SHIFTS IN INDUSTRIAL STRUCTURE AND CHANGE IN JOB PATTERN IN THE UNITED ARAB REPUBLIC 1937 — 1960

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This paper tries to analyze the employment trends in the United Arab Republic, Egypt, in relation to shifts in industrial structure and change in job pattern since the Census of 1937 through the 1960 Census of Population. The processes of industrialization and economic development, that have been taking place since the Egyptian Revolution in 1952, have brought with them an increase in the variety of jobs and a change in the composition of occupations. The analysis of these trends will be based on the first digit level of the «International Standard Classification of Economic Activities (ISCE)», and the «International Standard Classification of Occupations (ISCO)» recommended by the United Nations and the International Labor Office, respectively.

1. Changes in Industrial Structure.

Data on active population in the United Arab Republic (UAR) classified according to ISCO are not available from any Egyptian census before 1960. Consequently, it would be impossible to study the trend of shifts in occupational composition in Egypt. It would be appropriate, therefore, to study changes in industrial structure. The 1960 census of population provides elaborate data on active and inactive population classified by ISCE and ISCO. For comparison purposes, the Department of Statistics and Census has adjusted the 1937 and 1947 census

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data on economic activity to be comparable with 1960.[1] These data are used in the present analysis, shown in Table 1. Data for 1937 and 1947 refer to persons aging 5 years and over. However, the census authority provided the following statement:

> «For comparison and research purposes it should be noted that the number of persons aging 5 years included in the 1937 and 1947 census were mainly occupied in agriculture and services. Number of population aging 5 years in both censuses is... 556,391 and 482,565»[2] for 1947 and 1937 respectively.

Distributing these figures according to the ratio between agriculture and services and subtracting the amount from these two groups, it may be possible to assume that the adjusted data for 1937 and 1947 census refer to population aging **6 years and over**. Subtracting the «inactive population» from the three censuses and the «not stated» from the 1960 census it would be possible to consider the resulting population as the active population. In fact the census does not show what is meant by «active» and «inactive». However, most of the concepts used in the census were based on United Nations definitions. Thus, it seems that the concept «active» refers to «the economically active population» which comprises «all those persons who contribute to the supply of labor for the production of economic goods and services, including not only those employed at the time of the investigation, but also those unemployed but available for work.» However, one may consider the number of active population to represent the employed persons, since the number of unemployed persons aging **6 years and over** is only 173,640, i.e. 2.2% of the active population. Taking these remarks into consideration, one may proceed to the analysis of data.[3]

Table 1 presents information on the changes in industrial structure of employed persons **6 years of age and over** in the

(1) Department of Statistics and Census, **1960 Census of Population**, Volume II, General Tables, English Version, Table IV, p. XIV, (U.A.R., Cairo : S.O.P. Press, 1963).

(2) Department of Statistics and Census, ibid., footnote 2 of Table IV, p. XIV.

(3) United Nations, **Population Studies No. 33, Demographic Aspects of Manpower,** Report 1 (New York : 1962), p. 1.

population censuses of 1947 and 1960. Only one industrial group namely «activities not adequately defined», cols. 3 & 4, showed absolute decline. Such a decline may be an indicator to improvement in methods of data collection and job description. The rest of industrial groups grew at varying rates from 8.6 per cent (commerce) to 62.9 per cent (electricity, gas, and others), col. 4. agriculture, forestry, hunting, and finishing activities still remain as the basic source of employment for the majority of population, 57.0 per cent in 1960 as compared with 56.6 per cent in 1947, cols. 5 & 6.

Parallel to the differential rates of increase of employment in industries was observed a varying degree of shifts in the relative share of each industry. In order to assess the total shift in the industrial structure during this period, the index of redistribution or concentration is used. This index was used by P. S. Florence and A. J. Wensley in their studies on «The Location of Industry in Great Britain»,[4] and «Industrial Location and National Policy by the National Resources Planning Board»[5] in the United States. The index of concentration may be explained briefly as follows :

Let X_i represent the per cent of employed persons in the major industry group in the 1960 census and Y_i is the corresponding percentage of the employed persons for the same major industry group in the 1950 census of population (i = 1, 2, . . . 9). The index of employment concentration in this case will be :

$Cl = \frac{1}{2} \Sigma (X_i — Y_i)$, where Cl stands for concentration index. For computational check, the sum of the positive and negative differences, $(X_i —Y_i)$ are made separately, and the two sums should be equal.[6] This index is widely used in regional science and in ecology. In the present study, the index is shown in Column 7 of Table 1. It is

(4) P. Sargant Florence and Arthur J. Wensley, «The Location of Industry in Great Britain», **Political and Economic Planning**, London, 1939.

(5) Edgar M. Hoover, «Interstate Redistribution of Population, 1850 — 1940, Journal of Economic History, 1 (1941-1942), 199_205.

(6) Duncan, Otis Dudley, et al., **Statistical Geography : Problems in Analysing Aerial Data**, (illinois : The Free Press of Glencoe, 1961).

obtained by subtracting col. 5 from col. 6 and then adding all positive or negative differences.

The computations in Table 1 show that the aggregate change in the industrial structure during 1947 - 1960, amounted to 4.82 percentage points. This means that, for every 10,000 employed there were 482 additional workers in 1960 belonging to the gaining industries as compared to the situation in 1947. Or one can say that the declining industries lost employment during this period at the rate of 482 persons per 10,000 employed in 1960. The gains ocurred principally in all industrial groups except commerce and ill-defined activities. The gains were at the rate of 54, 44, 30, 21, 13, and 7 persons per 10,000 taken in order (see col. 7). Ill-defined activities and commerce lost at the rate of 395 and 87 persons per 10,000 employed in 1960, respectively. Such losses in commerce, industry cannot be related to movement of nationalization since defective data can lead to such a conclusion. The 1947 census of population in Egypt is believed by many students of population to be inflated. Such inflation was stimulated by rationing census undertaken in 1945 which put the population of Egypt at 24 million, i.e., 5 million over the 1947 census. The over-reporting was estimated by El-Badry to be about one million.[7]

However, in order to have another assurance, the same analysis is applied to the two censuses of 1937 and 1947. The results are shown in Table 2. Again the calculations in cols. 3 & 4 show that only one industrial group (construction) implies absolute decline (6.1 per cent). Activities not adequately defined provide another proof for the lax procedures for collecting census data, and probably more for the new variety of jobs provided by the British Occupation forces which could be considered new to the natives occupying such jobs. The rest of industrial groups grew at varying rates ranging from 0.9 per cent (agriculture) to 58.9 per cent (manufacturing). This absolute high rate of growth for manufacturing (as compared with that of 1947 - 60, 27.2 per cent) is probably possible since the country had to depend upon home industries in meeting necessary needs

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(7) A. M. Zikry, «Socio-Cultural Determinants of Human Fertility in Egypt, U.A.R.,» (Unpublished Ph.D. Dissertation, Syracuse University, 1963), p. 62.

during World War II. Another striking growth compared with that of 1947-60 was in transportation and communication. Again, this might be due to the circumstances prevailing in the international scene and at home (war and occupation).

These developments are supported by the redistribution index in Table 2 (col. 7), where the loss in agricultural industry amounted to 11.17 percentage points. Such shift was stimulated by the needs of British forces to civilian work force in different services activities, and by manufacturing in order to fill out the gap created by lack of imports with the strike of the Second World War. It would be important to mention that Egypt, by then, was dependent on foreign industries to the extent that needles were imported. Other contracting industries in the period 1937 - 47 were construction and electricity. Mining showed zero growth. The gaining industries were manufacturing, commerce, transport, services, and ill-defined activities. The aggregate change in the industrial structure during 1937 - 47 amounted to 11.72 additional workers in 1947 belonging to the gaining industries as compared to the situation in 1947. On the other hand, this means that the declining industrial groups lost employment during this period at the rate of 1,172 persons per 10,000 employed in 1947.

2. Job Pattern by Industry, 1960 :

As it was mentioned above, the 1960 census of population provides information on Egyptian population, 15 years and over, which contains cross-classified data on occupations and economic activities. By utilizing these data it was possible to obtain the calculated results provided in Table 3, which shows the occupational pattern by industries in 1960.

It is obvious from Table 3 that the various industries are differentiated from one another with respect to their occupational patterns. The table shows also that some industries are dominated by one or two occupations, while the others are composed of several occupations. In 1960, the job patterns in agriculture, for example, included 99 per cent farmers; similarly, the occupational pattern of manufacturing activity was composed of 90 per cent craftsmen, 4 per cent clerical, 1 per cent professional, 1 per cent executive, 2 per cent services, and about

1 per cent transport workers. Mining, construction, electricity, and services activities utilized relatively higher percentage of professional, executive, and clerical workers (compared with other activities).

The distribution presented in Table 3 shows that Egyptian industries lack occupation diffusion. Only services and mining industries, excepting the ill-defined industries, have a diffused occupational patterns. However, one cannot infer from the analysis of a single census what will be the occupational pattern of a particular economic activity in the process of economic growth. That is to say, one cannot know whether or not the expansion of a certain industry will lead to more increase in particular occupations rather than others. The study of occupational pattern would have been greatly enhanced if the same data had been available for the 1947 census.

3.   Sex Composition of Active and Inactive Egyptian Population

Table 4 gives the distribution of Egyptian population **6** years of age and over by sex and major groups of economic activities in 1960.   The ratio of total males to total females (active and inactive, i.e., total of column 1 to total of column 3) is unity. Considering the active population only, we find that active males represent 92.3 per cent of the total active population, and the active females represent only 7.7 per cent, a result which is entirely different from the one presented by either the total of columns 7 & 8 or columns 9 & 10 (50 per cent for males and 50 per cent for females).

In Egypt the labor force participation of female population 16 years of age and over accounts only for 5.9 per cent of the total labor force in 1961, as compared, for example, to 33.8 per cent in the United States in 1962.[8] This sex differentials in participation in the labor force between Egypt and the United States shows that females manpower in Egypt is still retained for domestic and household activities. Columns 2, 4, 7, 8, 9, and

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(8) The Central Statistical Committee, The Aggregative of Employment and Wage Survey,   October, 1961, in Arabic, (Cairo,   Société Orientale de Publicité) Table V, p. 35; and U.S. Bureau of Labor Statistics, **Employment and Earnings**, VIII, May, 1962, Table A - 3, p. 3.

10 of Table 4 support this statement. The active male population represents 68 per cent of total males, whereas active female population represents only 6 per cent of total females (columns 2 and 4). Agriculture, services, manufacturing, and activities comprise the highest percentage either of males or of females, Even if when we relate the number of active males or females to total population (columns 7 & 8) these activities still dominate the others.

CONCLUSION

In this paper the writer analysed the trend of shifts in industrial structure and differentiation in job patterns in the U.A.R. The writer applied the so called «redistribution» or concentration index in analysing the shifts in industrial structure during the censal periods 1937 - 1947 and 1947 - 1960. The analysis showed that there were gain and loss among the major industrial groups, and demonstrated the need to more up-to-date data if the impact of economic development to be confirmed. Still more important is the utilization of this index in studying the differences in industrial shifts among the different governorates. Such aerial analysis will be of great help in the assessment of economic planning and training of manpower.

TABLE 1 — Changes in Industrial Structure of Employed Persons 6 Year od and over in Egypt, 1947-1960

Economic Activities (Industries)	Number Employed		Net Change			Percent of Total		Shifts in industrial structure 1947—60
	1947*	1960*	No.	%		1947	1960	
	1	2	3 = 2 - 1	4 = 3/1		5	6	7 = 6 - 5
Agriculture, forestry, hunting, and fishing	3,643,187	4,406,379	763,192	20.95		56.59	57.03	0.44
Mining and quarrying	12,965	21,109	8,144	62.82		0.20	0.27	0.07
Manufacturing.	560,601	713,100	152,499	27.20		8.71	9.23	0.52
Construction	113,361	158,885	45,524	40.16		1.76	2.06	0.30
Electricity, gas, water, and sanitary services	22,595	36,808	14,213	62.90		0.35	0.48	0.13
Commerce	590,380	641,408	51,028	8.64		9.17	8.30	- 0.87
Transport, storage, and communication . .	203,335	260,210	56,875	27.97		3.16	3.37	0.21
Services	937,868	1,369,432	431,564	46.02		14.57	17.72	3.15
Activities not adequately defined . .	353,934	119,320	-234,614	-66.29		5.49	1.54	- 3.95
Total	6,438,226	7,726,651	1,288,425	20.01		100.00	100.00	4.82
			Redistribution Index					

Source : Department of Statistics and Census, 1860 Census of Population, Vol. I, II, General Tables. (Cairo : S.O.P. Press, 1963), Table IV, p. XIV.

TABLE 2.—Changes in Industrial Structure of Employed Persons 6 Year old and over in Egypt, 1937-1947

Economic Activities (Industries)	Number Employed		Net Change		Percent of Total		Shifts in industrial structure 1937 — 47
	1937*	1947*	No.	%	1937	1947	
	1	2	3 = 2 - 1	4 = 3/1	5	6	7 = 6 - 5
Agriculture, forestry, hunting, and fishing	3,609,579	3,643,187	33,608	0.93	67.76	56.59	-1.24
Mining and quarrying	10,828	12,965	2,137	19.74	0.20	0.20	1.70
Manufacturing	352,706	560,601	207,895	58.94	6.62	8.71	0.50
Construction	120,706	113,361	- 7,345	- 6.08	2.27	1.76	5.72
Electricity, gas, water, and sanitary services	20,966	22,595	1,629	7.77	0.39	0.35	0.02
Commerce	439,542	590,380	150,838	3.60	8.25	9.17	-.90
Transport, storage, and communication	138,911	203,335	64,424	46.38	2.61	3.16	2.17
Services	630,036	937,868	307,832	48.86	11.83	14.57	-.04
Activities not adequately defined	3,433	353,934	350,501	102.10	0.07	5.49	5.54
Total	5,326,707	6,438,226	1,111,519	20.87	100.00	100.00	2.11
			Redistribution Index				—

* Source : see footnote of Table 1.

TABLE 3.—Occupational Patterns by Industries, Egypt, 1960

(Employed Persons 15 Year old and over, in Percentage) *

Industries+	Occupations								
	Professional	Executive	Clerical	Sales	Farmers	Miners	Transport	Craft.	Services
Agriculture, forestry, ing, andnnh fishing	0.07	0.01	0.19	0.04	98.84	0.0	0.13	0.26	0.46
Mining and quarrying . . .	4.06	1.15	4.79	0.27	0.18	54.39	3.33	27.64	4.19
Manufacturing.	1.25	1.23	3.94	0.74	0.17	0.03	0.89	89.95	1.79
Construction	1.74	4.23	1.54	0.40	0.07	0.07	0.71	90.26	0.98
Electricity, gas, water, and sanitary services	3.38	0.92	9.32	0.02	1.35	0.03	4.01	77.14	3.82
Commerce	0.77	1.20	5.81	87.39	0.40	0.01	0.82	2.27	1.32
Transport, storage, and communication	1.86	1.93	8.15	0.22	0.22	0.0	57.53	25.56	4.53
Services	15.28	3.75	11.66	0.53	1.36	0.02	3.22	16.82	47.36
Activities not adequately defined . . .	5.79	2.24	31.88	6.47	0.59	0.38	7.09	37.14	8.42
Total	3.20	1.11	3.71	8.22	54.85	0.18	3.0	15.16	9.50

* Computed from Department of Statistics and Census. 1960 Census of Population, Vol. II, General Tables. Table 32, pp. 119 — 47.

+ Each row adds to 100, except for roundng error.

TABLE 4.—Egyptian Population, 6 Year old and over, By Economic Activities (Industries) and Sex, 1960*

Economic Activity (Industries)	Male		Female		Total		% to total		% of industry total	
	No.	%	No.	%	No.	%	Male	Female	Male	Female
	1	2	3	4	5	6	7	8	9	10
Agriculture, forestry, hunting, and fishing	4,134,625	39.46	270,602	2.59	4,405,227	21.04	19.75	1.29	93.9	6.1
Mining and Quarrying	20,758	0.20	122	0.0	20,880	0.10	0.10	—	99.4	0.6
Manufacturing	679,753	6.49	24,526	0.23	704,279	3.36	3.25	0.12	96.5	3.5
Construction	157,067	1.50	585	0.01	157,652	0.75	0.75	—	99.6	0.4
Electricity, gas, water, and sanitary service	36,072	0.34	277	0.0	36,349	0.17	0.17	—	99.2	0.8
Commerce	592,616	5.66	37,644	0.36	630,260	3.01	2.83	0.18	94.0	6.0
Transport, storage, and communication	254,202	2.43	2,474	0.02	256,676	1.23	1.21	0.01	99.0	1.0
Services	1,108,717	10.58	240,049	2.30	1,348,766	6.44	5.30	1.15	82.2	17.8
Activities not adequately defined	99,573	0.95	17,886	0.17	117,459	0.57	0.48	0.09	84.8	15.2
Inactive	3,390,053	32.35	9,861,735	94.29	13,251,788	63.29	16.19	47.10	25.6	74.4
Not stated	4,498	0.04	3,010	0.03	7,508	0.04	0.02	0.01	59.9	41.1
Total	10,477,934	100.00	10,458,910	100.00	20,936,844	100.00	50.05	49.95	50.0	50.0

* Computed from Department of Statistics and Census. 1960 Census of Population, Vol. II, General Tables, 1963, Table 29, pp. 95 — 104.

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