

LABOR MARKETS AND INDUSTRY IN EGYPT:
ANALYSIS AND RECOMMENDATIONS FOR EMPLOYMENT ORIENTED GROWTH

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A Report of the Industrial Strategy Assessment Project
for the U.S. Agency for International Development

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Executive Summary

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SYNOPSIS

This report focuses on the need to create 300,000 to 500,000 new jobs each year in Egypt during the current decade. This will require much faster employment growth than in the past, and can only be accomplished with fundamental change in the focus of public policy.

Principal obstacles to sufficiently rapid rate of job creation are identified as: (1) excessive wage growth; (2) inconsistencies between public and private sector wage structures; (3) low productivity in public enterprises; and (4) mismatches between education/training programs and skill requirements for economic growth.

Chapter II and Appendix A provide evidence that current tightness in the labor market will be temporary, and that large labor surpluses and high unemployment and underemployment will occur unless the rate of job creation is increased substantially. After considering potential sources of employment, a job creation strategy is proposed which focuses on increasing labor demand through the growth of labor-intensive export industries.

Recent wage trends are reported in Chapter III and Appendix B. Real increases in legislated minimum wages and benefits have exceeded rates of productivity growth, and are deterring the adoption of labor-intensive technologies in industry. Inconsistencies between the public sector civil service wage structure, and recent developments in the private sector, are causing labor misallocations. Incentive and productivity problems in the public enterprise sector are described. Continuing low wages of women pose problems for income distribution, but opportunities for accelerated industrial growth as well. Occupational wage patterns are consistent with survey results showing on-going scarcities of engineers, technicians, skilled craftworkers, and middle level managers.

In chapter IV, mismatches between educational enrollments and expenditures, and labor market needs, are reviewed. In particular, (1) primary and preparatory enrollments remain below appropriate target levels, and adult illiteracy rates remained persistently high; (2) secondary curricula lack sufficient emphasis on labor-market preparation; (3) public vocational expenditures are insufficient to meet a number of skill needs in the labor market, and do not provide subsidies to encourage private training which could benefit the economy as a whole; (4) a great deal more management, personnel supervision, industrial relations and achievement/motivation training is needed in both public and private sectors; and (5) budgetary needs of most literacy, basic education and vocational training programs are not being met, while expenditures on university programs are disproportionately large. Suggestions are made for shifting the balance in favor of more necessary, higher-payoff programs.

The principal findings of these three analytical chapters are presented in Chapter I, together with recommendations for increasing overall labor demand, revising incentives to enhance productivity in the public enterprises, and expanding and strengthening education and training programs.

Executive Summary

Egyptian labor markets have tightened significantly during the past decade. Rapid economic growth has greatly improved employment opportunities. Public employment has increased sharply, due in part to job guarantees for war veterans and higher-education graduates. Temporary emigration to the Arab Gulf has also continued to increase. As a result, previous labor surpluses in agriculture have been greatly reduced or eliminated and real wages have risen in the economy as a whole.

However, these labor market successes will be difficult to sustain during the 1980's. Growth of the domestic labor force will soon overtake net employment increases, causing renewed problems of unemployment and underemployment, unless an effective job creation strategy is adopted. Public employment, which has accounted for nearly 90% of net job creation, cannot continue to grow fast enough to absorb the 300,000 to 500,000 additional workers who will need good new jobs each year. Net emigration is likely to decline. In other sectors, employment growth has barely kept ahead of declines in agricultural employment.

Because wages are the only source of income for a large majority of Egyptian families, productive income-earning opportunities are the key to equitable income distribution and an improved standard of living. Thus, creating enough good jobs must be a central focus of development policy. However, the recent increases in prosperity could easily be

reversed unless action is taken now to expand employment growth. To prevent mounting open unemployment and underemployment, public policies and resources should focus on expanding production of labor-intensive industrial exports.

Forecasts of sectoral employment suggest that between 260,000 and 370,000 jobs will be needed annually in industry alone. In 1975-1979, approximately L.E. 15,000 of new investments were required for each new job among Law 43 industrial firms. At these levels of capital per new job, it would not be feasible to create enough additional employment during the 1980s. At current prices, annual investments of between L.E. 3.4 billion and L.E. 5.3 billion would be required in industry. Adequate employment growth, at a sufficiently rapid pace to avoid an unemployment crisis, can be accomplished only through more labor-intensive industrial growth. Egypt has labor and other resource endowments which are well suited to labor-intensive export industries. These industries can provide large numbers of jobs, while strengthening the productive base of the economy and improving Egypt's long-run competitiveness and balance of payments.

While there has been an increased reliance on private market pricing, subsidies and government-controlled prices have continued for many items. This dual pricing system has created distortions and misallocations which foster inefficiency, make labor-intensive investments less profitable, and increase income inequality. Some distortions are inevitable, particularly during rapid economic development. However, misallocations can be significantly reduced.

Public subsidies have favored capital accumulation. Comparable, offsetting incentives are needed to encourage employment-oriented growth. Wages for unskilled labor are above long-run social costs, due to current demand pressures which will soon give way to growing surpluses. Recent government efforts to raise earnings of low-income families by increasing minimum wages and benefits ultimately will be self-defeating unless wage gains are backed by productivity growth. Inflation erodes any temporary improvements in real income, and high labor costs cause investors to select technologies which are more capital-intensive than is appropriate for the economy in the long run. Increased labor costs also undermine the competitiveness of Egyptian exports. The immediate distributional advantages of accelerating wage increase by government fiat, rather than through rising productivity, should be weighed carefully against the social and economic costs of foregone employment growth in the future.

Several other recent trends in formal sector relative wages are particularly important for job creation and industrial growth:

- * The wage structure in the public sector remains narrower than in private firms. Entry-level wages are higher, while technical and managerial employees receive less.
- * Women, whose average wages have increased somewhat relative to men, continue to earn wages which average only one half to two-thirds of male rates.
- * Recent changes in occupational wage differentials confirm that scarcities remain in markets for well-trained engineers and technicians, skilled laborers and craft workers, and middle-level managers.

In public enterprises, the narrower wage structure and extensive

remaining labor redundancies continue to cause inefficiency. The strength and productivity of these public firms is crucial for successful economic development. In manufacturing, these firms account for nearly half of enumerated employment and supply the economy with key intermediate products and consumer goods. Measures now being considered to increase managerial autonomy, and additional measures to extend productivity incentives to all employees, are important for strengthening public firms.

Despite increasing educational attainments of young women, and correspondingly greater participation in formal sector labor markets by new female entrants, sex discrimination remains strong particularly in these good jobs. The benefits of recent economic progress have not been extended as fully to women as men. Illiteracy remains high among Egyptian adults, much higher among women. Gains in educational enrollments have little benefit for older women, whose prospects for productive employment may actually have worsened. Educational requirements are currently higher for women seeking well-paying jobs than they are for men, and the large majority of illiterate women may be increasingly marginalized as employers raise educational requirements in formal sector jobs. Thus, returns to education are still lower for women. Greater enrollment levels in basic education for female children can provide only a partial and long-term solution to these problems. In addition, more immediate efforts are needed to lower barriers to employment for less-educated adult women.

Vocational education and training efforts are planned or under way

to close the most serious skill gaps. Despite a considerable expansion in recent years, however, many skill programs are still below the levels required to fill existing or anticipated gaps. Among the most serious and unmeasurable consequences of skill shortages are the selection of labor-replacing technologies, and an overall reduction of investment. In some areas, such as construction, the impact is clearer than in others. The large volume of temporary emigration poses added problems in anticipating shortages, and in providing sufficient skill training. The relative costs and benefits of emigration need to be weighed carefully. A consistent policy toward emigrants needs to be implemented, and training programs need to compensate for ongoing attrition through emigration.

The other project reports include proposals to support more rapid growth of labor-intensive export industries. To expand employment opportunities in industry at a sufficiently rapid pace, a number of additional measures in the labor market are needed:

- * create a national-level technology clearing house to identify successful labor-intensive production alternatives, and to inform prospective investors of these employment-oriented options;
- * help identify international markets for exporting firms which utilize labor-intensive production methods;
- * limit legislated and administered real wage increases at the national level to the rate of productivity growth;
- * subsidize vocational and technical skill training by private and public employers on an equal basis;
- * assist managers in learning how to improve personnel supervision and industrial relations through training and advisory consultation;

- * establish a large scale program of administrative and achievement training for both public and private sector managers through short-term, focused management seminars;
- * assess the costs and benefits of emigration, and develop more effective incentives to keep needed personnel in Egypt;
- * increase the educational base of the work force, by expanding primary and preparatory enrollments, increasing practical and pre-vocational content in the curriculum, and intensifying efforts to increase adult literacy and basic education; and
- * improve job access for capable men and women, by developing hiring criteria which reflect necessary competencies rather than unrelated educational attainments.

To increase productivity in the public enterprises, the most important work force policies are:

- * increase managerial autonomy and base managerial bonuses on improvements in enterprise profits, where profits are defined through social accounting which reflects pricing subsidies and economy-wide objectives;
- * reward managers for adopting efficient labor-intensive production alternatives by including the social value of job creation in firms' profit accounts;
- * revise the wage and bonus system, separating it from regular civil service regulations, to reward all group and individual contributions to increased productivity;
- * provide advice and support through a staff of government industrial relations experts, in defining new enterprise-specific compensation systems, redesigning jobs, reallocating and retraining employees in a manner which is satisfactory for workers and management, and strengthening internal labor-management and bargaining practices;
- * provide direct assistance in retraining workers for new assignments within the firm; and
- * provide achievement and supervisory training for many middle-level managers and line supervisors.

In order to reduce average training costs and increase profitability associated with labor-intensive technologies and

investments, the following measures are proposed to strengthen the educational base of the work force:

- * increase enrollments in primary, preparatory, and secondary technical schools programs;
- * intensify efforts to increase adult literacy and basic educational programs; expand remedial and skill training programs in the military for men, and develop counterpart screening and remedial education institutions for women;
- * double or triple budgetary commitments to these programs; finance increases if necessary by shifting support from less vital university and higher-education programs through a variety of specific proposed measures;
- * introduce more practical and pre-vocational content into the primary and preparatory curricula, including an agricultural component for rural children;
- * develop evaluation and certification methods which are more oriented to practical competencies, are less focused on rote memorization of theoretical concepts, and are available to those who have learned outside formal and other institutional education and training channels; and
- * expand teacher training programs, and provide upgrading seminars for existing teachers to introduce competency-based teaching methods, and applied curricula.

One of the most serious obstacles to effective human resource planning is the lack of current, rapidly available data. An extensive data collection system exists, but data compilation and retrieval is too slow to be of use to program planners and policy makers. This is an area where a relatively small investment could provide substantial benefits by allowing planners to anticipate skill shortages, plan necessary training programs, and adjust incentives as needed.

The large size of the U.S.A.I.D. program in Egypt creates a unique opportunity to assist Egypt in achieving self-sustaining growth. By

focusing on job creation this assistance can make a decisive difference. In the industrial development program, a paramount criterion for selecting projects to assist should be the long-run contribution to employment growth. An Employment Impact Report should be included in all project assessments.

In addition to providing funds for employment-generating investments, U.S.A.I.D. programs could have a powerful leverage effect on job creation by providing technical support and consultation in the following critical areas:

- * identifying successful labor-intensive production technologies which are appropriate, given Egypt's resource base and comparative advantage;
- * building an effective, computerized, rapidly accessible human resource data base, and expanding personnel capabilities for effective data management, analysis, and human resource planning;
- * strengthening managerial training, for line supervisors and middle-level as well as top managers, including components for personnel management and industrial relations, achievement motivation, and (for the relevant decision-makers), identification of efficient labor-intensive investment alternatives;
- * introducing modern teaching methods and technology into both basic education and technical vocational/skill programs; and
- * developing new curricula to increase the job-relatedness of lower-level education programs.

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I. LABOR AND INDUSTRIAL GROWTH:

SUMMARY AND RECOMMENDATIONS

Bruce Vermeulen

Egyptian labor markets have tightened significantly during the past decade. In the period 1973-1980, average real wages increased steadily in the economy as a whole, while in agriculture scarcities of even relatively unskilled workers have emerged. The rapid economic growth of the past decade, spurred to a great extent by the infatih policies, has brought an increase in living standards for many workers, although it has also led to a greater degree of income inequality.

The recent economic gains have occurred during a period in which a fundamental shift has taken place toward greater reliance on private pricing and allocation decisions in the market. This has created a peculiar juxtaposition of administered with market-determined wages and prices, with unavoidable distortions which too often result in private profit at the expense of the government's ambitious objectives concerning growth and equity. Despite these distortions, the economy has experienced continuing rapid economic growth.

It will be increasingly difficult in the 1980's to reproduce the successes of the past decade. Rapid labor force growth and increasing

demands on public resources may cause unacceptable reversals in the labor market -- stagnant average real incomes and increasing unemployment -- unless a major program for job creation is implemented by the government.

The purpose of this report is to recommend a set of changes in labor market policies which can accomplish cost-effective increases in employment, productivity, and worker incomes on the scale required during the 1980's. The report focuses on three broad areas of policy concern: (1) the imminent need to create a potentially massive number of new productive jobs if an unemployment crisis is to be avoided; (2) distortions in the level and structure of wages and incentives which must be corrected to avoid dampening economic growth and job creation; and (3) serious mismatches between the nation's education and training system and the labor market requirements of the 1980's.

A. Principal Problems for Employment-Oriented Industrial Growth

Rapidly Expanding Job Creation Needs

There is little question that the labor market was much tighter in 1981 than it was five years earlier. However, the success in creating jobs faster than the growth of domestic labor supply has been achieved partly through actions and circumstances which are unlikely to generate enough jobs in the future. Large annual increases in the number of temporary emigrants -- in numbers totalling perhaps as much as 40-50 percent of net annual increases in the labor force -- have helped to

limit the need for new jobs within Egypt.¹ The expansion of government employment has also been an extremely important factor in overall labor absorption within Egypt. Increases in private non-agricultural employment have stayed only slightly ahead of declines in the agricultural work force. As a result, close to 90 percent of net job creation can be attributed to public sector jobs.²

Neither of these factors can be relied upon to the same extent in the future. Net emigration rates almost certainly must decline over time, even in the absence of any abrupt reversals of demand for labor among the Arab Gulf nations.³ Similarly, government employment cannot be expected to continue increasing at previous rates. Already, there are mounting pressures to reduce the degree of redundancies in public sector employment, particularly in the public enterprises. As the budgetary drain of low-productivity jobs increases through wage inflation and continued hiring of redundant workers, fiscal pressures will force a shift of emphasis from increasing government jobs to raising productivity in existing jobs.

Labor market forecasts reviewed for this report ignore or underestimate another change which is taking place in the Egyptian labor market. Although the proportion of Egyptians having previously earned

1. For a discussion of the range of estimated emigration rates, see Chapter II and Appendix A.

2. See R. Rucker, "Egypt: FY 1983 CDSS Employment and Labor Force Annex," U.S.A.I.D., Cairo (1982), p. 35.

3. As the pool of Egyptians who have been abroad for an extended period of time increases, return migration will increasingly offset the ongoing flow of new emigrants.

secondary and higher-level degrees is still small, and women have received much less education on average than men, enrollment rates are now changing rapidly. Both the numbers and proportions of young women receiving better educations are increasing. Unlike women with less education, who have been largely excluded from the formal sector labor force, these women are guaranteed public sector jobs as are men. They have very high recorded labor force participation rates, which have grown faster than employment opportunities; thus, recorded unemployment rates among these women have also grown.⁴ Because government policies have fostered new sets of aspirations in both men and women who gain access to secondary and higher-level education, the change in educational attainments among women is likely to have profound effects on the composition of the enumerated and skilled labor force over time.

Each of these factors has a potential for increasing the need to create new productive jobs more rapidly than has been anticipated in the five-year plans. Together, these changes could result in critical levels of unemployment. The recent gains in real wages and employment could rapidly be eroded, as in the past,⁵ unless a concerted program is undertaken to develop new sources of productive employment. An estimated

4. For an in-depth discussion of female labor force participation, see H. Papanek and B. Ibrahim, "Economic Participation of Egyptian Women: Implications for Labor Force Creation and Industrial Policy" (report submitted as part of this project). See also education discussion in Chapter IV of this report.

5. The historical cycle of rising and stagnating real wages is discussed in Bent Hansen, Samir Radwin, et. al., Employment Opportunities and Poverty in a Changing Economy; Egypt in the 1980s: A Labor Market Approach; first draft (Geneva: International Labour Office, 1980).

300,000 to 500,000 new jobs will be needed each year to keep pace with labor force growth. To assure adequate wage earnings in these jobs, as many as 270,000 to 360,000 of these jobs may be needed in the industrial sector alone.⁶

Wage Distortions and Labor Misallocation

Average real wages in the economy have risen for most of the period since 1973-1974. Detailed wage data, which were available for this report only through 1976 and 1977, show a general reduction in wage differentials across major sectors, two-digit industries, and for blue collar-white collar, and public-private sector comparisons. Within industry, there also appears to have been some reduction in male-female differentials, though this is less certain.⁷ The narrowing of wage differentials has resulted partly from conscious government policy, and presumably from increases in education, training, and labor mobility as well.

In general these relative wage trends are consistent with a program for employment expansion and rapid industrial growth. However, there are two principal aspects of current wage patterns which do not encourage sufficient job creation: rapid recent increases in aggregate

6. The basis for these estimates is the central focus of Chapter II and Appendix A.

7. Recent evidence concerning wage differentials is presented in Chapter III. Women's relative wage rates were significantly higher in 1976 than in 1966, but preliminary data for 1977 suggest that the rise in the previous year may have been only temporary.

wage and benefit levels in the economy as a whole; and the relatively narrow wage structure in the public sector compared with private sector rates.

1. Rapid increases in aggregate wages and benefits. Because the tightness of the labor market is likely to be a relatively short-run phenomenon, soon to be replaced by a renewed need for the Egyptian government actively to develop productive job opportunities, it is reasonable to assume that actual real wage rates at present are above their long-run equilibrium levels even in highly competitive parts of the labor market.⁸ Therefore, private investment decisions being made on the basis of current wage rates favor less labor-intensive technologies than are appropriate in the long-run. Investments tend to be more capital-intensive, and overall investment rates are reduced somewhat, because actual labor costs in the market exceed the long-run social costs of labor. Recent government policies which have increased minimum wage rates, bonuses, pensions and other labor benefits further deter labor-intensive investments.⁹ These policies do have clear short-run distributional advantages, and are perhaps viewed as necessary to match

8. In technical terms, the aggregate "shadow wage rate" is below the market rate. This does not mean that real wages cannot rise in the future, through active efforts to increase productivity and employment. Rather, it means that labor supply will outstrip increases in demand, putting downward pressures on wages, unless these efforts are undertaken on a sufficient scale.

9. In June 1981 the Deputy Prime Minister for Economic and Financial Affairs, Dr. Abdul Razzak Abdul Meguid announced a large increase in the budgeted total compensation for workers in fiscal year 1981/82, to 2103.2 million Pounds, up 38% from the preceding year. This sharp rise is more than double the anticipated inflation rate of 15-16%. (Middle East News Economic Weekly, Vol. 20 No. 23, June 5, 1981, p. 23.)

the rapid increases in many non-wage sources of income in Egypt. However, they fuel inflation by raising labor costs well ahead of gains in productivity, and thus are ultimately self-defeating.

Rapid wage inflation discourages job creation and helps to undermine one of Egypt's strongest advantages in international trade -- comparatively low current wage costs for well educated and experienced labor. The long-run hazards of inflation and the erosion of Egypt's current competitive strength in international trade should be weighed carefully against current policies which attempt to achieve immediate and expedient distributional objectives without sufficient attention to productivity.

2. The dual wage system: imbalances between public and private rates. The existence of a dual wage system, with fundamental differences in the relative wage and salary structures in the public and private sectors, is among the most important causes of labor misallocation. Because such a large portion of formal sector employees are covered by the civil service compensation system, inconsistencies with the private sector structure have a major impact on labor allocation in both sectors. Public enterprise wage and salary ranges are considerably narrower than in the private sector. Wage rates for entry-level positions in public firms are substantially above market-clearing levels, while average compensation rates for highly-skilled and technical personnel are well below rates in comparable private sector jobs. Real salaries in some white collar job categories have actually declined in

the past decade.¹⁰

The inability of managers to pay their best employees salaries which are competitive with private sector alternatives, has encouraged turnover of the most productive employees, while the past requirement to hire large numbers of university graduates regardless of their academic performance and learned skills has simultaneously increased labor redundancies in many of the same job categories. Public enterprise managers complain, for instance, both that they have too many engineers on their payroll, and that they are unable to retain their best engineers, who leave for private position firms paying three to five times more than the public sector.

Although inefficiencies among public sector firms are often exaggerated, productivity in many of these firms is reduced by the combined impact of a relatively narrow salary structure, large remaining labor redundancies, and relatively lax work standards.¹¹ These legacies of past policies cause waste and inefficiency in much of the

10. Inflationary pressures have reportedly made second, supplemental jobs in the private sector necessary for many civil servants. Because second jobs are not legal, no systematic information on the extent or importance of "moonlighting" by civil servants could be collected for this report. However, this phenomenon was mentioned frequently in informal discussions, and appears to be an issue which should be addressed more directly by the government.

11. For a discussion of strengths and improvements in public firms, see Heba Handoussa, "The Public sector in Egyptian Industry, 1952-1977" (Paper presented to the Annual Conference of Egyptian Economists, Cairo, March 1978). For a discussion of current productivity and efficiency assessments, see L. Jones, "Improving the Operational Efficiency of Public Industrial Enterprises in Egypt" (paper submitted as part of this project).

government and public enterprise sector.

Public enterprise managers lack the authority to change or correct these policies. Unless measures are taken to change the wage structure, and to grant managers discretionary wage-setting authority to reduce job turnover and promote higher productivity, public firms will continue to lose many of their best employees, and are likely to experience a steady erosion of productivity and (social) profitability.

The detrimental effects of public sector wage and employment policies also spill over into the private formal sector labor markets, by placing some upward pressure on entry-level wage rates, benefits and job security. Thus, the inconsistencies between publicly administered and private sector wage and employment systems, like increases in the aggregate wage level, discourage labor-intensive investments and reduce the ability of the economy to generate enough new employment.

To successfully achieve both continued rapid economic growth and a more equitable distribution of income, the emphasis of economic policies must be on creating the greatest possible number of productive income-earning opportunities, where productivity implies that each newly created job contributes more to the nation's welfare than the job costs society to create and maintain (in terms of capital investment, entrepreneurial and managerial inputs, and all compensation directly and indirectly associated with the job). In the long run, policies which focus on building the productive base of the economy, assuring international competitiveness and self-sufficiency, and doing so in a manner which creates the widest possible array of new employment opportunities in good

productive jobs, are the only means to achieve greater equity. Measures to moderate overall wage growth and to free public enterprise wages to respond more flexibly to market conditions, are essential for the achievement of these objectives.

Mismatches Between the Education-Training System and the Labor Market

A number of changes and extensions of education and training programs are also needed to encourage job creation through labor-intensive industrial growth. The paramount role of the education and training system in this process is to fill the rapidly evolving, specialized labor requirements of new economic activities efficiently, by anticipating skill needs effectively and avoiding major shortages. In addition, continuing efforts to extend basic education and literacy to all workers are important. These more general, basic programs can increase the productive potential and trainability of the work force as a whole, and thus increase the profitability and broad applicability of labor-intensive technologies. Beyond these growth and efficiency objectives, education and training programs are a key in the long run to distributing the benefits of growth as widely as possible. For these distributional reasons, basic education should be provided to as many Egyptians as possible, to enhance employability and income-earning capacities in an equitable manner. Thus, it is useful to assess the effectiveness of existing education and training programs in fulfilling these roles, and to identify areas where public policies and programs

could be improved.

1. Skill shortages in industry. Employer interviews, wage trends, and evidence from recruitment studies, all indicate that there are significant shortages of intermediate technicians, of skilled labor in numerous craft and other categories, and of well-trained engineers and higher-level managers. Despite large increases during the 1970's, including a major recent expansion, enrollments in vocational education and training remain well below the levels required to meet employer demands in many skill areas.¹² While secondary technical schools account for more than half of total enrollments in secondary schools, only about 12% of secondary students were in industrial arts programs in 1978/79.¹³

Formal school-based vocational education is supplemented by a large number of public and private non-formal vocational training programs. Large training programs are operated by the Ministries of Industry and Mineral Resources, Housing and Reconstruction, and Social Affairs. A number of other ministries conduct job training on a smaller

12. Shortages in most construction crafts, metal, metallurgical, electrical, automotive, fine-equipment repair, refrigeration, air conditioning and glass trades were initially identified in an examination of 1976/77 data compiled under the direction of the Higher Committee of the National Council for Education, Scientific Research, and Technology. Spot checks with employers in 1981 suggest that shortages still exist in most of these categories. Recently funded projects are attempting to expand training to meet these needs.

13. Ministry of Education preliminary enrollment estimates, reported in Central Agency for Public Mobilisation and Statistics (CAPMAS), Statistical Yearbook (Cairo, 1980).

scale as well.¹⁴ Although these training programs increased significantly during the late 1970's, particularly in the construction trades, their scale remains small in comparison with both actual and potential employment growth.

In the private sector, employers must provide a great deal of training on their own. This is apparent from interviews conducted among private employers, although no systematic data on amounts of private training are available. When these training programs teach skills which are transferable to other jobs, employers have to pay wage premiums (in addition to training costs) to protect their training investments and avoid problems of high turnover.

Experience in the United States has shown that on-the-job training programs cost substantially less than school-based vocational programs on average, and often are the most cost-effective method of preparing workers for productive work. This is partly because training tends to be more narrowly focused on competencies which are directly applicable to trainees' jobs. Very little training effort is wasted on teaching skills which are not utilized, and there is no problem of matching workers with jobs after training. However, the narrow focus of training also limits

14. The 47 vocational skills centers operated by the Department of Productivity and Vocational Training (DPVT) -- a division of the Ministry of Industry and Mineral Resources (MOIVR) -- had about 16,000 trainees in their programs during that year. Training for construction trades, administered principally by the Ministry of Housing and Reconstruction, enrolled about 10,000 individuals, and another 7,000 workers were in Ministry of Social Affairs training programs. Data are from The World Bank, "Staff Appraisal Report: Third Education Project, Arab Republic of Egypt" (1980).

workers' ability to adapt to technical change, or to remain mobile and responsive to better opportunities as they emerge. Thus, there are tradeoffs between the efficiencies of focused training and building longer range flexibility in the work force, but on-the-job training by employers often is appropriate.¹⁵

Because the skill centers of the Ministry of Industry and Mineral Resources are located within the public enterprises, the apprenticeship and other training programs by these centers can benefit from a close relationship between training and work. Approximately three-fourths of the apprenticeship program is devoted to "practical training." This model should be strengthened and applied much more widely within public firms, and subsidies for comparable private sector programs should be considered as well. Subsidies to private firms would be justified for on-the-job training which is less expensive than school-based programs, and when net social benefits exceed private benefits. The most frequent

15. Data for FY 1967 in the United States indicated that vocational education and Manpower Development and Training Administration funded by the U.S. Department of Labor programs cost more than six times as much as on-the-job training programs on average. Unfortunately, no detail is provided concerning the scope of training or the impact on earnings. R. E. Wenig and W. Wolansky, Review and Synthesis of Literature on Job Training in Industry (Columbus, Ohio: ERIC Clearinghouse on Vocational and Technical Education, Ohio State University, 1972), p. 32. For a more recent review of rate-of-return measurements for training, see Patricia Pannell, "Occupational Education and Training Performance: Goals and Performance," in Peter Doeringer and Bruce Vermeulen, Jobs and Training in the 1980s: Vocational Policy and the Labor Market (Boston: Martinus Nijhoff Publishing, 1981). For a general discussion of the pros and cons of school-based vs. workplace programs, see Bruce Vermeulen, "Accelerating the Transition from Schools to Careers," also in Doeringer and Vermeulen, Jobs and Training.

case would be where turnover may limit employers' ability to recoup training costs.¹⁶

2. Productivity, upgrading, and retraining needs in public sector firms. Labor redundancies have already been significantly reduced in recent years, according to Handoussa, and for the most part the public enterprises have remained remarkably vital considering the various constraints imposed on them.¹⁷ However, substantial labor surpluses remain in many firms, and there is a well recognized need to increase labor productivity.¹⁸ As these firms grow, new labor requirements can be met to an important extent by retraining current employees and assigning them to new, more productive tasks. To support job reassignments and retraining, achievement training should be provided¹⁹

16. For a discussion of employer staffing strategies and training investments, see Bruce Vermeulen and Susan Hudson-Wilson, "The Impact of Workplace Practices on Education and Training Policy," in Doeringer and Vermeulen, Jobs and Training.

17. Heba Handoussa, op. cit., p. 20.

18. See Chapter IV for additional discussion of shortages, surpluses, and possibilities for retraining and upgrading.

19. Studies in numerous cultures indicate that attitudes, motivation, and other ascriptive qualities are as important as skills in determining productivity. A variety of "motivation," "efficacy," "achievement," and related training programs have proven highly cost-effective in many environments. See D. McClelland, The Achieving Society, 2nd edition (New York: Irvington Publishing, 1976); Frederick Herzberg, "One More Time: How Do You Motivate Employees?" in Gene W. Dalton and Paul K. Lawrence, eds., Motivation and Control in Organizations (Homewood, Illinois: Richard D. Irwin, 1971); and David C. McClelland, Power: The Inner Experience (New York: Irvington Publishing, 1975), pp. 252-271.

as well as skill-specific training, since fundamental changes in work tasks and standards will require major personal and attitudinal adjustments as well as new task-oriented competencies.

3. Illiteracy and low educational attainment of the labor force.

While immediate skill requirements should be given top priority in short range education and training programs, a longer run strategy for continuing employment growth will require a steady increase in the number of workers having mastered basic educational skills. A central objective of long-range educational policy should be to provide universal primary and preparatory education, both for youths and for adults already in the labor force.

Despite major advances at most educational levels during the 1970's, primary enrollments rose only marginally as a percentage of primary-age children (ages 6 through 11) -- from 71% in 1970/71 to 73% in 1978/79.²⁰ During the same period, adult literacy rose from 40% to 44%.²¹ The most pressing need for broadening the educational base is distributional; job opportunities are poor and incomes are low among illiterate and marginally literate workers, particularly among women.²² Over time, however, a wide base of educational achievement

20. World Bank, *op. cit.*, Annex 1, Table 1.1.

21. *Ibid.*, p. 4.

22. Literacy rates are much lower for women, and employment rates among illiterate and marginally literate women are much lower than for men. For a discussion of this dual discrimination against women in education and in the labor market, see H. Papanek and B. Ibrahim, *op. cit.*

will raise the overall productive capabilities of the work force, reducing labor costs and increasing the profitability of labor-intensive investments. Thus, continuing to expand access to elementary education will ultimately help to create more high-productivity, high-wage employment. Where poverty restricts the ability of children to remain in school, subsidies to their families should be considered. Changes to make the curriculum more practical, particularly for rural children, can also be expected to have a positive impact on enrollments.

Adult literacy programs pose a special problem, since they generally must reach individuals who are working full time. At present classes are held in primary school facilities -- presumably a major reason why as many as 60 percent of these facilities run multiple sessions. However, relatively few adults now take advantage of these programs. For young male adults, the military provides a single entry port through which nearly all must pass, and is a station at which a great deal of remedial literacy and basic educational work can be done. Unfortunately, no comparable institution exists for women. If the government wishes to counteract the serious educational deficit of adult women as compared with men, one way to do so would be to artificially create an institution comparable to the military through which all women would pass. This could range from something as simple as a mandatory literacy test at age 21 with follow-up literacy programs, to actual conscription of women into non-military public service on a basis parallel to that of men. The latter is probably inappropriate in Egypt at present, but a concerted attempt is needed to counter illiteracy

through some screening and remedial procedure.

For all older adults, more effective basic education programs are needed to assure that these workers are not left out of the mainstream of the modern labor force in the future. Current program enrollments are quite low, suggesting that existing incentives are insufficient, and that renewed efforts are needed to reach these groups.²³

4. The general secondary curriculum and job skills. Over 80% of students who pass their preparatory examinations continue in secondary school programs. Nearly half of these students enroll in general (academic) programs, and about three-fourths of students who successfully complete these programs go on to the university level. In 1978/79, higher education enrollments constituted about 15% of Egyptians between the ages of 18 and 22 years of age.²⁴ These rates are very high in comparison with other countries with comparable income per capita, and are due in large part to a combination of tuition-free admissions and job guarantees for graduates.

One shortcoming of the secondary curriculum, in terms of meeting the nation's skilled labor needs, is its nearly total focus on preparing students for university programs. Many students drop out before obtaining a secondary certificate. At present the academic secondary program offers these students few marketable job skills, although

23. Ministry of Education preliminary enrollment figures.

24. World Bank, "Staff Appraisal Report" (1980), p. 5.

students with this amount of education could help fill crucial skill gaps now and in the future if the curriculum included more applied course material. It would be both possible and useful to provide greater overlap between the technical and general curricula, so students could revise their educational plans and transfer between programs more easily.

5. Skill attrition through emigration. The emigration of large numbers of Egypt's skilled workers and professionals also poses special problems for the educational planning and management of human resources. Remittances from foreign earnings, and reduced pressures for domestic job creation, are attractive benefits of emigration for the country.²⁵ However, the emigration also causes a serious depletion of the skilled work force in many key categories.²⁶ This in turn stifles domestic economic growth, and limits the ability of the economy to create complementary lesser-skilled jobs. The net consequences for the economy of these benefits and costs of emigration should be estimated carefully, as a basis for informed and consistent policy decisions. If there is a consensus that emigration should be encouraged, then the education and training system must plan to promote and provide sufficient programs to

25. According to National Bank of Egypt estimates, remittances in 1979 were approximately U.S.\$ 2 billion.

26. In "External Migration of Egyptian Labour" (Cairo University, 1980), A. Mohie-Eldin discusses the admittedly sparse evidence concerning temporary and permanent emigration, which suggests that the depletion of university-educated and other skilled personnel, as well as of teachers at all levels, represents a major cost to the economy.

meet both domestic and international skill needs; otherwise, additional incentives should be provided to keep individuals with these skills in Egypt. Without an explicit policy toward emigration, it is impossible for human resource planners to allocate public resources in a manner which will effectively match education and training with the skill requirements of an ambitious industrial development program.

6. Inadequate budgets for meeting basic skill and educational needs. Rapid increases in university enrollments have caused overcrowding and have reduced quality in many programs. Budgetary commitments to these programs have also soared. In 1978, 47% of the total annual capital budget for education went to higher education.²⁷ In the 1980 budget, more than L.E. 55 million was allocated to the universities, compared with about L.E. 6.5 million for primary schools (which have enrollments approximately ten times larger than the universities).²⁸ While at least some university programs are providing surpluses of graduates, sufficient funding is not being provided to support basic education and vocational skill programs on the scale needed to promote rapid employment growth and industrial expansion. To correct this imbalance, it may be necessary to shift a large portion of total

27. Ibid., p. 5.

28. Definitions were not provided in the budget translation, and these figures may not represent total capital outlays in these categories. They suggest, however, that there exists an even stronger emphasis of public support at the university level than in previous years. In view of the rapid increases in enrollments, and per-student costs of university education, these figures are not surprising.

educational funding away from the universities and into these urgently needed alternative programs. Employment guarantees also need to be revised accordingly.

While the need to reallocate educational resources seems apparent, it is much less clear how to move forward from previous budgetary patterns in an acceptable way, to free public resources for meeting more basic current educational needs. Clearly the best alternative would be for students to enter the labor market sooner, finding equally attractive alternatives without having to forego several additional years of income while in school. In the absence of such attractive opportunities in the labor market, the government could raise admission standards by changing entrance examinations, or make employment guarantees much more selective.

If the secondary curriculum is modified to equip students with more marketable job skills, these additional measures at the university level could result in reduced university enrollments without a great deal of discontent. Because existing higher-education subsidies represent a large benefit for the relatively small elite of university students, there will undoubtedly be some resistance to change. However, if these educational resources are reallocated in a manner which increases educational opportunities for the vast majority of Egyptians, and if new programs prepare preparatory and secondary students more effectively to enter the labor market, these changes are likely to be quite popular as a "package."

B. Policies for Labor-Intensive Industrial Growth

A labor force strategy for rapid industrial growth must be consistent with broader economic development objectives. If we judge development progress in terms of increasing the modal standard of living, then distributional and growth objectives are equally important. Since employment is the only source of income for most Egyptians, outcomes in the labor market are a crucial gauge of successful economic development.

From this perspective, the most pressing requirements of economic development policy within the labor market are: (1) to create 300,000 to 500,000 new productive jobs annually during the current decade; and (2) to distribute employment, productivity and income-earning opportunities as widely as possible. The recommendations which follow are intended both to assure that the labor requirements of rapid industrial growth are met efficiently, and that an industrial growth program has the greatest possible impact on employment opportunities and living standards of all Egyptians.

Encouraging Labor-Intensive Industrial Growth

Export industries offer the best long-run combination of direct and indirect employment creation, aggregate income growth, and foreign exchange earnings. In addition to the recommendations of the other

reports of this project concerning exchange and trade regulations, financial arrangements, managerial incentives in the public sector, and other policies, the following measures are needed to encourage the adoption of labor-intensive technologies to take advantage of Egyptian factor advantages in production.

1. Provide international marketing support for labor-intensive Egyptian exports. The emphasis on exports will require major efforts to penetrate international markets. Because there are large fixed costs in developing market relationships, it is appropriate for the government to assume a central role in providing needed information and contacts. The United Nations has considerable experience in assisting small as well as large exporters to identify potential markets, and has found this to be a highly cost-effective service.
2. Create a technology clearing-house for information concerning labor-intensive technology. Because capital-intensive technologies are often most visible and available, particularly through partnership and royalty agreements with multinational firms, alternative labor-intensive technologies which are more consistent with local resource endowments and employment objectives are too often overlooked. There is a rapidly growing network of information concerning the successful use of alternative labor-intensive technologies. One of the least expensive and highest-return investments the government can make to encourage the adoption of these alternative production methods is to disseminate information to prospective investors about technological options in

industries where Egypt has (or is likely to have) a comparative advantage internationally.

3. Limit legislated and administered real wage increases to the rate of productivity growth. To bring the relative costs of labor and capital in line with local factor scarcities, increases in the minimum wage and required insurance, pensions and other benefits, should be limited to average productivity growth plus an ex post inflation adjustment. The index of productivity growth should be in real terms, adjusted carefully for nominal changes in administered prices of public enterprise inputs and outputs, and based on industrial output, excluding oil.

4. Subsidize skill training by both public and private employers. In addition to providing vocational education and skill training programs in publicly funded, school-based programs, at least some of the costs of skill training by employers should be covered through public subsidies. Public and private firms should receive comparable financial and technical support for skill training. Decision criteria concerning levels and types of support should be made on the same basis for public and private firms, as should decisions about the appropriate location and nature of training.²⁹ In each case the proportion of training costs which firms pay for should be accounted in

29. Using uniform criteria, for example, in-plant training may be appropriate more often in public enterprises because of their size, while the choice between classroom and on-the-job training depends more on skill content and the objectives of training.

the firm's profit and loss statement; the remainder should be in the government budget.³⁰ Managers should take the initiative in defining training objectives and needs, and government training consultants should provide ample advisory support to design and deliver training.

Training subsidies are appropriate to balance existing subsidies for capital. In principle, employers should pay for non-transferable training (i.e. skills only useful within the firm), and workers or the government should incur the costs of developing more widely useful skills. Programs inside the firm which teach transferable skills should be subsidized or directly provided by government.

To some extent, workers can and do pay for this training through reduced wages during training. Once they are trained, however, employers have to pay wage premiums to discourage turnover. Turnover is particularly costly to employers who make major investments in training, and may represent a serious hidden deterrent to employment-generating investments. However, the economy as a whole benefits from private training regardless of turnover, in two ways: (a) it increases trained personnel in the work force, and (b) it often leads to the creation of complementary jobs both inside and outside the firm. However, employers base hiring and training decisions on the firm's profits alone. Therefore, subsidies are needed to maximize economy-wide benefits.

30. The distinction between external subsidies provided to the public enterprises by government, and training costs accounted within the firm, has an important bearing on incentives and performance. See the discussion of needed changes in incentives and accounting procedures below, and in Jones, op. cit..

5. Provide training and consultation in personnel supervision.

One of the greatest deterrents to choosing labor-intensive growth strategies is the additional cost of supervision which these technologies require. Entrepreneurs, many of whom are engineers in Egypt, rarely have formal training in personnel management. Managerial talent is often scarce, and highly mechanized production processes are a practical way to conserve supervisory resources. Therefore, a lack of expertise in personnel supervision may be a serious obstacle to labor-intensive growth. However, these managerial needs are similar in most firms, and there is a wealth of successful training experience in other countries to draw on to solve this problem.³¹ Free training in personnel administration should be a high priority in government-sponsored training programs, and should be made available to both public and private sector managers. In addition to training, there should be an accessible, well publicized consultation service for managers and workers to assist in evaluating and overcoming problems.

6. Provide administrative and achievement training for public and private managers on an equal basis. In addition to personnel-management training, managers in the private and public sectors should have on-going access to a variety of short-term, focused seminars designed to develop other key achievement and modern management skills. Measured rates of

31. For an overview of current approaches to teaching personnel administration, see Herbert Heneman, Donald Schwab, John Fossum and Lee Dyer, Managing Personnel and Human Resources: Strategies and Programs (Homewood, Illinois: Dow Jones-Irwin, 1981). See also Wayne F. Cascio and Elias M. Awad, Human Resources Management: An Information Systems Approach (Reston, Virginia: Reston Publishing Co., 1981).

investment return on such courses are generally quite high. Basic managerial skills are frequently the binding constraints faced by industrial development programs. In public administration and in the public enterprises, efforts to raise productivity would benefit greatly from the goal-setting, problem-solving, and achievement-seeking methods taught in conjunction modern management programs. Seminars should be intensive, short-term, highly focused courses which do not require long absences from job responsibilities.

7. Build the educational base of the work force. Finally, in the long run, labor-intensive industrial growth can be encouraged by increasing broad-based educational attainments in the labor force. A well-educated labor force can be trained and supervised more readily and less expensively. Thus, focusing greater education and training resources at this level is an important means for encouraging long-range employment growth.

Increasing Productivity in Public Enterprises

The policies proposed above will affect public and private firms equally. Additional policy changes are needed to reduce labor redundancies and raise productivity in public sector firms. These measures consist of (a) changing incentives to reward productivity increases more effectively, and (b) providing additional training and consultative support required to reallocate labor within the firm.

1. Grant managers increased autonomy and reward profitability.

The single most important set of changes to encourage productivity growth in the public enterprise system is to increase managerial autonomy and revise managerial incentives. Proposals for such changes, which are based on rewarding profits as measured through social adjustment accounting, are included elsewhere in the reports for this project.³²

2. Include the value of job creation in profit accounting. The social value of job creation should be added into the account of enterprise profits, and should be considered in determining managerial rewards, in two ways. First, productivity and profit measures should not be achieved by reducing the work force through layoffs.³³ Such plans would be contrary to the proposed employment objectives, and would undoubtedly cause workers to resist change. Secondly, the accounting adjustments should be designed to encourage managers to adopt labor-intensive technologies where practical. If the other proposed subsidies for labor utilization are adopted, no additional accounting considerations would be required. However, accounting incentives may be useful in the immediate future until training and other support is developed.

32. See L. Jones, "Improving the Operational Efficiency of Public Industrial Enterprises in Egypt," and G. Papanek, "Industrial Development in Egypt: An Overview" (reports submitted as part of this project.)

33. Some reductions through attrition of individuals who switch to private sector jobs may be appropriate, but in general the social costs of layoffs should be deducted in the profit calculation.

3. Reward all employee contributions to productivity growth.

Granting managers authority to determine the incentive and reward structure within individual public firms amounts to detaching public enterprises from the civil service system. This is a major departure from past practice, and presumably would be resoundingly rejected by organized labor unless replaced by an equally attractive alternative. For an alternative compensation system to be accepted, it must assure that almost no employees' incomes are reduced initially, and that realistic opportunities for wage increases are available for everyone. Therefore, piece-rate or productivity-based wage and salary components must be based on output standards which are realistic, and must be coupled with labor reallocations, retraining, and other measures which assure that all workers are in positions to meet and surpass baseline performance standards. To effectively encourage individual effort, productivity standards should be clearly defined, well publicized, and based on the performance of either individuals or small groups of workers.³⁴ Work teams and supervisors should also be rewarded for identifying and implementing ideas which raise productivity and profitability more generally within the firm. For example, work teams could be paid 10% of any incremental first-year profits resulting from innovative, cost-saving

34. For a discussion how to structure incentives to maximize the impact of production incentives on productivity, see see Edward E. Lawler III, Motivation in Work Organizations (Monterey, California: Brooks/Cole Publishing, 1973). Also see Mark R. Lepper and David Greene, eds., The Hidden Costs of Reward: New Perspectives on the Psychology of Motivation (New York: John Wiley & Sons, 1978.); and F. R. Bentley, People, Productivity, and Progress (New York: Business Books, 1964).

suggestions. Such reward programs have proven extremely successful recently in other countries, both in increasing effort and in strengthening cooperation among workers.³⁵

Compensation practices will differ both within and across firms, depending on differences in production processes and the nature of jobs. For example, production jobs and non-production tasks such as accounting, marketing, and clerical functions, all may require separate evaluation and reward systems.³⁶

Basing managerial rewards primarily on increases in enterprise profits should be sufficient to assure that firm wage bills do not grow too rapidly. However, it may be useful initially to set some limit or guideline for overall growth of the wage bill in public enterprises. For example, the total wage bill (including bonuses) could be limited to its current real level, with subsequent increases in each firm's aggregate payroll being a fixed proportion of real productivity growth (e.g. 75%). Some such rule will probably be required for a number of firms prior to the completion of managerial training and to the restructuring of incentives. However, in the longer run every effort should be made to

35. Numerous experiments with group rewards for productivity growth have been conducted over the past three decades. Early evaluation of the Scanlon plan, for example, reports large productivity gains in a wide variety of firms. See George Schultz, "Worker Participation on Production Problems," and Elbridge Puckett, "Productivity Achievements: A Measure of Success," in Frederick Lesieur, ed., The Scanlon Plan: A Frontier in Labor-Management Cooperation (Cambridge, Massachusetts: The MIT Press, 1958).

36. For a discussion of methods of job evaluation, see T. Husband, Work Analysis and Pay Structure (London: McGraw Hill, 1976).

turn over all such decisions to managers who demonstrate their capability of using increased autonomy effectively.³⁷

4. Provide industrial relations support for redesigning compensation rules and job assignments. Workers may be resistant as firms attempt to revise incentives unless these changes are viewed as emerging in the mutual interests of labor, management, and the country as a whole. The government can provide vital support for these changes by guaranteeing that labor interests as well as managerial concerns will be protected.³⁸ In its dual role as a (third-party) protector of the public interest, and as owner of the enterprise, the government has great advantages in attempting to assure harmonious labor-management relations.³⁹

37. The relationship between performance and increased autonomy is discussed by Leroy Jones, *op. cit.*.

38. For discussions of problems which arise when transforming pay structures, see Robert McKersie and L. C. Hunter, Pay, Productivity and Collective Bargaining (London: St. Martin's Press, 1973); and D. T. B. North and G. L. Buckingham, Productivity Agreements and Wage Systems (London: Gower Press, 1969). For a discussion of some problems faced by government in overseeing productivity bargaining, see J. F. B. Goodman, "Government Agencies and Productivity Bargaining," in B. Towers, T. G. Whittingham and A. W. Gottschalk, Bargaining for Change (London: George Allen & Unwin, 1972), pp. 238-256.

39. In India, for example, public sector strike rates during the past two decades have been less than 20% as high as private rates per thousand employee-hours on average, and have often been far less. This is partly due to differences between public and private sector industrial relations practices. See B. Vermeulen, "Labor-Management Conflict Resolution in State-Owned Enterprises: A Comparison of Public- and Private-Sector Practices in India," in L. Jones, Public Enterprises in Less-Developed Countries (New York: Cambridge University Press, 1982)

Managers and employees need to know about available alternatives, and will probably need third-party (government) support to negotiate satisfactory compromises among their various competing interests. It will be important for government counselors to function as mediators rather than arbitrators -- helping the parties to reach solutions rather than making decisions for them -- so newly increased managerial autonomy is left intact while labor and management gain practical experience in independent, firm-specific labor-management negotiations.

5. Reassign and retrain workers to increase productivity.

Because there are skill shortages in some job categories, and surpluses of workers in others, training is necessary to facilitate labor reallocations within the firm. Several issues are important in considering such shifts. First, incentives for job changes need to be sufficient to make transfers voluntary. One-time bonuses for transferring may be appropriate for horizontal transfers to jobs involving comparable skill and compensation levels. Training and the promise of wage increases are sufficient incentives where transfers involve increased skills and wages. Secondly, job redesign rather than simple transfers may be required to utilize the firm's labor capacities more effectively. Such efforts must be done in cooperation with labor union representatives, line supervisors, and individual workers.⁴⁰ The

40. See Thomas K. Connellan, How to Improve Human Performance: Behaviorism in Business and Industry (New York: Harper & Row, 1978), pp. 157-160.

technical decisions about appropriate job design may be the simplest part of these changes. However, if individuals and groups of workers are rewarded as proposed for suggesting methods to raise productivity, many sound recommendations for job redesign may be forthcoming on a voluntary basis. Similarly, strong managerial incentives for increased productivity and profitability should be sufficient to encourage managers in obtaining and implementing proposals for job reassignments.

6. Administer achievement training to lower- and middle-level supervisors and production foremen. The importance of involving line foremen and lower levels of management in redesigning jobs, defining new performance criteria, and establishing revised pay structures has already been indicated. To maximize the impact of these changes on productivity, lower-level supervisory personnel may need a variety of supports, including additional training. The techniques which are incorporated into achievement training (i.e. goal setting, identifying problems, and developing strategies for achieving objectives) will be particularly valuable in the process of implementing change.

Expanding Basic Education and Vocational Training Programs

Education and training priorities, other than those specified for managerial, achievement, and specific skill training within firms, emerge directly from the problems discussed above. To summarize, the following education and training objectives are essential for successful attainment of short-term and longer-range employment goals:

1. Enrollments need to be expanded in primary, preparatory, (secondary) industrial, and adult literacy and basic education programs. Young adults should be screened and provided with remedial literacy and basic education. For young men, the military is an obvious institutional check-point; for women, an equivalent screening institution is needed.

2. Budgetary support needs to be greater by a factor of three or four if these programs are to achieve existing government objectives. This will probably require a reduction in the level or growth of university enrollments, which could be achieved by any or all of the following measures: (a) raising entrance examination standards; (b) continuing to provide tuition-free university education only in fields where there are current or anticipated scarcities; (c) guaranteeing public sector jobs only to graduates in certain fields; (d) requiring applicants for government jobs to achieve a given minimum grade level in courses or a minimum score on civil service examinations; (e) requiring a period of compulsory public service for all university graduates who are granted tuition-free education, working at relatively low salaries in outlying regions where skills are scarce⁴¹; (f) requiring doctors, teachers, other professionals and skill technicians who receive free university education either to remain in Egypt for a specified period (e.g. 3-5 years following graduation) or to repay some percentage of

41. The decision to restrict initial public sector assignments to rural areas has already been made. This announcement, made by President Sadat in June 1981, will undoubtedly slow the growth of government employment somewhat, but may not reduce university enrollments.

their university costs and (g) improving work preparation at lower educational levels.

3. Curricula need to incorporate more practical and pre-vocational material beginning in primary grades. For example, the curricula in rural areas, where enrollment rates have been particularly low, should include an agricultural component. This change would serve as incentive to remain in school, and would enhance learning by linking educational content to applications which are more closely related to their rural experiences.

4. Evaluation and certification at all educational levels need to be more competency-oriented and less focused on rote memorization of theoretical material. Testing of basic educational competencies as well as vocational skills should be open to everyone, regardless of their formal education and training. This is particularly important among adults for certification of literacy and other basic educational attainments, and of vocational abilities. Current vocational certification procedures exclude many able workers, and in some instances certify trainees who may not be as capable. Because certification is very important currently in determining employment opportunities, procedures and test instruments need major revisions.

5. Training teachers. Major shortages of primary teachers are reportedly a serious constraint to expanding primary school enrollments. Because many young teachers emigrate temporarily to neighboring countries, it has been difficult for the teaching colleges to meet

growing domestic needs. Additional incentives for teachers, or expanded teacher training programs, are needed to assure that the achievement of basic education targets is not undermined by a lack of teachers.

6. Teaching techniques need to be updated. Many fundamental improvements are available which could greatly accelerate learning in the Egyptian education and training programs. In addition to updating the curriculum in teacher training colleges to include some of the latest teaching methodology, seminars should be offered to introduce these methods to the large existing corps of experienced teachers. Within the framework of the large investments in education and training which are now being made or planned, efforts to strengthen teaching methods and bring the curriculum more in line with labor market needs would be both feasible and highly cost-effective.

Improving Data for Human Resource Planning

One of the most serious limitations faced by human resource planners in Egypt currently remains a lack of current, complete, clearly defined and consistent data. While a great deal of data are available after a time lag of three to five years, these data would be much more useful for planners if they were compiled and distributed more rapidly. Existing data would also be more useful for planners if they were accompanied by clear indications of definitions and sampling methodologies.

To successfully implement a program for rapid industrial expansion and employment growth, including many of the above recommendations, better information about labor market conditions and about the education and training programs will be essential. In addition to compiling and disseminating current information, a series of standard projections and analyses should be performed to monitor employment and training progress, and to identify shortages and training needs in key skills as they emerge.⁴²

Because public policies and programs concerning education and training are intended to meet needs which are not met sufficiently in the private market, it is important to monitor private as well as public sector skill needs and training commitments even if government subsidies are not provided for these programs. To anticipate additional policy and program requirements, planners need reliable predictions concerning occupation- or skill-specific labor supply, new employment opportunities, the full array of private and public education and training outputs, and data concerning key distortions and policy targets. Because the economy is changing rapidly, it is especially important to keep these data as current as possible.

42. Detailed recommendations concerning appropriate indicators are contained in a 1978 report prepared for the Advisory Council on Technical Education and Manpower Development and the National Committee on Manpower and Training with U.S.A.I.D. support by D. Evans: "The Development of a Human Resource Information Planning and Policy System for Egypt; A Feasibility Study." Pending additional analysis, these recommendations are a sufficient basis for beginning to develop such a system.

Even with current data, labor market projections need to be used with caution. Labor market forecasts depend on national-level assumptions about aggregate trends in employment and output. As forecasters attempt to predict employment with increasing occupational and geographic specificity, the predictions are subject to proportionately larger errors. In addition, labor market projections concern employment rather than new job openings. Education and training plans must identify jobs which are accessible to new entrants and trainees, rather than being filled in the "internal labor markets" which exist within many firms.⁴³

At present, employment data, are collected by CAPMAS, and are available only after a considerable lag. Data on shortages and surpluses of graduates are collected only occasionally, through the Ministry of Manpower. Because education and vocational training programs are administered by numerous ministries as well as by private sector institutions, there is no single source of regularly collected data concerning these programs. The National Council for Education, Scientific Research and Technology, established in 1974 primarily to address problems of coordination, information needs, and planning, initiated an inventory of all publicly funded programs in 1976. This baseline information is valuable, and should be updated annually. In addition, it is essential to have at least good sample information

43. For a discussion of problems and pitfalls in forecasting, see Appendix 4. Also, see S. Hudson-Wilson, "Labor Market Projections for Education and Training," in P. Doeringer and B. Vermeulen, Jobs and Training, op. cit..

concerning private training if subsidies or other public policy measures are implemented to encourage these programs.

Among agencies now utilizing such data, the Institute of National Planning is particularly professional in its analytical work. Planning specialists in the INP should certainly be included in the planning stages of a data management effort, as they are likely to be among the principal users for long range labor market and educational forecasts. Because the compilation and analysis of employment and training data now occurs in CAPMAS, the Ministry of Economy, the Ministry of Industry and Mineral Resources, and the Ministry of Manpower, the Ministry of Planning, the Ministry of Education, and a number of other ministries which are engaged in training, an employment and training information system should probably be coordinated by a cabinet-level council or committee which has membership from all concerned ministries, but which also has a permanent staff of professionals, primarily seconded from the data gathering, compilation and analysis sections of the pertinent ministries.

Once the appropriate coordinating agency (or agencies) for such information gathering and analysis is determined by the Egyptian government, this is an area in which U.S.A.I.D. might provide particularly effective support. In addition to supporting the development of adequate computer facilities, training in data processing, modern data management, and some areas of labor market analysis and planning would be useful. These measures could provide the leverage needed to update the human resource information system.

Strengthening Institutional Capabilities

To implement the proposed changes of incentives in the public enterprises, expand education and training programs in cost-effective ways, and provide essential support in personnel management and labor relations, several types of existing institutional capacities need to be strengthened. The most urgent of these are to: improve data management; modernize vocational education and training curricula, equipment and methods of instruction; enhance managerial training and consultative capabilities; and strengthen government advisory resources for developing more flexible labor-management relations in both public and private firms.

Investment Costs of A Job Creation Program

In a recent analysis, Bruton estimated that during 1975-1979 an average of L.E. 9,200 was invested for each new job created in industry. In companies created under Law 43, investments per job were about L.E. 15,000.⁴⁴ Ministry of Planning estimates of the incremental capital-labor ratio for these years are even higher for industry as a whole, averaging L.E. 11,300.⁴⁵ Assuming that inflation has totalled approximately 50% since

44. Henry Bruton, "A Review of 1979," mimeo (Cairo: Economic Intelligence Unit, Ministry of Economy, December, 1980), p. 19. Averages are appropriate because of large year-to-year variation.

45. Ministry of Planning, unpublished worksheets.

1979, the two industry-wide estimates would be L.E. 13,800 and L.E. 16,950 respectively at 1982 prices.⁴⁶ Investments per job in Law 43 firms at 1982 prices would be L.E. 22,500.

Using the sector averages for industry in 1982 prices, rather than the estimate for more capital-intensive Law 43 firms, the magnitude of investments required to create 250,000 to 300,000 jobs in industry annually range from between L.E. 3.4 billion and 5.3 L.E. billion per year.

For the economy as a whole, investments per job are not significantly lower, though levels vary widely across sectors. Bruton estimates that the economy-wide average was about L.E. 6,000 between 1975 and 1979, and Ministry of Planning data (which are essentially the same for the period as a whole) show the level rising to nearly L.E. 7,500 in 1979. Again converting these rates to 1982 prices as before, these translate to investments of L.E. 9,000 and 11,250 per job.

Even at these lower economy-wide rates, and even if the conversions to 1982 values have overestimated inflation, investments of the magnitude required to generate between 300,000 and 500,000 jobs annually in the economy at the current investment-to-employment ratios are simply not feasible. Instead, alternatives must be found for expanding the economy through more employment-intensive growth. A great deal of latitude exists for increasing

46. CAPMAS estimated that 1979 and 1980 cost-of-living increases were 10.9% in each year. A Ministry of Planning forecast of inflation in 1981-1982 at 15-16%. Assuming these rates, the cost-of-living index (1978=100) used here is:

Year	1979	1980	1981	1982
Index	110.9	123.0	141.45	162.7

labor-capital ratios in industries such as spinning and weaving. Bruton's data show that trade and finance had the lowest incremental capital-labor ratio, at about L.E. 400 per new worker. This suggests the importance of encouraging "cottage" industries as well as actively searching for more labor-intensive technologies and investment opportunities in large-scale industry. Because this project is concerned with a strategy for larger-scale industrial growth, the recommendations included here are concerned with this latter objective. However, development efforts at all levels should focus on encouraging labor-intensive growth.

Key Roles for International Aid

The large size of the U.S.A.I.D. program in Egypt creates a unique opportunity to assist Egypt in achieving self-sustaining growth. By focusing on job creation this assistance can make a decisive difference. In the industrial development program, a paramount criterion for selecting projects to assist should be the long-run contributions these projects can make to employment growth.

Both in public and private firms, labor-intensive investment choices need to be actively supported. Information about labor-intensive technologies needs to be made available to prospective investors. Subsidies are needed for managerial development, personnel relations, and vocational skill training. In addition, major investments in curriculum redesign and teacher retraining are needed to strengthen basic educational and technical school programs. In public enterprises, additional emphasis is needed on raising productivity.

This will require new managerial and worker incentives which reward improved productivity and increased profits, and will require a considerable amount of training at all levels of these firms. It will also require the development of new industrial relations practices which regularize performance evaluations, job redesign, and the retraining and reassignment of workers.

If the Egyptian government agrees that creating productive jobs is a central concern of public policy, every proposed project which is considered for financial and technical assistance by U.S.A.I.D. should include an Employment Impact Report, approximating the probable indirect as well as direct effects on job creation.

In addition to providing funds for employment-generating investments, U.S.A.I.D. programs could have a powerful leverage effect on job creation by providing technical support and consultation in the following critical areas:

- * identifying successful labor-intensive production technologies which are appropriate, given Egypt's resource base and comparative advantage;
- * building an effective, computerized, rapidly accessible human resource data base, and expanding personnel capabilities for effective data management, analysis, and human resource planning;
- * strengthening managerial training, for line supervisors and middle-level as well as top managers, including components for personnel management and industrial relations, achievement motivation, and (for the relevant decision-makers), identification of efficient labor-intensive investment alternatives;
- * introducing modern teaching methods and technology into both basic education and technical vocational/skill programs; and
- * developing new curricula to increase the job-relatedness of lower-level education programs.

II. EMPLOYMENT: A CRUCIAL PROBLEM FOR THE 1980s

Gustav. F. Papanek

Egypt may well face a time bomb in the prospect of rapidly rising unemployment and underemployment. One of the major achievements of the new policies introduced since 1974 has been increasing income for workers, as a result of rising wages and increasing participation in the labor force. Both are threatened by likely future developments.¹

Yet rising labor incomes are crucial if the poorer 60% of the population is to benefit from economic development. This group obtains nearly all of its income from performing relatively unskilled work. Since 1974 the real income of the great majority of the population has increased with rising real wages.

This has been a major achievement. Serious problems can be anticipated, however, because the number of workers looking for jobs in Egypt will increase, while productive job opportunities are likely to decline. Whether this happens in the next few years or only in a decade

1. For additional details concerning the employment problem, see Appendix A.

Table II.1: REAL WAGES: A SUMMARY
(in Piasters, 1978 prices)

<u>Year</u>	<u>Agriculture</u> (Per Day)	<u>Construction</u>	<u>Manufacturing</u> (Per week)	<u>Trade</u>	<u>Textiles</u> <u>Blue Collar</u>
1951	54				
1955	20				
1960	42	951	765	1522	

1964	49	1218	937	1611	
1966	60	860	843	1330	781
1968	56	947	843	1296	786

1971	50	844	861	1119	781
1973	50	872	929	1095	888
1975	65	904	873	983	814

1976	73	909	890	1041	851
1977	81	946	976	1280	886
1978	86				

1979	99				
1980	100				

Source: See Chapter III discussion of wages. Agricultural data are for daily rates; all other wage data are weekly averages.

is impossible to predict with any degree of confidence. But even if favorable circumstances combine to postpone the time when employment problems become serious, Egypt will need to start now on a process of massive industrial development. There is a lag of several years between the time when policies are changed and when their effect is felt.

The Likelihood of Surplus Labor

There are several reasons for concern that employment will again

become a serious issue.

a) The labor force increased by an estimated 380,000 in 1979, but as a result of a rising population and a greater number of women entering the labor force, the number seeking employment in the mid-1980s will increase by some 15% more, to 440,000 a year.

b) In 1979 an estimated 40% of the additional workers migrated temporarily to other countries. It is quite likely that net migration will end in this decade. As a result 145,000 more workers would have to be absorbed in Egypt per year.

c) Over one fifth of the 1979 additions to the labor force were added to the ranks of the unemployed. It is clearly undesirable, and politically risky, to increase unemployment at that rate. Productive jobs need to be found in the future for most of the workers added to the openly unemployed in 1979, some 85,000 people.

d) Almost a quarter of the additional workers in 1979 seem to have entered Government (including the military). Government could absorb them only because its resources were rising very rapidly as a result of higher oil incomes and other factors. It is doubtful that revenue will continue to rise at the same rapid rate (see World Bank Report) and it will therefore be more difficult to absorb such large numbers in Government. Moreover, it is generally agreed that Government is overstuffed in many categories (although desperately understuffed in most special skills). It would be desirable in the future to reduce government employment or at least not to increase it.

e) Construction absorbed another fifth of the additional workers

Table II.2: LABOR FORCE ESTIMATES --1979 and 1985
(orders of magnitude per year in 000)

	Total (1979)	Estimated Increase 1979*	Projected Increase, mid-1980s		
			Inter- mediate	Pessi- mistic	Opti- mistic
1) Increase in Labor Force					
a) Males employed in Egypt (8,930)		110	345	445	210
b) Females employed in Egypt (excl. agric.) (540)		40	70	40	90
c) Migrants (net) (1,400)		145	0	-100	150
d) Unemployed (460)		85	15	15	15
e) Total	11,330	380	430	400	465
2) Additional Employment Required in Egypt (1a + 1b)	---	150	415	485	300
3) Source of Additional Employment in Egypt					
a) Agriculture*** (4,000)		-80	-60	0	-80
b) Construction (450)		79	35	25	60
c) Tourism (70)		15	10	5	20
d) Government (2,500)		90	0	50	0
e) Trade, service, etc. (1,000)		-20	60	55	40
	8,020	75	45	135	40
f) Required Employment in Manufacturing (and mining) (1,555)		70	370	350	260
4) Investment Required in Manufacturing--per job (LE thousands)		(15.5)	(8)	(15.5)	(8)
Total (LE millions)***		(1,100)	(3,000)	(5,400)	(2,000)

Sources and assumptions: see Appendix 1.

*Based on trends for 1975-79.

**In 1979 prices.

***Males only--see Appendix 1.

Note: totals may not add because of rounding.

in 1979, but cannot continue to expand at that rate.

In 1979 an estimated 150,000 jobs were created in Egypt. By the mid-1980s between 300,000 and 500,000 such jobs may have to be created, if unemployment is not to increase more rapidly than the labor force. There is such a wide range, largely because it is difficult to predict whether migration will continue at the high rate of the later 1970s, will decline or will even be reversed.

Most of these jobs would have to be in industry, because several other sectors already have many workers in low-productivity, low-income work: lottery ticket sellers, shoe shiners, sidewalk peddlers and repairers, excess people in government and in stores. Even in industry there are excess workers. Surely as the economy expands more workers will be needed in banks, on the docks, in trucking and in operating irrigation pumps and so on. Many of these jobs are directly dependent on rapid growth in industrial output. To a large extent these additional, productive, better paying jobs will simply draw on workers moving out of essentially make-work, or very low productivity jobs. We have therefore assumed that employment in many sectors will continue to increase only slowly. In other sectors, most notably agriculture, employment should continue to decline, as Egyptian farming is among the most labor intensive in the world.

Under the pessimistic assumptions Government would probably have to continue to absorb workers to keep open unemployment from rising, with all that this implies for the Government deficit and productivity. Few women will be able to enter the formal labor force. Wages are likely to

stagnate and income distribution to worsen.

The optimistic and intermediate scenarios call for creating 260,000 to 370,000 new industrial jobs. In 1975-79 it required an estimated LE 15,500 (in 1979 prices) to create one job in manufacturing, on the average. Law 43 companies seem to have required the same amount. If the high investment rate of recent years is maintained and if investment grows at 8% a year together with the economy, some LE 6,300 million would be available for investment in 1985. In the past, about one quarter of investment has gone to industry. That suggests that with present practice 100,000 jobs could be created in industry as compared to a need for 260,000 to 370,000. In other words, with present practice and the pessimistic scenario as many as 250,000 people could not find jobs, although this scenario assumes that Government has absorbed a substantial number of, probably unneeded, employees.

Table II.3: INCREASE IN OUTPUT AND EMPLOYMENT IN MANUFACTURING
(average annual percent)

	<u>1960/6-65/6</u>	<u>1966/7-70/1</u>	<u>1970/1-76</u>	<u>1976-79</u>
1) Output	6.1%	6.3%	4.7%	8.7%
2) Employment	6.0	4.8	2.4	4.5

Source: Ministry of Planning, cited in ILO "Employment Opportunities and Poverty in a Changing Economy," draft.

Note: Output is Value Added; * = Provisional.

Past investment simply has been too capital intensive to create much productive employment in industry. Another measure of this, in

addition to investment required per workers, is the increase in employment for each unit of output. Only in the early 1960s, when public enterprises took on tens of thousands of redundant workers did output and employment increase together. In 1970s output (value added) increased about twice as fast as employment. This despite the fact that public enterprise continued to absorb some unneeded workers, at least until the late 1970s.

Of course, all these estimates are designed only to give orders of magnitude and certainly have a large margin of error. But no error is likely to change the basic conclusion, it would only postpone the period when problems are likely to arise.

This leads to the conclusion that unless the pace of industrial development is substantially stepped up and shifted to a far more labor-intensive pattern than at present there is a considerable risk that in the foreseeable future: (i) there will be massive unemployment and underemployment and (ii) the income of workers will stagnate and possibly decline, not only in industry but also throughout the Egyptian economy. The result would obviously be serious social and political tensions.

An Employment Oriented Strategy

An alternative strategy would emphasize labor-intensive industry. Such industries as garments, textiles, plastics and electronics can effectively employ two to four times as many workers for each thousand

Pounds of investment as industries such as chemicals, petroleum refining, steel production or aluminum. Moreover the workers required by this group of labour intensive industries can be drawn almost wholly from the poor, that is the unskilled and semi-skilled. However, given the size of the Egyptian market and present industry, the rapid development of labor intensive industries would require that a substantial proportion of output be exported. How to make such exports attractive and how to obtain access to foreign markets is discussed elsewhere.

So is an analysis of the industries in which Egypt shows comparative advantage at present, that is, those that Egypt can efficiently develop. In general Egypt's relative efficiency is greatest in labor-intensive industries. There are several other factors which suggest that Egypt could effectively compete in the world and domestic market for some labor-intensive products, if appropriate policies are adopted:

a) Wages in Egypt remain relatively low by world standards, a strong asset for industries where labor is a major factor in cost. In 1977 wages for unskilled workers in Hong Kong, a major exporter of labor-intensive goods, were approximately U.S. \$4 a day, although it is a low wage area. In Egypt industrial wages in that year were about U.S. \$2 for workers of varying skills, including technicians. For unskilled workers in labor-intensive industries and particularly for female workers, the wage was closer to \$1 a day and it was even lower in the informal sector. It is sometimes argued that labor productivity is lower in Egypt and that as a result labor costs per unit of output are not

low. But a study of the textile industry in 1976 found that labor costs per unit of output in Egypt were still only one half to one seventh of those in the U.S. and Europe. (Unfortunately no comparison was made with East Asia). Moreover, labor productivity surely is not fixed, especially if substantial overstaffing exists. If the incentives discussed in another report are provided to management and workers, experience in other countries has shown that productivity can increase quite rapidly. Finally, if manufactured exports were valued at the "own exchange" rate, as also discussed in another report, the effective cost of labor would be reduced by another 20-30%, for export industries.

Lower labor costs therefore are already a substantial asset to labor-intensive industries in Egypt and are potentially an even greater asset. However if real labor costs are allowed to rise more rapidly than productivity, Egypt's ability to compete in the world market could quickly disappear.

b) Egypt's proximity to the European market is another major asset for exporters of goods for which market conditions change rapidly. A producer in East Asia exporting to Europe either has to ship by air at greater cost, or has to guess at the trend of fashion and changes in demand a month earlier than one in Egypt. A month can provide a significant advantage in such fields as garments, toys and some textiles.

c) Egypt can greatly increase the number of women in the industrial labor force, with benefits in terms of efficiency and equity. In Hong Kong female participation rates in the organized sector range from 40% at ages 35 to 54, to 73% at ages 20 to 24. In Egypt

participation is a fraction of that proportion. Countries that already have high participation rates need to spend substantial sums to provide housing, transportation and other facilities to workers drawn from the rural areas to the cities. In addition, many of these workers will require literacy training. Egypt has another potential advantage in the thousands of women who are already in the urban areas, are already supplied with housing and other infrastructure, who are already literate, but who are not in the formal labor force.

d) Egypt also has a higher general rate of literacy and secondary education than many other countries with low wages; a long industrial tradition; much less of a foreign exchange problem, which keeps other countries from buying machines and other imports; and a larger group of people at home in foreign languages and countries than other potential competitors.

As wages have risen rapidly in Korea, Taiwan, Hong Kong, Singapore, Mexico and Brazil, another group of countries can follow the pattern pioneered by Japan and then followed by these countries: the production of labor-intensive manufactured goods for the world market. But there are many countries that could fill the partial vacuum that has been created by higher wages in East Asia and South America. Some of these countries have lower wages than Egypt (e.g., Pakistan, India, Bangladesh, Indonesia and China), some also have a potential female labor force that is underutilized (e.g. Pakistan, Bangladesh), some are located close to a large market for labor-intensive goods (e.g. the Caribbean countries, Turkey). While Egypt is quite well-positioned in terms of

potential assets, the crucial question is not who has the greatest potential advantage, but which countries will act most quickly to turn the potential to actual advantage. If Egypt is one of the countries that acts quickly to fill the vacuum which is developing in labor-intensive goods, it can pre-empt a part of the market for the next decade or two. The policies needed are described in other papers. If they are adopted, Egypt could be part of the next group of countries that follows the Japanese pattern of development. If it delays, others are likely to fill the vacuum.

In short, Egypt will find it difficult, if not impossible, to employ productively its rapidly growing labor force without developing an industrial sector that is expanding at a higher rate, and on a far more labor-intensive pattern than in the past. That will require a change in policies, especially to increase the attractiveness of labor-intensive industries.

III. WAGES AND LABOR ALLOCATION:
PROBLEMS OF THE DUAL INCENTIVE SYSTEM

Bruce Vermeulen

As Egypt shifts toward greater market determination of prices, adjustments in the wage system will be particularly crucial for stable and equitable economic growth. Wages are the only direct source of income for most Egyptians, so wage policies have profound implications for income distribution as well as for the allocation of factor inputs in the economy.

At present, the labor market remains divided and governed by a dual system, comprised of (a) the public sector civil service system, and (b) wage determination through competition in the private market. Because fundamental shifts have occurred in economic policy and the balance between publicly administered and private market pricing of labor is changing, distortions are inevitable. The purpose of this chapter is to review the wage structure and public wage policies, and to identify the most serious sources of allocative distortions.

Recent wage trends are summarized in Part A. Narrowing wage differentials among sectors, between white-collar and blue-collar workers, and between public- and private-sector employees, and to

some extent between men and women, are described along with recent evidence concerning relative wage shifts among occupational groups. Then, problems in the public sector which result from a relatively narrow wage distribution and widespread labor redundancies are discussed in section B, together with ways to increase productivity.

A. Wage Trends and Differentials

Prior to 1973, aggregate real wages in the economy (and particularly for agriculture) fluctuated for several decades around an essentially constant trend. In the economy as a whole, average wages rose 121% between 1960 and 1976.¹ During the same period, however,

1. For all sectors, except agriculture, data for average weekly wage rates are obtained from annual CAPMAS volumes of Survey of Employment, Earnings and Hours of Work, Tables 1 and 2. These data are for firms with ten or more employees. Dr. Mohamed Mongi, Institute of National Planning, Cairo, made available summary compilations of these data which he prepared for years prior to 1966. For years 1966/67 to 1972/73 data had to be converted to calendar years, using simple averages of consecutive fiscal years (beginning in July) as a basis for estimates in the overlap calendar year (e.g. $W_{1967} = [W_{1966/67} + W_{1967/68}]/2$). Wage data from Table 1 provide breakdowns by sectors (public vs. private), skill categories (blue collar vs. white collar), and sex. Table 2 disaggregates juvenile and adult blue collar workers by industry but not by sex. Wage data for the economy as a whole, for individual sectors, and for individual industries, are taken from Table 1.

Real wages for all sectors except agriculture are calculated using an urban cost-of-living index based on International Labour Organization, Yearbook of Labor Statistics (1973) for 1960-1967, adjusted to 1978 = 100. For subsequent years, 1967-1980, data are from CAPMAS, Statistical Yearbook, converted to calendar years where necessary according to the method indicated above, and adjusted based on overlap years (1967) to be consistent with ILO series.

the cost of living rose 118 percent. Thus, despite some fluctuations in real wages during the period, real wages in 1976 were barely above their 1960 level. An economy-wide real wage index is shown in Table III-1. Increases of 16% and 8%, in 1963 and 1964 respectively, raised real wages in 1964 to a peak for the entire period, only to have them eroded by two subsequent years of inflation in 1965 and 1966. During the early 1970s the cycle was repeated: real wages rose somewhat between 1971 and 1974, but by 1976 fell back to their 1971 level.²

Table III-1

INDEX OF REAL AVERAGE WEEKLY WAGES FOR ALL SECTORS

(1976=100)

<u>Year</u>	<u>Real Wage Index</u>	<u>Year</u>	<u>Real Wage Index</u>
1960	99	1969	104
1961	96	1970	102
1962	97	1971	100
1963	111	1972	103
1964	114	1973	104
1965	107	1974	104
1966	100	1975	---
1967	99	1976	100
1968	99	1977	(109)

Source: Calculated from Table 2, CAPMAS Survey of Employment, Earnings and Hours of Work by Dr. Mohamed A.F. Mongi, Institute of National Planning. Estimate for 1977 is based on preliminary wage data.

2. For a discussion of recurrent cycles of rising and falling real wages, see Hansen and Samir Radwan, et al., Employment Opportunities and Poverty in a Changing Economy; Egypt in the 1980s: A Labour Market Approach, first draft (Geneva: International Labour Office, 1980).

While data for 1977 are only preliminary, and for subsequent years are very incomplete, the aggregate real wage level appears to have climbed steadily through 1979.³ The evidence for 1980 is still quite incomplete and unclear. Depending on the price index used, some estimates find that real wages increased somewhat, while others show declines. Almost certainly, however, the dispersion of real wages has increased dramatically as a result of the rapid inflation.⁴ With rapid change in the structure of demand, and rapid inflation, some groups are more able than others to obtain wage gains which match or exceed increases in the cost of living.

The widening dispersion of incomes is a by-product of both rapid economic growth and inflation, and may result in serious inequities. Increasing wage differentials generally accompany rapid growth, and provide the signals and incentives needed to induce training and to transfer labor into expanding and newly emerging economic activities. When growth is combined with rapid inflation, income inequality tends to

3. With the exception of agricultural wages, data for 1977 which are included here and in Appendix B must be interpreted with caution because they are provisional. These data indicate that aggregate money wages rose in 1977 by 21%, and by 9% in real terms. Available agricultural data, nearly all small data samples, and interview evidence reviewed for this report concur in essence with these estimates.

4. The wage share in gross domestic product fell steadily and dramatically throughout the 1970's, from approximately 50% at the beginning of the decade to 30.3% in 1979. (Ministry of Planning, unpublished data) This reduction in the wage share of product occurred in nearly every sector, despite increases in real wages at the end of the decade. See "Recent Developments in the Egyptian Economy," mimeo (Cairo: Economic Studies Unit, Ministry of Economy, January 1981), pp. 22-25.

increase. Wage and price changes are not uniform, and some groups are more able than others to benefit from structural and pricing imbalances. Prices and wages which are set by the government tend to adjust slowly, creating opportunities in the remainder of the economy to earn profits in socially wasteful ways.

Policies proposed in this report would help to reduce the disparities in the distribution of wages and salaries by greatly expanding and equalizing employment and training opportunities.

Trade-Offs Between Rapid Wage Growth and More Jobs

In June 1981 the government announced a 3.3% increase in overall compensation for workers in the budget for fiscal 1981/82.⁵ Pensions also increased sharply in the preceding months. Because non-wage incomes have continued rising faster than inflation, these increases may have been an attempt to restore somewhat the balance of income shares between wages and other sources. However, the rapid escalation of labor costs without corresponding gains in productivity creates three potentially serious deterrents to employment growth. First, as total labor costs increase relative to capital, entrepreneurs are likely to shift toward more capital-intensive production technologies. Secondly, increases in payments to labor will reduce the international competitiveness of both

5. Middle East News, Economic Weekly, Vol. 20 No. 23, June 5, 1981, p. 23.

Egyptian export products and of emigrant workers. Finally, such large increases well above productivity growth, are highly inflationary. Ultimately, they may be self-defeating as inflation erodes short-term gains in living standards. If government fails to contain inflation, and real wages fall significantly, the result is likely to be widespread discontent and lower productivity.

At present, capital imports are heavily subsidized, both through tariff practices and through favorable treatment in parts of the capital market. Labor costs, in contrast, keep increasing rapidly due to government minimum wage regulations, wage increases in the public sector, and requirements concerning health insurance and social security taxes. Thus, managers often make labor-replacing investments to avoid uncertainties about future labor costs, as well as to minimize the costs and potential problems of supervising a large work force. Modern capital equipment also has prestige value, and may be chosen for this reason unless labor-intensive alternatives are clearly more profitable.

With these strong forces operating as deterrents to employment-intensive economic growth, the pressures for large wage increases need to be balanced carefully against the urgency of expanding employment opportunities through labor-intensive industrial growth.

Sectoral Trends: Evidence of Tightening Labor Markets

Intersectoral wage differentials fluctuated between 1960 and 1977, and were generally narrower at the end of this period. Table III-2 shows

Table III-2: AVERAGE WEEKLY WAGE BY SECTOR, 1960-1977

ACTIVITY	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977 ¹
<u>Agriculture</u>																		
Money Wage ²	287	111	124	133	167	375	347	337	278	302	281	273	337	331	424	501	533	754
Real Wage	963	350	382	399	431	817	838	795	630	637	551	532	632	567	544	712	649	814
<u>Mining and</u>																		
<u>Quarrying</u>																		
Money Wage	582	475	451	465	457	572	695	801	683	765	641	746	790	770	779	978	1160	1870
Real Wage	1573	1284	1253	1292	1203	1330	1479	1669	1394	1500	1233	1381	1411	1328	1217	1397	1432	2078
<u>Manufacturing</u>																		
Money Wage	283	286	273	322	356	364	396	393	413	465	466	465	518	539	591	611	721	852
Real Wage	765	773	758	894	937	847	843	819	912	896	861	925	929	923	873	890	976	946
<u>Construction</u>																		
Money Wage	352	325	341	385	463	450	404	416	464	463	453	456	460	506	628	633	736	856
Real Wage	951	878	947	1069	1218	1047	860	867	947	908	871	844	821	872	981	904	909	951
<u>Trade, Restaurants, and Hotels</u>																		
Money Wage	563	540	538	597	612	662	625	635	635	663	543	604	630	635	759	688	843	998
Real Wage	1522	1459	1494	1658	1511	1540	1330	1323	1296	1300	1044	1119	1125	1095	1186	983	1041	1108
<u>Transport, Storage and Communications</u>																		
Money Wage	431	428	437	470	512	499	520	509	492	563	537	538	546	611	606	952	805	941
Real Wage	1165	1157	1214	1306	1347	1160	1106	1060	1004	1104	1033	996	975	1053	947	1360	997	1045
<u>Finance, Insurance, Real Estate and Business Services</u>																		
Money Wage											814	801	778	852	1322	--	907	1150
Real Wage											1565	1483	1389	1469	2066	--	1120	1277
<u>Community, Social and Personal Services</u>																		
Money Wage	314	321	323	339	373	388	445	413	436	467	491	470	499	508	599	580	831	815
Real Wage	849	868	897	942	982	902	946	860	889	916	944	870	981	876	936	829	1026	906
<u>All Sectors</u>																		
Money Wage	342	337	325	376	407	429	441	443	454	497	494	503	540	566	652	701	757	917
Real Wage	924	911	903	1044	1071	998	938	923	927	975	950	931	964	976	1019	1001	934	1018
<u>Urban C.O.L. Index (1978 = 100)</u>																		
	37	37	36	36	38	43	47	38	49	51	52	54	56	58	64	70	81	90

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work except as noted. Real rates for all sectors except agriculture are calculated using an urban cost-of-living index; a separate index is used for agriculture (see footnote 1 in the text).

- Notes: 1. Data for 1977 are preliminary.
 2. Weekly wage levels in 1962, 1963, and 1975 are estimates, using the average of weekly-to-daily wage ratios in adjacent years to the interpolate. The preliminary CAPMAS estimate differs from rates estimated by extrapolation from average daily wages. Using the 1976 weekly-to-daily wage ratio, these rates would be 673 current piasters, and 727 piasters at 1978 prices.

Table III-3

RELATIVE WAGE INDICES BY SECTOR, 1960-1977
(ALL SECTORS = 100)

ACTIVITY	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
<u>Agriculture</u>	83	82	88	85	81	87	77	76	61	61	57	54	62	58	65	71	70	82
<u>Mining & Quarrying</u>	170	141	139	123	112	133	156	181	150	154	130	148	146	136	119	139	153	204
<u>Manufacturing</u>	83	85	84	86	87	85	90	89	91	94	94	92	96	95	91	87	95	93
<u>Construction</u>	103	96	105	102	114	105	92	94	102	93	92	91	85	89	96	90	97	93
<u>Trade, Restaurants and Hotels</u>	165	160	166	159	150	662	142	143	140	133	110	120	117	112	116	98	111	93
<u>Transport, Storage and Communication</u>	126	127	134	125	126	116	118	115	108	113	109	107	101	108	93	135	106	109
<u>Finance, Insurance, Real Estate and Business Services</u>											164	159	144	150	202	--	119	103
<u>Community, Social and Personal Services</u>	156	95	99	90	92	90	101	93	96	94	99	93	92	90	91	82	108	120
<u>All Sectors</u>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Table III-2.
Ratios are for weekly money wage rates. Because real wages in agriculture are based on a separate rural cost-of-living index, the real wage ratios for agriculture are different.

both money and real wage rates. Relative wages, reported in Table III-3, differed less in 1977 than in 1960.⁶ Although there were some fluctuations in relative rankings among sectors, these rankings were identical in 1960 and 1976.⁷ Mining and quarrying workers earned the highest average weekly wages in all years except 1961-1965. Trade, restaurants and hotels generally ranked second, but exceeded mining and quarrying in the early 1960s. In most years transport, storage and communications was third, construction fourth, and community, social and personal services fifth. The two sectors with the lowest relative wages were agriculture, which in most years was lowest, and manufacturing, which generally showed gains during the period. Wage data for an eighth sector -- finance, insurance, real estate and business services -- are available only beginning in 1970. Because earlier data were unavailable, this sector was not included in the rankings above. Since 1970, however, it has consistently ranked first or second along with mining and quarrying. Jobs in this sector are primarily white collar positions, which presumably accounts for the relatively high rates for all employees.

Agriculture. For decades real daily wage rates in agriculture have fluctuated widely, but they have tended to fall back toward prior

6. Real wages are calculated using an urban cost-of-living index from the National Bank of Egypt, adjusted to convert fiscal years to calendar years prior to 1973. Reported wages are for blue collar and white collar employees combined. Disaggregated rates are discussed below.

7. Preliminary figures for 1977 suggest that this trend has continued except in mining and quarrying, which includes high-wage petroleum extraction activities and accounted for only about 0.6% of employment in 1979 according to Ministry of Planning estimates.

low levels rather than to achieve sustained increases.⁸ A fairly consistent agricultural wage series, available for the entire thirty-year period 1951-1980, is graphed in Figure III-1. Real as well as money wages are shown, along with the rural cost-of-living index used to calculate agricultural real wage rates.⁹

These data indicate that after remaining relatively stable (and even declining temporarily) during the 1950's, money wages rose between 1961 and 1966, then levelled off again until 1972. Beginning in 1972, money wages began to rise once more. Then, in 1975, the pace of wage increases suddenly quickened -- first by a dramatic 41% in 1975, then by between 7% and 15% in each subsequent year through 1980. Although average wage rates in agriculture have remained below other sectors, money wage rates in 1980 were 126 piasters per day -- nearly four times their 1974 level.

As a result of trends in the cost of living, however, real wages followed a much more uneven course. During 1951-1955, real wage rates

8. Hansen, Radwan *et al.*, *op. cit.*; also see Lance Taylor and Richard Sabot, "Egypt: Population and Human Resources," IBRD Report No. 3175-EGT, 1980.

9. Average daily wage data for agriculture are the most complete wage series available. Samir Radwan, in Agrarian Reform and Rural Poverty, 1977, p. 31, reports a nearly complete average daily wage series from 1938-1974. As with other sectors agricultural data from Radwan for years 1966/67-1972/73 were converted from fiscal years (beginning in July) to calendar years. Data for 1975-1979 are taken from Hansen, Radwan, *et al.*, p. 89. Unpublished 1980 data are from the Ministry of Agriculture. Real wages are calculated using a separate rural cost-of-living index. For 1951-1966, Radwan's index is used directly. For subsequent years through 1979, an index provided in CAPMAS Statistical Yearbook is adjusted to extend Radwan's series. The base year is changed to 1978. See Table S-1 in Statistical Supplement.

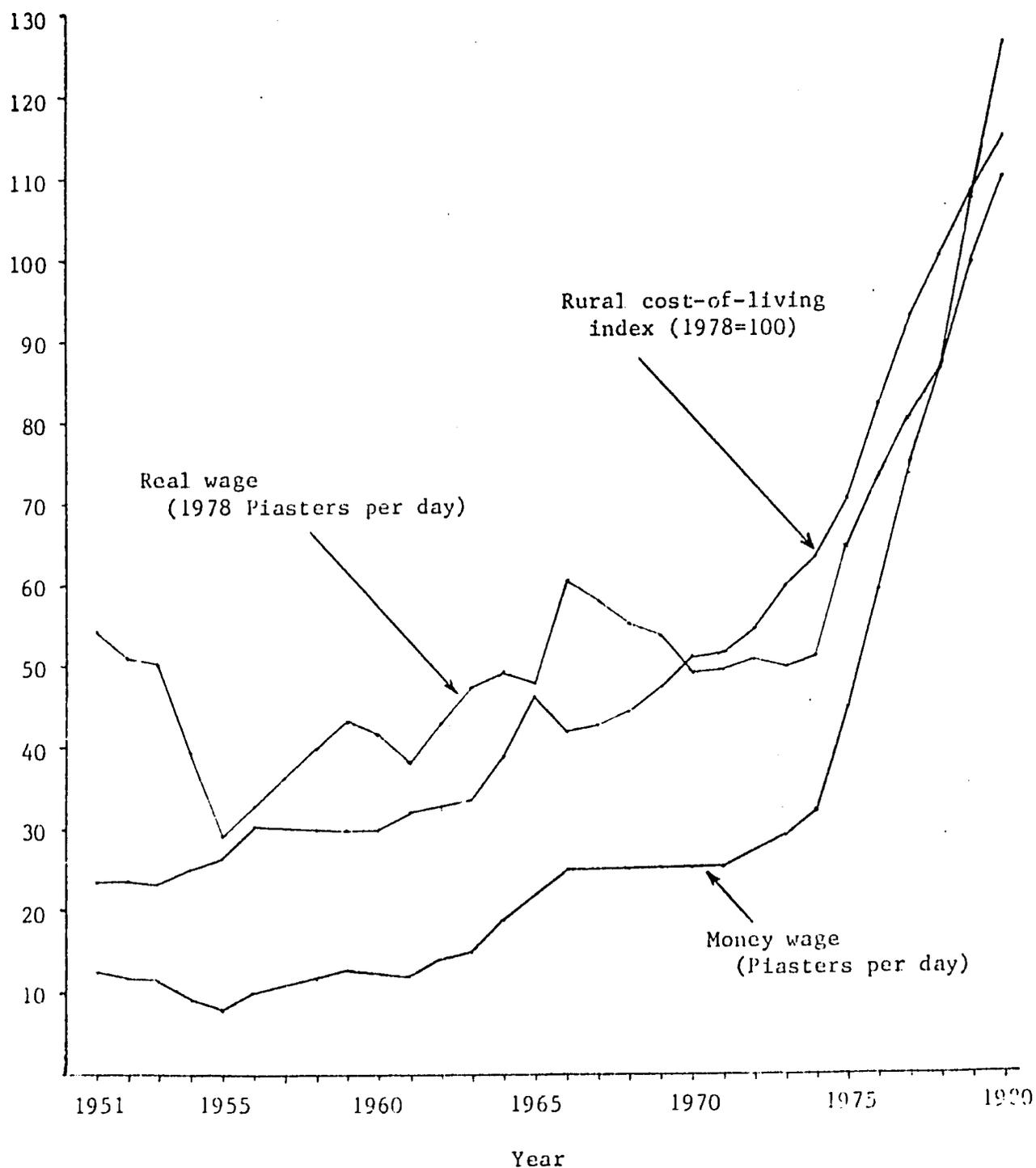
fell by nearly 40%, then rose again through 1960. After a decline in 1961, real wages again rose to a peak in 1966, only to decline once more. By 1974, after an almost continuous drop, real wages were nearly one-fourth lower than in 1966. However, wage gains were sufficient during the latter half of the 1970's to raise real wages well above prior levels. Even after accounting for an increase in the cost of living of approximately 65%, real wages in 1980 were more than twice (239% of) their 1974 level.

Although no formal data are available after June 1980, money wages by all reports have risen sharply again. Money wages averaged 126 piasters per day in the first half of 1980, while (according to a variety of sources) daily rates by August 1981 ranged between 150 and 200 piasters -- an increase of between 19% and 54% above 1980 levels. This probably represented a significant real increase, though this is not certain because cost-of-living estimates are preliminary and vary widely.¹⁰

Regression analysis was performed to estimate the respective impacts of agricultural output, inflation, and increases in urban construction wages on agricultural wage rates. These estimates support the hypothesis that agricultural wage determination changed sharply in the mid-1970s. Table III-4 reports results of several alternative specifications, with t-statistics in brackets under the coefficient

10. One estimate of the 1980-1981 increase in the cost of living is 25%. (Middle East News, Economic Weekly, Vol. 20 No. 23, June 5, 1981, p. 23.)

Figure III-1. AGRICULTURAL AVERAGE DAILY WAGE RATE AND RURAL COST OF LIVING, 1951-1980



Source: See Table S-1, Statistical Supplement.

values. Estimates are reported for 1960-1977, the period for which wage data were also available in other sectors.

Prior to 1975, percentage changes in money wages were relatively small for several years at a time, and did not respond strongly to wage changes in other sectors, or to changes in competing or complementary input prices, or even to changes in real per capita agricultural output. Regressions of changes in average daily money wages on changes in rural consumer prices and average product for 1954-1974, adjusted R^2 is only 0.18. For 1950-1980, these variables explain only 0.35 of money wage variations. When a dummy variable is introduced beginning in 1975, however, adjusted R^2 rises to 0.43 and only the dummy variable is statistically significant.

These results are not shown fully because a substantially better fit is obtained when changes in agricultural wages are regressed on changes in average weekly wages in the construction sector. Despite the noncomparability of these wage series, with the construction data including white collar workers rather than only day labor, there is a good fit between real construction wages with a one-year lag. When agricultural rates are regressed on both current and lagged construction wages, adjusted R^2 equals 0.68. However, introducing a dummy variable from 1975 increases the explanatory power of the equation to 0.82. As the first equation in Table III-4 indicates, the fit is almost as good without including current construction wages ($R^2 = 0.78$).

Changes in real agricultural wages also seem to follow real changes in construction wages with a lag, though the relationship is not

Table III-4

AGRICULTURAL WAGE REGRESSION ESTIMATES, 1960-1977

Form of Dependent Variable	Constant	Rural Cost of Living (t)	Real Wage in Construction (t-1)	Per capita Agricultural Output (t)	Dummy (1975- 1977)	Adjusted R ²
money wage (% change)	-46.42 (-3.73)		0.057 (4.30)		20.09 (6.09)	.78
real wage (% change)	-28.52 (-1.61)		0.032 (1.68)	0.78 (3.46)	9.78 (2.22)	.59
real wage	-63.84 (-4.50)		0.026 (3.63)	0.89 (9.79)	8.17 (-2.86)	.89
money wage (log)	-7.64 (-5.03)	0.056 (0.51)	0.48 (3.64)	1.74 (7.66)	-0.19 (-3.31)	.90

as strong. Simple regressions of real agricultural rates on average product (per capita output), the rural cost of living index, and lagged real construction wages, have adjusted R² values of 0.49, 0.59, and 0.55 respectively. The price coefficient is negative, and merely reflects the lack of response of money wages to changes in the cost of living. However, the simple positive correlations of 0.66 and 0.74 with these other two variables reflect parallel trends in these real economic relationships. When a dummy variable for the latter years is introduced to the equation for average product, adjusted R² rises only slightly, to 0.56. When the dummy variable is included together with both lagged construction wages and current average product, the coefficient of

determination becomes 0.5%.

Regressions were also run for the absolute level of real wages, and for the log of money wage rates. The best of these results are reported in Table III-4 as equations 3 and 4. In each case, the fit of lagged construction wages and a dummy for 1975-1977 was better than for average product with a dummy, although the t-statistics on current average product are larger in both reported equations.

In short, the regression results show that there is a strong relationship between construction wage rates and agricultural rates, and that the economic takeoff in the mid-1970's altered the pattern of wage determination significantly. In earlier years, annual average wages in agriculture responded relatively sluggishly to changes in rural prices and output. However, as increases in employment opportunities outside of the rural areas drew workers to the cities and abroad, wages became increasingly connected to urban rates. The sharp increases during the late 1970's were fitted only with a dummy variable which embodies both the pull of urban and international jobs, and underlying changes in the agricultural sector itself such as increased mechanization.

Rapid increases in real wage rates are only one dimension of the increase in agricultural labor costs. Hours of work have reportedly dropped sharply as well during the past several years. Workers who used to work seven- and eight-hour shifts as recently as two or three years ago now work shifts of six hours or less.¹² Many wage laborers

12. Alan Richards and Philip Martin, "Changes in Rural Wages Rates: A Review of the Evidence and of Demand-Site Pressures," mimeo (University of Santa Cruz, California: California, March 1981), p. 5.

reportedly work additional hours (often) double shifts, and earn up to twice the wage "per day".¹³ The attractions of growing employment opportunities in Cairo, and particularly of the higher-wage construction jobs, led to an absolute as well as relative decline in the agricultural work force during the 1970s.¹⁴ Large numbers of urban and rural workers have emigrated temporarily to the Arab Gulf states each year, and construction contractors had to recruit from the countryside increasingly to staff their crews.¹⁵ At the same time, owners of large-scale farms complain of labor shortages even for unskilled agricultural labor. Due to this tightening of the rural labor market, jobs which in the past were filled only with adult males are now being performed increasingly by youths and women. Because of tight labor markets, a great deal of mechanization has taken place. This makes it unlikely that the overall declines in agricultural employment will be significantly reversed even as labor surpluses reappear.¹⁶

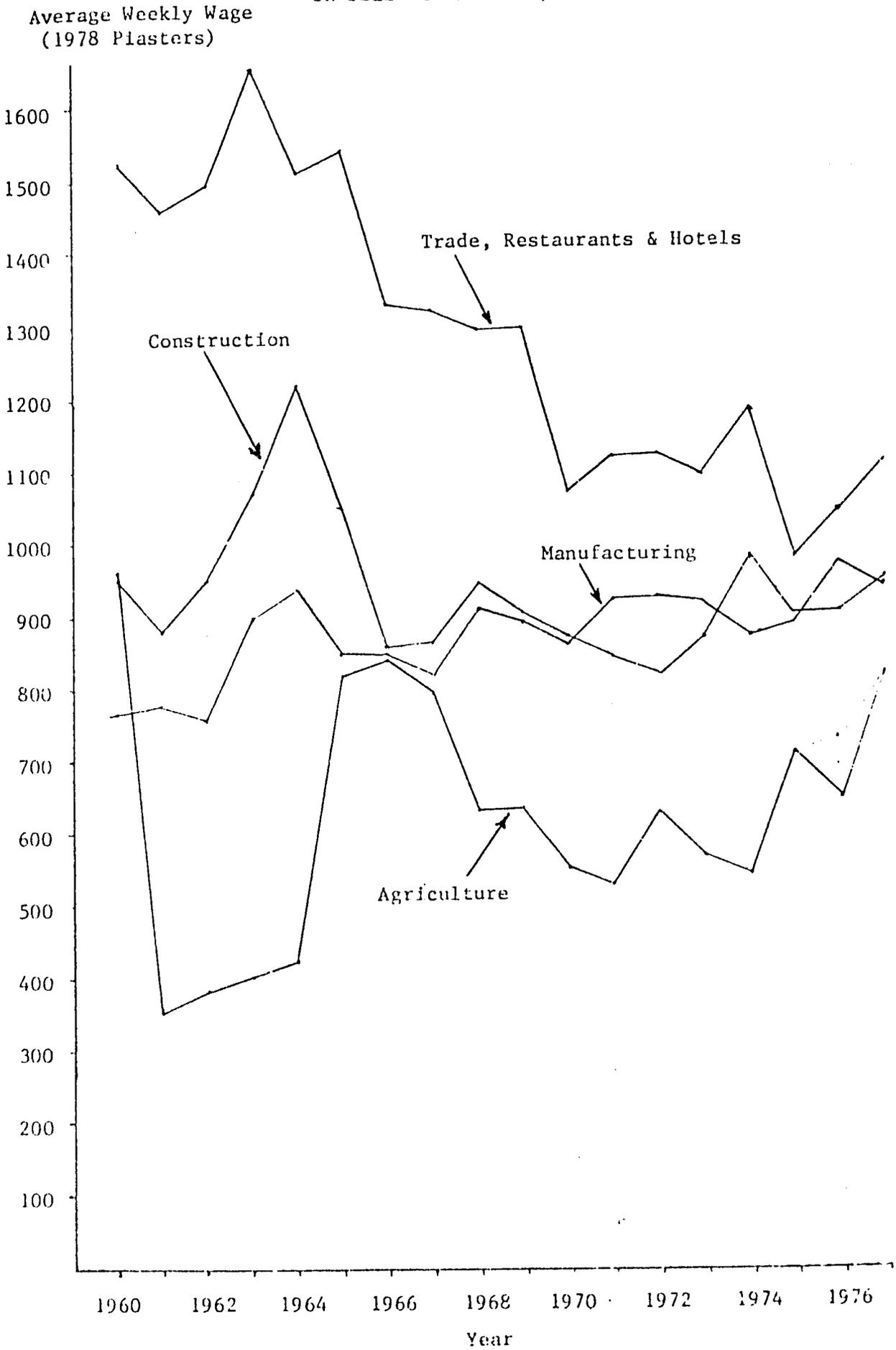
13. Because no empirical evidence of the extent of this phenomenon was available, agricultural wage data used in tables and in regression estimates for this report are based on daily rates rather than an alternative adjusted measure of earnings.

14. While estimates from various sources differ, partly due to what is a massive under-reporting of female employment, they generally show a levelling off after 1971-1973, and absolute declines beginning sometimes between 1975 and 1977. See Appendix A; also see Robert Rucker, "Egypt: FY 1982 CDSS Employment and Labor Force Annex", mimeo, January 1981, p. 28.

15. See report of interviews with construction contractors in Appendix B.

16. See Chapter II on employment; and Alan Richards, "Mechanization in Egypt: Hopes and Fears", International Journal of Middle Eastern Studies, (October 1981).

Figure III.2. AVERAGE WEEKLY REAL WAGE RATES
IN SELECTED SECTORS, 1966-1976



Construction. Construction wages rose dramatically in the 1973-1974, a year ahead of the take-off of wages in agriculture. (See Figure III-2 and Table III-2.) The average money wage rose by 24% (a 13% real increase), faster than in any other major sector. In fact, while wages in construction were beginning to rise rapidly, real wages fell in agriculture, mining and quarrying, manufacturing, and transport and communications, and rose only by 4% in the economy as a whole. In 1975, real construction wages fell in the face of a 9% inflation, but they rose again in 1976 and 1977. Ministry of Planning estimates for 1978 show an 11% increase in average construction wage rates, just matching the increment in urban cost-of-living index.¹⁷

Data were unavailable for 1979 and 1980, but interview results indicate that real wage growth has again been strong during 1980-1981.¹⁸

Construction wages are pivotal in the economy currently. Both because domestic construction has been increasing steadily, and because the foreign demand for Egyptian emigrants has remained strong, real construction wages have been bid steadily upward throughout the latter half of the 1970's. Eckhaus estimates that by 1979, roughly 400,000

17. Nazli Choucri, Richard Eckhaus and Amr Mohie-Eldin, "Migration and Employment in the Construction Sector: Critical Factors in Egyptian Development," mimeo (Cairo University/Massachusetts Institute of Technology Technical Adaptation Program, 1978), p. 48. These Ministry of Planning estimates also show a decline of average money wage rates in construction between the CAPMAS survey results for 1977, although also preliminary, are probably more accurate because of their large sample base.

18. See report of interview results below and in Appendix B.

Egyptian construction workers were working abroad.¹⁹ As a construction boom also took hold in Egypt, the impact of emigration hit construction wages first, then spread to other sectors. Employers sought to replace workers who emigrated to the Arab Gulf and wages within Egypt began to be bid up strongly.²⁰

Regressions of the percentage change in average weekly money wages for construction workers were run for 1960-1977. The results indicate that besides being strongly correlated with current urban cost of living increases, construction wages respond most strongly to a combination of prior period price increases and changes in prior period average product in agriculture:

$$W_t = 5.34 + 0.99 P_{t-1} + 0.43 AP_t + 13.63 \text{ Dum.} \quad (R^2=0.56)$$

(2.86) (2.87) (2.81) (3.86)

The strong association between farm and construction work helps to explain the close lag of agricultural wages behind those in construction. Interviews with construction workers in the casual labor market, and with workers at several construction sites, indicate that

19. Richard S. Eckhaus, "The Effects of Construction Labor Migration on the Egyptian Economy," mimeo (Cairo: Cairo University and Massachusetts Institute of Technology Project on Methods of Macroeconomic and Sectoral Planning, 1980), p. 4. He reports that estimates range from 293,000 to 434,000, and asserts that the higher figure is more likely.

20. According to a sample of prospective immigrants interviewed outside the Saudi Embassy, construction wage rates on the Arab Gulf are reportedly as much as nine to eleven times higher, despite recent increases within Egypt.

most are relatively recent arrivals from agricultural communities. A majority of workers at construction sites where interviews were conducted had been recruited directly in their rural communities. Some had been in Cairo for two years and more, but most were lured to the city initially for construction jobs. Almost without exception, workers who were interviewed indicated that they would return to their agricultural communities if wages in their construction jobs fell close to what they could earn back home.

Another measure of the close ties between agricultural and urban construction labor markets is the extent of seasonality in construction wages. Labor brokers in the casual labor markets indicated that average wage rates vary considerably during the year, depending on the competing demands for laborers in agriculture. While reported variations of up to 60% seem inconsistent with other wage information derived from interviewing workers, it is clear that both workers and employers evaluate urban construction wages in relation to the rates being paid in agriculture. Thus, wages in these two markets are interdependent. The ability of urban construction contractors to draw labor out of agriculture has been crucial. Clearly, urban wages in general, and particularly construction wages, would have increased even more dramatically without the massive migration of workers from rural Egypt to the urban labor force.²¹

The growth in demand for construction workers abroad is expected

21. In "The Effects of Construction Labor Migration..." (pp. 38-39), Eckhaus estimates that migration from agriculture has been a key factor despite "frictions, adjustment costs and long training times for skilled construction labor."

by most analysts to taper off gradually in the current decade. At present, however, shortages of skilled construction workers continue. This helps to keep real wages high, and has inhibited to some extent the growth of sectoral output.²²

Manufacturing. During much of the period between 1960 and 1977, average wages in the manufacturing sector were among the lowest of any sector other than agriculture. Although manufacturing wages have risen slightly in relative terms, they remain near the bottom of the distribution (see Table III-2).

Within the manufacturing sector, wage trends were examined for ten industries, using the wage series from the Survey of Employment, Earnings and Hours of Work (CAPMAS) for 1966-1976. Money wage rates are reported in Table III-5; relative wages are shown in Table III-5. For this group of industries, overall relative wage differences diminished somewhat during the decade. However, there were some major shifts in the relative rankings of individual industries. The dispersion of industry average wage rates was highest in 1971 (a ratio of 1.8 between the highest and lowest), and diminished significantly by 1976 (to less than 1.5). Food processing, and spinning and weaving, were at the bottom of the distribution for essentially the entire period. Publishing and printing, with a high proportion of white collar and skilled craft employees, remained at the top of the distribution in all years but 1976. Of all the industries considered, metal products was the most volatile. This

22. World Bank, "Arab Republic of Egypt: Domestic Resource Mobilization and Growth Prospects for the 1980's," December 1980.

Table III-5

AVERAGE WEEKLY WAGE FOR ALL EMPLOYEES IN
SELECTED INDUSTRIES, 1960-1977 (CURRENT PRICES)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
Food Production	318	---	408	460	482	535	561	637	731
Spinning and Weaving	367	385	422	500	515	551	570	689	797
Publishing, Printing and Related Products	513	609	734	681	721	791	857	818	1031
Industrial Chemicals	---	451	534	553	443	643	601	737	974
Other Chemicals	---	---	512	555	554	693	612	735	830
Non-Metallic Mining (except petroleum and coal)	396	403	471	560	533	558	645	717	932
Metal Products (except machines and equipment)	302	403	642	580	469	589	707	795	791
Iron and Steel	---	467	639	636	716	767	768	932	1020
Non-electrical Machines	498	434	601	576	679	765	708	825	843
Transport Equipment	483	525	602	595	600	665	727	762	837
Total Manufacturing	396	413	465	518	531	591	611	729	852

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1
(annual volumes as indicated). Data are for blue collar and
white collar employees combined.

(*) Data for 1977 are preliminary.

Table III-6

AVERAGE WEEKLY WAGE AS A PERCENTAGE
OF TOTAL MANUFACTURING: 1960-1977, SELECTED INDUSTRIES

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
Food Production	80	---	88	89	91	91	92	87	85
Spinning and Weaving	93	93	91	97	97	93	93	95	94
Publishing, Printing and Related Products	130	148	158	132	136	134	140	112	121
Industrial Chemicals	---	109	115	107	83	109	98	101	114
Other Chemicals	---	---	110	107	104	117	110	101	97
Non-Metallic Mining (except Petroleum and Coal)	100	98	101	109	100	94	106	98	109
Metal Products (except Machines and Equipment)	76	98	138	112	88	100	116	109	93
Iron and Steel	---	113	137	123	135	130	126	128	120
Non-Electrical Machines	126	105	129	111	128	130	116	113	99
Transport Machines	112	127	130	115	113	113	119	105	98
	---	---	---	---	---	---	---	---	---
Total Manufacturing	100	100	100	100	100	100	100	100	100

Source: Calculated from Table III-5.
(*) Data for 1977 are preliminary.

was due to the large changes in total employment, and to the diversity within the industry during a period of dynamic employment growth. Wages in the metal products industry rose fastest among the entire group between 1973 and 1976.

Other sectors. Among other sectors, wage trends in trade, restaurants and hotels fluctuated the most in both absolute and relative terms during 1960-1977. Between 1962 and 1965, average wages exceeded rates in all other sectors, at levels more than 50% above the economy-wide average throughout these years. After 1965, however, wages fell behind mining and quarrying, and ranked ahead of transport, storage and communications for the remainder of the period.²³

Although average wages remain relatively high in comparison with most other sectors, they declined steadily and significantly in real terms from 1965 through 1970. After a brief reprieve from 1971 to 1974, during which real wage rates recovered somewhat, they dropped sharply again in the following year to a low for the period. In 1975, money wages were just 4% higher than in 1963, and inflation had eroded the real wage to 40% below the 1963 level. Then in 1976 and 1977, when the labor market had already tightened considerably and wages in other sectors had begun to accelerate, real wages jumped by 6% and 23% respectively.

Workers in trade, restaurants and hotels were not the only ones in the economy to experience a decline in average real wages in 1975. This

23. As noted above, data for financial and other business services are available only for 1970-1977. During these years, wages in trade, restaurants and hotels, as in other sectors, were substantially lower than in financial and business services.

was also a relatively low year in construction and in social, community and personal services. What is significant about wages in this sector, however, is their sustained real decline over time. (See Figure III-2.) This substantial real decline in reported wages is of interest because it may reflect a much more serious drop of real incomes among workers in smaller, informal sector establishments.²⁴ Trade, restaurants and hotels accounted for about one-sixth of all non-agricultural employment enumerated in the 1976 census, much of it not included in the annual CAPMAS surveys.²⁵ Self-employed workers and employees in smaller informal sector establishments tend to earn less than workers in larger establishments. Their earnings also are more vulnerable to downward competitive and cyclical pressures.²⁶ Thus, the decline of wages in larger trading firms may signal a much deeper erosion of real incomes among the self-employed and unenumerated wage workers in smaller firms

24. The decline in average real wages may reflect reductions in earnings of individual workers, or it may be due to changes in the sectoral composition of employment. It could also be a statistical artifact, resulting from steadily increasing the coverage of smaller-scale lower-wage firms. Without more intrasectoral detail, it is impossible to be certain. In the absence of evidence to the contrary, however, it seems likely that individual worker incomes have fallen in real terms.

25. The census data show total nonagricultural employment in specified activities during 1976 as 5,149,650, with 16.5% (850,291) in the trade, restaurants and hotels sector. (1976 Census, Table 16, p. 16^o; see Statistical Supplement, Table S-30) The CAPMAS wage survey for 1977 covers only 1,116,553 workers, with sectoral employment equal to 115,917, or about 10%. Thus, the 1977 data cover only about 14% as many workers as were reported in the sector a year earlier in the census.

26. The correlation between firm size and average wages is pervasive across most economies. While data by firms size were not available for, this is very likely to be true in Egypt as well.

within the sector which are not included in the data.

While these data do not provide a sufficient basis for drawing a definitive conclusion, they raise the strong possibility that inflation eroded real incomes in the informal sector during 1960-1975. Presumably, improvements in recorded wages during 1976 and 1977 would imply broader improvements in the informal sector as well. Unfortunately, a lack of more complete or more recent data prevents a better understanding of these trends. For purposes of human resource planning better information about employment and earnings in the informal sector is clearly needed.

Female-Male Wage Differentials: Continuing Lower Earnings of Women

Economy-wide relative wage differences in formal-sector, enumerated jobs also narrowed somewhat between men and women, between blue collar and white collar workers, and between workers in the private and public sectors from 1960 to 1976 and 1977. Economy-wide relative wage differences between men and women (shown in Table III-7) declined in both blue collar and white collar jobs. Among blue collar workers, female average wages rose from barely more than one half those of males in 1960, to 75% in 1976. The preliminary data for 1977, however, show a sharp drop back to 63%. The relative gains of women in white collar employment were less dramatic and less persistent through 1976, when the average wage of white collar female workers was 66% of the male average, up from 56% in 1960. The 1977 data show an increase again,

to 72%. Relative wages of both categories of female employees rose sharply in the mid-1960s, reaching 67% for blue collar workers and 69% for white collar workers as early as 1966. This relative increase was maintained through 1976 for blue collar women, but for women in white collar jobs was eroded steadily between 1966 and 1974 as white collar employment expanded in urban areas. The white collar differential narrowed again between 1974 and 1977.

The apparent volatility of these relative rates, between 1976 and 1977 for instance, undoubtedly is due partly to the relatively small number of women recorded as working in firms with ten or more employees, (the population for which these data are collected). The larger proportion of these women in white collar jobs reduces overall average wage and salary differences, since white collar rates are higher. In 1977, women in all recorded employment combined had average weekly wage and salary rates which were nearly four-fifths (79%) of male rates. However, the great majority of women are excluded from jobs surveyed, and are instead forced into marginal employment in the informal sector. Thus, the ratio of female to male wage rates would undoubtedly be dramatically lower if these more marginal jobs were included.²⁷

Within the formal manufacturing sector, women also made some gains relative to men, though the preliminary data for 1977 provide a very different picture from trends through 1976 and prevent strong conclusions. (See Table III-8.) In particular, the data for 1976

27. See Papanek and Ibrahim, project report.

Table III-7

FEMALE/MALE WAGE RATIOS (PERCENT):
ALL SECTORS, 1960-1977

<u>Year</u>	<u>Blue Collar</u>	<u>White Collar</u>
1960	53	56
1961	54	56
1962	54	57
1963	61	57
1964	63	59
1965	63	57
1966	67	69
1967	68	66
1968	68	64
1969	71	65
1970	70	65
1971	68	62
1972	70	63
1973	66	63
1974	69	60
1975	--	--
1976	75	66
1977*	63	72

Source: Calculated from Wage Tables provided by Dr. Mohamed A.F. Mongi, Institute of National Planning, from CAPMAS, Survey of Employment, Earnings, and Hours of Work, Table 1.

(*) Data for 1977 are preliminary.

include significant changes from earlier patterns, and there are numerous equally sharp reversals in the 1977 data. The high degree of volatility in the data raises questions about data reliability, and about whether changes are due to shifts in the composition of employment or of individual earnings. The extent of variations during these and other years is surprising.

For the decade 1966 to 1976, female-to-male wage ratios rose from 67% to 75% among blue collar workers, while white collar women fared relatively less well, registering only a gain from 61% to 64%. In 1977,

Table III-8

FEMALE/MALE WAGE RATIOS (PERCENT): ALL MANUFACTURING INDUSTRIES (PUBLIC AND PRIVATE SECTORS), 1966-1977

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
<u>Blue Collar</u>									
Public	67	70	70	69	68	69	69	76	68
Private	64	65	61	68	61	73	68	75	53
Total	67	68	67	68	65	67	68	75	63
<u>White Collar</u>									
Public	60	66	61	61	64	68	69	62	74
Private	70	68	75	70	67	63	70	80	72
Total	61	66	63	62	64	67	70	64	74
<u>All Employees</u>									
Public	69	74	74	73	73	75	75	75	77
Private	67	66	71	71	65	78	75	76	59
Total	68	72	73	72	71	75	74	75	72

Source: Calculated from CAPMAS, Survey of Employment, Earnings, and Hours of Work, Table I (annual volumes as indicated). For the wage series in current and 1978 piasters per week, see Tables and in Statistical Supplement.

(*) Data for 1977 are preliminary.

the reverse was true: the blue collar ratio dropped to 63%, while for white collar female workers it rose to 74%. The net effect in 1976-1977 across both categories of jobs was a slight decline from 75% to 72%.

Separate patterns of change in the public and private manufacturing firm are equally ambiguous for 1976-1977. The 1976 data indicate that blue collar women in both sectors had gained substantially relative to men since 1960, with private workers making relatively greater gains. For white collar women, public sector rates continued to lag far behind men, while private rates rose from 70% to 80% of male rates. In 1977, however, all

these trends appear to have been reversed. Women suffered sharp relative declines in the private sector, and with blue collar wages dropping to barely more than half male rates, while relative white collar rates dropped back from the uncharacteristically high 1976 levels. Relative pay rates in public sector white collar jobs rose, while blue collar ratios fell.

In most of the ten individual industries considered more closely, female-male wage ratios followed closely the overall trend in manufacturing.²⁸ However, in spinning and weaving, which in 1976 employed 58% of all women working in manufacturing,²⁹ blue collar female-male ratios were 62% and 50% in 1976 and 1977 respectively.³⁰ In the public sector, women did relatively better, but in private firms these ratios were substantially lower (51% in 1976, and 43% in 1977). White collar women in private firms earned wages closer to male rates in most years between 1960 and 1977, though women suffered even sharper

28. Industry-specific wage tables for 10 selected industries are included in the Statistical Supplement, in Tables S-5 to S-17. Relative wage computations appear in Supplement Tables S-18 to S-27.

29. 1976 Population and Housing Census, Table 16, p. 169ff, reproduced in translation in Statistical Supplement as Table . Of 80,600 women reported in manufacturing jobs, 52,140 were in spinning and weaving, with roughly 40% in public firms and 60% in private firms. Women employees were about 9% of the total spinning and weaving work force. Figures for 1977 from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1, show lower levels of employment since surveys are for firms with ten or more employees. These data show total employment of 303,325, including 30,444 women (about 10%).

30. See Statistical Supplement, Tables S-5, S-15 and S-18 for money, real, and relative wage rates respectively in spinning and weaving, 1960-1977.

relative drops in 1977 than among their blue collar counterparts.

For all spinning and weaving workers combined, the female-male wage ratios were 70 and 67 in 1976 and 1977, with smaller differences in the public sector (77% and 80%), and greater differences in private firms (53% and 45%). Thus, while there were some wage gains for women relative to men, female-to-male ratios are best characterized as (a) lower, (b) volatile and (c) sensitive to fairly small changes in the structure of employment.

The data show that even women who are employed in formal sector jobs continue to have substantially lower average earnings than men. These numbers, however, mask larger differences in female-male earnings nationally. While they report average wages by broad classification, they do not reflect occupational discrimination on the inclusion of most working women from enumerated, formal sector jobs. Employment data for 1977 show that while the public sector is less discriminatory in blue collar average wage payments, a smaller proportion of the blue collar work force was female (8% in public firms as compared with 18% in private firms).³¹ The same was true in white collar jobs. Women occupy 13% of these jobs in the public sector and 18% in the private sector. These differences presumably result from the public sector job guarantees, which have led to larger ratios of white collar employees and have favored men disproportionately. Private firms accounted for only 4% of white collar jobs in the spinning and weaving industry, although private

31. CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1.

employment constituted 13% of the total in all job categories combined.

Where relative wage gains did occur for women, they were accompanied by even greater increases in the average level of education (thus, theoretically, by increased labor quality as well). New female labor market entrants are substantially better educated on average than either the existing work force or new male entrants.³² On the basis of interviews, rather than statistical evidence, it also appears that women are now being hired to fill jobs which were previously viewed as male jobs. This recent trend may fundamentally and permanently change the employment patterns of women. However, unless public policy supports this trend, it could also be merely a short-term phenomenon that could be reversed when overall labor supplies again increase in relation to demand.³³

Another aspect of the changes in female wages and educational attainments, noted by Papanek and Ibrahim, has more negative implications for equity and income distribution. Many lower-wage jobs in the formal sector are disappearing and are not being replaced by better jobs. Formal sector jobs which are available for women are predominately in white collar occupations, and blue collar positions are sufficiently

32. See discussion of educational attainments, Chapter IV.

33. In slack labor markets, traditional discriminatory practices generally increase. In the United States, women, minorities and younger workers are the first and the hardest hit by recessions. In many Western European countries, the heaviest impact is on guest workers. In Egypt, the first group of workers likely to be moved back in the "queue" for good jobs could well be women, unless government policy protects these workers.

scarce so employers can impose much higher educational requirements for women.³⁴

The lower wage rates of women in formal sector jobs have several implications for industrial growth. First, they mask even larger differences in returns to education because as women recorded as employed in manufacturing jobs (and throughout the economy) have substantially greater average educational attainments.³⁵ Secondly, the willingness of women to work at lower wage rates could represent a source of lower-cost labor inputs for industry. Lower relative wage rates and higher employment ratios for women in the private sector suggest that private employers may be responsive to these wage differences, although there is still a great deal of resistance to stereotypes concerning "men's work" and "women's work". Finally, wages are the only source of income for most families. In poor families most women are working whether or not they are counted in official data, and industrial jobs are superior to most employment opportunities for women despite wage major differentials between women and men. Thus, expansion of female employment in industry is consistent with efficiency objectives and with national concerns for equity and for raising family incomes.

34. See Papanek and Ibrahim, project report.

35. In Chapter IV., differences in educational attainments of enumerated workers are reviewed.

Skill Differentials and Shifting Scarcities

Blue collar/white collar differences. The narrowing of the relative wage distribution for blue collar and white collar workers in the economy as a whole was more dramatic than the increase in female-male relative wages during 1960-1977. In 1960, both male and female blue collar workers earned less than one third as much on average, as white collar employees (See Table III-9). By 1977 males in blue collar jobs

Table III-9

BLUE COLLAR/WHITE COLLAR WAGE RATIOS (PERCENT):
ALL SECTORS, 1960-1977

<u>Year</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
1960	31	30	31
1961	31	30	31
1962	30	29	30
1963	33	35	33
1964	35	37	35
1965	34	38	34
1966	42	41	42
1967	43	45	43
1968	45	48	45
1969	48	52	48
1970	46	50	46
1971	46	50	46
1972	53	58	53
1973	51	53	51
1974	50	57	50
1975	--	--	--
1976	59	69	59
1977*	63	55	65

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1.

(* Data for 1977 are preliminary.

had made gains to 63% of white collar rates. Relative gains of blue collar women were greater through 1976, (up to 69%), but less by 1977 (55%) if the preliminary data are correct.

Within manufacturing, blue collar-white collar ratios were slightly higher during most of the period. Differences between the public and private sectors are striking, however. Blue collar-white collar ratios are consistently and significantly higher for public than for private employees. For males, this was true until 1976-1977, when the private and public ratios were essentially the same; for females,

Table III-10

BLUE COLLAR/WHITE COLLAR WAGE RATIOS:
ALL MANUFACTURING INDUSTRIES (PERCENT), 1966-1976.

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
<u>Public</u>									
Male	43	50	50	56	55	62	61	61	64
Female	48	52	58	63	59	63	61	75	59
Total	44	51	52	58	57	63	62	64	65
<u>Private</u>									
Male	33	31	30	44	33	41	44	61	62
Female	31	29	25	43	30	47	43	57	45
Total	33	30	30	45	33	42	45	61	61
<u>All Employees</u>									
Male	41	46	46	54	51	59	58	61	64
Female	45	47	49	60	52	59	56	72	54
Total	41	47	47	56	52	59	59	63	64

Source: Calculated from CAPMAS, Survey of Employment, Wages and Hours of Work (annual volumes). (*) Data for 1977 are preliminary. See Table S-2, Statistical Supplement.

there are no exceptions. (The relatively narrower wage distribution among public enterprises than in private manufacturing firms is discussed below.)

The data on blue collar and white collar wage differentials between 1966 and 1977 indicate that there was a significant shift in relative wage compensation in favor of blue collar workers. Even in the private sector, where relative gains by blue collar workers were much smaller, these increases suggest either that the average skill content and productivity in blue collar jobs increased, or that relatively greater scarcities have emerged in blue collar occupations.

More recent data on these broad skill differentials are unavailable from official sources, as are reliable figures for individual occupations. This is unfortunate, because wage data provide crucial information for assessing changes in relative scarcities. Although public sector rates are set administratively for the entire civil service system, private market rates fluctuate more freely and can signal key shifts in the balance between market demand and supply. Recommendations for improving labor market information, proposed in Chapter I, are particularly important for this reason.

Recent trends in occupational differentials: clues from a biased sample. One source of more current but unofficial data on wages is the semi-annual Survey of Personnel Policies and Salary Levels in Egypt.³⁶

36. The surveys are conducted by the Middle East Advisory Group (MEAG), and have been administered in June and December since 1977. The survey population consists of subscribers, rather than a sample chosen for purposes of statistical inference.

Two other recent single period surveys were also reviewed for this report.³⁷ Each has serious shortcomings for the present objective of examining general changes in the occupational wage structure, but each does provide some clues concerning recent trends.³⁸

The semi-annual survey of salary levels tracks non-wage components of compensation as well as base pay and bonuses, and permits some guarded inferences about relative wage movements between 1977 and 1980. However, considerable caution is needed to avoid drawing incorrect conclusions from these data.³⁹ A number of sample characteristics make broader

37. Some comparative wage and salary information is available from a survey conducted by an international consulting company as part of an analysis of needed increases in skilled-labor and professional wage and salary rates in a public sector company. In addition, there is some salary and skill-scarcity information in a 1979 study by Mohamed A.F. Mongi et al, Factors Affecting Public Sector Salaries Policy in Egypt (Cairo: Institute of National Planning, 1979), p. 280.

38. Each of these studies is based on a small sample of firms. In the public sector, this is a less serious problem because of common civil service regulation of wages and bonuses. Nevertheless, there is a considerable amount of variation among firms, particularly in determining bonuses. A common problem in the choice of sample firms in the private sector in these surveys is that they are almost all quite large. While survey results may be useful for inferences about larger firms, they are probably quite different from practices in smaller firms.

39. The surveys were designed to provide salary information primarily for firms which know relatively little about local wage-setting practices among multinational firms in Egypt, and perhaps in larger local firms as well. These firms are 50-60% more capital-intensive than the average for manufacturing as a whole, and investments per worker average more than twice the economy-wide average. Thus, their wage bill tends to be a much smaller portion of total costs, and they are more able than most private Egyptian firms to provide wages and benefits which grow in real terms despite inflation. This is a serious shortcoming for purposes of generalizing about wages in the economy, although it in no way detracts from the value of the surveys for their intended purpose.

inferences potentially unreliable: (a) it consists almost entirely of firms which are principally or wholly foreign-owned, with above average capital-intensity and wages; (b) the total number of firms sampled is small, and the number of firms reporting wages for overlapping occupations is even smaller;⁴⁰ (c) there is a very strong representation of high-wage, petroleum-sector firms, whose high wages and benefit policies may be quite unlike those of other foreign or domestic firms; and the composition of the sample has changed significantly in most sample periods.⁴¹

Results of these surveys were not intended to be generalized, and their use at all can only be suggestive. Because surveys monitor a continually changing sample of high-wage firms, economy-wide inferences about absolute changes in occupational wages would be unreliable. However, systematic changes in relative wages within these firms may be a useful basis for inferences about changes in relative occupational skill scarcities. For a small number of occupations, it is possible to trace developments from 1977 to 1980 by examining year-to-year movements among firms which were in the sample for at least two consecutive sample

40. In making comparisons, the number of firms involved rather than the number of workers is the relevant measure of sample size, since each firm makes a complete set of compensation decisions as a unit regardless of the number of employees.

41. For example, the banking industry was well represented in early surveys, but was not included in later rounds.

years.⁴² Even this limited use of the data is warranted only because of a dearth of alternative information, and the results should be viewed with caution. Due to their above-average capital-labor ratios, skill requirements and job tasks associated with a particular occupation may be quite different in these firms.⁴³

With these caveats in mind, there is sufficient continuity and large enough samples of firms to justify calculating real wage indices for 15 occupations (see Table III-11).

Despite the shortcomings of this sample, the results are interesting in several respects. In general, the indices are consistent with the conventional wisdom concerning changing skill scarcities and labor costs. They show a steady increase in real base salaries for most of the selected blue collar and white collar jobs in the surveyed firms. Base salaries for white collar workers rose by 31% in real terms over the three years, and by 24% for blue collar workers. White collar increases were largest in 1978-1979, while blue collar salaries rose most sharply in the following year.

42. This approach is not completely satisfactory, because there were major changes in the nature of the sample as well as in the specific firms surveyed.

43. These caveats must be emphasized because of the inevitable enthusiasm among analysts and policy makers for any current data, given the long lags in obtaining economy-wide data from official sources. The recent use of these data in a country development strategy statement to make sweeping inferences about the benefits of growth in the private sector more generally, for example, is likely to be quite misleading.

Table III-11

INDICES OF REAL MONTHLY BASE SALARIES FOR SELECTED OCCUPATIONS
MEAG SAMPLE (1978 = 100)

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>Blue Collar</u>	100	100	120	124
Unskilled				
Factory laborer		100	120	133
Office boy	77	100	105	110
Semi-skilled				
Driver	105	100	103	110
Production foreman		100	109	132
Junior carpenter		100	88	87
Computer operator	105	100	138	142
Skilled				
Senior carpenter		100	105	110
Senior electrician		100	116	129
Senior mechanic		100	128	138
<u>White Collar</u>	83	100	100	109
Semi-skilled				
Typist	91	100	101	114
Skilled				
Secretary	88	100	97	107
Accountant	76	100	97	102
Administrative Assistant	104	100	112	128
Professional				
Senior accountant	110	100	91	99
Chemist		100	112	118
<u>All Included Occupations</u>	81	100	106	118

Source: Computed from Middle East Advisory Group, Survey of Personnel Policies and Salary Levels in Egypt, Nos. 2, 4, 6 and 8 (December 1977, 1978, 1979 and 1980).

The largest increases have occurred in technical and supervisory occupations (e.g. computer operator, production forman, administrative assistant), skilled trades (e.g. electrician and mechanic), and (heavy) factory labor jobs. From 1978 to 1980, base salaries for these occupations rose between 28% and 42%. The smallest increase since 1978 have occurred in white collar clerical occupations (e.g. secretary and accountant) and in light, relatively unskilled work (e.g. office boy and driver). Senior account salaries actually fell steadily from 1977 through 1979, and did not quite recover in 1980 to their 1978 level. Lower-level accountants made substantial gains from 1977 to 1978, then showed almost no change subsequently. These salary trends among accountants will be considered below, in the discussions of government employment and of mismatches between educational outputs and the labor market.

The other curious salary pattern is for carpenters. Real salary levels among skilled carpenters rose by only 10% between 1978 and 1980, while for semi-skilled carpenters they actually fell after 1978. Carpenters' wages had reportedly risen rapidly in prior years. Supply apparently responded sufficiently, despite continuing out-migration to the Arab Gulf states, to equilibriate the market with relatively small money and real wage growth. This evidence is consistent with interviews conducted in the construction market.

The real wage index for the entire sample of selected occupations grew by 23% between 1977 and 1978, then by 6% and 18% respectively in the subsequent two years. The average growth in white collar jobs was 20%

between 1977 and 1978, but real base salaries in these occupations taken together remained unchanged in 1979 and rose only 9% in 1980. In blue collar jobs, by contrast, real wages showed no improvement between 1977 and 1978, then gained 20% in 1979 and an additional 3% in 1980. Again, it is important to emphasize that these aggregate indices must be interpreted with great caution. Although the aggregation across occupations may reduce small-sample "noise," it creates added problems of bias. The included occupations may not represent all blue collar and white collar occupations accurately. Higher capital-labor ratios among surveyed firms may make the skill distribution in these jobs quite different from jobs with the same title in other firms. Compensation may also differ because wage costs are a smaller proportion of total production costs, and firms are more able than the vast majority of Egyptian firms to offer wage and benefit increases substantially above the rate of price inflation.

Another interesting change is the growth of overtime pay, allowances, and other components of compensation (principally insurance) in relation to base salary increases.⁴⁴ Unfortunately, comparable data are unavailable for the labor force as a whole. Based on a number of informal conversations, it seems probable that the same pattern of change has occurred in the public enterprises. In smaller (private) establishments, overtime is also an important component of pay, but supplemental allowances and insurance tend to be relatively small portions of total compensation.

44. See Table S-4, Statistical Supplement.

These differences in the structure of overall compensation are important to document and analyze systematically. Base wage comparisons may mask major shifts in relative compensation among workers who receive substantially different amounts of other payments and benefits. This seems to be particularly important in comparisons of the public and private sectors.

The findings of the two other surveys are consistent with these wage results. The single-firm study monitored responses from recruitment ads, and found that for engineers and technicians, there were fewer applicants than advertised positions. In other categories, applications exceeded job openings by multiples ranging from 1.3 for craftsmen to 4.9 for clerks. The Institute of National Planning study found that both public sector and private sector managers cited shortages most frequently in skilled labor and middle management categories.⁴⁵

Private-Public Differentials: the Dual Wage Structure

Finally, employees in the private sector made important gains relative to public sector workers during the 1970s. Consistent comparisons are possible only beginning in 1966. Extensive nationalizations in 1961 which brought approximately 80% of organized, non-agricultural economic activities under public ownership. By 1966, this process was complete and the major economic adjustments that

45. Mohamed A. F. Mongi et al., Factors Affecting Public Sector Salaries in Egypt (Cairo: Institute of National Planning, 1979), pp. 250-252.

followed nationalization had been made. Private-public sector relative wage ratios (in percent) for 1966-1977 in all economic activities combined are presented in Table III-12. Average wages for the entire private sector remained consistently below public sector aggregate levels during 1966-1977. However, the ratio rose from 73% to 95% during the period, with a considerable amount of interim fluctuation.

Table III-12

PRIVATE/PUBLIC WAGE RATIOS: ALL SECTORS, 1966-1977

<u>Year</u>	<u>Ratio</u>	<u>Year</u>	<u>Ratio</u>
1966	73	1972	90
1967	76	1973	80
1968	79	1974	81
1969	71	1975	--
1970	75	1976	94
1971	79	1977*	95

Source: Calculated from CAPMAS Surveys of Employment, Earnings and Hours of Work, Table 1 (annual volumes). (*) Data for 1977 are preliminary.

A similar pattern occurred in the manufacturing sector, as shown in Table III-13. Strong relative gains were made during the period by all manufacturing workers combined, and separately by both men and women. The aggregate private/public ratio was only 66% of the public sector rates in 1966, and rose to 95% by 1977. The separate patterns for men and women were essentially the same as for both groups combined until 1977, when relative rates fell for women and increased for men.

Disaggregation of private/public ratios for blue and white collar workers reveals distinctly different trends. The dispersion of wages among private sector workers is greater than in the public sector. Women

Table III-13

PRIVATE/PUBLIC SECTOR WAGE RATIOS
IN ALL MANUFACTURING BY SECTOR (PERCENT), 1966-1977

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
<u>Blue Collar</u>									
Male	68	68	70	92	68	77	84	89	102
Female	65	63	61	91	61	88	82	88	79
Total	67	67	69	91	67	77	82	88	98
<u>White Collar</u>									
Male	87	110	116	116	113	118	115	90	106
Female	101	114	140	134	118	111	116	116	103
Total	88	112	118	119	114	116	113	92	106
<u>All Employees</u>									
Male	67	71	73	90	70	80	85	87	98
Female	65	63	71	87	62	84	84	88	75
Total	66	70	73	89	70	79	83	85	95

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). (*) Data for 1977 are preliminary.

holding white collar jobs in the private sector earned an average of nearly 19% more than in the public sector during 1966-1976, though this ratio declined in 1977. Among male white collar workers, private sector wages exceeded public rates by an average of 8% (and nearly 15% between 1968 and 1975). Private sector rates for blue collar workers, by contrast, were 68% of public rates for males and 65% for females in 1966, and had risen to 89% and 88% respectively in 1976, with the 1977 ratio rising again to 102% for men and falling to 79% for women. Thus, private-public wage ratios remained high (generally greater than 1.00) for white collar workers, while private sector blue collar rates remained lower despite substantial

relative gains. The 1977 data show private wages for blue collar males exceeding public rates for the first time. However, because of larger benefits and fringes, total public compensation in blue collar workers has remained well ahead of private levels.

The only source of more recent public-private comparisons identified for this analysis is a small-sample survey of competitors' wages conducted as part of the public firm evaluation cited above. Comparisons in six occupational categories are summarized in Table III-14. This evidence suggests a continuation of earlier relative wage patterns. Private sector wage ranges remained below public sector levels for unskilled laborers, and above public rates for accountants and engineers. The wage distribution was wider for clerical and technical workers, reflecting the private sector's greater wage differentials in these very heterogeneous categories. The only anomaly in the survey is the narrower range of skilled laborer wages in the private companies. This may be because all firms are from two closely related industries, where the range of skills may be less diverse. It also could be the result of different methods of assigning semi-skilled workers' jobs to the "unskilled" or "skilled" categories.⁴⁶ Thus, no strong inferences should be drawn from this last result.

46. For example, the INP study classifies "semi-skilled" and "unskilled" workers together. Small differences in the way individual firms allocate this middle skill group into skilled and unskilled categories could make these distinctions noncomparable. Technicians also perform such varied functions that skill distributions of this job category are also likely to vary greatly between firms.

Table III-14

PUBLIC-PRIVATE ANNUAL WAGE RATIOS, 1979
(based on small sample)¹

<u>Occupational Category</u>	<u>Private Minimum Wage Rate²</u>	<u>Public Minimum Wage Rate³</u>	<u>Ratio of Minimum Rates</u>	<u>Private Maximum Wage Rate</u>	<u>Public Maximum Wage Rate</u>	<u>Ratio Maximum Rates</u>
Laborer	108	144	.75	480 ⁴	780	.62
Technician	108	180	.60	2400 ⁵	1440	1.67
Clerical	108	180	.60	960 ⁴	780	1.23
Skilled Laborer	360	240	1.50	840 ⁴	1440	.58
Accountant	360	240	1.50	1920 ⁵	1440	1.33
Engineer	360	300	1.20	5400 ⁴	1440	3.75

Source: Evaluation of a public sector firm by international consultants.

- Notes:
1. The sample upon which these data are based consisted of 3 public sector firms, and 4 private firms with total employment ranging from 18 to 750 employees.
 2. All minimum rates were for the same firm, with 65 employees.
 3. All public firms reported identical minimum and maximum rates, determined under law 61 of 1971.
 4. Rate paid by firm with 750 employees.
 5. Rate paid by firm with 18 employees.

Taken as a whole, however, the survey is consistent with prior evidence: (1) private sector firms have much wider wage distributions than firms in the public sector; and (2) wages in entry-level and low-skilled categories tend to be lower, while advanced engineering and technical skills command higher pay than in the public sector.⁴⁷

Distortions and inefficiencies resulting from the dual wage and incentive system in Egypt are discussed in Section B.

47. These wage patterns are consistent with employer interviews conducted in January and June 1981, which indicated that public enterprises have had large entry-level increases in total compensation, and continue to have narrower wage distributions than a sample of private firms with more than 25-50 employees.

B. The Dual Incentive System: An Obstacle to Productivity and Growth

Public enterprises remain locked in the confines of civil service wage and employment policies which were established at a time of greater economic planning and administrative controls over the economy.⁴⁸

Inconsistencies between the civil service and private market wage systems erode incentives among public sector workers, and cause higher labor costs for private firms as well. These differences create distortions which stifle the growth of labor-intensive activities, and encourage Egyptian entrepreneurs to utilize technologies which are excessively capital-intensive.

The detrimental impact of the wage structure on productivity is aggravated as a result of past hiring guarantees for higher-education graduates and war veterans, which have left many public firms with large numbers of redundant workers.⁴⁹ The narrower relative wage structure of public enterprises encourages private firms to pirate the most productive public enterprise workers while leaving behind those who are least trained, motivated and experienced. Productivity and work standards are difficult to establish and maintain. As the economic role

48. The civil service system was extended to cover wages and salaries in the public enterprises in 1962, a year after the nationalization of a number of these firms.

49. Despite reductions in the degree of redundancy during recent years, surpluses remain as large as 30-40% in a number of job categories.

of private sector firms expands, many public enterprises face potentially serious problems of becoming increasingly inefficient and marginal.

The public enterprises account for nearly half of manufacturing employment, and more than half of value added in manufacturing.⁵⁰ They produce goods and services which are vital to the economy. For many private firms, a stable supply of intermediate goods produced by public sector firms is essential for profitability. It is difficult to imagine successful development of the private sector, or of the Egyptian economy as a whole, without a strong public enterprise sector. To assure that public firms become increasingly productive, public sector wage and employment practices need to be modified.

Redundancies and the low-productivity trap. High entry-level wages, substantially greater benefits, and greater security than in the private sector make public enterprise employment very attractive to low-skilled workers. Past job guarantees for war veterans as well as post-secondary graduates, together with higher compensation, have led to large labor surpluses in most public sector firms. A 1979 survey of public enterprise managers conducted by the Institute of National Planning asked top level managers to assess to the extent of labor

50. According to 1976 census data, there were 594,693 manufacturing employees in public sector firms, an additional 32,843 in "government" (presumably the firms run by the military), and 731,922 in the private sector. Ignoring those listed as "unspecified," workers in public sector and government manufacturing constituted 43.7% and 2.4% of total manufacturing employment, while 54.8% were in private firms. (1976 Census, Table 16, p. 169; see Statistical Supplement, Table S-30.)

underutilization.⁵¹ Of 91 responses, 20 managers estimated labor underutilization was 10%, 41 identified 20% as the appropriate figure, 15 said 30%, and the remaining 16 indicated that underutilization was 40%. This does not mean that such large portions of the work force could be dismissed without any immediate loss of output. It does imply, however, that if managers are given the authority and adequate incentives to set their own personnel policies and increase productivity, these magnitudes of relative labor reductions might be achieved over time. Increased utilization, and the eventual elimination of redundancies can be achieved through productivity-increasing job redesign, labor reassignments, and expansion of outputs, rather than through layoffs of current workers. In fact, some progress in this direction has already been made, as Handoussa reports.⁵² Without effective incentives for raising productivity, the existence of surplus workers has created a low-productivity trap which is extremely difficult to overcome. Several studies and a number of interviews consistently identify three kinds of difficulty which public enterprise managers face due to the redundant workers they have been required by the government to hire: (1) defining and allocating work

51. Mohamed A.F. Mongi *et al.*, Factors Affecting Public Sector Salaries Policy in Egypt (Cairo: Institute of National Planning, 1979), p.280. The same study reports lower estimates of actual overall labor redundancy: "about 10% in food, spinning and weaving, trade, transportation and hotels, 14.4% in petroleum, 15% in electrical construction, 16.7% in chemicals, and 17.9% in engineering industries." (p.244)

52. Handoussa, op. cit.

tasks, responsibility and accountability; (2) enforcing work standards and work discipline; and (3) elevating workers morale and productivity, which tend to decline to the lowest common denominator.⁵³ Where surpluses are particularly large, it is impossible to provide high-productivity assignments for all workers. Thus the basis for enforcing productivity standards is undermined or absent, and it is often difficult to enforce even rudimentary work discipline and to discourage absenteeism. In Egypt's public sector firms, difficulties in encouraging productivity are further hampered by the cumbersome due process requirements for dismissals, and a purportedly strong bias in labor hearings against such dismissals.

One measurable consequence has been the reduction in effective hours worked in some plants. For example, while the work day is legally defined as 7 hours, actual shifts in some cases are only 5 hours (lasting from 9 a.m. to 2 p.m.).⁵⁴

The problem of redundancies is widely recognized, and public enterprises are no longer required to hire graduates and veterans. However, the large remaining redundancies will not be eliminated simply by attrition. A shift in incentives is required to eliminate both the redundancies and accompanying problems of low morale, low productivity, and (frequently) poor industrial discipline.

53. See, for example, Mongi *et. al.*, (1980), pp. 225-240. The public-firm evaluation notes, "The solution of current and future manpower problems will require fundamental changes in the existing (company) wage structure..."

54. Public firm evaluation cited above.

Spillover effects in the private sector. It is difficult to gauge the extent of distortions which result in the private sector from the narrow wage differentials and redundant labor policies of the public sector. Some specific effects are perceptible, however. In two medium-sized private textile firms site visits were conducted, some of the young female workers had completed enough education to qualify for government employment. They were working in the textile plant while awaiting eligibility for a public sector assignment. Public employment was viewed by these women as preferable because of the security, benefits, and easier work schedules.

When individual skills are in scarce supply, the availability of government jobs places added pressures on the private sector labor market. In some cases this is appropriate, because skills are used in an economically efficient manner in the public sector. More often, however, indiscriminate public-sector job guarantees for all higher-level graduates, regardless of their field of study and acquired skills, cause inefficient uses of scarce skills. For instance, university graduates sometimes are assigned to jobs that could be filled by secondary-level technical graduates instead.⁵⁵ Engineering skills are scarce elsewhere in the economy, yet there are surpluses of engineers in public firms. In part this is a problem of poor training rather than misapplication of

55. Richard F. Nyrop, Area Handbook for Egypt. The American University Foreign Area Studies (Washington, D.C.: U.S. Government Printing Office, 3rd. edition, 1976), p.78.

skills.⁵⁶ However, it results from a set of distortions which waste both educational resources and scarce skills. Job security and better benefits deprive the private sector of many capable workers, and raise the costs for hiring individuals with these skills.

Finally, because the public sector employ a large portion of the total work force, the detrimental effect of labor redundancies on productivity may cause more general declines of worker efficiency in private jobs as well.⁵⁷

Incentives for greater productivity The bonus system in public firms is supposed to reward productivity. However, both standard promotion schedules and bonuses are granted more as a function of time than of individual accomplishments. Production bonuses are given periodically, and tend to be linked to the base salary level. The overall amount of bonuses is determined by firm output levels more than by individual outputs. Similarly, promotions are made primarily on the basis of seniority rather than merit. These reward systems fail to counteract the disincentive effects of redundant employment, and provide no leverage to encourage productivity.

56. See discussion of enrollment and quality problems in university programs in Chs. I and IV.

57. This is less certain. However, workers typically are aware of work requirements in alternative jobs, and use these comparisons in bargaining over wages, working conditions, and job standards. Patterns and standards set by government are likely to create particularly strong demonstration effects.

An alternative incentive structure is needed for both management and workers if public firms intend to encourage productivity. For managers, rewards need to be linked more closely to enterprise profits. Managers also need additional autonomy and advisory support to respond effectively to new incentives.⁵⁸ Bonuses should be based on evaluation criteria which are tied as closely as possible to the performance of the individuals and small groups of workers.⁵⁹ An extreme form of such an incentive system is a "piece rate" system, which pays only for output actually produced. Among production workers, sensible piece rate schedules can be conceived relatively easily, though negotiating both initial and subsequent pay rates per unit produced often strains labor-management relations. In order to be acceptable to the firm's employees, initial rates have to assure that there are relatively few actual income reductions, and that workers can significantly increase their incomes by working diligently. To be affordable by the firm, rates must be set low enough to keep the overall wage costs per unit of output at reasonable levels.⁶⁰

58. See Mongi, et. al., pp. 225-228. Also see Jones, project report.

59. For a review of alternative compensation systems, see Thomas K. Connellan, How to Improve Human Performance: Behaviorism in Business and Industry, (New York: Harper and Row, 1978). Also see references and proposals in Chapter I.

60. Frederick Lesieur, The Scanlon Plan: A Frontier in Labor-Management Cooperation (Cambridge, Massachusetts: The MIT Press, 1958), and Edward E. Lawler III, Motivation in Work Organizations (Monterey, California: Brooks/Cole Publishing, 1973).

In the profit-maximizing private firms, piece rates are dependent in some manner on output prices. For products which are subsidized through government price controls, however, tying unit wage payments to prices generally is inappropriate. An alternative approach is needed. One such approach is to determine both the appropriate target output levels and the target income for workers who produce the quota. The appropriate piece rate can then be derived in a straight-forward manner. Piece rates are harder to define for non-production workers. However, standard approaches do exist for a number of non-production jobs, such as clerical tasks.⁶¹ Modified piece-rate systems can be applied to most types of jobs. Where this is impossible, higher management levels, rewards can be geared to profitability rather than output, in a manner similar to top-level management remuneration. In fact, profit sharing schemes are a useful complement to production-based pay rates, since they reward worker efforts to keep costs down and maintain quality, as well as encouraging increases in output per worker.⁶²

To redesign incentives successfully, new rewards must be advantageous for workers as well as managers. This objective is feasible, and can be achieved by including union representatives and line supervisors in the process of change. Productivity gains can be beneficial for all parties, if competing interests of managers and

61. T. Husband, Work Analysis and Pay Structure (London: McGraw Hill, 1976.)

62. Geoffrey W. Latta, Profit-Sharing, Employee Stock Ownership, Savings, Asset Formation Plans in the Western World, (Philadelphia: University of Pennsylvania, The Wharton School, 1979).

workers are balanced through integrating flexible bargaining and cooperation. Government must take the lead in helping to negotiate a smooth transition, and in giving both managers and workers information and training needed for future bargaining. Recommendations for public support are included in chapter I.

Without these fundamental shifts in the reward system for workers and for managers, and without an active program to increase productivity, public sector firms are unlikely to fare well in the increasingly market-oriented economy. If present distortions are maintained, profitability is likely to decline. Private firms will take over the most profitable activities and the most productive workers, leaving the public enterprises with the least-profitable tasks in the economy and the lowest productivity work force.⁶³

The changes in incentives, training, and work assignments which are needed to raise productivity among public enterprise workers will not be easily accomplished. However, these changes are possible; they are also necessary to accelerate industrial growth. The public enterprises can and must continue to perform a central role in national economic development.

63. One private sector manager who was interviewed had previously headed a public sector company. He left the public enterprise, took a number of key personnel with him, and set up a private firm to produce a competing product. Ultimately an informal arrangement was made with the public company to divide the market geographically, giving the private firm the densest, most profitable part. Unless public enterprise managers have incentives to remain in public service, and are given the authority to make needed improvements for profitability, this phenomenon became a common practice.

IV. EDUCATION AND TRAINING FOR INDUSTRIAL GROWTH

Bruce Vermeulen

The ability of the Egyptian economy to create enough good jobs in the 1980's will depend on the willingness of industrial firms to adopt labor-intensive technologies. The profitability of such investments depends, in turn, on the wage demands, previously acquired skills, and trainability of available workers. Therefore, a close "fit" of education and training with employer skill requirements is essential for a successful employment program.

There is a considerable degree of concensus about the general nature of education and skill training needs in Egypt, and the shortcomings of current programs. This is clear from legislation and Presidential decrees, national economic plans, and independent reports of international agencies in recent years.¹ Large investment projects and

1. See, for example, World Bank Mission reports in 1978 and 1980. Also see Education in Egypt: A Survey Report (Cairo: Education Office, U.S.A.I.D., December 1977). These assessments are consistent with statements by Egyptian officials reported in the Egyptian Gazette on a number of occasions concerning national educational objectives and needs.

other measures have been initiated, and both educational programs and attainments have improved substantially in the past decade. However, there are still some fundamental mismatches between educational programs and labor market needs. Skill requirements for more rapid and equitable industrial growth could be met more effectively and efficiently, primarily through reallocations rather than major increases in the overall public budget for education and training.

In this chapter the adequacy of education and training budgets, enrollments, and outputs is viewed in relation to labor market needs. In assessing these needs, it is assumed that the education and training system has two essential objectives: (1) to assure an adequate skill mix in the labor force to meet the prospective needs of employers during this period of rapid industrial growth; and (2) to distribute educational opportunities widely, to facilitate more equitable access to good jobs.²

Educational Enrollments and Attainments

A national commitment to universal literacy is embodied in the country's compulsory primary education requirement, and was reinforced in 1970 with the passage of a law to provide remedial literacy training for

2. More equal education would reduce income disparities, although its impact on efficiency may be debated. In the short run, the skill needs of employers may be met more effectively by focusing training resources intensively, on a relatively small number of current and prospective employees. However, a longer-range strategy to encourage massive increases in high-productivity, high-wage jobs will also require a very broad educational base among Egyptian workers.

all adults.³ Yet, 56.5 percent of the population over 10 years old remained unable to read or write in 1976, with women suffering much higher illiteracy rates than men -- 71% vs. 42%.⁴ In each case, this represented an improvement over 1960 figures,⁵ but fell far short of the ambitious goals established by the Egyptian government. If those who are marginally literate are included, 84% of females and 70% of males had minimal or no education in 1976.⁶ In absolute terms, illiteracy has actually continued to increase. Between 1960 and 1976, the number of illiterates rose from 13.3 million to 15.6 million persons.⁷

The slow progress in reducing illiteracy is due partly to the large numbers of adults who have already passed the normal schooling age without learning to read and write. As recent adult education programs

3. The 1970 literacy law for adults was accompanied immediately by a ten-year plan to eradicate illiteracy, and by the creation in 1972 of a Supreme Council for Adult and Literacy Education to coordinate these efforts. See Education in Egypt: A Survey Report (Cairo: U.S.A.I.D., 1977).

4. See 1976 Housing and Population Census Table 10, p. 143, translated in Statistical Supplement as Table S-28.

5. Illiteracy rates in 1960 were (71% for all Egyptians, and 57% and 84% for men and women respectively. Preliminary Results of the 1976 Population and Housing Census, p. 30.

6. Individuals referred to here as "marginally literate" indicate that they can read or write, but have not completed primary school. According to one official, individuals are included in this group if they can write their name, and even if their reading ability is below a functional level. Only a small proportion have completed more than two years of primary school.

7. Ministry of Education, "Adult Education in Egypt: Efforts and Effects," mimeo (undated -- approximately 1970).

Table IV-1

APPROXIMATE ENROLLMENT RATES (PERCENT) BY SEX IN PRIMARY,
PREPARATORY AND SECONDARY PROGRAMS, 1978-1979

<u>Grade</u>	<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<u>Primary</u>				
1	6	89	66	77
2	7	99	70	85
3	8	86	59	73
4	9	95	63	79
5	10	80	52	66
6	11	69	43	56
Total		87	59	73
<u>Preparatory</u>				
7	12	66	41	54
8	13	63	39	51
9	14	82	47	65
Total		70	42	57
<u>Secondary</u>				
10	15	48	30	39
11	16	41	25	33
12	17	47	29	38
Total		46	28	38
<u>University and Higher</u>				
Total	18-22	21	9	15

Source: Calculated from World Bank age cohort projections from 1976 Population and Housing Census, and enrollment data from CAPMAS.

Notes: Enrollment data are preliminary, and the assumption that all children in each grade are the same age is of course restrictive primary enrollments in many cases include over-aged persons. Secondary figures exclude grades 13 and 14 of five-year secondary schools. Therefore, estimates for individual grades are only approximate.

have shown, it is difficult to reach these older individuals and improve literacy rates. In addition, initial enrollments of Egyptian youths have remained below national targets, and dropouts in early years have continued to erode progress in making universal primary education a reality.

Table IV-1 presents data on enrollment rates in 1978-79 at the various educational levels as a percentage of estimated population in corresponding age groups. While these estimates are based on somewhat rigid assumptions (see notes for table), they indicate that enrollment rates are lower than desired even among young Egyptians. In 1979, nearly three-fourths of school age children were enrolled in primary schools.⁸ However, growth in enrollments at this level was slow during the 1970's. The fraction of eligible children enrolled in grades 1-6 rose only from 71% in 1970/71 to 73% in 1978/79. Rural enrollments in primary schools remained below levels in urban areas -- 62% vs. 90% in 1978/79.⁹

Among girls, initial enrollments have remained much lower and dropout rates are much higher than for boys despite somewhat greater increases during the decade. Only 66% of 6-year-old girls, compared with 89% of boys, were reportedly enrolled in first grade in 1978/79. Rates for all primary school grades combined diverged even more, with 59% of

8. Attendance is reportedly sporadic for many children, particularly in rural communities. Therefore official enrollment rates somewhat overstate the effective delivery rates of education.

9. The World Bank, "Third Education Project, Arab Republic of Egypt," Staff Appraisal Report No. 3096-EGT (Washington, D.C., August 1980), pp. 3-4.

Table IV-2

ENROLLMENT OF FEMALES AS A PERCENTAGE OF MALE ENROLLMENT
BY EDUCATIONAL PROGRAM, 1973-1979

	<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>
Primary	62	62	63	63	64	66
Preparatory	51	54	54	55	57	58
Secondary (total)	49	51	52	53	56	58
Secondary (general)	49	59	52	53	55	56
Secondary (technical)	49	51	51	54	57	60
Training Colleges	76	76	78	79	84	91
University	41	42	42	43	42	44
<u>Total enrollments</u>	57	58	58	59	60	61

Source: Calculated from Table S-51, Statistical Supplement. Values for 1978-79 are estimates.

eligible girls and 87% of boys enrolled. Table IV-2 traces the gradual increase in female enrollments as a percentage of male rates at all levels of education from 1973/74 through 1978/79. In primary programs, less than two-thirds as many girls as boys were enrolled during each of these years.

The growth of primary school enrollments has been constrained in part by an inadequate supply of qualified teachers, and lack of available classroom space. According to a World Bank report in 1978, as many as 60 percent of primary schools held multiple sessions. The problem of training sufficient numbers of teachers is aggravated because a large number of

recent graduates from the teaching institutes emigrate to the Arab Gulf states, where salaries are substantially higher. Major teacher shortages reportedly persist despite a large increase of enrollments in teacher's training colleges from 21,756 in 1973/74 to 44,567 in 1978/79.¹⁰

Much greater increases in enrollments and graduation rates were achieved at the preparatory level than in primary schools. Between 1970/71 and 1978/79, enrollments grew from 37% of the eligible age group to 57%.¹¹ However, while the Government of Egypt has a stated policy of extending universal education to the preparatory level, this object remains far from being achieved.

At the secondary level, significant progress has been made in a number of respects. Overall enrollments have grown substantially, both in absolute terms and as a percentage of the relevant age cohorts in the population. Total secondary enrollments grew by nearly 45% between 1973/74 and 1978/79 alone,¹² and during 1970/71 - 1978/79 the percentage of eligible youths who were enrolled in secondary programs rose from 28% to 38%.¹³ Enrollments in technical secondary programs increased faster than in general (academic) programs, and in 1978/79 accounted for 52% of secondary enrollments. About one-fourth of these technical students were in industrial fields in 1976-77, and about 65%

10. CAPMAS, Statistical Yearbook. (Cairo, 1980), p. 166.

11. World Bank, "Third Education Project," p. 4.

12. See Table S-51, Statistical Supplement.

13. World Bank, op. cit., p. 4.

of general secondary students concentrated in math and sciences.¹⁴

Female enrollment rates in preparatory and secondary programs, as in the primary grades, continue to be well below male rates. In 1978/79, these rates were 42% and 28% respectively, compared with 70% and 46% for males.¹⁵ However, enrollments of young women in these programs did increase faster than among males during the 1970's. Even during the six years 1973/74 to 1978/79, the ratio of female to male students in these programs rose from 51% initially in preparatory programs, and 49% in secondary programs, to 58% at the end of the period at each level, with slightly higher proportional gains in the secondary technical schools.¹⁶

In universities and higher technical institutes, the rate of increase in enrollments was far greater than in any of the lower-level programs, up 75% in the six years 1973/74 through 1978/79. As a fraction of the estimated college age population, enrollments rose from about 6 percent in 1970/71 to about 15 percent in 1978/79. In comparison, only about 2.2 percent of Egyptian adults had received university and higher degrees by 1976.¹⁷ Relative gains of women occurred principally in the teacher colleges, where the ratio of female to male students rose from 76% in 1973/74 to 91% in 1978/79. In other higher education programs,

14. World Bank, "Second Education Project, Arab Republic of Egypt," Staff Appraisal Report No. 2112-EGT (Washington, D.C., November 1978), Annex 1, Table 1.3, p. 32.

15. See Table IV-1.

16. See Table IV-2.

17. 1976 Population and Housing Census, Table 10, p.143. See Statistical Supplement, Table S-28.

women's enrollments remained only slightly more than 40% of male rates throughout the period, partly because both male and female enrollments rose rapidly together.

The impact of rising educational enrollments will affect the labor force only slowly. However, the extent of recent progress can be seen by comparing the recent enrollment figures to data on educational attainments for the population as a whole taken from the 1976 Census. Table IV-3 reports the age distribution of individuals with maximum educational attainments at each respective level. The data show that for both men and women, 80% of all Egyptians who graduated from primary schools and had some additional preparatory education by 1976 were no more than 20 years old. Among preparatory graduates, 49% of males and 59% of females were 20 years old or less, and 80% were no more than 30. At the level between preparatory and completion of university, again 80% were only 30 years or younger. Finally, among university graduates, 53% of males and 79% of females having earned university degrees before 1976 were still only 30 years or less at the time of the Census.

Thus, although a majority of Egyptians are still unable to read or write, there a strong undercurrent of change in educational attainment has been developing during the past decade. It remains to be seen what impact these changes will have on income distribution and on economic growth. This will depend on how education is used in the labor market, and how equitable access is to job-related education and training. Some evidence concerning educational attainments and employment, also from the 1976 Census, is considered following a review of recent progress in vocational training.

Table IV-3

PERCENTAGE AGE DISTRIBUTION OF FEMALES BY
LEVEL OF EDUCATIONAL ATTAINMENT, 1976

Educational Level	Sex	Age						Unspecified	Total
		<10	11-20	21-30	31-40	41-50	>50		
Illiterate	M	12	23	17	17	14	17	<0.5	100
	F	12	22	20	18	14	15	<0.5	100
	T	12	22	19	17	14	16	<0.5	100
Literate	M	31	14	16	15	13	11	<0.5	100
	F	45	19	15	11	7	4	<0.5	100
	T	35	16	15	14	11	9	<0.5	100
Primary	M	45	31	7	6	6	4	<0.5	100
	F	53	32	7	4	3	2	<0.5	100
	T	48	32	7	6	5	3	<0.5	100
Less than Preparatory, higher than Primary	M	2	80	11	5	1	1	<0.5	100
	F	3	81	11	4	1	1	<0.5	100
	T	2	80	11	5	1	1	<0.5	100
Preparatory	M	--	49	28	12	5	5	<0.5	100
	F	--	59	26	9	4	2	<0.5	100
	T	--	52	28	11	5	4	<0.5	100
Less than University, higher than Preparatory	M	--	19	49	21	6	5	<0.5	100
	F	--	29	51	15	3	2	<0.5	100
	T	--	29	50	19	5	4	<0.5	100
University and higher	M	--	9	44	26	12	8	<0.5	100
	F	--	24	55	15	4	2	<0.5	100
	T	--	13	46	24	10	7	<0.5	100
Unspecified	M	27	33	15	9	6	11	<0.5	100
	F	24	27	15	10	8	16	<0.5	100
	T	25	29	15	10	7	14	<0.5	100
Total	M	19	27	17	14	11	12	<0.5	100
	F	18	26	19	15	11	12	<0.5	100
	T	18	16	18	14	11	12	<0.5	100

Source: Calculated from 1976 Census, Table 10, p.143
(Statistical Supplement, Table S-28).

Public Vocational Training Programs

In addition to these formal educational programs, there are a large number of publicly funded and operated training programs for vocational skills. The majority are operated by the Ministry of Industry and Mineral Resources (MOIVR), and Ministry of Reconstruction and New Communities (MRNC), the Ministry of Education and the Ministry of Higher Education. In addition, training is offered in specialized areas by eight other ministries, including the Ministries of Agriculture, Tourism, Health and Social Affairs.

The largest group of vocational training programs is run by the Department of Productivity and Vocational Training (DPVT), in the Ministry of Industry and Mineral Resources, which has 47 training centers (including 10 located in industrial firms, and one for instructors). Through these centers, the DPVT provides training principally for public enterprises in a wide variety of skill areas. There are three principal types of training: (1) the "accelerated system," for training semiskilled workers in programs lasting 16-24 weeks; (2) the upgrading system, for 11-22 week programs which prepare semiskilled workers for skilled work; and (3) the apprenticeship system, which involves 3-year programs for skilled workers.

The apprenticeship programs are by far the largest of these programs. In 1976/77, all apprenticeship programs combined had enrollments totaling 16,419.¹⁸ The number of graduates rose by 50%

18. Ministry of Industry and Mineral Resources, unpublished data.

between 1970 and 1980, from 3,092 to 4,544. These programs require an adedeya (9th grade general preparatory) certificate, and provide a combination of classroom instruction and practical training on the job. As late as 1978, by contrast, the accelerated training for semiskilled workers graduated only 430, and the upgrading programs graduated only 27.¹⁹

Another large group of programs is in the construction trades, provided by the Ministry of Reconstruction and New Communities. With loans from the World Bank, these programs have been greatly expanded in the past several years. However, since these training programs focus exclusively on construction trades, they are of only tangential interest for industrial training. Finally, the Ministry of Higher Education operates two-year, post-secondary technical programs which train technicians in basic electrical and mechanical engineering, electronics, drafting, and a variety of other laboratory and industrial technical areas. In 1978/79, enrollments in the High Institutes of Industry totaled 19,206.²⁰ This was an increase of more than 50 % from the early 1970's.

The significance of these enrollment patterns for an employment program and for industrial growth depends both on current and future relationships between educational attainments, labor force participation, and employment opportunities. Some recent evidence of these linkages

19. Data provided by U.S.A.I.D., presumably from Ministry of Industry and Mineral Resources.

20. CAPMAS. Statistical Yearbook (Cairo, 1980), p. 182.

Table IV-4

PERCENTAGE DISTRIBUTION OF THE POPULATION 10 YEARS AND OLDER
BY EDUCATIONAL ATTAINMENT AND LABOR FORCE STATUS, 1976

		employed	unemployed	student	house work	cannot work	unspecified
Illiterate	M	91	2	--	--	6	7
	F	3	0	--	90	7	<0.5
	T	36	2	--	56	6	<0.5
Reads and writes	M	65	2	29	--	3	7
	F	4	1	40	54	1	<0.5
	T	19	1	70	8	1	1
Elementary	M	28	2	68	--	1	1
	F	2	1	72	24	1	<0.5
	T	19	1	70	8	1	1
Below Intermediate	M	25	2	73	--	0	<0.5
	F	5	<0.5	73	--	0	<0.5
	T	18	1	73	9	0	<0.5
Intermediate	M	56	11	29	--	3	1
	F	38	14	28	19	7	<0.5
	T	50	12	29	6	2	1
Higher than Intermediate and Below University	M	86	11	--	--	3	0
	F	73	14	--	12	1	0
	T	81	12	--	5	2	0
University and Higher	M	87	8	--	--	4	1
	F	72	17	--	10	1	0
	T	84	10	--	2	3	1
Unspecified	M	64	19	--	--	7	10
	F	2	13	--	--	8	<0.5
	T	29	16	--	44	7	4
Total	M	70	3	22	--	3	1
	F	5	1	13	76	5	0
	T	38	2	18	37	5	0

Source: Calculated from 1976 Census, Table 11, p. 145
(Statistical Supplement, Table S-29).

from the 1976 census is considered next.

Education and Enumerated Employment

While educational enrollments and attainments have risen in the past decade, the majority of these increases have not yet been reflected in the labor market. By looking at recent data on education and roles in the labor force, however, some important implications for education and training policy emerge.

The 1976 Census provides the most recent and most complete picture of relationships between education and employment, although it is less than ideal in both respects. First, the data provide a record of a labor market which has changed dramatically since the Census. Secondly, it seems clear from the work done and reviewed by Papanek and Ibrahim for this project, that the Census seriously under-reports and thus misrepresents the economic activities of women in the economy. Therefore, caution is required in interpreting these data. For example, Table IV-4 shows the distribution of labor force status for men, women, and the population as a whole, by level of educational attainment. These data show dramatic differences between employment and alternative economic roles between men and women. Among illiterates, 91% of males are listed as employed, with most of the remainder who are able to work listed in the unspecified category. For illiterate women, an equally high proportion (90%) are listed as doing housework, and thus considered out of the work force. These numbers seem clearly incorrect, since most

women cannot afford to remain out of the mainstream of economic life. However, the data are interesting for what they do show: that women who succeed in earning higher degrees also gain much more visible roles in the economy. Among those with university and higher degrees, measured labor force involvement is essentially as high as among men -- 89% vs. 95%. It is nearly as high for those who complete some university-level or higher institute work, and is in general higher at each successive educational level. However, the recorded unemployment rate is correspondingly high. Unemployment of female university and higher institute graduates was 17%, compared with 11% for males, and was 14% at the preparatory level.

One explanation of the high unemployment rates is that the data are somewhat artificial, since eligible graduates at these higher levels commonly sign up for public sector employment and thus become listed as unemployed.²¹ Since they do not include the truly needy, who are employed in extremely marginal activities and are unable to find good, well-paying jobs. What makes these data interesting despite these problems is that they indicate that women who advance in the educational system also have a strong propensity to seek employment in the formal sector.

Among individuals who are in the labor force, and among enumerated wage employees, illiteracy rates remain quite high for men, while a substantially lower fraction of women in recorded employment are

21. In fact, over 95% of females and more than 90% of males listed as unemployed in 1976 were new labor market entrants with no prior work experience. See Table S-29, Statistical Supplement.

Table IV-5

PERCENTAGE DISTRIBUTION OF EDUCATIONAL ATTAINMENT BY SEX
FOR WAGE EARNERS AND ENUMERATED LABOR FORCE

<u>Education</u>	<u>Working for Wages</u>			<u>Labor Force</u>		
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Illiterate	49	30	47	54	31	52
Reads and Writes	26	8	24	26	9	25
Elementary	6	3	5	4	3	4
Higher than Primary & Less than Preparatory	2	4	3	2	3	2
Preparatory	9	4	3	2	3	2
Higher than Preparatory & Less than University	1	4	2	1	3	1
University and Higher	6	16	7	4	14	5
Unspecified	1	1	1	2	5	2
Total	100	100	100	100	100	100

Source: Calculated from 1976 Census, Table 11, p.145
(Statistical Supplement, Table S-29).

illiterate. Table IV-5 summarizes these data. Among males recorded as wage employees, 75% were either illiterate or only able to read and write. For women who were counted in wage-earning positions, only 38% were in these two lowest educational categories. These ratios are very similar in the enumerated labor force as a whole, with 80% of men and only 40% of women in the enumerated labor force either illiterate or only marginally literate.

There are two quite different possible interpretations of these data. The first is that labor force participation is a relatively new phenomenon for women in Egypt, and that those who do not participate in the educational system also do not work. However, an alternative interpretation is that educational requirements in formal sector jobs are

Table IV-6

PERCENTAGES OF EMPLOYED MALES AND FEMALES
HAVING ATTAINED AN PREPARATORY CERTIFICATE OR HIGHER DEGREE
BY SECTOR OF EMPLOYMENT, 1976

<u>Sector</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
Agriculture	1	3	1
Mining and Quarrying	18	46	20
Manufacturing	10	25	11
Electricity, Gas and Water	32	87	36
Construction	7	59	7
Commerce, Restaurants and Hotels	6	22	8
Transportation, Storage and Communication	11	78	13
Insurance and Other Services (real services)	61	93	66
Social Services and Personal Services	38	71	44

Source: Calculated from 1976 Census, Table 17, p. 174
(Statistical Supplement, Table S-36 and S-37).

simply higher for women than they are for men. Although women have traditionally received less education than men, they are required to obtain greater education to receive good jobs. The remainder are forced into marginal roles in the economy. The evidence gathered in the course of this project by Papanek and Ibrahim suggests that this latter interpretation is the correct one; so do the interviews in the construction labor markets of Cairo, which indicated that women receive lower wage rates and in some cases work longer hours.

A review of educational attainments by sector shows similar

patterns in almost every case. Table IV-6 shows the percentages of males and females counted as employed who have received a preparatory or higher level degree by sector. Even in agriculture, the data indicate that a larger percentage of women than men had completed at least an elementary education. Without a single exception, larger percentages of females than males in every sector had attained each higher level of education from the Intermediate Certificate upward. In the economy as a whole, only 13% of all workers, and 11% of male workers, had completed Intermediate or higher levels of education, while 47% of the enumerated female workers had completed at least the Intermediate Certificate. In manufacturing, 25% of employed females and only 10% of males had earned Intermediate Certificates or higher degrees.

Within the manufacturing sector, educational patterns in most industries paralleled the pattern for the sector as a whole. Except in spinning and weaving and in wood products and furniture, the percentage of male employees who were illiterate or only marginally literate was higher than that of women, while there were proportionately more women in every higher educational category in all nine individual industrial groups.²²

Thus, while women represented a relatively small percentage of the total recorded work force in manufacturing in 1976 -- only about 6.5% for the sector, and less than 12% in every industry, women who were counted among industrial workers were substantially more educated on average than

22. 1976 Census, Table 17, p. 174 (Statistical Supplement, Table S-38 and S-39).

their male counterparts in the work force.

A number of the important implications of these data for industrial expansion, for increasing employment opportunities, and for identifying education and training needs, are discussed at length in the project report on women. However, from the prospective of educational planning, two are paramount. First, relatively few women now at work in the economy have received an education, and the higher average educational attainments of those who are recorded as employed suggests a form of discrimination which has serious distributional consequences. Therefore, it is important to break down these barriers to formal sector employment, and assure that educational credentialism does not prevent equally qualified educated women with less formal education from having equal employment opportunities. Secondly, if educational skills are at all useful in industrial jobs, then in the long run employment opportunities will depend on raising educational attainments of a large segment of the adult population -- even if efforts to reduce barriers to employment are successful.

Sources of Inaccuracy in Labor Market Forecasts

Problems and pitfalls in forecasting. The prevailing method of forecasting employment relies on the assumption that for narrowly defined outputs, the skill or occupational composition of labor inputs remains fixed. Once detailed output levels are forecast, employment estimates can be derived using fixed occupation- or skill-output coefficients then

summing across occupational categories.²³

These and other rigid assumptions required for employment projections and forecasts often result in large prediction errors, particularly when major economic changes occur -- such as the oil price hikes of the early 1970s, or in a period of rapid development. Even in a relatively stable economy, employment forecasts are generally inaccurate at the local level, because the arrival or departure of a single large employer can substantially alter the composition of labor demand.

Forecasts of job openings are subject to additional errors, since they require additional assumptions about turnover rates.²⁴ Finally, even if accurate estimates of the number of job openings in a particular skill category could be obtained, these estimates would not be a very good basis for designing education and training programs. Employers frequently fill jobs with experienced workers from related occupations, rather than hiring new trainees.²⁵ These kinds of errors in forecasting the potential demand for trainees and graduates can lead to expensive mistakes and waste in education and training programs.

Because of the current rapid pace of economic growth in Egypt,

23. See Susan Hudson-Wilson, "Labor Market Projections for Education and Training," in Doeringer and Vermeulen, Jobs and Training; also see U.S. Department of Labor, Bureau of Labor Statistics, Occupational Manpower and Training Needs, Bulletin 1824 (Washington, D.C.: Government Printing Office, 1974), Appendix A: "Methods and Assumptions for Projections of Manpower Requirements."

24. Job openings are the sum of net new jobs plus replacement demand due to turnover.

25. See Peter Doeringer and Michael Piore, Internal Labor Markets and Manpower Analysis (Lexington, Massachusetts: D. C. Heath and Co., 1971).

projections based on past trends can be particularly misleading, even using data which are current. Predictions are substantially less reliable, particularly for specific skill categories, when they are based on data which are several years out of date. While major trends must be identified and taken into account in planning training opportunities, discontinuities are more the rule than the exception, and detailed forecasts are almost sure to be inaccurate.

Employer surveys are another resource for forecasting employment and skill needs. Unlike projections which are based on past (fixed) relationships between output and employment, employer surveys inquire directly with a sample of firms concerning their investment plans and anticipated skill requirements in the future. Generally, these are used to supplement rather than to replace input-output (fixed coefficient) forecasting models. Because investment plans of individual employers change, and only a very small proportion of employers can be sampled, employment predictions from such surveys often are more inaccurate than those based on aggregate data.²⁶ However, in Egypt, they would be a very useful data source for planning, if designed properly, because such a large component of employment is in the public sector.²⁷

26. The incorrectness of estimates obtained from employer surveys is well documented in a number of countries.

27. For a good discussion of problems with current surveys, see Mohamed A. F. Mongi, Inventory and Estimates of Manpower Needs in the Public Sector, a Preliminary Study, (Institute of National Planning, Cairo, 1975). Mongi concluded that it was impossible to obtain adequate estimates of future skill needs and potential shortages from employers.

The Ministry of Manpower and Vocational Training also periodically analyzes shortages and surpluses of university and higher technical institute graduates, classified by their fields of study. However, the demand estimates are based on reports from only the public sector -- government ministries, governates, public organizations, public authorities and public enterprises. Demand is defined as the number of graduates from particular faculties needed to fill identifiable vacant posts, plus "those needed over and above those for vacant posts and thus requiring the existence of the extra wage funds." However, due to the employment guarantees for graduates of higher education institutions, "demand" for workers in these categories has depended principally on the number of graduates each year, and thus is an expression of the willingness of bureaucratic agencies to expand, given the government mandates to create employment. When a ministry indicates its demand for a particular type of graduate (e.g. a law student), it is agreeing to help fill a government employment quota. This is very different from demand forecasts which would be obtained if there were no hiring requirement.

The supply forecasts are more reliable as estimates of total national supply, since they consist of graduates who have signed up for public sector employment with the Ministry of Manpower and Vocational Training during the base period. This includes most graduates, since even many who obtain private employment register to preserve their opportunity for future government employment.

"Shortages" and "surpluses" of graduates which are identified by

the Ministry are very different from those of a competitive market. The interdependence between "demand" and the number of anticipated graduates creates estimates which do not accurately reflect society-wide (or even governmental) skill scarcities and educational needs. Other factors which limit the usefulness of these forecasts are (a) the omission of private sector demands, and (b) the exclusive focus on graduates at the university and higher institute level.

A third method of identifying skill shortages and surpluses is to examine relative wage movements. When relative wages are rising in a market environment, this signals either skill upgrading in the occupation or relative scarcity. Such data are not an adequate basis for forecasting, but often are satisfactory for monitoring current scarcities.

In Egypt, even relative wage movements have to be evaluated with care. Differences between private and public sector wage structures and distortions created by government employment guarantees and inflationary wage policies, often cause market wages to differ significantly from "shadow" wages which reflect actual social scarcities.

The reliability of forecasts depends not only on economic stability and continuity, but also on the accuracy and currency of data. Planners can exercise much greater control over data quality than over structural changes in the economy, of course, and good data can increase the ability to anticipate such changes. In Egypt, the lack of adequate data is perhaps the weakest link in human resource planning, and one where relatively small investments in data could have an enormously constructive impact.

At present, the combination of insufficient labor market information and rapid economic change makes detailed predictions about skill requirements especially perilous. Program planners must be careful not to establish training programs in response to two- or three-year old employer needs. Employers generally cannot wait so long to meet these requirements, and often pursue alternative staffing strategies instead. These include: doing their own training, switching to alternative production methods, paying sufficiently high wage premiums to attract and keep previously trained workers, or simply not making job-creating investments at all.²⁸

Estimates of shortages and surpluses. Drawing on recent examples of each of these types of forecast, problems in using such projections as a basis for detailed educational planning can be shown clearly. The particular surveys reviewed here agree in some respects, but differ sharply in others. Differences are due partly to geographic coverage, timing, and the nature of the respective sample frames. However, they also result from fundamentally different underlying assumptions.

A regional forecasting model for the Suez Canal Region, produced in 1981, reports detailed occupational imbalances based on forecasts for

28. For a discussion of the employer training investments and overall staffing strategies, see Bruce Vermeulen and Susan Hudson-Wilson, "The Impact of Workplace Practices on Education and Training Policy," in Doeringer and Vermeulen, Jobs and Training, op. cit., pp. 72-87.

85 two-digit ISOC occupations.²⁹ To develop the forecasts, assumptions are required about changes in the underlying population (basic demographic projections), and about relationships between output, occupational employment, age and education. The assumptions, which are necessary partly due to a lack of good data, include the following:

1. The relative distribution of the population across occupations will continue to change in the future as it did between 1960 and 1976 (e.g., if there were 4,000 fishermen in a particular governorate in 1960 and 6,000 in 1976, this study determines a compound growth rate in relation to population growth and uses that to predict occupation-specific shifts in the future.)³⁰
2. "Non-basic" employment -- including service, supply, maintenance and administrative jobs -- will expand in proportion to population growth. This is assumed to be synonymous with employment in government or in the informal sector, which is about 70% of total urban employment.³¹
3. The relationship between educational levels and occupational choice will remain constant. Even with substantial technical change, which is assumed unlikely, only university-level occupation-education relationships would be likely to change.³²
4. Past increases in educational enrollments (linear trends between 1960 and 1976) will continue unchanged, unless there are major changes in public policy. Therefore, 63% of all labor market entrants each year through 1990 will be either illiterate or only able to read and write.³³

29. Suez Canal Region Human Resources Development Study, Final Draft Report, Volume III: "Socio-Economic Survey" (Engineering Management Consultants study for the Ministry of Development and the Ministry of Housing and Land Reclamation in cooperation with the United Nations Development Programme, Cairo, January 1981).

30. Ibid., pp 154-155.

31. Ibid., p. 150.

32. Ibid. p. 151.

33. Ibid., p. 210.

5. Labor force participation rates will increase faster between 1976 and 1990 than they did between 1960 and 1976. Governate-specific estimates of these increases differ, based on differences in rural/urban and formal/informal mix, and in unique activities (e.g. related to the ports and petroleum industry).³⁴

The assumptions are sensible in view of data limitations. The report also stresses the need to develop a forecasting system which can be updated frequently in light of additional data, assessments of prior forecasts, and policy changes or other "extraneous" factors. However, because economic progress and shifts in public policy can alter employment patterns and educational needs in unanticipated directions, forecasts such as this must be used cautiously in planning education and training programs. Broad indications of net demands for graduates at various educational levels are likely to be quite useful in allocating educational funds in an appropriate balance among programs. However, occupational forecasts, and assumptions about education-occupation relationships, are likely to be increasingly inaccurate at more detailed levels of analysis, and as the time horizon of planning increases.

The most reliable of the report's findings, therefore, are likely to be the aggregate estimates of surpluses and shortages by broad educational level. The study predicts surpluses of illiterate workers, and shortages of those only able to read and write. Surpluses of primary and preparatory graduates are also predicted, with shortages of graduates from secondary technical schools and middle institutes.

Even these aggregate estimates are subject to errors over time, of

34. Ibid., p. 164-165.

course, and must be used carefully by planners. For example, increases in educational attainments and in employers' educational requirements often go hand in hand. As educational levels increase, employers raise hiring requirements simply because they are able to obtain better-educated workers more easily.³⁵

In the Ministry of Manpower and Vocational Training estimates, the five faculties for which deficits of graduates are indicated during 1970-1975 are commerce, law, social service, art and political science.³⁶ Faculties with recorded surpluses of graduates are agricultural and cooperative institutes, and (by 1973-1974) sciences. The projections for 1977-1980 show the largest deficits in commerce, the next largest in law, and small deficits in political science, languages and technical arts. Surpluses again are anticipated in agriculture, sciences, arts, fine arts and social services. Despite the incompleteness and artificiality of the demand measures used in these projections, they do provide some insights into the relative attractiveness in government for graduates with different types of education. The projected shortages of commerce and law graduates, and surpluses of science graduates, are particularly noteworthy. These

35. The growing availability of workers with more education also allows employers to make organizational and production changes. Such changes in hiring requirements, and in the design of jobs, are well documented in in the U.S. As educational attainments have risen over time, so have hiring requirements. Conversely, standards have been lowered and job tasks changed in periods of tightness in the labor market, such as during the late 1960's.

36. Reported in Mongi, et al., op. cit., p. 170. See Statistical Supplement, Table S-52.

predictions are quite different from reported skill scarcities in the private sector.

Data on relative wage movements, which often provide useful signals of changes in relative scarcities, are too incomplete for recent years to be used as the basis for a detailed educational plan. It is notable, however, that wage trends from the Middle East Advisory Group's surveys suggest that accountants are relatively abundant, while the forecasts based on government "demand" appear diametrically opposed. The government forecast predicts severe shortages of commerce graduates, of which accountants are a major component. However, the private sector survey indicates that salaries for accountants in the survey sample were not keeping up with inflation for most accountants, and were increasing only moderately even for senior level accountants.³⁷

Finally, counts of respondents to recruitment ads can provide a useful indication of relative skill shortages at existing wage rates. An examination of responses to advertisements for positions in telecommunications found excesses of applicants for clerk and operator positions, sufficient number of applications in craft occupations, serious shortages of engineers, and -- particularly within the Cairo area -- shortages of technicians. The shortages of engineers and excess supply of clerks as early as 1976 and 1977, the years during which the ad results were collected, are noteworthy. According to more recent interviews, there has been additional tightening of markets for

37. See Chapter III, Table III-11.

engineers, technicians and skilled workers since then.

Another shortcoming of many of the forecasts is their narrow focus on imbalances with respect to university and higher education graduates. Most of the population in Egypt is struggling against poverty without the advantage of education. The crucial importance of literacy training for the majority of the population is considered next, along with other major mismatches between available education and training programs, and the skill requirements of most good jobs.

Planning Education and Training for Rapid Industrial Growth

The objectives of education and training, stated at the beginning of this chapter, must be to meet both the present and future skill needs of the economy for rapid industrial growth, and to promote equitable access to good jobs. In meeting these goals, human resource planners need to view the numerous components of the education and vocational training system as a whole. Public policies and financial resources need to achieve these objectives through both public and private sector programs. A strategy is needed which takes into account the weaknesses of detailed labor market forecasts, and focuses a significant portion of total public education and training resources on catalyzing private initiatives.

To maximize the impact on job-related education and training, the efforts of a number of governmental units will need to be coordinated. Links also must be strengthened between public agencies and the public

and private enterprises which they serve. The appropriate organizational arrangements for these functions have been discussed by other analysts, and are beyond the scope of this report. However, there are a number of general guidelines which may be useful in planning and coordinating education and training efforts.

1. Encouraging private training efforts. Public policies, subsidies, and programs should catalyze as much private training as possible. Employers know best what skills they require, and on-the-job training is the most effective method of teaching many skills. Private, profit-oriented employers and training institutions are likely to revise training programs quickly to match changing needs in the course of rapid industrial growth. If the recommended changes in managerial incentives are implemented in the public enterprises, to reward profitability, training programs within the public firms could be expected to respond well also to changing skill requirements. By contrast, government-run programs are more likely to become entrenched, bureaucratic, and oriented toward self-perpetuation, rather than adapting to meet evolving training needs.

When markets are working well, a general tenet of public education and training policy should be to decentralize decision-making as much as possible. For private employers, and for public enterprise managers with increased autonomy and incentives for productivity, this means leaving training decisions in the hands of individual firms. Public encouragement and support for these private training efforts should take a number of forms, including: (a) support, when requested, in developing

training know-how and specific skill programs; (b) subsidies for training programs which increase workers' mobility in ways which are beneficial to the economy as a whole, but result in turnover which is costly to the employers who provide this training; and (c) assistance with industrial relations functions associated with training, and with the additional supervisory and training which may be needed in conjunction with labor-intensive technologies.

Most large firms already have training experience. However, it may be difficult, particularly for smaller firms, to learn about the latest, most effective instruction and motivation techniques. This is an area in which there are large economies of scale in identifying "best-practice" teaching methods, and where government subsidize are appropriate.

Introducing more up-to-date content and methods into the 5-year technical skill programs for vocational instructors would have a particularly high impact per Pound of investment. In addition, teacher training could be provided on an expanded scale for highly skilled and experienced workers, who could then work as instructors on a part-time or full-time basis.

The critical role of industrial relations support in the public enterprises is discussed in Chapters I and III, in conjunction with proposals to alter both incentives and work assignments. This type of support is also needed more generally to encourage entrepreneurs and managers to select labor-intensive technologies when these alternatives are viable. Partly as a result of training deficiencies in this area,

there is a tendency to prefer the administrative simplicity associated with machine-intensive production.

2. Providing public programs for general learning and transferable skills. An important objective of both education and public vocational programs should be to prepare workers for flexible careers in the labor market. For individual workers, this means providing broad knowledge about the labor market, and a sufficiently solid educational and vocational base to enhance long-term mobility. For employers, it means increasing workers' trainability and thereby reducing the costs to employers of providing whatever incremental, firm-specific skill training is required. Background learning, general skills, motivation, and attitudes all are important attributes by which employers gauge a worker's trainability.

This does not mean that specific skill training should be avoided in public programs. The massive current effort to overcome skill shortages in the building trades is a good example of providing training which teaches widely useful skills which are also quite specific. Construction skills are highly transferable geographically, among a variety of types of construction, and among employers. The enormous expansion of construction trade programs in the past several years is also in keeping with the next recommended guideline.

3. Avoiding skill gaps and filling urgent skill needs. In addition to providing programs which develop broad-based labor competencies, a high priority for direct public training programs should

be on skills where shortages cannot be met sufficiently rapidly by private sector efforts, even with the help of public subsidies. As part of a strategy to encourage labor-intensive investments, the government should be prepared to provide focused skill training on an ad hoc basis when such training removes a bottleneck to socially profitable employment creation. In the United States, where localities compete vigorously to attract employment-generating investments in new plants, a number of states have been very successful partly as a result of guaranteeing these companies a trained work force. By tailoring training to the specialized needs of potential investors, they have reduced overall investment costs sufficiently to make location in their state more profitable.³⁸ While this experience may not be completely transferable to Egypt, it suggests that the potential impact of such customized training programs and subsidies should be considered, to determine whether or not they are likely to expand employment opportunities in a cost-effective way.

In addition to filling general skill needs, and meeting more specialized needs as they arise, public programs can provide a vital catalyst for long-range employment growth by training in advance of anticipated needs. This is the most difficult area for planners, because there is a danger of training workers who are then unable to find jobs

38. North Carolina and Florida are among the most active states in this regard. They have worked actively with both foreign firm, and U.S. firms considering relocation in the South, to provide training as well as other tax incentives. The chief state vocational education administrators in these two states are convinced that these relatively small public investments have generated tens of millions of dollars in additional investments, together with large numbers of jobs.

utilizing their training. However, a well-trained work force is a great attraction to local and international investors, and can be a decisive factor in investment choices. Therefore, public training programs should include skills which are in keeping with long-range plans for industrial growth, where skill training in preparation for these jobs is unlikely to be forthcoming from the private sector.

These decisions about how to divide responsibilities for education and trainings between individual employers (both public and private) and government-run programs will be crucial in shaping industrial growth both currently and in the future.

4. Increasing equality in training and employment opportunities.

Beyond its role in assuring that skill bottlenecks do not stifle labor-intensive industrial growth, the government can correct inequities by promoting equal opportunities for training and employment. Because wages are the sole source of income for most Egyptians, problems of poverty and income inequality are inextricably intertwined with inequality in the labor market. Short-term expediency and long-range equity concerns often are in conflict, and public policy can play the mediating role between these objectives to assure equitable job access and income-earning opportunities.

In Egypt, these efforts need to focus at three levels: (a) completing national efforts to make universal primary education a reality for both male and female children, in rural areas as well as in cities; (b) extending remedial literacy and basic education to a much greater proportion of adults, both male and female; and (c) reducing

certification requirements for access to both vocational skill training and jobs.

In most industrial jobs, rudimentary literacy is valuable. In public enterprises and in many private sector firms, it is required. While many jobs can be performed without being able to read, it is likely to be one of the strongest determinants of differences in individual earnings in the future. The employment forecast for the Suez Canal Region discussed above, for example, predicts growing surpluses of illiterate workers, and growing shortages of those who can read and write only.

Therefore, the single most important measure the government can take to bolster income earning opportunities in the long run is to assure that all Egyptian youths have at least this rudimentary preparation. Meanwhile, even if public education successfully reaches all primary age children, and reduces the disproportionately high dropout rates of girls, the large majority of Egyptians who have already entered the labor market with little or no education will face increasing marginalization and poverty as educated younger workers push them out of viable employment. Men are likely to continue having a variety of manual and craft employment opportunities despite illiteracy, but illiterate women are already being displaced as a result of increased educational requirements in formal sector jobs. Therefore, it is equally important to revise hiring standards whenever possible to eliminate unnecessary hiring screens. Women have been particularly hard hit by higher degree requirements in industrial firms. The requirement of an adedeya degree

is now common, even in jobs where manual dexterity rather than literacy is needed to work productively. Employers may require the preparatory degree simply because there is a surplus of better-educated job applicants. However, imposing formal educational certification requirements is discriminatory if these requirements are not related to job performance. This form of discrimination falls most heavily on less-educated adult women, and reduces their ability contribute to national economic growth and to family income.

Education and Training Priorities

In the discussion of current skill shortages and surpluses, and of education and training programs in Chapter IV above, it was argued that the existing allocation of public education and training resources places excessive emphasis on university education at the expense of stronger basic education programs at the primary and preparatory levels. This misallocation, as well as the insufficiency of vocational skill development programs, are widely recognized problems in the current educational system. The Government of Egypt, in conjunction with international funding agencies, including the World Bank and the U.S. A.I.D., are planning (or have already initiated) programs to provide stronger and more widely available programs in primary and preparatory general education, and in vocational education and training. As these programs are more fully specified and implemented, a number of factors will be important in determining their contribution to human resource

development for industrial growth.

The recommendations which follow focus on several education and training targets which are particularly important for industrial growth: (1) strengthening the curricula for primary and preparatory education, and broadening access for youth to these programs, to make universal primary education an attractive reality; (2) providing remedial literacy and basic education programs for adults; (3) strengthening relationships between academic and vocational programs at the secondary level; (4) providing skill-specific vocational training programs; and (5) regaining high quality in university programs while limiting the growth of enrollments.

1. Making compulsory education an attractive reality. To increase initial enrollments in primary schools, and to reduce dropouts prior to completion, primary education programs need to be both more accessible and more practical. Although attendance in primary schools was made compulsory by presidential decree, and although educational facilities have been increased substantially in the interim, universal primary education is still far from a reality. This is particularly true in rural areas, where dropouts often occur early, either for financial reasons or because primary education is perceived as being irrelevant. There may be other reasons as well for the high degree of dropouts. If Egypt is to succeed in extending primary education to virtually all young Egyptians, it is important to determine the nature and extent of each of these deterrents to enrollment, and to provide offsetting incentives. If children are being kept out of school to work, it may be appropriate to

provide some alternative financial assistance for the poorest families with children in school. This would be equivalent to hiring the children of these families to "work" as students, and would be appropriate in cases where the family's immediate financial needs force decisions which are not in the long-run interests of either those children or of Egyptian society. If transportation costs are a key constraint, these costs could also be subsidized.

On the other hand, if children are kept out of school because their parents view the school curriculum as irrelevant, other less costly measures may be taken to increase enrollment rates. The simplest would be merely to overrule parental judgments, and vigorously enforce the legal compulsion for attendance. However, it is both possible and more sensible to modify the curriculum to fit the needs of rural children and other children who are likely to join the work force at an early age.

Because it is unlikely that a large fraction of Egyptians will remain in the educational system beyond the preparatory level, students should be exposed to basic problem solving, analytical and measurements techniques, and a wide variety of concrete and practical applications by the time they obtain the preparatory (adedeya) certificate. Experiments with alternative modes of learning have shown that individual children in the United States differ in their abilities to learn by these various methods. A majority of students learn theoretical concepts more effectively through applications. As a precursor to curriculum redesign, studies of dominant learning modes among Egyptian children are needed to determine the most efficient ways to teach children what they need to

know to be successful in the labor market.

2. Remedial basic education for adults. There is also a need to provide basic literacy and computational skills to adults. Although education costs for adults are higher with respect to foregone income, and lifetime returns may be considerably less because of a shorter post-training working life, net benefits for adults as well as children are likely to be strongly positive. Otherwise, these workers will be increasingly marginalized over time, as the pool of younger, more-educated workers grows. It is necessary to recognize the difficulty of remediating illiteracy in adults, and to provide incentives such as job advancements, raises, etc.. It may be appropriate to provide time off work, or to pay adults for time spent in literacy classes after regular working hours. An informational media campaign may be useful in motivating adults to enroll in these programs.

3. Linking academic and vocational programs at the secondary level. In addition to strengthening the educational base of the work force, by expanding coverage of primary and preparatory educational programs, the education and training system must also seek to meet the vocational skill requirements of an expanding industrial sector more effectively. Two types of vocational education and training programs are needed for this purpose: a large-scale, school-based set of programs which teach generic, highly transferable job skills; and more specialized skill programs which are targetted at specific jobs (and perhaps specific firms). The latter programs might take place either in separate

classroom facilities, or as on-the-job apprenticeships and other training within the job context.

School-based vocational and technical programs need to be integrated at least partially with the general academic programs at the secondary level. The current separation of these programs creates some stigma for vocational education, preventing students in the general academic curriculum from gaining marketable vocational skills, and vocational students from receiving satisfying academic skill training. Thus, most students who complete secondary school and pass the entrance examinations continue their education at the university level. If the secondary curriculum included a broader range of general skills needed in the labor market, a number of these students might be induced to seek productive employment immediately rather than waiting to complete a university degree. During a period when the economy will be needing increasing numbers of semi-skilled and technically trained workers for industry, it is important to equip students for the labor market early so that they will have viable options if they drop out of school. Similarly, it may be appropriate for some vocational students to transfer into more sophisticated technical areas requiring at least some university level studies. Thus, vocational students should be exposed to at least a small set of core academic courses.

In short, a greater degree of correspondence between general academic and vocational curricula at the secondary level could prepare academic students for early entry into the labor market, and open higher level educational options for vocational students.

4. Expanding skill training for industrial vocations. Most school-based skill training programs teach entry-level workers. Now a project to expand skill upgrading programs is being planned. To assure that these programs will be cost-effective, decisions need to be made for each skill of the extent to which training should be publicly subsidized, the appropriate balance of on-the-job training vs. formal classroom instruction, and the relative advantages of training at separate centers vs. training within the employing firms. These issues are discussed in greater length in Chapter IV.

5. Strengthening university programs. There appears to be a consensus in Egypt that the universities are overcrowded now, and that job guarantees for graduates have been an key factor in encouraging the dramatic increase in enrollments. As the number of general secondary graduates has increased, so has the percentage who go on to the universities. This ratio rose from about 66% in the late 1960's to approximately 75% by 1975-76, and has continued to rise since then. These increases have been so large that they have diluted the quality of programs. Classes have become so large that in some cases additional private sessions are held for paying students who wish supplemental instruction in smaller classes. In short, the policies of the past have been so successful in increasing university enrollments that new policies are now needed to shift the balance back in favor of strengthening programs at lower levels, and making these programs broadly available to most Egyptians.

Each of these education and training objectives could be met with sufficiently good planning and unlimited funds. However, with major constraints on the overall amount of resource which can be committed to education and training, it is essential to plan all of these programs jointly to assure an optimal allocation of the total educational budget. This requires carefully structuring the incentives associated with each program, to induce private initiatives which are aligned with these education and training objectives.

APPENDIX A: EMPLOYMENT

Gustav Papanek

There is controversy about Egyptian employment statistics for the past. Projections for the future always have a large margin of error. The data and projections in the employment paper are designed only to provide orders of magnitude and may well be wrong. This appendix provides the sources and assumptions necessary to appraise whether they paint a picture that is reasonably accurate.

Push or Pull--Employment in Agriculture, in the

Informal Sector and for Women:

It is well known that open unemployment is very low in low-income countries. The poor are rarely unemployed. They lack the savings necessary to survive without income and therefore take whatever work will feed them that day. Therefore if jobs do not exist in the organized sector--the part of the economy which generally pays a fixed wage (more rigorously defined as work whose marginal product equals the wage)--they will crowd into agriculture or the informal sector (where the labor income is related to the average product and exceeds the social marginal product). So if few jobs are created in the organized sector, the result will not only be somewhat more open unemployment, but also more men, and above all more women, who are in low income, low (or zero marginal) productivity activities in agriculture, in the informal sector (petty trade, some services) and--in the case of women--in the home.

A consequence of inadequate jobs in the formal sector is stagnant

wages and unchanging (female) participation rates and therefore stagnant incomes for the poor. The projections in table 2, therefore assume, in their "optimistic" and "intermediate" variants, that the aim of policy is a continuation of the tight labor market of the late 1970's, to assure that real wages will continue to rise throughout the economy and that female participation in the organized labor force will continue to increase. In the "pessimistic" variant it is assumed that the situation of the late 1970's with respect to agriculture will be reversed: with no decline in the number of agricultural workers. Also there would be no increase in the proportion of women in the organized labor force.

There would be two unfortunate consequences of this scenario:

a) Egypt would not use fully one of its most abundant resources, its labor force, and would therefore make less progress in dealing with other economic issues (e.g., the Balance of Payments).

b) Real wages and (female) participation rates in the formal sector are likely to stagnate, and with them the income of the poor. The result will be greater income disparities.

In short, the "pessimistic" scenarios assume a less efficient and less equitable economy than the alternative forecasts, and should therefore not be acceptable. Rather, policies need to assure that enough jobs are created to achieve the equity and growth implied in the two alternative scenarios. This requires a labor-intensive industrialization strategy, and the rising labor incomes it can bring.

Labor Force Developments and Forecast:

There is a great deal of uncertainty, and even controversy, about labor force data, since different sources are not in agreement (e.g. Census and Labor Force Sample Surveys) and for some crucial variables there is almost no good, up-to-date information (e.g. migration). The estimates below are drawn largely from the Labor Force Sample Surveys (LFSS), the only current source.

Following the outline of table 2, specific estimates are as follows: (all figures rounded to the nearest 5,000 in table 2)

1a) Males Employed in Egypt: Actual figures from LFSS. The forecast assumes a 2.9% increase in the male labor force. This is the Plan estimate and was also the USAID projection (based on 1976 population data from the Census; projected using age-specific death rates, but assuming they continue to decline at the past rate; applied to 1975 participation rates).

The labor force includes those employed in Egypt plus unemployed (totaling 9.245 million in 1979) and should include Egyptians in other countries. On the assumption that 1.4 million workers are abroad (see below) and that 90% are men, that gives a total 1979 male Labor Force in Egypt and abroad of 10.5 million, increasing at 2.9% or 305,000 a year.

By the mid-1980's a 2.9% growth rate, on a larger base, will mean an annual increase of 350,000 men. The number to be employed in Egypt is 350,000 minus 90% of projected migrants (the other 10% are assumed to be females) and minus the projected unemployed.

Table A-1*

Males in the Labor Force, 1979-85

	Total 1979	Increase 1979	Annual Increase--1985		
			Intermediate	Pessimistic	Optimistic
Employed in Egypt	8,928	110	345	445	210
Migrants	1,260	130	0	-90	135
Unemployed	<u>305</u>	<u>65</u>	<u>10</u>	<u>10</u>	<u>10</u>
Labor Force	10,493	305	355	355	355

*Note: The sources for all tables are discussed in the text.

1b) Females employed in Egypt: The figures here exclude all females employed in "agriculture" or "unspecified" activities, because the data for those sectors are so unreliable as to be meaningless. Consider the changes in the 1975 to 1979 LFSS:

Table A-2Female Workers in Agriculture and Unspecified
Categories, 1975-1979 (000)

	1975	1977	1978	1979
1) Agriculture	102	127	91	44
2) Unspecified	<u>41</u>	<u>0</u>	<u>143</u>	<u>51</u>
3) 1 plus 2	143	127	234	95

It is simply unbelievable that out of some 8 million females in rural areas between the ages of 6 and 65 (not handicapped) only 1% or less are working in agriculture. It is similarly inconceivable that the numbers working in agriculture should drop to one third

between 1977 and 1979 or that the totals for "agriculture" and "unspecified" should nearly double between 1977 and 1978 and then drop to less than half by 1979. In fact, a detailed study has shown that 50-80% of rural women are working in various agricultural activities, confirming that in this respect the LFSS is not reliable.¹

The data for female workers in other sectors do not show the same erratic fluctuations. Instead, most show a stable and steady increase over the years (table A-3). The significant exceptions are "services" and "insurance and finance" which drop in 1978, the year when the "unspecified" category was re-introduced. It is likely that a number of workers were (incorrectly) placed in the "unspecified" category in that year. A comparison between 1977 and 1979 may therefore be more accurate (details in table A-8, attached).

If one uses data for sectors where statistics are somewhat more reliable, one finds a 4.8% rate of growth in female employment in the 1970's and a 7.6% rate of growth in the more recent (1975-79) period when job opportunities were more readily available.

The increasing female participation in the non-agricultural labor forces is also indicated by the increasing numbers reported as "unemployed," that is, seeking work. The rate of increase was 14% in the 1975-79 period. That large numbers of women are seeking regular employment outside agriculture is also shown by the interview data in another report.² It indicates that even at the minimum wage plus a small production bonus, as many as 13

¹Khairy H. Aboul Seoud and Flora Farraq, "The role of women and youth in rural development", Cairo, 1979 (mimeo).

²See Hanna Papanek and Barbara Ibrahim, "Economic participation of Egyptian women: Implications for labor force creation and industrial policy."

Table A-3

Employed and Unemployed Females, 1971 to 1979
Excluding "Agriculture" and "Unspecified" (000)

	1971	1975	1977	1979	Annual Compound rate of % change		
					71-75	75-79	71-79
Manufacturing	67	66	69	87	0.0	7.2	3.3
Trade, services, etc.	<u>306</u>	<u>339</u>	<u>429</u>	<u>455</u>	<u>2.6</u>	<u>7.6</u>	<u>5.0</u>
Total (excluding Agriculture and Unspecified)	373	405	495	542	2.1	7.6	4.8
Unemployed	35	84	86	124	24.0	14.0	19.0

Source: LFSS

Table A-4

Females in the Labor Force, 1979-1985
Excluding Agriculture and Unspecified (000)

	Total in 1979	Increase in 1979	Annual Increase--1985		
			Intermediate	Pessimistic	Optimistic
Employed in Egypt	(542)	41	75	60	80
Migrants (net)	(140)	15	0	-10	15
Unemployed	<u>(153)</u>	<u>21</u>	<u>20</u>	<u>35</u>	<u>0</u>
Labor Force	(835)	77	95	85	95

women applied for every available job, even when only unmarried females with some education were considered.

Increased employment for women, as the companion report points out, is not only desired by a large number of women, it is also important to improve the income of the poorest families. It may also contribute to a slower rate of population growth and it is crucial to keep Egyptian industry competitive in the world market.

A reasonable assumption for all these reasons would be that female participation in the non-agricultural labor force grows at a somewhat slower rate than in 1975-79, because of a larger base. Combining the increase in employed and unemployed women, the 1975-79 growth rate of non-agricultural jobs held by females was 8.8% a year.

At that rate of increase, the number of women in the (non-agricultural) labor force would be about one million in 1985. A 7.5% increase in that year would add 75,000 women to the labor force. Depending on assumptions about unemployment and migration, one obtains the number of new jobs required. If job opportunities and wages stagnate, fewer women will enter the organized labor force, and vice versa with rising opportunities and wages. This is reflected in the alternative projections.

1c) Migrants: The Census of 1976 showed 1,423,000 Egyptians abroad and Choucri et.al.³ estimated that one million of these were in the labor force. If one then accepts that migration continued at a rapid pace for the next two years, an estimate of a stock of 1.4 million workers in 1979

³Nazli Choucri, R. Eckhaus, A. Mohie Eldin, "Migration and employment in the construction sector," MIT - Cairo University.

is not too inconsistent with the Ministry of Manpower estimate of 1.39 million for 1978, given by Amr Mohie El Din.⁴ The assumption that 90% of migrant workers are male and only 10% female is pure conjecture, but may not be completely unreasonable, given the limited range of jobs women can hold in the receiving countries and the importance of all-male construction labor for the migrants.

The 1979 estimate of migration was constructed as follows: assume that the male labor force increases by 2.9% a year; subtract estimated (from LFSS) increases in domestic employment and unemployment; the residual is male migration; add 11% on the assumption that female workers (not dependents) are 10% of the migrant labor force.

Projections are difficult. In early 1981 it might have been reasonable to expect that the recipient oil exporters would absorb additional migrants as a result of the increase in their (oil) revenues in 1979-80 and the consequent expansion of their development programs. But there are several reasons for expecting the opposite -- a decline in the total number of Egyptian migrant workers:

i) Many of the workers are employed on investment projects and particularly on relatively labor-intensive construction. As infrastructure projects and industrial plants are completed, fewer workers will be required for operation than for construction. There is some evidence that the construction boom is slowing as many needed infrastructure projects are completed.⁵

⁴Dr. Amr Mohie Eldin, "External migration of Egyptian labour," ILO Employment Mission, September 1980 (mimeo).

⁵See Alan Richards and P.L. Martin, "The laissez-faire approach to international labor migration: the case of the Arab Middle East," in Economic Development and Cultural Change (forthcoming).

ii) It is highly likely that the rate of increase in real income of the oil producers will be less in the 1980's than it was in the 1970's. The transfer of income from oil exporters increased in the 1970's from roughly \$130 billion to \$400 billion (in contrast to the 1980 prices). As a result of higher real prices there has been a decline in demand for energy, a shift to energy sources other than oil and an increased supply of oil. It is difficult to believe that a further tripling of real oil income will occur. As the expansion of the oil importing economies slows down, so will their need for additional migrants. The substantial decline in real oil prices and in quantities consumed in 1981/82 has already come to an end (in May 1982), but it will be months at least before real revenue from oil again reaches the absolute level of 1980/81.

iii) The process of diversifying the sources of migrant labor, for political and economic reasons, began to gather momentum in the late 1970's. Various Asian countries have begun to become significant suppliers of labor, reducing the proportion drawn from the Arab world. Egypt's political relations are no longer an asset in the placement of migrants.

iv) All recipient countries are mechanizing and some are training their own workers to reduce dependence on migrant labor.

Taking account of the reasons for expecting a continued net outflow of migrants and for the beginning of a reverse flow, one can assume three alternative scenarios:

a) The optimistic assumption would be for a continued outflow on the order of magnitude estimated for 1979.

b) An intermediate assumption would be no net outflow, with emigration roughly equal to return migration.

c) A pessimistic assumption would be that there is a net return to Egypt of, say, 100,000 workers a year.

ld) Unemployed: There are a variety of estimates for unemployment. The one used here is from LFSS which also shows roughly one third of the unemployment as female. The increase in recorded unemployment averaged 16% in the 1975-79 period. The same 16% increases applied to a higher base in 1985 would mean that there would be an additional 95,000 unemployed that year, rounded to 100,000 for the pessimistic projection. At that rate there would be about one million of openly unemployed in 1985, surely an undesirable and unacceptable situation. We have therefore assumed in all three projections that the increase in open unemployment in the mid-1980's would be limited to the growth rate in the labor force; that is, the rate of unemployment will not change.

le) Total Labor Force: The optimistic and intermediate projections for increase in the total labor force of 445,000 a year are quite consistent with the Plan estimate of 450,000. The pessimistic projection has a lower increase in total labor force because it assumes a substantially lower increase in female employment. That, of course, would have unfortunate consequences for the incomes of the poorer groups.

2) Additional Employment Required in Egypt (see table 2): This is the addition of lines la) and lb) for male and female employment in Egypt.

3) Sources of Additional Employment:

3a) Agriculture: Since that data for female employment in agriculture

could not be used (see above) one needs to analyze trends in male employment separately. There was an 8% decline in total male workers in agriculture from 1975 to 1979, or almost 2% a year. This decline followed on stagnation in the reported male agriculture labor force during the early 1970's.

Table A-5

Male Employment in Agriculture (000)

1971	1975	1977	1979
4,322	4,322	4,063	3,958

Source: LFSS

Note: 1971 rather than 1970 figures are used throughout because 1970 data seem to be inconsistent with those for subsequent years, e.g.: from 1970 to 1971, male labor and total labor in manufacturing both decline by 15%, construction labor increases 239%, male agricultural labor by 9%. Insurance and finance show zero labor in 1970. The 1971 data are more consistent with those for later years (see table A-8, attached).

As discussed earlier, it is quite likely that the situation in agriculture could be reversed if there were no attractive employment opportunities outside the agricultural sector. In that case, rather than losing workers, the sector would be forced to absorb additional workers. But that would probably result also in stagnant or declining real labor income (wages), and an increasing gap between rich and poor. An industrialization strategy designed to be employment-oriented, to raise the income of the poor should therefore be designed to absorb enough workers so (male) agricultural employment will continue to fall at a slightly higher rate than in the past. That is the optimistic projection. It would be quite pessimistic to assume that no further workers leave agriculture, because no

better employment alternatives are available. An intermediate projection is for a lower rate of decline on a higher base.

Is it reasonable to argue for a further decline in the agricultural labor force, despite the current concern among some observers about labor "shortages?" Undoubtedly, some cultivators have lacked labor at prevailing wages and with prevailing technology. But in fact the agriculture sector still has "excess" labor, in the sense that it would be desirable for Egypt's overall development to continue reducing the labor force in agriculture:

a) Farm management data suggest that even in 1978 the average number of days worked per year is 150. During the peak month, 25 days per month are needed.⁶ Real wages rise because labor is far from perfectly mobile. Many workers are family members on small farms who will not take wage labor off the farm at prevailing agricultural wage rates. These data suggest that with time for adjustment, including cropping pattern changes to reduce seasonal peaks, in response to higher wages, there remains a good deal of surplus labor, since 150 days a year is far from full-time work.

b) Egypt has a higher ratio of agricultural population per unit of crop area (687) than such land-poor, high-population density countries as Bangladesh (660), India (244), Pakistan (204) or Indonesia (456).⁷ There are no labor shortages in these countries; on the contrary, they are

⁶ Amr Mohie El Din, "Rural employment problems in Egypt," (unpublished) September 1979, Cairo University.

⁷ FAO, Production Yearbook, 1976.

generally considered labor surplus.

Both ratios suggest that the shortage perceived in Egyptian agriculture may be a temporary phenomenon, due to a lag in adjustment to a somewhat less ample supply of excess labor overall, segmented labor markets, and regional/seasonal shortages that will diminish when both workers and employers have adjusted to the new situation.

c) The perceived shortage and higher wages have led to an expansion in tractors used, to an officially estimated 25,000. This is likely to have a ratchet effect: once tractors are used and some workers know how to operate them, both workers and farmers will be reluctant to return to low-wage hand labor.

Over time, if good jobs are available in non-agricultural activities in Egypt, labor use in the rural areas should adjust to labor availabilities. Some families and some family members will move out of agriculture, operating units per family will become larger, labor use will decline and machinery use increase. Egypt will move to a ratio between cultivable land and labor that is characteristic of neighboring countries and its level of per capita income, not the ratio characteristic of such poorer countries as Bangladesh. The desirable consequence will be higher labor incomes in agriculture.

The projections of table 2 assume that it is desirable for the agricultural labor force to continue to decline at a slow (2% per year) rate.

3b) Construction: Construction employment has been increasing at 16.5% a year in 1975-79. It is unlikely that this pace will continue,

since it was on a low base and as a result of a very rapid expansion of investment. In fact between 1974 and 1979 the amount of investment in constant prices more than doubled. The rate of investment as a percent of GNP has been at 30% or more during this period. The 1979 rate was already high by the standards of other countries, so a further increase in the rate of investment is most unlikely. In fact, if Egypt were to invest at the same rate as other countries with its per capita income the rate would decline to 20 to 25%. If the rate of investment stays unchanged, then the absolute amount of investment will rise with the National Product, say at 8% a year, and one can assume that construction will increase at the same rate.

Since the real wages of construction workers are reported to have increased between 1975 and 1979 there is bound to be some substitution of capital for labor. An intermediate projection therefore could be that construction labor will increase by 6% a year, the actual rate between 1971 and 1975. An optimistic projection would assume no substitution against labor, a higher growth rate of construction and an increase of 10% in construction labor. A pessimistic projection, of slower growth in construction and substantial substitution against labor, could result in a growth rate of 4% in construction labor. (Even lower growth is plausible, but it should be remembered that the pessimistic projection has a substantial return flow of labor from other countries, which will keep real wages stagnant).

3c) Tourism: Most studies of Egypt's tourism potential assume that each hotel room will generate two jobs directly, in the hotel, and two indirectly, outside. Other assumptions are not sufficiently different

to result in significantly changed labor force projections. In 1980 there were an estimated 17,000 tourist hotel rooms. There were 1.15 million tourists who visited Egypt, a 19% increase over 1979 (but only a 16% increase since 1976).⁸ A report by a German consulting firm projected 1.75 million tourists in 1985, and a 20% growth rate a year. The lower figure would represent a 52% increase over 1980 and would presumably require a 50% increase in hotel rooms, the latter 20% a year growth, a 150% increase in rooms. A 50% increase, or 8,900 hotel rooms is taken as the intermediate forecast, generating 45,000 jobs. The 150% increase, with 100,000 jobs is the optimistic projection, and a 40% increase is the pessimistic one. These 5 year figures when annualized and rounded yield the results for table 2.

3d) Government: The ILO report estimates government employment, including military and paramilitary forces, at about 2.5 million in 1979. It also includes the very approximate guess that one million of these are "abnormal" or excessive. Presumably it would be highly desirable for the excess number of workers in government to be gradually absorbed into more productive activities. If this is to be accomplished in 10 years, it would require absorbing 100,000 workers a year. If the estimate is too great, it would mean that the excess is absorbed more quickly, surely desirable; if the estimate is too small, the process of absorption is likely to take longer, since it would be very difficult to absorb more than 100,000 a year.

⁸ Unclassified. June 9, 1981 report by American Embassy.

However, government employment would normally need to increase more rapidly than the population to provide for rising government services (e.g.: in education). A 4% increase in government employment would equal 100,000 workers. Of course, much of the increase should be in professional and technical positions, many of the redundancies are probably in clerical jobs. This has implications for training and hiring, but the projections are concerned with numbers only.

The assumed "normal" increase would just equal the projected absorption of the excess. Therefore the intermediate and optimistic projections would be for no net change in government employment, as the natural and desirable increase gradually absorbs redundant workers. The pessimistic assumption is that net government employment continues to increase, but at 2% a year, with no absorption of redundant personnel. Even the pessimistic projection does not assume a continuation of the 3.5% rate of growth of government employment which seems to have occurred in 1975-79, on the assumption this would be too costly for the Egyptian economy.

3e) Trade, Service, Transport, Other: The remaining sectors (other than manufacturing) can be amalgamated, after subtracting tourism and government, because employment in them is largely derived: productive jobs are created as a result of the growth of other sectors. As more goods are produced by the commodity producing sectors, the number of workers in trade and transport usually rises somewhat more than proportionally. Similarly, as income increases the demand for services

grows, also somewhat more than proportionately. (The income elasticity of both trade and services is greater than one).

However, employment in these sectors will grow more rapidly than income only if there was no surplus labor originally. Usually trade, services (and agriculture) are sectors with substantial work- and income-sharing at low labor income (see section on wages for a discussion). When employment is then created at more satisfactory wages in other sectors, employment in trade and services (and some traditional forms of transport) may increase very slowly. That is exactly what appears to have happened in Egypt.

Table A-6

Employment in Trade, Services, Transport, Finance, Electricity
and Unclassified (000)

	Total (1)	Government (2)	Tourism (3)	1-(2+3) (4)
1975	3,298	2,145	45	1,100
1979	3,560	2,500	70	1,000

Sources: (1) LFSS, (2) See above, extrapolated from 1978 to 1979,
(3) See above.

Note: Some of the civilian government officials are probably counted in sectors other than those covered by table 6 (e.g.: agriculture). Military personnel appear to be assigned to their sector of prior occupation, if they are not new entrants into the labor force. For both reasons, both columns (1) and (4) are understated. But the relevant variable here is the change between 1975 and 1979. Therefore, the error does not matter much: if corrected for, it would increase the numbers of workers in Trade, Services, etc. but decrease the numbers in Agriculture, Construction, etc. and leave the overall change between 1975 and 1979 essentially unaffected.

Apparently no additional labor was absorbed by trade, services, etc. between 1975 and 1979 once government and tourism are excluded.

These sectors actually seem to have employed fewer people in 1979 than in 1975. Nevertheless there probably still is excess labor in some activities in these sectors. Casual observation of shoe shiners, lottery ticket sellers, sidewalk peddlers, porters, and so on suggests that they would prefer to do more work than they are able to obtain. (That is, they would like to increase their turnover). More concretely, there still are very low labor incomes in services and considerable demand for regular employment outside the informal sector, especially on the part of women (see section on wages and paper on women).

On the other hand the growth in the economy and especially the assumed accelerated growth in industry, will create productive jobs in transport, finance, trade and such services as repairing and advertising as well as some services to consumers.

The intermediate and optimistic assumptions provide for a reversal of apparent recent trends and the net creation of productive jobs in these sectors. The pessimistic projection also provides for an increase in jobs, but these most probably would be of the make-work variety, in work-sharing, low productivity activities.

3f) Required Employment in Manufacturing (and Mining): When one subtracts employment created in other sectors (3a-3c) from the additional employment required in Egypt (2), one obtains the employment required to be created in manufacturing (all projected).

4) Investment Required in Manufacturing: The pessimistic projection assumes that the ratio between employment and investment which seems to have prevailed in the past will continue in the future. This was estimated at LE 9,200 of investment for each job in 1975 prices.⁹ Adjusting by the GDP deflator one obtains LE 15,500 at 1979 prices. Although this projection is based on Egypt's actual experience it is labeled "pessimistic" because: (i) it simply is not feasible with the resources likely to be available and (ii) a number of steps have already been taken that encourage investment in more labor intensive activities. Yet without further steps this could be a realistic, although grim, scenario. The 1979 rate of investment was about LE 4,000 million and recently about one-quarter of investment has gone to manufacturing. If investment rises by 8% a year with the National Product (unchanged investment ratios) it would reach LE 6,300 million in 1985. One quarter of this would provide roughly 100,000 jobs with present investment patterns. Other entrants to the labor force could not find productive employment, but would have to be absorbed into low productivity government, agriculture, trade and services. The consequences would be stagnant or declining wages.

Employment Oriented Strategy

While the East Asian countries are utterly different from Egypt in many respects, the techniques of production in labor intensive industries do not differ all that much among countries. Hong Kong with one-tenth the population of Egypt and a much smaller domestic market in 1976 employed nearly 900,000 workers in industry, only 30% fewer than

⁹ Economic Studies Unit, Ministry of Economy, "Recent Developments in the Egyptian Economy," January 1981.

in Egypt.¹⁰ Some 60-90% of the workers in labor intensive industries were unskilled, 5-10% semi-skilled.

Nominal wages were HK\$18.77 for unskilled males per day, equal to US\$4. Egyptian wages, taken from another section of this report were the equivalent of \$2 for all workers in industry. But for private firms in the yarn and cloth sector for 1977 the wage bill divided by the total number of all workers (including managers, skilled workers, technicians) comes to LE247 a year (including bonuses) or less than LE1 a day. Production (blue collar) workers generally receive less than 90% of average wages for all workers, and unskilled workers received less. Workers in the informal sector and women received even lower wages than blue collar workers in industry. So the per day wage in Egypt was less than one-fourth that in low wage Hong Kong.

The Werner report gives the following figures for labor costs per unit of output in the textile industry (in US\$):

Egypt: 0.112	West Germany: 0.767
France: 0.316	USA: 0.275

The importance of proximity to the market is discussed by D. Morawetz in his study of the Colombian garment industry.¹¹ He finds that tastes or fashions change rapidly. Visits between producers and buyers are therefore important. They are quicker and cheaper between Colombia and the US than East Asia and the US. Shipment of finished garments

¹⁰ All data on Hong Kong calculated from S.C. Chow and G.F. Papanek "Laissez-Faire, Growth and Equity: Hong Kong" Economic Journal, June 1981.

¹¹ See David Morawetz "Why the Emperor's New Clothes are not made in Columbia," World Bank Staff Working Paper 368.

from East Asia takes much longer. They are shipped by sea to the U.S. at about the same cost as shipping garments from nearby Colombia by air. As a result it was possible in the case of Colombia to postpone by a month a decision on what to produce that would appeal to the U.S. market that season. The locational advantage helped Colombia to expand its garment exports from \$2 million to \$83 million when the foreign exchange rate was favorable for exports. When the exchange rate was not favorable, proximity did not provide a sufficient advantage and exports dropped by two-thirds. Egypt can similarly benefit from its proximity to the European market.

Data for female education and employment are shown in a companion paper. Various studies show a gradual shift in Japan from industries which are intensive in unskilled labor, to more capital and skill intensive activities. The other four Asian countries have followed the same pattern. Observers were as pessimistic about the future of industry in Korea, Taiwan, Hong Kong and Singapore when they started industrial development as many now are about Egypt. Changes in policies made the difference in Asia; there is no compelling reason to believe that changes in policies would not have the same effect in Egypt.

Unfortunately, we do not have any data for Egypt on labor intensity of different industries as it should be measured: the contribution of labor, as contrasted with capital, to value added. There are no reasonable data available to us on the capital stock.

Labor intensity is measured in various ways in table 6, all of them unsatisfactory. Since input and output prices are often government-determined, profits can be quite low in enterprises using a great deal of capital (capital intensive). So the wages/profit ratio, usually the best index of labor intensity, is of dubious reliability.

Another indicator is output per person, but this too is flawed, since a high ratio can equally well mean low labor intensity (large output for each worker) or low value added per unit of output (i.e. large material inputs per unit of output). But in some cases both indexes give the same result.

TABLE A-7
Various Measures of Labor Intensity

	Output/ worker (LE 000)	Output/ wages	Wages/ profits
Textiles, garments, shoes - private firms	1.7	7.1	0.63
Textiles, garments, shoes - public firms	2.1	4.8	0.44
Machinery - private firms	2.7	8.6	0.38
Machinery - public firms	2.2	7.6	0.38
Basic metals - public firms	5.0	7.2	0.68
Food, drink, tobacco - public firms	8.4	19.3	0.28
Chemicals, petroleum - public firms	89.0	18.4	0.06

Source: CAPMAS, "Quarterly Industrial Production, 1977".

The data in Table A-7 are consistent with results from other countries: labor intensive industries employ two to four times as many workers per unit of investment or value added as the capital intensive industries.

Sources: LFSS for different years

Notes: 1) Agriculture, hunting, fishing

2) Manufacturing plus mining, quarrying - in the LFSS these are two categories, but some mining activities appear to be included in manufacturing in any age

3) Construction

4) Trade, restaurants, hotels

5) Transports, communications, storage; plus electricity, gas, water

6) Services; plus insurance, finance

TABLE A- 8
Employment by Economic Activity and Sex
(Ages 12-64: LFSS definitions)
(in thousands)

	1970	1971	1974	1975	1977	1979
1) Agriculture-total	4,109	4,470	4,198	4,424	4,190	4,002
Male	(3,981)	(4,322)	(4,097)	(4,322)	(4,063)	(3,958)
Female	(127)	(147)	(101)	(102)	(127)	(44)

2) Manufacture, mining	1,242	1,037	1,375	1,309	1,375	1,555
Male	(1,155)	(907)	(1,305)	(1,242)	(1,304)	(1,467)
Female	(87)	(67)	(70)	(67)	(69)	(88)

3) Construction	57	193	233	247	334	449
Male	(54)	(190)	(229)	(243)	(329)	(442)
Female	(3)	(3)	(3)	(4)	(5)	(6)

4) Trade	717	797	1,031	841	915	918
Male	(668)	(743)	(982)	(794)	(869)	(862)
Female	(49)	(55)	(49)	(47)	(46)	(57)

5) Transport, Elect.	559	349	437	466	480	554
Male	(548)	(339)	(423)	(448)	(459)	(531)
Female	(12)	(10)	(14)	(17)	(21)	(23)

6) Services, finance	1,334	1,352	1,547	1,641	1,906	1,937
Male	(1,102)	(1,114)	(1,287)	(1,371)	(1,548)	(1,569)
Female	(232)	(238)	(260)	(270)	(357)	(369)

7) Unspecified	28	54	47	103	--	150
Male	(22)	(36)	(39)	(63)	--	(100)
Female	(6)	(18)	(7)	(41)	--	(51)

Total	8,044	8,255	8,867	9,031	9,198	9,565
Male	(7,530)	(7,715)	(8,362)	(8,485)	(8,572)	(8,928)
Female	(515)	(538)	(505)	(548)	(626)	(637)

APPENDIX B: WAGES

Bruce Vermeulen

This appendix provides additional information concerning two aspects of the wage data upon which Chapter III is based: (a) interviews conducted in casual hiring markets in the Cairo area and at construction sites; and (b) survey data concerning compensation practices of foreign firms in Egypt.

Interviews in the Market for Construction Labor

To obtain current information about wage levels and skill shortages in the construction sector, interviews were conducted in June 1981 in two of the casual labor markets in Cairo, and at several construction sites. Interviewees included labor brokers, contractors, and workers at these sites.

Daily wages ranged from 1.5 Egyptian Pounds per day to 6 Pounds per day. Juveniles earn between 1.5 and 2.25 Pounds per day, and students working during their summer vacation usually earn approximately 2 Pounds per day. Wages for women are reportedly between 2 and 3 Pounds per day in Imbaba, and between 2.5 and 3 Pounds per day in Matariya. Assistants to highly skilled workers earn about 3 Pounds per day, while wages for skilled workers mostly range between 4 and 6 Pounds daily

(occasionally as high as 10 Pounds per day). A person earning 6 Pounds or more per day is generally either highly skilled or doing very heavy work. Wages are reportedly highly differentiated among tasks, with premiums paid both for special skills and for the degree of risk involved. For example, workers on the fourth floor of a new building receive more per day than those on the second floor.

In both hiring markets, wages were said to be 50-60% higher than last year. For example, semi-skilled assistants who earned 2 Pounds in 1980 now earn 3 Pounds per day. The work day is generally 8 hours with an hour break for lunch. Most workers work six days per week, but some also work 3-4 hours on Fridays.

Current construction wages, like agricultural wages, are strongly seasonal. Interviews in the Imbaba and Matariya hiring markets produced estimates that the available labor supply in urban construction markets declines 20-35% during the peak of the summer harvest, causing wages to increase by up to 40 or 60 percent. Declines in available labor during the summer were attributed to the heat as well as to the harvests.

Workers are usually hired for at least one week, and often for as much as several months. There are shorter jobs, but these are less frequent. A subset of the jobs which are filled in these two casual labor markets are available to women as well as men. The proportion of women hired in these market is apparently quite small, however. In Matariya, one labor broker suggested that women in some instances work longer hours but receive less pay, because they tend to have less physical stamina and do not become skilled workers.

Markets for construction workers in Cairo seem to clear fairly well at existing wage rates. In both markets where interviews were conducted, the strong seasonality of both labor supply and wage rates was emphasized by the labor brokers. Yet, in the Matariya market, there were substantial numbers of workers who had not been hired by 11 a.m. on the interview day. In Imbaba, which is located much closer to the center of Cairo, fewer workers remained without jobs by late morning. In both markets, labor brokers indicated that there were always sufficient workers available at current wage rates. On the other hand, many of the workers had not been back to their rural homes for more than two years, because of abundance of available work. Most workers came from outside Cairo and live with relatives, with other workers in shared apartments, or on the work sites. There seem to be neither major shortages nor surpluses of laborers at current wage rates.

Interviews were also conducted at several construction sites operated by two contractors, and produced results in keeping with those obtained in the two casual hired markets. The contractors each had a foreman who went by truck directly to several villages in the Fayoum area whenever he needed additional workers. Workers' interviews ranged from 19 to 28 years old, and had worked for the employer from between 3 months and 2 years. Daily wages ranged from 2.75 Pounds to 5 Pounds, depending on skills and experience. Most of the work force was from Fayoum, and for more than two-thirds this was the first job in Cairo. The majority of workers were recruited directly in their villages by a foreman employed by the contractor. The second most common source of recruits

was through employee referrals of friends and relatives. The remainder of the work force -- the most skilled workers, and the concrete workers hired for their strength (from Zena) -- were hired in the Imbaba labor market in Cairo.

Nearly all workers interviewed at construction sites lived at the work site. A few shared apartments with other workers, at a cost of between 2 and 4 Pounds per worker each month. They worked 26-28 days per month, and most went home once or twice a month. Transportation costs round trip to and from Fayoum ranged between 3 and 5 Pounds.

None of the workers interviewed had worked less than three months or more than two years for the employer. Beginning wages for unskilled workers were 2 Pounds during a brief orientation period, with rapid increases to 2.75 or 3 Pounds daily for unskilled jobs. The modal wage for unskilled manual jobs such as carrying dirt, digging holes, clean-up, handing out tools, mixing concrete and helping skilled workers in a variety of ways, was 3 Pounds per day. The average age of workers in these jobs was just over 21 years.

Semi-skilled workers earned between 3.25 and 3.5 Pounds per day, and were of similar ages. They tended to have substantially more experience on average. Most had worked between one and two years for the contractor. Starting wages for these workers had been 1.75 Pounds in 1979.

The highest-paid regular workers at the construction site were skilled brick layers and concrete workers, who earned 4 to 5 Pounds daily. Their average age was 26 years, and they had been working in the

Cairo construction industry for 1 1/2 years. Their jobs tend to be for relatively short periods -- 5 or 6 months at most -- and all have worked for other employers. The concrete workers, physically powerful men from Zena, earned the highest wage because of the extraordinary physical stamina required for their jobs.

Other specialized skills required by the contractor are self-employed subcontractors, paid by the job rather than on a daily or weekly basis. Finishing carpenters, for example, can make over 20 Pounds per day, according to the contractor. Rates for carpenters have not risen in more than a year, however.

When asked about opportunities to work abroad, only 1/3 of the workers interviewed knew that wages abroad were higher. These were primarily the more skilled workers hired from the Cairo labor markets. None knew of actual employment opportunities for their skills abroad, though one worker was actively seeking work in Saudi Arabia through a friend who is there currently.

Construction wages are apparently highly responsive to market shifts in supply and demand, and are essentially at market clearing levels most of the time. Recruiting in the rural areas, and the relatively easy access of large numbers of rural workers to Cairo, prevent market barriers between agricultural and construction work, and help to link the two wage series closely together.

Wage Surveys in Multinational Firms: 1977-1980

Due to a lack of official wage data beyond 1977, current evidence concerning money, real and relative wage levels for skill and occupational categories has to be pieced together from various sources. One such source is the Survey of Personnel Policies and Salary Levels in Egypt, which has been conducted by the Middle East Advisory Group every six months beginning in June 1977. A small one-period survey conducted by the Institute of National Planning, and a study for the telephone company (ARETO), were also drawn on for information concerning relative wages in 1977 and 1979 respectively.

By far the most systematic and detailed wage data available are from the Middle East Advisory Group wage surveys. The surveys from 1978 forward contain detailed information concerning base salary, bonuses and overtime, allowances, and other compensation (including insurance) for individual jobs in each firm included in the survey. Firms are coded to preserve confidentiality, while permitting comparisons of firm-specific wage distributions and tracking of wages over time in individual firms.

The surveys have two weaknesses for the purpose of estimating economy-wide wage trends, however: the sample is highly atypical and the companies included in the sample have changed substantially in each survey year. The sample includes only survey subscribers, which have been primarily firms which are partially or wholly foreign-owned, with heavy representation of petroleum firms and (in early survey) banks. Wages and benefits in these companies tend to be well above typical

private sector rates.

There is so much turnover of firms in the sample that there are few job titles and individual jobs which can be traced throughout the entire four survey years within a consistent sample of firms. Instead, wage indices must be developed by calculating money and real wage changes for a selection of job titles for each pair of sample years, then converting to a four-year index. For this procedure to be reliable, firms in the sample must be adjusting wages in every six-month period in a similar manner. Otherwise, the results are very sensitive to compositional changes in the sample. Despite these caveats concerning the peculiarities of the sample and the relatively high wage rates paid for all skills, relative changes in skill-specific wage differentials are likely to reflect reasonably well changing patterns of relative scarcity in the broader economy. Viewed from this perspective, the indices computed from the surveys and reported in Table I tell a plausible story.

Despite the shortcomings of this sample, the results are interesting in several respects. They show a steady increase in real base salaries for most of the selected blue collar and white collar jobs in the surveyed firms. Base salaries for white collar workers rose by 31% in real terms over the three years, and by 24% for blue collar workers. White collar increases were largest in 1978-1979, while blue collar salaries rose most sharply in the following year.

Another interesting change in the wage and salary structure which is apparent in the MEAG survey data is the expansion of overtime pay, allowances, and other components of compensation (principally insurance)

in relation to base salary increases. (See Table S-4, Statistical Supplement.) Unfortunately, comparable data for the labor force as a whole are not available. Based on a number of informal conversations, it seems probable that the same pattern of change has occurred in the public enterprises. In the smaller (private) establishments, overtime is an important component of pay, but supplemental allowances and insurance tend to be relatively small portions of total compensation.

These differences in the structure of overall compensation are important to document and analyze systematically. Base wage comparisons may mask major shifts in relative compensation among workers who receive substantially different amounts of other payments and benefits. This seems to be particularly important in comparisons of the public and private sectors.

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Table S-1: AVERAGE DAILY WAGE RATE IN AGRICULTURE, 1951-1980

<u>Year</u>	<u>Daily Money Wage (current Piasters)</u>	<u>Rural Cost-of-Living Index (1978 = 100)</u>	<u>Daily Real Wage (1978 Piasters)</u>
1951	12.60	23.20	54.31
1952	12.00	23.40	51.28
1953	12.00	23.00	50.42
1954	9.00	24.90	39.36
1955	7.60	26.00	29.23
1956	10.00	30.20	33.11
1957	10.93	29.97	36.47
1958	11.86	29.73	39.89
1959	12.80	29.50	43.39
1960	12.50	29.80	41.95
1961	12.30	31.70	38.88
1962	14.00	32.40	43.21
1963	15.00	33.30	45.04
1964	19.00	38.70	49.10
1965	22.00	45.90	47.93
1966	25.00	41.40	60.39
1967	24.50	42.40	57.78
1968	24.50	44.10	55.56
1969	25.50	47.40	53.80
1970	25.00	51.00	49.02
1971	25.50	51.30	49.71
1972	27.50	54.20	50.74
1973	29.20	58.40	50.00
1974	32.20	62.75	51.30
1975	45.55	70.40	64.70
1976	59.00	82.10	72.84
1977	74.55	92.60	80.51
1978	86.35	100.00	86.35
1979	106.70	107.30	99.44
1980	126.20	114.90	109.84

Source: Money wage data for 1951-1974 are from Samir Radwan, Agrarian Reform and Rural Poverty, p.31. Data for 1975-1978 are based on Bert Hansen, Samir Radwan et al., Employment Opportunities and Poverty in a Changing Economy; Egypt in the 1980s: A Labour Market Approach, first draft (Geneva: International Labour Office, 1980). Their wage index is reconverted to a daily rate. For 1979-1980, data are from Ministry of Agriculture (simple average of monthly rates for full year in 1979, and for January-June in 1980).

Table S-2

Average Weekly Wage in Total Manufacturing--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	348	389	431	475	506	560	571	676	794
	Female	234	271	302	327	343	385	396	513	541
	Total	341	383	423	466	496	550	560	665	777
Private	Male	286	263	300	438	344	433	477	603	810
	Female	151	170	183	298	210	318	326	451	426
	Total	229	256	290	426	331	424	461	588	764
Total	Male	326	363	401	468	476	543	553	663	797
	Female	220	246	269	320	308	366	375	498	503
	Total	318	356	392	458	465	524	541	651	774
<u>2. White Collar</u>										
Public	Male	811	783	854	850	922	905	937	1095	1240
	Female	487	517	525	518	586	611	648	684	918
	Total	783	754	810	803	877	867	900	1040	1194
Private	Male	708*	862	987	986	1039	1068	1077	986	1313
	Female	493	587	736	692	694	676	754	793	949
	Total	688	841	956	953	996	1002	1019	961	1261
Total	Male	798	793	872	863	932	923	952	1084	1247
	Female	488	523	551	531	595	620	664	694	928
	Total	771	765	830	817	887	882	914	1032	1201
<u>All Employees</u>										
Public	Male	433	446	503	539	581	626	641	755	977
	Female	299	331	371	393	427	467	482	569	673
	Total	423	437	493	528	561	615	631	739	861
Private	Male	288	315	369	485	405	498	542	655	860
	Female	193	207	262	342	265	390	404	500	504
	Total	280	307	359	472	391	488	526	631	816
Total	Male	406	421	475	529	552	602	624	737	874
	Female	275	305	346	383	393	449	462	555	629
	Total	396	413	465	518	531	591	611	729	852

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work
Table 1 (annual volumes).

Table Table S-3

Average Weekly Real Wage in Total Manufacturing--
Public and Private Sector by Sex (1978 Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	740	794	798	848	872	966	816	835	882
	Female	498	553	559	584	591	664	566	633	601
	Total	726	782	783	832	855	948	800	821	863
Private	Male	502	537	556	782	593	747	681	744	900
	Female	321	347	339	532	362	548	466	557	473
	Total	487	522	537	761	571	731	659	726	849
Total	Male	694	741	743	836	821	936	790	819	886
	Female	468	502	498	571	531	631	536	615	559
	Total	677	727	726	818	802	903	773	804	860
<u>2. White Collar</u>										
Public	Male	1726	1598	1581	1518	1590	1560	1339	1352	1378
	Female	1036	1055	972	925	1010	1053	926	844	1020
	Total	1666	1539	1500	1434	1512	1495	1286	1284	1327
Private	Male	1506	1759	1828	1761	1791	1841	1539	1217	1459
	Female	1049	1198	1363	1236	1197	1166	1077	979	1054
	Total	1464	1716	1770	1702	1717	1728	1456	1186	1401
Total	Male	1698	1618	1615	1541	1607	1591	1363	1338	1386
	Female	1038	1067	1020	948	1026	1069	949	857	1031
	Total	1640	1561	1537	1459	1529	1521	1306	1274	1334
<u>All Employees</u>										
Public	Male	921	910	931	962	1002	1079	916	932	974
	Female	636	676	687	702	736	805	689	702	748
	Total	900	892	913	943	967	1060	901	912	957
Private	Male	613	643	683	866	698	859	774	809	956
	Female	411	422	485	611	457	672	577	617	560
	Total	596	627	665	843	674	841	751	779	907
Total	Male	864	859	880	945	952	1038	891	910	971
	Female	585	622	641	634	678	774	660	685	699
	Total	843	843	861	925	916	1019	873	900	947

Calculated from CAPMAS, Survey of Employment, Wages and Hours of Work,
Table 1 (annual volumes). See Statistical Supplement, Table S-2.

Table S-4

COMPONENTS OF LABOR COMPENSATION
IN SELECTED PRIVATE SECTOR FIRMS, 1978-1980

(Percentages of Total Remuneration)

	<u>June 78</u>	<u>Dec 78</u>	<u>June 79</u>	<u>Dec 79</u>	<u>June 80</u>	<u>Dec 80</u>
<u>Base Salary</u>						
Managers	67	73	68	64	56	58
Professionals	67	68	71	65	64	64
Skilled clerical	68	75	68	66	64	65
Skilled technical	64	47	49	48	64	49
Semi skilled clerical	62	63	61	59	58	57
Semi skilled technical	51	44	48	47	43	43
Unskilled	41	39	48	46	44	41
<u>Bonuses</u>						
Managers	11	9	8	11	9	7
Professionals	9	7	6	7	8	7
Skilled clerical	7	8	7	7	7	7
Skilled technical	10	17	12	11	7	7
Semi skilled clerical	10	9	6	8	8	7
Semi skilled technical	11	11	5	8	7	7
Unskilled	12	10	6	14	8	7
<u>Overtime</u>						
Managers	1	--	--	--	--	--
Professionals	1	2	2	1	4	3
Skilled clerical	3	2	4	4	5	4
Skilled technical	7	5	5	4	12	11
Semi skilled clerical	4	5	6	8	7	6
Semi skilled technical	11	8	8	13	12	11
Unskilled	7	8	12	10	11	12
<u>Allowances</u>						
Managers	--	--	3	5	11	11
Professionals	--	--	4	4	7	6
Skilled clerical	--	--	3	4	5	5
Skilled technical	--	--	5	4	8	7
Semi skilled clerical	--	--	5	3	4	4
Semi skilled technical	--	--	3	2	6	5
Unskilled	--	--	2	4	5	4
<u>Other Compensation</u>						
Managers	21	18	20	20	24	24
Professionals	23	23	17	23	17	20
Skilled clerical	21	15	18	19	19	20
Skilled technical	20	31	24	24	24	26
Semi skilled clerical	24	23	24	22	24	25
Semi skilled technical	27	37	36	30	32	34
Unskilled	40	43	32	26	31	36

Source: Middle East Advisory Group, Survey of Personnel Policies and Salary Levels in Egypt (Nos. 3-8)

Table S-5

Average Weekly Wage in Food Production--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u> [*]
1. Blue Collar										
Public	Male	271		370	407	448	490	492	536	611
	Female	193		255	230	322	374	382	369	467
	Total	265		362	394	441	485	485	523	605
Private	Male	228		320	419	346	471	519	710	813
	Female	133		153	300	186	334	352	360	346
	Total	221		310	412	335	421	504	687	778
Total	Male	258		251	411	416	483	501	593	688
	Female	175		220	250	272	355	268	366	409
	Total	252		342	400	407	477	491	576	671
2. White Collar										
Public	Male	671		773	783	884	801	900	948	1089
	Female	396		467	487	513	590	576	682	714
	Total	651		735	747	830	775	861	910	1031
Private	Male	455		544	500	496	758	686	739	869
	Female	253		393	365	332	627	591	573	507
	Total	435		533	494	488	735	670	730	843
Total	Male	622		724	749	835	792	864	918	1052
	Female	356		458	482	504	601	580	676	695
	Total	601		694	719	795	766	828	887	1008
All Employees										
Public	Male	351		457	490	545	559	589	630	725
	Female	236		328	317	405	478	459	484	583
	Total	343		446	475	535	554	579	616	715
Private	Male	262		344	425	358	504	537	713	818
	Female	157		184	304	195	418	397	376	365
	Total	254		334	418	347	497	522	691	784
Total	Male	326		418	472	492	541	573	654	757
	Female	213		288	314	350	454	435	460	505
	Total	318		408	460	482	535	561	637	731

* Preliminary

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes).

Table S-6

Average Weekly Wage in Spinning and Weaving--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	323	375	399	475	493	546	561	662	755
	Female	238	268	293	320	352	361	415	514	519
	Total	316	368	393	465	484	535	549	651	736
Private	Male	212	213	237	475	295	357	393	469	969
	Female	145	153	167	330	189	325	262	435	548
	Total	203	206	227	453	279	353	375	463	849
Total	Male	310	354	378	475	471	523	538	644	781
	Female	221	242	258	322	312	353	380	497	472
	Total	302	346	369	464	459	511	524	631	751
<u>2. White Collar</u>										
Public	Male	756	757	823	787	973	823	909	1100	1168
	Female	483	497	527	530	573	574	621	683	714
	Total	736	734	789	755	920	795	873	1050	1111
Private	Male	511	684	734	740	1041	785	862	960	1113
	Female	386	333	360	360	573	498	554	537	584
	Total	559	658	690	692	974	732	821	902	1017
Total	Male	747	753	819	785	975	822	906	1096	1166
	Female	479	489	518	523	573	568	616	677	717
	Total	728	729	784	753	922	791	870	1045	1107
<u>3. All Employees</u>										
Public	Male	394	416	455	515	552	587	608	725	810
	Female	274	302	347	369	403	415	459	550	559
	Total	384	408	448	504	541	575	595	710	788
Private	Male	237	235	262	487	325	381	422	495	974
	Female	153	158	175	331	201	340	280	439	457
	Total	226	337	250	464	306	376	403	485	857
Total	Male	378	394	432	512	529	564	584	705	829
	Female	255	273	308	361	361	401	423	530	510
	Total	367	385	422	500	515	551	570	689	797

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1, (annual volumes).

Table S-7

Average Weekly Wage in Printing, Publishing & Related Products---
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar										
Public	Male	341	341	425	496	455	505	530	486	653
	Female	--	574	325	400	300	333	338	600	669
	Total	341	342	425	496	454	505	528	486	653
Private	Male	335	466	480	504	523	654	670	740	953
	Female	283	887	256	220	173	247	732	410	547
	Total	335	467	478	503	521	646	670	737	946
Total	Male	337	431	474	502	512	603	645	659	874
	Female	283	828	262	235	202	249	642	415	571
	Total	337	431	473	501	511	598	645	658	869
2. White Collar										
Public	Male	868	675	803	790	772	1080	873	918	899
	Female	582	496	813	586	924	849	562	842	756
	Total	843	663	804	767	786	1043	846	907	880
Private	Male	1068	1213	1476	1346	1361	1495	1460	1371	1583
	Female	719	835	1057	923	883	928	942	905	1274
	Total	1024	1187	1425	1295	1217	1402	1366	1284	1518
Total	Male	981	1073	1456	1256	1302	1311	1415	1302	1432
	Female	662	747	1052	872	886	893	929	896	1204
	Total	942	1050	1408	1210	1247	1243	1330	1236	1388
All Employees										
Public	Male	511	428	460	540	414	688	577	545	712
	Female	582	499	650	577	771	844	482	837	737
	Total	514	429	462	541	520	697	575	551	713
Private	Male	505	675	758	722	749	850	903	921	1134
	Female	694	838	987	853	831	761	929	856	1167
	Total	512	678	767	727	753	845	904	917	1136
Total	Male	507	606	733	676	717	791	854	816	1027
	Female	649	751	979	812	820	792	907	854	1104
	Total	513	609	734	681	721	791	857	818	1031

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S-8

Average Weekly Wage in Industrial Chemicals--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male		388	438	450	443	529	490	616	761
	Female		196	231	327	372	258	400	511	465
	Total		386	436	450	443	528	480	616	765
Private	Male		310	337	378	436	598	554	709	539
	Female		262	286	237	169	---	--	614	415
	Total		307	333	370	401	598	554	698	524
Total	Male		386	434	449	443	530	491	617	764
	Female		205	251	287	276	258	400	564	454
	Total		384	432	448	443	528	491	617	762
<u>2. White Collar</u>										
Public	Male		783	884	839	437	900	807	1034	1527
	Female		530	555	586	524	605	572	661	1291
	Total		763	863	819	443	879	789	992	1504
Private	Male		1200	1222	1170	883	950	1760	1959	1331
	Female		1100	607	562	815	1033	1000	860	2000
	Total		1182	1080	973	859	978	1475	1709	1490
Total	Male		786	891	842	437	900	807	1040	1527
	Female		539	559	585	526	608	574	664	1303
	Total		766	869	821	444	879	790	997	1504
<u>All Employees</u>										
Public	Male		454	539	554	441	645	602	738	969
	Female		414	471	576	519	564	565	657	1228
	Total		453	538	554	443	643	601	735	977
Private	Male		363	455	506	471	629	621	945	617
	Female		391	395	429	323	1033	1000	699	732
	Total		365	449	497	448	647	633	911	632
Total	Male		452	536	553	441	645	602	740	966
	Female		413	457	566	512	568	568	659	1214
	Total		451	534	553	443	643	601	737	974

Source:

CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S-9

Average Weekly Wage in Other Chemicals--
Public and Private Sectors by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar										
Public	Male			397	443	443	464	444	611	711
	Female			302	368	324	398	269	576	510
	Total			370	425	412	444	411	601	659
Private	Male			417	409	442	743	722	572	715
	Female			329	316	350	391	476	438	514
	Total			386	376	412	649	637	523	669
Total	Male			399	440	443	514	491	608	711
	Female			306	359	327	397	336	560	528
	Total			372	419	412	479	457	593	660
2. White Collar										
Public	Male			940	932	960	971	974	1029	1011
	Female			567	476	593	665	692	826	1166
	Total			846	765	867	885	909	982	1051
Private	Male			1942	1837	1907	2703	1582	1976	2572
	Female			1135	1082	1029	1179	903	1222	1588
	Total			1784	1670	1742	2422	1369	1783	2213
Total	Male			1047	1006	1061	1409	1098	1080	1173
	Female			614	501	633	750	752	851	1217
	Total			940	826	954	1239	1012	1028	1185
All Employees										
Public	Male			536	592	581	603	583	763	812
	Female			362	417	394	465	403	645	727
	Total			488	543	533	562	548	729	760
Private	Male			835	779	819	1466	988	905	1226
	Female			451	433	466	599	595	561	793
	Total			712	667	711	1258	856	787	1070
Total	Male			566	610	607	776	656	774	863
	Female			373	419	404	487	462	636	739
	Total			512	555	554	693	612	735	830

Source:

CAPMAS, Survey of Employment, Earnings and Hours of Work
Table 1 (annual volumes).

Table S- 10

Average Weekly Wage in Non Metallic Mineral Products
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	375	426	519	551	558	605	656	718	842
	Female	246	305	321	182	343	392	504	472	461
	Total	371	423	518	547	557	605	655	717	837
Private	Male	212	227	270	457	313	338	457	554	593
	Female	144	164	194	254	168	252	339	389	426
	Total	208	225	265	450	310	336	453	548	585
Total	Male	321	355	426	517	474	494	590	660	737
	Female	193	235	208	229	227	277	370	399	437
	Total	316	352	420	511	472	492	587	657	729
<u>2. White Collar</u>										
Public	Male	807	817	954	994	1041	1170	1084	1149	1222
	Female	427	578	643	571	582	717	663	849	1256
	Total	784	789	926	951	971	1127	1027	1109	1227
Private	Male	523	619	732	620	664	746	736	1103	932
	Female	365	434	673	440	586	660	955	684	876
	Total	518	611	722	615	660	736	750	1071	928
Total	Male	780	783	912	941	995	1077	1044	1143	1176
	Female	425	569	653	565	582	702	678	837	1229
	Total	760	761	884	906	936	1039	997	1104	1183
<u>All Employees</u>										
Public	Male	474	482	574	617	630	686	725	785	907
	Female	318	443	558	429	548	671	644	817	1026
	Total	468	481	574	612	627	686	723	785	912
Private	Male	230	250	295	465	328	363	471	580	610
	Female	151	181	263	262	216	384	393	422	459
	Total	225	247	293	458	326	363	468	575	603
Total	Male	403	403	475	566	534	558	648	718	791
	Female	251	352	357	359	467	529	555	662	787
	Total	396	403	471	560	533	558	645	717	791

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S-11

Average Weekly Wage in Iron & Steel--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>										
Public	Male	413	575	526	635	726	741	869	999	
	Female	398	307	375	586	613	552	565	706	
	Total	413	575	526	634	726	741	869	994	
Private	Male	--	--	--	--	406	686	537	684	
	Female	--	--	--	--	--	--	500	400	
	Total	--	--	--	--	406	686	538	683	
Total	Male	413	575	526	635	702	740	858	982	
	Female	398	307	375	586	613	552	563	702	
	Total	413	575	526	634	702	740	858	977	
2. <u>White Collar</u>										
Public	Male	766	1005	1118	1083	1109	897	1353	1183	
	Female	621	559	519	754	639	764	877	1066	
	Total	756	954	1060	1055	1041	887	1306	1172	
Private	Male	--	--	--	--	629	805	975	1258	
	Female	--	--	--	--	425	400	664	760	
	Total	--	--	--	--	612	747	928	1206	
Total	Male	766	1005	1118	1083	1068	896	1348	1183	
	Female	621	559	519	754	629	757	873	1061	
	Total	756	954	1060	1055	1006	885	1301	1172	
<u>All Employees</u>										
Public	Male	467	641	639	716	799	770	944	1039	
	Female	591	533	516	747	638	756	864	917	
	Total	467	639	636	716	794	770	934	1035	
Private	Male	--	--	--	--	453	694	567	718	
	Female	--	--	--	--	425	400	650	625	
	Total	--	--	--	--	452	691	568	717	
Total	Male	467	641	639	716	772	768	933	1024	
	Female	591	533	516	747	628	749	860	913	
	Total	467	639	636	716	767	768	932	1020	

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S- 12

Average Weekly Wage in Metal Products (excluding Machinery & Equipment)--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	297	391	589	511	483	598	719	823	943
	Female	173	719	246	371	396	372	462	556	696
	Total	295	393	587	505	478	592	707	813	934
Private	Male	232	240	250	589	321	396	437	506	668
	Female	133	173	--	339	266	376	356	294	387
	Total	232	239	250	587	321	396	436	503	664
Total	Male	257	330	544	536	407	533	640	735	861
	Female	160	511	240	368	383	373	454	525	653
	Total	256	332	542	531	407	529	633	728	855
<u>2. White Collar</u>										
Public	Male	779	964	1115	964	954	889	1194	1225	1397
	Female	426	514	574	539	489	528	659	561	795
	Total	735	920	1076	892	875	829	1104	1117	1312
Private	Male	694	761	905	834	874	901	1037	1160	1250
	Female	468	449	350	399	415	489	587	543	706
	Total	682	745	855	784	824	832	981	1050	1151
Total	Male	739	925	1109	949	940	890	1178	1219	1380
	Female	437	509	565	528	481	524	654	559	783
	Total	711	888	1070	880	866	829	1092	1111	1294
<u>All Employees</u>										
Public	Male	356	479	692	581	564	662	801	898	1031
	Female	318	575	497	453	437	475	552	559	746
	Total	355	481	688	573	555	650	783	876	1014
Private	Male	266	272	281	601	348	426	473	542	707
	Female	302	268	350	368	337	433	453	413	542
	Total	266	272	281	598	348	426	473	539	702
Total	Male	302	401	645	587	471	595	717	809	943
	Female	313	510	493	446	426	470	545	543	718
	Total	302	403	642	580	469	589	707	795	932

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S- 13

Average Weekly Wage in Nonelectrical Machinery--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
<u>1. Blue Collar</u>										
Public	Male	423	409	534	529	614	711	661	764	827
	Female	239	201	463	507	512	557	376	533	810
	Total	423	408	530	528	612	707	656	764	827
Private	Male	284	380	308	286	362	335	391	653	586
	Female	114	--	262	210	270	300	300	405	317
	Total	282	380	308	286	362	334	391	652	576
Total	Male	409	402	517	508	600	694	645	755	801
	Female	210	201	463	507	511	553	375	482	513
	Total	408	402	514	508	598	690	640	755	799
<u>2. White Collar</u>										
Public	Male	793	685	998	823	1047	1045	937	1111	1021
	Female	543	296	663	692	637	758	692	660	687
	Total	762	671	973	799	1010	1017	916	1075	971
Private	Male	1330	653	759	1371	1141	1049	1152	1292	1592
	Female	587	146	333	786	553	521	649	617	734
	Total	1171	631	739	1268	1001	931	1023	1139	1408
Total	Male	873	679	991	852	1050	1046	940	1116	1051
	Female	549	364	656	704	632	750	690	656	691
	Total	799	663	967	826	1009	1015	918	1077	996
<u>All Employees</u>										
Public	Male	501	444	264	589	696	785	726	837	868
	Female	513	262	518	575	577	668	568	658	694
	Total	501	443	618	588	691	780	721	834	861
Private	Male	465	407	342	429	425	389	446	708	693
	Female	500	146	290	772	529	466	639	598	524
	Total	467	406	342	438	427	391	451	705	681
Total	Male	497	435	605	576	682	770	712	828	851
	Female	511	245	516	585	575	663	570	652	664
	Total	498	434	601	576	679	765	708	825	845

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work
Table 1 (annual volumes).

Table S- 14

Average Weekly Wage in Transportation Equipment--
Public and Private Sector by Sex (current Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar										
Public	Male	397	475	517	521	524	583	644	693	766
	Female	255	356	211	213	391	416	458	436	661
	Total	397	475	516	520	524	582	642	690	764
Private	Male	263	323	285	349	360	403	612	524	661
	Female	400	682	--	--	--	--	--	554	---
	Total	263	323	285	349	360	403	612	525	661
Total	Male	379	465	509	514	520	580	644	677	764
	Female	262	344	211	213	391	416	458	450	556
	Total	379	465	508	513	519	579	642	674	762
2. White Collar										
Public	Male	949	795	909	888	871	963	1019	1108	1115
	Female	472	440	493	530	557	597	617	676	695
	Total	909	769	863	842	832	916	967	1054	1049
Private	Male	639	838	866	1476	938	948	1059	828	2097
	Female	400	447	333	578	433	525	900	844	1529
	Total	633	812	852	1396	892	900	1041	829	2042
Total	Male	918	796	909	1000	871	963	1019	1083	1127
	Female	470	440	492	531	556	597	619	689	700
	Total	883	770	863	853	832	916	968	1034	1061
All Employees										
Public	Male	506	537	614	602	607	672	733	786	845
	Female	457	431	465	504	547	576	588	625	673
	Total	505	535	609	598	605	668	727	780	837
Private	Male	320	370	324	491	394	455	715	588	868
	Female	400	389	333	578	433	525	900	759	1529
	Total	320	370	324	492	394	456	720	594	878
Total	Male	483	527	606	598	602	669	733	767	845
	Female	455	430	464	505	547	576	590	637	678
	Total	483	525	602	595	600	665	727	762	837

Source: CAPMAS, Survey of Employment, Earnings and Hours of Work,
Table 1 (annual volumes).

Table S-15

Average Weekly Real Wage in Food Production--
Public and Private Sector by Sex (1978 Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>										
Public	Male	576		685	727	772	766	703	662	679
	Female	411		472	411	555	584	546	456	519
	Total	564		670	704	760	758	693	646	672
Private	Male	485		593	748	597	736	741	877	903
	Female	283		283	536	321	522	503	444	384
	Total	470		574	736	578	658	720	848	864
Total	Male	549		465	734	717	755	716	732	764
	Female	372		407	446	469	555	383	452	454
	Total	536		633	714	702	745	701	711	746
2. <u>White Collar</u>										
Public	Male	1428		1431	1398	1524	1252	1286	1170	1210
	Female	843		865	870	884	922	823	842	793
	Total	1385		1361	1334	1431	1211	1230	1123	1146
Private	Male	968		1007	893	855	1184	980	912	966
	Female	538		728	652	572	980	844	707	565
	Total	926		987	882	841	1148	957	901	937
Total	Male	1323		1341	1338	1440	1238	1234	1133	1169
	Female	757		848	861	869	939	829	835	772
	Total	1278		1285	1284	1371	1197	1183	1095	1120
3. <u>All Employees</u>										
Public	Male	747		846	875	940	873	841	778	806
	Female	502		607	566	698	747	656	598	648
	Total	730		826	848	922	866	827	760	794
Private	Male	559		637	759	617	788	767	880	909
	Female	334		341	543	336	653	567	464	406
	Total	540		619	746	598	777	746	853	871
Total	Male	694		774	842	848	845	819	807	841
	Female	453		533	561	603	709	621	568	561
	Total	677		755	821	831	836	801	786	812

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-5.

Table S-16

Average Weekly Real Wage in Spinning and Weaving--
Public and Private Sector by Sex (1978 Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>										
Public	Male	687	765	739	848	850	853	801	817	839
	Female	506	547	543	571	607	564	593	635	577
	Total	672	751	728	830	834	836	784	804	818
Private	Male	451	453	439	848	509	558	561	579	1077
	Female	309	312	309	589	326	508	374	537	387
	Total	432	420	420	809	481	558	536	572	943
Total	Male	660	722	700	848	812	817	769	795	868
	Female	470	493	478	575	538	552	543	614	524
	Total	643	706	683	829	791	798	749	779	834
2. <u>White Collar</u>										
Public	Male	1609	1545	1524	1405	1678	1286	1299	1358	1298
	Female	1028	1014	976	946	988	897	889	843	793
	Total	1566	1498	1461	1348	1586	1242	1247	1296	1234
Private	Male	1215	1396	1359	1321	1795	1227	1231	1185	1237
	Female	821	680	667	643	988	778	791	663	649
	Total	1189	1343	1278	1236	1679	1144	1173	1114	1130
Total	Male	1589	1537	1517	1402	1681	1284	1294	1353	1296
	Female	1019	998	959	934	986	888	880	836	797
	Total	1549	1488	1452	1345	1590	1236	1242	1290	1230
3. <u>All Employees</u>										
Public	Male	838	849	843	920	952	917	869	895	900
	Female	583	616	646	659	695	648	656	679	621
	Total	817	833	830	900	933	898	850	877	876
Private	Male	504	480	485	870	560	595	603	611	1082
	Female	325	322	324	591	347	531	400	542	508
	Total	481	688	463	829	528	588	576	599	952
Total	Male	804	804	800	914	910	881	834	870	921
	Female	543	557	570	645	622	627	604	654	567
	Total	781	786	781	893	888	861	814	851	886

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-6.

Table S-17

Average Weekly Real Wages in Metal Products
(excluding Machinery & Equipment)--
Public and Private Sector by Sex (1978 Piasters)

		<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>										
Public	Male	632	798	1091	913	833	934	1027	1016	1048
	Female	368	1467	456	663	683	581	660	686	773
	Total	623	802	1087	902	824	925	1010	1003	1038
Private	Male	494	490	463	1052	553	619	624	625	742
	Female	283	353	---	605	459	588	509	363	430
	Total	494	488	463	1048	553	619	623	621	738
Total	Male	547	673	1007	957	702	833	914	907	957
	Female	340	1043	444	657	660	583	649	648	726
	Total	545	678	1004	948	702	827	904	899	950
2. <u>White Collar</u>										
Public	Male	1657	1967	2065	1721	1645	1389	1706	1512	1552
	Female	906	1049	1063	963	843	825	941	693	883
	Total	1564	1878	1993	1593	1509	1295	1577	1397	1458
Private	Male	1477	1553	1676	1489	1507	1408	1481	1432	1389
	Female	996	916	648	713	716	764	838	670	784
	Total	1451	1520	1583	1400	1421	1300	1401	1296	1279
Total	Male	1572	1888	2054	1695	1621	1391	1683	1505	1533
	Female	930	1039	1046	943	829	819	934	690	870
	Total	1513	1812	1981	1571	1493	1295	1560	1372	1438
3. <u>All Employees</u>										
Public	Male	757	978	1281	1038	972	1034	1144	1109	1146
	Female	677	1173	920	809	753	742	789	690	829
	Total	755	982	1274	1023	957	1016	1119	1081	1127
Private	Male	566	555	520	1073	600	666	676	669	786
	Female	643	547	648	657	581	677	654	510	602
	Total	566	555	520	1068	600	666	676	665	780
Total	Male	643	818	1194	1048	812	930	1024	999	1048
	Female	666	1041	913	796	734	734	779	670	798
	Total	643	822	1189	1036	809	920	1010	981	1036

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-12.

Table S-18

A. Female-to-Male Wage Ratios in Food Production--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>									
Public	71		69	57	72	76	78	69	76
Private	58		48	72	54	71	68	51	43
Total	68		88	61	65	73	53	62	59
2. <u>White Collar</u>									
Public	59		60	62	58	74	64	72	66
Private	56		72	73	67	83	86	78	58
Total	57		63	65	60	76	67	74	66
3. <u>All Employees</u>									
Public	67		72	67	74	86	78	77	80
Private	60		53	72	54	83	74	53	45
Total	65		69	67	71	84	76	70	67

B. Private-to-Public Wage Ratios in Food Production
by Sex (Percent)

1. <u>Blue Collar</u>									
Male	84		86	103	77	96	105	132	133
Female	69		60	130	58	89	92	98	74
Total	83		86	105	76	87	104	131	129
2. <u>White Collar</u>									
Male	68		70	64	56	95	76	78	80
Female	64		84	75	65	106	103	84	71
Total	67		73	66	59	95	78	80	82
3. <u>All Employees</u>									
Male	75		75	87	66	90	91	113	113
Female	67		56	96	48	87	86	78	63
Total	74		75	88	65	90	90	112	110

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-5.

Table S-19

A. Female-to-Male Wage Ratios in Spinning and Weaving--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>									
Public	74	71	73	67	71	66	74	78	69
Private	68	72	70	69	64	91	67	93	36
Total	71	68	68	68	66	67	71	83	60
2. <u>White Collar</u>									
Public	64	66	64	67	59	70	68	62	61
Private	76	49	49	49	55	63	64	56	52
Total	64	65	63	67	59	69	68	62	61
3. <u>All Employees</u>									
Public	70	73	76	72	73	71	75	76	69
Private	65	67	67	68	62	89	66	89	47
Total	67	69	71	71	68	71	72	75	62

B. Private-to-Public Wage Ratios in Spinning and Weaving
by Sex (Percent)

1. <u>Blue Collar</u>									
Male	66	57	59	100	60	65	70	71	128
Female	61	57	57	103	54	90	63	85	67
Total	64	56	58	97	58	66	68	71	115
2. <u>White Collar</u>									
Male	68	90	89	94	107	95	95	87	95
Female	80	67	68	68	100	87	89	79	82
Total	76	90	87	92	106	92	94	86	92
3. <u>All Employees</u>									
Male	60	56	58	95	59	65	69	68	120
Female	56	52	50	90	50	82	61	80	82
Total	59	83	56	92	57	65	68	68	109

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-6.

Table S-20

A. Female-to-Male Wage Ratios in Publishing and Printing--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>									
Public	--	168	76	81	66	66	64	123	102
Private	84	190	53	44	33	38	109	55	57
Total	84	192	55	47	39	41	100	63	65
2. <u>White Collar</u>									
Public	67	73	101	74	120	79	64	92	84
Private	67	69	72	69	65	62	65	66	80
Total	67	70	72	69	68	68	66	69	84
3. <u>All Employees</u>									
Public	114	117	141	107	186	123	84	154	104
Private	137	124	130	118	111	90	103	93	103
Total	128	124	134	120	114	100	106	105	107

B. Private-to-Public Wage Ratios in Publishing and Printing
by Sex (Percent)

1. <u>Blue Collar</u>									
Male	98	137	113	101	115	130	126	152	146
Female	--	155	79	55	58	74	217	68	82
Total	98	137	112	101	115	128	129	152	145
2. <u>White Collar</u>									
Male	123	180	184	170	176	138	167	149	176
Female	124	168	130	157	96	109	168	107	169
Total	121	179	177	169	155	100	161	142	173
3. <u>All Employees</u>									
Male	99	158	165	134	181	124	156	169	159
Female	119	168	152	148	108	90	193	102	158
Total	100	158	166	134	145	121	157	166	159

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-7.

Table S-21

A. Female-to-Male Wage Ratios in Industrial Chemicals--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. <u>Blue Collar</u>									
Public	---	51	53	73	94	49	82	83	61
Private	---	85	95	63	39	---	---	87	77
Total	---	53	58	64	62	49	81	91	59
2. <u>White Collar</u>									
Public	---	68	63	70	120	67	32	64	85
Private	---	92	50	48	92	109	57	44	150
Total	---	69	63	69	120	68	71	64	85
3. <u>All Employees</u>									
Public	---	91	87	104	118	87	94	77	127
Private	---	108	87	85	69	164	161	74	119
Total	---	91	85	102	116	88	94	89	126

B. Private-to-Public Wage Ratios in Industrial
Chemicals by Sex (Percent)

1. <u>Blue Collar</u>									
Male	---	80	77	84	98	111	113	115	71
Female	---	134	124	72	95	---	---	120	89
Total	---	80	76	82	91	113	115	113	68
2. <u>White Collar</u>									
Male	---	153	138	139	202	106	97	189	87
Female	---	208	109	96	156	171	175	130	155
Total	---	155	125	119	194	111	187	172	99
3. <u>All Employees</u>									
Male	---	67	84	91	107	98	103	128	64
Female	---	94	84	74	62	183	177	106	57
Total	---	81	83	90	101	101	105	124	65

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-8.

Table S-22

A. Female-to-Male Wage Ratios in Other Chemicals--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public			76	83	73	86	61	94	72
Private			79	77	79	53	66	77	72
Total			77	82	74	77	68	92	74
2. White Collar									
Public			60	51	62	68	71	80	115
Private			58	59	54	44	57	62	62
Total			59	50	60	53	68	79	104
3. All Employees									
Public			68	70	68	77	69	85	90
Private			54	56	59	41	60	62	65
Total			66	69	67	63	70	82	86

B. Private-to-Public Wage Ratios in Other Chemicals
by Sex (Percent)

1. Blue Collar									
Male			105	92	100	160	163	94	101
Female			109	80	108	98	177	76	101
Total			104	88	100	146	155	87	102
2. White Collar									
Male			207	197	199	278	162	192	254
Female			200	227	174	177	130	148	136
Total			211	218	201	274	151	182	211
3. All Employees									
Male			156	132	141	243	169	119	151
Female			125	104	118	129	148	87	109
Total			146	123	133	224	156	108	141

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-9.

Table S-23

A. Female-to-Male Wage Ratios in Non-Metallic Mineral Products
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public	66	72	62	33	61	65	77	66	55
Private	68	72	72	56	54	75	74	70	72
Total	60	66	49	44	48	56	63	60	59
2. White Collar									
Public	53	71	67	57	50	61	61	74	103
Private	70	70	92	71	88	88	130	62	94
Total	54	73	72	60	58	65	65	73	105
3. All Employees									
Public	67	92	97	70	87	98	89	104	113
Private	66	72	89	56	66	105	83	73	75
Total	62	87	75	63	87	95	86	92	99

B. Private-to-Public Wage Ratios in Non-Metallic Mining
by Sex (Percent)

1. Blue Collar									
Male	57	53	52	83	56	56	70	77	70
Female	59	54	60	140	49	64	67	82	92
Total	56	53	51	82	56	56	69	76	70
2. White Collar									
Male	65	76	77	62	64	64	68	96	76
Female	85	75	105	77	101	92	144	81	70
Total	66	77	78	65	68	65	73	97	76
3. All Employees									
Male	49	52	51	75	52	53	65	74	67
Female	47	41	47	61	39	57	61	52	45
Total	48	51	51	75	52	53	65	73	66

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table I (annual volumes). See Statistical Supplement, Table S-10.

Table S-24

A. Female-to-Male Wage Ratios in Iron and Steel--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public		96	53	71	92	84	74	65	71
Private	---	---	---	---	---	0	0	93	58
Total	---	96	53	71	92	87	75	62	71
2. White Collar									
Public	---	81	56	46	70	58	87	65	90
Private	---	---	---	---	---	68	50	68	60
Total	---	81	56	46	70	59	84	65	90
3. All Employees									
Public	---	127	83	81	014	80	98	92	88
Private	---	---	---	---	---	94	58	75	87
Total	---	127	83	81	104	81	98	92	89

B. Private-to-Public Wage Ratios in Iron and Steel
by Sex (Percent)

1. Blue Collar									
Male	---	---	---	---	---	56	93	62	68
Female	---	---	---	---	---	---	---	88	57
Total	---	---	---	---	---	56	92	62	69
2. White Collar									
Male	---	---	---	---	---	57	90	72	106
Female	---	---	---	---	---	67	52	76	71
Total	---	---	---	---	---	59	84	71	103
3. All Employees									
Male	---	---	---	---	---	57	90	68	69
Female	---	---	---	---	---	67	53	75	68
Total	---	---	---	---	---	57	90	61	69

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-11.

Table S-25

A. Female-to-Male Wage Ratios in
Metal Products (excluding Machinery & Equipment)--
Public and Private Sector

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public	58	184	42	73	82	62	64	68	74
Private	57	72	---	58	83	95	81	58	58
Total	62	155	44	69	94	70	71	71	76
2. White Collar									
Public	55	53	51	56	51	59	55	46	57
Private	67	59	39	48	47	54	57	47	56
Total	59	55	51	56	51	59	56	46	57
3. All Employees									
Public	89	120	72	78	77	72	69	62	72
Private	114	99	125	61	97	102	97	76	77
Total	104	127	76	76	90	79	76	67	76

B. Private-to-Public Wage Ratios in Metal Products
by Sex (Percent)

1. Blue Collar									
Male	78	61	42	115	66	66	61	61	71
Female	77	24	---	91	67	101	77	53	56
Total	79	61	43	116	67	67	62	62	71
2. White Collar									
Male	89	79	81	87	92	101	87	95	89
Female	110	87	61	74	85	93	89	97	89
Total	93	81	79	88	94	100	---	94	88
3. All employees									
Male	75	57	41	103	62	64	59	60	69
Female	95	47	70	81	77	91	83	74	73
Total	75	57	41	104	63	66	60	62	69

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-12.

Table S-26

A. Female-to-Male Wage Ratios in Nonelectrical Machinery--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public	57	49	87	96	83	78	57	70	98
Private	40	---	85	73	75	90	77	62	54
Total	51	50	90	100	85	80	58	64	64
2. White Collar									
Public	68	43	66	84	61	73	74	59	67
Private	44	22	44	57	48	50	56	48	46
Total	65	54	66	83	60	72	73	59	66
3. All Employees									
Public	102	59	196	98	83	85	78	79	80
Private	108	36	85	180	124	120	143	84	76
Total	103	56	85	102	84	86	80	79	78

B. Private-to-Public Wage Ratios in Nonelectrical
Machinery by Sex (Percent)

1. Blue Collar									
Male	67	93	58	54	59	47	59	85	71
Female	48	---	57	41	53	54	80	76	39
Total	67	93	58	54	59	47	60	85	70
2. White Collar									
Male	170	95	76	167	109	100	123	116	156
Female	108	49	50	114	87	69	94	93	107
Total	154	94	76	159	99	92	112	106	145
3. All Employees									
Male	93	92	130	73	61	50	61	85	80
Female	97	56	56	134	92	70	113	91	76
Total	93	92	55	74	62	50	63	85	79

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table 1 (annual volumes). See Statistical Supplement, Table S-13.

Table S-27

A. Female-to-Male Wage Ratios in Transportation Equipment--
Public and Private Sector (Percent)

	<u>1966</u>	<u>1968</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1. Blue Collar									
Public	64	75	41	41	75	71	71	63	86
Private	152	211	---	---	---	---	---	106	--
Total	69	74	41	41	75	72	71	66	73
2. White Collar									
Public	50	55	54	60	64	62	61	61	62
Private	63	53	38	39	46	55	85	102	73
Total	51	55	54	53	64	62	61	64	62
3. All Employees									
Public	90	80	76	84	90	86	80	80	80
Private	125	105	103	118	110	115	126	129	176
Total	94	82	73	84	91	86	88	83	80

B. Private-to-Public Wage Ratios in Transportation Equipment
by Sex (Percent)

1. Blue Collar									
Male	66	68	55	67	69	69	95	76	86
Female	157	192	---	---	---	---	---	127	--
Total	66	68	55	67	69	69	95	76	87
2. White Collar									
Male	67	105	95	166	108	98	106	75	188
Female	85	102	68	109	78	88	146	125	220
Total	70	106	99	166	107	98	108	79	195
3. All Employees									
Male	63	69	53	82	65	68	98	75	103
Female	88	90	72	115	79	91	153	121	227
Total	63	69	53	82	65	68	99	76	105

Source: Calculated from CAPMAS, Survey of Employment, Earnings and Hours of Work, Table I (annual volumes). See Statistical Supplement, Table S-14.

Table S-28

Distribution of Educational Attainment by Age and Sex, 1976

<u>Education-Sex</u>		<u>Age Group:</u>							<u>TOTAL</u>
		<u>≤10</u>	<u>10-20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>>50</u>	<u>Unspecified</u>	
Illiterate	M	674,685	1,322,115	984,057	957,244	797,933	989,774	379	5,726,187
	F	1,101,829	2,059,331	1,841,257	1,645,407	1,292,412	1,425,385	2,207	9,367,828
	T	1,776,514	3,381,446	2,825,314	2,602,651	2,090,345	2,415,159	2,586	15,094,015
Literate	M	1,201,265	535,716	607,191	583,512	484,359	417,527	174	3,829,729
	F	754,229	326,095	247,178	177,790	113,005	69,740	161	1,688,218
	T	1,955,494	861,811	854,379	761,302	597,359	487,267	335	5,517,947
Elementary	M	627,432	436,240	98,388	89,475	83,091	58,385	90	1,393,011
	F	384,014	234,161	47,967	30,350	19,739	12,718	27	728,976
	T	1,011,446	670,401	146,355	119,825	102,830	71,013	117	2,121,987
less than Intermediate	M	16,566	707,888	100,515	46,564	10,546	6,794	75	889,010
	F	12,105	372,210	52,341	16,883	4,164	3,124	15	460,842
	T	28,671	1,080,098	152,916	63,447	14,710	9,918	90	1,349,852
Intermediate	M	--	522,262	305,527	131,894	58,620	57,759	51	1,076,113
	F	--	295,947	130,650	47,456	17,663	10,709	29	502,545
	T	--	818,209	436,177	179,350	76,283	68,468	80	1,578,568
less than University higher than Intermediate	M	--	11,349	28,584	12,083	3,589	2,754	2	58,361
	F	--	10,013	17,437	5,245	963	547	4	34,209
	T	--	21,362	46,021	17,328	4,552	3,301	6	92,570
University and higher	M	--	41,645	191,835	114,360	53,118	36,951	1,411	439,326
	F	--	30,328	70,238	19,072	4,909	1,969	381	126,909
	T	--	71,973	262,073	133,432	57,997	38,968	1,792	566,235
Unspecified	M	56,250	68,164	30,398	17,914	12,228	22,859	195	208,009
	F	66,792	73,673	41,354	29,337	23,533	42,759	281	277,239
	T	122,042	141,847	71,752	47,252	35,770	65,618	476	485,248
TOTAL	M	2,576,198	3,645,381	2,346,485	1,953,047	1,503,479	1,592,719	2,377	13,619,746
	F	2,318,468	3,401,768	2,448,442	1,971,534	1,476,358	1,566,993	3,105	13,186,675
	T	4,894,667	7,047,149	4,794,987	3,924,581	2,979,837	3,159,712	5,482	26,806,421

Source: 1976 Census, Table 10, p. 143.

Table S-29

Employment Status by Education and Sex, 1976

		Self Employed	Works for Wages	Non Wage Work	Works Very Little	Total Employed	Unem- ployed (worked previ- ously)	Unem- ployed (new labor entrants)	Total Unem- ployed	Total Enumerated in Labor Force	Student	Housework	Age/ Disability	Unspeci- fied	Total
Illiterate	M	1,811,784	2,934,466	337,742	134,076	5,218,068	18,720	105,041	123,761	5,341,829	-	-	329,000	55,575	5,726,187
	F	40,452	166,213	31,098	-	237,763	3,085	12,151	15,236	252,999	-	8,489,677	624,561	592	9,367,828
	T	1,852,236	3,100,679	368,840	134,076	5,455,831	21,805	117,192	138,997	5,594,828	-	8,489,677	953,561	55,949	15,094,015
Reads & Writes	M	892,010	1,535,457	36,992	31,899	2,496,358	7,559	49,029	56,588	2,552,946	1,124,069	-	118,203	34,511	3,829,729
	F	20,120	42,316	1,638	-	64,074	400	7,875	8,275	72,349	677,709	917,005	20,884	274	1,688,218
	T	912,130	1,577,773	38,630	31,899	2,560,432	7,959	56,904	64,863	2,625,295	1,801,775	917,005	139,087	34,785	5,517,947
Elementary	M	41,484	338,304	2,739	11,151	593,678	1,255	19,430	20,685	414,363	949,768	-	19,028	9,852	1,393,011
	F	1,237	15,963	271	-	17,471	239	5,520	5,759	23,230	526,174	175,206	4,128	233	728,976
	T	42,721	354,267	3,010	11,151	411,149	1,494	24,950	26,444	437,593	1,475,942	175,206	23,156	10,090	2,121,987
less than Intermediate	M	19,008	172,364	65	26,214	217,651	937	16,331	17,268	234,919	645,660	-	3,649	4,782	869,010
	F	541	22,995	8	-	23,544	118	2,544	2,662	26,206	333,925	99,098	1,446	167	460,842
	T	19,549	195,359	73	26,214	241,195	1,055	18,875	19,930	261,125	979,585	99,098	5,095	4,949	1,334,852
Intermediate	M	21,680	537,258	-	36,748	595,686	2,684	120,417	123,101	718,787	314,081	-	32,384	10,861	1,076,113
	F	724	191,260	-	-	191,984	868	71,063	71,931	263,915	137,360	96,597	4,144	438	502,454
	T	22,404	728,518	-	36,748	787,670	3,552	191,480	195,032	982,702	451,441	96,597	36,548	11,299	1,578,567
less than Univ. higher than Intermediate	M	607	47,528	-	1,549	49,684	176	6,467	6,643	56,327	-	-	1,711	323	58,361
	F	28	24,915	-	-	24,943	96	4,713	4,809	29,752	-	4,170	251	36	34,209
	T	635	72,443	-	1,549	74,627	272	11,180	11,452	86,079	-	4,170	1,962	359	92,570
University & Above	M	9,056	361,363	-	9,849	380,269	2,315	33,870	36,185	416,454	-	-	18,848	4,024	439,326
	F	356	91,910	-	-	92,266	560	19,948	20,508	112,774	-	12,901	862	372	126,909
	T	9,412	453,274	-	9,849	472,535	2,875	53,818	56,693	529,228	-	12,901	19,710	4,396	566,235
Unspecified	M	21,337	53,707	9,235	50,008	134,287	789	39,156	39,945	174,232	-	-	12,249	21,528	208,009
	F	839	4,176	961	-	5,976	277	36,186	36,463	42,439	-	211,258	23,331	211	277,239
	T	22,176	57,883	10,195	50,008	140,263	1,066	75,342	76,408	216,671	-	211,258	35,580	21,739	485,248
TOTAL	M	2,816,966	5,980,448	386,774	301,494	9,485,682	34,435	389,741	424,176	9,909,858	3,033,578	-	407,959	141,238	13,619,746
	F	64,297	559,748	33,975	-	658,020	5,643	160,000	165,643	823,663	1,675,165	10,005,912	679,607	2,528	13,186,675
	T	2,881,263	6,540,196	420,749	301,494	10,143,702	40,078	549,741	589,819	10,733,521	4,708,743	10,005,912	1,211,679	143,566	26,806,421

Source: Derived from 1976 Census, Table 11, p. 145.

Table S-30

Distribution of Egyptians by Sector, Major Economic Activity,
and Sex, 1976

		<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Other*</u>	<u>Unspecified</u>	<u>Total</u>
Agriculture and Fishing	M	59,088	25,391	4,618,324	13,871	6,385	4,723,059
	F	1,937	1,250	151,084	662	631	155,564
	T	61,025	26,641	4,769,408	14,532	7,016	4,878,623
Mining and Quarrying	M	292	17,878	12,977	--	802	31,949
	F	8	526	813	--	106	1,453
	T	300	18,404	13,790	--	908	33,402
Manufacturing	M	30,502	552,434	687,656	347	6,094	1,277,033
	F	2,341	42,259	44,266	36	707	89,609
	T	32,843	594,693	731,922	383	6,801	1,366,642
Electricity, Gas and Water	M	43,390	13,666	--	--	30	57,086
	F	3,336	1,243	--	--	16	4,595
	T	46,726	14,909	--	--	46	61,681
Construction	M	--	92,699	322,662	60	1,356	416,777
	F	--	5,882	2,993	4	101	6,980
	T	--	96,581	325,655	64	1,457	423,757
Commerce, Hotels and Restaurants	M	2,855	44,877	755,413	2,981	1,669	807,795
	F	525	7,500	40,189	300	221	48,736
	T	3,381	52,377	795,602	3,281	1,890	856,531
Transport and Storage	M	164,621	98,018	199,179	43	1,675	463,536
	F	9,108	4,185	2,471	2	61	15,837
	T	173,729	102,213	201,650	45	1,736	479,373
Insurance, Real Estate, Personal Services	M	21,928	26,281	22,484	5	606	71,304
	F	6,676	7,948	1,629	1	249	16,503
	T	28,604	34,229	24,113	6	855	87,807
Social Ser- vices and Personal Services	M	1,179,949	13,576	332,605	3,533	2,997	1,532,660
	F	250,062	4,157	70,226	1,351	1,498	327,294
	T	1,430,011	17,733	402,831	4,884	4,495	1,859,954
Unspecified Activities	M	8,199	6,113	76,895	213	59,872	151,292
	F	1,246	690	13,904	21	15,026	30,887
	T	9,445	6,803	90,799	234	74,898	182,179
TOTAL	M	1,510,824	890,933	7,028,195	21,053	81,486	9,532,491
	F	275,240	73,650	327,575	2,377	18,616	697,458
	T	1,786,064	964,583	7,355,770	23,430	100,102	10,229,949
No activity (unemployed or out of the labor force)	M						5,837,675
	F						14,122,066
	T						19,959,741

Source: 1976 Census Table 16, p. 169.

*"Other" consists of those in "cooperative"
and "foreign and international" sectors.

Table S-31

Percentage Distribution of Egyptian Workers by Sector,
Major Economic Activity and Sex, 1976

		<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Other*</u>	<u>Unspecified</u>	<u>Total</u>
Agriculture	M	1	0.5	97.8	<0.5	<0.5	100.00
and Fishing	F	1	1	96.8	<0.5	<0.5	100.00
	T	1	0.5	97.7	<0.5	<0.5	100.00
Mining and	M	1	56.0	40.6	--	2.5	100.00
Quarrying	F	0.6	36.2	56.0	--	7.3	100.00
	T	7	55.1	41.3	--	2.7	100.00
Manufacturing	M	2.4	43.3	53.8	<0.5	0.5	100.00
	F	2.6	47.2	49.4	<0.5	0.8	100.00
	T	2.4	43.5	53.4	<0.5	0.5	100.00
Electricity,	M	76.0	24.0	--	--	<0.5	100.00
Gas and	F	72.6	27.1	--	--	<0.5	100.00
Water	T	75.7	24.3	--	--	<0.5	100.00
Construction	M	--	22.2	77.4	<0.5	<0.5	100.00
	F	--	55.6	42.9	<0.5	1.4	100.00
	T	--	22.8	76.9	<0.5	<0.5	100.00
Commerce,	M	<0.5	5.6	93.5	<0.5	<0.5	100.00
Hotels and	F	1.1	15.4	82.5	0.6	<0.5	100.00
Restaurants	T	<0.5	6.1	92.9	<0.5	<0.5	100.00
Transport,	M	35.5	21.1	43.0	<0.5	<0.5	100.00
Storage and	F	57.5	26.4	15.6	<0.5	<0.5	100.00
Communication	T	36.2	21.3	42.1	<0.5	<0.5	100.00
Insurance,	M	30.8	36.9	31.6	<0.5	0.8	100.00
Real Estate,	F	40.6	48.2	9.7	<0.5	1.5	100.00
Personal	T	32.6	38.7	27.3	<0.5	1	100.00
Services							
Social Ser-	M	77.0	0.9	21.7	<0.5	<0.5	100.00
vices and	F	76.4	1.3	21.5	<0.5	0.5	100.00
Personal	T	77.0	1.0	21.7	<0.5	<0.5	100.00
Services							
Unspecified	M	5.4	4.0	50.8	<0.5	39.6	100.00
Activities	F	4.0	2.2	45.0	<0.5	48.6	100.00
	T	5.2	3.7	49.8	<0.5	41.1	100.00
TOTAL	M	15.9	9.3	73.1	<0.5	0.9	100.00
	F	39.5	10.6	47.0	<0.5	2.7	100.00
	T	17.5	9.4	71.9	<0.5	1.0	100.00

Source: Calculated from 1976 Census, Table 16, p. 169 (Table S-30)

*"Other" consists of those in "cooperative"
and "foreign and international" sectors.

Table S-32

Sex Composition of Egyptian Workers by Sector
and Major Economic Activity (Percent), 1976

		<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Other</u>	<u>Unspecified</u>	<u>Total</u>
Agriculture and Fishing	M	96.9	95.5	96.8	95.5	91.0	96.8
	F	3.1	4.5	3.2	4.5	9.0	3.2
Mining and Quarrying	M	97.3	97.1	94.2	--	88.3	95.6
	F	2.7	2.9	5.8	--	11.7	4.4
Manufacturing	M	93.0	92.9	93.9	90.5	89.6	95.8
	F	7.0	7.1	6.1	9.5	10.4	4.2
Electricity, Gas & Water	M	92.9	91.9	--	--	65.2	93.4
	F	7.1	8.1	--	--	34.8	6.6
Construction	M	--	96.0	99.1	93.8	93.1	98.3
	F	--	4.0	0.9	6.2	6.9	1.7
Commerce, Hotels and Restaurants	M	84.4	85.9	94.9	90.9	88.3	94.3
	F	15.6	14.1	5.1	9.1	11.7	5.7
Transport & Storage	M	94.8	96.1	98.5	95.6	96.5	96.7
	F	5.2	3.9	1.5	4.4	3.5	3.3
Insurance, Real Estate & Personal Services	M	75.9	76.9	93.8	83.3	70.9	81.2
	F	24.1	23.1	6.2	16.7	29.1	18.8
Social Ser- vices and Personal Services	M	82.5	76.8	82.6	71.5	66.7	82.4
	F	17.5	23.2	17.4	28.5	33.3	17.6
Unspecified Activities	M	86.8	89.9	84.7	91.0	80.0	83.0
	F	13.2	10.1	15.3	9.0	20.0	17.0
TOTAL	M	84.6	92.3	95.5	90.1	81.5	93.2
	F	5.4	7.7	4.5	9.9	18.5	6.8

Source: Calculated from 1976 Census, Table 16, p. 169. (Table S-30)
 *"Other" consists of those in "cooperative"
 and "foreign and international" sectors.

Table S-33

Distribution of Egyptians by Sector, Industry and Sex, 1976
(manufacturing only)

		<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Other*</u>	<u>Unspecified</u>	<u>Total</u>
Food and Beverages Production	M	2,575	70,879	89,049	46	1,100	163,649
	F	187	5,596	3,152	1	178	9,114
	T	2,762	76,475	92,201	47	1,278	172,763
Spinning and Weaving, Leather and Clothes	M	19,318	241,035	236,319	173	2,227	499,072
	F	1,125	18,821	31,904	25	265	52,140
	T	20,443	259,856	268,223	198	2,492	551,212
Wood, Wood Products and Furniture	M	822	4,893	151,688	93	815	158,311
	F	8	298	2,141	9	54	2,510
	T	830	5,191	153,829	102	869	160,821
Paper and Printing and Related Products	M	5,488	18,560	16,869	12	320	41,249
	F	415	1,323	934	1	41	2,714
	T	5,903	19,883	17,803	13	361	43,963
Chemicals, Chemical Products Petroleum Products, Coal and Plastic	M	1,209	68,443	15,231	--	358	85,221
	F	565	8,233	1,603	--	93	10,494
	T	1,774	76,676	16,834	--	431	95,715
Non metallic Mining Products	M	--	23,776	41,458	17	293	65,544
	F	--	1,052	1,570	--	21	2,643
	T	--	24,828	43,028	17	314	68,187
Basic Metal Products	M	--	46,758	13,391	--	261	60,410
	F	--	1,002	245	--	7	1,254
	T	--	47,760	13,636	--	268	61,664
Machinery Productions	M	903	76,622	117,448	6	--	668
	F	15	5,797	2,331	--	--	38
	T	918	82,419	119,779	6	--	706
Other Manufacturing	M	187	1,468	6,203	--	72	7,930
	F	26	137	386	--	10	559
	T	213	1,605	6,589	--	82	8,489
TOTAL Manufacturing	M	30,502	522,343	687,656	347	6,094	1,277,033
	F	2,341	42,259	44,266	36	707	89,609
	T	32,843	564,603	731,922	383	6,801	1,366,642

Source: 1976 Census Table 16, p. 1969

*Cooperative, foreign and international

Table S-34 PERCENTAGE DISTRIBUTION OF EGYPTIAN MANUFACTURING WORKERS

BY SECTOR, INDUSTRY AND SEX

	<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Others</u>	<u>Unspecified</u>	<u>Total</u>
<u>Food and Beverage</u>						
Male	2	43	54	<0.5	0.7	100.0
Female	2	61	35	<0.5	2.0	100.0
Total	2	44	53	<0.5	0.8	100.0
<u>Spinning, Weaving, Leather and Clothes</u>						
Male	4	48	47	<0.5	<0.5	100.0
Female	2	36	62	<0.5	0.5	100.0
Total	4	47	49	<0.5	<0.5	100.0
<u>Wood, Wood Products, and Furniture</u>						
Male	0.5	3	96	<0.5	0.5	100.0
Female	0.5	12	85	<0.5	2.0	100.0
Total	0.5	3	96	<0.5	0.5	100.0
<u>Paper and Printing and Related Products</u>						
Male	13	45	41	<0.5	0.8	100.0
Female	15	49	34	<0.5	1.5	100.0
Total	14	45	40	<0.5	0.8	100.0
<u>Chemicals, Chemical Products, Coal, Petrol.</u>						
Male	1	81	18	--	0.5	100.0
Female	5	78	15	--	0.9	100.0
Total	1.8	80	18	--	0.5	100.0
<u>Non-Metallic Mining</u>						
Male	--	36	63	<0.5	0.5	100.0
Female	--	40	59	--	<0.5	100.0
Total	--	37	63	<0.5	<0.5	100.0
<u>Basic Metal Products</u>						
Male	--	78	22	--	<0.5	100.0
Female	--	80	19	--	0.7	100.0
Total	--	78	22	--	<0.5	100.0
<u>Machinery</u>						
Male					--	
Female				--	--	
Total					--	
<u>Other Manufacturing</u>						
Male	2	19	78	--	0.9	100.0
Female	5	24	69	--	2.0	100.0
Total	3	19	78	--	1	100.0
<u>Total Manufacturing</u>						
Male	2	43	54	<0.5	0.5	100.0
Female	3	47	49	<0.5	0.8	100.0
Total	2	44	54	<0.5	0.5	100.0

Source: Calculated from 1976 Census, Table 16, p. 169 (Table S-33).

Table S-35 Percentage Sex Distribution of Egyptian Manufacturing Workers by Sector, and Industry

	<u>Government</u>	<u>Public</u>	<u>Private</u>	<u>Others</u>	<u>Unspecified</u>	<u>Total</u>
<u>Food and Beverages</u>						
Male	93.2	92.7	96.6	97.9	86.1	94.7
Female	6.8	9.3	3.4	2.1	13.9	5.3
<u>Spinning, weaving, clothes and leather</u>						
Male	93.1	92.7	88.1	87.4	89.4	90.6
Female	6.9	7.3	11.9	12.6	10.6	9.4
<u>Wood, wood products and furniture</u>						
Male	99.0	94.3	98.7	91.2	93.8	98.1
Female	1.0	5.7	1.3	8.8	6.2	1.9
<u>Paper and Printing</u>						
Male	93.2	93.5	94.9	92.3	88.9	93.7
Female	6.8	6.5	5.1	7.7	11.1	6.3
<u>Chemicals, petrol, coal</u>						
Male	68.3	89.2	90.5	--	79.1	89.0
Female	31.7	10.8	9.5	--	20.9	11.0
<u>Non-Metallic Mining</u>						
Male	--	95.8	96.5	100	93.3	96.0
Female	--	4.2	3.5	0	6.7	4.0
<u>Basic Metal Products</u>						
Male	--	97.8	98.5	--	97.4	97.9
Female	--	2.2	1.5	--	2.6	2.1
<u>Machinery</u>						
Male						
Female						
<u>Other Manufacturing</u>						
Male	87.8	93.8	93.9	--	87.8	93.4
Female	12.2	6.2	6.1	--	12.2	6.6
<u>Total Manufacturing</u>						
Male	93.0	92.8	94.0	90.6	89.6	93.4
Female	7.0	7.2	6.0	9.4	10.4	6.6

Source: Calculated from 1976 Census, Table 16, p. 169 (Table S-33).

Table S-36

Distribution of Educational Attainment, Sector, and Sex, 1976

Sector	Educational Level	Illiterate	Literate (Reads & writes)	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	University and higher	Unspecified	TOTAL
Agriculture and Fishing	M	3,631,277	738,240	35,578	13,260	31,683	475	12,302	49,787	4,512,002
	F	117,660	5,275	518	268	2,378	95	1,008	2,396	129,598
	T	3,748,937	743,515	36,096	13,528	34,061	570	13,310	52,183	4,642,200
Mining and quarries	M	14,031	9,168	1,935	816	2,784	208	2,582	287	31,811
	F	451	140	55	77	347	48	272	43	1,433
	T	14,482	9,308	1,990	893	3,131	256	2,854	330	33,244
Manufacturing	M	524,424	474,646	88,892	41,748	88,644	4,620	39,558	8,678	1,271,210
	F	30,436	20,024	7,917	7,143	15,837	1,236	5,754	632	88,979
	T	554,860	494,670	96,809	48,891	104,481	5,856	45,312	9,310	1,360,189
Electricity, water and gas	M	13,772	18,586	4,067	1,901	13,589	677	4,223	256	57,071
	F	171	68	88	252	2,880	245	877	11	4,592
	T	13,943	18,654	4,155	2,153	16,469	922	5,100	267	61,663
Construction	M	222,051	128,473	21,312	7,398	15,640	1,011	11,576	8,163	415,624
	F	1,765	461	227	312	2,317	249	1,428	56	6,815
	T	223,816	128,934	21,539	7,710	17,957	1,260	13,004	8,219	422,439
Commerce, restaurants and hotels	M	184,481	503,462	37,780	17,899	31,269	1,343	18,832	7,036	802,102
	F	12,259	20,185	1,904	2,665	7,343	566	2,806	461	48,189
	T	196,740	523,647	39,684	20,564	38,612	1,909	21,638	7,497	850,291
Transportation, storage, and communication	M	149,255	171,848	62,205	26,316	33,935	2,729	13,847	2,406	462,541
	F	756	403	696	1,517	9,018	825	2,513	45	15,777
	T	150,011	172,251	62,901	27,833	42,953	3,554	16,360	2,451	478,314
Insurance and other services (real insurance)	M	5,045	11,307	8,773	2,431	20,481	1,048	21,929	245	71,259
	F	163	121	408	710	9,520	948	4,596	16	16,482
	T	5,208	11,428	9,181	3,141	30,001	1,996	26,525	261	87,741
Social services and personal services	M	328,241	406,670	121,806	76,259	312,789	35,590	241,137	8,118	1,530,610
	F	62,218	14,971	4,977	9,804	139,198	20,426	71,753	1,812	325,159
	T	390,459	421,641	126,783	86,063	451,987	56,016	312,890	9,930	1,855,769
Unspecified activities	M	67,192	37,097	7,783	5,160	13,560	738	8,896	4,470	144,896
	F	15,558	3,100	1,158	1,081	4,451	437	2,191	995	28,971
	T	82,750	40,197	8,941	6,241	18,011	1,175	11,087	5,465	173,867
TOTAL	M	5,139,769	2,499,497	390,131	193,188	564,374	48,439	374,882	89,416	9,209,726
	F	241,437	64,748	17,948	23,829	193,289	25,075	93,198	6,467	665,991
	T	5,381,206	2,564,245	408,079	217,017	757,663	73,514	468,080	95,913	9,965,717

Source: 1976 Census, Table 17, p. 174.

Table S-37

Percentage Distribution of Educational Attainment by Sector and Sex, 1976

		Illiterate	Literate (Reads & writes)	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	University and higher	Unspecified	TOTAL
Agriculture and Fishing	M	80	16	0.8	0.3	0.7	0.01	0.3	1	100
	F	91	4	0.4	0.2	2	0.07	0.8	2	100
	T	81	16	0.8	0.3	0.7	0.01	0.3	1	100
Mining and Quarrying	M	44	29	6	3	9	0.7	8	0.9	100
	F	31	10	4	5	24	3	19	3	100
	T	44	28	6	3	10	0.8	9	1	100
Manufacturing	M	41	37	7	3	7	0.3	3	0.7	100
	F	34	23	9	8	18	1	6	0.7	100
	T	41	36	7	4	8	0.4	3	0.7	100
Electricity, Gas and Water	M	24	33	7	3	24	1	7	0.4	100
	F	4	1	2	5	63	5	19	0.2	100
	T	23	30	7	3	27	1	8	0.4	100
Construction	M	53	31	5	2	4	0.2	3	2	100
	F	26	7	3	5	34	4	21	0.8	100
	T	53	31	5	2	4	0.3	3	2	100
Commerce, Restaurants and Hotels	M	23	63	5	2	4	0.2	2	0.9	100
	F	25	42	4	6	15	1	6	1	100
	T	23	62	5	2	5	0.2	3	0.9	100
Transportation, Storage and Communication	M	32	37	15	6	7	0.6	3	0.5	100
	F	5	3	4	10	57	5	16	0.3	100
	T	31	36	13	6	9	0.7	3	0.5	100
Insurance and Other Services (real services)	M	7	16	12	3	29	1	31	0.3	100
	F	1	0.7	2	4	58	6	29	0.09	100
	T	6	13	10	4	34	2	30	0.3	100
Social Services and Personal Services	M	21	27	8	5	20	2	16	0.5	100
	F	19	5	2	3	43	6	22	0.6	100
	T	21	23	7	5	24	3	17	0.5	100
Unspecified Activities	M	46	26	5	4	10	0.5	6	3	100
	F	54	11	4	4	15	2	8	3	100
	T	48	23	5	4	10	0.7	6	3	100

Source: Calculated from 1976 Census, Table 11, p. 145 (Table S-30)

Table S-33

Distribution of Educational Attainment by Industry and Sex, 1976
(manufacturing only)

Educational Level		Illiterate	Literate (Reads & writes)	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	University and higher	Unspecified	TOTAL
Manufacturing										
Food, Tobacco & Beverages	M	77,279	52,801	10,633	3,912	10,936	404	5,995	1,211	163,081
	F	2,933	1,752	686	521	2,124	167	791	69	9,043
	T	80,212	54,553	11,319	4,433	13,060	571	6,696	1,280	172,124
Spinning, Weaving, Clothing and Leather	M	185,593	215,664	37,497	18,166	26,865	743	9,070	3,328	496,926
	F	2,262	15,397	5,067	2,989	4,182	248	1,248	422	51,815
	T	207,855	231,061	42,564	21,155	31,047	991	10,318	3,750	548,741
Wood and Furniture	M	88,346	56,769	6,631	1,669	1,165	36	713	1,308	156,637
	F	1,391	396	178	74	234	19	77	43	2,412
	T	89,737	57,165	6,809	1,743	1,399	55	790	1,351	159,049
Paper and Printing	M	10,835	16,780	4,631	1,881	3,908	195	2,755	207	41,192
	F	373	195	211	242	982	93	591	9	2,696
	T	11,208	16,975	4,842	2,123	4,890	288	3,346	216	43,888
Chemical, Coal, Petroleum Products, Rubber and Plastic	M	23,372	28,971	7,264	4,187	12,580	793	7,594	409	85,170
	F	1,132	1,314	1,096	1,841	3,266	271	1,536	33	10,489
	T	24,504	30,285	8,360	6,028	15,846	1,064	9,130	442	95,659
Non-metallic Mining products (except petroleum & coal)	M	36,930	18,338	3,074	1,280	3,164	141	1,496	612	65,015
	F	1,287	215	95	181	529	51	198	21	2,577
	T	38,217	18,553	3,169	1,461	3,693	192	1,674	633	67,592
Metal products (Basic)	M	20,277	19,054	3,907	3,001	9,459	686	3,642	331	60,357
	F	117	70	51	123	578	51	258	2	1,250
	T	20,394	19,124	3,950	3,124	10,037	737	3,900	333	61,607
Machinery	M	78,108	63,663	14,674	7,427	20,087	1,594	8,187	1,211	194,951
	F	740	593	493	1,136	3,817	326	1,015	26	8,146
	T	78,848	64,256	15,167	8,563	23,904	1,920	9,202	1,237	203,097
Other Manufacturing	M	3,684	2,606	581	225	480	28	216	61	7,881
	F	201	92	40	36	125	10	40	7	551
	T	3,885	2,698	621	261	605	38	256	68	8,432
TOTAL	M	524,424	474,646	88,892	41,748	88,644	4,620	39,558	8,687	1,271,210
	F	30,436	20,024	7,917	7,143	15,837	1,236	5,754	632	88,979
	T	554,860	494,670	96,809	48,891	104,481	5,856	45,312	9,310	1,360,189

Source: 1976 Census, Table 17, p. 174.

Table S-39

Percentage Distribution of Educational Attainment by Industry and Sex, 1976

(manufacturing only)

		Illiterate	Literate (Reads & writes)	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	University	Unspecified	TOTAL
Food, Tobacco and Beverages	M	47	32	7	2	7	0.2	4	0.7	100
	F	32	19	8	6	23	2	9	0.8	100
	T	47	32	7	3	8	0.3	4	0.7	100
Spinning, Weaving, Clothing and Leather	M	37	43	8	4	5	0.1	2	0.7	100
	F	43	30	10	6	8	0.5	2	0.8	100
	T	38	42	8	4	6	0.2	2	0.7	100
Wood and Furniture	M	56	36	4	1	0.7	<0.1	6.5	0.8	100
	F	58	16	7	3	10	0.8	3	2	100
	T	56	36	4	1	0.9	<0.1	0.5	0.8	100
Paper and Printing	M	26	41	11	5	9	0.4	7	6.5	100
	F	14	7	8	9	36	5	22	0.3	100
	T	26	39	11	5	11	0.6	8	0.5	100
Chemicals, Coal, Petroleum Products, Rubber and Plastic	M	27	34	8	5	15	0.9	9	0.5	100
	F	11	13	10	18	31	3	15	0.3	100
	T	26	32	9	6	17	1	10	0.5	100
Non-metallic Mining products (except petroleum & coal)	M	57	28	5	2	5	0.2	2	0.9	100
	F	50	8	4	7	21	2	8	0.8	100
	T	57	27	5	2	5	0.3	2	0.9	100
Metal products (Basic)	M	34	32	6	5	16	1	6	0.5	100
	F	9	6	4	10	46	4	21	0.2	100
	T	33	31	6	5	16	1	6	0.5	100
Machinery	M	40	33	8	4	10	0.8	4	0.6	100
	F	9	7	6	14	47	4	12	0.3	100
	T	39	32	7	4	12	0.9	5	0.6	100
Other Manufacturing	M	47	33	7	3	6	0.4	3	0.8	100
	F	36	17	7	7	23	2	7	1	100
	T	46	32	7	3	7	0.4	3	0.8	100
TOTAL	M	41	37	7	3	7	0.3	3	0.7	100
	F	34	23	9	8	18	1	6	0.7	100
	T	41	36	7	4	8	0.4	3	0.7	100

Source: Calculated from 1976 Census Table 17, p. 174

Table S-40

Age Distribution of Egyptians by Sector and Sex, 1976

		<u>0-10</u>	<u>11-20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>50+</u>	<u>Unspecified</u>	<u>Total</u>
Agriculture and Fishing	M	371,669	1,440,174	817,725	810,634	673,766	608,628	463	4,723,059
	F	42,615	65,522	13,628	13,811	11,528	7,435	25	155,564
	T	414,284	1,505,696	831,353	824,445	685,294	616,063	488	4,878,623
Mining and Quarrying	M	289	5,126	8,841	8,501	6,412	2,761	29	31,949
	F	40	533	539	225	72	24	-	1,453
	T	329	5,679	9,380	8,726	6,484	2,785	29	33,402
Manufacturing	M	16,064	346,801	357,349	280,617	181,585	94,389	228	1,277,033
	F	1,506	42,076	30,294	9,757	3,925	2,037	14	89,609
	T	17,570	388,877	387,643	290,374	185,510	96,426	242	1,366,642
Electricity, Gas and Water	M	52	7,806	23,486	13,905	8,641	3,094	2	57,086
	F	8	1,891	2,329	282	73	12	-	4,595
	T	60	9,697	25,815	14,187	8,714	3,106	2	61,681
Construction	M	3,156	146,916	105,253	77,733	52,071	31,573	75	416,777
	F	301	3,032	2,688	640	192	123	4	6,980
	T	3,457	149,948	107,942	78,373	52,263	31,696	79	423,757
Commerce, Restaurants and Hotels	M	11,615	145,289	159,168	189,422	164,875	137,308	118	807,795
	F	924	11,321	12,030	9,758	8,057	6,591	15	48,736
	T	12,579	156,610	171,198	203,180	172,932	143,899	133	856,531
Transportation, Storage and Communication	M	2,178	55,853	142,901	130,466	91,828	40,277	33	463,536
	F	104	4,597	8,447	2,087	462	137	3	15,837
	T	2,282	60,450	151,348	132,553	92,290	40,414	36	479,373
Insurance and Services (real estate)	M	157	7,483	23,786	19,732	12,717	7,410	19	71,304
	F	58	5,620	8,309	2,076	348	85	8	16,503
	T	215	13,098	32,095	21,808	13,065	7,495	27	87,807
Social and Personal Services	M	6,033	235,323	525,226	371,419	264,517	129,866	176	1,532,660
	F	6,885	98,700	136,105	54,827	21,742	8,958	69	327,294
	T	12,918	334,031	661,331	426,246	286,259	138,824	245	1,859,954
Unspecified Activities	M	11,735	45,637	29,747	19,213	14,210	29,666	1,084	151,292
	F	3,464	10,284	6,712	4,507	3,014	2,625	281	30,887
	T	15,199	55,921	36,459	23,720	17,224	32,291	1,365	182,179

Source: Derived from 1976 Census, Table 19, p. 196.

Table S-41

Percentage Age Distribution of Egyptians by Sector and Sex, 1976

		0-10	11-20	21-30	31-40	41-50	50+	Unspecified	Total
Agriculture and Fishing	M	8	30	17	17	14	13	<0.5	100
	F	28	42	9	9	7	5	<0.5	100
	T	8	31	17	17	14	13	<0.5	100
Mining and Quarrying	M	7	16	28	27	20	9	<0.5	100
	F	3	37	37	16	5	1	--	100
	T	7	17	28	26	19	8	<0.5	100
Manufacturing	M	7	27	28	22	14	7	<0.5	100
	F	2	47	33	11	4	2	<0.5	100
	T	7	28	28	21	14	7	<0.5	100
Electricity, Gas and Water	M	<0.5	14	41	25	15	5	<0.5	100
	F	<0.5	41	50	7	2	0	--	100
	T	<0.5	16	42	23	14	5	<0.5	100
Construction	M	1	35	25	19	12	8	<0.5	100
	F	4	43	39	9	3	1	<0.5	100
	T	1	36	25	18	12	8	<0.5	100
Commerce, Restaurants and Hotels	M	1	18	20	24	20	17	<0.5	100
	F	2	23	24	20	17	13	<0.5	100
	T	7	18	20	24	20	17	<0.5	100
Transportation, Storage and Communication	M	<0.5	12	31	28	20	9	<0.5	100
	F	<0.5	1	29	57	13	3	<0.5	100
	T	<0.5	12	31	29	19	8	<0.5	100
Insurance and Services (real estate)	M	<0.5	11	34	28	18	10	<0.5	100
	F	<0.5	34	50	13	2	1	<0.5	100
	T	<0.5	15	36	25	15	9	<0.5	100
Social and Personal Services	M	<0.5	15	34	24	17	8	<0.5	100
	F	<0.5	30	42	17	7	3	<0.5	100
	T	<0.5	18	36	23	15	7	<0.5	100
Unspecified Activities	M	8	30	20	13	9	20	7	100
	F	11	32	23	15	10	8	7	100
	T	8	31	20	13	9	18	1	100

Source: Calculated from 1976 Census, Table 19, p. 196.

Table S-42

Age Distribution
Distribution of Egyptians by Industry and Sex
(manufacturing only)

		<u>0-10</u>	<u>11-20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>50+</u>	<u>Unspecified</u>	<u>Total</u>
Food, Beverages and Tobacco products	M	1,436	32,952	43,015	42,438	29,452	14,316	40	163,649
	F	145	3,958	3,412	963	410	226	--	9,114
	T	1,581	36,910	46,429	43,401	29,862	14,542	40	172,763
Spinning, Weav- ing, Clothing and Leather	M	5,735	139,651	140,487	103,934	71,620	37,567	78	499,072
	F	856	27,736	14,175	5,367	2,606	1,392	8	52,140
	T	6,591	167,387	154,662	109,301	74,226	38,959	86	551,212
Wood, Wood products and Furniture	M	4,961	63,297	32,188	25,364	17,030	15,422	49	158,311
	F	203	1,145	498	282	201	178	3	2,510
	T	5,164	64,442	32,686	25,646	17,231	15,600	52	160,821
Paper and Printing	M	203	8,903	12,650	10,445	6,305	2,726	17	41,249
	F	36	1,009	1,142	373	114	38	2	2,714
	T	239	9,912	13,792	10,818	6,419	2,764	19	43,963
Chemicals, Coal and Petroleum products	M	121	12,269	29,185	25,066	14,018	4,554	8	85,221
	F	19	3,492	5,345	1,316	243	78	--	10,494
	T	140	15,761	34,530	26,382	14,261	4,632	8	95,715
Non metallic Mining (ex. Coal & Petrol.)	M	1,259	16,796	16,079	15,229	10,592	5,581	8	65,544
	F	151	1,197	775	304	159	57	--	2,643
	T	1,410	17,993	16,854	15,533	10,751	5,638	8	68,187
Basic Metal products	M	145	12,695	21,660	15,636	8,105	2,161	8	60,410
	F	6	416	642	149	34	7	--	1,254
	T	151	13,111	22,302	15,785	8,139	2,168	8	61,664
Machinery	M	2,058	57,600	60,128	41,023	23,469	11,348	19	195,647
	F	69	2,844	4,154	942	131	40	1	8,181
	T	2,129	60,444	64,282	41,965	23,600	11,388	20	203,828
Other manufac- turing	M	144	2,638	1,957	1,482	994	714	1	7,930
	F	21	279	151	60	27	21	--	559
	T	165	2,917	2,108	1,542	1,021	735	1	8,489
TOTAL:	M	10,064	346,801	357,349	280,617	181,585	94,389	228	1,277,033
	F	1,506	42,076	30,294	9,757	3,925	2,037	14	89,609
	T	7,570	388,877	387,643	290,374	185,510	96,426	242	1,366,642

Source: Derived from 1976 Census, Table 19, p. 196.

Table S-43

Percentage Age Distribution of Egyptians in Manufacturing
by Industry and Sex, 1976

		Age:	<u>0-10</u>	<u>11-20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>50+</u>	<u>Unspecified</u>	<u>Total</u>
Industry:	Sex:									
Food, Beverages and Tobacco production	M	1	20	26	26	18	9	<0.5	100	
	F	2	44	38	11	4	2	--	100	
	T	1	21	27	25	17	8	<0.5	100	
Spinning, Weaving, Clothing and Leather	M	7	28	28	21	14	8	<0.5	100	
	F	2	54	27	10	5	3	<0.5	100	
	T	1	30	28	20	13	7	<0.5	100	
Wood, Wood products and Furniture	M	3	40	20	16	11	10	<0.5	100	
	F	7	48	20	11	8	7	<0.5	100	
	T	3	40	20	16	11	10	<0.5	100	
Paper and Printing	M	<0.5	22	31	25	15	7	<0.5	100	
	F	<0.5	38	42	14	4	1	<0.5	100	
	T	<0.5	23	32	25	15	6	<0.5	100	
Chemicals, Coal and Petroleum products	M	<0.5	14	34	29	16	5	<0.5	100	
	F	<0.5	33	51	12	2	1	--	100	
	T	<0.5	17	36	28	15	5	<0.5	100	
Non metallic Mining (excluding Coal & Petroleum)	M	2	26	24	23	16	9	<0.5	100	
	F	6	46	29	12	6	2	--	100	
	T	2	26	25	23	16	8	<0.5	100	
Basic Metal products	M	<0.5	21	36	26	13	3	<0.5	100	
	F	<0.5	33	51	12	3	1	<0.5	100	
	T	<0.5	21	36	26	13	3	<0.5	100	
Machinery	M	1	30	31	21	12	6	<0.5	100	
	F	1	35	50	12	2	1	--	100	
	T	1	30	31	21	12	15	<0.5	100	
Other Manufacturing	M	2	33	25	19	13	9	<0.5	100	
	F	4	50	27	11	5	4	--	100	
	T	2	34	25	18	12	9	<0.5	100	
TOTAL	M	1	27	28	22	14	7	<0.5	100	
	F	2	47	33	11	4	2	<0.5	100	
	T	1	28	28	21	14	7	<0.5	100	

Source: Calculated from 1976 Census Table 19, p. 196.

Table S-44

Distribution of Managers and Businessmen by Sector of Employment, Educational Attainment and Sex, 1976

		Illiterate	Literate reads and writes	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate less than University	First University degree	Higher Diploma	Masters	Ph.D.	Unspecified	Total
Government	M	--	48	6	4	4,214	223	6,084	194	178	81	19	11,051
	F	--	--	--	--	210	30	486	11	14	5	--	756
	T	--	48	6	4	4,424	253	6,570	205	192	86	19	11,807
Public	M	--	156	19	12	3,301	230	6,538	220	172	68	88	10,804
	F	--	--	--	--	80	25	368	2	4	--	--	479
	T	--	156	19	12	3,381	255	6,906	222	176	68	88	11,283
Private	M	--	6,052	800	410	9,617	209	3,509	90	94	71	3,212	24,064
	F	--	11	2	5	350	10	175	1	4	1	9	568
	T	--	6,063	802	415	9,967	219	3,684	91	98	72	3,221	24,632
Cooperative	M	--	1	--	--	161	1	63	--	--	--	--	226
	F	--	--	--	--	1	--	2	--	--	--	--	3
	T	--	1	--	--	162	1	65	--	--	--	--	229
Foreign International Diplomat	M	--	--	--	1	23	1	49	--	4	4	--	82
	F	--	--	--	--	2	1	8	--	--	--	--	11
	T	--	--	--	1	25	2	57	--	4	4	--	93
Unspecified	M	--	6	--	--	83	1	59	--	--	1	6	156
	F	--	--	--	--	24	--	8	--	1	1	--	34
	T	--	6	--	--	107	1	67	--	1	2	6	190
Total	M	--	6,263	825	427	17,399	660	16,302	504	448	225	3,325	46,383
	F	--	11	2	5	667	66	1,047	14	23	7	9	1,851
	T	--	6,274	827	432	18,066	731	17,349	518	471	232	3,334	48,234

Source: 1976 Census, Table 22, pp. 239-322.

Table S-45

Distribution of Accountants by Sector of Employment, Educational Attainment and Sex, 1976

		Illiterate	Literate reads and writes	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	First University degree	Higher Diploma	Masters	Ph.D.	Unspecified	Total
Government	M	--	--	--	--	1	--	27,632	188	94	14	--	27,929
	F	--	--	--	--	--	--	8,038	15	9	3	--	
	T	--	--	--	--	1	--	35,670	203	103	17	--	
Public	M	--	--	--	--	1	--	19,509	148	79	1	--	19,738
	F	--	--	--	--	--	--	4,611	9	7	1	--	
	T	--	--	--	--	1	--	24,120	157	86	2	--	
Private	M	--	--	--	--	1	--	8,462	66	37	5	--	8,571
	F	--	--	--	--	--	--	1,271	5	1	--	--	
	T	--	--	--	--	1	--	9,733	71	38	5	--	
Cooperative	M	--	--	--	--	--	--	246	--	--	--	--	246
	F	--	--	--	--	--	--	41	--	--	--	--	
	T	--	--	--	--	--	--	287	--	--	--	--	
Foreign International Diplomat	M	--	--	--	--	--	--	155	--	2	--	--	152
	F	--	--	--	--	--	--	54	--	--	--	--	
	T	--	--	--	--	--	--	209	--	2	--	--	
Unspecified	M	--	--	--	--	--	--	286	1	1	--	--	288
	F	--	--	--	--	--	--	68	--	1	--	--	
	T	--	--	--	--	--	--	354	1	2	--	--	
Total	M	--	--	--	--	3	--	56,290	403	20	20	--	56,929
	F	--	--	--	--	--	--	14,083	29	4	4	--	
	T	--	--	--	--	3	--	70,373	432	24	24	--	
													71,063

Source: 1976 Census, Table 22, pp. 239-322.

Table S-46

Distribution of Lawyers by Sector of Employment, Educational Attainment and Sex, 1976

		Illiterate	Literate reads and writes	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate less than University	First University degree	Higher Diploma	Masters	Ph.D.	Unspecified	Total
Government	M	--	226	92	61	439	42	14,133	346	35	135	46	15,555
	F	--	10	3	8	52	11	1,953	11	4	4	2	2,058
	T	--	236	95	69	491	53	16,086	357	39	139	48	17,613
Public	M	--	--	--	--	--	--	2,691	35	4	7	--	2,737
	F	--	--	--	--	--	--	435	3	--	--	--	438
	T	--	--	--	--	--	--	3,126	38	4	7	--	3,175
Private	M	--	1,215	236	141	284	7	5,798	60	8	54	6	7,809
	F	--	1	1	--	--	--	292	1	1	1	--	297
	T	--	1,216	237	141	284	7	6,090	61	9	55	6	8,106
Cooperative	M	--	--	--	--	--	--	10	--	--	--	--	10
	F	--	--	--	--	--	--	1	--	--	--	--	1
	T	--	--	--	--	--	--	11	--	--	--	--	11
Foreign International Diplomat	M	--	--	--	--	--	--	35	--	--	--	--	35
	F	--	--	--	--	--	--	--	--	--	--	--	--
	T	--	--	--	--	--	--	35	--	--	--	--	35
Unspecified	M	--	1	1	--	1	--	85	2	1	9	1	101
	F	--	--	--	--	--	--	12	1	--	--	--	13
	T	--	1	1	--	1	--	97	3	1	9	1	114
Total	M	--	1,442	329	202	724	49	22,752	443	48	205	53	26,247
	F	--	11	4	8	52	11	2,693	16	5	5	2	2,807
	T	--	1,453	333	210	776	60	25,445	459	53	210	55	29,054

Source: 1976 Census, Table 22, pp. 239-322.

Table S-47

Distribution of Engineers & Professionals by Sector of
Employment, Educational Attainment and Sex, 1976

	<u>Illiterate</u>	<u>Literate</u>	<u>Elementary</u>	<u>Less than Intermediate Certificate</u>	<u>Intermediate Certificate</u>	<u>More than intermediate less than University</u>	<u>First University Degree</u>	<u>Higher Diploma</u>	<u>Masters'</u>	<u>Ph.D</u>	<u>Un Specified</u>	<u>Total</u>
<u>Government</u>												
Male	--	--	--	--	35,330	3,762	19,728	102	101	142	--	59,165
Female	--	--	--	--	938	242	2,368	9	25	14	--	3,595
Total	--	--	--	--	36,268	4,004	22,095	111	126	156	--	62,760
<u>Public</u>												
Male	--	--	--	--	29,328	2,180	16,576	99	81	19	--	48,283
Female	--	--	--	--	819	113	1,531	5	8	--	--	2,476
Total	--	--	--	--	30,147	2,293	18,107	104	89	19	--	50,759
<u>Private</u>												
Male	--	--	--	--	8,608	763	7,613	55	51	53	--	17,143
Female	--	--	--	--	203	34	475	1	1	1	--	715
Total	--	--	--	--	8,811	797	8,088	56	52	54	--	17,858
<u>Foreign, International or Diplomat</u>												
Male	--	--	--	--	51	2	69	1	1	2	--	126
Female	--	--	--	--	--	--	4	--	--	--	--	4
Total	--	--	--	--	51	2	73	1	1	2	--	130
<u>Unspecified</u>												
Male	--	--	--	--	384	26	475	1	5	1	--	892
Female	--	--	--	--	30	2	47	--	--	--	--	79
Total	--	--	--	--	414	28	522	1	5	1	--	971
<u>Total</u>												
Male	--	--	--	--	73,701	6,733	44,461	258	239	217	--	125,609
Female	--	--	--	--	1,990	391	4,424	15	34	15	--	6,869
Total	--	--	--	--	75,691	7,124	48,885	273	273	232	--	132,478

Source: 1976 Census, Table 22, pp. 239-322.

Table S-48

Distribution of Scientific Professionals by Sector of Employment,
Educational Attainment and Sex, 1976

		Illiterate	Literate reads and writes	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate less than University	First University degree	Higher Diploma	Masters	Ph.D.	Unspecified	Total
Government	M	--	--	--	--	1,986	142	6,245	45	61	30	--	8,509
	F	--	--	--	--	656	130	8,306	27	28	7	--	9,154
	T	--	--	--	--	2,642	272	14,551	72	89	37	--	17,663
Public	M	--	--	--	--	901	62	1,033	14	7	--	--	2,017
	F	--	--	--	--	179	46	805	3	4	--	--	1,037
	T	--	--	--	--	1,080	108	1,838	17	11	--	--	3,054
Private	M	--	--	--	--	1,191	20	431	8	5	1	--	1,656
	F	--	--	--	--	115	18	473	2	6	--	--	614
	T	--	--	--	--	1,306	38	904	10	11	1	--	2,270
Cooperative	M	--	--	--	--	--	--	--	--	--	--	--	--
	F	--	--	--	--	--	--	--	--	--	--	--	--
	T	--	--	--	--	--	--	--	--	--	--	--	--
Foreign International Diplomat	M	--	--	--	--	31	--	66	3	5	4	--	109
	F	--	--	--	--	14	2	70	2	1	--	--	89
	T	--	--	--	--	45	2	136	5	6	4	--	198
Unspecified	M	--	--	--	--	64	4	46	1	--	--	--	115
	F	--	--	--	--	10	1	46	1	--	--	--	58
	T	--	--	--	--	74	5	92	2	--	--	--	173
Total	M	--	--	--	--	4,173	228	7,821	71	78	35	--	62,406
	F	--	--	--	--	974	197	9,700	35	39	7	--	10,952
	T	--	--	--	--	5,147	425	17,521	106	117	42	--	23,358

Source: 1976 Census, Table 22, pp 239-322.

Table S-49

Distribution of Teachers by Sector of Employment, Educational Attainment and Sex, 1976

		Illiterate	Literate reads and writes	Elementary	Less than Intermediate Certificate	Intermediate Certificate	Higher than Intermediate lower than University	First University degree	Higher Diploma	Masters	Ph.D.	Unspecified	Total
Government	M	--	--	--	3,881	79,073	14,937	60,720	1,133	1,633	3,487	--	164,864
	F	--	--	--	1,926	43,765	11,664	24,724	198	528	541	--	83,346
	T	--	--	--	5,807	122,838	26,601	85,444	1,331	2,161	4,028	--	248,210
Public	M	--	--	--	177	1,049	137	755	11	22	39	--	2,190
	F	--	--	--	83	480	107	331	3	9	2	--	1,015
	T	--	--	--	260	1,529	244	1,086	14	31	41	--	3,205
Private	M	--	--	--	1,366	2,390	350	1,735	39	47	86	--	6,013
	F	--	--	--	945	2,323	334	1,257	10	34	17	--	4,920
	T	--	--	--	2,311	4,713	684	2,992	49	81	103	--	10,933
Cooperative	M	--	--	--	8	6	--	8	--	--	--	--	22
	F	--	--	--	1	6	1	1	--	--	--	--	9
	T	--	--	--	9	12	1	9	--	--	--	--	31
Foreign International Diplomat	M	--	--	--	4	1	--	1	--	--	--	--	6
	F	--	--	--	1	2	1	--	--	--	--	--	4
	T	--	--	--	5	3	1	1	--	--	--	--	10
Unspecified	M	--	--	--	53	509	103	454	7	13	24	--	1,163
	F	--	--	--	32	282	72	181	3	6	1	--	577
	T	--	--	--	85	791	175	635	10	19	25	--	1,740
TOTAL	M	--	--	--	5,489	83,028	15,527	63,673	1,190	1,715	3,636	--	174,258
	F	--	--	--	2,988	46,858	12,179	26,494	214	577	561	--	89,871
	T	--	--	--	8,477	129,886	27,706	90,167	1,404	2,292	4,197	--	264,129

Source: 1976 Census, Table 22, pp. 239-322.

Table S-50

Distribution of Doctors, Dentists and Veterinarians by Sector of
Employment, Educational Attainment and Sex, 1976

	<u>Illiterate</u>	<u>Literate</u>	<u>Elementary</u>	<u>Less than intermediate Certificate</u>	<u>Intermediate Certificate</u>	<u>More than intermediate less than University</u>	<u>First University Degree</u>	<u>Higher Diploma</u>	<u>Masters'</u>	<u>Ph.D</u>	<u>Un- Specified</u>	<u>Total</u>
<u>Government</u>												
Male	306	1,960	456	473	5,341	2,288	17,534	730	288	390	17	29,783
Female	737	1,513	630	1,213	25,313	896	7,743	197	111	68	48	38,469
Total	1,043	3,473	1,086	1,686	30,654	3,184	25,277	927	399	458	65	68,252
<u>Public</u>												
Male	70	481	105	86	575	90	1,520	45	25	28	4	3,029
Female	66	118	35	48	1,268	42	669	18	8	5	2	2,279
Total	136	599	140	134	1,843	132	2,189	63	33	33	6	5,308
<u>Private</u>												
Male	123	649	81	81	689	68	4,179	121	58	147	4	6,200
Female	268	720	119	91	1,002	25	674	18	6	5	13	2,941
Total	391	1,369	200	172	1,691	93	4,853	139	64	152	17	9,141
<u>Cooperative</u>												
Male	--	--	--	--	6	--	9	--	--	--	--	15
Female	--	1	--	--	--	--	--	--	--	--	--	1
Total	--	1	--	--	6	--	9	--	--	--	--	16
<u>Foreign, International or Diplomat</u>												
Male	--	1	--	1	5	1	25	1	--	2	--	36
Female	--	2	1	1	6	--	2	--	--	--	--	12
Total	--	3	1	2	11	1	27	1	--	2	--	48
<u>Unspecified</u>												
Male	--	26	6	4	33	7	140	4	--	4	1	225
Female	11	9	4	5	165	8	49	1	--	1	2	255
Total	11	35	10	9	198	15	189	5	--	5	3	480
<u>Total</u>												
Male	499	3,117	648	645	6,649	2,454	23,407	901	371	571	26	39,288
Female	1,082	2,363	789	1,358	27,754	971	9,137	234	125	79	63	43,957
Total	1,581	5,480	1,437	2,003	34,403	3,425	32,544	1,135	496	650	91	83,245

Source: 1976 Census, Table 22, pp. 239-322.

Table S-51: Educational Enrollments by Program and Sex, 1973-1979

		1973-74		1974-75		1975-76		1976-77		1977-78		1978-79*	
		Number	%										
Primary	Male	2,422,052	64	2,518,121	63	2,535,663	60	2,541,505	59	2,560,130	58	2,589,615	57
	Female	1,497,809	69	1,556,772	67	1,585,273	65	1,610,451	63	1,651,215	62	1,697,509	61
	Total	3,919,861	66	4,074,893	65	4,120,936	62	4,151,956	60	4,211,345	59	4,287,124	59
Preparatory	Male	727,131	19	786,981	20	869,486	21	925,299	21	969,011	22	979,626	22
	Female	372,571	17	412,820	18	469,577	19	510,230	20	549,467	21	567,682	20
	Total	1,099,702	18	1,199,801	19	1,339,063	20	1,435,529	21	1,518,478	21	1,547,308	21
Secondary-General	Male	217,515	6	226,784	6	236,143	6	256,982	6	268,862	6	283,140	6
	Female	106,088	5	113,542	5	122,176	5	135,879	5	147,346	6	159,935	6
	Total	323,603	5	340,326	5	358,319	5	392,861	6	416,208	6	443,075	6
Secondary-Technical	Male	214,139	6	227,953	6	247,185	6	262,377	6	276,048	6	303,979	7
	Female	104,911	5	116,671	5	126,851	5	141,173	6	156,061	6	181,190	7
	Total	319,050	5	344,624	5	374,036	6	403,550	6	432,109	6	485,169	7
Secondary-Total	Male	431,654	11	454,737	11	483,328	11	519,359	12	544,910	12	587,119	13
	Female	210,999	10	230,213	10	249,027	10	277,052	11	303,407	12	341,125	12
	Total	642,653	11	684,950	11	732,355	11	796,411	12	848,317	12	928,244	13
Training Colleges	Male	17,787	0.5	18,865	0.5	18,505	0.5	18,284	0.5	19,899	0.5	21,317	0.5
	Female	13,441	1	14,410	1	14,509	1	14,460	1	16,623	1	19,278	1
	Total	31,228	0.5	33,275	0.5	33,014	0.5	32,744	0.5	36,522	0.5	40,595	1
University	Male	195,637	5	224,799	6	296,650	7	317,519	7	334,701	8	335,973	7
	Female	80,426	4	95,501	4	124,934	5	136,131	5	141,835	5	149,691	5
	Total	276,063	5	320,100	5	421,584	6	453,650	7	476,536	7	485,664	7
Total Enrollments	Male	3,794,251	100	4,003,503	100	4,203,632	100	4,321,966	100	4,428,651	100	4,513,650	100
	Female	2,175,246	100	2,309,516	100	2,443,320	100	2,548,524	100	2,662,547	100	2,775,285	100
	Total	5,969,497	100	6,313,019	100	6,646,952	100	6,870,290	100	7,091,198	100	7,288,935	100

Source: Derived from CAPMAS, Statistical Indicators, July 1980, pp. 152-164.

* Estimated values.

Table S-52

Higher Institute and University Graduates: Expected Supply and Demand, 1977-1980

Universities & Higher Institutions	1977				1978				1979				1980			
	gradu- ates	expec- ted demand	Balance defi- cit	sur- plus												
Art	5324	4130	-	1194	6302	4889	-	1413	7019	5445	-	1574	7890	6121	-	1769
Law	4266	8532	4266	-	4942	9884	4942	-	4848	9696	4848	-	5476	10952	5476	-
Commerce	11201	19330	8129	-	13531	23351	9820	-	14954	25807	10853	-	16589	28629	12040	-
Political Science & Economy	356	504	148	-	392	555	163	-	431	610	179	-	474	671	197	-
Science	3893	2021	-	1872	4927	2402	-	2225	5707	2963	-	2744	6920	3592	-	3328
Agriculture	6172	3204	-	2968	6997	3632	-	3365	7051	3660	-	3391	7678	3986	-	3692
Languages	53	289	136	-	166	313	147	-	179	338	159	-	192	362	170	-
Fine Arts	551	231	-	330	669	275	-	394	679	279	-	400	809	333	-	476
Technical Arts	333	414	81	-	358	445	87	-	255	317	62	-	362	450	88	-
Social Services	636	602	-	84	1060	930	-	130	1317	1156	-	161	1448	1271	1	177

Source: The general department of labour force researches (Ministry of Manpower), 1977.

Reproduced from Institute for National Planning, Factors Affecting Public Sector Salaries Policy in Egypt (Cairo: December 1979), p. 170

Table S-53

University Enrollments by Faculty and Sex, 1973-1979

		<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79*</u>
<u>Humanities</u>							
Arts	M	11,332	13,816	18,399	23,104	23,004	23,947
	F	13,880	16,553	19,580	19,790	20,966	21,492
	T	25,212	30,369	37,979	42,894	43,970	45,439
Commerce	M	36,988	47,501	64,504	75,700	82,126	83,467
	F	16,256	19,868	20,004	30,518	30,213	30,757
	T	53,244	67,369	90,508	106,218	112,339	114,224
Law	M	20,363	23,706	28,952	30,318	34,266	36,402
	F	5,657	6,797	8,084	10,592	11,374	11,682
	T	26,020	30,503	37,036	40,910	45,640	48,090
Teaching	M	15,834	19,096	23,134	24,555	27,578	29,063
	F	5,922	7,405	9,334	10,294	12,322	14,964
	T	21,756	26,501	32,468	34,849	39,900	44,567
Other	M	20,381	21,820	27,586	26,275	26,089	26,997
	F	14,550	16,892	22,981	23,231	23,388	25,396
	T	34,931	38,712	50,567	49,506	49,477	52,293
Total	M	104,898	125,939	162,575	179,952	193,063	199,776
	F	56,265	67,515	85,983	94,425	98,263	104,297
	T	161,163	193,454	248,558	274,377	291,326	304,073
<u>Sciences</u>							
Medicine	M	30,157	34,025	36,845	36,590	39,848	36,958
	F	9,277	10,449	12,171	13,203	14,602	15,833
	T	39,434	44,474	49,016	49,793	54,450	52,791
Engineering	M	24,601	24,817	29,560	29,809	32,981	32,520
	F	3,660	4,294	5,480	5,821	6,636	6,627
	T	28,261	29,111	35,040	35,630	39,617	39,147
Agriculture	M	23,775	25,963	29,238	29,545	28,499	27,177
	F	6,686	7,711	8,098	8,378	8,234	9,185
	T	30,461	33,674	37,336	37,923	36,733	36,362
Sciences	M	7,515	8,810	9,326	10,984	12,794	12,959
	F	3,187	3,641	4,236	4,822	5,183	5,037
	T	10,702	12,451	13,562	15,806	17,977	17,996
Other	M	3,319	3,758	29,423	30,639	27,516	26,583
	F	1,434	1,679	8,966	9,482	8,917	8,712
	T	4,753	5,437	38,389	40,121	36,433	35,295
Total	M	89,367	97,373	134,392	137,567	141,638	136,197
	F	24,244	27,774	38,951	41,706	43,572	45,394
	T	113,611	125,147	173,343	179,273	185,210	181,591

Source: CAPMAS, Statistical Yearbook, June 1980.
*Preliminary

Table S-54

Enrollment Indices for University Faculties, 1973-1979

		<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>
<u>Humanities</u>							
Arts	M	100.0	121.9	162.4	203.9	203.0	211.3
	F	100.0	119.3	141.1	142.6	151.1	154.8
	T	100.0	120.5	150.6	170.1	174.4	180.2
Commerce	M	100.0	128.4	174.4	204.7	222.0	225.7
	F	100.0	122.2	160.0	187.7	187.7	189.2
	T	100.0	126.5	170.0	199.5	211.0	214.5
Law	M	100.0	116.4	142.2	148.9	168.3	178.8
	F	100.0	120.2	142.9	187.2	201.1	206.6
	T	100.0	117.2	142.3	157.2	175.4	184.8
Teaching	M	100.0	120.6	146.1	155.1	174.2	183.5
	F	100.0	125.0	157.6	173.8	208.1	252.7
	T	100.0	121.8	149.2	160.2	183.4	204.8
Other	M	100.0	107.1	135.4	128.9	128.0	132.0
	F	100.0	116.1	157.9	159.7	160.7	174.5
	T	100.0	110.8	144.8	141.7	141.6	149.7
Total	M	100.0	120.1	155.0	171.5	184.0	190.4
	F	100.0	120.0	152.8	167.8	174.6	185.4
	T	100.0	120.0	154.2	170.2	180.8	188.7
<u>Sciences</u>							
Medicine	M	100.0	112.8	122.2	121.3	132.1	122.6
	F	100.0	112.6	131.2	140.3	157.4	170.7
	T	100.0	112.8	124.5	126.3	138.1	133.9
Engineering	M	100.0	100.9	120.2	121.2	134.1	132.2
	F	100.0	117.3	149.7	159.0	181.5	181.1
	T	100.0	103.0	124.0	126.1	140.2	138.5
Agriculture	M	100.0	109.2	123.0	124.3	119.9	114.3
	F	100.0	115.3	121.0	125.3	123.2	137.4
	T	100.0	110.5	122.6	124.5	120.6	119.4
Sciences	M	100.0	117.2	124.1	146.2	170.2	172.4
	F	100.0	114.2	132.9	151.3	162.6	158.0
	T	100.0	116.3	126.7	147.7	168.0	168.2
Other	M	100.0	113.2	886.5	923.1	829.0	800.9
	F	100.0	117.1	625.2	661.2	621.8	607.5
	T	100.0	114.4	807.7	844.1	766.5	742.6
Total	M	100.0	109.0	150.4	153.9	158.5	152.4
	F	100.0	114.6	160.7	172.0	179.7	187.2
	T	100.0	110.2	152.6	157.8	163.0	159.5

Source: Calculated from Table S-45.