasks" (Wells 1911a: 67). Wells also explained the procedure of weaving start by cleaning of silk done by women, then by machine by men (Wells 1911a: 66-67). Gordon (1910) who reported the textile industry in Beni Adi, Beni Suef and Abou Kerkas in Upper Egypt noted that in Abou Kerkas has at least 700 fellahs out of 7000 population producing threads, and "their wives and children help them in this task" (Wells 1911a: 72).

[17] Bank Misr, founded in 1920 was the first bank financed and managed by the Egyptians. In the 1920s the bank launched out into manufacturing: In 1924 Misr Ginning Company created the first ginning factory in Maghagha in Minya governorate. After having been ginned, the cotton was transported down the Nile by the Misr Transport and Navigation Co. to the Mina Basal Bourse where it was sold for its owners and shipped abroad by the Misr Cotton Export Co. The Misr Insurance Co. served to ensure the cotton which was shipped by Misr Transport and Misr Cotton Export (Davis 1977: 296): a large cotton textile plant in

cotton town in the Nile Delta suggests that there was a substantial underreporting of female workers due to the inaccurate reporting by the companies to avoid legal obligations or because women themselves who were uneducated and of rural origin tended to report themselves not as worker because of social stigmatization (Hammad 2016: 86-87)[18]. Female workers were not well documented in the official statistics either, because they worked mostly in small establishments, or hired, not by the parent company directly, but by cotton ginning workshops seasonally (Hammad 2016: 85), or because they worked to help the males in their family-operated small textile factories, mostly in charge of weaving, dying, wrapping, and pressing (Hammad 2016: 83).

Given the statistically oriented aim of this paper, this section's literature survey may be summarized in the following ways. First, the course of Egypt's industrialization had an unmistakable impact on women's position in the labor force. While the Egyptian textile sector had generally been dominated by male labor, it was the fast-growing cotton trade that expanded women's employment opportunities significantly from the late nineteenth to the early twentieth century.[19] Second, however, the female presence was

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Mahalla in 1927, Misr Spinning and Weaving Company which undertook entire process of cotton spinning, weaving and dying process, and in 1938, the Misr Fine Spinning and Weaving Co., and its sister firm, Beida Dyers in Kafr Dawwar, and other industrial enterprises were established.

[18] Women themselves did not think themselves as working women Usually, the women were documented by male bureaucrats according to her marital status (Hammad 2016: 87). Beinin (2001: 68-69) suggested that state authorities undercounted female workers because of ambivalence toward women working in public sphere, or because they did not know how to categorize female industrial workers.

[19] With the four sub-sectors (ginning, pressing, spinning and weaving) put together, the total number of women employed in the cotton trade at large increased at 4 percent per annum over the 1917-1947 period. Considering the comparable rate of growth in female working-age population being 1.5 percent, it was a strong growth. However, this does not imply that the share of female workers enlarged in the sectoral labor force: the corresponding number of male workers grew at an even higher rate of 7 percent. Data for these calculations are all after adjustment; for ways in which adjustments were made to the original census

often invisible if working at home where their productive contribution was described only as "helping the husband (or household)" without receiving any monetary allowances. Such non-waged works were not confined in agriculture but may well have been found in manufacturing, commerce and services as well. Nor can we assume that they became more or less visible as time passed on. Finally, all this consideration for the non-waged does not guarantee that women in formal or waged jobs were always recorded. Depending on the guidelines adopted by the census people, they too may have been omitted from the occupied population. These cautions point to what kind of estimation tasks we have to do. Before taking on such tasks, however, we would like to turn to a critical survey of the existing time-series data.

II. CONSTRUCTING THE TIME-SERIES

Presenting how men's and women's labor force participation evolved with the changing occupational structure over the entire period from 1897 to 2017 may sound a straightforward issue. However, the arrangement of data from the published census reports does not produce time-series data ready for researchers' use. There are several issues, both big and small, which we have to consider in order to make the time-series usable.

Female non-waged work

One nagging problem we must address first is a difficulty specific to female labor: home-based works in which women were engaged are likely to have been omitted

tabulations, see Section V below.

from most, if not all, census surveys. This is especially so for the primary sector. In the 1897 census, the total number of female workers in agriculture were reported to be virtually zero.[20] In other censuses, the numbers varied count by count: it was 104,000 in 1907, 1,023,000 in 1917, and 524,000 in 1927. Similarly violent changes also took place between 1937 and 1960. Fortunately, there are some census years in which those domestic works were enumerated. For instance, the 1917 census reported "Agricultural laborers on family land (inferred from schedule)" in the primary sector. This category designates females and males over eight years old not attending any school who belonged to farmers' households owing ten feddans and under. The census gave a total of 1.1 million women classified as agricultural workers 'by inference'. They did not give this as their occupation, but given the farm size mentioned in the report (Population Census 1937, III, p. iii), it is probably safe to assume that they were engaged in agricultural work. These are "inferred" by the census authorities as economically active unless they reported themselves to be inactive (Nassef 1970: 184). In the censuses after 1917, females' "inferred" labor was excluded while males' "inferred" labor was not[21]. Domestic work is also reported in the tertiary sector. This category is found in all the census years for both women and men. In some census years, however, it is reported only for women. For instance, in 1907, there were 2.27 million cases of "females engaged in home duties". The 1917 census also reported that there were "married women, young girls, etc., engaged in domestic works

[20] One exception was a tiny group of female workers who were engaged in 'fours à poulet', i.e. poultry farm. They totaled to 113. For this poultry farm, see Bay, 'Les Fours à poulets'.

[21] It is hard to get to know whether male agricultural labor included "inferred" labor in the census in 1927 and after, because the classification of labor was not the same. However, it is clear from the comparisons of the differences in the tables of occupations for 1917 with those for 1927 since the 1927 publication includes the retabulated data of 1917. See Table XVI Industries of governorate for 1917 and 1927 in the 1927 Census.

inferred", who added up to 1.92 million. In 1947, the category of "housekeeping, governess" appeared in the section of domestic work ("persons of service"), numbering close to 2.5 million. All these suggest that female labor in unpaid domestic sphere was numerically large, but that ways in which the category was defined were so *ad hoc* that it cannot be applicable to other census years. For this reason, in our study, we have to exclude these domestic work categories to make the temporal comparison consistent.

Another field where women are likely to be underreported is manufacturing, notably in the textile and clothing industries. It would be a reasonable supposition that the underreporting was serious when textiles were not mechanized yet, but there is virtually no clue for us to make an estimation. The only amendment we will make is for 1897 and 1907, because they were the two earliest census years in which textile mechanization was not yet under way, and also because the numbers of women working in the two industries of those census years, as we will see later, seem to have just too small in comparison with the corresponding number in 1917.

The 1947 census was a unique case in which detailed information about employment statuses which was cross-tabulated with occupational sub-sectors (Table 1). It contained various categories of female domestic work, such as "wives or relatives doing domestic duties", "relatives helping their chief in work", "wives helping their husband in work". For consistency we limit our definition of female domestic workers to the latter three categories across the censuses of the entire period. Their proportion in each industry derived, for example, from the 1947 census, can thus serve as a clue to estimate the numbers of female domestic workers for census years before and after 1947.

For the post-1947 period, LFS results are available. It seems, however, that earlier LFS data are not quite ready for use. The levels of female labor force participation

rates for females aged 12 and above, calculated from the published LFSs, remained low during the 25-year period from 1957 to 1982-8 percent at the start and 7.6 percent at the end; it was from the very end of the 1980s when the calculated participation rates became double-digit in a stable manner.[22] Since a detailed cross-tabulation exercise is not possible from the published census reports in the corresponding decades, what we can do is to link the information about the non-waged available from the 1947 Census tabulations to the one derived from the 1990 LFS in order to make adjustments for three occupational groups where the female non-waged were numerous, i.e. the primary sector, manufacturing, and commerce and services, for the census years in between.

Changing concepts of the labor force

Beside the problems specific to female labor, there are five more issues that need to be considered. First, the concept and classification of "labor" changed over time. In the censuses from 1897 to 1947, both males and females who were considered economically unproductive, such as students, retirees, and passengers, were placed in a group "with" occupation (Table 2). The censuses after 1960, on the other hand, distinguished economically active and inactive populations in a more rigorous manner, as a result of which new categories of "housewife" and "unemployed" were created (Tables 3 and 4).

Second, the working age population changed from one census to another. The censuses before 1960 included those aged 5 years or 10 years and above. The censuses

[22] CAPMAS, Annual Bulletin of Labor Force, 1957-2023 (in Arabic). The World Bank's World Development Indicators (https://databank.worldbank.org/, accessed October 13 2024) confirm that there was a jump between the 1982 and the 1983 percentages. Given the latter series' coverage of the 1980s being better than the former, however, it is probably safe to say that it was from 1990 when the female participation rates in official statistics became truly stable.

after 1960, on the other hand, defined the labor force as aged 15 or older, thus excluding child labor. As to the LFSs, on the other hand, the working age has been set as above 12 from the very beginning. Our definition of the labor force population is those aged 15 and above. We have applied this yardstick to the entire period by adjusting the age limit wherever it was set at 5, 6, 10 and 12, on the basis of information derived from population tables in the censuses.

Third, in the census reports occupations were aggregated into categories that varied from one census to another[23]. The first-digit industrial classifications used in the earlier censuses were easily modified to match the International Standard Classification of Occupations (ISCO)[24] used in the censuses and LFSs of the post-1947 period, except for gas and electricity that were included in the manufacturing prior to the 1960 census. However, second-digit industrial classifications varied considerably - especially in the censuses before 1960. In such cases we have made adjustments by merging categories at the lowest level to establish the time-series comparable at the second-digit level[25].

Fourth, the unemployed listed in the reports are sectorally unallocated. This is especially so in the censuses from the 1960 one, in which the independent category of the "unemployed" was created among the labor force categories. In our tables, they were allocated to the secondary and tertiary sectors on the assumption that unemployment took place almost always in these two sectors while agriculture's function was to keep and absorb surplus labor. The ratio used for this allocation is calculated from that of those

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[23] Army forces were classified in the tertiary sector in the censuses before 1960. After 1960, the army forces were excluded or classified according to the occupation prior to military service (Nassef 1970: 190)

[24] See ISCO classification in https://www.ilo.org/public/english/bureau/stat/isco/

[25] The occupations in the census reports are aggregated at three levels: lowest, mid, and most aggregated, except for the census of 1897 that has the lowest and the most aggregated level only.

who were in employment. In the censuses prior to the 1960 Census, on the other hand, the remarkably small size of the unemployed category while sizable categories for the "ill-defined" and "general designation without definite occupation" especially in 1917 and 1947 suggest that those who are considered "unemployed" in our terminology were divided into these two categories. They are thus equally allocated to the secondary and tertiary sectors. For 1917, however, there were cases categorized as "ill-defined" and "general designation without definite occupation". They are allocated to the secondary, tertiary and primary sectors. This decision is made on the assumption that "ill-defined" jobs such as day laborers may have taken place in agriculture, construction, and miscellaneous service worker as well.

Finally, as to the category of housewives we propose, in difference to the category of the unemployed, to leave this description as it is, only when they were not engaged in any domestic production. In other words, while most of those "housewives" are classified as out of employment, some of those who are considered performing income-producing domestic works are re-classified back into the labor force. This re-classification is made only for the primary sector, manufacturing, and commerce and services of the 1960, 1966, 1976 and 1986 census years, as will be discussed in Section III below.

Labor force participation rates

In order to ensure internal consistency across the censuses, the labor force participation rate is calculated as the number of individuals with stated occupations divided by the working-age population, i.e. aged 15 and above, for both males and females.

Have a look at Figure 1 first, which displays the *un*adjusted time-series of male and female labor force participation rates from 1897 to 2017. Figure 1 shows, first, the significant overestimations of female labor force participation in 1907, 1917 and 1947, while the censuses of 1897, 1927 and 1937, and of 1960-1986 appear to have underestimated the female labor force; and second, that from 1986 to 1996 there took place a 4.9 percentage-point jump, suggesting that the 1996-2017 levels were more or less accurate. As mentioned earlier in this section, the 1897 census did not count female labor in agriculture, which resulted in a significant underestimation of the female labor force participation rate. The male labor force participation rate, on the other hand, appears to be more or less consistent for most of the benchmark years[26].

III. ESTIMATING THE SECTORAL SHARES IN THE FEMALE LABOR FORCE, 1897-2017

Before making adjustments for the size and sectoral shares of the female labor force in the periods when the level of women's labor force participation seems to have been problematic, it is worth looking at what the unadjusted census data would provide us with. Figure 2 displays the sectoral shares in the female labor force derived directly from the census reports. This shows that the 1897 census gives an incredibly distorted picture because the numbers of females engaged in agriculture was zero, while the 1907 census overestimated the tertiary sector by including "Members of families (married women, etc.) engaged in domestic work" ("domestic" in this and other phrases should be understood as performing housekeeping tasks only). The 1917 census also overestimated

[26] The 1907 census was the only one which included nomads in agriculture (Nassef 1970: 9).

the agricultural labor force, as was pointed out in the previous section, because its size was “inferred from schedule”. The 1947 census, on the other hand, reported a high share of female agricultural labor by including "Domestic work in farmers' houses." Thus, after excluding these female domestic works in 1907, 1917 and 1947, the shares of female agricultural labor in 1897 and 1907 turn out to be unreasonably lower than those in other years of the pre-1947 period.[27]

As for manufacturing in 1897 and 1907, there seems to have been other factors accounting for female underestimation. This is especially the case with the textile trade which was the largest labor absorbing industry at that time. In 1897 and 1907, however, the number of female workers in clothing and textiles was believably low – 3,610 in 1897 and 15,182 in 1907 as compared with 47,438 in 1917. It is likely that the size of the female workforce in those two industries were substantially underreported in these first two census years.

As for the period of 1960, 1966, and 1976, on the face of it, the level of the female participation rates seems to be acceptable. However, a closer look at individual-year estimates reveals that there were somewhat more cases of under-enumeration of female employment than in 1947; and that it was not just for the primary sector but for manufacturing and for commerce and services as well. Cross-tabulations have revealed that for those post-1947 years under-enumeration was serious only for those in non-waged

[27] The category of those who were sectorally unallocated appeared in every female table of the census report. But the listing of those unemployed as separated from the sectorally unspecific was made only in 1907 and 1917, and then in the post-World War II period of 1960-2017. The number of females unemployed was only 3 in 1907 and 530 in 1917 while in 1960 the total (“those who are looking for work and have not previously joined a specific job”) became 12,454 which grew to 1,615,100 in 2017. For this unemployment issue, see Section V below.

categories, i.e. females on own account, wives helping their husband, and relatives helping their chief.

Based on the above observations as well as what the literature survey suggested (Section I), we make the following five-point adjustments to produce a time-series for women's labor force participation rates, 1897-2010, which are more reliable and hence comparable to men's time-series.

(1) For the period prior to 1947, the agricultural shares in 1897 and 1907 censuses are corrected by applying the sex ratio for agricultural labor of 1917 to the male agricultural labor force to estimate the female counterparts in these two years.

(2) Also for the pre-1947 period, dairying, which was women's important duty in "farmer's houses", is added by using the ratio of "dairying in farmer's house" reported in the 1937 census.

(3) For 1897 and 1907, as noted above, the shares of textiles and clothing were substantially understated. The numbers reported in the censuses are corrected by applying the sex ratio of the textile and clothing labor force in 1917 to the male labor forces in 1897 and 1907 respectively.

(4) As for the period of 1960, 1966, and 1976, such a detailed cross-tabulation cannot be possible for the census reports in the 1960s, 70s and 80s. Thus, we link the 1947 information about the non-waged to the one derived from the 1990 LFS, allowing us to make adjustments for the primary sector, manufacturing, and commerce and services in the three benchmark years in between. It is to smooth out smooth out changes in the census-to-census female non-waged by assuming that the two estimates derived from the 1947 and 1990 statistics are reliable, i.e. 390,823 and 1,528,761 in agriculture, 54,171 and 187,738 in manufacturing, and 69,256 and

369,155 in commerce and services. The procedure for this exercise is as follows: (i) calculating the ratio of non-waged female workers to the male counterparts for the category concerned in both 1947 and 1990; (ii) interpolating the ratios for 1960, 1966, 1976 and 1986 geometrically between the two endpoints at 1947 and 1990; (iii) multiplying each of the derived ratios to the male labor force figures for the corresponding occupational category (taken from the census report of the year concerned); (iv) calculating the difference between the number of the non-waged thus estimated and the one given in the census report as non-waged female helpers; and then (v) the number of females matching the above difference is taken out from the ”not working” category and transferred to each occupational group in the three sectors. Finally, (vi) in years when the Census Bureau listed some of those helping hands, the number of those listed is also deducted from the estimated sectoral total for the non-waged.

(5) As for the post-1996 period, the correction is made for the agricultural shares in 1996, 2006, and 2017 by using the LFS data for the corresponding years.

The final result of the above estimation procedures is set out in Appendix Table 1 with the male and female tables tabulated separately, both covering the entire period of 1897-2017. What this set of estimates tell us can be summarized in two forms: the labor force participation rates and the sectoral shares of the labor force. They are displayed in Figure 3 and Figure 4 respectively. Discussions based on the two figures will follow in the next section (note that given the correction methods adopted, the margins of error are not quite small for the three census years of 1897, 1907 and 1917, particularly in the female series).

IV. ECONOMIC DEVELOPMENT AND STRUCTURAL CHANGE

According to Figure 3, while the pattern of changes in the labor force participation for males presents an expected shape of convexity, the female curve is placed much lower and its shape is undoubtedly concave. The starting level of women's participation rate was at about 10 percent in both 1897 and 1907 while that of the trough in the 1960s was only a few percentage points lower than the early plateau; since then there was an upturn but the post-1966 ascendance was similarly gentle, although in 2017 it reached the level of 23 percent. Together with its lowness, this rather static nature of women's labor force participation behavior is one feature of modern Egypt's economic development process in the long run.

This does not imply that there took place no noticeable economic development, however. There was an identifiable tipping point. All the three sectoral share graphs in Figure 4 show, first, that after 1937 the share of the primary sector started to decline, allowing for the secondary and tertiary sectors to enlarge as economic development proceeded. According to Figure 4a (with both sexes combined), the decline was steady in the subsequent decades, reaching 22 percent in 2017. Second, this picture of occupational change seems consistent with an empirical generalization accepted widely in development economics, i.e. a temporal shift out of the primary sector into the secondary and, subsequently, into the tertiary sector. For the secondary sector, as pointed out above its percentage share progressed steadily from 1937 on and continued into the twenty-first century, overtaking the primary sector's share for the first time in 2017. Turning to the relationship between the secondary and the tertiary sector, however, there was no stylized

sequential shift from the former to the latter. Third, the level of services' share was from the very start higher than that of secondary-sector occupations.

Fourth, this finding implies that the supposed economy-wide shift to a service economy has not yet taken place, although if focused on women, the move was already started in the 1970s: the tertiary-sector share in the female labor force was 27 percent in 1976, which increased to 64 percent in 2017 (see Figure 4b). During this period, the structural change in the labor force became diversified along the gender line.

Fifth, turning to the earlier period of 1897-1937, there was no economy-wide take-off into the industrialization era. This finding is at odd with the commonly accepted narrative that Egypt's industrialization started at the turn of the century as the growth of manufacturing industries centered around cotton spinning and weaving activities. This spinning-centered group of industries included producers of various clothes who were placed in the down-stream of the commodity flow across the industries as well as workers in ginning mills in the up-stream of that flow. Of the secondary sector the numerically largest was clothing and textiles. Its share had been higher in the period from the end of the nineteenth and to the very early twentieth century, indicating that roots of the post-1937 rise in the secondary-sector share can be traced back to that period. However, two cautionary notes are in order. One is that the share of clothing and textiles in the secondary sector labor force (with both sexes combined) exhibited ups and downs during the 1897-1937 period: 22 percent in 1897, increasing to 27 percent in 1907, and then coming back to 22 percent in 1937. The other is a possibility that the levels and ways in which the share rose and declined were distinctly different between the male and female working populations. In fact, this is what Figures 4b and 4c suggest. According to the male graphs (Figures 4c), the proportion of men working in the secondary sector followed much the

same secondary-sector curve for both sexes combined (the levels of the male figures were higher, reaching 32 percent in 2017), whereas the corresponding female graphs (Figures 4b) indicate a radically different path for women. For them, initially, there was a decrease from 10 percent in 1897 to 5.5 percent in 1947; then came a sudden rise to 12 percent in 1960, peaking at 15.5 percent in 1976, after which there was a gradual decline to a below 10 percent level.[28] Within the secondary sector the clothing and textile industries were collectively the largest employer of both men and women. In the period from 1897 to 1960, between 17 percent and 27 percent of men in the secondary sector worked in this industrial group, while in women's case the range was much wider – there was an extraordinary rise from 8 percent in 1897 to 80 percent in 1927, followed by a substantial decline to 27 percent in 1960. It is certain, therefore, that beneath the static appearance of women's involvement in Egypt's economic development, there must have been some more stories we have to uncover.

Now take a look at Table 5, which shows the female percentage shares in the labor force as well as in the primary, secondary and tertiary sectors, together with the same shares in selected sub-sectors and industries with clothing and textiles listed as separate industries. The first point to be made is the lowness in the overall female share throughout the entire period of 1897-2017. Within the total labor force women' share did not reach the 20 percent level for most of the period until 1986. This is a little surprising since we made an effort to take women in unpaid jobs into the labor force as much as possible. From the end of the nineteenth century to the 1970s women represented only 14 to 17 percent of Egypt's working population, which was in sharp contrast with

[28] Caution must be made for the pre-1947 years, during which changes in the level were rather erratic. It is likely that they reflect estimation procedures we adopted for that earlier period.

neighboring countries such as Turkey and Italy where the levels were well above the 30 percent line.[29]

This does not imply that there was no industry or sub-sector in which women made an important contribution to productive activities. One salient case is clothing. When the country's textile-based industrialization took off, the clothing industry employed an unproportionally large number of female hands, pushing up the female percentage from 27 percent in 1897 to 55 percent in 1917. Since then, however, there took place a reduction in the total number of clothing workers due mainly to the relative shrinkage of the women's dress making industry within the secondary sector. In Table 5, what happened after 1986 cannot be traced. However, it is well-known that from 1990 onwards Egypt's private sector responded to the world's trade globalization, by expanding an export-oriented apparel industry. Its impact may be gauged by looking at ILO's database for 2022: Egyptian women's employment in clothing as a whole increased nearly ninefold between 1986 and 2022, although it should be remembered that it did not push up the total number of female workers in the secondary sector.[30] In textiles too, the female percentage had been low initially, but it jumped up to 26 percent in 1917, followed by a steady decline. However, in terms of the industry's share in the secondary sector total, it followed the contrasting pattern: 18 percent in 1897, then down to 10 percent in 1937, followed by an upturn to 18 percent in 1960. Considering the narrative that the early twentieth century saw the rise of factory-based production although it was never steady throughout the Nasser and post- Nasser phases, it seems certain that employment

[29] Based on workings for the INCHOS project: Kabadayi and Küçükbaşlar (forthcoming) on Turkey, and Daniele and Malanima (forthcoming) on Italy.

[30] ILO, ILOSTAT (https://ilostat.ilo.org/data/ accessed November 9, 2024).

creation made by the coming of textile factories in the early twentieth century was heavily biased towards male workers. Given the well-known fact that textile industries in developing countries employed a large number of female hands, this Egyptian pattern is unusual.

V. WOMEN IN THE ECONOMY: CHAGING AND UNCHANGING RELATIONSHIPS

The previous section has established, first, that over the 120 years since the end of the nineteenth century the level of Egyptian women's labor force participation rate was never high, and second, that the shape of their curve was U-shaped with the bottom year being 1966 while the female percentage share in the total labor force touched the bottom in the 1937-1966 period (see Figure 4b and Table 5 above). In other words, women's involvement in productive activities were on the decrease in the early period when the factory mode of manufacturing was first introduced into Egypt. Also revealed is that in clothing and textiles, with which the female contribution to industrialization was significant according to the historical experience in other countries, there was virtually no tendency for the Egyptian women's participation to increase with the coming of the new productive impetus. In textiles, the female share in the industry's labor force continued to decline from an early peak in 1917, while in clothing the initial growth in the female share was stronger as the share increased from 27 percent in 1897 to 55 percent in 1917, but there was a steady decline since then and in the 1947-1986 period the female share came down to a level of 16-19 percent, with which no one would characterize the industry as female-dominated (Table 5 above). From the 1940s onwards, however, there

took place some noticeable changes: a gradual decline in the primary-sector share in the labor force and the corresponding rise in the share of the non-primary sectors for both men and women (see Figures 5b and 5c above). In the male case, this took the form of industrialization, an expansion in the secondary share in the labor force, whereas in the female labor force, it was the service sector that enlarged the share greatly.

As for women, moreover, a significant transformation was taking place with respect to where to work and whether their labor was paid or unpaid. In 1947,[31] it is estimated that 514,000 women were at work without attracting investigators' attention in the other census years: a vast majority of them are believed to have worked in their household without receiving payment. Of the half-million, 391,000 (76 percent) were in the primary, 54,000 (11 percent) in the secondary, and 69,000 (13 percent) in the tertiary sector. Altogether they represented 55 percent of the total female labor force. As Table 6 shows, a majority of the non-waged worked as "helping hands". This percentage was particularly high, 70 percent, in agriculture, the largest sector of the day, than in manufacturing and services. While two-thirds of the non-waged in manufacturing were working in not well-defined ways, in two tertiary sections of commerce and personal services, the majority were "on own account", indicating that they were solo workers, not helping others in the household. Turning back to the helping hands in agriculture, it is interesting to note that they were not necessarily the wife of the family head: the number of wives helping their husband was, though slightly, exceeded by that of "relatives helping the chief", i.e. daughters, sisters and nieces helping the head of the farm household. Considering the finding that the 1940s was the period in which agriculture had just started

[31] The following account is based on the same source for Table 2 above. One important difference with that tabulation is that all the numbers quoted and calculations made in here are limited for females aged 15 and over.

releasing workers to non-agricultural pursuits, it may be that those female "relatives" were job-seeking rural women who were no longer able to find work in clothing, textiles and related trades, suggesting how the farm household functioned in absorbing unpaid female workers at the time when there was virtually no non-agricultural job opportunity left for them.

However, the number of women in non-agricultural paid employment did increase since 1947, which is reflected in an unmistakable rise in the combined share of the secondary and tertiary sectors in the female labor force: from 28 percent in 1947 to 72 percent in 2017, although from 1986 onwards there took place an unmistakable switch from manufacturing to services, especially to education and government services, as favored places of employment. However, a new problem emerged. According to Table 7 showing the numbers of unemployed men and women, which became available in the published Population Censuses and LFSs since 1960, as many as 1,615,000 (32 percent) out of 5,016,000, the total number of women in the non-primary sector labor force in 2017, were in search of employment: there was an eight-fold rise in this percentage since the 1960s when the rate of unemployment among women had been around 4 percent. On the other hand, the change in men's unemployment rate level between 1960-66 and 2017 was modest – from 2 to 10 percent. As a result, the gender gap widened greatly (see Figure 5). Table 8 includes another series of the unemployment rate calculated with a different definition that the unemployed were to be distributed into all the three sectors,[32] but even that series exhibited a similar trend of the widening female-male gap in the probability of

[32] In the official statistics, the numbers of the unemployed were not sectorally allocated. But it is our assumption that in post-World War II Egypt unemployment almost always took place in the non-agricultural labor market. This was the way in which the number of men and women unemployed were distributed into sectors in the process of estimating sectoral distribution of the labor force. See Section II, p.18 above.

losing one's job over this half-century period. Given the fact that in the past there were not an ample opportunity for women to find a job outside the household economy, the significance of the transformation from a shadowy world of unpaid, domestic work to a more open and formal arena of paid employment should not be underestimated. For women in other countries, the transformation was associated with economic and social changes such as a move away from agriculture as a source of employment, an increase in female literacy and an expansion of industrial, commercial and service-job opportunities available to women, but in Egypt, the end result of all these changes seems to have been not an entirely happy one. From the 1970s onwards, there was a staggering rise in the rate of unemployment among the job-seeking women. Certainly the male rate too was on the rise, as shown in Figure 6. But the same graph also indicates that while the female-male difference remained just at 4 percentage points in 1976 when the general level of unemployment started to rise, the gender gap widened markedly to 24 points in 2017. In difficult times it was women who were made redundant.

This interpretation reminds us of what happened in nascent industries of textiles from the end of the nineteenth to the early years of the twentieth century. What the employers found were two kinds of labor: cheap female hands and abundant male workers[33]. As the literature survey in Section I has suggested, the former group was outweighed by the ready supply of the latter. Furthermore, when new textile mills were built in the Nile Delta of the 1920s and 30s, moreover, it was male workers who became

[33] According to Hansen (1991), Egyptian agriculture suffered from both seasonal unemployment and labor shortage at harvest and other busy seasons. Seasonal unemployment remained substantial even after the closure of Aswan High Dam in 1964-65 that changed the seasonal pattern of cultivation. Little is known about unemployment problems before the 1950s. What we know is that urban unemployment, an offshoot of the oversupply of rural labor, was substantial during the Great Depression (Hansen, 1991: 27).

the core workforce. The building of the factory industry did create demands for female labor, especially for workers in ginning plants that supplied the material to the spinning mill for use, but they were employed not by the parent company but by ginning mills. Another factor that separated female labor from the male core workforce was that female workers were on a seasonal contract. Forces at work in the early period were not necessarily the supply price of labor between male and female labor: the asking price of the male worker was reasonably cheap in most cases. With the established notion of the family economy, the fact that male labor was cheap and abundant acted as a decisive factor. In the past too, it was women who were marginalized whenever the decision had to be made between male and female labor.

VI. CONCLUSION

This paper has attempted to estimate the Egyptian labor force from 1897 to 1917, by constructing a sectorally distributed series of estimates for men and women on the basis of information available from the published Population Censuses and LFSs.

There were considerable undercountings of females in agriculture and to a lesser extent in manufacturing and other non-agricultural sub-sectors as well. The most conspicuous are the 1897 and 1907 censuses, but even in the period after 1960 there still remained the underestimation of women's participation in the labor force. There were also overcountings of female workers for the agricultural and service sectors in some census years. The undercounting and sometimes the overcounting of females' participation in the labor force may well have reflected the concepts of "work" and "labor" held by the census officials as well as families surveyed by them at the time when the

census was taken. Female workers who worked at home or took an outside job temporarily or seasonally were, even when making a genuine contribution to the production of goods and services, not considered as workers and hence omitted from the Censuses and LFSs. To what extent did such female non-wage labor result in underreporting?

This question led to the development in this paper of a methodology for imputing work activities by women for whom no occupation or employment activity is reported, i.e. the use of the sex ratio. The assumption is that even if an occupation or employment was not reported, women did work as ”helping hands” in home-based production activities. Two types of sub-sectors are considered: agriculture and manufacturing, especially the textile division of industries (all textiles, clothing, and shoemaking). It was the largest labor absorbing industrial sector for women in the past. The inclusion of the unreported female workers into those industries enabled us to correct the under-reporting of female workers. With labor force statistics thus revised for both sexes (set out in Appendix tables), we are in a better position to delineate the trend in females' labor force participation, and hence, long-term patterns of change in the labor force with respect to the structural change of the Egyptian economy from the end of the nineteenth century onwards.

Based on the Appendix tables, several observations have been made. The first is that the structural change in the Egyptian labor force did not begin in the period before the First World War but in the interwar period. A gradual shift from the primary to the non-primary sectors began in 1937, followed by a steep decrease in the primary-sector share, and the rise of the secondary and tertiary shares accelerated since 1960.

The second point to be made is a modest role played by the secondary sector in

the structural change. The secondary-sector share, be in the male or the female table, remained below the tertiary-share level throughout the 120-year period.[34] In the period before 1937, the level of the secondary-sector share with both sexes combined hardly changed. While it was partly accounted for by interactions at work between manufacturing and the two tertiary sub-sectors of commerce and transport in the form that increased industrial output created more jobs for trading and distribution of goods (which went mostly to men),[35] the growth potential in the non-textile industries was not strong. It was in Nasser's state-led industrialization period when the secondary share rose from 14.7 percent in 1960 to 20.1 percent in 1976, the level of the sectoral share never became higher than that of the tertiary sector. While an impressive gain was achieved initially in industries associated with the construction of the Aswan High Dam in the first half of the 1960s, the program stumbled due to poor management and financial constraints. In the private sector, the textile and clothing industries, still representing *c*.30 percent of the industrial value added in the mid-1970s,[36] were unable to answer a structural question they inherited from the pre-revolutionary past, i.e. the dilemma of having to use high-quality Egyptian cotton for low-quality woven goods (Owen and Pamuk, 1998: 132-141). It was after 1990 when another rebound took place in the textile-related sector, a response

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[34] The only exception was the 1907 female share of the secondary sector. But that share level was so low and the difference with the tertiary level so marginal that it may well be within a margin of error.

[35] Such effects were not unique to Egypt's industrialization. We now know that similar secondary-tertiary interactions were at work in the British industrial revolution and also in the industrialization process of a late-comer such as Japan. See Shaw-Taylor and Wrigley (2014), pp. 63-64, and Saito and Settsu (2024), pp. 18-19.

[36] To be precise, in 1976 the combined sector of textiles and clothing accounted for 34 percent of the total value added in manufacturing of Egypt, according to the World Bank's Development Report data (World Bank, 1980). The Egyptian textile sector was the third largest in the Middle East after Iran and Turkey (Issawi, 1982: 163).

to the globalization drive in the world market for apparel products. As a result, female employment increased ninefold in the clothing industry from the late 1980s to the 2020s. However, this recent change was not able to put a brake on the long-term decline in the secondary-sector share of female employment or in the female percentage share in the sector's total labor force. Eventually, moreover, the state's priorities shifted from industrial development to the rebuilding of the armed forces and the streamlining of the public sector.

Finally, there are issues specific to women. One finding was that the female labor force participation rate remained more or less constant over time. The participation rate in 1897 stood at 20.3 percent and in 2017 it is 23.2 percent. In between there was a prolonged episode of slow decline from 1937 to 1966. Another is that women's participation in industrial work did not increase despite the gradual rise of industrialism in pre-World War II Egypt. In the textile and clothing industries female workers increased slightly from 1897 to 1917, while the 1907 Census indicates that women worked in cotton, wool, silk and clothing workshops and factories in rural as well as urban settings. Despite all this, the number of those female workers declined from 1917 to 1947. Structural change in the female labor force did take place, however. Slowly from 1937, then drastically from 1976, implying that women did change sectoral affiliation from time to time. The share of the agricultural sector decreased gradually from 1937, then more markedly from 1976 onwards. The latter period saw women turning to tertiary-sector jobs, especially in education, health, and government. This post-1976 move reflected the government's emphasis on social development for well-being, namely education and health, for which the female youth responded ardently. However, since 2007 when the government stopped expanding public-sector employment, as we have seen in Section V

above, unemployment grew at a remarkably high pace among those females who had actively sought a job in the public sector.

It appears, therefore, that whenever the labor demand increased it was male workers who gained employment. The female counterparts were turned away. When the development of the cotton industry and its mechanization took place in the first half of the twentieth century, as Tucker argued more than forty years ago, it was females' labor that was marginalized (Tucker 1976: 8). However, this does not necessarily mean that women retired from the world of work. Rather, their participation came to concentrate in home-based or seasonal jobs, the sphere where their contribution was underreported in the official records. Similarly, in the post-1976 period when women responded to the government's policy of expanding employment in the public sector, it was mostly women who ended up in the unemployment pool.

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TABLE 1. Females in the labor force cross-tabulated by industrial sub-sectors and employment status in the 1947 census (unit: person, above 5 years old)

	Sub-sectors											Total
	Employers	On own account	Directors and sub-directors	Employees	Labourers and artisans	Apprentices	Wives helping their husbands in work	Relatives helping their chief in work	Unemployed	Domestio servants	Wives or relatives doing domestio duties	
Agriculture	36,906	116,690	38	58	165,153	196	82,874	160,993	241	25,531	3,309,663	3,898,343
Mining	1	23	6	4	68			7				109
Manufacturing	1,982	29,450	27	312	14,861	833	2,551	5,753	98			55,867
Construction	9	79	2	26	752	9	9	31	8			925
Transport and communication	18	310	2	531	803	15	12	140	11			1,842
Commerce	16,449	42,615	19	1,356	3,768	93	3,981	6,488	61			74,830
Service	223	1,974	32	294	10,089	93	182	432	448	111,090	2,463,243	2,588,100
Social service	75	4,998	28	13,089	7,709	20	10	63	62			26,054
Total	56,279	197,226	155	15,719	203,331	1,259	89,631	173,913	1,241	136,621	5,772,906	6,648,281

Source: Ministry of Finance and Economy, Statistical and Census Department, *Population Census of 1947, General Tables*, Government Press, Cairo, 1954. pp. 344-362.

TABLE 2. "Ill-defined" and "Unproductive" persons in the 1897-1947 Censuses (age range: 1897, 10 and above; other years, 5 and above)

	Male						Female						
	1897	**1907**	**1917**	**1927**	**1937**	**1947**	**1897**	**1897**	**1907**	**1917**	**1927**	**1937**	**1947**
General designation without indication of a determined occupation													
mechanics,without other indication			1,716							9			
Workmen, task-masters, day labourers, general jobbers, etc.	113,765	32,342	270,341			18	113,765	4,461	788	38,475			48
merchants,manufactures,etc,without other designation			30,578							9,493			
agents without other designation			4,294							4			
Persons temporarily unemployed		75	69,020						17	577			
Unproductive and unknown													
Pupils and students			282,494	452,060	847,333	764,683				43,341	111,293	455,965	433,966
Touring and passage				1,436	360	104					456	248	80
Beggars and vagabonds		4,839	5,825	3,824	4,122	2,915			3,790	3,781	2,207	3,323	2,849
Prostitution			111	18						4,132	3,247		
Living on private means		98,889	1,739	5,362	7,986	10,972			13,300	2,185	4,058	4,433	2,663
Ill-defined industries		434		10,877	616	344,145					963	2,817	9,789
Occupation unknown		3,064	347,517						108	91,399			

Source : Population Census 1907, p. 283; Population Census 1917, p.404.

Note: The category of "Living on private means" in 1917 was described as "Landowners living principally on the rent of their landed property, proprietors of house property living on the rent of their property".

TABLE 3. Male and female workers by employment status and those outside the labor force in 1960 (Age above 6)

('000)

Category	Employment status	Male	Female	Total
Inside labor force	Employer	560	12	572
	Self-employed	1,695	51	1,746
	Waged work	3,476	337	3,813
	Work for household without wage	1,264	176	1,440
	Work for other without wage	21	3	24
	Neither working nor searching for a job	138	35	174
Outside labor force	Cannot work	180	312	492
	Neither working nor searching for a job	3,135	9,528	12,663
	Unknown	9	4	13
	Total	10,478	10,459	20,937

Source: Population Census 1960, vol. 2, pp. 124-29.

TABLE 4. Male and female workers by employment status and those outside the labor force in 1976 (Age above 6).

('000)

Category	Employment status	Male	Female	Total
Inside labor force	Self-employed without worker	1,980	51	2,031
	Self-employed with worker	846	14	860
	Paid worker	6,049	571	6,620
	Unpaid for relatives	561	55	617
	Unpaid worker	3	1	3
	Unemployed previously worked	35	6	41
	Newly unemployed	523	287	810
Outside labor force	Student	4,358	2,600	6,959
	House keeping	-	10,588	10,588
	Retired	128	4	132
	Uncapable to work	389	-	389
	Aged not capable to work	378	666	1,045
	Handicapped	34	14	48
	Unclassified	147	3	150
	Total	15,431	14,861	30,292

Source: Population Census 1976, p. 108.

TABLE 5. Female percentage shares in the primary, secondary and tertiary sectors, selected sub-sectors and industries, 1897-2017

	1897	1907	1917	1927	1937	1947	1960	1966	1976	1986	1997	2008	2017
Primary sector total	16.9	19.9	17.1	18.4	17.2	17.8	15.3	16.6	20.6	24.5	20.8	28.7	30.5
Secondary sector total	15.7	15.6	14.2	8.2	7.7	6.4	10.7	11.7	12.9	11.4	8.2	6.2	6.8
Manufacturing	18.9	23.6	18.8	11.0	10.4	8.0	13.4	12.3	14.6	16.6	9.1	7.9	10.1
Food and drink	10.1	3.4	7.2	3.2	4.1	3.0	2.3	-	5.1	7.8	-	-	-
Clothing	27.3	32.2	55.0	36.8	28.1	19.1	16.6	-	18.9	16.3	-	-	-
Textiles	0.2	9.6	26.0	19.2	15.7	10.3	7.6	-	6.7	10.0	-	-	-
Tertiary sector total	6.8	6.6	17.2	11.1	10.4	12.2	9.7	12.9	13.6	21.4	25.9	26.6	29.6
Commerce (dealers and sellers)	7.0	6.0	13.0	9.7	11.7	10.8	5.6	6.3	6.0	7.5	10.7	11.1	15.9
Services & professions	7.9	8.4	14.6	15.2	11.7	15.0	12.4	14.4	14.2	20.8	25.8	26.9	29.7
Government services	-	-	0.7	2.0	0.3	1.0	1.3	-	10.6	19.4	21.9	23.8	40.0
Labour force total	14.4	16.8	16.8	15.6	14.7	14.8	13.0	14.7	16.7	20.6	20.5	22.5	23.8

Source: Appendix table 1.

TABLE 6. Non-waged women by work status in three occupational groups: the primary sector, manufacturing, and commerce and personal services, 1947

	Total non-waged	Of which			
		On own account	Helping hands	Un-employed	Ill-defined and others
Primary	390,823	5,027	273,965	290	111,542
	(100)	(1.3)	(70.1)	(0.1)	(28.5)
Manufacturing	54,171	10,681	6,627	127	36,737
	(100)	(19.7)	(12.2)	(0.2)	(67.8)
Commerce and personal services	69,256	43,851	8,968	647	15,789
	(100)	(63.3)	(12.9)	(0.9)	(22.8)

Sources: Population Census 1947.

Notes:

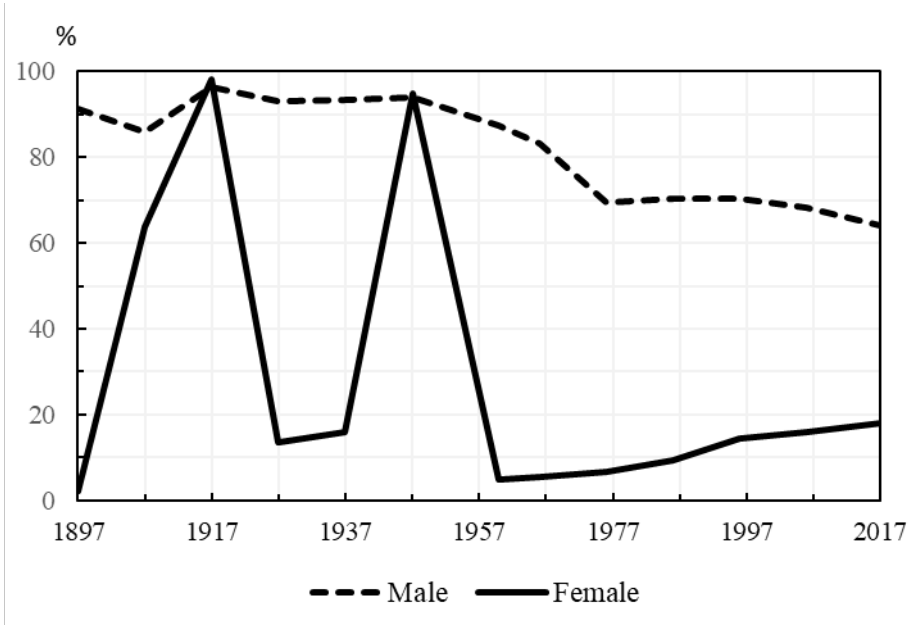
1) Numbers in parentheses are percentages.
2) The status category of "helping hands" is the sum of "wives helping their husband" and "relatives helping their chief". The latter outnumbered the former in all the three groups with the distribution ratio being 49:51, 39:61, and 46:54 respectively.
3) The occupational group of "commerce and personal services" in this table do not include domestic servants as they are "waged" workers.

Table 7. Numbers of unemployed people and the rates of unemployment (defined in two ways), 1960-2017

	1960	1966	1976	1986	1997	2008	2017
I. Number of the unemployed ('000)							
Females	12	20	142	297	735	1,026	1,615
Males	48	75	382	589	690	1,034	1,853
II. Unemployment rate (percent)							
	a. Defined as against the labor force with the secondary and tertiary sectors combined						
Females	3.9	4.1	18.3	20.7	29.3	30.5	32.2
Males	1.7	2.2	7.6	8.8	7.0	7.7	10.3
	b. Defined as as against the total labor force						
Females	1.3	1.6	7.8	10.5	20.5	19.3	23.1
Males	0.7	1.0	4.2	5.4	4.9	5.6	8.2

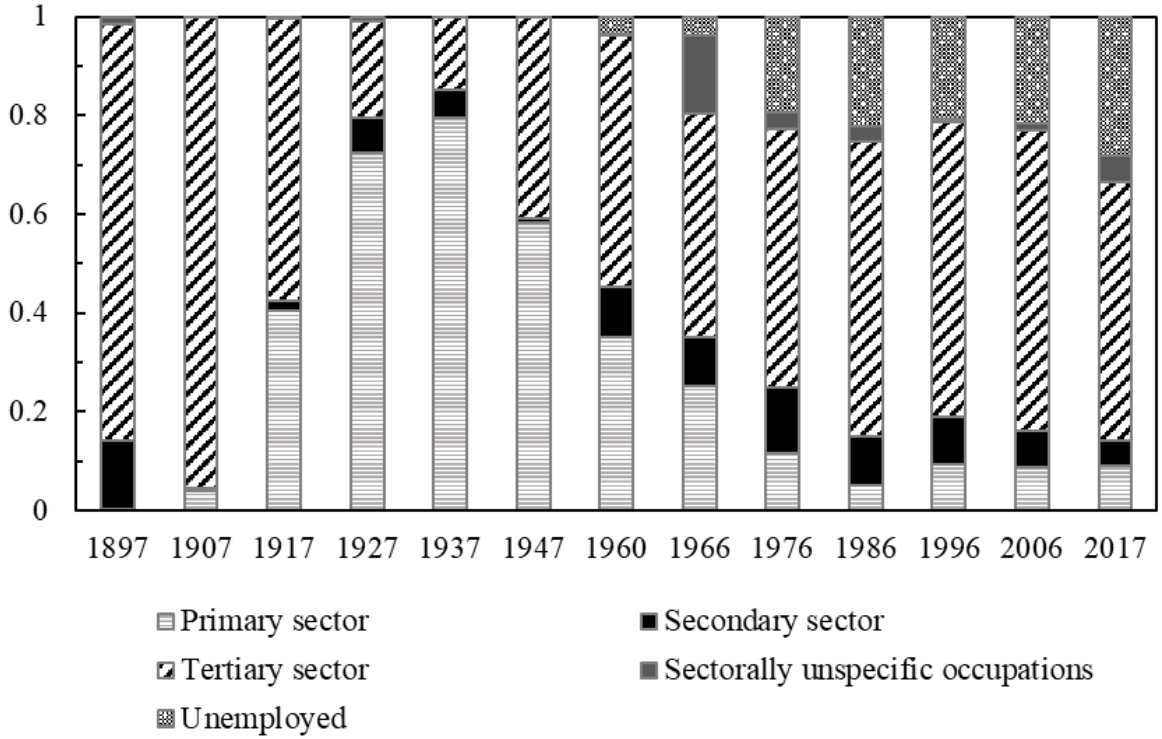
Sources: Population Censuses 1960-2017; LFSs 1997, 2008 and 2017.

FIGURE 1. The labor force participation rates before adjustment (age adjusted to 15 and above)



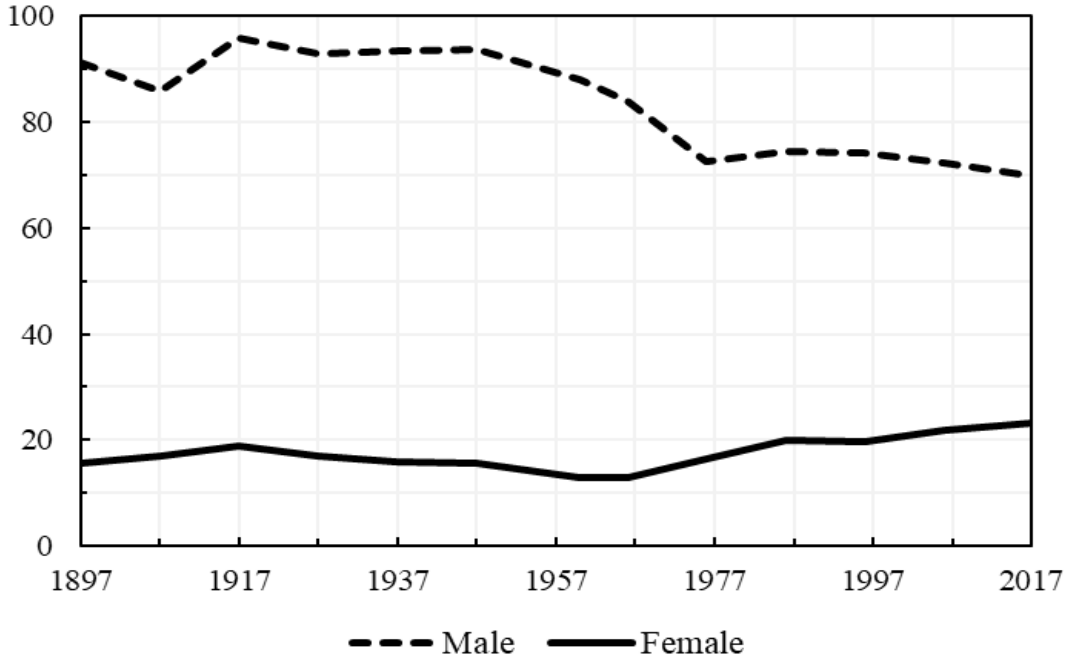
Sources: Population Censuses 1897-2017.

FIGURE 2. The sectoral shares of the female labor force, before adjustment, 1897-2017



Sources: Population Censuses 1897-2017.

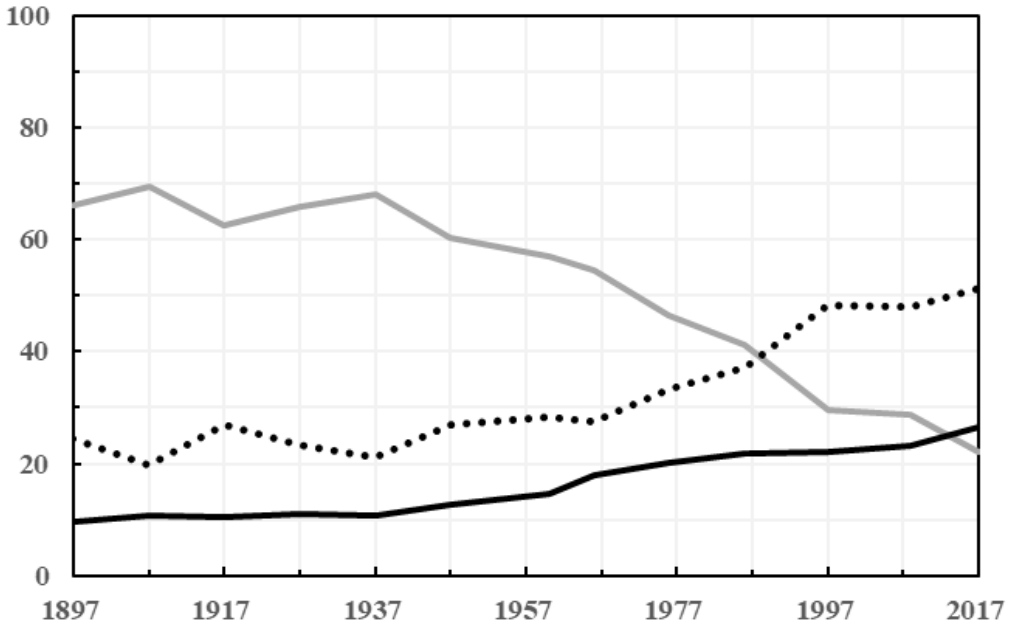
Figure 3. The labor force participation rates after adjustment (age adjusted to 15 and above)



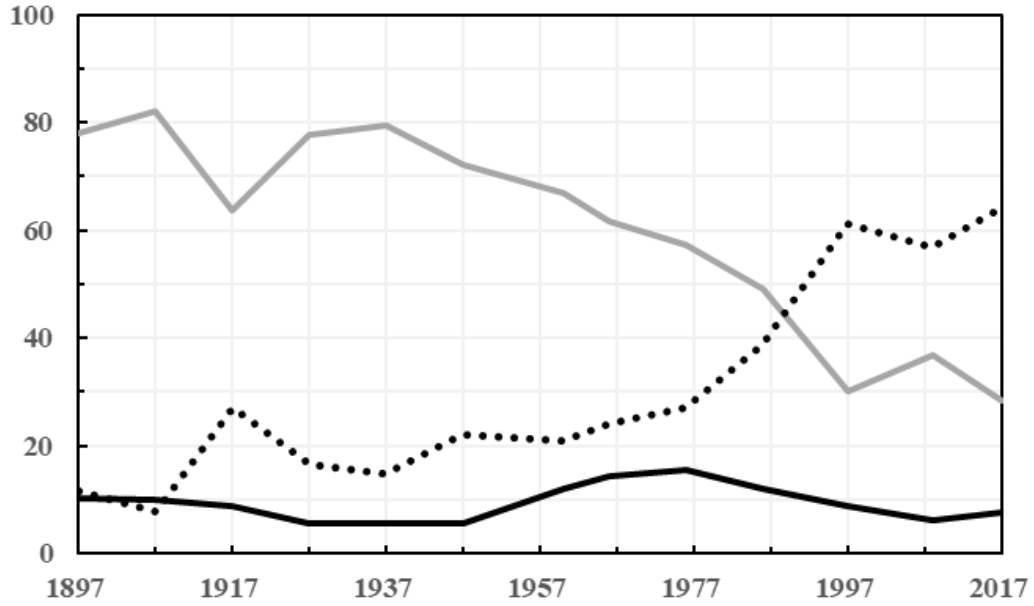
Sources: Appendix table 1.

FIGURE 4. The sectoral shares of the labor force after adjustment, 1897-2017

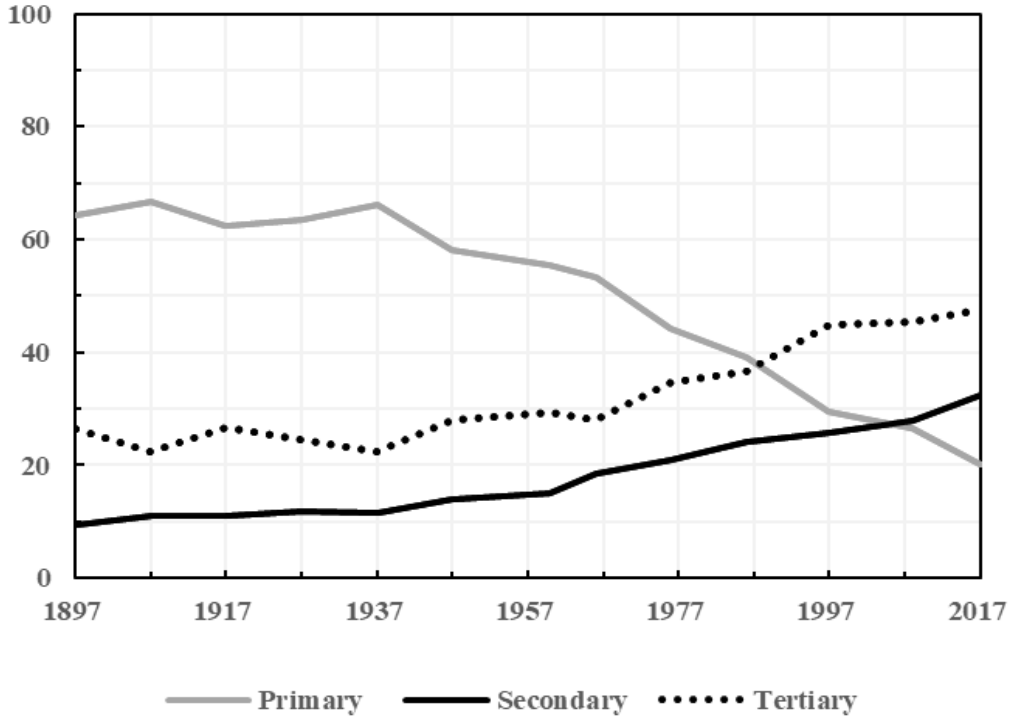
a. Both sexes combined



b. Females

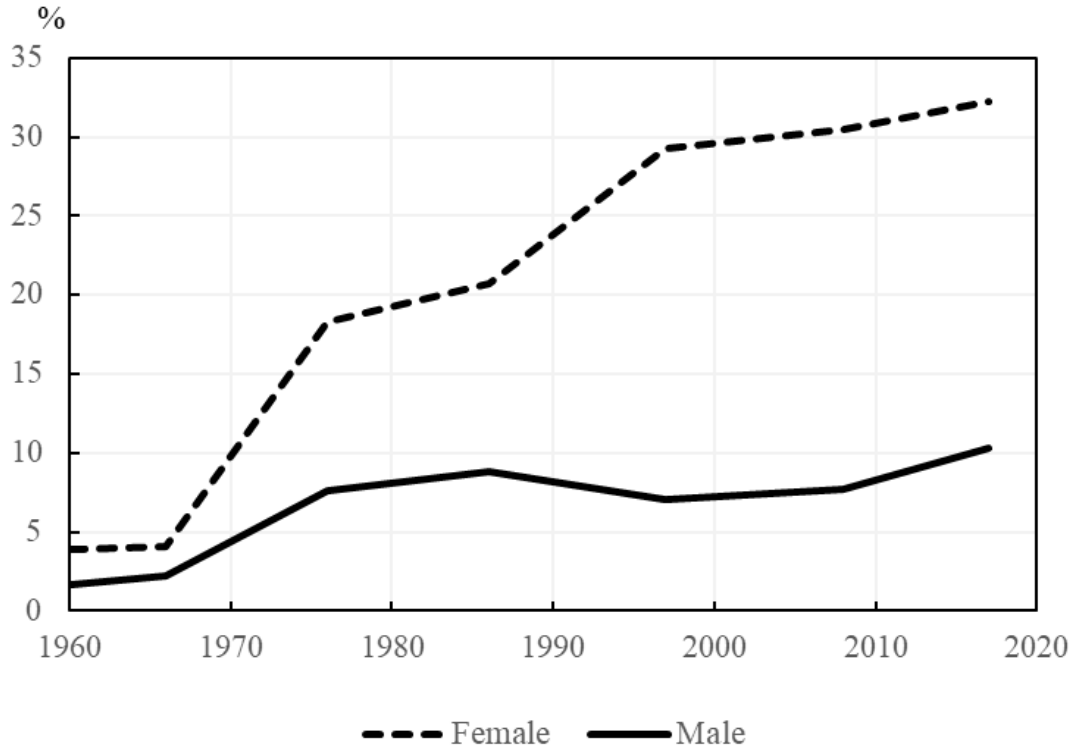


c. Males



Sources: CAPMAS, Population Censuses 1897–2017; Annual Bulletin of Labor Force, 1996, 2008 and 2017.

FIGURE 5. Female and male unemployment rates (defined as against the labor force with the secondary and tertiary sectors combined), 1960-2017



Sources: Table 8 above.

APPENDIX TABLE 1a Males

PSTI Sector	PSTI Group	PSTI Major Sub-Sector	(1) Census 1897	(2) Census 1907	(3) Census 1917	(4) Census 1927	(5) Census 1937	(6) Census 1947	(7) Census 1960	(8) Census 1966	(9) Census 1976	(10) Census 1986	(11) Census/LFS 1997	(12) Census/LFS 2008	(13) Census/LFS 2017
PRIMARY			**1,664,112**	**1,882,603**	**2,180,630**	**2,523,850**	**2,967,332**	**3,144,422**	**3,558,947**	**3,841,907**	**4,002,522**	**4,277,690**	**4,100,900**	**4,873,759**	**4,524,900**
SECONDARY	Not further distinguished		9,453	3,566	34,575	3,351	24	36,282	28,228	94,115	192,170	303,365	252,156	401,498	755,041
	Mining and quarrying		-	3,950	2,562	9,108	10,529	12,494	20,397	17,268	31,123	39,398	41,300	33,280	37,400
	Manufacturing	Not further distinguished	-	-	-	-	-	-	-	979,087	-	-	1,959,300	2,268,513	2,808,000
		Food and drink industries	17,185	15,810	28,854	47,649	45,724	66,816	85,743	-	143,500	194,830	-	-	-
		Clothing	9,402	17,174	27,531	37,383	47,993	59,427	82,569	-	98,188	87,050	-	-	-
		Footwear	11,407	15,772	18,406	27,257	30,054	41,991	47,727	-	40,199	37,631	-	-	-
		Textiles	51,370	66,166	38,930	50,533	49,635	117,310	183,176	-	311,698	279,360	-	-	-
		Wood and furnishing	42,939	7,445	43,519	55,516	62,728	63,406	81,248	-	140,459	206,177	-	-	-
		Iron, steel, machines and tools	27,631	31,145	23,571	36,745	47,651	91,236	79,463	-	176,629	338,602	-	-	
		Electrical and electronic goods	-	-	3,474	-	-	-	13,844	-	48,687	-	-	-	-
		Transport manufacture and repair	291	1,325	1,355	5,373	14,995	30,777	51,702	-	32,419	-	-	-	-
		Other manufacturing industries	33,031	28,490	64,445	60,624	58,501	80,187	104,286	-	222,244	238,051	-	-	-
	Construction		23,455	96,386	**61,256**	101,255	117,424	109,998	154,796	201,867	402,560	831,407	1,142,700	2,151,313	3,334,300
	Utilities (Electric	Not further distinguished	15,708	21,594	4,896	35,441	37,692	41,850	36,072	50,151	56,910	87,476	176,500	265,953	355,900
	Total		**241,872**	**308,823**	**353,374**	**470,235**	**522,950**	**751,774**	**969,251**	**1,342,488**	**1,896,786**	**2,643,347**	**3,571,956**	**5,120,557**	**7,290,641**
TERTIARY	Not further distinguished		**-**	**1,543**	**5,265**	**3,572**	**466**	**923**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Dealers and sellers		**114,677**	**181,107**	**237,220**	**333,938**	**364,975**	**466,432**	**542,107**	**554,211**	**682,227**	**682,955**	**1,619,400**	**2,036,511**	**2,757,300**
	Services and professions		**473,486**	**351,425**	**484,717**	**468,656**	**501,637**	**845,754**	**1,089,489**	**1,141,815**	**1,991,949**	**2,709,312**	**3,766,843**	**4,851,575**	**5,781,159**
	Transport and communications		**98,430**	**94,206**	**139,413**	**167,273**	**132,419**	**193,407**	**250,680**	**330,073**	**453,138**	**619,278**	**885,500**	**1,454,829**	**2,119,400**
	Total		**686,593**	**628,281**	**866,615**	**973,439**	**999,497**	**1,506,516**	**1,882,276**	**2,026,099**	**3,127,314**	**4,011,545**	**6,271,743**	**8,342,915**	**10,657,859**
LABOUR FORCE			**2,592,577**	**2,819,707**	**3,400,618**	**3,967,524**	**4,489,779**	**5,402,712**	**6,410,474**	**7,210,494**	**9,026,622**	**10,932,582**	**13,944,599**	**18,337,231**	**22,473,400**
WITHOUT OCCUPATION			**243,373**	**461,935**	**411,227**	**298,172**	**316,168**	**358,246**	**863,795**	**1,365,923**	**3,399,026**	**3,752,411**	**4,879,293**	**6,982,778**	**9,664,734**
MALE POPULATION 15 AND OVER			**2,835,950**	**3,281,642**	**3,811,845**	**4,265,696**	**4,805,947**	**5,760,958**	**7,274,269**	**8,576,417**	**12,425,648**	**14,684,993**	**18,823,892**	**25,320,009**	**32,138,134**
LABOUR FORCE PARTICIPATION RATE (%)			**91.4**	**85.9**	**89.2**	**93.0**	**93.4**	**93.8**	**88.1**	**84.1**	**72.6**	**74.4**	**74.1**	**72.4**	**69.9**

APPENDIX TABLE 1b **Females**

PSTI Sector	PSTI Group	PSTI Major Sub-Sector	(1) Census 1897	(2) Census 1907	(3) Census 1917	(4) Census 1927	(5) Census 1937	(6) Census 1947	(7) Census 1960	(8) Census 1966	(9) Census 1976	(10) Census 1986	(11) Census/LFS 1997	(12) Census/LFS 2008	(13) Census/LFS 2017
PRIMARY			**471,577**	**533,425**	**617,801**	**567,505**	**615,561**	**679,639**	**642,091**	**766,265**	**1,038,853**	**1,391,868**	**1,076,600**	**1,958,681**	**1,985,300**
SECONDARY	Not further distinguished		121	1	1,905	233	45	194	2,462	37,983	60,291	43,796	89,370	97,385	163,837
	Mining and quarrying		-	-	25	47	35	95	92	446	1,351	3,032	700	1,926	1,100
	Manufacturing	Not further distinguished	36,735	40,218	-	-	-	-	75,361	136,938	124,307	166,834	195,300	194,674	316,800
		Food and drink	1,930	556	2,240	1,588	1,970	2,035	2,017	-	7,654	16,370	-	-	-
		Clothing	3,530	8,161	33,681	21,741	18,799	14,075	16,398	-	22,828	17,014	-	-	-
		Footwear	-	13	98	156	147	375	183	-	919	1,391	-	-	-
		Textiles	80	7,008	13,659	11,977	9,253	13,535	15,085	-	22,321	30,985	-	-	-
		Wood and furnishing	2,320	327	2,341	381	6,895	12,138	217	-	2,162	1,941	-	-	-
		Iron and steel manufacture and products	-	56	-	-	113	208	68	-	767	1,175	-	-	-
		Non-ferrous metal manufacture and product	-	3	102	204	216	524	153	-	1,850	4,867	-	-	-
		Metal working	-	2	177	33	3	2	46	-	-	-	-	-	-
		Machines and tools	-	-	20	39	43	276	68	-	894	9,301	-	-	-
		Electrical and electronic goods	-	-	-	-	-	-	111	-	4,535	-	-	-	-
		Transport manufacture and repair	-	-	16	28	57	206	135	-	1,346	-	-	-	-
		Other manufacturing industries	458	431	5,742	3,721	3,862	4,465	2,619	-	18,702	25,136	-	-	-
	Construction		-	44	532	679	816	851	460	1,800	6,318	10,893	18,300	24,166	23,500
	Utilities (Electricity, Gas. Water, Sewage)		-	310	17	1,131	1,605	2,644	277	889	4,577	8,470	15,600	19,159	28,000
	Total		**45,174**	**57,130**	**60,553**	**41,958**	**43,859**	**51,623**	**115,752**	**178,056**	**280,822**	**341,205**	**319,270**	**337,310**	**533,237**
TERTIARY	Not further distinguished		**726**	**172**	**16,993**	**647**	**118**	**783**	**12,405**	**64,116**	**105,875**	**294,567**	**646,094**	**932,982**	**1,456,763**
	Dealers and sellers		**8,692**	**11,570**	**35,576**	**36,012**	**48,247**	**56,616**	**32,406**	**36,952**	**43,271**	**55,580**	**193,900**	**253,115**	**522,700**
	Services and professions		**41,231**	**32,298**	**96,985**	**84,013**	**66,247**	**149,670**	**154,520**	**192,239**	**328,670**	**711,520**	**1,308,800**	**1,787,499**	**2,440,800**
	Transport and communications		**76**	**73**	**602**	**1,448**	**951**	**1,660**	**2,313**	**7,248**	**15,325**	**33,774**	**41,500**	**55,938**	**62,300**
	Total		**50,725**	**44,113**	**150,156**	**122,120**	**115,563**	**208,729**	**201,644**	**300,555**	**493,141**	**1,095,441**	**2,190,294**	**3,029,534**	**4,482,563**
LABOUR FORCE			**567,476**	**634,668**	**828,510**	**731,583**	**774,983**	**939,991**	**959,487**	**1,244,876**	**1,812,816**	**2,828,514**	**3,586,164**	**5,325,525**	**7,001,100**
WITHOUT OCCUPATION			**2,225,960**	**2,736,991**	**3,058,415**	**3,615,306**	**4,114,250**	**5,067,464**	**6,529,800**	**8,467,431**	**9,197,256**	**11,317,785**	**14,557,361**	**19,070,858**	**23,222,143**
FEMALE POPULATION 15 AND OVER			**2,793,436**	**3,371,659**	**3,886,925**	**4,346,889**	**4,889,233**	**6,007,454**	**7,489,286**	**9,712,307**	**11,010,072**	**14,146,299**	**18,143,526**	**24,396,384**	**30,223,243**
LABOUR FORCE PARTICIPATION RATE (%)			**20.3**	**18.8**	**21.3**	**16.8**	**15.9**	**15.6**	**12.8**	**12.8**	**16.5**	**20.0**	**19.8**	**21.8**	**23.2**