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THE GROWTH OF EMPLOYMENT IN SERVICES: EGYPT, 1960–75

NORMAN GEMMELL

I. INTRODUCTION

THE role of structural change in the process of development is now well documented in the literature on development economics. The early theoretical writings of Lewis [22], Ranis and Fei [29], Jorgenson [16] [17], and many others established a critical role for the transfer of resources, especially labor, from an agricultural sector to an industrial sector during development. Empirical evidence has tended to support this view, most notably Kuznets [20] [21], Chenery and Taylor [6], Turnham [32], and Chenery and Syrquin [5]. The increasing importance of a service sector in both developed and less developed countries has also been highlighted by Fuchs [9] [10], Bhalla [3], Berry [2], and Gemmell [11] [12].

For the Egyptian economy in particular, structural changes up to 1960 were examined by Mead [27], who identified a very rapid expansion in service employment relative to other sectors of the economy. Mabro [23], in a brief survey of some aspects of the development of industrial and service sectors in the 1950s and 1960s, suggested that this trend probably continued to some extent after 1960. The purpose of this paper is to provide some more detailed evidence on structural changes in employment toward the service sector in Egypt during the 1960s and 1970s, and to seek to identify some of the underlying influences behind these changes. In Section II some international evidence on structural change is surveyed, and evidence on the relative growth in employment in goods and service sectors in Egypt during the period 1960–75 is examined. This suggests a strong relative growth in Egyptian service sector employment from the mid-1960s. Possible reasons for this growth are considered in Section III. The evidence is summarized, and some conclusions drawn, in Section IV.

II. INDUSTRIAL AND SERVICE SECTORS

Before examining the growth of industrial and service sectors in Egypt in particular, it is helpful to consider some of the theory on structural change and the empirical work which has attempted to identify patterns of structural change across countries.

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A. *Empirical Evidence: International*

As noted briefly in the introduction, development theory has suggested that a transfer of resources (particularly labor) out of low productivity agricultural activities to higher productivity nonagricultural activities can be expected to accompany development. This arises because increases in per capita income must involve increases in labor productivity within a sector and/or labor transfers from low to high productivity sectors. In practice, it is often suggested, the latter dominates and a resource transfer from agricultural to manufacturing activities occurs because economies of scale and a relative ease of combining capital with labor in the manufacturing sector creates higher productivity. In addition, if agricultural productivity does rise as per capita income rises, then under the assumption of a diminishing marginal product of labor the pace of the resource transfer may be expected to slow as income rises.

This pattern of development has been supported by numerous empirical studies which show considerable uniformity across countries in their tendency for industrial sectors to expand their share of output and employment at the expense of the agricultural share (e.g., Kuznets [20], Chenery and Taylor [6]). It has also been found that this transfer tends to be greatest in the early stages of development.

Evidence of a uniform pattern across countries for the service sector is more ambiguous. Chenery and Syrquin [5] found some evidence of an increasing service sector share in GNP as per capita income rises but the relationships involving the service sector were fairly weak relative to those found for industrial sectors. Fuchs [10], using a sample of OECD countries, found that both manufacturing and service sectors' employment shares rose, but at a diminishing rate, as per capita income increased. More recent evidence on the relationship between industry and services in various countries suggests two further aspects.

First, empirical studies (including UNECE [33] and Gemmell [12]) have shown from cross-section and time-series data that while industrial and service sector employment shares may both increase during development, beyond a certain point the service sector share can be expected to increase at the expense of the industrial employment share. Second, in some LDCs, especially the semi-industrialized countries of Latin America, employment in some service activities has grown particularly rapidly both absolutely and relative to industry (e.g., Argentina, Brazil, Mexico). The growth of these services would appear to be related to levels of urbanization, rates of internal migration, and trade and other restrictions on industrial output (see Turnham [32], Berry [2]).

There are various reasons why industry and services may *both* increase in the earlier stages of development. Since industrialization tends to be localized geographically it is associated with urbanization. This gives rise to demands for infrastructure services such as communications, public utilities, and distribution services. The development of industry often leads to specialization of activities so that whereas a manufacturing firm may distribute its own goods when it is

small, when it becomes larger it contracts a separate firm to distribute its products. This may not involve any economic change, but statistically often appears as an increase in services relative to manufacturing. Thus the process of resource transfer from agriculture to industry can be expected to require some expansion of resources in services.

It would seem therefore that there is considerable evidence to support the view that development of per capita income in many countries will be accompanied by resource transfers to industrial and service activities, the latter growing particularly in the early and later stages. However, it is also clear from international studies that the degree of uniformity in the patterns of structural change is influenced by other economic and noneconomic factors. Chenery and Taylor [6], for example, found uniform patterns emerged when countries were differentiated according to population size and orientation toward primary or industrial exports. It has also been argued that political factors influence the extent of some service expansion. On the one hand, it has been suggested that public services grow more rapidly where national governments have a significant role in planning and production in the economy as a whole. On the other hand, the expansion of private services in states such as Hong Kong, which have few natural resources, has often been attributed, in part, to a "passive" role of government in the economy.

B. *Empirical Evidence: Egypt, 1960–75*

One of the problems when considering the relationship between sectors, both within and across countries, is that different studies have used different industrial and service classifications (which sometimes contribute to differing results). The "industrial" sector, for example, may be defined to include *only* manufacturing, or all "industrial" activities (however defined), of which manufacturing may form only 50 per cent. The approach adopted here to examine the relative growth of service sectors is to compare employment in the aggregate service sector (and two sub-sectors, "commercial" and "social" services) with employment in the "goods producing" sector. This approach, first used by Fuchs [9], while obscuring the details of trends in individual industries, does enable any general and systematic differences between goods and service sectors, which economic theory suggests may exist, to be identified. Although there are some economic activities which could be classified in either category (depending on the criteria used), in most cases activities fall clearly into one category.[1] In this study the goods sector is defined to include agriculture, manufacturing, mining and quarrying, electricity, public utilities, construction, and housing. (The nonagricultural goods sector is also used for comparisons and is denoted, "goods*.") The service sector includes

[1] Economic activities which may be classified as "services" but which are here classified as "goods," are public utilities and construction. These marginal activities are always difficult to allocate between groups, but in Egypt, as in most countries, they form a small proportion of total employment and, therefore, do not have much effect on inter-sectoral comparisons.

TABLE I

AVERAGE ANNUAL RATES OF GROWTH IN EMPLOYMENT, 1947–75

		1947–60	1960–65	1965–70	1970–75
(1)	Goods (G)[a]	0.9	4.2	2.0	1.8
(2)	Goods (G*)[b]	2.2	8.1	3.9	4.4
(3)	Services (S)	2.4	3.8	3.3	4.3
(4)	Commercial services (CS)[c]	1.1	3.4	2.7	3.6
(5)	Social services (SS)[d]	3.3	4.1	3.9	4.7

[a] Agriculture, mining and quarrying, manufacturing, electricity, construction, housing, and public utilities.
[b] Goods − Agriculture.
[c] Transport, communication, finance, and wholesale and retail trade.
[d] Education, health, defence, community religious and social services, government administration, and personal services.

TABLE II

RATIOS OF SECTORAL EMPLOYMENT GROWTH RATES, 1947–75

		1947–60	1960–65	1965–70	1970–75
(1)	S/G	2.67	0.90	1.65	2.39
(2)	S/G*	1.09	0.47	0.87	0.98
(3)	CS/G*	0.45	0.42	0.69	0.82
(4)	SS/G*	1.50	0.51	1.00	1.07

"commercial services" (CS)—transport and communication services, financial services, wholesale and retail trade; and "social services" (SS) including education, health, government administration, and personal services.[2]

Employment growth rates in goods and service sectors for three five-year periods, 1960–75, are shown in Table I and may be compared with the 1947–60 period. The choice of these periods is partly dictated by the data: 1947 is the only postwar census year prior to 1960, and the 1960–75 period has been decomposed into five-year periods to coincide with the Egyptian government's first five-year plans, 1960–65 and 1965–70. The 1970–75 period is chosen to provide a consistent comparison. A full set of data for 1975–80 is not yet available.[3] In addition to the sector employment growth rates in Table I, *relative* employment growth can be seen from the ratios in Table II.

[2] The terms "commercial services" and "social services" are used for convenience and are not necessarily meant to indicate homogeneity within groups. However, commercial services predominantly include services which are marketed as opposed to the social service sector which predominantly includes nonmarketed services provided "free" by government, e.g., health services and defence.

[3] Some recent evidence on the 1970–79 period by Hansen and Radwan [15] suggests that some of service sector employment expansion, identified in this paper up to 1975 has continued, particularly in government services. However, they also suggest that higher demand for labor in the later 1970s has probably reduced the growth of private, informal services. See Hansen and Radwan [15, pp. 535–41].

It can be seen from Table I that employment in all sectors grew faster after 1960 than during 1947–60, with the goods* sector (line 2) growing particularly rapidly during 1960–65. Second, for commercial services the post-1960 growth rates are a new phenomenon, pre-1960 growth being just over 1 per cent per annum. For social services, although employment growth after 1960 is higher than before, the increase in growth rates is less dramatic.

The increase in the *relative* growth of service sectors during 1960–75 is clearly demonstrated in Table II. Using any of the sectoral definitions there is a systematic increase in the service to goods ratio from 1960–65, to 1970–75. However, apart from the ratio in line 3, the high ratios pertaining in 1947–60 are not achieved again till 1970–75, and even then the ratios are somewhat below the pre-1960 period. The commercial services/goods* ratio in line 3 appears to have risen considerably above that occurring prior to 1960, confirming that employment growth in commercial services has been particularly strong from 1960.

These data suggest that at least some service activities have grown rapidly since 1960 and have shown an increasing *relative* growth since the mid-1960s. This growth has occurred relative to both agricultural and nonagricultural goods sectors. In addition, Egypt's service sector would appear to be large by international standards. This is perhaps best demonstrated by evidence from Turnham [32] who found that, out of twenty-one less developed countries, Egypt had by far the largest share of its labor force in service activities in 1960, despite the inclusion of more developed countries such as Argentina in the sample. Conventional development theory suggests that a rise in service employment relative to industrial employment (equivalent to the goods* sector here) would normally be expected only when much higher levels of development have been achieved and "industry" more developed, though there is evidence that some less developed countries, particularly in Latin America are experiencing "premature" growth in services.[4] In Section III possible reasons for this relative growth in service employment in Egypt will be examined.

III. EXPLANATIONS OF STRUCTURAL CHANGE

The evidence presented in Section II suggests that at least some of the causes of the increasing relative service sector growth from 1965 have their origins in earlier years. Since Mead [27] and others have already discussed some of the causes of service employment growth between 1937 and 1960 these will only be discussed here where they help to explain the relative growth after 1965.[5]

Before examining the applicability of some more general explanations of service sector growth to Egypt, two factors peculiar to the Egyptian economy, which may be held to explain the data discussed in Section II will be considered.

First, it may be suggested that the relative growth of services after 1965 was

[4] See Thirlwall [31], Berry [2], and Gemmell [12].

[5] See Mead [27], Hanafi and Mongi [14] for some discussion of service sector growth prior to 1960.

simply a return to a longer-term trend, when the drive toward "industrialization" during the First Five-Year Plan (1960–65) lost its momentum in subsequent years. While there is some evidence, as will be seen later, that factors causing a growth in services during previous decades did also play a part in the post-1965 growth, they certainly could not be said to explain the whole phenomenon. Both the absolute growth rates of service employment and those relative to goods-sector employment have fluctuated considerably since the turn of the century. Also, compared to the 1947–60 period, both service sectors grew in absolute terms much faster from 1960 than previously, as indeed did the goods sector, at least for the first five years. In addition growth in the commercial service sector relative to the goods sector occurred for the first time (during the postwar period) only after 1965. Therefore, it is unlikely that the post-1965 growth in services could be explained as a resurgence of an earlier trend once the temporary emphasis of development effort on "industry" had subsided from the mid-sixties onwards.

Second, it is often argued that in Egypt, for a given increase in output, the public sector has a higher propensity to absorb labor than the private sector. This is often stressed in relation to manufacturing industry, where surplus labor is alleged to exist in publicly-owned factories.[6] This might lead to the presumption that the relative growth of services after 1965, as goods-sector employment growth fell, simply reflects the fact that the public sector failed to absorb labor at the rate achieved during the early sixties as the pace of development slowed thereafter. Thus employment grew less in the predominantly public goods sector but continued to grow at a similar pace in the predominantly private service sector.

A sectoral breakdown of output data reveals however that the public sector is no more important in the goods than service sectors. In 1974, the public sector formed 63 per cent of value added in the nonagricultural goods sector and 65 per cent in the total service sector. If agriculture is included the public sector is of even less importance in goods production, being responsible for only 32 per cent of all goods-sector value added. Thus if there was a general reduction in public sector growth after 1965, ceteris paribus, it would seem unlikely that it was responsible for the relative growth in service employment after 1965.[7] It is clear, then, that neither of these two explanations is adequate to explain the

[6] See, for example, Mabro and Radwan [24, pp. 76ff.]. This is not suggest that Mabro and Radwan do not recognise the growth of the nonmanufacturing public sector; indeed they identify Finance and some areas of the Retail Trade as prime targets of State "sequestration" in the early years of the new regime. However, there is a tendency to stress the importance of the early 1960s employment drive, and the extension of public ownership, in manufacturing in particular.

[7] In fact, if it is desired to test whether reduced growth in the public sector is responsible, per se, for the relative growth in service employment, the relationship to be tested cannot be a simple one. To establish that the public sector is responsible would require information on differences in "surplus" labor, output, capital-labor ratios, etc. between public service and goods sectors, and private service and goods sectors. Information on changes in these variables and changes in the public-sector's share of the two sectors would also be required. For the most part, this information is not available for Egypt.

relative growth in service employment, and an understanding of the relevant causal factors must be sought elsewhere.

The body of literature which has emerged in an attempt to assess the causes of the expanding share of services in various industrialized Western economies has produced several hypotheses. The original aruguments of Fisher [8] and Clark [7] that income elasticities and productivity differences between sectors are important explanations of the relative growth of service industries as part of the development process continue to have strong support. Other factors which economic theory suggests may cause differential sectoral employment growth include sectoral differences in input requirements arising from differential rates of technological progress between sectors or changes in relative factor prices. The effects of different combinations of capital and labor inputs across sectors may of course be evidenced in productivity differences. In the remainder of this paper the first two of these hypotheses will be examined, namely differences in income elasticities and productivity.[8]

A. *The Method of Analysis*

Before examining the effects of income elasticities and productivity on employment some methodological problems must first be dealt with. First, problems arise over the method of testing for these effects. One approach would be to examine the two functions,

$$Q_i = f(Y) \tag{1}$$

and

$$E_i = f(Q_i, P_i, \cdots), \tag{2}$$

where Q_i, E_i, and P_i are output, employment, and productivity in sector i, respectively, and Y is per capita income. Using regression techniques, estimates of income elasticities for each sector's output may be obtained from equation (1), and the effects of the resulting demand, and productivity on employment from equation (2), assuming output to be demand-determined. There are, however, econometric problems with regressions between employment, output, and productivity.[9] In addition data problems with Egyptian output and productivity statistics in some years, and the limited number of observations, make the application of regression analysis to annual data unsatisfactory in this case.[10]

[8] Unfortunately, data limitations prevent separate examination of differences in capital accumulation and technical change across sectors. These are in addition to the well known methodological problems associated with measuring changes in capital stock and technology.

[9] Because of the identity linking these three variables (see below), the use of regression analysis to test for *behavioral* links between the variables has led to a lengthy debate over the appropriate econometric procedure. The issue has been important in tests of the so-called "Verdoorn law." See, for example, Kaldor [18], Rowthorn [30], and McCombie [25].

[10] In addition to the data problems discussed above, the evidence in Tables I and II suggests that relative employment growth between sectors has varied within the 1960–75 period. Clearly the number of observations available does not allow satisfactory testing of hy-

A less rigorous but in this case more appropriate method of analysis is therefore used in this study. This method, first used by Fuchs [9] for the United States, consists of examining the association of employment growth rates with output and productivity growth rates. It can be shown that for any sector these variables are linked identically such that,

$$e_s - e_g \equiv (q_s - q_g) - (p_s - p_g), \qquad (3)$$

where e, q, and p are the proportionate rates of growth of employment, output, and productivity (as measured by output per man), respectively, and subscripts g and s refer to the goods and service sectors, respectively. From equation (3) it can be seen that sectoral differences in employment growth must be equal to the difference between sectoral differentials in output and productivity growth. If output and productivity are exogenous (see below) then, "*other things being equal*, a more rapid rise in real output for the service sector compared with the goods sector would imply a more elastic demand for services" (Fuchs [9, p. 8]).

Thus, although the hypothesis that faster employment growth in services relative to goods is due to higher income elasticities for services cannot be tested directly, the association of a given value of $(e_s - e_g)$ with a similar value of $(q_s - q_g)$ could be interpreted as indicating a higher income elasticity in aggregate for services. Alternatively, if a positive employment growth differential appears to be associated with a similar negative productivity growth differential, the hypothesis that slower productivity growth in services accounts for its relative employment growth becomes more plausible. Slower labor productivity growth may of course result from a number of factors. Sectoral differences in the quantities of capital allied with labor in production; in the elasticities of substitution between capital and labor; in the rate of technical progress, for example, may cause productivity growth to differ between sectors. Initially, however, it is desired to ascertain whether output *or* productivity growth differences appear to be the main source of differences in employment growth.

The relationship between growth rates in the three variables will be examined for the three sub-periods discussed earlier, namely, 1960–65, 1965–70, and 1970–75. Differences in the relative employment growth rates between these periods (as shown in Tables I and II) are sufficiently large as to suggest that factors affecting employment growth may not be the same in all periods.

A second methodological problem arises from the identity between employment, output, and productivity growth discussed above. If, within the identity output and productivity are to be held to exert influences on employment, both output and productivity variables must be exogenously given, and *behaviorally* independent.[11] In fact there are likely to be causal relationships between output and productivity. Different rates of productivity growth between sectors, for

potheses for some sub-periods using regression analysis. Some attempt to use regression techniques for the whole period has been made by Gemmell [13].

[11] Obviously the two variables are not statistically independent since they share a common term-output. However, it must be assumed that there are no causal relationships between the variables in terms of economic behavior.

example, may be expected to affect relative prices which in turn, via demand changes, can affect sectoral output growth rates. Conversely, the Verdoorn law suggests that higher rates of output growth may be expected to encourage faster rates of growth in employment *and* productivity, through economies of scale and the encouragement of faster technical progress.[12] In practice in studies of employment change it is typically assumed that the effects of interdependencies between output and productivity growth are sufficiently small as to allow the two variables to be treated as independent.[13]

In mainly market economies it is probably not unreasonable to assume that in general output and productivity growth variables in equation (3) are exogenous. Thus employment growth is determined by the rate of output growth (usually assumed to be demand-determined) and the rate of productivity growth. However, in economies where the government is heavily involved in the production of marketed goods and services, particularly in developing countries with high unemployment, it may adopt employment-creating policies which affect output and productivity. In Egypt, for example, it has been suggested that productivity fell or grew slowly in some industries in the early 1960s because the government's "employment drive" in this period expanded employment beyond that required for production. Similarly, it is likely that there were times during the 1960–75 period when output was constrained by supply factors despite growing demand. Balance of payments deficits in the 1960s led to brief but severe import restrictions in some years which prevented some industries from producing at full capacity due to shortages of foreign input goods.

While these factors undoubtedly did affect the relationship between output, productivity, and employment in some parts of the economy during this period, overall, the effects were probably small and short-lived. For the goods and service sectors as a whole, over the 1960–75 period, it is probably reasonable to regard output as demand-determined and output and productivity as exogenous.[14] However, in interpreting the data later in this section, it is important to be aware of possible violations of these assumptions.

Finally, any analysis concerned with output growth in service sectors must be aware of the problems of measuring that output. These problems really only relate to those services which are "nonmarketed" such as state-provided health and education. Since these services have no observable market prices, their real output cannot be measured readily and the costs of nonmaterial inputs (mainly wages and salaries) are usually used to evaluate "output." This makes the concept of productivity growth in these services different from other sectors since it largely reflects increases in wage rates. In common with previous studies, this study

12 See Verdoorn [34]. This relationship has been examined in detail with reference to the U.K. economy. See references cited in footnote 9.

13 See, for example, Fuchs [9].

14 Per capita income was growing particularly rapidly during this period by historical standards so that it may be presumed that demand was a considerable stimulus to output growth.

uses output data for these services as calculated for national accounts, but interpretation of output and productivity statistics must be rather different from that of the goods and "marketed" services sectors.

B. *Income Elasticity of Demand*

The link between income elasticities and differential employment growth between sectors has been well documented in the economic literature.[15] It needs only be reiterated here that it has been observed that as incomes rise so does the demand for (or consumption of) goods and services. Empirical evidence also suggests that once a certain level of goods consumption has been reached, further increments in income tend to be increasingly used for greater consumption of services so that there is a tendency for the elasticities of demand for services to rise relative to goods as incomes rise.

Normally therefore higher, or a significant increase in, income elasticities for services may be expected to occur only in countries where per capita income is already relatively high and where a high level of goods consumption has been attained, while in Egypt by 1975 per capita national income was only a little over £E100 (or approximately U.S.$250 at the exchange rates then prevailing). Thus it might be expected that income elasticities will be of little importance in any explanation of faster service employment growth in Egypt. However two points can be made here. First, in countries where per capita income is not high but where income distribution is very inequitable, it is possible for a minority with high incomes to exhibit high elasticities for services while a majority of those on low incomes are allowed to form only a small part of total market demand. Many writers have pointed to the heavily skewed distribution of income in Egypt, among them Abdel-Fadil [1], Radwan [28], and Wilson [35], who suggest that land ownership and rural incomes remain very inequitably distributed despite the aims and efforts of the socialist regime.[16] Mabro [23] has also identified the persistence of an unequal income distribution in urban areas, although the tendency there seems to be toward a more equal distribution. Second, it is of course possible that the Egyptian consumer exhibits a pattern of income elasticities legitimately inconsistent with that which has been observed in some other LDCs, and it is possible that a "premature" demand for modern services may arise as some LDCs such as Egypt attempt to emulate "Western" life-styles.

It may be therefore that the relative growth in service sector employment in Egypt since the mid-sixties has been due to a rise in the income elasticity of demand for those services, relative to goods.

To estimate differences in real output between sectors, using Fuchs's methodology [9], two measures of real output will be used—gross domestic product at constant 1960 prices (measure I), and at current prices (measure II). It is likely that implicit price deflators for services (and particularly social services)

[15] See Fisher [8], Clark [7], Chenery [4], Maizels [26], and Thirlwall [31].

[16] After studying income and land distribution in rural Egypt since the revolution, Radwan concludes that "the distributive effects of the Egyptian agrarian reforms were marginal" [28, p. 75].

TABLE III

SECTOR DIFFERENTIALS IN RATES OF GROWTH IN EMPLOYMENT (e) AND OUTPUT (q), 1960–75

	1960–65			1965–70			1970–75		
	(e_s-e_g)	$(q_s-q_g)_I$	$(q_s-q_g)_{II}$	(e_s-e_g)	$(q_s-q_g)_I$	$(q_s-q_g)_{II}$	(e_s-e_g)	$(q_s-q_g)_I$	$(q_s-q_g)_{II}$
(1) S–G	−0.4	1.4	0.6	1.3	0.1	−1.5	2.4	6.5	2.8
(2) S–G*	−4.3	−1.0	−0.4	−0.6	−1.0	−1.6	−0.1	5.0	3.3
(3) CS–G*	−4.7	−1.5	−0.5	−1.2	−5.5	−5.2	−0.8	6.4	4.4
(4) SS–G*	−4.0	−0.7	−0.3	0.0	1.7	1.0	0.3	4.1	2.6

are underestimates relative to goods so that the constant price data probably overestimates the output differential in favor of services.[17] Conversely, current price data which assume both sectors' prices increase at the same rate probably underestimate the real growth in service output relative to goods. It is however likely that measure II is the more accurate for this comparison.[18] Table III shows sector differentials in the rates of growth in employment and real output, using both measures, for the three five-year periods.

Between 1960 and 1965 goods sectors, however defined, grew faster in employment terms than services. Variations in the employment differentials result mainly from slow growth in agriculture and a faster growth in social services. In line 1 of Table III, considering the aggregate service sector relative to goods, it may be seen that during 1960–65 a negative differential employment growth is associated with a small positive output differential (assuming that the true growth in real output lies somewhere between the two measures). During 1965–70, however, when employment in services begins to grow faster than the goods sector, this positive differential becomes associated with a slower output growth in services than goods.

A similar phenomenon occurs in lines 2, 3, and 4; employment in the goods* sector grows faster than either definition of the service sector during 1960–65 and faster than commercial services in 1965–70. The output differential moves quite differently for the two service sub-sectors. The relative employment growth of commercial services (line 3) is associated with a sizable decrease in its output differential for 1965–70. This trend is reversed during 1970–75 when there is a large increase in the output differential in favor of services. For the hypothesis that income elasticity differences are an important explanation of relative service employment growth to be supported, it is required that only output growth differ-

[17] It is widely recognised that deflators used to produce constant price GDP figures, since the 1960s at least, are underestimated so that in "Industry," for example, though average money wages were about 100 per cent higher in 1975 than in 1960, prices in that sector were apparently only 40 per cent higher. This difference is large enough to suggest that price controls are unlikely to be an adequate explanation and in the service sectors the difference is even larger.

[18] Although the prices of many services probably did increase by less than those of many goods in this period the difference implicit in real GDP data clearly exaggerates this and the assumption of equal price rises across sectors is probably closer to the truth. For a discussion of price deflator problems in Egypt, see Kanovsky [19, p. 219].

entials are present and are sustained. It is clear however that neither of these two conditions are satisfied and it would, therefore, seem unlikely that income elasticities could be regarded as an important explanation of the relative growth of commercial services employment from 1965 to 1975.

For social services, the data do suggest that the rising employment differential is consistently associated with a rising output differential (line 4). However, it may be noted that the large rise in the employment differential from the first to second periods, of 4 percentage points (−4.0 to 0.0) is associated with only a 1.3 percentage point rise in the output differential. The reverse is true for 1970–75 when a large increase in the output differential occurs with only a small increase in the employment differential. Thus, although increases in demand (proxied by output) may have been greater for social services than goods, differences in income elasticities cannot be confirmed. There are, moreover, particular difficulties interpreting social service output data, as discussed above. Since the majority of these services are in public ownership and are financed from public funds, any observed output growth in these services is effectively decided by public agencies on behalf of the private citizens who consume them. To the extent that these services are financed by taxation, private consumers may be considered to be allowing their "social wage" to be used in the purchase of these social services and, therefore, have indirect income elasticities for them. However, with the Egyptian budget deficit high and increasing over the period, arguably the government is creating a growth in output in excess of that demanded by the consumers it represents.[19]

Therefore, it appears that the rise in service employment growth relative to goods cannot be satisfactorily explained by a rise in, or higher value of, income elasticities for services. The rise in social service employment, while possibly associated with a faster rise in social service output, seems to result from government expansion which is difficult to interpret in terms of elasticities.

C. *Productivity*

It was shown in Section III.A that the rate of growth of output is equal to the sum of the rates of growth of output per man and employment.[20] Having examined the association of employment and output differentials in the previous section, this section will consider the associated productivity differentials.

[19] Of course it is often the case where public goods and services are concerned, that if the decision was left to the individual he would display income elasticities below those which are in his own best interest or in the interest of the nation as a whole. The often-quoted example of defence is particularly relevant in Egypt where the continuing threat of war makes it imperative that adequate defence measures are taken, measures which if left to the individual are unlikely to be sufficient.

[20] In discrete time of course it can be shown that,

$$q_i = p_i + e_i + p_i e_i .$$

As long as p_i and q_i are small then $q_i \approx p_i + e_i$. For this reason employment differentials in Tables III and IV are not exactly equal to output differentials less productivity differentials.

TABLE IV

SECTOR DIFFERENTIALS IN RATES OF GROWTH IN EMPLOYMENT (e) AND OUTPUT PER MAN (p), 1960-75

	1960–65			1965–70			1970–75		
	(e_s-e_g)	$(p_s-p_g)_I$	$(p_s-p_g)_{II}$	(e_s-e_g)	$(p_s-p_g)_I$	$(p_s-p_g)_{II}$	(e_s-e_g)	$(p_s-p_g)_I$	$(p_s-p_g)_{II}$
(1) S–G	−0.4	1.7	1.0	1.3	−1.2	−2.8	2.4	3.8	0.3
(2) S–G*	−4.3	3.1	3.8	−0.6	−0.5	−1.1	−0.1	4.9	3.3
(3) CS–G*	−4.7	3.1	4.2	−1.2	−3.4	−3.8	−0.8	7.0	5.1
(4) SS–G*	−4.0	3.1	3.6	0.0	1.7	0.9	0.3	3.6	2.2

Table IV shows the productivity differentials using both measures of output. It is clear that the increase in the employment growth differential between 1960–65 and 1965–70 is associated with a sizable fall in the relative growth in output per man in services. Whereas during 1960–65 productivity growth in services exceeded that in goods, during 1965–70 the reverse is generally true. Considering the total service and goods sectors for example; before 1965 a faster employment growth in goods of 0.4 per cent per annum is associated with a productivity growth of between 1 per cent and 1.7 per cent slower than in services. After 1965 service employment growth exceeds goods by about 1.3 per cent per annum, but now service productivity growth is slower than goods by between 1.2 per cent and 2.8 per cent. In other words, it could be argued from the data that the faster employment growth in services after 1965 was precipitated partly because of slow productivity growth after this date. However, such a universal conclusion would be misleading for two reasons. First, data after 1970 suggests a reversal of this trend, with ample evidence in Table IV that between 1970 and 1975 the increased relative employment growth in services is no longer associated with relatively slower productivity growth. Second, the large productivity growth differentials arise mainly because of a particular decline in productivity in one sub-sector of commercial services, the reasons for which will be discussed later. It is clear from line 4 that social services have experienced similar but less dramatic changes over the 1965–75 period. The increased employment differential in 1965–70 is associated with a large fall in relative productivity growth, while the improvement in relative productivity growth after 1970 is associated with only a small rise in the employment differential.

The large decrease in the commercial services productivity during 1965–70 appears to be a specific and abnormal phenomenon. Examining more disaggregated data reveals that the "transport and communications" sector, although it did not form a substantial part of commercial service employment, was an important contributor to commercial service output, mainly from Suez canal revenues. The cessation of these revenues following the 1967 Arab-Israeli war meant a large fall in commercial service output without a similar employment decrease.

If, then, the 1965–70 period is excluded for the moment because of the abnormal trends it shows, overall trends in output and productivity from the early sixties to the early seventies can be assessed. Comparing Tables III and IV reveals immediately that different conclusions concerning the relative importance

of output and productivity in influencing employment growth will be reached depending on which output measure is used. For example, comparing the social service and goods* sectors in line 4 of Tables III and IV: current price data (measure II) indicates that the increase in the employment differential from −0.4 per cent in 1960–65 to 0.3 per cent in 1970–75 is associated with a rise in the output differential from −0.3 per cent to 2.6 per cent and a fall in the output per man differential from 3.6 per cent to 2.2 per cent, that is, changes in output and productivity both have strong influences on employment. The constant 1960 price data (measure I), however, suggests that the increase in the employment differential occurs almost entirely because the output differential has risen, with productivity differentials remaining fairly constant. As previously noted it is likely that the current price measure, though clearly less accurate when calculating *absolute* real growth rates, is the more accurate measure of the relative growth rates between sectors in Egypt over this period.

If this is the case then the data in Tables III and IV suggest that the increasing employment differential in favor of services from 1960–65 to 1970–75 is associated with rising output, and falling productivity differentials. However this association is not uniform across service sub-sectors. As Tables III and IV show, the relative social service growth in line 4 occurs with a 1.4 percentage point *decrease* in the productivity differential (or a 0.5 percentage point increase if measure I is adopted), whereas in commercial services (line 3) a 0.9 percentage point *increase* is recorded (or 3.9 percentage points in measure I). These differences suggest that the respective roles of output and productivity in an explanation of relative service employment growth are variable and, therefore, an explanation (or explanations) of service sector expansion must be pursued at a more disaggregated level. This will be the subject of a subsequent paper.

IV. SUMMARY AND CONCLUSIONS

This paper has examined the extent of structural change in Egypt in the 1960s and 1970s, considering particularly the growth of service sectors relative to agricultural and nonagricultural goods-producing sectors. It was discovered that over the period there was a strong trend toward increasing employment in service activities, both commercial and social. In some services this appeared to be a return to trends evident prior to 1960 but which had been halted in the early sixties, while in others the strong absolute and relative employment growth was a new phenomenon.

In Section III the respective influences of output and productivity on employment growth were considered and it was argued that neither one of these factors was dominant overall, with relative employment growth appearing to be associated with changes in relative output and productivity growth. In addition, there seemed to be differences across sector results. The relative growth of commercial service employment occurred with a very large increase in the relative growth of output, and a positive productivity growth differential which kept employment

growth lower than it might otherwise have been. In social services on the other hand, relative employment growth was probably larger than relative output growth because of a simultaneous decrease in relative productivity growth. This conclusion is, however, slightly sensitive to the output measure used.

The variability, both in time and across sectors, in the role of output growth was sufficiently large as to suggest that higher income elasticities for services relative to goods could not be supported overall. Demand for some services, however, did appear to be strong. The reasons for this, and the very different rates of productivity growth across service sectors must await a more disaggregated study of these sectors.

Finally, it was noted that trends evident during 1965–70 were strongly influenced by selective effects of the 1967 war which had a large effect on commercial service sector output mainly as a result of the closure of the Suez canal. Because of the low labor intensity of services associated with the Suez canal, there was little effect on employment in this sector.

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