

THE USES AND PROBLEMS
OF JOB EVALUATION TECHNIQUES
IN DEVELOPING INDUSTRIAL NATIONS

By

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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

«...وقل ربی زدنی علماً»

صدق اللہ العظیم

In the name of God:

... and say God increase my knowledge

The Holy Quran

TO THE MEMORY OF
MY FATHER

The Uses and Problems
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in Developing Industrial Nations

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SYNOPSIS

The objective of the study is to assess the usefulness of job evaluation techniques in the imposition of incomes policy to a developing country, namely Egypt. The concept of job evaluation is examined from the viewpoint of neo-classical economic theory and of social science, as is the notion of incomes policy. Both imply the erection of a hierarchy of tasks evaluated against shared social and technical values within a society. Since such values are rarely shared in the manner implied by the use of the term "consensus", it is unlikely that either job evaluation or incomes policy will result in social or industrial peace.

In the context of developing countries job evaluation/incomes policy is seen by the administration to offer a way of distributing rewards according to some agreed standard of production efficiency and some concept of social fairness. In the first instance, technical efficiency, such a distribution would be designed to bring about the best allocation of labour services. According to the second criterion, social justice, it ought to result in the fulfilment of the political ideals of the revolutionary elite. In practice not only do these two standards of performance conflict, but in the assessment of "fairness" the notion of equity is likely to come up against prevailing perceptions of occupational and job status, sanctified as Lady Wootton believes, by time and practice. Faced with the need to attract labour into the most effective uses and by the constraints set by the existing and accepted hierarchy of jobs (and power), equity tends to give way to pragmatism in the eyes of the elite. However the very nature of job evaluation exposes these compromises with the self-set revolutionary principles of the elite and makes for political sensitivity and instability. It therefore becomes important to recognise the moulding effect that job evaluation has on the expectations and aspirations of the active - and inactive - work force and to adopt a flexible but consistent standard of evaluation.

This theoretical analysis is set against a historical description and analysis of the Egyptian economy and is illustrated by data taken from an industrial survey of 108 firms carried out by the Ministry for Industry in 1975. The author also presents attitudinal data gathered in 1976 from five companies located in the Mid-Delta and greater Cairo regions of Egypt. This type of study is unique in recent times.

Key Words : Uses, Problems, Equity, Labour Market, Job Evaluation, Egypt

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CHAPTER ONE

CHAPTER 1

GENERAL INTRODUCTION

1. STATEMENT OF THE PROBLEM:

Job Evaluation is a technique by which the tasks allocated to various specified jobs within industrial or commercial environments may be assigned to a position in a hierarchy of grades for the purposes of rewarding employees occupying similar roles within work organisations. It evolved in early twentieth century capitalism as part of the "scientific management" revolution. Like most such innovations it originated in the USA and did not become widely accepted in Europe until after World War II.⁽¹⁾

The main function of job evaluation is to provide some standardised means of differentiating between large numbers of employees working in similar conditions. Its use has therefore spread with the growth of big firms employing large concentrations of employees in offices and factories. In such circumstances it provides a source of internal consistency and control within the same establishment. In large companies the need for uniform rewards may extend to many dispersed establishments and the earliest examples of job evaluation were to be found in national civil services and publicly owned industries.

The question of why some positions or occupations are more highly regarded than others is of course one that is central to social and political order. The technique of job evaluation therefore deals with matters of perception, and social value judgement around which violent controversy may occur. However, job evaluation has been neglected by many economists, industrial psychologists and sociologists, although they have a potential theoretical interest in this matter. Most of what has been written about the technique has been by management consultants, managers, trade unionists and academics in business studies

(1) De Jong, J R : Job Evaluation : History and Trends : Some Approaches to National job evaluation, a Symposium, Foundation for Business Responsibilities, London, November 1972, p 7

whose work has not yet brought any independent body of theory to bear on the technique.

Yet job evaluation is widely and increasingly used in the determination of wages and salaries in many organisations in industry, commerce and the civil service. It has been applied at different levels ie plant, company, industry and national, and in different economies, free market and command. There are a number of interrelated reasons for its extended usage. The importance of both traditional rates of pay and of market forces in the structuring of differentials has been reduced as a consequence of the proliferation of non-traditional and highly specialised jobs and of the increased size of organisations. At the same time, increased legislation and the increased role of trade unions has also resulted in changes in the balance of political power between management and workers. As a result the pay structure may become unstable, and the organisation's existence threatened because of the lack of an agreed framework within which to monitor changes in differentials.

The introduction of job evaluation for determining differentials may be considered as an attempt by management in free market economy, or by government in a command economy, to rationalise and hence control and stabilise the existing pay structure. Any interpretation of the function of job evaluation leads into the heart of a major area of controversy and discussion in theory and practice which is the subject of this thesis.

There are, at least, three basic criticisms directed at the technique of job evaluation. First, it fails to take sufficient account of external market and social influences. In the long run, in spite of built-in adjustment mechanisms the dynamics of the labour market tend to erode internally constructed frameworks of wage and salary differentials. Secondly, it is suggested that while the technique

may impose a degree of restriction on existing negotiating limits it also results in rigidities by providing a floor for union bargaining and a fixed structure of differentials. In order to gain a union's cooperation, careful consideration has to be taken of the present interests of their members. Unions will aspire to joint regulation of such schemes in order to protect and advance their members' interests. Thirdly, the individual is more likely to be ignored in the application of the technique, as regards his ability, loyalty, length of service. Merit payments and bonus payments are possible within job evaluation schemes but the presence of trade unions discourage the former and the latter do not reward intrinsic factors and other features that are submitted to a standardised evaluation. Hence, the success of its operation will depend on the employee's perception of its fairness and equity in application. Finally, the technique cannot offer a workable solution to ongoing external institutional and industrial differences in pay. The problem of inter-firm, inter-industry and inter-occupational differentials will remain until there is a fundamental change in the attitudes towards such institutionalised practices. This might be brought about by the imposition of national job evaluation; in which case the former objections apply at a national/world level.

Despite these difficulties, job evaluation has been developed with considerable success in many organisations, industries, and countries. The striking examples are the great number of large corporations in capitalist economies such as the USA and UK, and the national application of the grading of occupations and rewards in socialist economies particularly of Eastern European countries. In capitalist economies, job evaluation has been introduced as a form of incomes policy at the level of company or industry in order to help management to control and

stabilise labour costs, and to incorporate trade unions into the decision-making process on wages and salaries. It cannot, therefore, be disassociated from either the immediate or the long term aspects of national incomes policy.

The main objectives of incomes policy, in countries such as Britain, have included the aim of reducing the rate of increase of money-incomes in order to control labour costs (ie to relate wages to productivity) and hence to reduce the pace of inflation. Some exceptions have been made to the incomes norms set at various times in the post-war history of the United Kingdom. Pay increases were allowed in the 1960's for more productive workers, for more effective manpower allocation, for improvement of lowest paid position, and for adjustments of anomalies existing between employees carrying out the same job. These latter exceptions provide for the possibility of a re-structuring of incomes. An incomes policy which offers such opportunities for re-ordering market positions is however somewhat unusual. For the most part national policy in capitalist economies has been concerned with circumscribing the amount of increase in labour costs in any given period, not with providing an overall framework. (Scandinavia and the Netherlands offer better examples of the latter).

Paradoxically, incomes policy may be ineffective because it is normally applied at the time of inflation. At that time, prices tend to rise because of the rising costs of imports including raw materials and food. An adverse external situation restricts the government's ability to keep a reasonable stability of money value by the monetary policy, or to maintain a low rate of taxes by fiscal policy. Hence, the labour costs tend to go up in spite of the government attempts to keep them down. Since the government cannot control everybody's earnings equally, fairness is negated. Some employees' earnings,

particularly in small firms, can be easily increased more through PBR, and managers perks. The wages of craftsmen and junior office workers are maintained at the same level and thus relative differentials are eroded. Craft and white-collar unions increase their pressure on the governmental norm either to restore or to improve their members' relative position. Finally, technological and organisational changes affect job content in a way which needs to be reflected in the income structure. Consequently, employers tend to seek ways to evade income constraints in order to gain flexibility of labour in their enterprises.

Most of these difficulties can be found in the operation of national incomes agreements in Norway and Sweden and in the attempt by the tripartite Planning Council of the Netherlands to impose a national job evaluation scheme on that country during the early 1960s. The Socialist countries of Eastern Europe have attempted to insulate themselves from externally induced inflation through import controls. In accordance with the Marxist "labour theory of value", job evaluation should become a major means of allocating value within such Societies at large, ie prices are directly related to labour costs. Socialist regimes will also adopt an equity criterion in the use of job evaluation to control the process of income distribution to this end. However, experience shows that allowances are often made in Eastern European states to some groups of workers in specific labour markets, locations, and to direct line workers in order to achieve the production targets. Hence, it seems that equity - the main criterion of their socialist objectives - cannot be achieved without detracting from the economic advance of these nations.

It is apparent that the problem of the criteria to be used in an incomes policy and the means by which they are to be operationalised

bring contradictions which may negate one or other of the original objectives of the scheme. Essentially the same problems are experienced at company level in capitalist economies or at national level in socialist economies. Either regime, capitalist or socialist, offers examples of the process of industrialisation under different economic models. In developing economies, such as Egypt, governments have attempted to industrialise their economies most rapidly by adopting features from both systems, eg the equity criterion and the incentives to greater effort and mobility between jobs. How far is it either possible or even desirable that job evaluation techniques should be used to resolve these apparently incompatible objectives?

The main problems encountered in a developing industrial nation are much concerned with control over consumer expenditure; the generation and allocation of investment and new jobs between economic sectors and industries within them; bringing up the agrarian sector to the level of efficiency needed to provide industry with food and raw materials, while moving surplus labour from agrarian pursuits and building up the skills required for industrial and service occupations through a modern educational system and training programme. (Kerr et al, 1960⁽¹⁾, Bernstein, 1973)⁽²⁾

In Egypt, attempts to solve these problems of growth show signs that they are not working efficiently. Since the beginning of the first 5-year plan in 1961, the Egyptian government has attempted to maintain a national job evaluation plan, the core of which is a National Cadre of Wages and Salaries designed to remove the existing inequity of the income structure, as well as to help in controlling and stabilising labour costs during a period of rapid economic growth. The government has become increasingly involved in efforts to regulate labour market conditions and to direct trade unions and workers towards a more

(1) Kerr, C, J T Dunlop, J T Harbison, and C A Myers : Industrialism and Industrial Man, Harvard University Press, 1960

(2) Bernstein, H : Underdevelopment and Development, London : Penguin, 1973

effective cooperation. Yet newly urbanised unskilled workers have little commitment to unions while skilled workers are in heavy demand within the most industrialised sectors of the economy. As a consequence the labour market can be seen to be dichotomised into at least two sectors. Not only are there "core" and "peripheral" workers but also "good" jobs and "bad" jobs in stable/growing industries or in small firms offering ephemeral employment opportunities. (See Morse, 1969⁽¹⁾ and Doeringer and Piore 1971⁽²⁾ for a description of labour market segmentation in an advanced industrial country). Faced with these major structural problems the Egyptian system treats job and people across all sectors and different market situations as if they were equal in their possession of the characteristics defined by the national planners.

2. OBJECTIVE AND SCOPE OF THE STUDY:

The thesis will seek to illustrate that the problems facing a centralised economy are not to be alleviated by the incremental addition of local labour market tactics to those of centralised strategy. It suggests that job evaluation should be regarded as a measure of the output of a complex allocative and distributive system. As such it should not be used without regard to the technical efficiency of that system and the managerial problems represented in its workings. As a result job evaluation (or incomes policy) should not be regarded as a means of distributing rewards, that is, of imposing control on the market, but rather, of monitoring the system. In this role it provides a means of bringing together representatives of the groups concerned. But in doing so the pre-existing ability of the regime to handle the problems of resource allocation lying behind the structure of rewards is assumed to exist. That is to say that no manager should risk exposing the

(1) Morse, D : The Peripheral Worker, Columbia University Press, 1969

(2) Doeringer, P and M Piore : Internal Labor Markets and Manpower Analysis, Lexington : Heath, 1971

existing distribution of rewards in a manner which allows comparison both within the population covered by the scheme and outside the boundaries of his domain, without first assuring his control over the allocative mechanisms of the economy.

3. RESEARCH METHODOLOGY:

The study was carried out in four firms in the public sector and one private company. It would have been useful to make comparisons with more privately owned firms but access to sites was too difficult. The data as presented here demonstrates the extent to which job evaluation even within the public sector has been eroded by local labour market pressures. The study proceeds with an empirical investigation which was carried out by a questionnaire designed for selected organisations in Egyptian industries supported by personal visits and disseminated data which are not available outside Egypt. The main purpose was to find out the effects of job evaluation plans on pay differentials and on the attitudes of those affected, and to see opinion and views of those people who are actually involved in its application.

A literature review was essential to explore the subject and was used as a basis for the survey. The answers to the questionnaire survey are discussed and analysed in the light of hypotheses generated from a review of the literature. In order to test the significance of the relationship between the various variables of the questionnaire, two statistical techniques were used, the Chi-square test and the Fisher exact probability test. Also earning differentials were investigated by multiple regression analysis (log quadratic model), analysis of variance (ANOVA), and a "t" distribution test.

4. PLAN OF THE STUDY:

The study is divided into three major parts. Part One, Chapter Two, presents the Egyptian context which is fraught with problems of income distribution and industrialisation. Chapter Three briefly discusses the reasons for change to a command economy, and the perceived need for the introduction of a national job evaluation scheme.

Part Two of this study is devoted to a theoretical analysis of the technique and the problems inherent in its application. Chapter Four provides some basic facts about job evaluation: preparation requirements, the main types, and the level of application. Chapter Five gives a brief description of the Egyptian experience in using the technique in the process of wage determination. Chapter Six expands and enumerates the operational difficulties experienced in operating job evaluation systems with special reference to a command economy and Chapter Seven attempts to conceptualise them.

Part Three deals with the findings of the questionnaire and consists of four chapters. Chapter Eight introduces the questionnaire in terms of its objectives, design, and structure, and finally, structural measures. Chapter Nine assesses and analyses the findings of the questionnaire in respect to individual and group differences in pay. The findings related to organisational and technological considerations of pay are discussed and analysed in the next chapters and Chapters Ten and Eleven comment on other aspects of Egyptian labour markets which have influenced the findings.

Finally, Chapter Twelve completes this study by providing a summary of the work and its conclusions.

PART I

CHAPTER TWO

PART I

EGYPTIAN CONTEXT

CHAPTER TWO

INCOME DISTRIBUTION PROBLEM IN EGYPT

1. INTRODUCTION

It is clear that the Arab Republic of Egypt is one of the developing countries. Her modest per capita National Income expressed in United States Dollars was little above \$100 at the middle of the twentieth century.⁽¹⁾ This places her, on the world scale, in the upper lower bracket of developing countries, namely, the middle-income countries' group.⁽²⁾

Table 2.1

Egyptian position according to her per capita National Income in US Dollars and Classifications of United Nations in 1949, and World Bank in 1972

Income Groups	UN in 1949 (US Dollars)		World Bank in 1972 (US Dollars)	
Egypt	100		220	
Developing countries:				
Lower-income countries	Under	100	Under	200
Middle-income countries	100	- 200	200	- 375
Higher-income countries	200	- 450	375	- 1,327
Oil exporters	—		187	- 3,673
Industrialised countries	450	-1,453	939	- 4,984

Source: UN, National Income and Its Distribution in Under-developed Countries, Statistical Papers Series E No 3, Statistics Office of UN, Department of Economic Affairs, New York, 1951, p 3; and World Bank, Annual Report, 1974, pp 78-79

- (1) UN : National and per Capita Incomes of Seventy Countries in 1949 Expressed in US Dollars, Statistical Papers Series E No 1, Statistics Office of UN, Department of Economic Affairs, New York, 1950, pp 14-16.
- (2) See Appendix II, Table No 1

Unfortunately, the country's per capita National Income in 1972, which was around US \$220,⁽¹⁾ keeps AR Egypt in the same position.⁽²⁾

The stage of economic and social development reached by AR Egypt at the middle of this century is illustrated in Table Nos 2 and 3,⁽³⁾ and in Figure No 2.3, where selected countries had been chosen as representatives of four major developing regions, Africa, Caribbean and Latin America, the Middle East, East and South East of Asia - as well as more developed economies of Western and Southern Europe and Oceania. Comparisons show that AR Egypt has reached a stage of development which is distinctly higher than that of East and South East of Asia (excluding the important exception of Japan) particularly India and The Philippines. Africa with the exception of South Africa is roughly comparable to most of the Middle East, but with few exceptions such as Israel, Lebanon and Turkey, is distinctly below the Caribbean and Latin America average, though above that of the poorer countries of Central America and North-Western South America and is very far behind North America, Oceania, and Europe (European Economic Community, European Free Trade Association, and other Europe). Generally speaking, the degree of Egyptian development stands below the world median and somewhat above that of developing economies.⁽⁴⁾ Egypt's per capita National Income is very far behind the developed market economies' average, but not far below the world's weighted average; and in the meantime is slightly above that

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- (1) UN : Yearbook of National Accounts Statistics, Vol III, 1973, Table 1B, pp 9-14; and Vol III, 1974, Table 1B, pp 9-14
 (2) See Appendix II, Classification of developing and industrialised countries - by income group in 1972, pp 3-4
 (3) Ibid pp 5-7
 (4) Issawi, Charles : Egypt at Mid-Century, An Economic Survey, Oxford University Press, London, 1954, p 77.

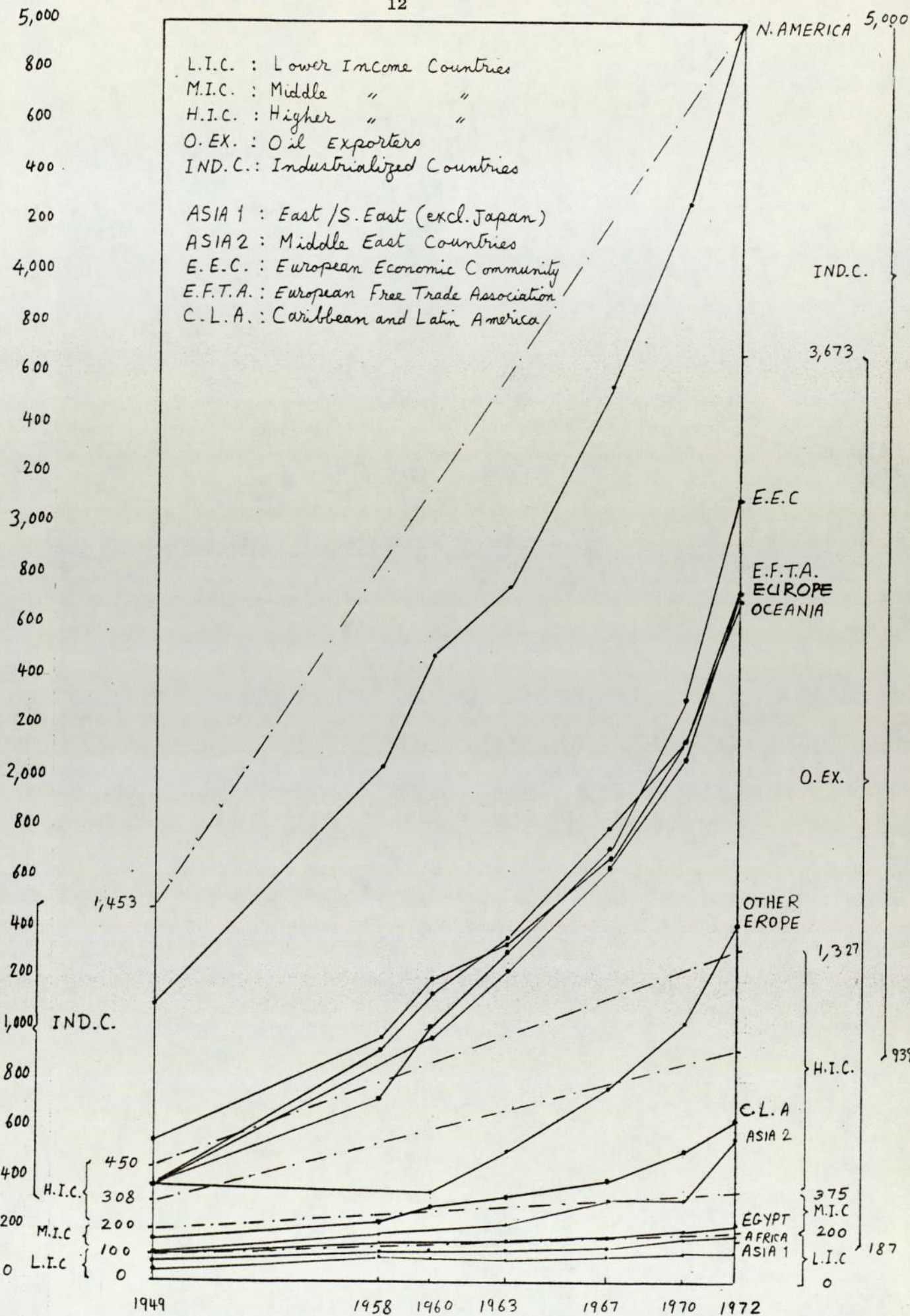


Figure (2-a)

average of developing market economies.⁽¹⁾ Again, in the words of Professor Issawi, "the Egyptian standard of living, low as it is, is higher than the level of that half of the human race, and more, which inhabits Southern and Eastern Asia, most of Africa, and much of Central America."⁽²⁾

2.2 MALDISTRIBUTION OF INCOME:

Up to the middle of this century, the distribution of national income in AR Egypt was very unequal across its population. This means that the Egyptian average real income was almost meaningless as a datum in comparison with that in other countries.⁽³⁾ Owing to the paucity of data, it is quite impossible to measure precisely the distribution of national income in Egypt in the course of that period. However, the following table 2.2 may illustrate the great inequality, which indicates that the majority, ie agricultural labourers and industrial workers, together with other employees including staff managers and civil servants, had only about one-third of national income, while the remaining part of national income went to the minority, ie the

Table 2.2
Rough estimate of national income distribution in Egypt

National Income	1937/39	1945	1950
	%	%	%
Rent of land and buildings	29	22	24
Profit and interest	37	40	38
Salaries and wages	31	36	38
Government income	4	3	3

Source: Issawi, C : Egypt at Mid-Century, op cit, p 84

(1) See Appendix II, Table 3, pp 6-7

(2) Issawi, C : Egypt at Mid-Century, op cit, p 79

(3) O'Brien, Patrick : The Revolution in Egypt's Economic System, From Private Enterprise to Socialism 1952-1965, 1st Ed, Oxford University Press, London, 1966, p 1

landowners and industrial capitalists who were the same. As regards the inequality of earned income, Professor Issawi stated that, "it is sufficient to compare the annual income of an agricultural labourer, about £E30, or of an industrial workers, about £E75, with that of a cabinet minister before the change of regime, £E3,000, or a bank president, £E5,000."⁽¹⁾

Another estimate of income groups, which may be helpful in our analysis was made by the British Chamber of Commerce in AR Egypt in 1955. In the following table 2.3, the family income group should be classified into three main groups.⁽²⁾ Firstly: the lower-income group comprises the agricultural labourers and poor industrial urban classes. Although they represent about 60 per cent of the population, they receive only 17.8 per cent of the national income, and hence live on the breadline.

Table 2.3

Rough estimates of income groups
by The British Chamber of Commerce in Egypt in 1955

Family income range (£E)	Family unit ('000)	Population		Total income		%*	%*
		million	%*	million	%*	Cumulative pop. group	Cumulative income
48 - 96	2,660	13.3	60.5	160	17.8	60.5	17.8
98 - 240	680	4.4	20.0	147	16.3	80.5	34.1
240 - 600	700	3.5	15.9	336	37.3	96.4	71.4
600 - 1,500	150	.6	2.7	157	17.5	99.1	88.9
1,500 up	50	.2	.9	100	11.1	100.0	100.0
Total		22.0	100	900	100	-	-

Source: GB, Board of Trade, Report of the United Kingdom Trade Mission to Egypt, The Sudan, and Ethiopia, HMSO, London, 1955, p 51

* calculated by the student

(1) Issawi, C : Egypt at Mid-Century, op cit, p 84

(2) GB, Board of Trade, Report of the United Kingdom Trade Mission to Egypt, The Sudan and Ethiopia, HMSO, London, 1955, p 51

This subsistence level allows them to purchase bare necessities only. They have no savings and any extra expenses, such as, sickness, marriage, etc drives them into much debt. Secondly: the middle-income group includes small farmers, clerical and better paid industrial workers, who constitute 20 per cent of the population. On account of their modest portion, about 16.3 per cent of the national income, they are sufficiently well off to be able to afford some non-essentials - such as tobacco, imported foodstuffs, European-style clothing, or durable consumer goods - and saving is a possibility. Thirdly: at the higher-income group come merchants, industrialists, professionals, and property owners. While they represent only 19.5 per cent of the population (the last three categories: 15.9%, 2.7%, and .9%), they enjoy about 66 per cent of the national income. Their consumption habits are similar to those of their counterparts in Western Europe and other developed countries.

Although the estimate was calculated after the early three years of the military-revolution of 1952,⁽¹⁾ it indicates that the inequality of national income distribution was still great. The inter-group comparisons strike any scientific analyst, even any honest and reasonable man, and the most casual visitor. The majority of agricultural and industrial proletarians, about 80.5 per cent of the population (ie the lower and middle-income groups), receive only 34.1 per cent of the national income. The bourgeoisie, together with a minority of landowners and capitalists, make up just about 3.6 per cent of the population, which stands at the top of higher-income groups (ie the last two upper-income categories), and receive 28.6 per cent of the national income.

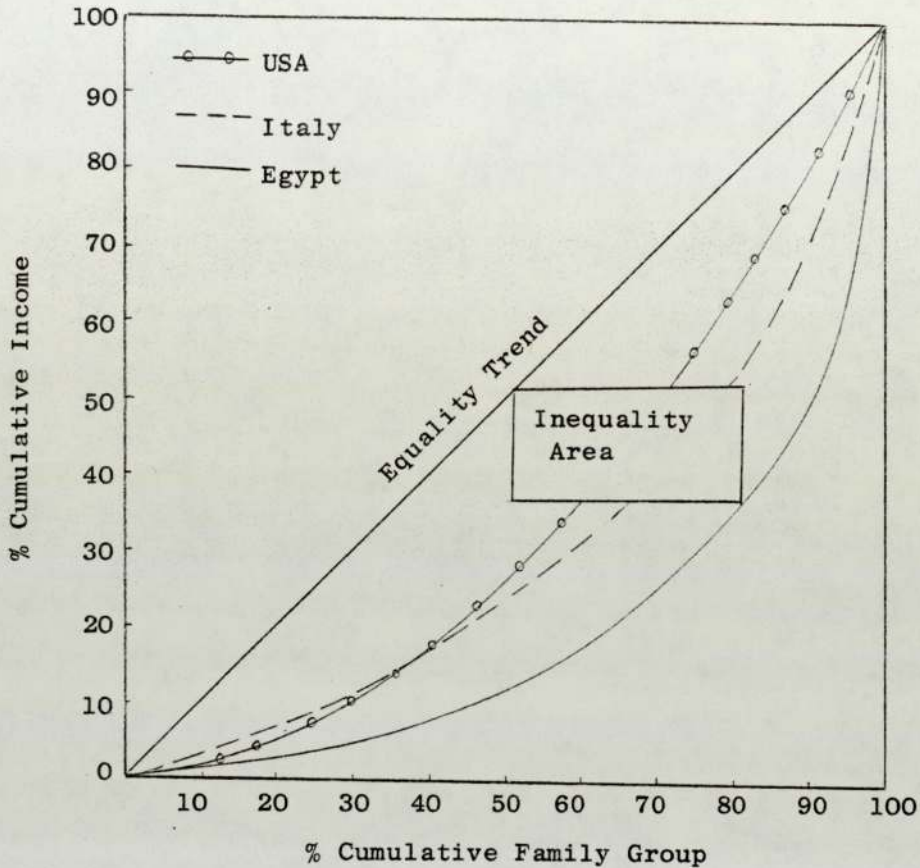
(1) Which includes the first attempts to redistribute the national income and wealth, such as, the land reform's legislation of September 1952, and amendments of 1954 to the Law of Industrial Contracts of Service, 1944. See O'Brien, op cit, pp 75-6

Unfortunately, there is no available disseminated data of the national income distribution to make an apt comparison with other similar developing countries in or near that period.⁽¹⁾ However, it is quite plausible to compare the national income distribution of 1955 in AR Egypt with that of some industrialised countries, namely, the distribution of national income of 1948 in Italy, and of 1949 in the USA.⁽²⁾ In the following figure (2-b) the inequality in Egypt is shown to be the greatest. About 60 per cent of the Egyptian population (ie the lower-income group) receive only 17.8 per cent of the national income. While the same proportion of the Italian and American population receive 31.3 per cent and 33 per cent of their national income respectively. Around 80 per cent of the Egyptian population (ie the lower and middle-income groups) enjoy only 34.1 per cent of the national income, while the corresponding percentages of the population in Italy and the USA enjoy 51.5 per cent and 57 per cent of their national income respectively.

(1) It is quite sufficient, here, to compare the employees' compensation as a percentage of the national income in Egypt with that of other developing countries. The compensation of Egyptian employees is higher than that of oil exporters, except Venezuela; and also the most of the lower and middle-income countries, except Sri Lanka, Honduras, and Paraguay which are about the same; but it is quite similar with that of the higher-income countries, except, Israel, Panama, and Spain, which are higher than Egypt. See Appendix II, Table 4

(2) See Appendix II, Tables 5 and 6

Figure (2-b)
Lorenz Curve⁽¹⁾ as a measure of
inequality in income distribution in
in AR Egypt, Italy, and USA



About one-third of the national income, exactly 34.1 per cent in Italy and 28 per cent in the USA, is received by 10 per cent of the family income groups in those countries. In Egypt the corresponding percentage, ie 28.6 per cent of the national income is received only by 3.6 per cent of the family groups. This is a significant figure since the stability of position held by these families in the Egyptian hierarchy passes from one generation to another and has survived several revolutions.

(1) Yeomans, K A: Statistics for the Social Scientist : Book 1, Introducing Statistics, 4th ed, Penguin Education, Harmondsworth, Middlesex, England, 1973, pp 49-51

3. MAIN CAUSES OF MALDISTRIBUTION OF INCOME:

A. Maldistribution of Wealth in Form of Landownership and Peasant Economy:

Agriculture was and still remains the dominant sector of the Egyptian economy. Out of the total of £E200 million, the pre-War value of the National Capital of land was estimated £E660 million. While the estimate of other constituents were: industry and commerce, £E130 million; residential houses, £E170 million; and state property, £E140 million.⁽¹⁾ In 1950, farming provided approximately a third of the national product and employment for two-thirds of the labour force.⁽²⁾

The maldistribution of wealth was very great in Egypt in the course of the old regime period. For example, property held by very few foreigners accounted for £E100 million or one twelfth of the total, which was concentrated mainly in industry and commerce.⁽³⁾ Moreover, landownership was also very unequally distributed and under-employment endemic. A rough estimate for the pre-War period showed that about half of the land was owned by only 21 thousand persons.⁽⁴⁾ Those landowners, with rising population, received a growing share of agricultural output, not for their part in production or investment in agriculture, but because they happened to own a factor of production in inelastic supply.

Consequently, at the top of Egyptian society stood a small minority of families, ie feudalists and foreigners, who owned land and other productive assets, and whose income were far above the national average farming such a significant proportion of the total. On the other

(1) Issawi, C : Egypt at Mid-Century, op cit, p 84

(2) Statistical Department: National Income of Egypt for 1953, Cairo, 1953, pp 2, 10, and 20

(3) Issawi, C : Egypt at Mid-Century, op cit, p84

(4) Ibid, p 84

hand, the majority of agricultural and industrial proletarians held little or no property, and were surrounded by poverty, illiteracy, and disease.

B. Social Imperialism:

The feudal system together with British occupation generated some sort of social imperialism. The British administrators, who regarded Egypt as "a vast cotton plantation for the factories of Lancashire",⁽¹⁾ actively attempted to keep the bulk of Egyptians to draw its livelihood from agriculture. The feudal landowners tried to exploit new technology to increase the productivity of their cotton plantations. The consequential redundancies left the workers under the pressure of illiteracy, poverty and disease.

By contrast the high bureaucratic positions were given to the minority of foreigners and wealthy Egyptians. The predominance of foreigners was most marked in the higher levels of finance, trade, and to a lesser extent industry. They usually operated in a position of legal privilege granted to them under the capitulations, and until 1936 were not subject to Egyptian law.⁽²⁾ Hence the occupational distribution between foreigners and Egyptians differed sharply from that of the Egyptian population. Political manoeuvring brought wealthy Egyptians into higher positions in the civil service and public sector. A few Egyptians were lucky to be employed in lower positions in industry and commerce as a repercussion of the pioneering efforts of the Bank Misr Group in 1920.

(1) Mansfield, P : The British in Egypt, Weidenfeld and Nicolson, London, 1971, p 108

(2) Anderson, J : Law Reform in Egypt, in P Holt, eg, Political and Social Change in Modern Egypt, London, 1967

Consequently, the divergence between occupational remuneration was determined not only by local economic factors but also by the fact that in Egypt three different civilisations existed with very different standards of living. For example, a rural labourer earned under £E4 per month, while a bank clerk started his career at nearly £E25, and a bank president received about £E417.⁽¹⁾ These pay differentials reflected the divergence in the standard of living of East and West.

C. Structure of Government

A great deal of blame for the lack of State participation in economic affairs came to be placed at the door of the Government. British administrators monopolised all positions of economic influence in Government. Their policy deliberately kept Egypt as an agricultural country. Successive Egyptian Governments displayed no strong disposition to force the pace of economic advance through industrialisation.⁽²⁾ The old regime ruling classes were in fact not industrial nationalists. They were cosmopolitan in their life styles imbibed the attitudes and ideology of a complacent European bourgeoisie.

Such feudalist governments were kept in power by the UK and France. British and French embassies as well as British troops in the Canal Zone influenced political life in favour of the King and his followers in government. The energies of the occasional nationalist leader were diverted into protracted struggles with the King and British Embassy over sovereignty. Such men were rarely given sufficient credit for the efforts to push Egyptian society out of its prison of poverty, illiteracy, and disease.

(1) Issawi, C : Egypt at Mid-Century, op cit, p 62

(2) Girgis, F : Studies in the Political History of Egypt, Cairo, 1958, pp 112-116

4. EFFECTS OF INCOME MALDISTRIBUTION:

As a result of a great inequality of income distribution, life for most Egyptian workers was (and is) very harsh and their standard of living was just about subsistence level. Indeed wages were very low and in a large part their level reflected the low productivity of poor quality of labour as having poor health and low level of literacy.

A. Disease and low life expectancy relative to industrialised countries:

In Egypt, disease, sickness and early death characterised most of the population, where life expectancy for a male Egyptian at birth was 36 years in 1937 about half of that for an American.⁽¹⁾ Poor health of Egyptian workmen reflected the inadequate diet, housing and medical care they could afford on low wages.

There are some signs that the welfare of the average Egyptian has improved much during the first half of the twentieth century. With increasing government expenditure on health and education, the death rate has fallen sharply and has shown every sign of continuing to decline, while the birth rate has remained high and stable.⁽²⁾

Hence, life expectancy has apparently increased to 41 in 1947 and 52 years in 1960.⁽³⁾ Much of this change came after the Revolution. No perceptible alteration occurred in the health of the population before 1945-49.⁽⁴⁾

B. Illiteracy and education:

The distribution of the population according to educational status shows that in 1950 less than a quarter could write and/or read, and

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 1

(2) Statistical Department : Annual Statistics 1955-6, Cairo, Section 3

(3) Hansen, B and Marzouk, G : Development and Economic Policy in the UAR (Egypt), North-Holland Co, Amsterdam 1965, p 25

(4) Issawi, C : Egypt at Mid-Century, op cit, pp 85-6

over 4 per cent had completed school and university education.⁽¹⁾ The ratio of illiteracy was largest among females and in rural areas. This ratio was very high in comparison with almost complete literacy among the world's wealthy societies.⁽²⁾ Therefore, it is not surprising to find that, most Egyptian workmen were illiterate, making the communication of instructions relating to their work and initial training protracted and difficult.

The census of 1960 shows a considerable improvement over the previous decade in the increase of literacy. The ratio of literate persons to the population over 6 years old in 1937 was 22 per cent or roughly nearly three times that for 1917.⁽³⁾ In 1947, the ratio of literacy rose only slightly to 23 per cent.⁽⁴⁾ Thereafter, however, there was a big increase to 44 per cent in 1960.⁽⁵⁾ In the meantime, although the number of students rose by almost 120 per cent from 1947 to 1960, their share of the age group 5-19 years stayed almost constant at 35 per cent.⁽⁶⁾

5. REASONS FOR CHANGE:

Apart from political considerations, there are several economic reasons making for unrest and frustration with the old regime, ie Farouk et al. Among the reasons motivating Egyptians to change the whole situation there were:

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- (1) Information Department : UAR Yearbook 1963, Cairo
 - (2) United Nations : Statistical Yearbook, Annually, New York
 - (3) Information Department : UAR Yearbook 1963, op cit
 - (4) Ibid
 - (5) Ibid
 - (6) Ibid

A. Economic Stagnation:

The economic statistics reveal immediately that, from the beginning of the first half of this century - apart from the first decade which may have shown better results - there was no significant change in per capita income and consumption took place. From 1913 (which was not a good year) to 1950, real income per person not only showed no tendency to rise but fell sharply in the Great Depression of the 1930s and again during the Second World War.⁽¹⁾ While the average consumption of an array of necessities, cereals, meat, textiles and coffee was probably slightly higher just after the Great War than at mid-century.⁽²⁾ All these trends could be ascribed to the state of economic stagnation. Gross Domestic Product (GDP) continued to rise but not rapid enough to raise real per capita income in the face of an increasing population and the increasing inequitable distribution of income.

Although Gross National Income (GNI) was broken by a slight decline during the Second World War, and a sharp fall in connection with the collapse of the Korean boom, its general trend is manifestly upwards overall. In the meantime, the long-run rate of increase of GDP has got larger and periods of recession less pronounced. Behind the apparent depression in the first half of this century there are, at least, two explanatory factors: i) the country's terms of trade and ii) the population explosion in Egypt.

(1) Terms of Trade:

The depression was partly due to the long-term fall in the Egyptian terms of trade. The movement in the country's terms of trade was very definitely adverse and so depressed average real income below

(1) Sherif, A : General Trends of Egyptian Economic Growth Over the Last 25 years (in arabic), National Planning Committee Memoranda No 121, Cairo, 1959

(2) Issawi, C : Egypt at Mid-Century, op cit, p 55

average real income. ⁽¹⁾ The Second World War cut off Egyptian agriculture from imported supplies of fertilisers and industry was unable to replace depreciated equipment. The terms of trade worsened considerably, real income and production per head fell to their lowest levels this century. ⁽²⁾ Per capita income fell at the end of the War to about 20 per cent lower than at the beginning of the century. ⁽³⁾ When after the War imports - as fertilisers and industrial equipment - again became normal, the terms of trade improved markedly, production and real income per head improved upwards, despite a marked acceleration in the rate of population growth from about 1½ to 2½ per cent per annum. ⁽⁴⁾

As a result of both the international raw material shortage, specially cotton, after the War and effects of the Korean boom, terms of trade rapidly improved and per capita income rose in 1951 to a level more than 25 per cent above that of 1939, but only 15 per cent above that of 1913 and 1928. ⁽⁵⁾ Just a year or two later, Egypt's terms of trade moved in an adverse direction once again, and both output and real income per head were merely at their 1913 level. ⁽⁶⁾ It was at this point that the frustration of the rising aspirations of the new bourgeoisie erupted in a military coup. Home production was rising at a time when real income was falling. Again in the words of Hansen and Marzouk, "it is characteristic of underdeveloped raw-

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 3

(2) Anis, M : A Study of the National Income in Egypt, Cairo, 1950, pp 690-700

(3) Hansen, B and Marzouk, G : Development and Economic Policy in the UAR (Egypt), op cit, p 5

(4) Hansen, B and Mead, D : The National Income of Egypt, 1939-62, Institute of National Planning, Memo No 335, Cairo, 1963

(5) Ibid

(6) Ibid

material producers that national income fluctuates more strongly than domestic production."⁽¹⁾

(2) Population Explosion:

The main factor behind the economic recession in the middle of the century was the population explosion. This may be dated back to the World War II, when the annual rate of increase in population rose from less than $1\frac{1}{2}$ to more than $2\frac{1}{2}$ per cent. Meanwhile GDP increased at an annual rate of about 1 per cent from 1913 to 1928, and about $1\frac{1}{2}$ per cent from 1929 to 1939.⁽²⁾ By 1950, the effects of the war period had been overcome, and from 1939 to 1950 the annual rate of increase in total production was about $2\frac{1}{2}$ per cent.⁽³⁾ Taking into account the sharp decline in the death-rate and the remaining higher and stable birth-rate, Egypt was passing through a population explosion and output per head showed no further tendency to rise. During the earlier phase of industrialisation, dominated by private enterprise, a slow but steady growth in per capita production was achieved by a relatively small stable work force. A population explosion had gained momentum by the end of the forties. Increases in productivity achieved thereafter were only sufficient to maintain per capita production without increasing it, while compensating for the long-term losses in the country's terms of trade.

B. Ineffective Labour Force:

Up to the revolution of 1952, the economic growth was also slowed down by inefficiencies in the working of the labour market. Although labour

(1) Hansen, B and Marzouk, G : Development and Economic Policy in the UAR (Egypt), op cit, p 4

(2) Ibid

(3) Ibid

productivity was rising, it was very low in comparison with that of more advanced countries.⁽¹⁾ Here, productivity of labour can only be measured by comparing workers operating with the same equipment within a similar organisation. In this sense, a United Nations study commented of one sector that 'the number of looms per workers in the cotton textile industry was 2 to 4 in Egypt and 4 to 8 in Turkey compared with 24 to 28 in Japan and 75 to 100 in some American plants producing coarse fabrics.'⁽²⁾ There are good reasons to suppose that Egyptian workers were likely to have been much less effective as producers than their counterparts in developed economies. For example malnutrition is a result of low wages, lack of training and poor equipment.

Some Egyptian large firms such as Misr Group, had appreciated the relationship between productivity and health and had provided their employees with free meals, medical care and improved accommodation. However, it was too difficult for small firms to offer such kinds of fringe benefits. Deficiencies were also apparent in the education and training. Illiteracy made training protracted and difficult, nor were workers motivated to be trained. Also, the education system, with its narrow base and non-scientific orientation, had not provided industry with the number required of skilled technicians and managers.⁽³⁾ Most small firms were reluctant to invest in training their workmen who might well move on to alternative employment or return to the countryside. In addition to their lack of skills the poor materials and outdated equipment that they were required to use kept the productivity of labour low.

(1) National Planning Committee, Memo No 555

(2) UN : The Development of Manufacturing Industry in Egypt, Israel and Turkey, New York, 1958, pp 77-78

(3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 29

C. Demand for equity:

Industrialisation in Egypt followed that of other countries, in producing many horrors before any attempt was made to regulate it and protect its victims. Wages were very low, hours long and plants remained unhealthy and dangerous. But since the beginning of this century, labour has been attempting to improve its lot. Unfortunately, their movement was for long handicapped by an absence of homogeneity and the illiteracy of work people. Labour energies were also drained by political activities during the early phase of nationalism and exploited by the Wafdist party and communists. Since they never achieved representation in Parliament and faced with an indifferent or hostile public, the only course open to labour was through strikes.

During both the British administration and successive Egyptian governments, the location of departments dealing with labour questions were adjacent to those of the police. For example in 1938's violent strikes, the strikers were drastically dealt with, many workers being imprisoned, but the government eventually induced employers to raise wages. ⁽¹⁾

The termination of hostilities in World War II resulted in a sharp increase in enemployment and a rise in the cost of living. The now strong unions provoked a new wave of strikes such as those among transport workers in 1946 and textile workers in 1946, 1947 and 1948. ⁽²⁾ Again, the government recommendations led to an improvement in working conditions and a significant increase in wages by the end of 1948. ⁽³⁾ The riots of January 1952 provided the military leaders with the popular support required for their coup. The change of the

(1) Issawi, C : Egypt at Mid-Century, op cit, p 173

(2) Ibid

(3) Ibid

Old Regime came in July of that year. It created a favourable atmosphere for anxious industrial workers and agricultural labourers to demand and receive a more equitable distribution of rewards.

6. COMMAND ECONOMY:

As soon as the revolutionists seized power in July 1952, their government was confronted with a terrifying number of economic and social problems. The ownership of land was very unequally distributed. Under-employment was endemic in all sectors but agrarian reform demanded radical and immediate reform. New institutional arrangements were devised for farming expropriated land. But agrarian reform seems to have been more than a political device to break the power of landowners. Its purposes were to bring about immediate redistribution of rural income, and to supply industry with more agricultural raw materials.

In the early phase of the revolution, the policy of the government towards the manufacturing and service sectors was to create conditions within which private enterprise might flourish. However private owners in the shape of the Federation of Egyptian Industries showed an enthusiastic or negative response to the governmental inducements for rapid industrialisation. Hence after the Suez War in 1956, the State launched immediately upon its own interim industrialisation programme directed at promoting long-term growth. The annual increase in per capita income rose to about 4 per cent and has remained at that level. This is said to represent the demarcation line between stagnation and development. (1)

By 1961 impatience for faster growth led the government to extend its control over all organised industry and commerce. In the new economic system 'the planned socialist economy', inputs are not

(1) Ibid, p 5

purchased nor labour hired on free markets. Managers in public companies seek to combine factors allocated to them or purchased at regulated prices in order to produce a given output at minimum cost determined without competitive forces. Public enterprises operate within a framework of rules and institutions designed to render them amenable to central control, ie their superiors in the 'General Organisation' (GO) and in other central agencies. At the same time the GO seeks to allow them sufficient autonomy and flexibility to conduct their daily operation efficiently.

The planned economic system has succeeded in producing annual rates of growth over 4 per cent on a regular basis.⁽¹⁾ There is therefore no question that the new system is considerably more efficient than the old. It has also created administrative possibilities for more direct techniques of income redistribution including progressive taxation, for defined ranges of fringe benefits, and wage determination by job evaluation at national level.

7. JOB EVALUATION AND NATIONAL CADRE OF WAGES:

Since comprehensive planning began in July 1960, the government has provided a more extensive and generous system of social security benefits for all industrial and commercial employees.⁽²⁾ The government has built up the code of social welfare legislation and has improved working conditions.⁽³⁾ In order to improve the standard of workers' living, the government reduced the working week to 42 hours without loss of pay,⁽⁴⁾ and applied stringent rent control.⁽⁵⁾ It has also compelled all firms to distribute 25 per cent of their retained profits to their workers.⁽⁶⁾

(1) Ibid, pp 295-6

(2) Laws 133 and 175 of 1961; 102 of 1962; 50 and 153 of 1963; and 63 of 1964

(3) Ibid (4) Ibid (5) Laws 168 and 169 of 1961, and 46 of 1962

(6) Law 127 of 1961

The government has come to realise that any attempt to reform pay structure and to improve employment conditions is far beyond its initial (post-1952) forms of traditional wage legislation. A great deal of complexity and confusion were found to exist within the existing wage/salary system in newly nationalised industries. As examples one might quote the following:

- a. As a result of favouritism, foreigners and employers' relatives increased their hold on the top-income jobs during the post-Revolutionary period at the expense of the Egyptian rank and file. Even when Egyptians hold higher positions they get less pay than foreigners and "favourites".
- b. Massive numbers of Egyptian workers were under-paid by reference to Government standards as some firms such as the Khedivial Shipping Line, had refused to execute wage legislation. ⁽¹⁾
- c. In the better cases, employers were willing only to raise wages to the minimum set by the government. This created the problem of bringing up the pay of unskilled closer to that of more skilled workers who were in greater demand.
- d. The knowledge of labour markets held by the bulk of Egyptian workers was so slight that employers found it easy to exploit defenseless workers and depressed their wages below or just above the governmental minimum wage.
- e. Militant trade unionists in areas of high demand exercised their power to increase wages through strike action, even though officially prohibited by the revolutionary government.

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 130

Consequently, the introduction of a job evaluation scheme seemed to have its roots in a sense of political objective within Egyptian industry.⁽¹⁾ The government at first responded by controlling wages and regulating employment conditions. It froze the incomes of top-income employees before dealing with anomalies. It sought to establish higher minimum rates for manual workers while restoring differentials. (Skilled workers had taken a leading part in the wildcat strikes). The purpose of the new job evaluation system and national cadre of wages and salaries was announced as that of providing a more rational and acceptable basis for pay differentials. The support of management and trade unionists was sought to bring about a radical change in the wages system at national level on the basis that it would provide economic stability. With the wisdom of hindsight it is possible to see that the scheme was built on the history of anomalies prior to 1961 rather than the anticipated policies of expansion. Who could have foreseen that a period of tight central planning would give way to the so-called "Open-Door" policy of private investment introduced in 1974?

(1) Laws 3546 of 1962 and 800 of 1963

CHAPTER THREE

CHAPTER THREE
INDUSTRIALISATION AND THE RISE AND FALL
OF A COMMAND ECONOMY

1 - INTRODUCTION

Unlike many other developing countries, Egypt had taken the initial step in fostering its industry and promoting economic development since the beginning of the nineteenth century. It is, therefore, necessary to take the whole period into account in any study of the problems which attend the Egyptian economic development. The process has been promoted under different ideologies, many of which may be considered as contradictory approaches to the problem.

For the purpose of this study, the Egyptian economic development will be classified under four main headings as follows: Firstly : the totalitarian and state monopoly phase (1905-1844). Under this regime the State played an important role in the economic development, and attempted to centralise and regulate the economy. Secondly : devolution and evolution of an archtypical free-market economy (1844-1914). The economic system disintegrated and evolved gradually towards a free market 'laissez-faire' system of production, while the state retained its overall responsibility for the upkeep and extensions to the communication and irrigation systems. Thirdly: driftage and emergency state intervention (1914-1952), where the state was called to mitigate the deleterious consequences of two World Wars and Great Depression. Finally, contemporary economic development since the revolution of 1952 to the present, which in turn could be sub-divided into four phases: (a) a creation of a favourable environment for private enterprise, (b) guided and regulated capitalism, (c) a planned socialist economy and the domination of the public sector, and (d) the open door policy for economic recovery.

This survey is an attempt to trace the changes in Egyptian economic environment in which the development of industry and the industrial labour market took place.

2 - TOTALITARIAN AND THE STATE MONOPOLY - 1805-1844

In the first half of the nineteenth century, the first and most direct state measure for economic development in Egypt took the form of creating government-owned monopolies. This policy was practised by the Viceroy of Islamic Ottoman Porte or Osmanli Empire, Mohammed Ali during his reign from 1805 to 1844. At the apex of his power, he operated an economic system which warrants the adjective totalitarian or fascism, supported with the state capitalism or state monopoly. According to Professor Issawi, the methods pursued by M Ali were "very reminiscent of those used in the Soviet Union."⁽¹⁾ Under him the state owned nearly all the means of production such as land, the irrigation system, roads, storage facilities, river and sea transport, industrial machinery, and factories. It also exercised almost sole responsibility for net and gross domestic capital formation. Not only did the state own, maintain, and add to the nation's productive assets, but to a considerable extent their employment in production was centrally directed.⁽²⁾

Traditionally Egyptian industry had been carried on in the houses of artisans and villagers, or in small urban workshops. M Ali proclaimed manufacturing a state monopoly and forbade any industrial production outside the public sector. He established many factories for textiles, armaments, iron products, ships, sugar, glass, leather, pottery, oil

(1) Issawi, C : Egypt since 1800; a study in lop-sided development in Journal of Economic History, March 1961, p 4

(2) O'Brien, P : The Revolution in Egypt's Economic System, op cit, pp 40-41

flour, rice-milling and chemicals,⁽¹⁾ in which he invested about £E12 million.⁽²⁾ He attempted to expand industrial output by setting up mechanised factories. On the one hand he imported the requisite machinery, engineers, and managerial staff from Europe.⁽³⁾ While on the other hand, skilled labour had been recruited from among urban artisans, and small masters found themselves directed to work in government factories, and unskilled peasants were likewise conscripted for the new industries.⁽⁴⁾ Out of a total population of 3 to 3.5 million, thirty to forty thousand were employed in these factories.⁽⁵⁾ Unfortunately, nothing is known about the proportion of the industrial output accounted for by these mechanised enterprises,⁽⁶⁾ while little is known about the industrial working conditions and wage structure for industrial workers, which were probably quite similar to those employed or conscripted for the irrigation system (described later in detail).

By and large, although the industrial sector contributed only a small proportion of total output, M Ali's power over industry was almost absolute. In addition to monopolising the provision of raw materials, the collection, and the sale of the finished products from workmen, the state laid down specifications as to the type and quality of commodities which might be produced and established an inspectorate to see standards were met.⁽⁷⁾

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- (1) El-Kammash, M : Economic Development and Planning in Egypt, New York, Praeger, 1968, p 39
- (2) El-Hitta, A : Economic History of Egypt (in arabic), Cairo, 1957, p 174
- (3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 35
- (4) Ibid, p 35
- (5) Issawi, C : Egypt since 1800, op cit, p 6
- (6) Gritty, A : The Structure of Modern Industry in Egypt, (in arabic), Cairo, 1947, pp 38-41
- (7) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 35

Yet the government did not normally attempt to direct the process or determine the pace of production in the handicraft sector, nor did it provide weavers, spinners, and other craftsmen with equipment or credit. It simply assumed the functions usually provided by merchants under more primitive forms of the 'putting-out' system.⁽¹⁾

Although M Ali's industrial system, which contributed very little to the national product, failed and the state monopoly of industry was destroyed, his agricultural policy met with some success. The agricultural policy of his government was inspired by the need to find raw materials for his new industries and sufficient revenues required to pay for a rising volume of military and bureaucratic expenditure and not as a means of livelihood for the masses.⁽²⁾ To increase agricultural output, M Ali's government made more land and water available to cultivators by improvements in the irrigation system and drainage.⁽³⁾ Moreover, he also attempted to raise the productivity of the soil. Methods of increasing agricultural output involved the institution of an extensive system of control over the land and the peasantry.

For many centuries, the state had exercised overall responsibility for the maintenance of and extension to the irrigation system. M Ali's civil engineers made use of the scientific principles and experience developed in Europe but the new investment in the irrigation system was all labour intensive. Labour was recruited and organised by government officials; perhaps conscripted is the more appropriate term because peasants were compelled to work on the irrigation system whether they agreed or not.⁽⁴⁾

(1) Gritty, A : The Structure of Modern Industry in Egypt, op cit, pp 28-32

(2) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 35

(3) Issawi, C : Egypt at Mid-Century, op cit, pp 21-23

(4) Rafy, A : History of the National Movement (in arabic), Cairo, 1930, pp 540-544

Referring to this system, Dr Rivlin⁽¹⁾ estimates that out of a total population of 4 million, the government forced about forty thousand to join corvees every year and each man worked on average about 45 days. At the end of this working period the labourer received a wage of 1 piastre a day from the state. Often the labourer himself had to provide his own implements and his family remained responsible for his sustenance. However, the corvees was not an efficient method of organisation, the meagre and often long-delayed payment of one piastre per day represented an insufficient recompense for removing peasants from work on their farms. Peasants were not renovating or constructing irrigation facilities which benefited their own farms. A corvee was always liable to be dispatched under guard to villages far from home where labour was short or where the state was executing a new large-scale project.⁽²⁾

M Ali's government monopolised the sale and supervised the cultivation of several cash crops such as cotton, rice, sugar, indigo, and silk,⁽³⁾ which were relatively novel to Egyptian farmers of the early nineteenth century and were produced mainly for export. For the main one, cotton, was first produced on a commercial scale in 1821. Characterised by its long staple, export revenues from cotton had reached £E2 million per annum compared with one-tenth of that in 1824.⁽⁴⁾ Thus when the State compelled farmers to allocate part of their farms to grow these new crops, it assumed the role of innovator. In addition to imported agronomists to train cultivators in new techniques, the government issued detailed instructions on how these new crops should be planted, tended, harvested, and provided farmers with seed and animal power necessary for

(1) Rivlin, H : The Agriculture Policy of Mohammed Ali, Harvard, 1961 pp 117, 237

(2) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 37

(3) Ibid, p 39

(4) Bullard, Sir R William : The Middle East, Royal Institute of International Affairs, London, 1958, p 182

their cultivation. Moreover, inspectors visited villages to ensure that official instructions were properly carried out and meted out physical punishment to obdurate or inefficient peasants.⁽¹⁾

Moreover, to an even greater extent, the government attempted to monopolise the distribution of all agricultural products of the farm. Exportable crops had to be delivered at government fixed prices to public warehouses, where they were later sold at higher prices to foreign merchants. The government issued compulsory orders, where private sale of these crops by the farmers was forbidden and discouraged by heavy penalties and an elaborate system of measuring and checking cash crops while under cultivation.⁽²⁾

Finally, the government also attempted to control and monopolise both external and internal trade. While external trade was a complete state monopoly, the government were unsuccessful in their attempts to monopolise internal trade. Often, the peasants refused to deliver a surplus over and above their own consumption even with a viceroy army official checking and searching for illegal disposal or consumption of crops. They resisted such incursions into their freedom.⁽³⁾

The recent economic development through industrialisation may then be traced to the first attempt of M Ali in the first half of the nineteenth century. His attempt to industrialise Egypt was not entirely successful and there may be several reasons for this.

Both industrial and rural workers were recruited or conscripted and organised by government officials to work in hazardous conditions, under guard and compulsion, and with a meagre and long-delayed payment

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 39

(2) Ruffy, A : History of the National Movement, op cit, pp 609-11

(3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 41

which represented an insufficient compensation.⁽¹⁾ Therefore, workers were driven to rebel or retaliate by flight and by abandoning their work. M Ali encountered insuperable administrative difficulties in organising labour markets necessary for the agrarian revolution.

Secondly, Ali adopted bureaucratic administrative systems in which excessive red tape was required by a high degree of centralisation of authority in the totalitarian system. The managers of the new agrarian projects were mainly "salaried government officials, ignorant, and unenthusiastic about the work they were called upon to do."⁽²⁾

Thirdly, international events played a considerable part in the failure of the first Egyptian industrialisation. Industrialisation came to an end after M Ali's military defeat in 1840, and the subsequent enforced limitation of his army. Such a reduction of military strength undermined the very structure which the agrarian/industrialisation programme had been designed to support.

Lastly, British competition was one of the main obstacles which hampered the Egyptian economic progress through the first industrialisation programme. By the Anglo-Turkish commercial convention of 1838, cheaper and better quality British manufacturers could enter Egypt with an ad valorem tax of only 8%.⁽³⁾ This weakened the position of Egyptian manufacturing industries and brought an end to the state monopoly over the industrial sector.

The period may offer lessons which perhaps still remain valid nowadays in the Egyptian context. They are: (a) In addition to the excessive

(1) Ibid, p 41

(2) Barakat, A M : Some aspects of organisation and management of public enterprise with special reference to electricity supply industry, unpublished MA dissertation, Durham University, England, 1965, p 5

(3) Mansfield, P : The British in Egypt, Weidenfeld and Nicholson, London, 1971, p 106

centralisation and poor management, the inability of the system to bring forth or promote new talented entrepreneurs or exemplary geniuses is noteworthy of that time as it is today. (b) Egyptians are involved in and influenced by international events such as, the Anglo-Turkish Commercial Convention in 1838, and M Ali's military defeat in 1840. More recently the great world depression in 1930, the Korean boom after World War II, the Suez War in 1956, and the Arab-Israel Wars in 1948, 1967, and 1973 consecutively played an important role in Egyptian economic development. As Professor Hansen⁽¹⁾ asserts, it is unrealistic to suppose that an underdeveloped country can choose its road to development free from all international pressures. (c) The standard of living of the majority of Egyptians did not rise, and most probably declined, as a result of M Ali's intensive and often mismanaged investment.⁽²⁾ (d) Finally, Egyptians have probably looked to a ruling power for any initiative during their modern history. Moreover they have usually been ruled by or ruled others with a high degree of autocracy during what Professor Issawi⁽³⁾ describes as, "several millenia of centralized autocracy."

3 - DEVOLUTION AND EVOLUTION OF AN ARCHTYPICAL FREE MARKET ECONOMY
(1844-1914)

During the second half of the nineteenth and the first two decades of the twentieth centuries, the economic command established by M Ali's successors was dismantled. State control disintegrated and evolved gradually towards a free-market laissez-faire system of production.

(1) Hansen, A : Public Enterprise and Economic Development, 2nd ed, Routledge, London, 1965, p 18

(2) Issawi, C : Egypt since 1800, op cit, p 6

(3) Issawi, C : Egypt at Mid-Century, op cit, p 7

This was accompanied by many structural changes, which gave way to a decentralised private enterprise economy. The economic functions of the State gradually withered.

Little attempt to establish publicly operated industry remained.⁽¹⁾ Some factories in clothing, printing, bakeries, and sugar refineries were constructed by Ismail (1863-1879). But after many unsuccessful experiences the remainder of M Ali's factories were liquidated and disbanded by his successors in 1875 and their buildings converted to barracks, while others were sold or given to private capitalists and/or individuals under a form of contractual management by which the government reimburses the contractor's running costs and pays him a fixed fee for his services. The only two industrial branches continuing to flourish were the sugar industry, run by the government, and cotton-ginning factories, established mainly by foreigners.⁽²⁾ The government gradually abdicated their total state monopoly drifting away towards the free-market economy. Entrepreneurs were left to develop manufacturing and to utilise methods of production or raw materials in whatever directions they found profitable. According to O'Brien⁽³⁾ there is no evidence that the State attempted to foster private manufacturing thereafter. Indeed, the complete absence of protection against foreign competition, together with the imposition of an excise duty of 8% on local products discouraged domestic enterprise.

As for the agricultural sector, emancipation from State control developed less slowly. The reasons behind the slow transition in agriculture were

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- (1) Rafy, A : The Reign of Ismail, (in arabic), Cairo, 1932, pp 4-10
Lahitah, M : The Economic History of Egypt, (in arabic), Cairo, 1944, pp 284-285
- (2) Baer, G : Social Change in Egypt; 1800-1914, in Holt, P M (ed) : Political and Social Change in Modern Egypt, Oxford University Press, London, 1968, p 137
- (3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 42

connected with the maintenance and regulation of the irrigation system which kept farmers always in close contact with the officials and directors of the central authority.⁽¹⁾ However, the ownership of land was transferred gradually from the State into private hands until by 1890 full rights of private ownership were confirmed.⁽²⁾ In the meantime, a large amount of the land became the property of senior government officials, some of it in the form of land grants from the rulers, and some purchased with money derived from economic activities such as supplying to government contracts. While these landowners became some of the wealthiest men and indisputable masters in Egypt,⁽³⁾ agricultural labourers were not free to choose their occupation or place of work.⁽⁴⁾

Free markets in trade developed more quickly than for land or labour. Under Said's rule the State monopoly system for agricultural crops gave way gradually to free markets for all farm produce whether for domestic or external sale.⁽⁵⁾ In addition to the growing international demand for cotton, and the end of compulsory deliveries of crops to government warehouses, farmers systematically converted their land tax from payment in kind to monetary contribution, which by 1880 it had been entirely monetised.⁽⁶⁾ Thus farmers became free from the restraints which compelled them to allocate part of their lands to crops designated by tax officials of the central government. Moreover, with the penetration by foreign merchants as a result of Anglo-Turkish trade agreement, farmers began to enjoy their right to sell part of their output on open markets to the highest bidder.⁽⁷⁾

(1) Baer, G : A History of Land Ownership in Modern Egypt, Oxford University Press, London, 1962, pp 7, 11

(2) Ibid, pp 7-10

(3) Baer, G : Social Change in Egypt; 1800-1914, in Holt, op cit, p 157

(4) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 43

(5) Mustafa, A : The Breakdown of the Monopoly System in Egypt after 1840, in Holt, op cit, p 293

(6) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 44

(7) Ibid, p 43

However, the State retained its overall responsibility for the maintenance and regulation of the irrigation and drainage system as a result of the increasing importance of cotton to the Egyptian economy. Moreover, the construction of communication system, such as roads, railways, bridges, telegraphs, docks, harbours, and lighthouses, also continued to be built and managed by the central authority of the State. The government continued to conscript and to compel workers to work on their projects and other public projects such as the Suez Canal. But private ownership developed and the population available for hire grew, so that by 1885 the government opted to employ more voluntary paid labour.⁽¹⁾ Public utilities were financed partly from government revenues but largely by foreign loans. By the end of the nineteenth century the infrastructure represented the bulk of Egyptian fixed capital which continued to be undertaken by the State up to the Great War.

According to O'Brien⁽²⁾ the explanation for the transition to free market economy must surely be political rather than economical or ideological: the needs of the European and Ottoman empires for trade and passage were mainly behind the frustration of the first attempt of M Ali to control agriculture and to industrialise Egypt. Successive rulers Abbas and Said, displayed little desire to emulate the totalitarian policies of their predecessor. Even Ismail who attempted, with his ambitious policies financed by foreign loans, to extend the power of the State both internally and abroad, failed to restore the totalitarian and State monopoly. The ill-conceived nature of many of his project and his inept dealings with foreign creditors caused his programme of large-scale investment to founder. The high rates

(1) Ibid, p 43

(2) Ibid, p 45

of interest on these foreign loans, together with more profligate expenditure of public revenues by her extravagant rulers put Egypt in foreign debt to the extent of £E98,377,000 by 1880. (1)

This debt taken together the increasing importance of Suez Canal (opened in 1869), and the growing need for Egyptian cotton by British industry, resulted in the British occupation of Egypt in 1882, and the subsequent withdrawal of the State into a more circumscribed sphere of activity. (2) Under British administration, Lord Cromer, who was in any case pre-disposed from his own political experience to confine the economic functions of the State, intercepted and improvised the development of Egyptian industry on this basis:

"The establishment of factories here will obviously produce serious consequences both in respect of the finance of Egypt and the huge trade in cotton goods now carried on between Egypt and this country." (3)

Consequently, in order to elevate the supply of cotton at a higher grade and to amortise the national debts, Cromer focused his attention directly on the agricultural sector and the amendment of the Egyptian civil service. As to the separation of agriculture, his policies sought to continue public expenditure, although at a diminished rate, upon irrigation facilities, and to alleviate and rationalise the burden of taxation on Egyptian farmers. As for the civil services, he increased the number of civil servants by 83.7 per cent against a population growth of 66 per cent between 1882 and 1907. (4)

In spite of Cromer's declaration, which was "to train up by precept and example, generations of Egyptians who in future may take our place

(1) Issawi, C : Egypt since 1800, op cit, p 10

(2) Rify, A : Reign of Ismail, op cit, pp 307-332

(3) Mansfield, P : The British in Egypt, op cit, p 108

(4) Baer, G : Social Change in Egypt, in Holt, op cit, p 157

and carry on the tradition of our administration",⁽¹⁾ he persisted in placing foreigners in many higher administrative posts. Even M Ali and his successors had filled these upper ranks of civil service with Turks and then personal favourites.⁽²⁾ Cromer did not lay down a good foundation for the development of administrative or management skill and experience among Egyptians. Evidence for that was given by Sir W Willcocks, an irrigation engineer who worked for the Egyptian Public Works Reservoirs from 1883 to 1897, who stated that, "Cromer had sedulously depressed and kept down every independent Egyptian and had filled all high posts with cyphers, with the result that the national leaders of the people had no opportunity of leading the people."⁽³⁾ Therefore, the proportion of the senior civil service occupied by Egyptians had fallen to 23 per cent by 1923 against 33.3 per cent in 1903.⁽⁴⁾

On the positive side, a major contribution of Cromer's reform of the civil service was the adoption of school certificates as recruitment qualifications, and the classification of the civil service positions into higher and lower grades,⁽⁵⁾ derived from secondary and primary school certificate holders respectively.⁽⁶⁾ A repercussion of Cromer's attempt to reform entrance to the Egyptian civil service was the encouragement of the spread of education to those seeking secure professional careers.⁽⁷⁾ Nevertheless, in 1920 the Cadre Commission criticised his policy and its nominal effects: "The present system which makes certain examinations of a not very advanced character the

(1) Mansfield, P : The British in Egypt, op cit, p 174

(2) Berger, M : Bureaucracy and Society in Modern Egypt, Princeton University Press, Princeton, 1957, pp 22-23

(3) Willcocks, W : Sixty Years in the East, Blackwood and Sons, London, 1935, p 269

(4) Rachid, A : The Emergence and Development of Public Enterprise in the UAR. In L'Egypte Contemporaine, Vol 61, No 340, Avril 1970, p 206

(5) Ibid, p 206

(6) Berger, M : Bureaucracy and Society in Modern Egypt, op cit, p 29

(7) Ibid, p 29

be-all and end-all of a student's scholastic career tends to produce rigidity in the curriculum and to foster the memory rather than the brain."⁽¹⁾ However, the civil service persisted in attracting the bulk of educated Egyptians at all levels. For instance, about 72 per cent of university graduates entered the civil service during 1949 to 1950.⁽²⁾ Therefore, the civil service became the breeding place for top management in industrial public enterprises in post-Revolutionary Egypt. The effects of their bureaucratic career on attitudes and behaviours in Egyptian industry may be seen as a significant factor in its later development.

Finally, we may observe that in the two halves of the nineteenth century Egypt passed from one extreme to another in terms of the types of control adopted by an elite following totally contrary ideologies. We shall see that in the twentieth century also any Egyptian economic situation contains the seeds for a change in control to the opposite extreme. At the end of the nineteenth century there was a dire need for state intervention to mitigate the more deleterious consequences of Egypt's exposure to external exploitation. In the words of O'Brien:⁽³⁾

"With free trade as its commercial policy and an absence of restrictions on capital movements across its frontiers; without a central bank or controls on the money supply; with very little social welfare legislation, minimal public expenditure on health and education, no taxes on income or wealth except the land tax, and free markets in land, labour and capital, Egypt appears almost as the archetypical laissez-faire Utopia of classical liberals."

(1) Report of the Cadre Commission, Government Press, Cairo, 1921, para 12, p 3

(2) Berger, M : Bureaucracy and Society in Modern Egypt, op cit, p 51

(3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 44

4 - DRIFTAGE AND EMERGENCY FOR STATE INTERVENTION - 1914-1952

After the Great War there was a definite trend away from free-market economy where state enterprise was confined to the area of public utilities. This trend indicated the government's change in attitudes towards a centrally-directed economy. This tardy retrogression was mainly to reconcile and to mitigate the pernicious effects of the desultory free-market system, and to promote the conditions required for economic development. Among the salient factors which may be considered as a great impetus for such a modification in the Egyptian economic system.

Some of the factors affecting the Government were as follows: The international depression of the 1920's and 1930's which reacted seriously and adversely on the domestic economy. The two World Wars and their attendant needs for greater control over production. By a Demo-Revolution in 1919, and the Sovereignty's Proclamation of February 1922. By the gradual transfer of political authority from the British back to native Egyptians - who were not so disposed to adopt laissez-faire attitudes. By the widespread emergence of nationalist regimes in the Middle East, particularly in Turkey and in Persia, which used the State to promote the economic development of their country.

Moreover, exports of Egyptian cotton, which was the focal point of commercial policy, met with growing competition from synthetics and from other countries producing cotton such as the USA and the Sudan. Furthermore, the horizontal expansion of cultivable land had actually reached its attainable limit (evidenced by the small increase from 5,280 feddan in 1912 to 5,845 in 1952.⁽¹⁾ Meanwhile, the quota of cultivated land per head fell off from 0.20 feddan in 1907 to 0.11

(1) Issawi, C : Egypt Since 1800, op cit, p 13

feddan in 1952 as a consequence of the population explosion. The general standard of agrarian living was declining.⁽¹⁾

Finally, perhaps the desire of Egyptian governments to emulate governments everywhere in promoting economic growth while increasing the welfare of its citizens. There were growing pressures from within the bourgeoisie as well as from the labour movement to regulate employment conditions, to control urban and rural environments, to promote public health, to provide free education, and to protect workers against the uncertainties of modern economic life, such as unemployment, accidents, sickness, and old age.⁽²⁾ Consequently, most of the state intervention in Egyptian economy had been prompted mainly by welfare considerations. In the course of this period, welfare legislation was designed and carried out, with partial success, to ameliorate the severe poverty and to present the worst kinds of exploitation.

In regards to agricultural sector, most of the effective state intervention sprang from pressures of both landowners and cultivators to avoid sharp fluctuations in the prices of farm products particularly cotton in world markets. By 1920, the Government had agreed to buy cotton crop at favourable prices, to enforce reduced farm rents by one-quarter and to restrict the cultivation of cotton.⁽³⁾ During the Great Depression of the 1920's and 1930's, the government attempted to reduce dependence on cotton by a policy of agricultural diversification. It imposed tariffs on foreign wheat to alleviate domestic grain prices and subsidised grain exports. In addition, it controlled sugar imports and compelled local refineries to buy the domestic crops at fixed prices.⁽⁴⁾

(1) Ibid, pp 16-17

(2) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 63

(3) Ibid, p 47

(4) Quny, M : Development of Egyptian Economy in Recent Contemporary, (in arabic), Cairo, 1944, pp 182-183

Moreover, it helped to pay off the mortgage debts of landowners who were affected by sharp falls in income from the depression.⁽¹⁾ After the Second World War, Egyptian Cotton Commission offered, along the same lines of previous initiatives, to purchase at fixed prices cotton not sold privately. It also imposed very strict limitations on the area allotted for cotton cultivation and encouraged the cultivation of food crops.⁽²⁾

The principle policy designed to mitigate severe poverty among the mass of small cultivators and tenants consisted of the promotion of Rural Co-operative Societies (RCS). The Government deposited funds with Bank Misr for short-term loans, which reached £E250,000 in 1927,⁽³⁾ to the RCS's and to small farmers. In 1931, the State established L'Credit Agricole d'Egypte "CAE" in order to further foster the expansion of RCSs and to supply small cultivators with credit.⁽⁴⁾ The RCS varied in the range of activities and services they performed for members. In addition to credit they encouraged and supported farmers through the sale of seeds, fertilisers, etc, and the bulk purchase of farm supplies on behalf of their members.⁽⁵⁾ These RCSs sprang up throughout the country under the guidance of the Ministry of Social Affairs, and control of the Ministry of Agriculture.⁽⁶⁾ About 50 per cent of all Egyptian farmers were in RCSs in 1948.⁽⁷⁾

During the Second World War, the Government set out a rural welfare programme in which Combined Centres "CC" would contain such specialists

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- (1) Said, G : The Cotton Problem, L'Egypte Contemporaine, October 1951, pp 8-9
 (2) Anis, M : A Study of the National Income of Egypt, op cit, pp 692-696
 (3) Shabana, Z : Co-operative Agricultural Economy, (in arabic), Cairo, 1961, pp 116-120
 (4) Quny, M : Development of Egyptian Economy, op cit, p 184
 (5) Tanamly, A : Agricultural Credit and Co-operative Organization, L'Egypte Contemporaine, October 1962, p 25
 (6) Shabanah, Z : Co-operative Agricultural Economy, op cit, pp 122-214
 (7) Lahita, M : The Economic History of Egypt, op cit, pp 556-558

as, agronomists, doctors, teachers, and social workers.⁽¹⁾ However, both RCS and CC failed to gel with the organisation of Egyptian village community life and develop a spontaneous growth among farmers. Under the economic conditions of the '30s and '40s the schemes were faced with constant shortages of experts and only limited resources were devoted to the schemes. Only 126 CCs were established by 1946 serving only 1.5m peasants from the total population of 18,702,000m⁽²⁾

On the infrastructure required for industry the State began to regain its traditional control and initiative. It studied many proposals for economic development, such as the generation of electricity from the Aswan Dam.⁽³⁾ The governments attempted to carry out, with very limited success, two Five Year plans. The first plan of 1935 demanded public expenditure on roads, railways, and irrigation facilities. It failed completely and was terminated by the outbreak of the Second World War.⁽⁴⁾ After the War the second plan of improvements required new roads, railways, drainage, drinking water, river barrages, schools, hospitals, and the generation of electricity at Aswan, etc.⁽⁵⁾ Government lethargy and difficulties in buying required equipment on international markets ensured that few of these objectives were met.

In the industrial sector, the state actively encouraged domestic industry from 1917 onwards by the provision of cheap credit and protective tariffs, by incentive tax systems, industrial subsidies, preference in governmental contracts, and rebates on nationalised railway charges.⁽⁶⁾ In 1936 foreign-owned companies were subjected to Egyptian laws and were increasingly subjected to pressures to

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- (1) Ministry of Social Affairs : Social Welfare in Egypt, (in arabic), Cairo, 1950, pp 12-17
 (2) Mattison, B : Rural Social Centres in Egypt, Middle East Journal, Autumn 1951, pp 464-467
 (3) Quny, M : Development of Egyptian Economy, op cit, pp 170-171
 (4) Khallaf, H : Financing Economic Development in Egypt, Middle East Economic Papers, American University, Beirut, 1955, p 31
 (5) UN : Economic Development in Selected Countries, op cit, pp 191-194
 (6) Quny, M : Development of Egyptian Economy, op cit, pp 184-185

involve Egyptian nationals in their affairs.⁽¹⁾ Meanwhile, considerable assistance given to Egyptian entrepreneurs by existing indigenous enterprises particularly Bank Misr, founded in 1919 by a group of Egyptian capitalists with national aspirations. The Bank's purpose was to promote local industrial and commercial enterprises, and to provide credit to the new industries. By 1922 the government deposited large sums with the Bank for this purpose.⁽²⁾ After 1936, when Egypt was granted full sovereignty by Britain and attained its fiscal autonomy, the government came under pressure from the powerful Federation of Egyptian Industry, to protect local industry. The Misr Bank became the instrument through which many of the large-sized textile plants and other capital intensive projects were both financed and offered managerial and technical advice.⁽³⁾

On the other hand, small and medium-scale industries continued to encounter some financial difficulties. In order to handle the required industrial credit for them, the government established the Industrial Bank in 1949, and contributed 51 per cent of its capital of £E1.5m, and most of the remainder came from insurance companies.⁽⁴⁾ The Bank continued to provide existing companies with long and short-term loans, and also to participate in the foundation of new industries.⁽⁵⁾

Over the course of this period a whole code of legislation governing the employment conditions for industrial workers had grown up. The Government passed laws governing the contract of employment, including

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- (1) Safran, N : Egypt in Search of a Political Community, Cambridge, 1961, pp 194-205
 - (2) Gritly, A : The Structure of Modern Industry in Egypt, op cit, p 376
 - (3) Issawi, C : Egypt in Revolution; an economic analysis, Oxford University Press, London, 1963, pp 264-265
 - (4) Barakat, A M : Some Aspects of Organization and Management of Public Enterprise with Special Reference to Electricity Supply Industry, op cit, p 5
 - (5) Industrial Bank : The Development of Industrial Credit in Egypt, (in arabic), Cairo, 1956, pp 7-19

remuneration and discharge, holidays, indemnity, sickness etc.⁽¹⁾

Moreover, the large industrial firms were often in advance of government legislation in the scope of the welfare facilities provided for employees; and by law such large employers were obliged to educate their illiterate workers.⁽²⁾ By contrast, the government did nothing to help or to permit Egyptian workers to organise for their own protection and welfare. Collective bargaining was not legally recognised until the Trade Union Act of 1942.⁽³⁾ This will be discussed later in more detail.

In order to ameliorate the soaring cost of living for the urban working class, the government imposed price controls upon a whole range of necessitous commodities, such as wheat, sugar, vegetable oil, rice, tea, coffee, meat etc. The Government also intervened in the distribution of most of these commodities, particularly sugar and vegetable oil. The State, moreover, effectively subsidised the price of bread through its agricultural policy. These policies failed to contain inflation during the Wartime and post-World War period.⁽⁴⁾

The consequences of all these governmental attempts to encourage economic growth were too small to change the face of Egypt, which by the mid-century remained an agricultural country. Industry by 1946 contributed only 10 per cent of the Gross Domestic Product.⁽⁵⁾ Out of an active work force of 5,962,000 only 650,000 were employed in industry and 400,000 of those industrial workers were recruited by small-scale enterprises with less than ten persons each.⁽⁶⁾

(1) Ministry of Social Affairs : The Labour Department, (in arabic), Cairo, 1951, pp 12-17

(2) Ibid, pp 12-17

(3) Ministry of Social Affairs : Social Welfare in Egypt, op cit, p 69

(4) Lloyd, E : Food and Inflation in the Middle East, Stanford, 1956, pp 130, 133, 225

(5) Rachid, A : The Emergence and Development of Public Enterprise in the UAR, op cit, p 215

(6) Ibid

The government still had no share in industrial capital,⁽¹⁾ while fixed capital was dominated by irrigation facilities and the communication system.⁽²⁾ Industrial management was largely ineffective and had done little to develop their industries.⁽³⁾ The State contributed only 16 per cent of Gross Domestic Product, most of which went to traditional areas of fiscal and social administration, defence, justice etc.⁽⁴⁾ In the meantime the public sector, in the shape of public utilities, yielded only 2 per cent of local production although it employed 515,000 workers.⁽⁵⁾

Behind the very limited success of the governmental policy there were some salient factors, which may also have contributed in the outbreak of the military-revolution of July 1952. In the face of the inflationary effects of the international depression and the two World Wars there was an absence of any real means for the expression of the aspirations of the growing bourgeoisie and the frustrations of the industrial and agricultural proletariat. The attitudes of the monarchical government of feudal landowners and conservatives contained neither the desire nor capacity to modernise and to industrialise Egypt.⁽⁶⁾ The British administration deliberately intended to keep Egypt as an agricultural country⁽⁷⁾ or as a "vast cotton plantation for the factories of Lancashire."⁽⁸⁾ From their own experience they were more disposed to

(1) Ibid

(2) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 64

(3) Rachid, A : The Emergence and Development of Public Enterprise in the UAR, op cit, p 215

(4) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 60

(5) Ibid

(6) Abdel-Malek, A : Egypte; Societe Militaire, Paris, 1963, pp 42-46

(7) Girgis, F : Studies in the Political History of Egypt, (in arabic), Cairo, 1958, pp 112-116

(8) Mansfield, P : The British in Egypt, op cit, p 108

constrain the economic activities of the State. Their goals were in the words of O'Brien,⁽¹⁾

"Britain had not occupied Egypt to develop the economy but to restore order to her tangled finances and to rationalize the tax structure."

5 - CONTEMPORARY ECONOMIC DEVELOPMENT (Since the Revolution of 1952 to the Present)

Since the military-revolution of July 1952 by an elite group of officers (President Nasser and his comrades in the Military Junta) economic development can be sub-divided into three phases or spectrums. Firstly, the policy of the revolutionary government from 1952 to 1956 was to actively attempt to encourage and to promote the free-market economy. Secondly, from 1956 to 1960 it virtually tried to guide and to regulate capitalism, but until the end of this period it was reluctant to move towards a planned economy. In 1960 came the dramatic announcement of the first ten-year national plan - the Government had turned back to a command economy in which the public enterprise was to be considered as a major instrument for economic development. However, it must be said that the spectrum of governments which came and went over the period of the attempted planning faithfully sought to derive or to find a consistent system corresponding to Egyptian culture and conditions. They neither wished to import or to emulate any of the current political doctrines elsewhere in other parts of the world,⁽²⁾ nor to follow up economic devices determined and adopted by the monarchical governments in old regimes.

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 65
 (2) Nakleh, E : An assessment of socialism as a process of change in UAR. The American University, Washington, 1968 (abstract)

A. A CREATION OF A FAVOURABLE ENVIRONMENT FOR PRIVATE-ENTERPRISE
(1952-1956)

During the first four years the Military Junta was more concerned and very preoccupied with conciliating between divergent contenders for power. They adopted the slogan of "White (bloodless) Revolution". After expelling the British troops from the Suez Canal Zone they confirmed their reliance on American financial support which in the field of credit assistance was ££6.5 million in loans and ££220 thousand in grants. (1)

Apart from their prompt land reform the Military Junta had not clear goals and their new ideology remained a diffused nationalism, ie, "the government of the whole nation." (2) Gamal Salem (The Revolutionary Council Member, and the Minister of National Guidance) insisted in January 1954, "We are not Socialists, I think our economy can only prosper under free market enterprise." (3) The Minister of Finance, Dr El-Kaissouni, asserted that, "the state encourages private enterprise and aids it in every way", and his Ministry aimed "to create a favourable atmosphere for the investment of national and foreign capital." (4)

The approach of the Revolutionary Government to the amelioration of rural poverty was similar to that adopted by the Old Regime with few exceptions. A law of land reform was passed in September 1952, which allowed it to expropriate any amount of land exceeding 200 feddan possessed by one individual. The Act reduced and fixed the agricultural rent for all cultivable lands, and set up a minimum daily wage for rural workers. (5) Although this land reform represented a radical departure from the traditional policy, it only affected just around

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- (1) Rachid, A : The Emergence and Development of Public Enterprise in the UAR, op cit, p 228
 (2) O'Brien, P : The Revolution on Egypt's Economic System, op cit, p 69
 (3) Bourse Egyptienne, January 26, 1954
 (4) Ibid, December 20, 1954, and August 9, 1955
 (5) Garzouzi, E : Old Ills and New Remedies in Egypt, Cairo, 1958, pp 80-87

10 per cent of the cultivable land, and a minority of families.⁽¹⁾ The fixed rent and prescribed minimum wage provisions were often avoided even under rigid state control.⁽²⁾ However, as a political device it served to demonstrate Government opposition to the economic power of feudal landowners and to gain an immediate support of Egyptian peasants.⁽³⁾ Other measures were to prove more effective in their objective of expanding the area of cultivable land. Among them were: the High Dam Project which aimed to increase the cultivable area by 1.5m feddans.⁽⁴⁾ Irrigation projects were proposed to reclaim about ½m feddans of unused desert land in Tahrir, New Valley, Beheria and Fayoum provinces.⁽⁵⁾ By the end of 1954 the preliminary designs of all these projects had been completed; the work was brought to an abrupt halt by the Suez crisis; the start of the High Dam project was delayed until 1958.

The Revolutionary Government actively attempted to help Egyptian industry to expand by creating a favourable atmosphere for free-market enterprise. New industrial institutions, such as the Permanent Council for the Development of National Production, were established. Consultation with the Federation of Egyptian Industry brought forth a lower taxes and higher tariff protection. National and foreign investors were offered every practicable incentive to place funds with Egyptian industrial firms. New company legislation sought to protect both employees and shareholders in their relationships with management.

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- (1) Hanson, B and Marzouk, G : Development and Economic Policy in the UAR (Egypt), op cit, pp 84-95
 Lacouture, J & S : Egypt in Transition, London, 1958, p 166
 (2) Warriner, D : Land Reform and Development in the Middle East, London, 1962, pp 34, 38, 193
 (3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 83
 (4) High Dam Authority : Report on the High Dam, (in arabic), Cairo, 1955 pp 6-7
 (5) Marei, S : UAR Agriculture Enters a New Age, Cairo, 1960, pp 110-121

As early as October 1952 the Government set up a Council for the Development of National Production (PCDNP) as an instrument of economic analysis and indicative planning. The PCDNP concentrated its early recommendations on traditional concerns for the infra-structure. It studied and recommended policies and projects in irrigation, land reclamation, mining, electrification and industrialisation. The members of the Council included ministers, engineers, bankers, industrialists and agriculturalists. (1) It was not a mere advisory body, it possessed power by which it actively participated with ministries and private sector in formulating, executing and financing its projects. The Council was proportionally represented on the boards of these projects according to its capital share. (2) As the State confined itself to the area of heavy or basic industry leaving the rest for private sector, the Council participated in the foundation and finance of several industrial projects of this basic type. Among them were iron and steel plants to which the Council contributed 50% of their capital, and the remainder came from national private firms and the Demag Steel Company of Germany. (3) In addition to this encouragement, the Council also tried to help the new industrial private enterprise by actively designing projects and encouraging the formation of new companies such as electrical cable and rubber tyres enterprises. (4)

The Federation of Egyptian Industry continued to press for higher protection and for tax concessions; the government responded by raising tariffs and lowering customs duties on raw materials and capital goods. New joint-stock companies were also exempt for seven years from profit tax, while

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 69

(2) Rachid, A : The establishment of heavy industry in a developing country, a case study, in *l'Egypte Contemporaine*, Vol 62, No 344, Avril 1971, p 154

(3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 72

(4) Ibid, p 73

profits accruing from new share issues were exempt for five years from the same tax. At the same time all undistributed dividends were exempt from 50% of the profit tax.⁽¹⁾ The actions of the FEI were strengthened by the governmental decree. It used these powers to compel all firms above a certain size to affiliate to its Industrial Chamber. The government entitled them to impose a levy on their members who failed to co-operate in the inauguration of co-operative technical and market research programmes of interest to all affiliated members.⁽²⁾

In order to attract foreign investors the Government, by the Act of 1953 which amended the Egyptianization Law 138 of 1947, allowed foreign shareholders to hold a majority interest and control in any Egyptian company. They were, moreover, allowed to transfer abroad 10% of their total profits per annum, and to transfer the whole accumulated capital within five years of the date of investment.⁽³⁾ Unfortunately, the lack of confidence in the new revolutionary regime was such that the response of both private national and foreign investors was very poor. Foreign capital brought into Egypt reached only £E870 thousand by 1955,⁽⁴⁾ while private domestic capital was invested mainly in the rented housing constructions.

To protect and improve the rights of the company's shareholders and workers against the misuse of the board's power, the Government passed extensive amendments to Company Law and to the existing body of labour and social welfare legislation. Firstly, Company Law 126 of 1954,⁽⁵⁾ defined the shareholders' right to inspect accounts, to vote on matters

(1) Ibid, p 71

(2) Ibid, p 72

(3) Law 430, 1954

(4) UN Department of Economic and Social Affairs : Economic Development in the Middle East, 1945-54 (supplement to World Economic Report 1953-4), New York, 1955, p 51

(5) Ministry of Commerce and Industry : The Companies Law, 1954

of company policy and to call extraordinary meetings. It also lowered the denomination of minimum shares that might be held from £E4 to £E2. It compelled board directors to retire at sixty, and fixed their maximum remuneration at 10% of final profit after a distributed dividend of 5%. In addition, the maximum number of directorships held by a man at once, was restricted to six and managing directorships to two. (A further amendment of 1957 limited the former to two and the latter to one). The impact of these modest reforms reflects the depth of corruption that had previously existed.

In order to gain political support from industrial workers, the government attempted to encourage urban workers to organise and to protect themselves against the prerogatives of their employers. The government reconstituted the defunct Advisory Council for Labour (ACL), and encouraged the Confederation of Trade Unions by reaffirming their rights to organise, bargain and to challenge management. By an amendment to the Trade Union Act of 1942 new categories of workers (including agricultural labourers) were compelled to organise and to join a recognised Union having 60% or more of the employees of any company in membership.⁽¹⁾ By an amendment to the Individual Contracts and Service Act of 1944, the government raised the minimum legal levels of wages, sick pay, holidays, medical care, and indemnities for dismissal.⁽²⁾ It introduced a limited form of social insurance in 1955, by which dependants of sick or deceased industrial workers could be provided with public assistance.⁽³⁾ Consequently, during this period workers benefited more from direct state intervention in the internal affairs of the company than from their union activities.

(1) Audsley, M : Labour and Social Affairs in Egypt, St Antony's Papers, IV 1958, pp 104-106

(2) Ibid, pp 103-104

(3) Ministry of Social Affairs : Social Welfare, op cit, pp 16-17

The latter were largely devoted to ensuring that firms applied the governmental rules and laws correctly.

At the end of this period many factors contributed to the change of Government attitudes towards the economic development. Among them were: the poor response of private capital, both domestic and foreign, to the incentives offered for new investment. The continued opposition shown by the Federation of Egyptian Industries to government involvement in finance and management. The frustration suffered in their relationships with the West particularly at the time of the Suez crisis; and above all the financial difficulties of the High Dam project, which may be considered to be a turning-point towards more state economic intervention. When the International Bank, USA, and Britain all refused to finance the High Dam project, the Government decided to nationalise the International Suez Canal Company in July 1956 as an alternative source of finance.

B. GUIDED AND REGULATED CAPITALISM - 1957-1960

By the end of the Suez War and the evacuation of the Canal Zone, a new turn had been taken in Government policy. The negative response of both businessmen and investors to the governmental inducements, together with the reluctance of both banks and insurance companies to give support to the projects of PCDNP, made direct measures seem necessary. The governmental desire to achieve real progress over a short period made the Revolutionary Government realise that their economic policies had to go beyond the creation of a favourable atmosphere for private enterprise. The State had to take the lead in pushing the economy forward. This was accompanied by the nationalisation of all foreign banks and insurance companies. An "Egyptianization Law" placed the State in a good position to control the main channels of finance, and investment through the replacement of foreign nationals at the head

of all major corporations.

Agriculture policy was focussed upon the government efforts to organise peasants into groups within co-operatives, and to the starting of the High Dam project. Economic policy during the course of this period was, however, more concentrated on industrialisation and connected particularly with the acute problems of investment. In January 1957, the Revolutionary Government set up two new purely public organisations - the National Planning Committee (NPC), and the Economic Development Organisation (EDO). The first replaced the consultative bodies (the Councils for Development of National Production, and Public Service),⁽¹⁾ and was given the specific objective of preparing a long-term plan for social and economic development which could mobilise public and private effort. Intensive studies were carried out by teams of Egyptian officials and foreign experts, for a plan scheduled to begin in 1960.⁽²⁾

In the meantime, a separate Five-Year Plan had been prepared by officials of the Ministry of Industry to begin in 1958. The plan purposed to increase the rate of growth of industrial production from 6% to 16% per annum.⁽³⁾ Actually the annual investment of £E34 million was focussed on elevating the rate of industrial growth of a selected 150 projects only.⁽⁴⁾ To finance the plan the government intended to provide 61% of the finance from public sources. This was directed at heavy industrial projects, Light industry and more profitable outlets in the service sector were left to private investors. Private investment was constrained by legislation such as Law 7 of 1959, whereby firms were compelled to

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- (1) Morshidy, A : Planning Economic Development in the UAR, unpublished report for UN, Cairo, 1963, p 24
 - (2) Tinbergen, J : Draft Reports on Egyptian Planning, National Planning Committee's memo 165
 - (3) Ministry of Industry : Industry After the Revolution and the Five-Year Plan, Cairo, 1957, p 101
 - (4) Ibid, p 165

invest 5% of their net profits in state bonds.⁽¹⁾ In addition, restrictions were placed on investment, where expansion, change in purpose, or location of any industrial plants was involved.⁽²⁾ This Law, Law 7 of 1959, proved to be the turning-point which led to more State intervention, after the industrial firms within the Bank Misr group challenged Governmental rights on the matter. Other legislation reduced rents and lowered the incentive to invest in property. It also slightly decreased the cost of living for urban workers, while restricting their job mobility as a result of the accommodation shortage in urban industrial areas.

The government launched their attack on the administrative structure by setting up the EDO in January 1957. The board directors of the EDO included ministers, part-time civil servants, and only one businessman. All of them were appointed by a Presidential Decree for an unlimited period and they were responsible directly to the President.⁽³⁾ The Revolutionary Government placed a major part of its public enterprise under EDO's management, and provided it with an authority over policies of investment and production of the affiliated companies in which the government held shares. As the managing centre for the State and holding organisation, EDO had a controlling influence on the national plan for industry and sought to gain co-operation, co-ordination and a unity of purpose around that plan.

The actual control exercised by the Government through the EDO was made obvious in the constitution of board representation, in its policy reports, and in the annual accounting audit. EDO had a power to appoint

(1) Information Department : UAR Yearbook, Cairo, 1959, p 137

(2) Law 21 of 1958, for Organising and Encouraging Industry

(3) Morshidy, A : Planning Economic Development in the UAR, op cit, p 24

the chairman and a majority of the board directors of any affiliated company if the State owned 25 per cent or more of its shares (a case of most firms). If the State's shares were less than 25 per cent but over 5 per cent it had a right to be represented (at least by one director) on a company board in proportion to the EDO's shareholding.⁽¹⁾ Secondly, all policy decisions taken by company boards had to be reported within three days to the EDO for ratification and might be returned within one week of the company board's submission.⁽²⁾ Although the EDO was entitled to demand a revision of policy, it had no power of veto, particularly when the policy decision was approved by a two-third of the company board directors and/or confirmed by its General Assembly. All accounts of the affiliated companies had also to be reviewed and an annual audit report to be presented by the State Accounting and Auditing Department.

The influence of the EDO as a holding organisation in its own right was fairly important. Fifty-two companies were affiliated to it in 1958. Some were old-established public enterprises, others were foreign-nationalised firms, and a later group were more recently founded in combination with private capital. EDO's share capital in its affiliates ranged from 20 per cent to 100 per cent (only 10 firms were completely owned). Thirty-four affiliates were industrial firms: ten were in mining and oil companies, six in chemicals, six in textiles - spinning, weaving, and dyeing, six in metallurgical, engineering and building, three in ceramics, and three in other industries.⁽³⁾ Eighteen were financial and commercial companies: seven in banking, five in insurance, and six covered air and surfacetransport and foreign and international trade agencies.⁽⁴⁾ Thus EDOs influence was widespread and its activities expanded and became

(1) - O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 91
 - El-Kammash, M : Economic Development and Planning in Egypt, op cit, p 284
 (2) EDO : Yearbook 1958-59, Cairo, 1959, pp 17-18
 (3) Al-Barawy, R : Economic Development in the UAR (Egypt), Anglo-Egyptian Bookshop, Cairo, 1972, p 68
 (4) - Ibid
 - O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 95

more significant with time. Investment devoted to the EDO's projects increased from £E57,900,000 at the end of 1957 to £E71,235,000 by the end of 1960.⁽¹⁾ Altogether the affiliated firms produced less than 12% of the total industrial output and employed not more than 10% of the industrial labour force. But after excluding small firms and concentrating upon businesses that were amenable to public control, they produced roughly a third of aggregate output, and provided employment for about 20% of the labour force. In other words, publicly controlled firms dominated the primary sector of employment.

The very strong group of firms associated with the Bank Misr, which produced most manufactured products and above all textiles, became a principal focus of government planning activities. Textile companies belonging to the Bank produced 60 per cent of the textile output and provided employment for 53 per cent of the labour force engaged in the textile industry.⁽²⁾ Back in the Great Depression, the monarchical government took over some of the Bank's capital share as repayment for bank debts of £E2 million. The Revolutionary Government exploited this opening to impose close control over the Misr Group. The insistence of the Misr Group in investing more in textiles against the wishes of the Revolutionary Government led to another wave of nationalisation in 1960.

By this time it was becoming too difficult to manage so large a sector of public enterprise through only one administrative structure. EDO was augmented by the newly formed Development Organization (MDO) created to run the newly nationalised companies of the Bank Misr, and, in addition, the Nasr Development Organization (NDO) to supervise the remaining

(1) Al-Barawy, R : Economic Development in the UAR, pp cit, p 68

(2) Bank Misr : Economic Bulletin, Cairo, January 1960, p 43

nationalised companies affiliated to the Ministry of Industry. The existence of these three clusters of multi-purpose organisations, covering a wide range of economic activities, permitted some competition between companies working in the same field. It also created some problems. For instance, it was difficult to recruit the required numbers of qualified specialists in all these fields from industry and the civil service to carry out the task of three new public organisations. With specialised labour in short supply, the triplication of effort led to wastages of manpower. Coordination of these independent giants at national level tended to worsen rather than alleviate the problems of planning.

The failure of the USA to co-operate further with the new regime, and the initiative of the USSR in financing the High Dam and its associated industrial projects, provided the final impetus towards the "Socialist, Democratic, and Co-operative Society".

C. THE PLANNED SOCIALIST ECONOMY OR THE "CENTRALISED MARKET ECONOMY" AND THE DOMINATION OF PUBLIC ORGANISATION (From 1960 up to the present day)

When the Ten-Year Plan for Economic and Social Development came into operation in July 1960, the Government intended to become more involved in economic development than ever, and it actively attempted to build up a favourable atmosphere for a centralised planned economy. The ambitious aim of the plan was to double real national income over the following decade. It set out detailed investment, saving, production, and consumption targets for every part of the economy. The Plan's investment of £E700 million was allocated among the economic activities as follows: 34.1% to industry, 26.8% to service and building, 23.1% to agriculture, and the remainder of 16% to power supplies.⁽¹⁾ It was expected optimistically that, nearly 20%

(1) Egypt, Comite de Planification Nationale : Cadre du Plan, 1960-65, Cairo, 1960

of the finance required for the first two years was to come from abroad in the form of loans and grants; local private funds were to provide 70% of the required domestic finance. By the end of the Plan, 55% of the required domestic finance was being provided by private sources, and the remaining 45% by the retained profits of government controlled businesses. (1)

Apart from the higher rate of growth for the public sector, the whole success of the Plan was to largely rely on co-operation from private businessmen and investors. If private enterprises failed to fulfil the production targets formulated in the Plan, the government would immediately encounter supply bottle-necks, and its own programme of investment and production also would be frustrated. Nevertheless, the government could do little to take positive action to realise investment and production targets. By 1961, the support of private enterprises was judged to be extremely inadequate. The Government announced that the private sector had failed to achieve their targets for the first year and commenced a third wave of nationalisation. By the end of June 1961, the entire cotton trade passed into public ownership. All firms engaged in external trade came under the jurisdiction of the Ministry of Economy. At the beginning of July of that year, the State took over another shipping line company (Khedivial Company) because it had refused to carry out wage legislation, and had surceased its operations without official permission. Towards the end of July 1961, the government by Law 117, nationalised all the remainder of private banks and insurance companies, as well as 44 other companies engaged in such basic industries as copper, cement, timber, motorised transport, and electricity. Moreover, by the expropriation Laws 118, and 119 of 1961, the State appropriated

(1) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 112

half the capital of 86 commercial and light industrial companies and limited individual shares in 147 other companies to a market value of £E10 thousand, with the amount of excess being expropriated. (1)

The rift between the Government and private capital was by now appearing throughout many parts of the Arab world. The earlier foundation of the United Arab Republic by the governments of Egypt and Syria was an indication of a new form of Muslim nationalism incorporating socialistic principles. The 1961 military coup d'etat in Syria broke up the nascent union, together with the early attempts at jointly planning the two economies. However far from distracting President Nasser from his evolving goals his Government increased their encouragement and support to the public sector. Later Governments maintained public industry as the basis for their planning. In the present Ten-Year Plan for Economic Development of 1973, about 90% of its total investment of £E8,400 million has been devoted to public sector projects. (2)

On the other hand, nearly all land, houses, motorised transport (ie taxis), small sized industrial and commercial enterprises making up three-quarters of companies and shops in internal trade, have all remained outside the public sector. But although these properties are privately-owned, their activities are strongly regulated by the State. For instance, the provision of agricultural input (seeds, fertilisers, machinery, credit, etc) and the collection and sale of land produce, are all controlled by public agencies. Private rents are regulated on all properties (3) as are profits and wages. For example, profits should be allocated, by Law 113 of 1963, as follows: 5% for buying state bonds, 20% as a company

(1) Ibid, pp 130-131

(2) The Ten-Year Economic Development, in The Arab Economist, Beirut, Vol 6, No 64, May 1974, p 15
Federation of Egyptian Industry : Yearbook, Cairo, 1974, pp 23-26

(3) O'Brien, P : The Revolution in Egypt's Economic System, op cit, p 135

reserve, and 25% of the remainder to be distributed to company employees in proportion to their wages and salaries.⁽¹⁾ By Law 114 of 1961 and 141 of 1963 private companies must also allow employees to elect four board directors.⁽²⁾ Subsequent legislation compels private firms to provide all social security benefits up to the standard adopted in the public sector, to reduce the working week to 42 hours, and to pay at least the minimum daily wage of 25 piastres for an adult worker.⁽³⁾

The expansion of the public sector was the means to two ends. Alongside the economic objectives, which aimed to promote and modernise the Egyptian economy through industrialisation, revolutionary regime also intended to eliminate economic inequality between people through the redistribution of both wealth and income. President Nasser described the enlargement of the public sector as the "application of socialism in its real meaning". Hence, the extension of public enterprise in Egypt through nationalisation was explained in a whole battery of slogans drawn from the ideology of socialism. Some Egyptian ministers announced that the July decrees aimed:

"to turn all citizens into owners; to permit people to control the means of production; to orient production to the public interest, to reduce class differences, to eliminate feudalism, monopoly and the dictatorship of capital; to give society a base from which to prevent exploitation and domination by a minority."⁽⁴⁾

Consequently, many objective economic questions on the economic situation cannot be asked without considering their political implications. What are the contemporary problems encountered in the process of Egyptian

(1) Ibid, p 136

(2) Ibid, p 136

(3) Ibid, p 136

(4) Middle East Journal : The Emergence of a Socialist Ideology in Egypt, Spring 1962, pp 133, 139 and 142



industrialisation through the public enterprise system? How does the system work as a whole to achieve these attractive slogans, particularly in the field of industrial relations? What is the framework of industrial relations that has emerged from twenty years of attempted socialist planning? All of this has of course to be placed against the fact that no more than a quarter of the active workforce is to be found in formally registered employment. The scope for individual evasion of State regulation in employment, as in other areas of Egyptian life, remains enormous.

D. OPEN DOOR POLICY FOR ECONOMIC RECOVERY (Since 1974)

After the successful crossing of the Suez Canal at the beginning of the 1973 War, there was a sense in which Egypt felt it had earned a rest. It hoped it would have time to turn attention to internal problems, notably the economy. Since 1974 President Sadat has tried to reverse the established state capitalism through his "infitah" (open door) policy which aims in the long term at reducing the size of the public sector, and encouraging the private sector and foreign investment. The weakness of the economy and the enormous drain on resources caused by defence spending provided a first reason for change. Secondly, the provision of aid on a massive scale has inevitably meant that Egypt has had to take some note of conservative opinions, particularly in the Arab world.

As we have seen, before 1974 the Egyptian economy was becoming increasingly centralised. Three key changes took place after the October War. An investment law was passed to encourage foreign companies to set up joint ventures in Egypt. Banking laws were amended to smooth the path for foreign banks to be the first foreign companies to take advantage of the new climate. Tax laws were also amended to create incentives for domestic savings.

Oil companies and banks have been the first to arrive but foreign manufacturing companies have been slow to invest over the last five years. There had been inadequate legal and structural preparation in spite of efforts to create a better financial climate for foreign companies. Egypt's foreign exchange regulations have been gradually eased since 1974. A parallel market of exchange has been set up to increase the availability of foreign currency, although more expensively. However, foreign companies were still obliged to import money at the official rate, but to repatriate it at the parallel rate which devalued their investment. Moreover, as the shortage of hard currency dominated government policy, stocks of intermediate goods dropped and capital investment actually decreased by one-fifth over 1975.⁽¹⁾ This was mainly because the trade balance became increasingly adverse as cotton prices decreased, while imports rose in both volume and price in 1974 and 1975.⁽²⁾ At the same time pressure was being put on Egypt by the chief aid donors, Saudi Arabia, Kuwait, and the USA, to introduce a policy package recommended by the International Monetary Fund (IMF). Crucial among the IMF recommendations was the demand that subsidies to consumer goods, which had increased with world prices since 1973, should be cut as they were considered one of the prime reasons for Egypt's current account deficit. In January 1977 the government introduced a Budget cutting subsidies by half. The measures led to riots against the price rises. Ironically the riots triggered a series of moves which pushed the economic reforms onwards.

The IMF decided that Egypt was a special case and granted a long awaited stand-by credit in April 1977. This was the clean bill of health creditor nations had been waiting for. The Arab States agreed also to

(1) Tingay, M : Economic Strategy, Financial Times Survey, Egypt (Supplementary Edition on Egypt) 1st August 1977, London p 13

(2) McDermott, A : The Pains of Restructuring, Financial Times Survey, op cit, p 13

postpone for five years their calls on demand deposits of \$2bn.⁽¹⁾ The Egyptian government agreed to proceed with plans to cut subsidies gradually in order to expose the public to more realistic prices. Finally, a large chunk of foreign trade moved to the parallel rate except for essential export goods; such as cotton, rice, petroleum and its products; and imported goods such as, wheat flour, edible oils, sugar, tea, fertilisers and insecticides.

These changes mean that Egyptian public companies pay only for the most vital goods at the artificial cheap official rate. The total effect on prices of this transfer pushed up manufacturing costs because of more expensive intermediate goods. After the batch of transfers to the parallel rate in 1975 and 1976, the public companies did not pass on the cost but absorbed it.⁽²⁾ This meant public companies increased losses or decreased profits, and the effect was ultimately felt in increased government borrowing from banking system.

These costs have been added to those of overmanning and unused capacity. These are the two chronic ailments remaining, causing inefficiency in public companies of Egyptian industry. Overmanning is the heritage of President Nasser who saw the industrialisation of Egypt not just as a means of boosting national income but also of creating full employment. The history of unused and underused equipment dates from 1967 when a large part of the nation's resources were diverted into the military effort. A similar slump in civilian industry occurred in 1972 and 1973 when defence absorbed nearly all available foreign currency. This meant spare parts and new equipment could not be bought for factories. In 1974 many factories were only operating at one-third capacity.⁽³⁾

(1) Tingay, M : Economic Strategy, op cit, p 12

(2) Ibid

(3) Tingay, M : Two Chronic Ailments Remain, Financial Times Survey, op cit, p 16

Therefore, administrative changes in industry were started late in 1975 when the public economic organisations, which controlled policy and production of companies, were abolished. This drastic amendment to the central planning machinery was meant to give more freedom of decision and management responsibility to the boards of public companies. The new boards have the power to control their own budgets, fix production targets and prices, raise capital and make investment, but not to lay off excess labour or to relate prices to production costs. Yet they are meant to accept responsibility for meeting targets. In consequence of management accountability, dozens of senior directors in industry, including 29 chairmen of public companies, were suddenly removed from their posts for inefficiency or failing to reach targets of 1976.⁽¹⁾ The purge seems to have created insecurity among senior managers throughout the public sector, who can do little to affect the constraints of wage policy and the policy of full employment which was bastion of Nasserism and is still applied in principle today. As long as companies are told how many people they must employ and how much wages are to be paid, and are unable to sack employees, they will not be able to regulate the overall efficiency of factor use.

The subject is too sensitive for public debate, but will have to be faced by the planners sooner or later. With hundreds of thousands of youngsters coming onto the labour market each year, the government has found a partial solution to the lack of jobs by encouraging emigration. This pushes the problem out of sight and it has the advantage of boosting the foreign currency sent home by workers abroad. But it has also caused a drain in manpower which has forced up the cost of skilled labour 300 per cent between 1974-76.⁽²⁾ Egypt now suffers from a shortage of skilled and surplus of unskilled labour.

(1) Ibid

(2) Tingay, M : Economic Strategy, op cit, p 13

It seems that the Egyptian government has insisted on maintaining the national system of job evaluation and National Cadre of Wages and Salaries (NCWS) as a means of rationalising and controlling labour market forces. It is believed that the system helps management to keep labour costs down and allows the government to control the pace of inflation. Also, as workers are not supported with strong trade unions, the system is designed to treat workers equally and to protect them against employers' exploitation under the increasing freedom allowed by the Open Door policy.

Summary:

Since the beginning of the nineteenth century, successive regimes have attempted to establish Egyptian industry and to promote her economic development. The process has been promoted under different ideologies, many of which may be considered as offering contradictory approaches to the problem.

In this chapter the history of Egyptian economic development has been divided into four main stages. Firstly that of Mohamed Ali who in the first half of the nineteenth century (1805-44) ruled over an even more centralised and regulated economy than the system which has emerged today. After 1850, the command economy established by M Ali disintegrated gradually towards a free-market laissez-faire system of production. By the Great War, markets almost entirely free from state intervention have emerged in land, labour, capital, and for the sale of industrial and agricultural commodities. While the state retained overall responsibility for the maintenance and extensions to the irrigation system, roads, railways, and ports.

But the literature reveals that between 1914 and the revolution of 1952, under the impetus of two World Wars and the Great Depression, successive governments began to intervene in economic policy in order to mitigate the

effects of wartime inflation. The Government therefore imposed controls upon food prices and enforced the code of legislation governing wages and working conditions for labour, who were by now employed in large scale industry and commerce. The Government had perceived that the way forward for Egypt was through industrialisation and gave private industry all possible aid to expand. Tax concessions, cheap credit, subsidies, railway rebates, and above all tariffs helped to make the two decades after 1930 a period of impressive industrial advance.

For only four years after the revolution of 1952, the Government continued to promote development and social welfare along the lines initiated by their predecessors. After the Suez War the Government interest in development became more pronounced. In order to achieve real and obvious progress over a short period of time, the revolutionary government realised that their economic policies had to go beyond the creation of a favourable environment for private enterprise. Thus between 1957 and 1960, the Government gradually appropriated responsibility for capital formation and used every conceivable form of pressure and inducement to impel the private sector to comply with its plans for development. By 1961, the negative response of the private sector to inducements and appeals implied that the state had to take the lead in pushing the economy forward through national planning. Rather than risk the success of the plan, the government preferred to nationalise those parts of the economy amenable to central control. The administration of industry, commerce and services had become more specialised and more formal. However the forces of centralisation and vices of bureaucracy appear to have operated to nullify the constitutional arrangements for the conduct of industry. Moreover, the internal and external political pressures and frequent wars had weakened the economy. Therefore since the October War of 1973, the Government has tried to dilute the established form of state capitalism through the "Open Door" policy. It aims in the long term at reducing the size of the public sector and encouraging foreign investment in the private sector.

PART II

CHAPTER FOUR

PART TWO

CHAPTER FOUR

I : GENERAL BACKGROUND OF JOB EVALUATION

Job Evaluation Defined:

Job Evaluation (JE) was defined by the National Board for Prices and Incomes⁽¹⁾ as a "means to the comparison of jobs by the use of formal and systematic procedures, in order, after analysis, to determine the relative position of one job to another in a wage or salary hierarchy." According to the British Institute of Management,⁽²⁾ it is "the process of analysis and assessment of jobs to ascertain reliably their relative worth, using the assessment as a basis for a balanced wage structure." Morris⁽³⁾ describes it as "a technique designed to assist in the assessment of the respective worths of different jobs so that equitable rates of payment may be determined."

More precisely, Dr Jong⁽⁴⁾ explained that, "it is the process of job analysis, job description, job grading and job assessment!" Or from the point of view of the TUC⁽⁵⁾ it was described as "a process used at company - but sometimes at industry - level in order to determine the relationship between jobs and to establish a systematic structure of wage rates for them. The purpose is to establish the rate for one job in relation to another."

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- (1) National Board for Prices and Incomes : Job Evaluation, Report No 83, HMSO, London, 1972, pp 1,47
 - (2) British Institute of Management : Job Evaluation - A Practical Guide, 2nd ed, London, 1961, p 77
 - (3) Morris, J W : Job Evaluation, The Institute of Supervisory Management, 4th ed, Lichfield, 1973, p 10
 - (4) Dr Jong, J R : Job Evaluation : History and Trends, Some Approaches to National Job Evaluation, a symposium, Foundation for Business Responsibilities, 1st ed, London, November 1972, p 7
 - (5) same as (1)

Moving upwards to the Netherlands Committee of Experts⁽¹⁾ - who attempted a national job evaluation - we hear it defined "as a method which helps to establish a justified rank order of jobs as a whole, being a foundation for the setting of wages," or as the "starting point for establishing a relative differentiation between base wage rates." This latter emphasis on the standardised nature of job evaluation is taken up by the ILO⁽²⁾ definition of JE as "an attempt to determine and compare the demands which the normal performance of particular jobs makes on normal workers without taking account of the individual abilities or performance of the workers concerned." Individual abilities or efforts may, of course, also be taken into account and reflected in the workers' earnings, for example under a system of PBR or of merit rating, but this is something entirely different from the rating of the job. Job evaluation is seen as rating the job, not the man.

It may be noted that some of these definitions refer to the determination of the relative value or worth of jobs, while others merely speak of their ranking, but all of them indicate its main objective - that of creating a structure which is sufficiently standardised to create homogeneous groups of workers for the purposes of administrative convenience and for the operationalisation of policies whether designed to create economic efficiency or social justice.

Basic Assumptions in Job Evaluation:

It is important to formulate the basic assumptions of job evaluation in the beginning, because if they are not accepted by the reader then the technique will be rejected at the start. According to Morris⁽³⁾, it

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- (1) National Board for Prices and Incomes : Job Evaluation, op cit, p 47
 - (2) International Labour Office : Job Evaluation, Studies and Reports, New Series, No 56, 7th impression, Geneva, October 1972, p 8
 - (3) Morris, J Walker : Principles and Practice of Job Evaluation, 1st published, Heinemann, London, 1973, pp 18-20

is possible to summarise these assumptions as follows:

The work must have some intrinsic worth when judged against certain criteria which can be identified, specified and quantified. The usual criteria are (a) those human characteristics or qualities that are required to do the work satisfactorily, and (b) these characteristics or factors, such as, skill, responsibility, etc, will be in more or less short supply. Thus it is possible to assume that there are certain aspects of work that affect its value to the employer. Other aspects of work such as danger and bad working conditions have a disutility to the employee and these have also to be recognised in an evaluation.

It is assumed that it is worthwhile to find out what work is worth, and that the knowledge can be put to some use. This assumption is based upon two others:

- that those jobs which, according to the chosen criteria are similar are of equal value, and
- that those which are not similar are of different value and these differentials can be quantified.

Another major operational consideration is that if the correct factors are chosen as criteria and if these factors are then valued correctly in related to each other, then the job value so determined can be related to an appropriate structure and system of wage payments (anomalies excepted). This condition should also hold when the economic pressures affect wages, and they have to be altered accordingly. So long as the criteria do not change neither should the evaluation. Thus the system will need to be carefully maintained in times of inflation if it is to serve its intended purpose. But the criteria and their application will have to be regularly assessed with an eye to their

continued viability in changing technological and organisational contexts.

Objectives of Job Evaluation:

In order to consider job evaluation as "an agreed logical basis" to "eliminate inequitable payment", many advocates indicated the value of the use of job evaluation. Morris⁽¹⁾ sees these objectives as the allocation of a relative value to work at a specific moment in time and in one place, under accepted criteria. Changes in worth or wage fluctuations can then be identified, isolated and quantified. It measures work in points or grades rather than in money, and only afterwards places a cash value on the latter. This is seen as avoiding the emotional aspects of the latter while engaged in the drawing up of a taxonomy. It thus supplies a base for negotiation between management and labour that depends on facts rather than on vague indeterminate ideas of relative values. It reveals wage anomalies between groups of workers making it easier to correct. In designing a wage structure, it also helps in rationalising and simplifying the system by reducing the number of separate and different rates. It shows where the money goes when paid for labour services and helps to isolate the factors regarded as valuable by the employer - while also giving a value to such factors relative to one another enabling standard evaluations to quite different changes in task content. In this way it should be possible to see whether wage claims are reasonable or exorbitant in terms of these accepted criteria.

Whether these objectives are accepted as logical or not, they will normally emerge from negotiation, or at least be submitted to the process of consent. Negotiation here has the function of, first, reconciling where necessary, differing views of the relationship between one job

(1) Morris, J W : op cit 1973, pp 2-5

and another. Secondly, it establishes and ratifies the general acceptability of the rankings achieved by the proposed job evaluation scheme. Acceptability is indispensable to the working of a job evaluation scheme whether at plant or national level.

Different Approaches to Job Evaluation:

The general problem in Britain appears to be that bargaining over earnings at workplace level is often fragmented, taking place now with one small group, now with another. Anomalies have therefore arisen in the pay of different employees in the same factory, for example, the unskilled being paid more than the skilled. Meanwhile the struggle of one group to keep abreast or ahead of another has led to increases in earnings far beyond any increase which may have been negotiated nationally and indeed beyond the rate at which productivity in the country generally is rising, with inflationary results. In many organisations these problems result in employees feeling that the total remuneration system is unfair, inequitable and arbitrary, and even in situations where management itself has been unable to give any logical reasons for the pay differentials. It is not surprising therefore that the British Institute of Management⁽¹⁾ believes the importance of using job evaluation lies in its logical, factual and systematic approach to the determination of job relationships.

At the national level, Professor Phelps-Brown⁽²⁾ indicated that it is much harder to get a common view of the relative requirements of jobs in different industries, but if it can be obtained, it should lead to a similar acceptance of the fairness of certain relativities - even

(1) British Institute of Management : Job Evaluation, A Practical Guide for Managers, 1st edition, Management Publication Ltd, London, 1970, p 5

(2) Professor E H Phelps Brown : Inter-Industrial Job Evaluation and Collective Bargaining, Some Approaches to National Job Evaluation, p 5

when this means that customary relations should be changed. Phelps Brown sees collective bargaining today as largely a struggle for the division of the product of industry not between capital and labour, but between different groups of employees. In so far as job evaluation promotes agreement on what relationships between pay paid to different groups could be accepted as fair and reasonable, it might help to make it possible to raise the pay of particular groups without precipitating a general movement throughout the economy. It would eliminate wasteful power struggles between different groups of workers.

Characteristics of Job Evaluation:

There are at least three characteristics of job evaluation schemes, which the ILO⁽¹⁾ stress:

(a) Accuracy

Job evaluation can be regarded as being rigorous only to the extent that it treats its problems in an orderly and systematic fashion. At the same time the method of evaluation must be worked out and applied in a practical and sensible manner. The method of rating must not attempt to be more accurate than is warranted by the basis of evaluation and the power of the argument for using any particular factor. The assessor must aim at a reasonable degree of precision in objectively determining the facts and comparing the elements on which the ratings are based. To this end various "scientific" means of measurement may be undertaken but he should not lose sight of the fact that the resultant job grading is to be based on a value judgement.

(b) Intelligibility

If the workers and trade unions are to trust it, the system of job evaluation must be easy to understand. If the worker

(1) International Labour Office : Job Evaluation, op cit, p 128

himself takes part in the rating process this may help to establish confidence.

(c) Flexibility

The job evaluation scheme must be flexible enough to be adapted to the special features of the field in which it is applied.

Job Evaluation Methods:

There are many methods of job evaluation, these methods differ from the point of view of their usage, their simplicity and complexity, and their acceptability.

A - Older Methods : Job evaluation by Scientific Management

- i - The Non-Analytical methodsie the ranking method and the grading or classification method
- ii - The Analytical methods
 - eg Factor Comparison method and the points rating system
- iii - The Highly Analytical methods
 - eg the Job Profile method
- iv - The Combination or Composite methods

B - Newer Methods : Job Evaluation by Managerial Audit

- i - The Time Span of Discretion method
- ii - The Decision Band method

Although some older methods differ significantly from others, there are, within each, elements common to all. The most commonly used methods involve four major stages of work:

- Analysing and specifying in a written job description the content of a job in terms of responsibilities, knowledge and skills required.
- Systematically and consistently assessing the job factors involved

in each job relative to the demands of other jobs

- Producing a rank order of jobs based on the assessments, and devising a grade structure so that jobs of similar levels of value are placed in the same grade
- Determining how much money is to be paid for jobs in each grade.

Watson⁽¹⁾ gives the best summary of the comparison of basic job evaluation systems in the following diagram.

It will be seen from this diagram that the newer methods of JE attempt to move away from a direct comparison of one job with another.

It will be seen from Watson's illustration that the newer methods move towards an attempted evaluation of what Lupton and Gowler refer to as work that is rewarded in a "non-reciprocal" manner.⁽²⁾ The factors included in the evaluation of salaried employment tend to be more difficult to assess than are the tasks of manual workers. Decisions taken by a professional person or senior administrator generally have much more long run consequences for the organisation. Even where this may not be true, ie where the junior employee is responsible for the well-being of a £2 million machine for instance, it is the executive who is seen to carry responsibility for its operation. Thus other methods of controlling and structuring the status and rewards of senior personnel have been evolved by consultants and academics.

The Main Techniques of Job Evaluation

Job Evaluation is essentially concerned to determine the relative position of each job in comparison with another. It is an exercise for the

(1) Trade Union Congress : Job Evaluation and Merit Rating, 4th ed, TUC, London, 1974, p 35
 (2) T Lupton and D Gowler : Selecting a Wage Payment System, Kogan Page Ltd, 1969

Illustration 4-a

Comparison of Basic Job Evaluation Systems

		TYPE OF PLAN		ADVANTAGES		DISADVANTAGES	
		INTEGRAL	ANALYTICAL	DOMINANT ELEMENT	INTEGRAL	ANALYTICAL	DOMINANT ELEMENT
INTEGRAL	Compares total jobs	Becomes more difficult as number or variety of jobs increases. (But computer can overcome this as in eg Direct Consensus, Profile method)	Requires time and costs more. Effect of interaction of factors may be lost. Factor may be difficult to choose or agree.	Simple, easy to understand, avoids time and expenses of analysis.	Concentrates attention on specific aspects of the job. Assists objectivity. Helps formulation and application of policy.	Jobs must be known to evaluators or described in great detail. Review documentation may be weak.	Time and cost of preparing scales may distort comparison of jobs if not well chosen. May be too rigid.
ANALYTICAL	Analyses jobs and compares them factor by factor	Requires time and costs more. Effect of interaction of factors may be lost. Factor may be difficult to choose or agree.	Requires time and costs more. Effect of interaction of factors may be lost. Factor may be difficult to choose or agree.	Concentrates attention on specific aspects of the job. Assists objectivity. Helps formulation and application of policy.	Concentrates attention on specific aspects of the job. Assists objectivity. Helps formulation and application of policy.	Reduces preparatory work. Simplicity. Flexibility of application.	Basis for decisions is integral to the system and can be used by evaluators who do not know all jobs. Wide range of jobs may be compared.
DOMINANT ELEMENT	One element considered to be main determinant of pay used for comparison	Experience of their use is limited. The usefully draw attention to importance of responsibility but leave out factors for which workers expect to be paid. They are claimed to be suitable for all types of jobs.	Experience of their use is limited. The usefully draw attention to importance of responsibility but leave out factors for which workers expect to be paid. They are claimed to be suitable for all types of jobs.	Experience of their use is limited. The usefully draw attention to importance of responsibility but leave out factors for which workers expect to be paid. They are claimed to be suitable for all types of jobs.	Experience of their use is limited. The usefully draw attention to importance of responsibility but leave out factors for which workers expect to be paid. They are claimed to be suitable for all types of jobs.	Rank order decided by successive slotting in or paired comparisons. Usually then grouped in grades and pay rates established.	Each job is compared with examples or specification of work for each grade. Pay rates for each grade determined before or after by survey.
						FACTOR COMPARISON	POINT RATING
						Money scales for each factor developed from each key job as anchor point. Jobs also ranked by factor. Rates determined by comparison with key job.	Jobs analysed and compared factor by factor with definitions which determine points. Scatter diagram and survey used to determine rates.
						TIME SPAN OF DISCRETION	DECISION BAND
						Based on time required to detect bad decisions. Rate established for time span and age graph.	Job graded according to type of decisions made.

establishment of job grades and hence associated wage and salary levels. The term job evaluation covers a wide range of techniques used in a diversity of organisations. Some of these techniques are very simple and inexpensive, while others are more expensive, complex, containing more detail and elaborate instructions for distinguishing the elements of job contents. Four main types of job evaluation schemes are in common use based on four different methods, namely the ranking method, the grading or classification method, the factor comparison method, and the point rating method. The first two are normally referred to as qualitative or non-analytical methods, while the second two are usually described as quantitative or analytical methods. There are also examples of schemes of composite evaluation which may combine certain features of all types. Finally, there are also other methods developed recently and can be used, namely the 'time span of discretion' method and the 'decision-banding' method.

It is necessary for all four methods, except the ranking method, to define clearly either grades to place jobs into or factors to evaluate jobs with. The jobs have then to be thoroughly examined and described in order to provide the basic data with which to evaluate them. In the case of a quantitative method, job analysis should be made to break down the job content into elements corresponding to each of the selected factors. Finally, the jobs should be compared with each other or with other groups of jobs in order to arrange them in an accepted order or hierarchy. The differences between the methods will be described here very briefly as background to our later criticism. Fuller details can easily be found in many job evaluation manuals. The methods will be mentioned in order of popularity as follows:

A. Non-quantitative Methods:

1. Ranking Method:

The ranking method is the simplest of the four job evaluation techniques and has been used to grade jobs since 1920. It aims to rank each job as a whole against another according to its difficulty of operation or contribution to the final output, disregarding its present incumbent or pay rate. A set of grades are always determined after the job description has been done, hence grades can only be ranked according to the description provided in this first step. The job description normally contains a table of duties, responsibilities and qualifications required for its successful performance. To achieve a complete ranking of certain groups of jobs, key jobs - the least and most important jobs - are selected and identified. The remainder of the jobs are ordered around such "key" jobs according to a 'paired comparison' of each with a "key". Finally, the ranked jobs are divided into grades and pay levels determined in respect to the structure thus agreed.

The method produces a determinate job hierarchy which can be easily understood by those affected and hence ease the way for an acceptance of associated rates of pay. As it is economical in application it may suffice for the needs of small organisations, but it becomes impracticable in larger ones. Moreover, it is very difficult for assessors to maintain the distinction clearly between the contents and requirements of a job, and its present grade, pay level, and the personal qualities of incumbents. Hence, its results may be found very difficult to defend under a heavy attack.

2. Grading or Classification Method:

This method is one of the most popular techniques, and has been applied mostly in the civil service and commercial organisations in the West since 1922. First jobs are divided into different classes, such as manual, clerical etc, by type of jobs or promotion routes. A set of grades

are usually determined before job descriptions are produced, based on significant differences believed to exist in the levels of skill, responsibility and other job factors in the organisation. Jobs are then examined according to their component elements but with an eye to placing them into the predetermined grades. A separate grading can also be developed for each job class in order to establish a complete hierarchy of job grades within the organisation. Pay rates should only afterwards be determined and allocated to each grade of the hierarchy.

As the method considers also each job a whole, it is simple in the application particularly in small units or to limited range of jobs, and is relatively inexpensive. It is easily understood by most of the incumbents of evaluated jobs, and also fits well with human psychological process of classifying items. It may be preferred to quantitative methods because of its greater flexibility in application to jobs with changing nature. However, it becomes very complex and difficult to operate as the range of jobs widens, particularly in large organisations, which require a large number of grades with quite complex definitions.

B. Quantitative Methods

1. Factor Comparison Method:

This method is rather complicated in comparison with others and hence is less widely applied although it was first used in 1932. Its lack of popularity may be due to difficulty in explaining or justifying its results to employees as the conceptualising and generalising of job descriptions is not easily understood. However, it has been used successfully in some organisations such as the BBC (British Broadcasting Corporation), where the nature of jobs and other characteristics of the organisation expose themselves to the use of factor comparison method.

The first task is to select a number of factors which should be clearly defined. About five factors are usual but many practitioners prefer more

in order to obtain greater precision. A set of stable key jobs or benchmark jobs have to be selected, but not more than twenty jobs. These jobs should contain all the factors and reflect also the range of variation in each factor. Then, the chosen key jobs are ranked successively by reference to each of selected factors used in the scheme to produce a first hierarchy. The existing pay rate for each job is also broken down and distributed between the selected factors according to the contribution of each factor to job performance in order to produce the second set of hierarchy of wages. When the results of the two exercises are compared and reconciled, a scale with money values for each factor is prepared which may be assigned to further job grades. Finally, the remainder of the jobs can be evaluated using the two scales thus derived and a complete hierarchy of jobs and pay rates arrived at.

2. Points Rating Method:

The points rating system is the most popular of all, and it is the third method which has been developed since 1926. The basic idea of the system is simple enough for better understanding and proper use. Firstly, a number of 'job value factors' are usually selected by a group of experts in relation to all aspects of jobs to be evaluated. These must be relevant to the determination of pay differentials and cover major inputs such as skills, responsibilities, effort and working conditions. However, the number of factors vary from one plan to another, and over twenty factors are in general use. A 'measuring scale' is then designed for each factor. Varying 'degrees' of each factor are defined, and a 'score' of 'points' is given to each job under each factor heading. Secondly, a scale for each factor is weighted by allocating different proportions of the total number of points to each according to its relative importance with that particular job (ie the total of points must add up to 100 for each job but a single factor may make up anything from say 5% to 50% of the total. Thirdly, once the factors and weightings are chosen, key jobs should be

used to obtain reasonable structure for the whole. Key jobs provide benchmarks for particular grades in the way already described. They are therefore usually selected to represent the most features of their group and are fairly stable to avoid disputes about grades or rates across the whole grades as a result of change in one "benchmark" job. Fourthly, the scores for each job will then be totalled, and the jobs can be ranked in order according to the differences between, and the total point scores of all job factors. The final and most important step, which is outside of job evaluation process, is the conversion from a job structure measured in points to a pay structure measured in money. These pay rates may be determined by collective agreement, minimum wage legislation, or alternatively by the going-market rates.

The points method appears to be less subjective than factor comparison and avoids reference to money as factors and points are predetermined and not related to existing pay rates. This enables the evaluation process and wage fixing to be carried out separately. This may give a false impression that it is a scientific technique. The system is not, however, entirely objective, as the selection of factors, the ordering of the point values attached to each factor involves many arbitrary and subjective elements. However these are more fully recognised and articulated than in other systems. It may however suffer from a lack of flexibility in comparison with the grading method, simply because it is so clearly articulated and covers a wide range of factors and degrees. The method's high degree of formality may encourage a certain rigidity without achieving complete coverage of all factors. Nevertheless, it provides common standards and a structural discipline by which all evaluators can judge and express results. It is therefore more reliable between differing situations. Although the method is widely used alone, the classification method may be applied as a supplement, and the factor comparison method may support it in arriving at factors and weights that satisfy the

relationship between old and new pay structures.

Job Evaluation on Managerial Audit

Many job evaluation systems stop just short of the top level of the organisational hierarchy because of both real and imagined difficulties in evaluating executive functions. There are however several systems that attempt to evaluate such managerial functions. These attempts may be classified into three main groups:

- (a) the evaluation of managerial groups by job factors suitable to their circumstances,
- (b) the evaluation of all groups of employees including managers under one scale but varying the factors by grade of work,
- and (c) a third attempt aims to evaluate management by one factor or criterion, namely decision making. There are two theories, one is the time span of discretion and the other is the decision band theory; these are often described as managerial audits.

Job Evaluation for Managerial Employees with Different Factors

Many companies apply job evaluation schemes, especially point rating method in managerial areas. More recently a new attempt has been made to develop a so-called "profile method" of high-level job evaluation in executive areas of employment. The main essential of the new plan⁽¹⁾ is: a reliance on organisational and functional analysis rather than a specific description of the duties involved. Knowledge and experience is nevertheless emphasised as is the mental application required. Decisions are enumerated in relation to their contribution to planning and policy making.

(1) Hay, E D and Purves, D : The Profile Method of High-Level Job Evaluation, Personnel, American Management Association, Vol 28, No 2, September 1951, p 162

Accountability for errors or failure for performance, judgement or discretion, modified by checks and reviews are another basis for evaluation. Measurement is again comparative but no predetermined scales are used, and no definitions or descriptions of the various levels of each component are employed (though weightings are given to factors ex post facto). In accordance with Weber's Law, measurement is accomplished by using scales with 15% intervals.⁽¹⁾ The evaluation is then submitted to the top executives for discussion, possible modification and acceptance. An analysis is made of the salaries and other compensation paid in relation to point value of each job.

Job Evaluation for all Employees with the same Factors

There are many attempts to evaluate all groups of employees with the same factors, such as revision ranking method and point systems on a single scale. Each of the two attempts try to chose some factors as predominant in relation to different groups of employees.

In revision ranking method⁽²⁾, the relative worth of jobs may be determined by looking at two aspects:

- (i) Mental requirements
- (ii) Responsibility

While in the points system there may be ten basic factors such as education, job training and experience, job complexity and scope, accountability for errors, contact with others inside the firm, contact with others outside the firm, functional guidance of the work of others, handling confidential information, work surroundings and physical effort.

Apart from the difficulty in assessment, such methods are not easy to apply across different groups of employees in companies in different industries.

(1) see H Phelps Brown, "Inequality of Pay", Oxford University Press, 1977, p109-110
 (2) Lawson, T : How much is a job worth?, Personnel, American Management Association, Vol 43, No 5, September-October 1966, pp 18-19

Job Evaluation Plan for Different Employees with One Sole Criterion

There are two major techniques on the theory of decision making, namely time span of discretion and decision band theory, used to classify all kinds of jobs under one factor.

1. Time Span of Discretion

Jaques⁽¹⁾ held that there are two basic elements in work, a "prescribed" and a "discretionary" element. The "prescribed" element consists of work for which there are rules, regulations and policies obviating any need for the worker to choose between various courses of action: he just follows instructions. The "discretionary" element consists of work which allows the individual freedom to determine the way he will carry out his work. According to the theory responsibility exists in those areas of work where discretion must be exercised while not conforming to instructions. The level and the degree of discretion involved may be measured in terms of time.

Time span of discretion is defined as the longest period which can elapse in a role before the manager can be sure that his subordinate has not been exercising marginally sub-standard discretion continuously in balancing the pace and the quality of his work. Therefore, since time span measures the level of responsibility, the taking of time span measurements of a series of jobs enables job hierarchies to be determined.

This theory claims to relate this job hierarchy to a scale of external pay known as the equitable payment curve. This plots pay against time spans, and is used to show what is the felt-fair pay for a given level of work as measured by its time span. It held that felt-fair pay is that pay which individuals intuitively feel to be correct for the level of responsibility they are carrying, and further, that at a given level of

(1) National Board for Prices and Incomes : Job Evaluation, op cit, p 7

responsibility the pay which all the different individuals concerned feel they should receive is within very narrow limits, similar.

The National Board for Prices and Incomes⁽¹⁾, mentioned that research carried out in the Netherlands has indicated that there is a high correlation between the results of analytical job evaluation methods and results achieved by using the time span method for non-manual employees, but the correlation is lower for manual workers. Therefore it seems difficult to evaluate different groups of employees on such single dimension.

Moreover, Bowey⁽²⁾ concluded that Jaques's methods of research and what he accepted as a proof are not acceptable to most social scientists. He himself admitted that the consensus on evaluation criteria which he claimed to find amongs working people was only teased out when the respondent could be persuaded to stop thinking in terms of skill and effort and other traditional criteria, and reject these "stereotypes" in favour of his "feelings, judgements, and attitudes which have most likely gone unrecognised even by himself."

Fox, in an excellent critique of Jaques's work suggested that these stereotypes might in fact be social values and therefore take precedence over the barely-conscious and rarely verbalised intuitions which clash too sharply with social values to be openly expressed. Hellriegel and French⁽³⁾ concluded that Jaques's methods are not adequate to deal with technological changes which would reduce the time-span of discretion of the workers with the concomitant necessity of adjusting in wage levels.

Yet Jaques's most useful theoretical contribution has been to point up the relationship between time-span of discretion and felt fair pay. The development of tools or approaches which permit the measurement of this

(1) Ibid, p 7

(2) Bowey, A M : Job Evaluation, Personnel Review, Vol 2, No 2, Spring 1973, p 80

(3) Hellriegel, D and French, W : A Critique of Jaques Equitable Payment System, Industrial Relation, A Journal of Economy and Society, Vol 8, 1968-1969, p 279

dimension of work and the psychological disequilibriums caused by imbalances in level of work, capacity, and pay may be primitive, but their existence denotes a new sophistication in the scientific manager.

2. Decision Band

Paterson has accepted Jaques's claim for the primacy of decision-making as a job evaluation criterion. His technique is to analyse work in relation to six basic kinds of decision, ranging from the highest "policy-making band" to the lowest "defined band". The lowest band refers to unskilled work, the next to semi-skilled, then skilled. The next three relate to middle management, senior management and top management. In the defined band the worker is told what to do and makes only very limited decisions like how fast to work. In each band except the lowest there are two grades, upper and lower, making eleven grades in all. The upper level job holder in any band co-ordinates the work of workers in the lower grade of the band, so that the lowest band obviously needs only one grade.

Paterson's emphasis on consultation as an important part of his method may give the impression that there is less bias in it than in other schemes. But Bowey⁽¹⁾ explains that, his use of consultation does not involve decisions on the criteria to be used for evaluation, since these are fixed. Because there is only one dimension for each grade there can be no consultation about the weighting of different aspects of that criterion. Employees are expected to accept a criterion which takes no account of the values by which they themselves evaluate jobs. Skill, physical effort, experience, are all rejected in favour of a hierarchy of decision-making responsibilities. Such a scheme is not suitable for evaluating non-managerial jobs because it is very unlikely that it reflects the beliefs of job holders about what aspects of their jobs constitute its worth.

Paterson considers that his method may be used as the basis for national job evaluation. The bias towards those jobs which are mostly managerial

(1) Bowey, A M : Job Evaluation, op cit, p 80

decision-making jobs would produce serious anomalies if it were applied on a national scale. It is doubtful whether airline pilots, astronauts and other similarly highly skilled but non-managerial people doing programmed work would accept the ranking imposed by the Paterson method. It is even more certain that the dockers, and car workers and similar strongly unionised manual workers would reject the scheme, and rightly so since it takes so little account of their contributions to the operation of an organisation.

Finally, Bowey⁽¹⁾ concluded that the Paterson technique might still have been valuable for evaluating managerial jobs except for two further shortcomings:

Patterson suggested that jobs should be graded by people selected for their lack of knowledge of the existing pay differentials between the jobs. The reason for this is that they will not be influenced by the grading as it stands, and may not be familiar with the pressures or influences which have produced those present pay differentials and such a committee working in the dark with only its suspicions and prejudices as sources of information on the present pay structure could well produce a grading structure which was at best out of line with employee expectations of what was fair, and at worst the source of discontent and industrial action.

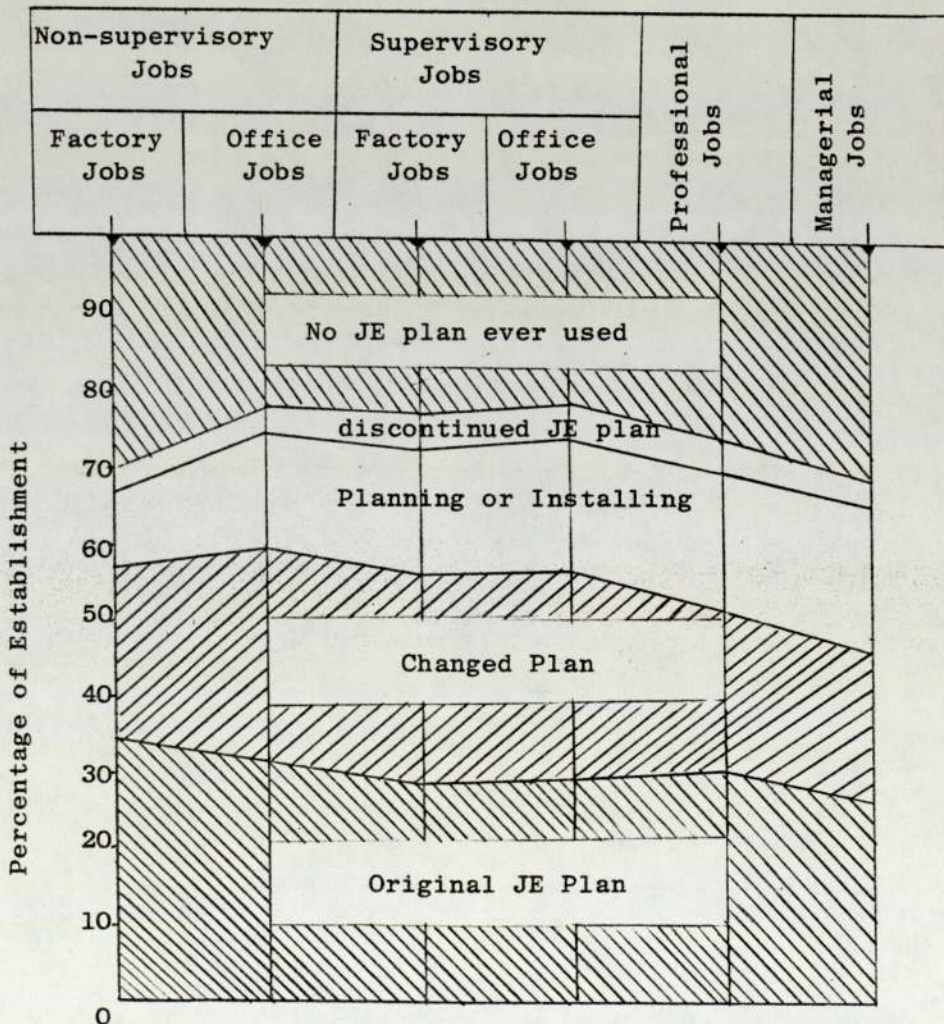
The decision-band method has two grades within each band. It therefore provides a financial incentive for employees in all lower grades within a band to try to gain co-ordinating responsibilities over others in their grade, or to formalise any informal authority they may have over such colleagues. In this way they can qualify for the next grade and the appropriate increases in pay. This kind of activity would lead to a more rigid structure to the organisation, and such incentive could produce behaviour counter to the optimal types of relationships and would almost certainly damage the achievement of profitability aims.

(1) Ibid, p 81

Suitable Application of Uniform Schemes:

Job evaluation is most easily and most satisfactorily applied when jobs to be evaluated are of a broadly similar kind. Thus, it may be necessary to have separate and different schemes for different groups of jobs, such as non-supervisory (factory and office) jobs, supervisory jobs, professional and managerial jobs. The following diagram indicates the findings of an American survey of 239 plants expressed as separate proportions of the total sample. From this it will be seen that not only were large proportions of the workforce not covered by JE but that similar numbers of schemes were in the process of evolution.

Illustration 4-b - The Use of Formal Job Evaluation Plans in an American Sample



Studies like those of Jong and of the National Board for Prices and Incomes demonstrate that the use of JE is related to the size of the employing establishment. It would seem of small advantage to the management of companies or establishments of less than say, 250 employees to standardise the rewards and working conditions of their employees. The system implies the existence of no more than a few grades of task clusters within a given location. The JE undertaken within Ford UK in 1967 reduced the total number of job grades from over 250 to 77. For a small employer it may be advantageous to pay 250 individualised rates, if to reduce this span of individual rates results in a refusal by anyone of those 250 employees to work outside of an artificial boundary placed on the range of tasks performed within a given job grade.

Jong's study also demonstrates that firms face different environmental conditions which make their organisational structures more or less amenable to the formalisation and standardisation of jobs and earnings levels. The application of JE to a jobbing builder or small catering firm might well put it out of business very quickly.

This risk becomes real when the application of JE on a national scale becomes a possibility. This is not however the major concern of the planners. While the use of job evaluation to achieve pay structure reform was encouraged in Britain by the NBPI⁽¹⁾ and its spread was in any case seen to be inevitable, there seemed a risk that the use of different job evaluation systems by companies operating under similar economic and technological circumstances and with similarly composed labour forces might produce conflicting evaluations of comparable groups of workers, thus creating new anomalies and discontent. Therefore, the Board recommended that industrial organisations (Little Neddies) should

(1) National Board for Prices and Incomes : Job Evaluation, op cit, p 35

urgently develop, preferably by joint agreement, industry-wide job evaluation schemes which could be made available to member firms and unions. It was seen as especially important that this be done in industries where current pay structures presented obvious problems, and where national negotiations have been mainly concerned with minimum rate fixing. Industry-wide schemes might also be valuable, in the Board's opinion, because the number of experts available is limited, and so there would be economies of scale in their use at the centre.

Many writers, such as Professor Brown⁽¹⁾ and Lord Wilfred Brown⁽²⁾ have advocated the use of national job evaluation on the basis that it would provide an agreed structure for sharing the product of industry between different groups of employees. Webb⁽³⁾ has also put forward the argument that JE would provide a basis upon which to conduct national bargaining.

The objections to such schemes are manifold. The NBPI concluded that an evaluation scheme which would embrace the great variety of skill requirements, responsibilities and working conditions to be found over the whole range of employment might prove impossible. Their Report recommended the application of job evaluation at the enterprise or plant level aided and promoted by action at the level of the industry.⁽⁴⁾

Among the purely technical considerations that are given so much primacy by the economists who drafted this Report, the degree of openness or closure of the labour market to be covered by a JE system is perhaps the most important consideration. Thus the ability of Dutch workers to find

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- (1) Professor Brown, E H P : Inter-Industrial Job Evaluation and Collective Bargaining, some approaches to national job evaluation, op cit, p 5
 - (2) Brown, W : Explorations in Management, London : Heinemann, (First suggestions, later developed in series of pamphlets during the 1970s)
 - (3) Webb, G H : National Job Evaluation in the Current Climate, Personnel Management, Vol 5, No 10, October 1973, p 29
 - (4) National Board for Prices and Incomes : Job Evaluation op cit, p 47

alternative employment in Germany or with American-owned companies which did not recognise the constraints of the State incomes policy was a major factor in eroding the attempt to construct a formal hierarchy of earnings in the Netherlands. In other parts of Western Europe the general weakness of such systems has been found to be the ability of local groups of workers in short supply to bargain for earnings greatly above those paid to workers whose jobs have been evaluated at higher levels in the national scheme.

Thus the principle that "the value" of a job relative to other jobs can be established by a process that is somehow insulated from the free market processes and from the cash nexus is demonstrated to be a totally impractical one. Even in the localised operation of "successful" JE schemes one discovers market forces operate to distort the original purposes of the designers. Thus in the event that merit or bonus payments cannot be awarded to employees either because of the external constraints of incomes policy or the internal constraints agreed with the union, the phenomenon of "grade-drift" in which individual employees are "promoted" through the grades with no objective change over time in the work-content of their job, is to be found throughout Western Europe. This is especially so in the highly unionised sector of public employment in the UK.⁽¹⁾ In this manner the system designed to eliminate inconsistency and to enable an equitable distribution of rewards itself may become the instrument by which inequity is perpetrated and ambivalence diffused across the organisation.

Yet in the face of change originating from market and technological sources it is unbelievable that a structure and the system used to evaluate it can remain unchanged. Unfortunately it is equally unbelievable that

(1) This phenomenon is remarked in several reports of the NBPI and the CIR

the managers of the system, employees and unions, can be brought to an anticipation of such changes in job (and ultimately in occupations) and to the point where changes in the JE structure actually complement those modifications in task occurring in the workplace. In other words the potentiality for inequity and felt unfairness is very great. Short-term modifications in the system to meet such grievances (or inadequacies perceived by managers) seem quite likely to lead to the regressive spiral described above, rather than modification towards an objective assessment of the new division of labour emerging from contextual changes.

Satisfaction with Job Evaluation:

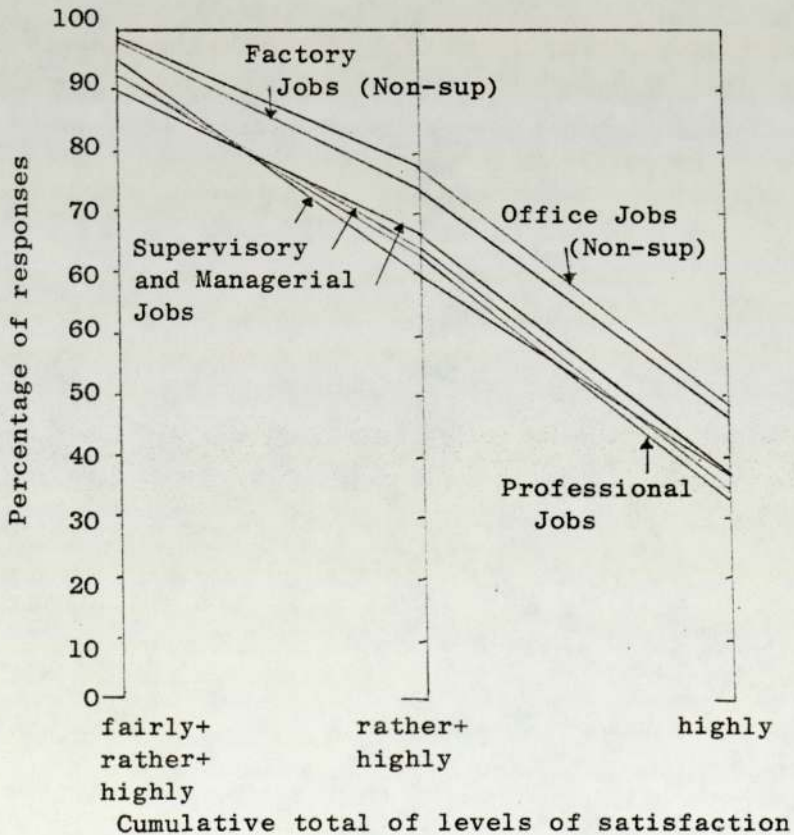
Satisfaction with job evaluation differs from one group to another. It may be helpful to indicate the views of workers, trade unions, employers and/or managers and the job evaluator himself.

a) Employees

The claim of job evaluation to be "scientific" is in some objective sense unfounded. Its purpose is to quantify certain value judgements on the nature of the job content of work around which some consensus or concurrence of opinion can be constructed. Nor does it take fully into account every factor of significance in determining "equitable rates" for different jobs. However, the complexity of job evaluation systems is often such as to render them largely incomprehensible to the workers. In these circumstances it is hardly surprising that workers hold the view that free collective bargaining is seen as the best instrument for maintaining an equilibrium between management and workers. Such dissatisfaction may be due to that job evaluation as a managerial technique has sometimes been introduced by management without consulting either the workers or trade unions and it obviously made the workers suspicious as to the management's intentions and the value of the scheme.

These sources of dissatisfaction come from the method of introducing JE and from its inherent complexity in operation. The present limitations in the application of job evaluation are probably due in part to such factors as lack of knowledge about its meaning and method of operation. Even among the consensus-oriented employees of the one hundred plants in the USA investigated by Jong in 1968 there were marked differences in satisfaction with the operation of job evaluation schemes, (see Illustration 4-c below). It is clear that in spite of the rather unclear manner in which Jong presents his data, professional and administrative staff are less happy with the operation of JE in their workplace. The effects of standardised evaluation and formalised control might well be psychologically greater among these employees than among junior staff - most of whom might well be represented by a trade union.

Illustration 4-c - Cumulative satisfaction with Job Evaluation at different levels of the firm



b) Trade Unions

In Britain the TUC has exhibited a cautious view of JE. Fisher (1970) suggests that its value should not be exaggerated but indicates that there may be plenty of traps for the ill-informed. The TUC are therefore anxious that shop stewards should be well-informed on the subject in order to pursue their job of protecting member interests. The TUC are not for or against job evaluation on technical grounds, but the unions are concerned about the consequences for their members and for the change that may result in their procedural status eg by stewards joining a JE Appeals Panel.

In a recent study, Professor Janes⁽¹⁾ concluded that in America JE is still viewed by unions as a serious threat to free collective bargaining. They believe that it tends to limit bargaining and freeze the wage structure. This view has to be reconciled with Loveridge's⁽²⁾ description of JE as the means by which white-collar unions may gain access or may propagate its membership in a place of work. It is clear that for the well established manual union JE may represent a challenge to its present bargaining bases in "custom and practice" but for the white-collar union it may be a means by which individualistic office employees gain an awareness of the standardised rules which govern their conditions and conduct.

Janes' data seems to suggest that no matter what is their initial view of JE trade union officials, like managers, eventually come to find JE a useful means to administering their responsibilities. It is, in other words, a bureaucratic device.

(1) Janes, H D : Issues in Job Evaluation : The Union Views : Personnel Journal, Vol 51, No 9, September 1972, p 679

(2) Loveridge, R J : "Occupational change and the development of interest groups among white collar workers in the UK : a long-term model", British Journal of Industrial Relations, Vol X, No 3, 1972, pp 340-365

c) Employers and Management

Employers initiate JE for their own administrative convenience and most of the advantages ascribed to it by Morris (op cit) are derived by management (qua management). Many companies refer to job evaluation as a means of rationalising pay structure by the removal of pay anomalies, simplification of an existing pay structure, the imposition of order on chaos, the related modernisation of pay systems and a clear definition of differentials. They also refer to the control which became possible with an ordered system.

On the other hand some companies still hesitate to introduce job evaluation for similar reasons. The existing fragmentation of labour enables agreement over personal rates of pay without interference from a trade union and creates a personal dependency on the employer which enables him to pursue paternalistic/autocratic policies towards his employees. Indeed the exposure of unsystematic pay differentials may reveal a lack of proper cost-accounting throughout the entire organisation and demonstrate the unprofessional conduct of its management.

Certainly the rigidity of structure referred to by Janesin respect to the fears of American unions is much more likely to be found among the objections to JE held by management in Britain than by unions. The exposure of pay structures to union negotiators seems on British experience to lead to an increasing narrowing of salary/wage bands associated with those grades, to the "concertinaing" of incremental scales and to the abolition of merit-payments.⁽¹⁾ By and large this would appear to be true in other countries where unions have considerable "grass-roots" support (eg Canada, Australia, and Denmark). One therefore suspects that Janes' findings relate to areas of union weakness within the USA and that whatever administrative convenience may be derived by making

(1) National Board for Prices and Incomes 1972, op cit, p 2

the structure of labour services and labour costs "opaque" has to be set off against the existing and potential balance of power in the labour market. A potential threat (of unionised staff) may in fact be actualised by the introduction of a job evaluation system. If this is true at plant or company level, how much more so may it be true in the case of an imposed incomes policy at national level?

Conclusion

It is clear that those capitalist countries which have operated a centralised incomes policy on a more or less consistent basis since the War are among the most highly unionised. Furthermore countries such as Sweden, the Netherlands and Israel have the most collectivised professional and administrative classes in the free world - all have experienced strikes or public protests specifically directed at restoring eroded salary differentials. JE may, then, contain the seeds of political controversy.

In itself JE represents an attempt to evaluate the current value of the services rendered by one group of labour against another. Whilst offering a means to administrative clarity and the effective regulation of labour services any method of JE contains a range of technical and operational problems. Ultimately it must be recognised that the major difficulties surrounding the application of JE rest in its basis of value-judgement. Thus the machinery - the procedures and statuses of the representatives of management and labour - may ultimately be of greater importance in providing a stable system of control than the type of evaluation system adopted. For it is in the handling of the conflicting ideologies and attitudes to the services being performed by any given group of labour as against another group - or ultimately in relation to the overall allocation of resources within the firm, industry or nation-state - that the success of the scheme depends. Such machinery

has evidently to be sensitive to the aspirations of varying groups of employees in the face of technological, market and organisational changes and be able to reflect them in the prevailing structure of jobs and occupational "values".

CHAPTER FIVE

CHAPTER FIVE

APPLICATION OF JOB EVALUATION IN THE EGYPTIAN CONTEXT

History and Trends:

Although the Civil Service and other large public corporations have operated crude grading systems for half a century, Egyptian industry has not operated formal job evaluation schemes. The administrative and technical requirements such as job analysts have not been trained up until 1950. It is useful to classify the introduction of job evaluation schemes into two phases, one involving the Civil Service and the other the public sector industries.

The Civil Service:

There are four main periods in which considerable changes have taken place. One of the first actions of the Revolutionary Council was to promote Act 210 in 1951. This ranked all Civil Service jobs into two groups, High and Intermediate categories. The High Category subdivided into managerial and technical jobs. The Intermediate Category subdivided into technical and clerical jobs. This initial grading scheme could not be considered as a proper job evaluation plan. Its basis was found in entrance qualifications rather than in job components. By 1957 the Central Agency for Public Organisation and Management had prepared a plan for ranking Civil Service jobs, throughout the national administration - but it was applied only to Cairo County Council. The impetus to standardisation was given by Act 46 during 1964 which asserted the necessity of grading all jobs according to nationally imposed criteria. The importance of the job was to be based on the responsibility, authority, and other specified requirements. Although the job descriptions were not based on any form of job analysis, the scheme provided a national cadre of salaries and earnings which was to provide the basis from which the national scheme emerged. Finally Act 58 of 1971 settled the definitions of 12 grades into

which all jobs in the civil administration were to be placed.

Public Sector of Trade and Manufacturing

No attempt was made to introduce job evaluation on a national scale before the conversion to socialism in 1961. Although little progress had been made towards standardisation in the Civil Service, Act 3546 passed in 1962 was concerned with preparing a national cadre of wages for the newly nationalised industries. The Ministry of Industry was urged to take action on the operational requirements of job evaluation, namely, to provide job analysis and job descriptions for all jobs in these firms. In the following year Act 800 asserted that job evaluation must cover all public organisations including industrial establishments. It was still necessary to pass Act 62 during 1966 which placed the responsibility for introducing job evaluation in all establishments with the Central Agency of Organisation and Management and a further Act (3309) to amend some previous legislation.

By 1968 it was found necessary to take responsibility for the introduction of job evaluation from the Central Agency and to set up a Board and Director of Establishments responsible to the Minister concerned. Finally Act 61 of 1971 complemented the provisions of Act 58 in providing the definitions for 12 grades which coincided with those set up in the Civil Service by the latter Act. These grades were to become known as the National Cadre. All work establishments were required by the new statute to prepare their own schemes in a manner which concurred with the National Cadre.

Job Evaluation procedures:

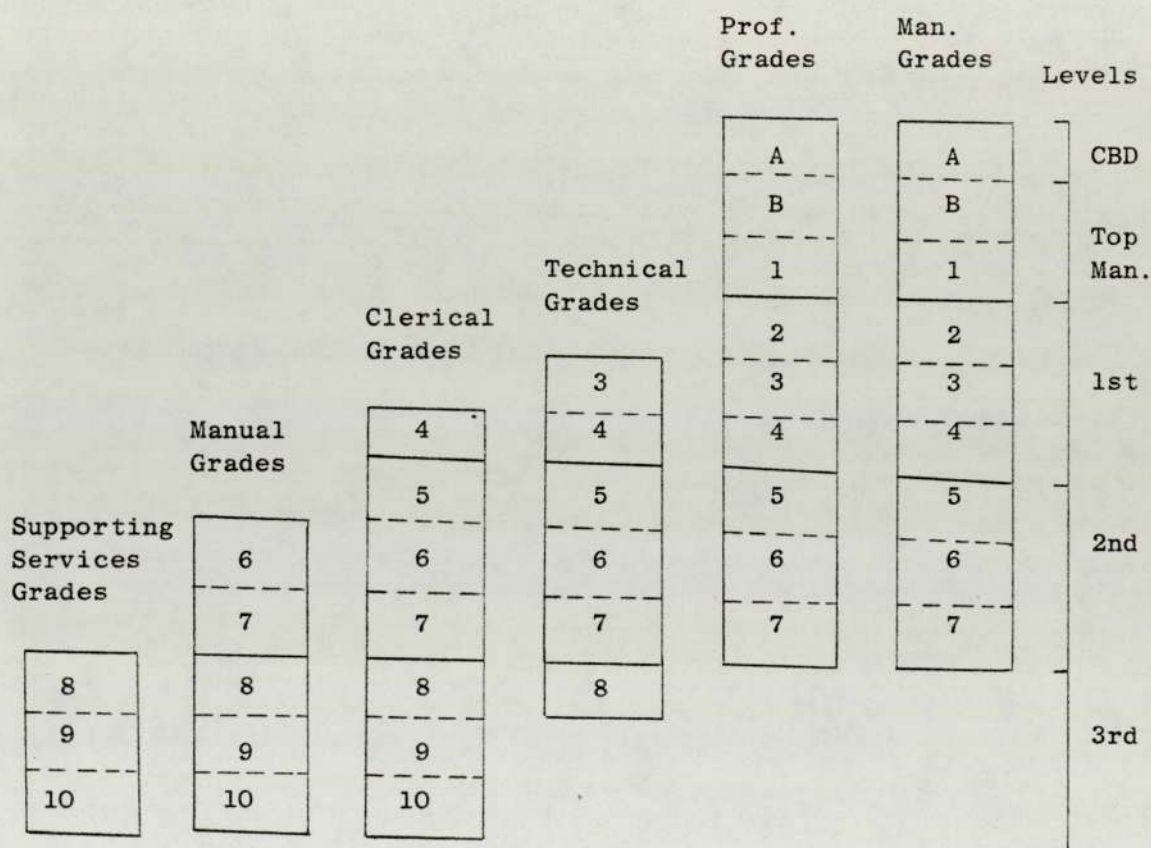
The culmination of these several Acts were the ten categories of jobs constituting the National Cadre. Within each category there were four levels established. In this way the standards against which all jobs were to be judged were laid down before the job evaluation exercise was

undertaken in each individual establishment. Differences in skill, responsibility and other factors were set up on the most general basis and these provided a guide for local discussion and implementation.

Job Grades and Wage Scales:

The national cadre of wages consists of national grades for each main group, managerial, professional, technical, clerical, manual and supporting services. These grades are illustrated below.

Illustration 5-a - The National Cadre for the Egyptian Job Evaluation System

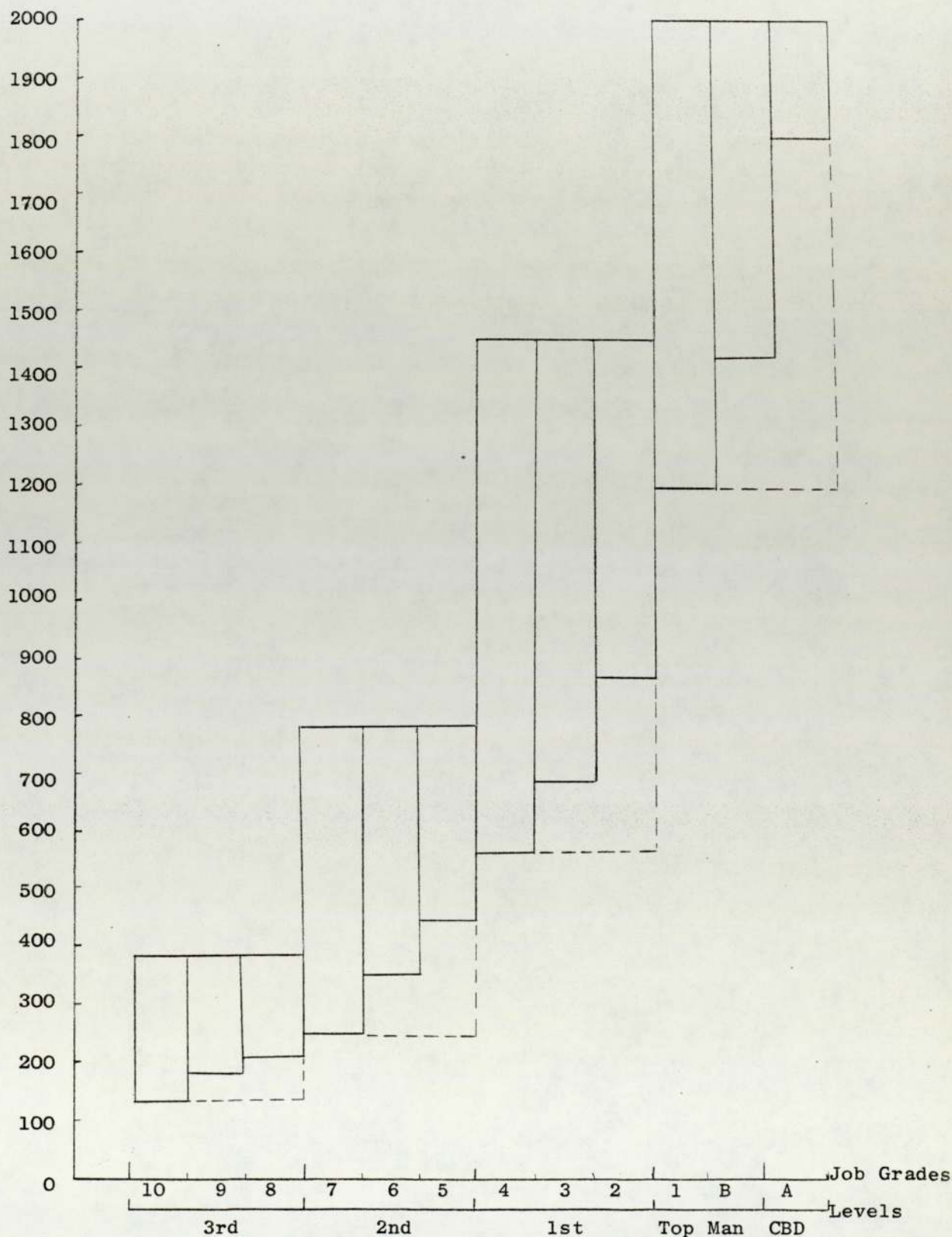


The proposal for a National Cadre was presented by the Minister of Finance and Economy to the National Assembly in 1971. A special Wages Committee of the Assembly began a series of studies based on data provided by national planning agencies such as the Central Agency. After these reviews the National Assembly received the Committee's draft plan. On a majority vote the plan was passed into Acts 58 and 61 and confirmed by Presidential decree. Since the Assembly at that time was made up of nominees from trade unions, farmers unions, management and professional

associations it might be said that those responsible for the administration of the scheme were more directly involved in the decision than would be the case under a Parliamentary system.

Illustration 5-b - Distribution of Wages and Salaries agreed by the National Assembly in 1971

Wage Scales £E



The structure of wages and salaries agreed in the same Acts contained two outstanding characteristics. Salary scales allocated to each category overlap very considerably as do those allocated to different levels. The maximum salary achieved in each level of job is the same, thus whatever career point the manager, professional, technician etc is at, he or she cannot expect to achieve an eventual maximum greater than that achieved by his juniors - though he or she will get there quicker than the more junior employee. In other words the system of rewards which complemented the job evaluation scheme set out to reward long-service rather than ambition. The frustrations that the legislators sought to avoid were those of the large majority of workers who could expect no promotion.

Classification of jobs:

The legislation required all establishments to analyse their jobs. They were free to prepare job descriptions and to select the job factors and sub-factors which suited their circumstances. In fact many firms did not prepare real job descriptions. Little provision had been made for the expansion in trained expertise required at local level. Managers had no experience and often preferred to draw up job specifications in their office rather than analysing jobs in their context. The views of supervisors and managers became the basis for the job structure. Job assessment panels did not usually include union representatives even when outside experts were used. Altogether the lack of time allowed by the newly appointed Director of Establishments left little opportunity for consultation between management and labour.

The most successful establishments were those in banking and textiles in which long-standing hierarchies of jobs existed. Generally the "ranking or grading" method was used but more sophisticated "points-rating" methods were to be found in the latter industries. There was little sign of uniformity in the factors chosen as analytical elements in the

diverse schemes and often the grades failed to conform to those established in the National Cadre.

The main types of schemes and their distribution across industry was as follows. (1)

The ranking method	22%
The grading or classification method	45%
The factor comparison method	0%
The points rating method	11%
No method/or office ranking	22%

The process of arriving at a job evaluation system and its results generated a high degree of dissatisfaction among employees. In a survey taken in 1966 38% of employees were satisfied with results of their scheme, while 62% were not satisfied with the results. (2)

This study reveals that although there was no significant alteration in the schemes applied in 1971, employees were less satisfied with their pay packet established by job re-evaluation and determined by NCWS (see Table 15-a in Appendix III, p 340). The problems encountered in installing a national system of job grades within a national cadre of wages were manifold.

Problems encountered in installing the Job Grading Scheme in Egypt

The freezing of wages:

Job evaluation, in many cases, resulted in the freezing of the actual wages of many employees. The Acts asserted that there was to be no reduction in the actual earnings of anyone. But when the job evaluation was completed the actual wage of many grades was higher than the top limits allowed by their allotted grade. This problem could often be resolved by promotion or transfer, but often the upper limits of the Cadre were transgressed.

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- (1) Dr Hassan, A : Job Evaluation, 1st ed, Maarif establishment, Alexandria, 1968, p 39
 (2) El-Fouli, M : Job Evaluation in public firms and establishment, first section, list ed, Abiden, Cairo, 1967, p 121

These solutions were restricted by the ability of a firm to take such actions, especially since the latter solution was expressly forbidden in Act 61 of 1971.

Blind-Alley jobs

Some employees, at all levels, from designers to doorkeepers were occupying blind-alley grades. The lack of promotion opportunities became obvious after the introduction of job evaluation. This compelled the introduction of a whole new system of training. In addition the originally homogeneous categories of the National Cadre were divided into 4 separate salary scales, thus giving the opportunity for progression by seniority within the overall category.

Supervisor and worker in the same grade

Since, eventually, all firms and establishments were obliged to allocate their job grades to a position in the national job scheme, it became evident that supervisors and workers in different job grades according to their local evaluation could end up in the same national grade and, officially entitled to a place on the same salary scale - with their relative earnings positions reversed. This remains a problem among middle management but evidently among manual workers the overall earnings differentials are eroded by the universally experienced phenomenon of bonus payments to junior workers.

Different jobs in the same grade, and similar jobs in different grades

Again a universally experienced problem in the application of job evaluation. It is experienced where the system depends on "evaluations" which are carried out by office staff with no analysis or observation. Often job descriptions depend on formal job titles which may differ significantly from the real job components. Lack of experience and the

unavailability of experts may be one reason. There was a great confusion about the nature of the evaluation process, especially where the evaluation aimed to evaluate the incumbent rather than the job itself. In small firms few organisational references of any kind were available for the guidance of managers in analysing the work alone in their establishments.

Consequently, the early Egyptian experience provided only the most pessimistic data on the usefulness of job evaluation as a technique for manpower planning and the development of personnel policies. Not only did it require a succession of Government statutes to set up the machinery of evaluation in the Civil Service but when the decision was made to spread its influence to the rest of the economy the extent of the problem poised by this decision was not clearly understood. The expertise was not available to carry through the plan and the state of management practice in the formerly privately-owned firms was not sufficiently professional for the exercise to be accepted as an extension to existing management practice within the firm.

Perhaps it is not unrealistic to compare the attempts by the centralised administration set up by the Revolutionary Council to the efforts by the British Government to bring about change in British industry over the same period. One of the central themes in the work of the National Board for Prices and Incomes and in the early reports of the Commission for Industrial Relations was that of "formalising the informal" - to attempt to persuade British management and unions to agree formalised work and bargaining procedures. As has been shown in Chapter 4 the opposition to the acceptance of formalising the job structure of an establishment can stem from deep political and ideological concerns which have little to do with the technical problems involved in "measuring" labour services.

Even within that part of the Egyptian economy that constitutes the primary sector of employment the opposition to formalising control structures may

be seen as very great. On the other hand the history of Egyptian industry demonstrates a reliance on central guidance which can be traced to the days of Mohamed Ali and of the short but significant influence of the Code Napoleon. Starting from a less developed basis of management professionalism and from the same need for flexibility in decision making that confronts managers in entrepot nations such as Britain and Egypt, employees in the latter country may be seen to have accepted and attempted to work within the framework of central planning imposed by their Government more readily than their British counterparts.

One important feature explaining their acceptance was the nature of the system of planning which caused their dependency on central authority to be quite high. In other words entrepreneurs were forced to conform to the letter of the law - even if not to the spirit. However, for the reasons given above, it seems likely that employers were used to conforming to central guidance in their business affairs and did so with no greater or lesser enthusiasm than was shown in other spheres of trading activity. This being the case there was plentiful latitude for the workings of the free market; especially when the area within which government controls were applied with some degree of rigour was bounded a much larger perimeter of secondary employment and hidden unemployment which was, and is, little affected by officialdom.

CHAPTER SIX

CHAPTER SIX

CONCEPTUAL APPROACHES

Introduction

Job Evaluation systems set out to establish a structure of earnings which relate to those elements in the labour service on offer normally seen as valuable by employees on the one hand and, on the other, factors which express the disutility of performing a task in the perception of the workers. These two elements of supply and demand are implicit in the factors considered as relevant by evaluators in capitalist countries. Usually no attempt is made to dichotomise between these two elements and often both aspects of "product value" and "disutility" may be contained in a single evaluated factor.

Nevertheless a job evaluation system may be seen as an attempt to reproduce an essential market function in distributing rewards (though not defining pay systems or remuneration packages) against any given allocation of work (though not itself part of the job analysis scheme). In this sense it attempts to provide the employer and employee with a more predictable and therefore more controllable version of the free market process and might be assessed as such by the labour economist. On the other hand the structure of earnings is also the basis of social stratification in society and the importance of job evaluation in a command or socialist society is therefore of immense political and social consequence. For this reason the sociologist and political scientist also has a concern in its operation.

Meaning, Type and Importance of Pay Differentials:Economic explanations

In regard to economic interpretation and explanation of pay differentials, new classical theory assumes that, net advantages within and between occupational groups will be equalised by the responsiveness of labour supply to any deviation from competitive equilibrium. As justification of

pay differentials, the theory of equalising net advantages takes account of the education and training required for the exercise of a particular occupation. ⁽¹⁾ Pay differentials, on the supply side, is considered as an attraction for workers moving from an occupation with low pay to one with high pay until equilibrium is restored. Recent studies, such as Reynolds and Robinson, ⁽²⁾ have pointed to the limitation of this presupposition of mobility and information on the part of employees. They argue that, many employees are unaware and misinformed of pay rates for their occupations in other firms in their locality and even that, others who do have such knowledge fail to move to a more advantageous position.

On the demand side marginalists use their 'law of diminishing returns' to argue that rational employers will reduce or increase their labour force in response to wages above or below the value of the marginal productivity of labour. Pen insists that marginal productivity is a plausible starting point for the explanation for most incomes. ⁽³⁾ In practice, the marginal productivity of a production factor cannot be measured except by the crudest means. Moreover, managers are typically ignorant of the cost and revenue at the margin of their various products. Hence, employers lack the information on which to base economically rational wage and employment policies. Lester attempts to demonstrate that marginal productivity analysis does not normally enter into the explicit rationale of employers' labour policies. ⁽⁴⁾

Yet most modern labour economists consider wages in a free market as the price of labour determined by forces of supply and demand in the absence

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- (1) Phelps Brown, E H : Wage Policy and Wage Differences, *Economica*, 22, pp 349-354
 - (2) Reynolds, L G : *The Structure of Labour Markets*, Harper, New York, 1951; and Robinson, D : *Local Labour Markets and Wage Structures*, Gower Press, London, 1970
 - (3) Pen, J : *Income Distribution*, Allen Lane, London, 1971
 - (4) Lester, R A : Shortcomings of Marginal Analysis for Wage Employment Problems, *American Economic Review*, 36, 1946, pp 63-82

of control. ⁽¹⁾ Although they have recently taken more account of collective bargaining as a shaping factor, it is treated merely as the process through which competitive forces are mediated. Dunlop insisted that, trade union wage policy is best understood in terms of an economic model. ⁽²⁾ Narrowing differentials following appears for fairness by unionists could only be met within constraints of supply and demand. To do otherwise would ensue the dire consequences predicted by neo-classical economic theory, ie unemployment of union members, a growing weakness of their bargaining power, and an eventual resumption of a "normal" wage level. ⁽³⁾

One of the early precepts of neo-classical theory was the assumption of the homogeneity of labour. Since the late nineteenth century the concept of heterogeneity has become of increasing consequence in labour economics. Thus the markets for different types of non-substitutable labour are treated as discrete units of analysis and the principles contained in the doctrines of maximisation of net advantages and of marginal productivity are applied to each separately. Principal among these so-called "structuring" factors is education and training and over the last two decades a specialised development of neo-classical thinking has attempted to explain differences in earnings by reference to what is called "human capital". In such theories occupational differentials can be explained as reflecting, on the supply side, the cost of entry to the employee in terms of education and training; and on the demand side, the contribution of his specific aptitude to productive efficiency. In more sophisticated versions investments in human capital, eg formal education, on-the-job training, are used to explain such diverse phenomena as interpersonal and interarea differentials in earnings, the shape of age-earnings profiles ... and the effect of

(1) Hicks, J R : The Theory of Wages, Macmillan, London, 1963, p 1

(2) Dunlop, J T : Wage Determination Under Trade Unions, Blackwell, Oxford, 1950

(3) Douglas, P H : The Theory of Wages, Macmillan, New York, 1954

drawn attention to the 'coercive' nature of some occupations and groups which provide more compelling comparisons than others in collective bargaining. ⁽¹⁾ Dunlop discussed the factors which bore on such comparison in his concept of 'job cluster' and 'wage contour'. He defined job clusters as groups of occupations within a firm among which pay comparisons are customarily made and accepted as legitimate; they are mainly determined 'by the technology, the managerial and administrative organization of the wage determining unit, and by the social customs of the work community'. ⁽²⁾ While wage contours are defined as "a stable group of firms (wage determining units) which are so linked together by (a) similarity of product markets, (b) by resort to similar sources for a labour force, or (c) by common labour market organization (custom) that have common wage-making characteristics." ⁽³⁾ Job clusters and wage contours are linked by key rates of jobs or occupations accepted as specially relevant for both internal and external comparisons. Unionists are more likely to concentrate on those comparisons which it is most within their power to change and which may be amended against both market forces, and the institutional strength of organised employers or the state.

Kerr argued that, institutional policy had virtually eliminated interpersonal differentials among manual workers and this might be welcomed by employers as an administrative convenience. ⁽⁴⁾ This creates a means to collective comparisons across common pay grades which often lead to the evaluation of bargaining groups and strategies in which one group 'leap-frogs' another or "esculates" the whole structure of earnings by reducing an earnings differential low in the pay hierarchy, thus bringing a chain-reaction up the organisation. The existence of multiple different occupational unions or interest groups therefore tends to undermine the stability of the hierarchy. In already

(1) Ross, A M : Trade Union Wage Policy, University of California Press, Berkeley, 1948

Kerr, C : Wage Relationships : The Comparative Impact of Market and Power Forces, in Dunlop 1957, pp 173-193

(2) Dunlop, J T : The Task of Contemporary Wage Theory, in Dunlop (ed), 1957, p 16

(3) Ibid, p 17

(4) Kerr, C : Wage Relationships, op cit

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(2) Dunlop, J T : The Task of Contemporary Wage Theory, in Dunlop (ed), 1957, p 16

(3) Ibid, p 17

(4) Kerr, C : Wage Relationships, op cit

unionised companies management often seek to introduce formal job evaluation schemes for the explicit purpose of defining narrowly and rigidly the criteria which may legitimately determine the pay relationships of occupational groups among whom comparisons conventionally occur. Indeed the attitude of trade union negotiators is more likely a key of success of such attempts to rationalise and hence control and stabilise pay structures than are market pressures. ⁽¹⁾

Sociological and Social-Psychological Factors

An alternative to an economic explanation of earnings differentials might be found in the social-psychologists' interpretation of pay differentials derived from their studies of fairness and comparisons within social groups. In particular equity theory postulates that an employee will assess the fairness of his pay (outcome) in relation to his effort or qualifications (input), and that this assessment is made by comparing his own input/outcome ratio with that of other individuals. ⁽²⁾ In other words the core postulate is that of reference group theory. The individual's evaluation of his situation and hence his sense of satisfaction or dissatisfaction typically involves a process of comparison in which his frame or set is relatively stable, coherent, and identifiable in an explicit manner.

On the one hand this approach gives conceptual meaning to the formal use of internal and external criteria of fairness in job evaluation schemes. On the other hand, it contains some limitations and weaknesses. The first is an exaggeration of the supposed coherence and stability of individual reference groups. Reference group theory remains easier to prove in the laboratory than in wider social action, and with primary groups rather than with secondary groups. The existence of contradictory references and inconsistencies in the frame bring used may be related to short term

(1) Sisson, K : Industrial Relations in Fleet Street, Basil Blackwell, Oxford, 1975

(2) Adams, J S : Wage Inequities, Productivity and Work Quality, Industrial Relations, 3, 1963, pp 9-16

attitudes and aspirations as against long term, to personality differences, to ignorance etc. Methodologically the choice of reference group appears as a cause of pay dissatisfaction, while in practice it could be a cause or consequence of dissatisfaction with pay. The individual or group may use another individual or group as long term reference point against which to plot his career or position in life or merely use it to set his short term bearings or, as is most likely in collective bargaining, to justify and legitimate a position that has already been accepted.

Functional sociologists justify pay differentials in a statement of the 'functional necessity of stratifications'. They argue that without income differentials nothing would motivate individuals to acquire the skill and perform the duties associated with positions of high functional importance. Social inequality is thus an unconsciously evolved device by which societies ensure that the most important positions are conscientiously filled by the most qualified persons.⁽¹⁾ This explanation is derived from the main presuppositions of structural-functional sociological theory. Firstly, common values are treated as explanation of social order. Social order is sanctioned and maintained by those who stand at the top of the hierarchy and hence control, regulate, and judge the relative merits held by different individuals among the rest. But the elite is maintained in power on the basis of a value consensus. Thus, secondly, the unequal distribution of power, deprivation, and material advantage is treated as a derivative of consensually defined social goals. Finally, inequality is treated as functional, as ultimately advantageous even for those whose immediate situation is highly disadvantageous.⁽²⁾ It is common to adopt the functional approach with its assumption of the necessity of inequality and natural tendency to value-consensus in job evaluation systems. Some

(1) Davis, K and Moore, W E : Some Principles of Stratification, American Sociological Review, 10, 1945, pp 242-249

(2) Hyman, R and Brough, I : Social Values and Industrial Relations, op cit, p 155

writers tend to counterpose 'social value' to 'market forces' to explain the unequal structure of employment obligations and industrial rewards. (1)

However, to explain the most vulnerable aspects of sociological theory there is a need to provide a plausible account of power and to bring its analysis into the centre of the analysis of social values and inequality. The assumption of consensus is replaced by that of "concurrence" in the explanation of similarities in occupational prestige provided by Goldthorpe and Hope. (2) Thus an apparent stability in the "social standing" of an occupation is the result of many evaluations made from various heterogeneous and often unrelated social bases. Yet these apparently independent sources of opinion may, as structural sociologists suggest, be no more than a complex and fragmented reflection of the dominant institutions within society. Thus the apparent conflict is no more than a superficial disguise for the control of society by a minority of the political community.

Incomes Policy and the concept of "Order"

A number of criteria have been advanced for the determination of a "managed" or regulated incomes structure. These have been discussed at some length in the previous Chapter but it is perhaps useful to consider them here against the background of conceptual theory. The main economic precepts of "productivity", "mobility", "flexibility", and "training" can all be seen as attempts to impose a system of job allocation and reward distribution which equates with that of economic "efficiency" (least cost : maximum returns factor). In this sense these criteria are regarded, by economists at least, as "neutral". On the other hand, concepts of equity or fairness include

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- (1) Lupton, T and Hamilton, R : The Status of the Industrial Workers, Scottish Journal of Political Economy, 17, 1970, pp 267-294
 (2) Goldthorpe, J H and Hope, K : The Social Grading of Occupations - a new approach and scale, Clarendon Press, Oxford, 1974

the varied use of references by one group against another. It was indeed the social evaluation of their position in society made by individuals against a background of organisational and technological change that was seen by Runciman to lead on to feelings of relative deprivation and hence to collective action.⁽¹⁾ It is this sense of grievance that provides a social direction to the "neutral" forces of the market place and work situation.

Hyman and Brough argue that "Formal mechanisms of job evaluation necessarily make explicit use of both types of criteria".⁽²⁾ Job evaluation could thus be considered as a means of measuring fairness in exchange where the focus is on the social relationship existing between employer and employee, and of fairness in distribution of income among employees in the same or different firms, occupations, or industries. If the first is based on the utilitarian exchange of the effort: cash bargain, the latter involves the use of wider explanations of social justice encapsulated in culture and history.

This may acquire a kind of sanctity of the sort described by Lady Wootton. This "sanctity" is that of expectations established by custom and practice within work communities. Thus at every level from the work-place to that of the nation state societies tend to establish an "accepted order" of wage and salary differentials. Hence because differentials bear a systematic relationship, one to another, a change in one part of the system brings about a change in others. The process by which this is conveyed is known as that of "fair-comparisons or relativities".

Indeed, differentials and relativities may become the only way in which a worker can decide whether he is fairly paid. The concept of fairness when applied to wages is inevitably a concept which requires comparisons.

(1) Runciman, W G : *Relative Deprivation and Social Justice*, London, Routledge and Kegan Paul, 1966 (1972 edn)

(2) Hyman, R and Brough I : *Social Values and Industrial Relations, A Study of Fairness and Inequality*, 1st pub, Heinemann, Basic Blackwell, Oxford, 1974, p 11

Therefore, many writers, such as Robinson assert that "differentials and relativities lie at the very heart of the concept of equity as applied to wage determination."⁽¹⁾

As against this Lockwood has argued that the concept of fair wages is typically employed for either conservative or reformative, or opportunistic purposes. In its conservative usage the concept means a maintenance of a group's position within the hierarchy and the hierarchy's position within the wider society. Whereas reformative usage implies a rational change in wage structure as in wage policy proposals. In respect of its opportunistic use it accords legitimacy to wage proposals whose derivation reflects quite different motivations.⁽²⁾ If we also accept that concurrence rather than consensus of opinion may underlie the national structure of occupations it is possible to explain its apparent stability as one of homeostasis rather than inertia. Underlying it may be a complex of conflicting and contradictory interests and contextual forces.

Kerr and Fisher suggest that "A large and growing literature takes up the process of describing, weighing, and applying all the internal factors that enter into the determination of what is a just wage. A plant or industry wage structure, however, may often be controlled by other considerations stemming from the environments in which the structure operates. Yet these external considerations are being comparatively neglected in current discussions of the problem."⁽³⁾ These authors are of course working within the context of free market economies. Workers may respond to changes in technology, organisation or ownership with strategies of protest or opportunism. They may use strategies which are designed to

(1) Robinson, D : Differentials and Income Policy, Industrial Relations Journal, Spring Vol 4, No 1, MHBP, London, 1973, p 7

(2) Lockwood, D : Arbitration and Industrial Conflict, British Journal of Sociology, 6, 1955, p 341

(3) Kerr, C and Fisher, L, : Effect of Environment and Administration on Job Evaluation, Harvard Business Review, April-May, Vol 28, 1950, p 77

maximise their collective (and personal) returns through the exploitation of others with whom they are conducting their wage:effort bargain. In doing so they would by their actions make the market more 'imperfect' for all but never by so much that they eliminate other contestants (be they employers or other employee groups).

If however one group - say the Egyptian Revolutionary Junta - gains a monopoly of power then it may decide to regulate such competition or to eliminate it altogether by becoming, as it were, the sole supplier of labour (in the manner of Mohamed Ali). They are then faced with the problem of how to determine both the most efficient distribution of income to labour services in terms of the output thus derived, and the most 'fair' or equitable distribution in a community sense. Marx offers a solution in the "labour theory of value."⁽¹⁾ This theory simply attributes value in accordance with the time and skill contributed by a labourer to any product he produces. It was derived from early classical economic thought, wherein the unit of labour was generally expressed in bushels of corn - a product in universal demand. The strengths and weaknesses of the labour theory of value in explaining economic behaviour need not concern us too greatly. For our purposes it is sufficient to understand that the existence of a centrally determined and universally accepted goal for the whole community means that a value can be ascribed to labour in accordance with its contribution to that goal.

Thus the structural-functionalist view of social stratification applies only in a socialist society in which occupational status is consciously (rather than unconsciously) derived from the contribution of the incumbents of these work roles to the communal good. The synthesis between employer-employee relationships and the wider social evaluation of work is achieved

(1) Marx, K : Capital, Vol I, New York, International Publishers, 1967 edn, p 439

through a centrally determined hierarchy of jobs/occupations. Through the same means the system of production is brought into line with the socially determined goals of the community (revolutionary elite). In such reasoning the economy concerned is almost always conceptualised as a 'closed' one. Hence both technological and product market constraints and contingencies can be subordinated to the most desirable hierarchy of jobs and occupations.

The problems confronting any industrialising elite that uses such a theory of industrialisation as a guide to action have been indicated in our previous analysis. The imposition of an occupational structure demands both technical and political control over productive resources and markets. Market 'pressures' in fact invade the domain of the would-be industrialiser through a) natural shortages - mainly of commodities but also because of variations in birth rates, b) external pressures from capitalist countries, and c) individualistic behaviour of a kind which may be contrary to the community interest. While the latter may be opportunistic, it may also derived from a 'conservative' attachment to previous mores and customs, or from counter-revolutionary or 'radically' alternative concepts of social justice.

Such localised expressions of competitive or bargaining behaviour derive from comparisons - not only with 'advanced' capitalist countries but also with pre-revolutionary experiences - and pre-revolutionary aspirations. The nature of human experience is such that aspirations can rarely be wholly satisfied and in the conditions appertaining at the time of radical change it is almost impossible to satisfy the aspirations of the diverse groups that come together for a short interval to overthrow the previous regime. Nevertheless the continuance of competition between such groups is a constant mark of the lack of concern for the community ethic that the new state is attempting to instil.

Apart from the 'openness' of the situation in which they operate, bodies such as the Egyptian Agency for Organisation and Management are faced with an environment whose sheer complexity leads to contradictory and competitive forces being put into motion from the centre. Regulations designed to bring about uniformity in operations often have the reverse effect at the point of implementation. Welfare measures designed to help one group may cross the logic that dictates the market incentives offered to another for example.

It is difficult to reduce the unpredictability of the environment confronting any single operational manager to any significant extent without reducing his ability to take decisions in the work-place to a minimum. To do that a more senior coordinator has to take responsibility and so on up the hierarchy until at the top the sheer complexity of the operations for which one person is responsible makes the system uncontrollable. For this reason decentralisation takes place along one of several various lines such as by divisionalisation of a product related kind, a functional kind etc.⁽¹⁾ However the freedom that results allows competition to take place outside the limits of central control and unrelated to the purpose of the original plan.

In the Egyptian case, as in that of most developing countries, this entrepreneurial freedom has to be set against problems of labour market segmentation in which the largest proportion of the population derive their livelihood from traditional, usually agrarian, sources and only a minority of the workforce are covered by either the production planning machinery or the complementary job evaluation scheme. The rising aspirations and the unpredictable movement of the agrarian workforce causes the divergence of economic output to cope with social and political problems that result. Thus private actions by labour as well as by capital bring high community costs. Yet, on the other hand, the existence of free markets

(1) Child, J : Organisations - a guide to problems and practice, London, 1977
Harper and Row, pp 72-94

enable some of these social difficulties to be overcome anonymously through individual choice. Resources and incomes distributed in this way do not earn the public judgement accorded to State intervention. The 'hidden hand' of the market can be given as the reason for this or that 'unfairness' in local custom and practice rather than the judgement of an identifiable group of bureaucrats such as an 'evaluation appeals committee'. The path back to a free or 'mixed' economy may be a seductive one for politically pressurised regimes - even if the costs have to be borne by the least able to bargain in the market place.

Factors underlying earnings differentials

In a very real sense the factors contributing to the frame of reference used by employees in adjudging their differentials and relativities is a matter of great political as well as economic consequence. These factors will be examined over the course of the next three chapters in the context of the five companies that provide the focus for this study. Some writers such as Robinson distinguish between differentials and relativities.⁽¹⁾ The term differentials is used to refer to 'objective' differences between defined groups of earners while the latter term refers to 'subjective' or self-comparisons made during the course of negotiations or other processes of inter-action between bargaining units or other potentially contesting groups. Kerr⁽²⁾ makes no such distinction between the term, but rather refers to varying spans of comparisons from inter-personal, inter-group, inter-firm, inter-district, inter-occupational and inter-industry. Clearly a number of institutional bridges cross these varying spans of collective consciousness. One has to be concerned with aids to comparisons such as the degree of unionisation, the size of

(1) Robinson, Derek : Differentials and Incomes Policy, op cit, p 4

(2) Kerr, Clark : Wage Relationship - The Comparative Impact of Market and Power Forces : Wage Determination, Market or Power Forces?, D C Heath and Company, Massachusetts, 1964, p 80

organisation or the existence of governmental statutes designed to reward age, marital status, size of family etc.

One has also to account for the 'objective' effect of such institutions. Reynolds (in the USA)⁽¹⁾ and Oxman (in Australia)⁽²⁾ note that, interarea differentials have been narrowing gradually both overall and industry by industry. This may be attributed to one or both of the following:

- The industrial policy of the government which is increasing the dispersion of manufacturing industry around these nations and hence reducing the importance of large localised supplies of agricultural workers.
- Trade Union agreements which seek the reduction or elimination of such differentials, especially in some industries with nation-wide markets such as iron and steel, oil refining etc.

On the other hand, in other industries with local product markets, these local differentials still exist, such as in building and trade services. The link may not be a market one (ie through the revenue product/price) but rather through the union policy of organising workers across national product markets along national lines, and those in local markets in fragmented units. Technological similarities and common market conditions may also provide the basis for uniform differentials - and for bringing about changes that are experienced at all levels of comparison - from interpersonal to inter-industrial.

In capitalist countries the impact that union and government intervention has on differentials has been the subject for constant debate between labour economists for some forty years. Generally the effect of unionisation seems difficult to isolate from that of the size of work-organisation (concentration of employees), the skill of the employee and the elasticity

(1)(2) See Kerr, C : Wage Relationship in the Comparative Impact of Market and Power Forces, op cit, p 84

of demand for his services.⁽¹⁾⁽²⁾ All of these factors must therefore be considered in our examination of differentials in a command economy.

I Personal Factors

Although many writers, such as Kerr,⁽³⁾ claim that a plant or company job evaluation should reduce interpersonal differentials within the same workplace, there is a doubt that personal differentials continue to play a large part in Egyptian wage structures. Personal factors such as age, length of service, sex, marital status, and family responsibilities account for the wide dispersion of the employee wages (either wage rates or actual take home wages) for the same time of work within the same plant or company. These affect the interfirm differentials, where the social structure of workers performing the same type of work differs between plants.

These differences in personal rates are the result of government regulations and trade union recommendations which allow some workers to retain their previous high wage rates as exceptional cases. Further differences in earnings may result from the actual wage base. For instance the government obliges public sector firms to pay cost of living allowances to their employees (non-government employees qualify for a family allowance in lieu).

Consequently changes in the social structure of the work-force results in fluctuations in the actual payments, and influences the labour costs of the firm. The effect of using the employer as an instrument of social as well as industrial administration is to further reduce the value of job evaluation as a stabilising and controlling device for management.⁽⁴⁾

(1) Kerr, 1964, op cit, p 80

(2) Maher, John E : Union and Nonunion Wage Differentials, op cit, p 127

(3) Kerr, 1964, op cit, p 82

(4) Wootton, B : The Social Foundation of Wage Policy, op cit, p 164

Organisational Factors

a. The size of industrial organisation

Organisational size is constrained by a number of factors. The level and intensity of product demand, and of competition in supplying that demand, helps to determine the minimum level of viable production. Technological considerations may provide parameters that are independent of market considerations, though normally regarded in tandem with market factors. Technology is however the factor bringing together product demand with the supply of labour or put another way the demand for jobs. The degree of labour or capital intensity, the distribution of incomes, and the structure of working relationships may be seen to relate to the technology employed. On the other hand the structure of organisation has been shown to develop independently of the working technology after a given size of organisation has been reached.⁽¹⁾ In other words bureaucracy feeds on itself after this size has been reached (the level referred to is of course no more than a statistically observed phenomenon).

But organisational size can be measured in several ways. The number of employees is the most accepted measure normally referred to as employment concentration. But this can refer to establishment, operating unit - both regionally concentrated - or company, with no implication of geographical concentration. Sales turnover or size of market share are also used as indicators of size as is the size of net assets. Industrial concentration refers to the amount of the product market supplied by a single supplier or the degree of monopoly; employment concentration is a measure of the degree of monopoly that an employer has over the supply of jobs or the

(1) D J Hickson, D S Pugh and D C Pheysey, "Operations Technology and Organisation Structure : An Empirical Reappraisal", Administrative Science Quarterly, Vol 14, 1969, pp 378-397

degree of monopsony. Both offer the employer greater control over his environment and make it possible for a structure of jobs to be set up and maintained in relation to an equally stable structure of earnings.

Yet size of organisation effects the structure and function of management, employment opportunities and the working conditions of all employees independently of consciously made strategic choice. In large organisations managerial specialisation are developed as the number of departments, divisions, and functional units within the organisation increase. For example separate personnel and/or industrial relations departments become established to administer the company's policy in industrial relations. The company's top management will develop and review general industrial relations policy, while plant management will have responsibility for its implementation at their workplace. Managerial specialisation in small organisations is rare with specialised functions being sub-contracted or being handled by the appropriate employers association.

Increasing size is usually accompanied by radical change in employment structures particularly for staff managers and professionals. However this will depend on the way by which the firm gets larger, and the type of technology used in the additional units. In general growth by diversification or merger may have little effect on the employment opportunities of the rank and file particularly at local level, while it may have a sudden and adverse effect on middle and top managers.⁽¹⁾ Growth through diversification tends to bring increases in the number of line managers, clerical and service workers rather than in blue-collar workers, particularly when a high level of technology is preferred. Increasing the firm's size by taking-over other organisations without a considerable change in its technology leads to the centralisation of staff services at the head office.

(1) Freedman, M : Labor Markets, Segments and Shelters, op cit, p 40

Non-office clericals and service workers are more likely to be increased as a result of the shifts in the pattern of providing services.

The growth of large firms means, however, an increase in the number of workers who are more likely to be covered by codified work rules and other bureaucratised arrangements such as, grievance procedures, protection against arbitrary personnel decisions, seniority arrangements for layoff and recall, and arrangements for severance pay and maintenance of employment in the face of technological changes.⁽¹⁾ These codified work rules and bureaucratised arrangements do not in themselves assure that large organisation has a favoured place in the national earnings distribution. Blauner suggests that increasing size, with its accompanying bureaucratisation creates impersonality in management-labour relations; there is a direct relationship between increasing size of organisations and enhanced feelings of alienation among employees.⁽²⁾

Employee feelings of attachment to an organisation are often developed in smaller firms as relationships between labour and management can be conducted on a more personal basis. The employee can exercise greater control over one or several tasks and more easily identify with his product. On the other hand, attachment to work could be developed in larger firms by other means. In large industrial firms, as well as utilities and public administration, custom demands prior experience on the job rather than pre-employment training, for example steel workers.⁽³⁾ In fact the promotional ladders and the stability of the internal labour market in large firms offer an important means of attachment for the 'ins' and protection against the 'outs'. Freedman also cites bureaucratic arrangements with a package of fringe benefits as increasingly the likelihood of stability of

(1) Freedman, M : Labor Market : Segments and Shelters, op cit, p 42

(2) Blauner, R : Alienation and Freedom, The Factory Worker and his Industry, Chicago University Press, Chicago, 1964, p 182

(3) Freedman, M : Labor Market : Segments and Shelters, op cit, p 41

employment,⁽¹⁾ so that both feelings of alienation from and attachment to organisation can be developed in large firms.

Large public firms can gain more advantages than smaller firms through public policies. For example, subsidies, cash incentives and recognition of seniority in the wage hierarchy demonstrate how governmental action in Egypt has succeeded in protecting workers in large firms at the expense of small, and this will be discussed in more detail later.

As might be expected, job evaluation is most likely to be used in larger firms. A study of 600 southern companies in the USA suggested that this was so,⁽²⁾ and a similar result was found in the UK, where 54 per cent of large organisations, which employed 5,000 employees or more, and only 13 per cent of small ones used job evaluation plans.⁽³⁾ Among 108 Egyptian firms surveyed by the Ministry of Industry recently 87.96 per cent represented large firms with more than 1,000 employees.⁽⁴⁾ There is also some evidence that the extent of use of job evaluation varies between different industries. In the study of Southern American companies variation by industry was found, but there was a strong relationship between industry and size of plant.⁽⁵⁾ As companies increase in size they tend to gain greater control over the market.

Increasing size of organisation and increases in the scale of operations tend to be accompanied by an increase in the number of departments, divisions, and functional units within the organisation increases.⁽⁶⁾ This raises problems of coordination in respect of the variety of employee behaviour and of associated job titles and wage relationships which are

(1) Ibid, p 51

(2) Steele, H, Myles, W, McIntyre, S : Personnel Policies in the South, Industrial and Labor Relations Review, IX, 1956, pp 244-250

(3) Webb, G H : National Job Evaluation, in Symposium of Some Approaches to National Job Evaluation, op cit, p 42

(4) See Table 10.1 below

(5) Steele, H, and others : Personnel Policies in the South, op cit, p 244

(6) See for example, Blau, P and Schoenherr : The Structure of Organisations, Basic Books, New York, 1971; Hall et al, R H : Organisation Size, Complexity and Formalisation, American Sociological Review, Vol 32, No 6, December 1967, pp 903-12

only indirectly related to production and therefore no longer tied to the "bench-mark" of direct contribution to output. The increased division of labour means that there are more separately recognised and designated jobs. The duties of these jobs are increasingly determined by the particular requirements of a department or function concerned rather than in terms of the main work flow of the company. A consequence of the lack of standardisation and the proliferation of distinct and specialised jobs is that adjustments in relationships and pay present acute problems. Scientific managers and the writers of the manuals consider that job evaluation provides the best answer available to managements who wish to control labour costs. The existence of fragmented interests 'sanctified' by custom and practice may make the introduction of job evaluation a conflictful process.⁽¹⁾ This may particularly be so after growth by merger or acquisition where the acquiring entrepreneur imposes the system on formerly independent firms - or in the Egyptian case where job evaluation follows public acquisition.

The size of industrial organisation, in terms of number of employees, has been growing in all industrialised countries since the beginning of this century⁽²⁾ and the spread of job evaluation can be directly associated with this phenomenon. Its use in small firms is normally associated with the need for a holding company or centrally run public agency to monitor and control the activities of the smaller unit. Hence the imposition of labour regulations at national level may well have the same effect on many aspects of the work and employment relationship as that of the increased size and bureaucratisation of the constituent companies.

(1) Loveridge, R : Occupational Change and the Development of Interest Groups, British Journal of Industrial Relations, Vol X, No 3, 1972

(2) For example see, Florence, P S : The Logic of British and American Industry, 1953, pp 29-32; and Hansen, B and Marzouk, G : Development and Economic Policy in UAR (Egypt), op cit, pp 124-8

b. Profitability and employee earnings

The use of establishment-size as an independent variable in the study of wage and salary continues to receive considerable attention. Many studies have dealt with the relationship between size and organisation characteristics⁽¹⁾ and size and industrial relations.⁽²⁾ There have been relatively few studies, however, of the direct relationship between size of establishment and wages. Of these studies most find that the relationship between size-of-establishment and earnings levels are too significant to disregard in wage theory, but they have yet to be satisfactorily treated in theoretical terms.⁽³⁾ This is also found to be so of the span of earnings levels within large plants.⁽⁴⁾

Several studies have suggested various factors as helping to explain the existence of size-of-establishment differentials in wage and salary compensation. It is assumed that large firms may be expected by community, unions, employees, and in turn its management to provide leadership in wage and salary compensation. Conversely, the small firms may also be expected to be wage and salary followers. Thus Lester writes:

"A firm's ability to pay its employees good wages and benefits is also alleged to be a factor in size-of-establishment differentials in employee compensation. If there are increasing returns to scale up to a fairly large-sized plant in many manufacturing industries, then plant-size may have some relationship to capacity to pay in significant parts of the economy. Also, well-run firms grow; expanding firms and plants are likely to be considered successful and profitable. In addition, large firms (and large plants) undoubtedly have economies of scale in the administration of insurance-type benefits on a group basis. Such economies may well be a factor in helping to explain the more market size-of-establishment differentials in benefits than in wages. Whatever

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- (1) See, for example, Hall, R H, et al : Organisation Size, Complexity and Formalization, American Sociological Review, Vol 32, No 6, December 1967, pp 403-912; Indik, B P : Some Effects of Organisation Size on Member Attitudes and Behaviour, Human Relations, Vol 16, No 4, November 1963, pp 369-384
- (2) Gennard, J : Technology, Market Forces and the Multinational Company, The Open University, p 881, Industrial Relations, 1974, pp 1-5
- (3) Lester, R A : Pay Differentials by Size of Establishment, Industrial Relations, Vol 7, 1967/68, p 67
- (4) Lester R A : Size of Establishment Compensation Differentials, Industrial Relations, October 1967, p 60

the validity of these assumptions, there seems to be a tendency for unions to consider that small firms and establishments have lower wage-paying ability than large firms and establishments."⁽¹⁾

Profitability or ability to pay is closely related with the monopoly power of large firms. Here, Lipsey and Steiner⁽²⁾ mention that, monopolistic conditions in the factor market will result in a lower level of employment and a lower wage rate than would be the rule when the factor is purchased under competitive conditions. While Reynolds⁽³⁾ states that the companies following a high wage policy are usually large, well-managed, and often sheltered from price competition by a monopoly or oligopoly position. They usually enjoy profits which are large and secure enough so that management can allow itself the luxury of paying superior wages. This latter statement is inconsistent with the main body of neo-classical economic theory. Rees and Shults⁽⁴⁾ cite neo-classical economic theory which assumes cost minimisation by both competitors and monopolists and argues that both profitable and unprofitable firms will pay no more for a factor of production than they have to. But the mobility of labour in modern society is such that for a single employer to become a total monopsonist would be somewhat unusual. Furthermore as Levinson and others have demonstrated the short-term bargaining power of unions is such as to explain why large firms in densely unionised regions and industries tend to pay more.⁽⁵⁾

On the evidence from western capitalist countries there seems little reason to believe that a direct link exists between the level or rate of increase in employee wages and that of profits. In

(1) Lester, R A : Pay Differentials by Size of Establishment, op cit, p 63

(2) Lipsey, R G and Steiner, P O : Economics, New York, Harper and Row, 1966, pp 381-383

(3) Reynolds, L G : Economics and General Introduction, Revised ed, Homewood, Ill, Irwin, 1966, p 271

(4) Rees, A and Shults, G P : Workers and Wages in an Urban Labor Market, The University of Chicago Press, Chicago and London, 1970, p 7

(5) Levinson, H : Unionism Concentration and Wage Changes, in Burton, J : Readings in Labor Market Analysis, Hold Rinehart and Winston, New York, 1971, pp 477-488

a recent study Howard and Tolles⁽¹⁾ found that empirically the lag between profit rates and wage changes is considerably longer than could be attributed to a simple information lag; this finding contradicts the conventional assumptions that wages are influenced by concurrent or anticipated profit rates. Moreover, many writers claim that profit as a motive has a limited effect on employee morale, especially in the lower grades. For instance, Worthy⁽²⁾ states that the influence of profit sharing on employee attitudes is primarily symbolic rather than direct. Bowlison⁽³⁾ suggests that executives have the greatest personal stake in company's profit-and-loss position because they come and go depending on profit, whereas the junior labour force do not relate their performance to profits with the same immediacy.

Whatever the ultimate motivational effect, the level of Egyptian employee earnings is greatly influenced by the calculated level of profit or value-added achieved by their employing organisation. Apart from the amount of the distributed profit received by employees (25 per cent of net profit), profitable firms are entitled by law (Act No 111, 1961) to reward their employees for their contributions to the outstanding efforts by increased bonuses, exceptional increments and selective promotion. Generally these provisions seem to work in favour of the large firm.

c. Incentive payments and fringe benefits

In capitalist economies the effect of incentive payments is a subject for debate among economists. Lester⁽⁴⁾ concluded that whilst such systems were

(1) Howard, W A and Tolles, N A : Wage Determination in Key Manufacturing Industries, 1950-70, Industrial and Labour Relations Review, Vol 27, 1973, p 557

(2) Worthy, J C : Factors Influencing Employee Morale, Harvard Business Review, Vol 28, January 1950, p 67

(3) Bowlison, K : The Profit Motive Compromised, Harvard Business Review, Vol 28, No 2, March 1950, p 103

(4) Lester, R : Pay Differentials by Size of Establishment, op cit, p 62

more common among large firms than small, in America at any rate the effect of organisational size was outweighed by the industrial effect (generally taken to imply technology). Lester further discovered that the span of differentials was wider in large firms than small because of the higher levels of fringe benefits in the former.⁽¹⁾ Other studies such as that of Greene⁽²⁾ discovered that large firms tend to spend more on fringe benefits than small.

Insofar as all Egyptian public sector firms are paying the same fringe benefits, namely, insurance-type benefits such as life, accident, health and medical services, pension and retirement plan as well as giving dismissal pay, luncheon vouchers etc, these differences in remuneration are not related to organisational size. It is also difficult to attribute high wage rates or actual earnings levels in the Egyptian public sector to incentive plans, because all payment-by-result schemes were withdrawn from these firms after the application of both the NCWS, and job evaluation plans in 1964.

Differences in earnings levels and in the vertical span of differentials which appear to be related to size of employing company should not therefore derive from differences in the remuneration package. That is not to say that fringe benefits such as tied houses, company bus services, removal facilities, discount purchasing schemes, sports and social clubs are not available in greater abundance to junior workers in large firms than in small, or that company cars, maintenance services, restaurants etc are not more available to managers of larger companies. However, differences in take-home pay cannot generally be explained in these terms.

(1) Lester, op cit, p 61

(2) Greene, Mark R : The Role of Employee Benefits Structure in Manufacturing Industry, Eugene, Oregon, School of Business Administration, University of Oregon, 1964, pp 32-34

d. Quality of labour and employee earnings

It is sometimes argued that grade for grade large firms attract better quality (and better qualified) workers than small firms.⁽¹⁾ Lester explains differences in earnings between companies in this way but also suggests that the impersonal and intrinsically unrewarding nature of the work in large organisations necessitates higher rewards to compensate for its disutility. In a somewhat contradictory manner he also argues that employees in large firms have to work without supervision and thereby undertake more responsibility than the 'marginal worker' supposedly employed by the small firm.⁽²⁾ Rees and Schultz point out that large establishments have a higher proportion of qualified specialists on their pay-roll and employ considerably more people who are treated as 'staff' and paid supplements as a mark of status.⁽³⁾ Reynolds maintains that this latter aggregative explanation does not hold up in grade by grade comparisons between different sizes of firms. Owen too finds little systematic relationship between quality of intake and earnings levels on a grade by grade comparison.⁽⁴⁾ Like Jacques he inclines to a size:responsibility explanation of earnings structure though recognising the tautological nature of his suggestion.

Apart from these "academic" studies the much more rigorous and comprehensive work of managerial consultants & information agencies such as those of the British Institute of Management, the Institute of Personnel Management, Hay/MSL, AIC/Inbuchon would tend to support Reynolds conclusions -

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- (1) Reynolds, L : The Structure of Labour Markets, Harper and Brothers, New York, 1951, p 219
 - (2) Lester, R A : Pay Differentials by Size of Establishment, Industrial Relations, Vol 7, 1967/8, p 67
 - (3) Rees, A and Shultz, G : Workers and Wages in an Urban Labour Market, op cit, p 6
 - (4) Owen, J : Toward a Public Employment Wage Theory, some economic evidence on teachers quality, Industrial and Labour Relations Review, Vol 25, 1971/2, p 222

at any rate in respect to European managerial salary structures. On the other hand the effect of living standards must play a major part in determining earnings levels even in grade by grade comparisons. In the Egyptian context the "diploma disease" is particularly prevalent.⁽¹⁾ One might expect that large employers offering secure careers with broad opportunities in a bureaucratic (rather than entrepreneurial) context, might attract the best graduates from universities and training schools and pay accordingly.

e. Unionisation

Unions are an important factor in employers' thinking about changes in wages and fringe benefits. Usually studies of the wage effects of unionisation compare organised and unorganised workers in the same sector. It has been argued that large firms are more likely to be organised than small ones, and that labour organisation usually results in some wage and fringe benefit differentials relative to unorganised labour. For instance, Ryscavage has shown that in a sample of American workers in the industrial states of the USA, union members, on average, earn about 15 per cent more than nonunion workers and that the effects are even larger for selected occupations.⁽²⁾ Rees and Shultz have also noted that the classification of firms according to latitude in wage policy corresponds roughly to degree of unionisation and that relative wage levels are lowest in the group of firms with the widest latitude and with a complete absence of unionisation.⁽³⁾ In respect to fringe benefits, Greene has pointed out that not only are larger employers more likely to have a costly programme of insurance benefits for their employees, but also that

(1) R Dore : The Diploma Disease, Allen and Unwin, London, 1976

(2) Ryscavage, P : Measuring Union-Nonunion Earnings Differences, Labour Review, No 97, December 1974, pp 3-9

(3) Rees, A and Shultz, G : Workers and Wages in an Urban Labor Market, op cit, p 44

organised employees tend to have a stronger preference for such benefits than unorganised employees.⁽¹⁾

The main objectives of trade unions, as indicated in the Royal Commission (Donovan Report 1965-68), are concerned with the maintenance and improvement of wages, hours, and conditions of labour, security of employment, and arrangements for participation in management.⁽²⁾ Dunlop suggests that unions and worker groups are interested in a "trade-off" between wages and employment, and the weight given to each will depend on the circumstances facing the union's members.⁽³⁾ Both commonsense and a substantial body of statistical evidence suggest that trade union pressure tends to raise the wages of the workers covered by collective bargaining agreements over time relative to unorganised workers. Much of this effect comes from their role in protecting their members' earnings from the adverse effects of inflation and unemployment rates. But these influences go beyond the direct process of collective bargaining. Rees and Shultz demonstrate that in some occupations the union rate is widely taken as a "given" by many firms.⁽⁴⁾

A central function of a trade union is thus the establishment and maintenance of control over jobs and the protection of their remuneration. They thus have a direct interest in the establishment and maintenance of job evaluation schemes. This interest may be threatened not only by the overt imposition of management control represented in a job evaluation scheme but also in the introduction of new criteria incorporated in such schemes. The old informally sustained rules and areas of demarcation

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- (1) Greene, M : The Role of Employees Benefit Structure in Manufacturing Industry, op cit, pp 30-67
 - (2) Donovan Report : Royal Commission on Trade Unions and Trade Associations (1965-68), HMSO, 1971, p 309
 - (3) Dunlop, J : Wage Determination Under Trade Unions, op cit
 - (4) Rees, A and Shultz, G : Workers and Wages in an Urban Labor Market, op cit, p 44

may represent both the basis of their members' livelihood and the boundaries of the unions' jurisdiction.⁽¹⁾ The defensive rules of craft unions, for example, can prevent the introduction of new technology or reduce its economic advantage to the employer by providing a base for resisting lower labour requirements.⁽²⁾ The effects of unionisation may be more widespread under the stable conditions provided by large firms in which jobs requiring experience and learning-by-doing encourage the growth of localised restrictive practices.

Nevertheless, unionisation and organisational factors may interact in contradictory ways. On the one hand, unions can exploit the weakness of small firms, but find it difficult to organise them. On the other, large employers have a greater power of resistance, but once they capitulate they have greater resources for meeting union demands. In practice therefore one finds union recruitment strategies tend to concentrate on the latter where greatest gains can be established quickly, thus providing "bench-marks" for parity bargaining. On the other hand where small companies are joined by a network of common ownership (holding company) or common standards (national job evaluation, commonly enforceable labour codes etc) the strategy of parity bargaining might be pursued with equal vigour.

Labour organisation in Egypt has greatly developed since the revolution of 1952. Collective bargaining was not legally recognised until the Trade Union Act of 1942. By 1944, comprehensive rules governing the contract of employment, including the mode of remuneration and discharge, indemnity, holidays, and sick leave became law.⁽³⁾ The discretion of industrial managers was circumscribed, to some extent, by law. But until 1950 the Government had not displayed the same readiness to permit industrial

(1) Gennard, J : Technology, Market Forces and the Multinational Company, op cit, p 4

(2) Ibid, p 8

(3) Ministry of Social Affairs : Social Welfare in Egypt, MSA, The Labour Department, Cairo, 1957, pp 12-17

workers to organise for their own protection and welfare. Moreover, governmental employees and agricultural labourers were expressly forbidden to organise: general federations of unions were likewise prohibited. Towards the formation and operation of trade unions official attitudes persisted in being unsympathetic and intimidatory. Notice had to be given to the authorities of all meetings and impending strikes. Contending parties to an industrial dispute could be subjected to compulsory arbitration.⁽¹⁾

The revolutionary government realised that unions need not be a disruptive influence and that they could even promote stable industrial relations, and help to raise productivity. The new government strongly enforced wage and welfare legislation and control over conditions of employment.⁽²⁾ For example, they introduced the national job evaluation system under the supervision of a Public Agency of Organisation and Management, and raised the level of employees' sick pay and the fringe benefits by law. But the Government also encouraged trade union formation, and amended the Trade Union Act of 1942 in order to permit additional categories of workers including agricultural labourers to organise. The new law also allowed for confederations of unions and stipulated that if 60 per cent of employees in any given company belonged to a union, then the remainder could be compelled to join.⁽³⁾

Since then union membership has risen rapidly. Their rights to organise are protected by law, but confrontation did not develop into the kind of free collective bargaining used in the UK and the USA, The government continued to guide and direct industrial relations in the same paternal way. Although the government encouraged all industrial workers to organise,

(1) Gritly, A : The Structure of Modern Industry in Egypt, op cit, pp 552-554

(2) Laws 177 of 1952; 417, 423 and 448 of 1953, 254 of 1954; and 153, 1957 and 91 of 1959

(3) Labour Act No 62 of 1964, Clause No 160

it retained overall responsibility for almost all matters pertaining to their welfare. Since both pay scales and regulations government employment stem from legislative bodies, trade unions and other employee groups have developed as lobbies for greater job protection and higher wages. Employees appear to have derived more benefits from direct state interference with the prerogatives of their employers than from direct union activity. Unions perform only the vital task of ensuring that companies obey the law.

By 1961, workers were allowed to participate in political activity, and at least 50% of the Egyptian National Assembly seat were reserved for them. Yet even after 1975 unions and other worker groups remained debarred from establishing their own parties is somewhat ambiguous. Unions have therefore developed a certain political power but only within strict limits such as governmental restrictions on the allocation of union funds.

Consequently, the effect of unionisation on employees' earnings is conveyed in two quite different modes. For example, closed craft-type unions, which consist exclusively of professionals and technicians use pressure through lobbying the National Assembly. Industrial trade unions are more likely to be able to indicate to management and to Government that a 'wildcat' strike of their members will occur if their lobbying effort for higher wages fails. In the public sector, the government as the wage decision maker is more sensitive to the interests of collective pressures. Public employees and their wives now make up the bulk of the urban electorate. The Government are likely to be especially aware of the danger of wildcat strikes and/or general political unrest among large concentrations of urban workers.

Lewis concludes that the advantages to worker groups in free collective bargaining are greatest when they are large and cohesive or when political entities consider the potential actions of affiliated groups. ⁽¹⁾

(1) Lewis, W : Economic Development with unlimited Supplies of Labour, Manchester School, May 1954

In Egypt the influence of big industrial trade unions on their members' earnings is also expected to be significant because of their ability to act outside the law if the occasion demands, and to threaten both strikes and electoral action. Membership in large firms are also expected to be more active and to be willing to support their trade union official in their choice of tactics by participating in their official meetings. Evidence in Table 10-b provides a qualified support for such expectation.⁽¹⁾ Further evidence may be found in the recent history of wildcat strikes and general riots which are always sparked off by groups of union members in large firms: examples are the Mahala textile workers' strike of 1975, the Cairo bus workers' strike of 1976, and general riots of January 1977.

Technological Factors

The political conditions and economic forces are significant in the choice of the level of technology, but the technology in turn can have a profound influence on industrial relations and upon job evaluation plans. Technical considerations are influential in determining the number of employees, the size of work group, and the employment structure of the firm. But it also affects the type of work place, and the attitudes of the work force.⁽²⁾ While technological changes can affect the types of skill,

(1) Table 10-b in Appendix III

(2) Blauner, R : Alienation and Freedom, op cit, p 182

the number of stages of production, the level and the structure of employment, and the content of and the demarcation between jobs (especially the required components of skill and responsibility).

In recent studies, some writers have tried to classify manufacturing organisations into a number of types according to their degree of technical complexity. Woodward⁽¹⁾ grouped them into three fairly broad categories. Type I: unit and small batch; Type II: large batch and mass; and Type III: process and continuous flow. Elsele⁽²⁾ used these types after an adaptation to classify manufactures in more detail according to their method of production. Woodward stated that in general Types I and III compared with Type II organisations in employing a higher proportion of skilled workers, having less dependence on staff specialists, a narrower span of control, and less formalised internal communications.

Woodward found that organisations with a Type II technology tended to have less satisfactory industrial relations than organisations with either of Types I and III. She speculated that one reason for this might have been that in general, organisations of Types I and III had a higher proportion of skilled workers, a narrower span of control, a tendency towards less formal or mechanistic management, less dependence on staff specialists, and less formalised internal communication.⁽³⁾ On summing up, she said, "life in firms in the middle ranges of the technical scale was therefore less pleasant and easy going than in firms at the extremes."⁽⁴⁾ Moreover, among firms that modified their production process in order to move from one type of technology to another, those moving into Type II had more "recalcitrant problems of organisation and behaviour" than those

(1) Woodward, J : Industrial Organisation Theory and Practice, Oxford University Press, London, 1965

(2) Elsele, C F : Organisation Size, Technology and Frequency of Strikes, Industrial and Labour Relations Review, Vol 27, 1973/4, pp 565-566

(3) Woodward, J : Industrial Organisation Theory and Practice, pp 50-67

(4) Ibid, p 67

moving out of it.⁽¹⁾ However, Woodward's conclusions are somewhat subjective, as she did not use any specific measure of the quality of the labour-management relationships.

In another study Blauner found a higher degree of "worker alienation"⁽²⁾ in industries that would be classified as Type II than in those that could be classified as Type I or Type III.⁽³⁾ Similarly, Gooding in his study "Blue-Collar Blues on the Assembly Line" found that, "Young auto workers find job disciplines harsh and uninspiring and vent their feelings through absenteeism, high turnover, shoddy work, and even sabotage."⁽⁴⁾ In 1972 a US Department of Health Sub-Committee on Employment, Manpower and Poverty, submitted a report to the Secretary of Health, Education and Welfare on Work in America. Elsele summed up by saying, "its basic message was that job discontent is widespread, particularly in repetitive jobs (Type II technology), and that discontent manifests itself in low production, poor quality products, high absenteeism and turnover rates, physical and mental health problems, sabotage, and wildcat strikes."⁽⁵⁾ In the negotiations of early 1973, the United Auto Workers recognised this problem and announced that "escape from the job" would be emphasised in future contract talks, and voluntary overtime was to become one of the key issues in those negotiations.⁽⁶⁾ A former Professor S Fuller of Harvard Business School was hired by General Motors to alleviate the 'alienation' problems in their plants.⁽⁷⁾

(1) Ibid, p 209

(2) Word 'alienation' is used in many studies to describe most types of negative worker behaviour and attitudes with respect to the factory system

(3) Blauner, R : Alienation and Freedom : The Factory Worker and his Industry, University of Chicago Press, Chicago, 1964, p 182

(4) Gooding, J : Blue-Collar Blues on the Assembly Line, Fortune, Vol 82, No 1, July 1970, pp 69ff

(5) Elsele, C F : Organization Size, Technology and Frequency of Strikes, Industrial and Labour Relations Review, Vol 27, 1973/74, p 564

(6) Ibid

(7) Ibid

A number of countervailing views have been expressed by sociologists such as Goldthorpe et al, Kristol, Anthony and others.⁽¹⁾ It should however be noted that none of these authors argue against the "objective" harshness of employment conditions within a work situation structured by Type II technology. They simply argue that such conditions do not necessarily produce consciously felt states of 'alienation' among employees. Discontent may for example be subordinated to a desire to earn more money: such alienation as exists is caused by the wider nature of the employment relationship rather than the specific technological conditions appertaining to the workplace. For example the application of formal impersonal controls may bring about the feelings of isolation, powerlessness and disassociation measured by Blauner but since work was not a central life interest for the employees concerned in their studies such sources of 'alienation' did not create the stress forecast by Woodward.

Technology is fixed when viewed at a point in time, but changes over time as employers or managements find it economically advantageous to introduce new methods of production or new products. In order to compete with others it might be necessary to introduce changes in the technology of production or the composition of the product as demand changes in response to changes in consumer tastes. Nowadays it is usual for large oligopolists to introduce changes in technology or in product design ahead of market tastes in order to 'steal a march' on competitors and so increase their market share. These changes may also be introduced because of an alteration in the relative prices of different types of labour and capital. Changes may be introduced to eliminate an acute labour shortage or because existing techniques make the company more vulnerable to labour militancy.

Whatever the cause, changes in technology will affect the number of stages

(1) - J Goldthorpe et al : Affluent Worker, Cambridge University Press, 1968
 - Kristol, I : "Is the American Worker 'Alienated'", Wall Street, Eastern Ed, Vol 181, No 13, 18 January 1973, p 13
 - Anthony, P : The Ideology of Work, Tavistock, London, 1977

of production, and hence may alter the strategic importance of work groups within a plant, company, or industry. It may also affect the employment structure. For example, at the manual work level, relatively few direct workers and more maintenance workers may be employed as a result of an automated technology. The demand for technical, clerical and administrative employees may also be increased at the expense of manual workers as a result of a necessity for more planning and programming of new production. The types of skill required to perform operations are also affected by technical change, as some of existing jobs or occupations are destroyed or modified and new types of jobs are created. The adjustment to technological change may be cushioned by management and union agreements which often cover natural wastage and redundancy payment for voluntary leavers.

Consequently technological change is one of the main causes of erosion and decay in existing job evaluation plans. One of the common causes of job evaluation deterioration is when a worker is transferred to a different job, usually to lower-rated job, and takes his own pay rate with him. Such anomalies have a tendency to become permanent and, in unionised situations, to be used as a basis for disputes about other values. Alternatively new tasks come into existence which have to be given to existing employees. Thus their job descriptions change over time. Even the most effective monitoring systems take time to adjust to the new situation. Appeals are made to the job evaluation appeals committee and only succeed when the assessors are sure the change is a permanent one. By which time the employee may be considerably dissatisfied and unionisation may be underway if not already in existence.

Conclusion

In this chapter it has been suggested that the application of job evaluation at national level assumes the existence of what economists

describe as a production function: that is a relationship between required output, a chosen set of technological capital and equipment, and a desired structure of occupations across society. This is in turn related to a welfare function - an accepted notion of the fair distribution of rewards against which the required investment can be undertaken.

Unfortunately this model has not proven to be equal to the human condition or more precisely to the 'open' market environment in which most socialist governments have been forced to operate. Perhaps equally as important in explaining the instability of national incomes policies has been the internal instability brought about by feelings of relative deprivation among the existing work population. This has been affected by a number of intervening structural factors such as organisational size, performance and the technology employed. The rest of this thesis will be concerned with tracing the impact of these factors on the operation of national job evaluation in Egypt.

CHAPTER SEVEN

CHAPTER SEVEN

OPERATIONAL PROBLEMS IN THE CONTEXT OF A PLANNED ECONOMY

Introduction

The difficulties outlined in the previous chapter are all to be found in the operation of the system of job evaluation across industrial occupations in Egypt. The sense of inequity that comes with comparisons across firms and across industries is, needless to say, of very much greater political significance than those possible within the closed economy of a company or the single establishment. Dissatisfactions that can be expressed in collective bargaining machinery within the plant or company find their way out in political pressure groups and even in counter-revolutionary movements when expressed at national level. The weaknesses of the Egyptian system have been enumerated in a number of studies.⁽¹⁾

National Cadre of Wages and Salaries (NCWS)

The structural design of the National Cadre of Wages and Salaries (NCWS) was a root cause of many problems. According to the Governmental Act no 61 of 1971, the NCWS consists of four levels, top management, level one, level two, and level three. These four levels are sub-divided into twelve categories as illustrated below. Moreover, the national scale of wages and salaries was determined for each group of employees, for instance, the first scale for both managerial and professional groups from Category A to Seven, the second scale for the technical group from Category Three to Eight, and so on down to the lowest scale for supporting services group from Category Eight to Ten.

Table 7.1 may help to explain the problems inherent in the National Cadre of Wages and Salaries in AR Egypt.

(1) - Hassan, A : Job Evaluation, op cit, p 39
 - El-Fouli, M : Job Evaluation in Public Firms, op cit, p 121

Table 7.1
Wage and Salary Levels, Categories, Money Ranges, and Group Scales

Wage and Salary Levels and Categories	Money Wage and Salary Range (£E)	Wage and Salary Scales
I. Top Management:		
A Category	- 2000	} Managerial and Professional Groups
B "	1400 - 1800	
1 "	1200 - 1800	
II. First Level		
2 Category	876 - 1440	} Technical Group
3 "	684 - 1440	
4 "	540 - 1440	
III. Second Level		
5 Category	430 - 780	} Manual Group
6 "	330 - 780	
7 "	240 - 780	
IV. Third Level		
8 Category	180 - 360	} Support Services Group
9 "	144 - 360	
10 " **	108 - 360	
(11 & 12) " *	? - ?	

Source: Derived from Governmental Act no 61 of 1971

- i. The twelve wage and salary categories present in the structure can be compared with the previous situation, where some firms had 24 wage and salary categories for all groups of employees.
- ii. Even so there is a tendency to minimise the number of wage and salary categories by eliminating the lowest categories, placing all workers in the high bands.
- iii. The money wage and salary ranges are very wide, the highest point being nearly threefold the minimum rate £E108 to £E360, £E240 to £E780 and £E540 to £E1440. While the differences between levels are approximately two-fold for example £E108 to £E240, £E240 to £E540 and £E540 to £E1200. This leads to wide disparities in wage and salary differentials.

* (11&12) categories had been eliminated by law before the governmental act no 61 of 1971. Therefore the Act does not include them

** Category No 10 was abolished in 1974

- iv. The wage and salary levels and categories were defined before the introduction of any job evaluation plans. These definitions exhibited the social orientation of the scheme rather than the technical requirements of the jobs. The wage and salary structure depends more on employee expectations rather than on a technically based assessment of industrial needs.
- v. The wage and salary differentials were derived and imposed by the Ministry of Financial and Economic Planning as part of their National Budget. They were presented to the political members of the National Assembly and imposed by statutory regulations.

Consequently, these characteristics generate many obstacles to the originally held objectives of the scheme which affect the stability of its operation.

- a. The National Cadre of Wages and Salaries represents a very obvious caste system which invokes social unease and unrest. It is difficult to justify a level of professional earnings twenty times those of unskilled earnings, and ten times those of technicians over the same period. The conflict brings together many groups in criticising the NCWS when overall changes in national rates are announced.

Each Trade Union defends and/or attacks NCWS with their favourite device. Some TUs use cost of living claims. Others attempt to eliminate the lower categories of NCWS (manual workers). Some seek lieu payments (physicians and engineers) or seek a special salary system (university staff, researchers and judges). Most seek to end NCWS. Under pressure the Egyptian Government tend normally to accept all claims in turn. Each acceptance provokes new social discrepancies between groups and generates new claims.

- b. For firms encouraging systematic approaches to evaluation the

existence of NCWS often acts against national assessment at local level. Firms normally encounter problems in applying the national criteria. They are forced to compromise between their detailed job specification and the earnings category specified by NCWS. Furthermore, where many local company job grades exist they have to be related to fewer numbers of NCWS categories. The arbitrary allocation to earnings ranges resulted in many different job grades in the same NCWS category, and/or to scatter similar job grades into different NCWS categories. These problems resulted in manifestations of dissatisfaction with job evaluation results. Turnover rates and restrictive practices grew rather than diminished at workplace level.

- c. The Egyptian Government imposed NCWS on the Public Sector industries and its service units. Management had no base for argument with the principles represented by the NCWS in the design of their own evaluation plans. On the other hand, TUs have political representatives in the National Assembly, while they are deprived of involvement in job evaluation plans at company level. This means that both managements and TUs play a contradictory game which disrupts the stability of the scheme and of the NCWS framework.

State Intervention in Wage Process

A second major source of difficulties is that of the State intervention in the wage and job allocation processes. The Egyptian Government attempts to control the wage and salary processes. The style and degree of such State interventions are very complex and often contradictory. The compulsory application of NCWS is costly for all involved and the benefits are not always obvious to those upon whom the Government relies for its administration. It is made more costly by the compulsory recruitment directives and constraints placed on these same entrepreneurs. For

example the Government undertakes to employ all technical secondary school and university graduates. Moreover, the Government are obliged to reallocate some of the workforce from time to time as a result of compulsory redundancies such as those following the completion of the High Dam and those undertaken on a more regular basis such as the reemployment of national service men. Such manpower policies pass on the difficulties of absorbing these redundant employees to the firm. This compulsory recruitment obliges firms to break down some of their complex jobs into simple ones after the evaluation of such jobs. The newcomer occupies only a part of the evaluated job while receiving the wage or salary of the whole job according to his wage or salary scale in NCWS. The outcome of such intervention was the high cost of the overpaid jobs and the reduced stability of the job evaluation system.

Firms in the Public Sector were obliged by law to keep open a job of an employee who left a company for certain purposes for not more than four years. For instance the employee could leave his firm to work in any Arabic country on unpaid leave. But his company were forced to increase his national wage or salary level and moreover to promote him in line with his colleagues remaining in the firm. The employee who is selected for postgraduate study outside the country (together with his wife and family) or who has volunteered for any Service is entitled to have his wage or salary from his firm during his absence, in addition to his new wage or government grant paid in their temporary position. The firms obliged to carry such additional salaries were not allowed to reduce those paid to their remaining workforce. Neither were the companies offered compensation for such types of intervention.

Thus the firm were, and are, forced to pay temporary workers to cover these sabbatical secondments of all kinds. In spite of the regulations employers tended, and tend, to pay such temporary replacements less than the permanent workers whom they replace. This obviously results in

resentment and anti-management activities. Workers may thus be underworked or in jobs in which they have little skill or knowledge. This may result in boredom or frustration leading to high turnover and other manifestations of dissatisfaction.

In constructing the scheme the Government imposed a set of factors such as company size, age and the company importance within the economy, to devise a categorisation of companies. According to this additional evaluation set, there are three company levels. The first level is that of big firms, the second level is for moderately sized firms, and a third level is for small firms. Therefore, the chief executive's salary in big firms does not equal that of his colleagues in small firms. Moreover the salaries of the subordinates in large firms were greater by a similar amount when compared with salaries in small firms. Thus the concept of equal pay for equal work which seems implicit in the concept of job evaluation is negated by inter-firm comparisons. This contradiction is built in to the job evaluation plan, and consequently undermines the acceptability of its results. In addition there is a need to study the influences of the organisational factors on job evaluation as a device for wage or salary comparisons.

In 1971 the Government established the Central Agency for Organisation & Management to supervise the administration of job evaluation and to overcome or solve problems arising from its application. But the lack of time given for introducing, implementing and auditing job evaluation regulations and results made their imposition difficult to achieve. There was a shortage of experts, and a multiplicity of local plans for the Public Service firms. The long term control of the scheme was jeopardized by discrepant orders and recommendations from the centre. Other discrepancies resulted from the conflict in decision making and variegated administrative policies in different firms. A cross-fire of questions

arose from the tactically generated grievances and counterfeit problems. The design of the pro formas used in some evaluation plans and other technical problems of this sort made the handling of these grievances more difficult.

The Problems of Imperfect or Restricted Labour Markets

The objective of a centralised planning system is to manipulate the propensities of the employer and employed in such a way as to bring about an equalisation of net advantages within the overall constraints of community goals. In a developing economy such as Egypt the movement of labour into industrial organisations and away from agricultural jobs has to be coordinated with the rate of capital investment on the one hand and the need for foods and raw materials on the other. On the supply side, there are a great many unskilled workers (ie farmers) waiting in a long queue to find any job at any rate of pay in any labour market, local or national. In addition, there is considerable disguised unemployment in Egyptian villages. On the demand side, there is a low or flagging demand for unskilled workers especially manual workers and lower clerical grades where supply responds to conditions in the local labour market. Therefore, the public sector firms do not often compete with private sector firms for such workers. Their admission or entrance to the industry is largely constrained by the local operations of the state apprenticeship training centres or at least by the approval that such bodies have to give to in-firm training.

The low demand for manual labour is the result of the concentration on heavy industries in successive government budgets: these industries depend on capital intensive technologies rather than the intensive use of labour.

Secondly, while there is a stable demand for skilled workers and some kinds of technicians, the most severe competition is likely to be

incurred between big and small firms, where big firms are able to attract such employees by offering a slight increase in their wages as a result of their ability to manipulate their company evaluation programme. But public sector firms are recognised as monopoly bodies in law and hence their ability to manipulate the labour market is restricted by laws and regulations. So are the rights of employees, ie employees are not allowed to move between public sector firms without permission or approval from the previous employer.

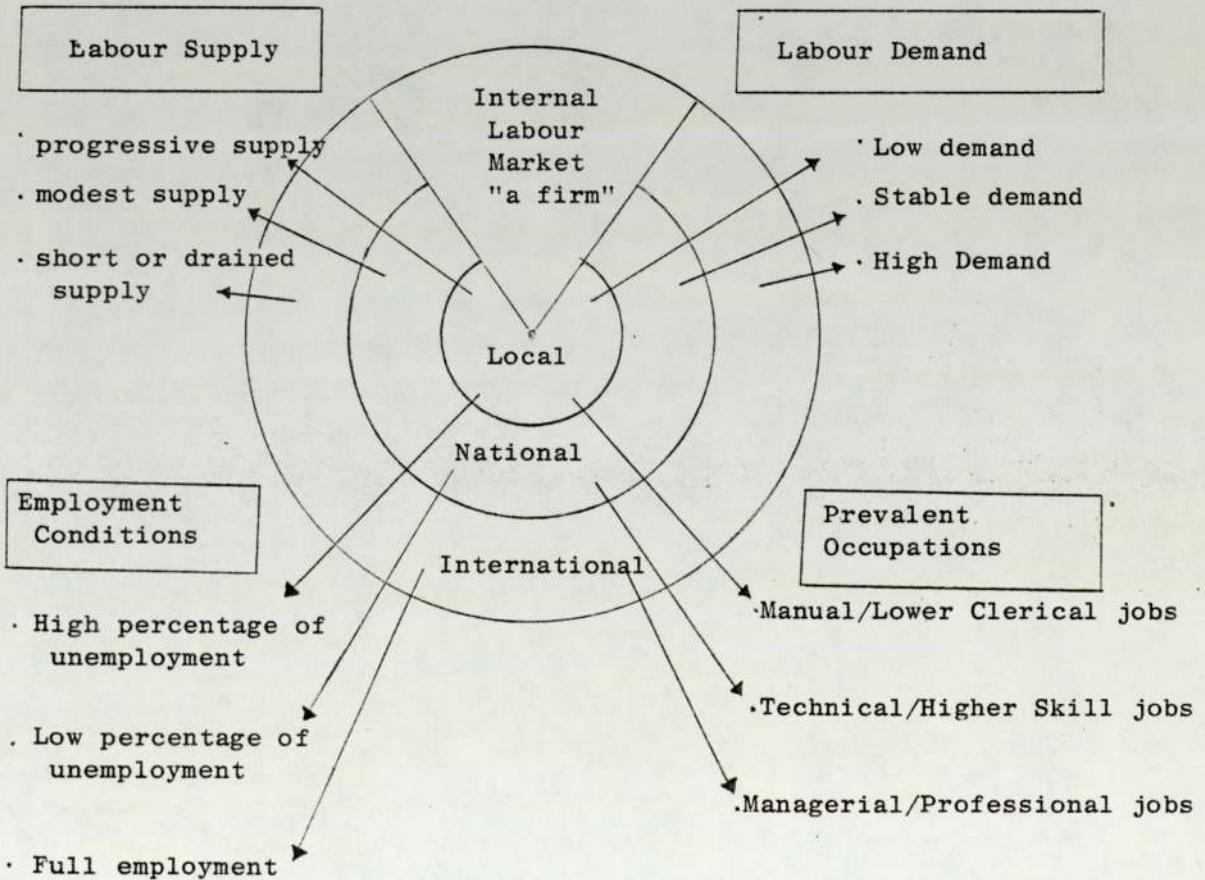
Finally, there is a high demand for some higher grade occupations (especially technicians, professionals, teachers, and university lecturers) where it is likely to be operated in an international labour market (especially the Arab labour markets). Therefore, there is keen competition for such occupations within the public sector, between these firms and the private sector, and between both and the Arabic employers outside the country. Here again, public sector firms fail to overcome the problems of such competition. They restrict labour mobility by refusing their approval to would-be leavers and advising the Government against giving permission for such workers to seek employment outside of Egypt. (Since they often have to maintain payment of their salary they have every incentive to restrict mobility!) Yet in the long term the lieu bonus is not enough to attract or at least to keep professionals and technicians in public sector occupations. There has been a net outflow of emigrants to other Arab countries where salaries may be ten times greater than those offered by the NCWS. The government has been obliged to apply compulsory orders to restrict emigration in certain occupations.

At the same time the products of technical schools, professional institutes and university graduates are guaranteed employment after completing their compulsory army service for males, or "public service year" for females. The national planning agency allocates such graduates to public sector

firms with only minimal consultation on the firm's capacity to absorb them. With only a small core of professional expertise the ability of public sector firms to properly train and develop these young graduates is extremely limited. Frustration among new entrants to technical and professional employment is therefore high: emigration becomes an ever more attractive prospect. Within the limits set by the NCWS salaries are kept as low as possible, but often young under-worked graduates are paid much more than experienced clerks. Both are left dissatisfied with their work situation - the former because of lack of challenge or substance to their job, the latter because of lack of recognition and rewards.

A summary of the situation is illustrated in the diagram below.

Illustration 7-a - Labour Markets



The demand for labour can be satisfied in any one of four markets:

- the labour force within the firm as an internal labour market
- the apprenticeship or graduate system made up of the governmental institutes which are established for such purposes, and conducted by the Industrial Productivity Centre
- the arrangements made for shedding a surplus workforce in other public sector firms within the same industry whether they are in the local or national labour market (such as redundant employees of the High Dam and demobilisation)
- returning Egyptian emigres from other Arab countries or from foreign institutions (mainly universities).

In a free economy labour mobility would be the result of equalising the net advantages of jobs by individuals within labour markets. But these influences may be distorted by State intervention in the economy as a whole. Therefore, job evaluation plans are not able to refer to the market in order to clarify the relative importance of jobs and occupations across the different labour markets within the Egyptian context. This leads some groups of employees to feel despair with the existing programme of job evaluation because it is far from their expectations and aspirations derived from horizontal and/or vertical comparisons with other groups elsewhere.

The effect of Trade Union interventions and of Employees participation in Job Evaluation:

Economic and governmental factors will not alone suffice as explanations of the vicissitudes encountered in the introduction and administration of job evaluation plans. Trade unions exercised their power in a complicated political environment at national and local level. The Egyptian government intended to control the Trade Union Movement by creating new roles for its

leaders before introducing their NCWS and job evaluation plans. The main features of those roles were to have been affected by broad structural changes. For example:

(a) The Public Sector employee should be a member of a trade union by law. Moreover, every industry should have a single industrial union to protect employee rights and interests within that industry. This was seen as resulting in:

- i. an increased number of the organised employees, which in turn was to reduce conflict between the organised and non-organised workers
- ii. eliminating rival unionism within an industry where it was likely to prove fatal to orderly administration and the survival of a job evaluation plan

This may be considered to favour the success of job evaluation plans, especially, the industry-wide plans. But on the other hand, there are some obstacles which handicapped the stability of the plans:

- i. The government permitted some groups of employees to belong to more than one trade union, eg the staff managers are entitled to be members of both their industrial union, and their Commercial Syndicate (Managerial Division). This leads to an overlapping in the unions' area of jurisdiction. Such an overlap may generate conflicts between different unions through the bidding up of wages and conditions.
- ii. The single industrial union consists of different groups of employees within the industry. The single industrial union may be envisaged as more compatible with the management of a job evaluation plan than several craft unions. But by

reason of the departmental conflicts between employee divisions within such a single union, rival interest groups occur inside it, especially when informal departmental leaders focus their arguments on the overlap between occupational and departmental identities.

- b. According to their statutory functions the Egyptian trade unions are much concerned with the improvement of workplace conditions and with the reduction of redundancies overtime in the operation of tripartite committees at plant and company level. At the same level they fail to share sufficiently in the determination of wage and salary levels. The operation of a job evaluation plan is left to employee representatives on the Board of Directors of the Company, who have also to be trade union members by law. The latter play conflicting roles, on the one hand, the employee director may find himself under a considerable pressure to act as a regular board member, and on the other hand, as an elected member he is responsible for his decision to his constituents. The resultant forces tend to push the representative into the role of an ordinary board member. On balance, it is easier for him to avoid playing the part of an employee representative in the determination of job grades than to play it.
- c. The Egyptian Government centralised trade unions in order to control the labour movement in general, and to obtain their formal approval for the differentials and relativities resulting from job evaluation plans and the NCWS. These tendencies towards greater centralisation contain the seeds of dissension for trade unions. Their leaders, as members of the National Assembly, often have broader views of the differentials or relativities than their rank and file who may be more inclined to see them from their

localised viewpoints. Such centralisation may constrain the freedom of particular groups of employees or their departmental unions in acting unilaterally in pursuit of what they regard as fair differentials and/or relativities.

The outcome of these constraints on the roles of Egyptian trade unions has been a lack of real employee participation in wage and salary decisions because they are not involved enough in job evaluation plans at local and national level. This draws attention to the impact of trade unions as a political power in widening and/or narrowing differentials or relativities as a result of wage and salary comparisons by their members irrespective of the type and degree of employee involvement in the management of a job evaluation system (as operated within the frame of employee participation in the management system).

The Problems of Technology

State intervention as a political power is important to the choice of the level of technology applied in public sector firms. Technological factors help determine the size of establishments, firms and plants within an industry, and consequently, numbers and hiring standards for employees, as well as their working conditions. The choice of technology is also influential in determining the employment structure, the size and the strategic importance of work groups within a plant. It also affects the contents of and the demarcation between jobs or occupations.

Problems for evaluation arise where job boundaries cannot be clearly defined. Vague boundaries for jobs affect the ability to quantify the required components of skill, which in turn results in imprecise job descriptions and specifications. This leads to overlapping between occupational categories. Such overlaps help marginal groups of employees

working in different technological conditions. For example, clerking became an omnibus term to cover office jobs in many contexts. An invoice clerk performing mundane tasks may compare his or herself with a highly responsible job carried out in the wages office of the same factory. To evaluate them in different grades prevents the employer from moving clerks from department to department. In other cases technology brings workers together in teams. Evaluation should therefore be carried out on the basis of their combined or complementary tasks.

Technology is also a central determinant of occupational change through its impact on the skills required to perform certain jobs. Such changes may, according to Marxian thought, be ultimately designed to reduce the skill or knowledge element in task performance but in the short run at least technological change may also create new skills and new types of knowledge. Hence some groups of workers may be struggling to gain recognition of their new skills at a time when other groups are defending the existing structure of occupations or jobs within the company. If either group gains a strategic place in the market place (internal or external) it may be very difficult to bring about a change in the current evaluation of jobs to match the optimum technical requirements or the aspirations of other contenders for control over the technology.

Job evaluation makes these changes formal and overt. The status of individuals or groups is deliberately compared with that of others; in times of change their effects are made clear to all. The analysis that breaks down jobs into their elements demonstrates the draining away of skill and responsibility from some jobs and their acquisition by others. In a period of rapid technological change it is probable that the structures produced by job evaluation schemes may lag behind technical change very considerably in order to avoid social conflict.

The Problems of Administration

The technical method of a job evaluation plan has generally less bearing on the ultimate results than the policies by which it is administered. The plan must be administered as well as devised, it cannot be left to its own devices.

In Egyptian Public Sector firms management was instructed to draw up their structure of jobs in their companies within six months in many cases without experience and experts, and under constraints of the NCWS, the Establishment control (of numbers) and the control of the Central Agency for Organisation and Mgt. Apart from these restrictions, the desire of the parties to make the plan work was to prove a good deal more important than the technical perfection of the plan. The better established were the relationships between the parties and the more peaceful their dealings the easier it might have been to introduce and administer a job evaluation plan. In the event conflicts within and between parties began almost immediately.

Union officials and employee representatives were not free from the political pressures inevitable in the administration of a plan and chose to ignore the questionable authority of those put in charge of its implementation. Nor were the diverse points of view over a plan limited to the National Assembly representatives. A conflict within the individual management groups existed in many firms. Where industrial engineers wanted to preserve the integrity of their scientific method, industrial relations men wanted to deal in more flexible concepts to adjust their tactics to the pressure of local representatives. The production supervisors sought to ease their administrative tasks while personnel managers wanted to recruit more readily, reduce turnover and eliminate grievances, and to raise morale. Accountants wished to contain costs within set limits.

In many cases the failure of local administration may be attributed to a number of features. The job evaluation plan was designed and administered by industrial engineers. This deprived management of adequate flexibility, which is the essence of successful administration. Most local plans depended completely on the supervisor's information. Supervisors, especially foremen, were perceived to be agents of management on the shop floor and therefore were unreliable where data was collected. Nor were their vantage points high enough to see the wage structure as a whole. Their perception of the work they supervise is affected by their own desire for status. In other cases personnel people (including industrial relations men) were intimidated by their involvement in ongoing relationships with those they were supposed to be evaluating. They were more concerned with getting an "appropriate" grading for an employee than with what happened on-the-job. They resorted to using their previous record information and the organisational chart. Under the threat of the statutory wage and salary regulations, and criticism of line managers, they tried to avoid creating employee grievances by changing the traditional differentials or other potentially dangerous political moves.

Problems for the job evaluator arose from human relationships and not those of the technical situation. The relationships of the job evaluator with others, top management, with those whose positions were evaluated, and with the union or the employee representatives on the Board. In many cases some executives tried to rate their secretaries' jobs in categories higher than they should be. While the job incumbent viewed the work of the evaluator as a threat, and a creator of change, the trade union did not support or cooperate with him in achieving his task with adequate precision. Moreover, representatives on the Board of Directors tried to overevaluate their previous jobs or occupations to which they might one day return!

Conclusion

The administration of the scheme was weakened by the inclusion of a structure of salaries (NCWS) which, though reflecting traditional differentials, in no way came up to the aspirations generated by the Revolutionary Council and later by the National Assembly. The continued existence of trade union and professional pressure groups in the latter body and within the planning machinery (CAOM) made for instability, given that no real consensus existed around the original scheme or structure of earnings. Subsequent changes in technology, brought about through central investment, have exacerbated rather than reduced this conflict. The dialogue held between CAOM and the firms making up the huge and burgeoning public sector was matched by inconsistencies and contradictory instructions and regulations imposed by the former on the latter. But this was in response to the variegated needs of companies operating according to a wide range of circumstances and against a background of a variety of localised custom and practice. It is hardly surprising then that the equity and sense of "fair-play" that was supposed to result from the construction of a national frame of reference in the labour market in fact became the most prominent mark of the failure of the planners in a command economy.

Job evaluation and NCWS were introduced at national level to establish a more rational and hence controllable and stable wage structure. The characteristics of NCWS have generated many obstacles to the originally held objectives of the scheme which affect the stability of its continual operation. The money wage and salary ranges are very wide and hence represent a very obvious caste system which brings together many groups criticising the NCWS when overall changes in national rates are announced.

The impact of governmental constraints on the roles of Trade Unions have pushed them to exercise their power in a complicated political environment

at national rather than local level. The style and degree of state intervention is very complex and often contradictory. Not only did the government accept and incorporate many modifications in wages and in the fringe benefits paid to diverse groups of workers but it also introduced a more or less guaranteed security of employment for all public sector workers. The high cost of the overpaid jobs undermined the stability of the job evaluation system and of the NCWS framework.

The widespread nature of governmental attempts to regulate labour market conditions have also reduced the effects that labour mobility might have brought in equalising the net advantages between jobs. The planners are, therefore, not able to refer to the market in order to clarify the relative importance of jobs and occupations across the different labour markets within Egyptian context. The effects of technological change in diluting the content of the better evaluated jobs are difficult to assess. As job evaluation makes this assessment formal and overt, it becomes difficult to reduce the ranking of a job within the structure without frustrating and upsetting employees' expectations. In the political context of a national job evaluation system this invokes serious problems. Finally, under the constraints of the NCWS and conflicting instructions of CAOM, it seems difficult for local management to devise and to administer a plan which can satisfy the employees' expectations and meet the diverse needs of departmental managers.

PART III

CHAPTER EIGHT

CHAPTER EIGHT

INTRODUCTION TO QUESTIONNAIRE

In developing economies, such as Egypt, job evaluation has been introduced as an aid to secure the national objectives through the process of rapid industrialisation. The problems encountered have been centred upon the creation of new industrial jobs and building up the skilled workforce. Hence, there has been a need to constrain wage levels by job evaluation in order to control the workers' desire for new consumer goods and to raise sufficient capital for investment. In the meantime, as some organisations were working in free markets, flexibility has been needed to allow managers to attract the more skilled employees and to compensate more productive workers. Coupled with this there was a need to protect workers against employers' exploitation as many do not have a strong trade union.

The Egyptian answer was the use of job evaluation as a national income policy to remove the existing income inequities, and to constrain wage levels and also to provide local flexibility for managers to meet their productivity requirements and their demand for specific skills in some locations. These objectives of maintaining an overall control on pay structures, and of building up flexibility for managers appears to be contradictory. Yet they are to be found in the operation of job evaluation schemes and incomes policies throughout the world. An extended investigation of Egyptian experience could therefore be very useful. A survey by a questionnaire was chosen to carry out such an investigation to test a certain set of hypotheses which derived from the previous chapters discussion on the rationality and stability of income differentials in Egypt.

1. The Objectives

To study the attitudes of both management and employees towards the fairness and stability of pay differentials established by job evaluation plan, and the need for an improved payment system, it was believed that a primary source of data was essential. Thus a questionnaire was designed to obtain first-hand knowledge and information about:

1. the nature and size of pay differentials in industrial organisations
2. the types and procedures of changes, if any, in the established pay rates
3. their perception of the basic requirement for an effective payment system
4. the difficulties and obstacles facing management introduced job evaluation system, and how they overcome such problems
5. the general attitudes of the employees towards the technique and both basic and earning differentials.

It is hoped that such an opportunity would elucidate valuable information from those organisations that work in different internal and external environments. This study will also characterise the nature and feelings of both management and workers towards the changes in basic rates by re-evaluation of jobs and extra payment by other systems.

2. The Design and Structure

The study was derived from two main sources. The first was a sample of five firms taken by the student in October 1976 from 546 employees in five industrial organisations in Egypt, representing about 5% of all employees in industrial firms of the Ministry of Industry. The names of these organisations are detailed in the "Report of Achievement and Business

Results of Industrial Sector and Mineral Wealth", 1975, Vol 2 (Ministry of Industry and Mineral Wealth, Cairo, 1976). Six firms were selected firstly according to a stratified random sample using random number tables.

This type of sampling was chosen to ensure that all strata have an equal chance to be in the sample. Organisations were divided into three basic stratum according to the number of employees working in the firm.

Unfortunately, the selected firms cannot be considered more than a case study. This was mainly because two firms were rejected from the sample as they refused to carry out such an investigation because of the lack of time and industrial disputes taking place at the time of the investigation. Hence a replacement was found in a small sized firm from the private sector. The size of cooperating firms is shown in Table 8.1. Most of the firms were in the Mid Delta area (see Table 8.2 below for a list of demographic and planning regions).

Nevertheless, the number of employees was selected randomly. Employees were divided into five basic stratum according to the main type of jobs (eg managerial, professional, clerical, direct manual, and indirect manual jobs), in randomly selected plants of the five firms. (see Tables 8.3 and 8.4).

Before designing the final draft of the questionnaire, a series of visits and personal interviews in the selected firms were made to find out the attitudes and reactions of personnel managers in particular towards such an investigation and to consider any suggestions and recommendations concerning the questions. The response was very encouraging and some suggestions and modifications were made to produce the final questionnaire which appears in the Appendix. As the data was collected fully by the student, the number of employees that was selected to answer the questionnaire

The definition of the variables used in the subsequent analysis is set out in Table 8.1 p 166. This is as follows:

(A) Official level of firm:

(One hundred points have been divided among following factors: net assets, investment, production value, added value, and no of employees) in the following manner:

Level 1, firms having 90 points and over

Level 2, firms having 85-89 points

Level 3, firms having 75-84 points

Level 4, firms having 65-74 points

(B) Organisation Size : (No of employees)

	Firm	Plant
Small	0-499	0-249
Medium	500-999	250-499
Large	1000 and over	500 and over

(C) Type of Technology (see pp 268-271)

I Single unit and small batch

II Large batch and continuous or mass production

III Highly automated - continuous - flow process industries

Table 8.1
 Characteristics of Selected Firms and Plants
 in the Sample

Name of selected firms	Type of industry	Industrial Sector	Firm level (Egyptian evaluation)	Size of the		Technology				
				Firm	Plant	Type	Category	Bulk of Equipment	The most automatic	Quality evaluation
1. Spring & Transport Needs Manufacturing Co (STNMC)	Heavy	Public	4	709	203	II	7	4	4	2
2. Delta Spinning & Weaving Co (DSWC)	Light	Public	2	4152	2812	II	5	4	4	2
3. Tanta V. Oil & Soap Co (TVOSC)	Light	Public	1	3417	1421	III	8	5	5	3
4. Alex. V. Oil & Soap Co (AVOSC)	Light	Public	1	4330	1176	III	8	5	5	3
5. Tanta Tobacco Trade & Manufacturing Co (TTTMC)	Light	Private	Out	195	150	I	4	2	3	1

(removed to Appendix III, p 299-a)

Table 8.3

Distribution of employees in the sample
according to the main types of jobs in each selected organisation

Selected firms in the sample	Selected employees in the sample					Total
	Managerial	Professional	Clerical	D Manual	Ind Manual	
Spring & Transport Needs Manufacturing Co "STNMC"	23	10	18	29	14	94
Delta Spinning & Weaving Co "DSWC"	37	16	22	27	29	131
Tanta Veg Oil & Soap Co "TVOSC"	28	14	15	21	34	112
Alex. Veg Oil & Soap Co "AVOSC"	37	8	17	36	50	148
Tanta Tobacco Trading & Manufacturing Co "TTMC"	10	4	7	32	8	61
TOTAL	135	52	79	145	135	546

Source : SPSS Programme

Table 8.4

Distribution of employees in the sample
according to their jobs in each selected organisation

Type of job	STNMC	DSWC	TVOSC	AVOSC	TTTMC	Total
Top managers	4	4	2	1	2	13
Middle managers	12	16	14	22	3	67
Office supervisors	3	3	5	4	1	16
Factory supervisors	4	14	7	10	4	39
Total Managerial Jobs	23	37	28	37	10	135
Accountants	6	9	6	6	2	29
Auditors	4	7	8	2	2	23
Total Professional Jobs	10	16	14	8	4	52
Bookkeepers	4	-	-	-	2	6
Storekeepers	6	6	1	6	2	21
Secretaries	4	7	9	5	1	26
Janitors	4	9	5	6	2	26
Total Clerical Jobs	18	22	15	17	7	79
Forgers	11	-	-	-	-	11
Oven workers	9	-	-	-	-	9
Fitters	9	-	-	-	-	9
Dust filter operators	-	9	-	-	-	9
Combing operators	-	9	-	-	-	9
Winding operators	-	9	-	-	-	9
Mod. & saponification workers	-	-	12	18	-	30
Mazoni line operators	-	-	9	18	-	27
Mixing workers	-	-	-	-	8	8
Mincing operators	-	-	-	-	8	8
Sweeting workers	-	-	-	-	6	6
Weighing and packing workers	-	-	-	-	10	10
Total Direct Manual Jobs	29	27	21	36	32	145
M. Electricians	8	9	7	17	-	41
M. Technicians	-	9	13	18	-	40
T.T. Drivers	6	11	14	15	8	54
Total Indirect Manual Jobs	14	29	34	40	8	135
Grand Total	94	131	112	148	61	546

NB TTTMC depends on sub-contracted outside maintenance workers as it is only a small tobacco company using two primary mincing machines; the need for regular maintenance work is therefore very small.

represented only 10% of the employees engaged in the five plants.

The questionnaire was divided into two parts. Part one covered the general and introductory questions which were intended to be completed by the chief executive, personnel manager, and job evaluation experts in these firms. Part two was designed for employees who were carrying out the selected jobs. There is one important point which must be emphasised concerning the design of the questionnaire. The respondents were not restricted to a single choice among the alternatives provided in the questions (see part two in the questionnaire). Thus, respondents to most questions tended to select more than one alternative answer. This means that the total presented in some of the tables is in fact greater than the number of individual responses. The aspects of weighting this data will be discussed later in this chapter.

Since the size of the sample allowed few generalisations about the broad effects of organisational characteristics etc the student decided to use secondary source data provided by the latter Report of the Ministry of Industry and Mining (1976) containing samples from 108 firms. (See Tables 8.5 and 8.6). For the purposes of data analysis a BASS programme was used on the latter data and SPSS on the former, smaller, sample.

3. Structural Measures

For the purpose of testing the hypotheses set out in the previous chapter it was necessary to develop a number of measures to represent the structural dimensions enumerated in these theories. These were primarily concerned with organisational size, technology and task-related skills. An explanation of these measures is set out below.

Table 8.5

Distribution of Employees in the sample,
according to managerial, professional, and skill levels in each organisation

Levels	STNMC	DSWC	TVOSC	AVOSC	TTMC	Total
Top managers	4	4	2	1	2	13
Middle managers	12	16	14	22	3	67
Office supervisors	3	3	5	4	1	16
Factory supervisors	4	14	7	10	4	39
MANAGERIAL	23	37	28	37	10	135
Professional A	4	4	6	6	2	22
Professional B	2	7	4	2	2	17
Professional C	4	5	4	-	-	13
PROFESSIONAL	10	16	14	8	4	52
High skilled	-	5	-	4	1	10
Skilled	2	3	4	8	2	19
Semi skilled	9	11	6	4	2	32
Unskilled	1	3	3	1	-	8
Attendants	6	-	2	-	2	10
CLERICAL	18	22	15	17	7	79
High skilled	4	-	6	8	3	21
Skilled	8	6	6	9	-	29
Semi skilled	8	9	8	19	20	64
Unskilled	3	8	1	-	3	15
Attendants	6	4	-	-	6	16
DIRECT MANUAL	29	27	21	36	32	145
High skilled	-	-	10	13	4	27
Skilled	3	8	7	19	2	39
Semi skilled	5	11	10	14	2	42
Unskilled	1	5	7	4	-	17
Attendants	5	5	-	-	-	10
INDIRECT MANUAL	14	29	34	50	8	135
TOTAL	94	131	112	148	61	546

Source : SPSS Programme

NB see Table 8.10 for skill and grade classification

(removed to Appendix III, p 299-b)

B. Technology Classification System

For the purpose of this study a 'manufacturing plant' is defined as a single plant that creates new physical outputs. It includes organisations which are commonly referred to as factories, such as, tobacco and food processors, textiles, and motor and railway equipment, but it does not include organisations in industries such as transportation, construction, retailing and service. Since these industries are not under the financial control of the Ministry of Industry in Egypt, and moreover as pay comparisons and labour mobility are more likely to be much easier if they are made within and between its industrial organisations we shall ignore these industries for the purpose of classification.

In order to classify these manufacturing plants according to their type of technology, the researcher used three different systems which are interrelated to each other.

1 - Production Method (Technical Complexity)⁽¹⁾

The technology classification system was presented by Woodward. She grouped manufacturing organisations into three fairly broad categories according to their degree of technical complexity: Type I: unit and small batch, Type II: large batch and continuous mass, Type III: process.⁽²⁾ This classification was adapted by Eisele in his research.⁽³⁾ He classified his manufacturing plants, in more detail according to their method of production, into nine categories which appeared under the main three headings of Woodward's types of technology. Hence, plants receiving scores of from one to four on this nine-point scale were classified as having a Type I technology, and those scoring from five to seven, and eight to nine were classified as having Type II and Type III technology respectively.

2 - Workflow Integration (Automaticity Mode and Range and Specificity of Quality evaluation of Outputs)

This classification system was used by the Industrial Administration Research Unit in the University of Aston in Birmingham.⁽⁴⁾ The manufacturing plants were classified technologically according to two scales in this system.

a - Automaticity Mode and Range:⁽⁵⁾

The scale divides the plant equipment into six categories according to the 'Yardstick for Automation' published by G E Amber and P S Amber. It starts from the simple hand tools, such as hammer and file, and moves to more complex automatic

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- (1) See the Interview Schedule I, question 4(A), Appendix III
 (2) Woodward, J : Industrial Organisation Theory and Practice, op cit, p 39
 (3) Eisele, C F : Organization Size, Technology, and Frequency of Strikes, op cit, p 565
 (4) Industrial Administration Research Unit : Writing-Up Schedule, 2nd ed, Paper WS1066, The University of Aston, Birmingham, 1974
 (5) See the Interview Schedule I, question 4(B), Appendix III

machines, such as computer control machine and automatic cognition. The management was asked to indicate the single category that most accurately described the bulk of plant equipment (mode), and the most automatic piece of equipment (range). The plants who scored from one to three are classified as having Type I, and those who scored four are grouped as having Type II. While those who scored five or six are specified as having Type III technology.

b - Specificity of Quality Evaluation of Outputs:⁽¹⁾

This three-point scale was used to measure the quality of work done (eg personal evaluation, partial measurement, and full measurement). According to this scale, it was assumed that personal evaluation is often used in plants with a Type I technology. While partial and full measurement are used in plants with Type II and Type III technologies respectively.

The technological data were collected by the research interviews with production management. Technical managers in the five plants were asked to react to the descriptions by indicating their plants' production method, automaticity mode and range, and specificity of quality evaluation of outputs. The managers seemed to have little difficulty in interpreting these questions correctly. Only one failed to comprehend the intent of these questions. With further explanation and by visiting the shopfloor in the company with technical managers, there was a complete understanding and agreement about the plant type of technology.

(1) Industrial Administration Research Unit : Writing-up Schedule, op cit

Table 8.9

Plants' type of technology in the sample

Plants	Production Method	Automaticity mode & range		Specificity of Q.E.	Type of Technology
STNMC (Motor)	7	4	4	2	II
DSWC (Textile)	5	4	5	2	II
TVOSC (V.Oil)	8	5	5	3	III
AVOSC (V.Oil)	8	5	5	3	III
TTTMC (Tobacco)	4	2	3	1	I

C. Skill Classification System

Skill components of jobs are difficult to quantify, and hence added a measurement problem to job evaluation. Indeed, skill is hard to define and understand, along with certain other human characteristics.

A machine-operator chart might be helpful in determining the level of skill required for each machine operation. The work is divided in the chart between machine and operator. The work would be described as 'machine oriented' or 'operator oriented' according to the degree of automaticity.

The operator plays an important part in trial runs, does basic inspection of his own work, and must be able to follow what is happening on a machine which is working without pause through a whole series of different types of machining operation. Ideally, he should be a skilled one with experience on more than one type of machining work, and yet young enough to adapt to the new methods being used. On the other hand, simple drilling machines require only an unskilled operator with a brief period of special training, within three months he should be fully effective.

Hence, certain substitute factors may be used, eg learning and/or training period, co-ordination, memory, intricacy, monotony, reasoning and planning, required to perform the work. Such factors are quite quantifiable, whereas skill is not. But if the training period, for example, is held to be a

factor to be used in the evaluation of work, it will not be the same as skill or even a sub-factor of skill. The degree of skill required to do a particular piece of work is not affected by the kind of training given, but the training period might well be influenced by concentrating the exercises, or by having different instructors. The training period may also vary according to the amount of work to be learned as well as its kind or quality. However, with regard to Egyptian classification system of skill, manual workers were classified into five groups according to the type of education or training and length of previous experience as shown in the table below.

Table 8.10

Skill classification system of manual workers in Egypt

Type of Education or Training	Length of previous experience				
	Skilled		Semi-skilled	Unskilled	
	Fine	Excellent	Good	Fair	Assistant
Above moderate	7	5	—	NA	NA
Moderate studies	9	7	—	NA	NA
Lower studies	17	15	8	—	NA
Literacy	17	15	11	6	—
NCWS Grade	5/6	7	8	9	10

Source : Clause 78 of Act 61 in 1971

NB - Moderate studies refer to the secondary school level

- Length of experience was counted for lower studies since leaving school, while for literacy as starting work.

Skilled and semi-skilled manual occupations are usually placed at the lower end of the employment structure, and unskilled ones at the very bottom.

These three broad types of manual workers are distinguished on the basis of type and length of training received. The combination in which these broad occupational types of manual workers are employed will vary within and between plants of the same company, and within and between industries according to the level of technology applied.

D. Measures of attitudes and opinions

In general the attitudinal measures used were 5-point Likert-type scales.⁽¹⁾ Many of the measures were derived from the work of the latter author together with that of other American and British authors. Help in constructing the scales was provided by members of Aston Workplace Control study group, especially by Mr M Marchington. Much of the data has not been included in this thesis for reasons of time alone and yet other items received a nil response from the majority of unskilled workers and was disregarded for that reason.

4. Conclusions

The attitude survey combined with the larger sample of earnings from 108 firms provides a good data base on which to present a study of job evaluation. The questionnaire data is however no more than a starting point from which to analyse the opinions and impressions gained by the student in visiting the five plants contained in the study.

(1) G Summers, "Attitude Measurement", Rand McNally, Chicago, 1972

CHAPTER NINE

CHAPTER NINE

SOCIAL STRUCTURE AND PERSONAL CHARACTERISTICS

It is an objective of this chapter to examine how the percept of "equal pay for equal work" had been carried out under Egyptian job evaluation plans, and in particular to find out whether differences in pay still correspond to differences in characteristics of incumbents of similar jobs in the same workplace in a plant, company or establishment.

In order to test these hypotheses, two jobs were selected, typist and accountant, from the sample, where different kinds of employees are doing the same work and performance is not measured in a quantitative way and has less influence on ultimate pay levels. Data were collected from the incumbents of each job in two plants, TVOSC and AVOSC. Each job was described and evaluated by the same plan and consultant body. Both plants are similar in size, technology, and in the same local labour market. Therefore, the difference in typist pay could be ascribed only to difference in their personal characteristics and the same for accountants.

The analysis of the data proceeded through several steps, generally in the following order. First, a rough analysis was made by comparing the arithmetic mean and a standard deviation of the socially weaker status group relative to those of their stronger counterparts in the workplace. Second, a more powerful test was made using a "t-test"⁽¹⁾ to measure the significance in differences in pay among different social characteristics of the same job incumbents in the workplace.

(1) See, for examples:

- Freund, J E : Modern Elementary Statistics, 4th ed, Prentice/Hall International, Inc, London, 1973, pp 279-282
- Siegel, S : Nonparametric Statistics, For the Behavioural Sciences, McGraw-Hill, Inc, London, 1956, pp 19-20 and 154-156

In accordance with Hypothesis I, a significant variance in earnings was explained by age. Young employees were defined as those under 30 years of age. As for typists, both mean basic pay and net earnings for older typists were higher than those for young typists. Mean basic pay and net earnings for old accountants were also much higher than those for young counterparts. For both typists and accountants the t-test indicates that, differences in basic pay and net earnings between old and young are significant at the .05 level. Age, therefore, has much influence on employee's pay. The long experience of old employees at the same company and the high level of their tax exemption are among the possible explanations. Long experience was given a high weighting in the evaluation, and old incumbents were rewarded extra increments for their experience. Older employees are more likely to be married with heavy family responsibilities which allow them to have a high rate of supplemental income such as cost

Table 9.1

Differences in pay between young and old typists and accountants

	N	Mean ££ per month	SD	DF	t-value
A. Typists :					
Basic : Young	6	18.333	2.427	} 12	1.840*
Old	8	23.125	4.166		
Net : Young	6	19.833	1.773	} 12	1.950*
Old	8	24.750	4.323		
B. Accountants :					
Basic : Young	6	27.167	7.313	} 20	2.084*
Old	16	36.875	6.421		
Net : Young	6	28.000	5.916	} 20	2.266*
Old	16	36.750	5.483		

* Significance at .05 level (tT= 1.782 and tA = 1.725)

- NB - Basic pay (ie basic wage or salary determined by NCWS for job grades established by job evaluation)
 - Net earnings (ie gross earnings for a month after tax and insurance deductions)

of living allowances. Moreover, tax exemption allows them to take home higher net earnings than younger employees.

With respect to Hypothesis II, there is less variance in female earnings. Mean basic pay and net earnings for both male typists and accountants were higher than those for women with high standard deviations. Nevertheless, these differences in pay (both basic and net earnings) between men and women and insignificant at the .05 level, except the differences in net earnings between male and female typists which are quite significant at .05 level. The figures in Table 9.2 suggest that there is little discrimination against women in take-home pay.

Table 9.2

Differences in pay between male and female typists and accountants

	N	Mean £E per month	SD	DF	t-value
A. Typists :					
Basic : Female	6	19.000	1.897	} 12	1.720
Male	8	22.750	5.030		
Net : Female	6	20.000	1.528	} 12	1.791*
Male	8	24.625	4.525		
B. Accountants :					
Basic : Female	6	31.167	7.360	} 20	1.096
Male	16	35.375	8.225		
Net : Female	6	32.000	6.870	} 20	1.175
Male	16	35.250	5.369		

* Significance at the .05 level (tT = 1.782 and tA = 1.725)

This is not entirely true because married males are treated better than married females. The latter are treated as single employees and so have no cost of living allowances or tax exemptions. However most women are young as they leave the labour market at an early age. Therefore, further analysis, using multiple regression analysis, will be carried out later in this chapter to see exactly how much impact sex has on pay differentials and on the allocation of jobs.

Finally, in regard to Hypothesis III, there is more variance in earnings for high educated employees. As for typists, mean basic and net earnings of high-school graduates were higher than those of school-graduates with about the same standard deviation. Similarly, for accountants the mean basic and net earnings for university graduates were higher than those for

Table 9.3

Differences in pay between high and low educated typists and accountants

	N	Mean £ per month	SD	DF	t-value
A. Typists :					
Basic : School Grad	8	19.375	4.373	} 12	1.837*
High S Grad	6	23.500	3.834		
Net : School Grad	8	21.000	4.140	} 12	1.784*
High S Grad	6	24.833	4.020		
B. Accountants :					
Basic : Univ Grad	13	30.154	6.757	} 20	2.638**
Non Grad	9	40.111	5.487		
Net : Univ Grad	13	30.615	5.652	} 20	2.985**
Non Grad	9	39.778	4.262		

* Significance at .05 level (tT = 1.782)

**Significance at .01 level (tA = 2.528)

non-university graduates, and standard deviations of the latter are higher than those of the former. The differences in pay between university and non-university graduate accountants were highly significant at both the .05 and .01 levels. While the differences in pay between high-school and school graduate typists were quite significant at the .05 level only. Education is then perhaps the most important variable, and has much influence on pay differentials even within the same workplace. For most Egyptians, Egypt is known as "the country of certificates". Females and younger people attempt to gain a high level of education in order to avoid or at least minimise discrimination against them in the labour markets. But overall it is fair to say that in a situation where different kinds of employees are carrying out similar jobs in a plant or company and are evaluated by the same job evaluation plan, then women, youth, and the less educated employees will earn less than their counterparts. Hence Egyptian job evaluation has failed to eliminate or reduce the interpersonal differentials within the same workplace.

1. The Roles of Age, Sex and Education

The previous analysis indicated that age, sex and education have a significance in determining the size of interpersonal differentials for a job within the same workplace. The purpose here is to provide further explanation about the way in which these variables operate in Egyptian labour markets. The analysis seeks to indicate whether there is discrimination against women, young people, and less educated workers in the allocation of jobs and occupations. It may help to examine the impact of age, sex and education on the job evaluators' thinking in determining job rates for different individuals.

A. Age-Earnings Profiles

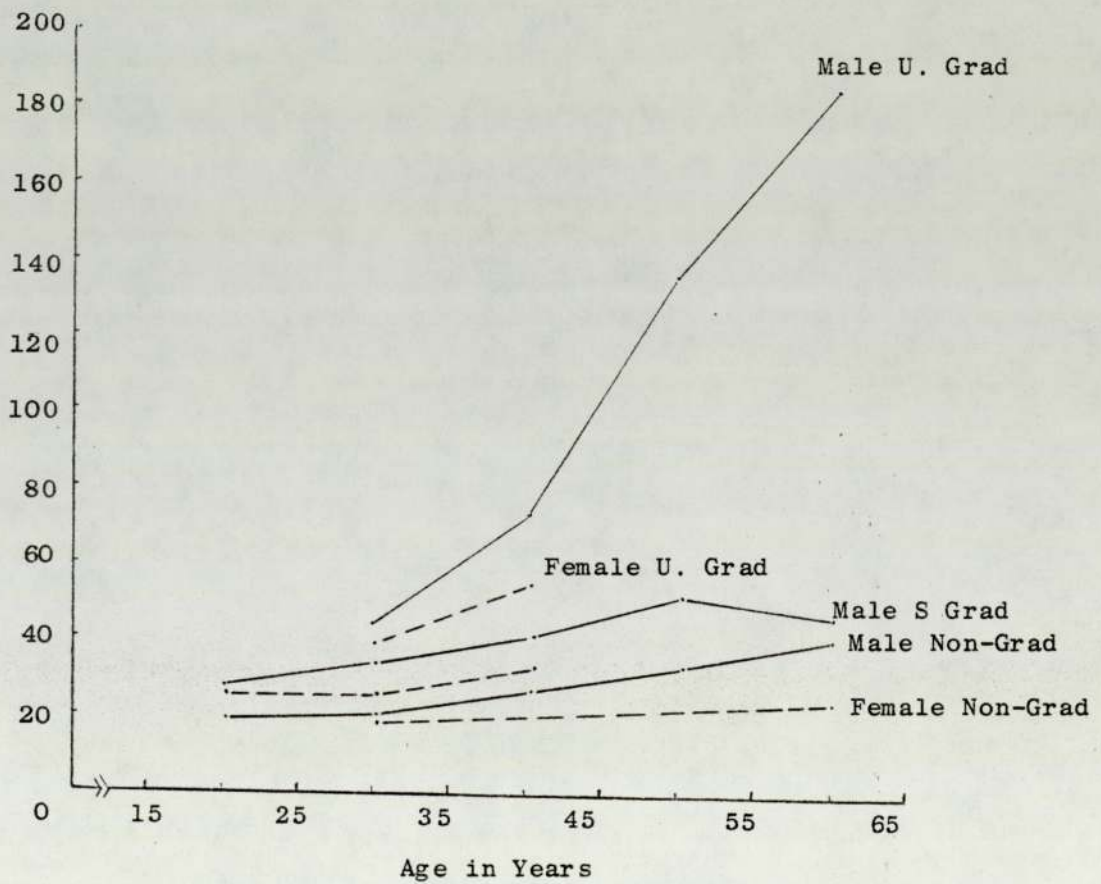
A major concern here is to find out whether women still earn less than men after taking into account their different age and/or length of service and pattern of qualification. Figures 9.a and 9.b below show the age-earnings and service-earnings profiles for male and female university

graduates (UGrad), school graduates (SGrad), and non-graduates (NonGrad) in Egyptian industrial firms in October 1976. They make it clear that there is a marked differential between male and female employees, and between university graduates and others including school graduates and non-graduates. Male university graduates are the best off particularly in old age or with long service.

Figure 9.a

Age-earnings profiles of full-time employees in Egyptian industrial firms in the sample at 1st October 1976

Net earnings
£E per month

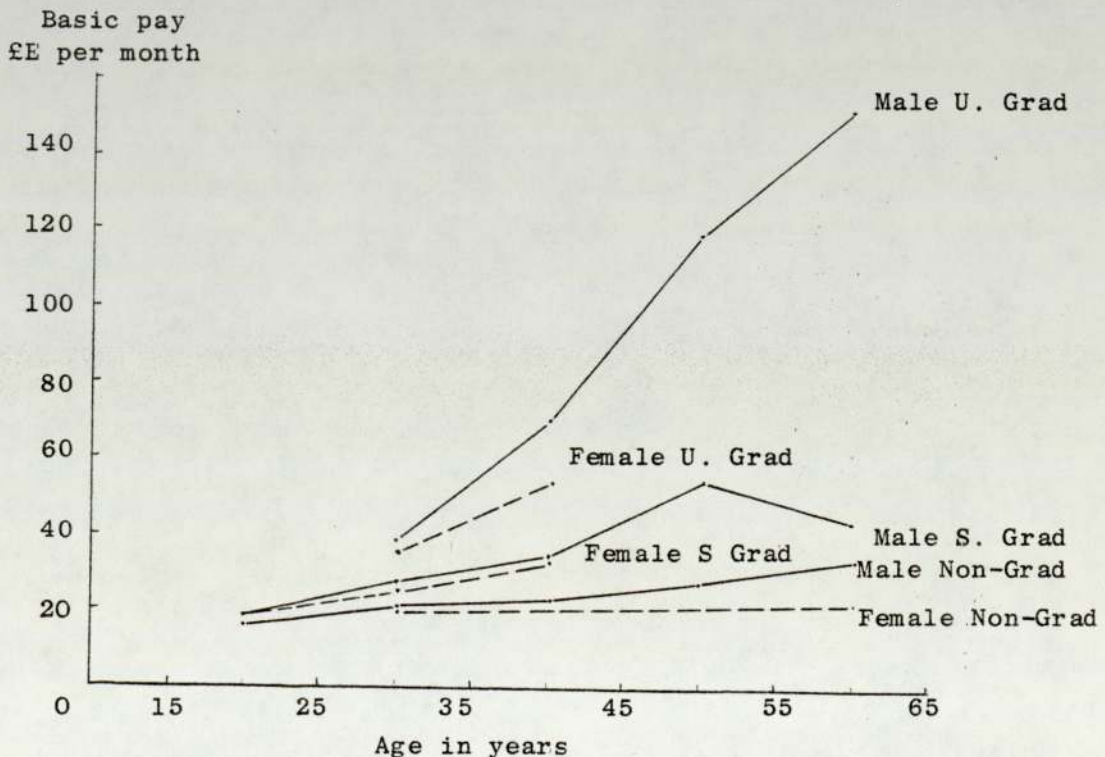


NB The profile of female non-graduates is not accurate because it represents only three employees.

However, female employees appear to do better if they are university graduates but not more than their male counterparts. As female employees entered labour markets recently, it is not clear what the size of the differentials between old male and female employees will ultimately be. In respect of school graduates and non-graduates, who respectively are more likely to be incumbents of clerical and manual posts, male employees always do better than their female counterparts. In the meantime, both male and female school graduates and non-graduates show slight increases in their earnings by time (age and length of service). Sometimes their earnings level off or decrease, particularly among old male school graduates as they reach the top end of their pay scales without hope for promotion and/or overtime, and as a result of the job evaluation structure.

Figure 9.b

Age-basic pay profiles of full-time employees in Egyptian industrial firms in the sample at 1st October 1976



NB The profile of female non-graduates is not accurate because it represents only three employees

The principal conclusion is that little progress can be made from simple comparisons of male and female earnings even allowing for differences in qualifications. The fundamental differences lie between married male employees who have heavy family responsibilities and others including married female employees who are treated as single male employees. It was hypothesised that, in a profession with equal pay for equal work, unmarried female employees should be at no disadvantage compared with their male colleagues. Married women employees, however, will be at a disadvantage in two respects. In the first place, they will be much more likely to have fewer extra payments, eg less overtime, high tax, and very low cost of living allowances while they have their own children. Secondly, they will be much more restricted in the local labour market over which they can search for jobs because they are constrained by their place of residence which is determined by their husband's job, accommodation, children, schools and short work travel.

In order to trace the validity of this finding, an attempt was made to set up a multiple regression equation. As a first phase of analysis, correlation matrix was calculated in order to know the most important independent variables which could explain the total variance in the dependent variable (net earnings). It was found that, the most important independent variables explaining earnings are age or length of service in addition to education, number of dependents and sex. At least 80 per cent of the total variance explained by the final equation is due to one or other of these variables. For this reason it was important to produce an accurate fit to the earnings profile in order not to obtain biased estimates of the dummy variables coefficients when these variables are added at a later stage. An attempt was made to fit a least-squares straight line to the data for each size of the firm. The result was tested for the linearity of

Table 9.4

Intercorrelation coefficients among all the variables which could enter into SPSS multiple regression programme

Variables (1)	Mean	SD	Age	LS	Sex	MS	ND	Ed	Size	Tech	NE	BP
Age	38.26	9.97	1.00									
Length/service	17.82	9.95	.79*	1.00								
Sex	.92	.25	.24	.25	1.00							
Marital status	.85	.22	.37	.45	.07	1.00						
No of dependts	1.35	.74	.48	.44	.10	.60*	1.00					
Education	.61	.72	-.17	.30	-.22	-.09	-.17	1.00				
Size	1.61	.68	.10	.09	.01	.02	-.05	-.05	1.00			
Technology	1.37	.68	.20	.19	.02	.03	.04	-.05	.80*	1.00		
Net earnings	35.54	24.48	(.31)	.24	(.09)	.14	(.15)	(.51)	(.09)	.08	1.00	
Basic Pay	29.50	23.46	.32	.24	.07	.14	.16	.57	.04	.02	.93*	1.00

* Strong intercorrelation coefficients among independent variables

NB One independent variable was chosen among highly intercorrelated ones

Correlation coefficients between brackets refer to the independent variables which will enter the equation (see Appendix III)

(1) Qualitative or factorial variables were estimated in numerical terms
See : Heward, J H and Steele, P M : Business Control Through Multiple Regression Analysis, 1st ed, Gower Press, London, 1972, pp 27-30

regression. (1) Since the non-linearity was indicated, the log-quadratic model was selected. (2)

$$\text{Log (earnings)} = \delta_0 + \delta_1 X + \delta_2 X^2 + \epsilon$$

In fact log quadratic model produces the best fit in terms of R^2 and it has the added attraction of predicting starting earnings very accurately. There are also other reasons for preferring a log relationship. Firstly, taking logs of earnings before performing the regressions has the effect of reducing (if not eliminating) the causes of bias. (3) Secondly, a useful intuitive advantage of the log relationship is that the coefficients, when converted into their multiplicative version, give useful statements such as the following: "A university graduate will earn x per cent more than a school graduate, other things being equal." This x per cent, representing smaller amounts at the start of the university graduate's career than at the finish, because of age or length of service increases in earnings, and corresponds to the real life situation. This percentage relationship is also a better reflection of economic realities than absolute fixed earning differentials.

Dummy variables were added representing various sub-groups of employees, for instance university graduates/school graduates/non-graduates, and men/women. This additive procedure ignores the presence of interaction in the actual relationships being investigated. Since there are a great many possible interaction terms, which can become very difficult to interpret, it is preferable to start off with the simple model of multiple regression

- (1) Dixon, W J and Massey Jr, F J : Introduction to Statistical Analysis, 3rd ed, McGraw-Hill, New York, 1969, pp 200-202
- (2) See Appendix III, Figure 1
- (3) As "non-constant residual variance" and "non-normality of the error term", are in violation of the implicit assumption of multiple regression analysis. This is because variance increases with age and earnings distribution has a positive skew for any age value. The skewness was expected since a great many employees are grouped around the minimum earnings and the rest are spread increasingly thinly towards the maximum permissible earnings.

and build from there. (1)

B. Education and Sex Differentials

Holding age constant, sex appeared a significant explanation of pay differences. More than one explanation of the age-specific differentials in earnings of male and female employees exist and some have already been explored. Generally these concern the supplemental payments available to married men. Thus it seemed possible that using basic pay, with which job evaluation is much concerned, instead of net earnings would reduce, if not eliminate, the value of the coefficient expressing differentials between sexes, and would increase differentials among educational levels, as education is an important factor in job evaluation plans. It would also reduce the statistical significance of sex explanatory variable, and increase that of educational variable. This proved to be true as is demonstrated in Table 9.5.

Table 9.5

Multiplicative Factors : 1976 results
(Holding age constant)

Variable	Net earnings expressed as proportion of referent (1)	Basic pay expressed as proportion of referent (2)
Grad	70.81	90.81
Grad 2	37.12	58.96
Sex	29.60	18.88
Dep	16.65	9.68
Sec	-37.70	11.99
Sec 2	27.56	-12.83

See legend over page for explanation of the Variable column.

(1) See: Draper, N and Smith, H : Applied Regression Analysis, 1st ed, John Wiley and Sons, Inc, London, 1966, pp 163-216
Johnston, J : Economic Methods, 2nd ed, McGraw-Hill, New York, 1972
Aigner, J, Golderber, A S, and Kalton, G : On the Explanatory Power of Dummy Variable Regression, International Economic Review, Vol 16, No 2, June 1975, pp 503-510

Legend for Tables 9.5 and 9.6In Regression 1 and 2:

- Grad : the difference between the level of earnings/pay of university graduate and high school graduate
- Grad 2 : the difference between high school graduate and uneducated employee
- Sex : the difference between male and female
- Dep : the difference between married employee with dependants and single with none
- Sec : the difference between average employee's earnings/pay in large firm and that in medium size firm
- Sec 2 : the difference between average employee's earnings/pay in medium and that in small size firm

In Regression 3 and 4:

- Grad }
Grad 2 } the same as above in regression 1 and 2
- Sex : the difference between pay/earnings of single man and that of the average woman
- Sex 2 : the difference between the pay/earnings of married men and that of all others
- Dep }
Sec } the same as above in regression 1 and 2
Sec 2 }

In regression 5 and 6:

- Grad }
Grad 2 } the same as in Regression 1 and 2
- Sex }
Sex 2 } the same as in Regression 3 and 4
- Dep : the difference between the pay/earnings of women with dependants and single with no dependants
- Dep 2 : the difference between the pay/earnings of men with dependants and women with dependants
- Sec }
Sec 2 } the same as in Regression 1 and 2

The factors of sex differentials, ie sex and number of dependants, are reduced by using basic pay instead of net earnings demonstrating the true effect of sex and/or family responsibility in the job evaluation plan. As expected the most dramatic fall is in the effect of dependants from 16.65 per cent to 9.68 per cent. It should be emphasised that 18.88 per cent of sex and 9.68 per cent of number of dependants are still highly significant statistically ($F_{sex} = 10.769$, and $F_{dep} = 5.677$), and thus represents markedly lower basic pay for women and single employees. Conversely differences in pay between university graduates and school graduates, and between school graduates and non-educated workers have increased, indicating the weight given to educational qualifications in job evaluation plans in Egypt.

Holding each of the six structuring factors constant (age, length of service, marital status, No of dependants, education, size of organisation) the effect of all others was tested as explanation of net earnings. As will be seen in Table 9.6 (which incorporates Table 9.5) educational differences remained the most significant explanation of pay differences while sexual differences in pay are largely explained by differences in education between men and women, differences in the size of the unit employing women, and, only to a lesser amount by dependency allowances.

Table 9.6
Summary of multiplicative factors : 1976 results
(Holding age constant)

Variable	Net earnings expressed as proportion of referent			Basic pay expressed as proportion of referent		
	1	3	5	2	4	6
Grad	70.81	75.51	72.23	90.81	91.69	92.09
Grad 2	37.12	37.28	37.12	58.96	59.18	59.11
Sex	29.60	20.45	8.87*	18.88	9.29*	4.06*
Sex 2	-	9.43*	6.53*	-	10.89*	9.48*
Dep	16.65	11.82	-2.09*	9.68	4.47*	-2.07*
Dep 2	-	-	17.30*	-	-	8.04*
Sec	-37.70	-30.62	-30.62	11.99	12.94	12.28
Sec 2	27.56	27.26	27.03	-12.83	-13.11	-13.22

* insignificant at the .05 level

see legend on previous page for explanation of the Variable column

In order to assess the importance of the structuring factors outlined in Chapter Six "Conceptual Approaches" the student set up some hypotheses around which to design the questionnaire. In particular he was concerned to isolate different orientations among employees in relation to these structural conditions.

2. Interpersonal Differentials

Job evaluation is to do with determining the value of work without regard to personalities of the incumbents. Hence, nowhere in job evaluation is the personal character of employees, male or female, old or young, taken into account. Thus if women or teenagers are capable of doing the work, and there are no other objections, then the rate should apply to them just as much as to men or to the old. Again, in an environment where different kinds of employees working on the same job or occupation, which is evaluated by a job evaluation plan, one could expect to find a unique wage/salary for such job or occupation, or at least differences in pay would be insignificant on condition that no difference in performance exists. Otherwise differences in pay between male and female, old and young, white and nonwhite, etc. will appear as anomalous and could be considered as a discrimination against women, youth, nonwhites etc who are carrying out the same job as their counterparts.

Null hypotheses on these matters might appear as follows:

Hypothesis I

For a given workplace, young workers will earn less than old employees carrying out the same job evaluated by the same plan

Hypothesis II

Under the same conditions, women will earn less than men

Hypothesis III

Differences in pay within the same workplace will increase as employee's level of education increases

A - Age

Fringe benefits are likely to be used as a complementary means in resolving the supply and demand problem which could otherwise be met by higher basic pay. However, these benefits are considered as special compensation for only selected groups of employees. In Egypt, such benefits are more likely to be given to those of long length of service, male employees and to well educated employees rather than others. Thus, personal factors have much influence on the size and type of extra payments including fringe benefits.

Length of service is the most important variable affecting access to better jobs. Age is highly correlated with length of service, 0.79⁽¹⁾, Low and temporary status occupations, which require no or little experience, are often specified for young and female employees by management. These jobs are more likely to be considered as so by job evaluators.

Young employees were defined as those under 25 years of age. These youngsters represent 7.69 per cent in the sample.⁽²⁾ They were found to work in the less skilled operations unless they were male graduates. Annual data on these and other subgroups show the relationship between temporary occupations and in-school status. In aggregate, temporary employees account for 12.55% of industrial employment in Egyptian public sector.⁽³⁾ Their percentage varies from industry to industry, and differs among occupational groups within an industry. For example, in the food industry 3.81% of non-manual work is temporary and 11.77% of manual work, most women are likely to be employed temporarily in rural industrial areas.⁽⁴⁾ Per contra temporary work was 0.36 per cent only for manual workers in the textile industry.⁽⁵⁾ Overall, 9.52% of Egyptian industrial jobs are

(1) see above, Table 9.4

(2) See Table (1-a) in Appendix III

(3) See Table (6-a) in Appendix III

(4) Ibid

(5) Ibid

officially regarded as those of temporary employees,⁽¹⁾ since these are jobs kept open for young army conscripts until their demobilisation.⁽²⁾

Although half of Egyptian population are female (estimated at 49.54 per cent in the Census of 1974,⁽³⁾) only about one third of school students and a quarter of university students are female. These proportions are gradually increasing,⁽⁴⁾ but most Egyptian farmers keep their daughters out of high schools and universities.⁽⁵⁾ In spite of free education, the poor rural families believe themselves in need of female help in house work and/or field work to gather crops, such as cotton, or to work temporarily in jobs in their local good industry in order to earn a supplementary cash income. This kind of work offers them training for an early marriage. School leaving is higher in rural than in urban areas, and among female rather than male students. Hence, women are in need of special training when they enter the labour market. One incentive is that of being counted as an officially unemployed person and thereby drawing a state allowance. Therefore, it is not surprising to find that female students are dominant in most training schools and colleges. Fifty per cent of these trainees are women a contrast with that in other schools and universities.⁽⁶⁾

In Egypt education is entirely free from primary education to postgraduate studies. The number of students who are working on temporary jobs in Egypt is therefore no greater than in Europe. Student participation rates are more likely to be more sensitive to market conditions partly because of the private nature of access to employment. On the other hand, all high school and university graduates have to wait for a year after

(1) Ibid

(2) Act No 61 of 1971, Clause 29, Official Paper No 41 on 14 October 1971

(3) CAPMS : Statistical Yearbook, AR Egypt, 1952-74, CAPMS, Oct 1975, pp 16-17

(4) Ibid , p 151

(5) see Table (7-a) in Appendix III

(6) Ibid

leaving school for the annual Presidential Decree of Employment which opens up the annual allocation of public sector jobs for competition. Therefore, they can be counted among the unemployed or considered as temporary participants in the labour force during that year. Their labour force status is influenced more by the availability of any jobs than by specific pay rates. The government decided in 1975 to employ high school and university graduates for a year in temporary occupations in the public sector.⁽¹⁾ They have to pay back something for their "free" education, and hence earn only pocket money for that year. This temporary job has now become a prior condition for a guaranteed job offer in governmental service. Faced with competition from foreign-owned private firms and from firms in other Arab countries public sector firms actively recruit school leavers and graduates for "temporary" employment. Most of this early experience is irrelevant for their later career and the effect of government intervention has been to shape the Egyptian youth market in a somewhat different way to that of capitalist countries.⁽²⁾ It nevertheless seems to have a somewhat similar function. On the supply side it enables young people to change jobs in search activity, though less so than in capitalistic markets (because they are securing the necessary induction period for public service jobs). On the demand side it enables the State to keep open the jobs of National Servicemen whilst recouping some of the costs of higher education by subtracting from the earnings of new graduates.

B - Sex

Although both sexes pass through a transitional period in their early occupational lives, the divergent paths of male and female employees soon become apparent in Egypt as in the USA. Freedman found that in the latter country young male employees tend to move upward in the occupational structure as they grow older, while their female counterparts tend to

(1) Ministerial Decree No 92 of 1975

(2) Freedman, M : Labor Markets : Segments and Shelters, op cit, p 85

remain at their early occupational level.⁽¹⁾ Women are often constrained by their place of residence as they have to live with their families or husbands. In addition to the lack of female participation in promotion training programmes,⁽²⁾ the voluntary promotion system,⁽³⁾ which is specified only for top occupational level (grade 3 and over), allows management to give priority to men rather than for women in their selection.

From the SPSS regression analysis in Table 9.6 there are four main differences in both basic and net earnings between male and female employees. Firstly, men are paid 29.60% more than women in earnings and 18.88% in basic pay. Secondly, men with family responsibilities have 17.30% more than women in their earnings and take home 8.04% in basic pay. Thirdly, even those women with family responsibilities are paid 2% less in both basic and net earnings than men with no responsibilities at all. Finally, single men are paid more than both single and married women by 8.87% in earnings and 4.06% in basic pay.⁽⁴⁾

In addition to the differences in earnings due to additional allowances to men, about 30% of the differentials may be accounted for by the isolation of female jobs or occupations, and the overrepresentation of women in the unfavourable labour market segments.⁽⁵⁾ The distribution in female earnings is foreshortened, variances are less, and occupational earnings curves are flatter; in fact the most striking aspect of the women labour market is its homogeneity. Much of the difference in earnings in our sample may be due to the greater propensity of large (and very small) firms to employ women.

(1) Ibid, p 85

(2) See Table (8-a) in Appendix III

(3) Act No 61 of 1971, Clause 8, op cit

(4) Because of the recent entry of females into the Egyptian labour market comparisons were made only between young and/or middle aged male and female employees. Differences in pay between old men and women might be expected to be greater. The dispersion in earnings increases with age or length of service in Western studies. The absence of female promotional ladders and the preferment for men in promotion to senior jobs are the principal reason for this.

(5) Freedman, M : Labor Markets, op cit, pp 71-81

Freedman suggests that, "in the case of typical female jobs, what stands out is the specificity of tasks and the absence of promotional ladders. It is not that women fail to learn on the job or to benefit from experience, but rather that the jobs they fill are discretely fenced off from upgrading systems that may apply in other settings, even in the same firm."⁽¹⁾ The Egyptian system of education and official training has an influence in formalising the type of female jobs or occupations through the categorisation of pre-employment training. By and large, according to the distribution of male and female in different schools and universities,⁽²⁾ about 51.14 per cent of Egyptian female graduates of preparatory schools have to take an official training course in skills such as typing, nursery-nurse, etc, for several months in order to get a government job. Of the rest 38 per cent continue their education after preparatory school at secondary school and 27 per cent of university students are women. A second choice in higher education available to non-honours graduates from high school is the technical school.

Commerce is a sole option for female graduates at technical school and women represent 50% on such courses: most take specific training for clerical and service activities. The preference among female students is in fact for vocational courses of all kinds where they represent 43% of the technical college population. Some of these institutes are specifically for "female studies" only such as, home economics, physical training and nursery nursing. Therefore, it is not surprising to find that the majority of female employees in the sample are carrying out clerical and professional duties in Egyptian industries: 58.97% of the female employees in the sample were employed in clerical jobs, in which they represent

(1) Freedman, M : Labor Markets, op cit, p 87

(2) see Table (7-a) in Appendix III

29.10% of the total clerical workers in the establishment in which they were employed.⁽¹⁾ In addition 33.33% of female employees worked as professionals which represented 25% of the total professional jobs in the sample.⁽²⁾

Among the female respondents in the sample their promotion aspirations were equal to or above that for men. For example 84.6% female professionals expressed high intentions for mobility compared with 76.9% for their male counterparts.⁽³⁾ It was about the same for female and male clerical workers, namely, 39.1% and 35.7% respectively.⁽⁴⁾ The low ambition of junior male employees taken together with their apparent level of job satisfaction seem to suggest that adjustment to their career situation was widespread across junior employees of both sexes. The high aspirations of professional women seem to bespeak of potential frustrations. When asked directly, the majority expressed satisfaction with their jobs, just as men do.⁽⁵⁾ Insofar as they complain of sex discrimination, women do so in direct proportion to their earnings levels. The data shows that, female employees express a higher degree of satisfaction with their jobs and with their job grading than with basic and net earnings,⁽⁶⁾ the differences in job satisfaction and satisfaction with basic pay were very significant.⁽⁷⁾

In Western countries the low level of female unionisation has been put forward as a reason behind low earnings for women. In the USA, Freedman found that there is an inverse relationship between the proportion of women workers in an industry and the extent of union organisation in that industry. Moreover the ratio of women union members to employed women has declined over the last two decades from 15 to 13 per cent in the USA.⁽⁸⁾

(1) See Table (10-a) in Appendix III

(2) Ibid

(3) See Table (11-a) in Appendix III

(4) Ibid

(5) See Table (12-a) in Appendix III

(6) See Tables (12-a)(13-a)(14-a) and (15-a) in Appendix III

(7) See Table (16-a) in Appendix III

(8) Freedman, M : Labor Markets, op cit, p 91

By contrast in Egypt all female employees have to join their appropriate trade union if they are employed in the public sector.⁽¹⁾ Those in the private sector obtain the same level of benefits as that negotiated by their organised counterparts in the public sector. The level of unionisation is unlikely to have an effect on women's earnings.

Yet the overwhelming majority of women in the sample had never attended their trade union's official meetings.⁽²⁾ This lack of involvement left female status and their level of pay to be decided by men in government, management, and trade unions. The Cost of Living Allowances' Act is the best example of this male dominance: this Act deprived all women of the full allowances given to men.⁽³⁾

On the other hand promoting married women to senior jobs may seem to carry a greater risk in the eyes of employers in the public and private sectors. Women are more likely to be absent through family responsibilities. They are expected to have a divided consciousness with respect to their commitments, with home and family taking priority whenever a choice must be made.⁽⁴⁾ In Egypt, married women employees often interrupt the works flow as management have to give them a paid maternity holiday of 40 days by law, as well as one year unpaid maternity leave.⁽⁵⁾ Keeping open a senior job for a married woman over this period is seen to lead to reallocation problems.

In a relatively traditional society it is not surprising that the 'natural' role of women as mother and the stereotype of a compliant and deferential 'natural' female personality should gain wide acceptance. The extreme conservatism of rural families is a very real factor in shaping opinion

(1) Act No 62 of 1964

(2) See Table (17-a) in Appendix III

(3) Act No 41 of 1975, and Act No 32 of 1976

(4) Freedman, M : Labor Markets, op cit, p 92

(5) Act No 61 of 1971, Clauses 40 and 43

as well as providing a stream of young women domestic servants for middle class professional households. Consequently, in Egypt the differences in labour cost between similar industrial firms may often be attributed to differences in the sex mix among employees in a given workplace. Moreover, women are not only a source of cheaper labour for the skills they offer, they also provide management with flexibility in the face of a proliferation of young male employees seeking mobility. Young male employees are conscripted by the Ministry of War for three years or more.⁽¹⁾ Egyptian firms have to keep their jobs and pay them their wages after the first year of the conscription.⁽²⁾ Women are ready substitutes at low cost.

Young men in the sample expressed a higher intention to move their job than young women; 57.60 per cent expected to move away from the firm while only 33.33 per cent of women did.⁽³⁾ Consequently the pool of women retained by most firms are considered to be very helpful in resolving the reallocation problems generated by employing young men. This seems to be inconsistent with our other comments about the maternity leave of older women and the military service of younger men. According to the survey results (shown in Table 9-a in Appendix III p 334) young men have a higher mobility than young women, as the former change their jobs in search of activity, particularly when job attachment has been weakened by their military service.

The survey results also indicate that older women have a higher mobility than older men and this may be due to the high rate of absenteeism for older women particularly through their family responsibilities and their prolonged absence during their maternity periods.

(1) See Table 6 in Appendix III

(2) Act No 61 of 1971, Clauses 28 and 29, op cit

(3) See Table (9-a) in Appendix III

This has been the case in Egypt since 1948 when Dr Taha Hussien, the Minister of Education announced his slogan "the necessity for education is like air and water for survival."⁽¹⁾ Furthermore, it was an article of faith that was to spread throughout the world during the fifties and sixties. As Freedman explains, the belief was that "more schooling for more people would enhance individual mobility, fulfil the demands of a radically changed occupational structure, and contribute to rational and technically correct solutions of the nation's ills."⁽²⁾ Most Egyptians, particularly those in "inferior" occupations such as manual workers and farmers, saw education as the sole means for their sons (and daughters sometimes) to be employed in higher paid occupations and hence penetrating the barriers of the upper classes.

Consequently, the number of schools and colleges expanded enormously.⁽³⁾ This expansion barely kept pace with the ever increasing rates of school and college attendance among the expanding young adult cohorts produced by the post-World War II explosion in the Egyptian population.⁽⁴⁾ The great reduction in educational fees, followed by their abolition after the revolution of 1952, encouraged poor students to aspire to a high level of education.⁽⁵⁾ University students as a percentage of the Egyptian population aged 20-24 increased from 6.69% to 11.59% between 1960 and 1970.⁽⁶⁾ This increase placed Egypt in a position just behind Oceania and Europe, but far above all developing countries in Latin America, Asia, Arab States and Asia.⁽⁷⁾

(1) Hussien, H : The Necessity for Education, Al-Ahram, 1 October 1948

(2) Freedman, M : Labor Markets, op cit, p 93

(3) CAPMS : Statistical Yearbook, op cit, pp 155 and 161

(4) Ibid, p 14

(5) Ibid, p 147

(6) UNESCO : Statistical Yearbook 1974, The Unesco Press, Paris, 1975, pp 342-343

(7) See Figure 1 in Appendix III

The existence of the NWS Cadre now takes on a new meaning. The differentials between managerial/professional earnings and all others discussed in Chapter Seven are evidently preserved by this rigid and overt national system. Such being the case, inequality in incomes will grow as the proportion of managerial and professional employees in the labour force grows year by year.⁽¹⁾ Many of these are young, reflecting the recent expansion in higher education. So long as the national price signals remains fixed this group of employees will continue to take an increasing share of the national income. This kind of change in the labour market will help to produce a growing inequality in rewards between older and younger generations.⁽²⁾ This may seem particularly inequitable because higher education is financed from the taxes paid by the older generation. Insofar as higher education and higher training are still more open to men than women, change in the labour market will also lead to a greater inequality between men and women.⁽³⁾

The extent of this discrepancy is revealed in the survey (see Table 9.6) that, other things being equal, university graduate employees are paid 72.23 per cent in earnings and 92.09 per cent in basic pay more than school graduate employees. While the latter group are not capable of changing their relative position they are nevertheless earning 37.12 per cent more than non-educated employees (59.11% on basic pay). The greatest gulf in pay and living standards is that between the 11.9 per cent of male salaried managers and professionals, and the rest of the labour force.⁽⁴⁾

At the start of his working life the younger manager or professional earns more than most clerical and manual workers at the peak of their lifetime earnings. Over time university graduates have increased their hold on

(1) see Table 7.1 p 147

(2) see Table 3-a p 322

(3) see Table 7-a p 332

(4) see Table 18-a in Appendix III

top-income jobs at the expense of high school graduates, while high school graduates have similarly displaced non-educated workers at the middle and lower income levels.

At present 34.8 per cent of top managerial jobs are held by university graduates and 53.9 per cent of professional jobs.⁽¹⁾ Meanwhile, the majority of high school graduates are employed in clerical and routine professional and administrative jobs, in which they comprise 54.4 per cent, 46.2 per cent and 39.3 per cent of each occupation.⁽²⁾ In the meantime, 83.4 per cent of direct manual jobs, and 71.9 per cent of indirect manual jobs are carried out by non-educated workers.⁽³⁾ The survey results are confirmed in similar distributions shown in national figures published in 1974 by the Ministry of Labour.⁽⁴⁾

These results may seem to be inconsistent with the view of human capital theory. Occupational earnings levels are explained by this theory as reflecting the cost to the employee in terms of time spent in education and training treated as an investment in later skills and specific aptitudes.⁽⁵⁾ However, an investment in education can bring no return unless the person can employ the qualification in a job. We are thus confronted with one of the paradoxes of human capital theory as applied to a planned economy. In a free market economy a formal qualification gains its value through the medium of competitive choices being made by entrepreneurs/employers. In a command economy the Government guarantees

(1) Ibid

(2) Ibid

(3) Ibid

(4) Central Agency for Public Mobilisation and Statistics : Labour Statistics in Management Sphere, CAPMS, October 1974, Cairo, p 19

(5) Hyman, R and Brough, I : Social Values and Industrial Relations, op cit, p 137

the value of formal qualification through the creation of jobs for graduates. Unless there is some higher economic objective against which to measure value or a wider market against which the value of those qualifications might be assessed the assignment of a starting salary for graduates becomes somewhat arbitrary.

Both the national economic objectives and the level of demand for Egyptian graduates in other Arab countries provide only the most arbitrary guides for the fixing of graduate salaries. The former are clearly distorted by the political and organisational channels through which they are conveyed to be of much use in arriving at a job/salary structure. For example large public sector enterprises are allocated new graduates each year in the somewhat arbitrary manner described in Chapter Seven. On the other hand salaries in certain Arab states are so high as to provide no realistic comparison. Against this has to be placed the risks of leaving Egypt for another Arab state. These risks are sufficient to deter most graduates (more so perhaps than they deter industrial technicians). But this does not prevent the latter from using salaries in other Arab states as their bench-mark for earnings comparisons and from feeling relatively deprived as a result.

Even so surpluses and bottlenecks occur that make relativities between graduates important in their comparisons. The build up of women in low status jobs has already been mentioned. Another labour pool was created when many solicitors and accountants offices closed down in 1961 as an indirect effect of the nationalisation of private firms who provided their clientele. These released a few thousand qualified personnel into the managerial market. By and large there were so successfully absorbed that they now occupy many top jobs in industry: 13.8% of personnel directors came from this pool and 38.7% of financial directors. ⁽¹⁾

(1) CAPMS : Labour Statistics, op cit, p 16

Shortages of engineers experienced in the 1960s caused the government to award engineering graduates an extra £E9 a month. Their current remuneration now amount to 36% more than other graduate starting pay. Even so the earnings of technical school graduates working in the private sector (particularly in foreign firms) can be very much more. For example the daily wage of a car repair technician was £E10 in a provincial city in 1976, higher than almost all official salary levels contained in the National Cadre. (1)

3. Conclusions

The effect of job evaluation has been to make overt the high priorities set upon higher education in Egypt. Whether this is a rational economic objective for the community as a whole might well be disputed. The profound shortage of technicians and the existence of a free market for such lower grade workers has demonstrated that it might well be in the interests of the nation to train more of this grade of employee than - say arts and commerce graduates. At the same time the external environment provides pay comparisons for graduates which leaves them dissatisfied. In other words in the race for individual achievement through education the job evaluation system has become the prize list.

On the other hand the actual operation of the labour market involves the creation of pools of peripheral workers of women and - albeit temporarily - new graduates who may be used flexibly to service the needs of the economy. The existence of these pools are only revealed by an analysis which goes beyond a macro-examination of the formal mechanism of allocating jobs and earnings. Indeed the wide discrepancies between managerial/professional occupational earnings and those of manual workers can hardly be understood without regard for that mass of people who are outside of the registered

(1) Researcher's meetings with groups of technicians in Tanta City, Egypt, October 1976 during the course of the survey

work force of Egypt but who are still Egyptians and therefore provide an alternative source of labour within the economy.

CHAPTER TEN

CHAPTER TEN

ORGANISATIONAL FACTORS

In Chapter Seven, the distribution of earned income was explained in terms of organisational factors in general. In this chapter, the nature of these factors and the way in which they relate to wage differentials and job evaluation are further developed. The prior analysis is taken only as a point of departure, and more detailed review of trends is presented in order to elaborate and illustrate the themes suggested by several writers in the field.

In terms of capital, the size of firms has been getting larger in recent times. Large units of capital have been required to produce the minimum output necessary for viability in such capital intensive industries as oil refining, chemicals, steel and electricity. In Egypt most of these industries have been established recently by the post Revolutionary administrations. In such industries labour costs are in the range of 10% to 20% of total costs of production.⁽¹⁾ The average proportion of labour cost to total costs in the Egyptian steel and chemical manufacturing is only 15%.⁽²⁾ This proportion contrasts with the 35% of labour relative to capital cost in light industries or service industries such as railways, and the textile industry together with primary industries such as mining.⁽³⁾ These proportions are very low in both heavy and light industries in comparison with that for UK industries,⁽⁴⁾ as a result of the more recent modernisation of these sectors in Egypt.⁽⁵⁾

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- (1) MIMW : Report of Achievements and Business Results of the Industrial Sector and Mineral Wealth in 1975, Vol 2, op cit, pp 2-6 and 88-109
 - (2) Ibid, pp 2-6 and 88-109
 - (3) Ibid
 - (4) Gennard, J : Technology, Market Forces and the Multi-national Company, op cit p 6
 - (5) Hansen, B and Marzouk, G : Development and Economic Policy in UAR (Egypt), op cit, pp 159-164

By contrast, small sized firms, which need a little capital resource and small number of workers to survive, have often been established in the private sector particularly in retail distribution and services like hairdressing. Labour costs in such small organisations are very important since variable costs represents the overwhelming proportion of total costs.

Before nationalisation the importance of small employers relative to large remained comparatively stable. In 1952, about 52% of all employees occupied in Egyptian industry were working in small-scale industries employing 50 employees or less; by 1960 the proportion had only increased to 53% and the number of small firms had fallen slightly.⁽¹⁾

The proportion of all employees in big establishments employing 500 or more persons was 22% in 1952 and had risen to 27% by 1960.⁽²⁾ Since the great nationalisation of 1961, the trend away from smaller firms has increased, but small firms are still significant in terms of employment and value added. For example, in 1960 when big establishments constituted 27% of all industrial employment they produced 47% of total value added.⁽³⁾

Smaller establishments employing 53% of those engaged in industry, produced only 34% of value added.⁽⁴⁾ This suggests an average productivity of labour two to three times larger in big establishments than in small at a time: a proportion large enough to explain some of the differences in earnings and working conditions in the two sectors of employment.

In terms of net assets, the trend towards larger companies was sharply accelerated by the rationalisation and merger which followed the 1961 Nationalisation Decree of July of that year. In April 1962, about 140

(1) Ibid, p 126
 (2) Ibid, p 127
 (3) Ibid, p 127
 (4) Ibid, p 127

big firms under the organisation of the Egyptian Ministry of Industry, held £E700 million and employed 240,000 people, about one third of the employees in the whole of Egyptian industry.⁽¹⁾ By 1975 out of 108 firms, the 95 largest companies had increased their net assets four times; holding £E2794 million, while their employment has doubled to reach 512,000 employees.⁽²⁾ Few large firms exercised a monopoly; others such as sugar and textile industries might be described as oligopolies. Large public firms have tended to grow by diversification since nationalisation. This seems to suggest that growth has stemmed from existing accumulations of technical and managerial resources rather than from the establishment of fresh enterprises. Existing bureaucracies have extended their influence in this manner. Thus the dichotomy between the stable and secure employment available in large public sector enterprises and that available in the unstable and uncertain conditions appertaining in the private sector of domestic (Egyptian) employment has grown greater. In a very real sense state intervention appears to have contributed to the segmentation of the labour market into primary, secondary and peripheral jobs.

1. The Effects of Size

Hypothesis I : as organisation size increases, the level of earnings increases as does the span of differentials.

Hypothesis II : as organisation size increases the reference group of the employee tends to be found within the firm or establishment. In more detail it is probable that employees in small companies with relatively poor conditions will tend to refer to larger 'higher status' plants or firms. They will be more satisfied when their job evaluation system is established at national level.

(1) Ibid, p 168

(2) MIMW : Report of Achievements and Business Results of Industrial Sector and Mineral Wealth in 1975, Vol 2, pp 13-18 and 88-89

On the other hand, employees in high status organisations (ie large firms, especially old multi-plant firms) will wish to compare vertically with a set(s) containing higher status individuals within their organisation. They tend to elaborate or extent their level of comparison (ie with group or groups at different levels of skill). Here, it is assumed that such vertical comparisons could be divided as follows:

- (i) Low-paid workers (ie unskilled manual workers) will concentrate their comparison on wage rates only when they already have the same fringe benefits as skilled workers. The plant job evaluation plan will help them to narrow such differentials depending on technological considerations.
- (ii) High-paid workers (ie skilled manual workers) are not satisfied with a confined company job evaluation plan which covers manual workers only. They tend to elaborate their vertical comparisons to include managerial jobs or occupations (which have been evaluated with another plan under different factors). They may seek to equalise the total compensation especially fringe benefits which differ between blue and white employees.

Hypothesis III : as organisation size increases, dissatisfaction with the job evaluation plan increases especially among manual workers.

Although it could be argued that large firms are more likely to have qualified job analysts and evaluators, and they are also able to bear the high cost of application of a job evaluation programme, the problems imposed by job evaluation in large firms arise from different considerations.

- (i) Large firms are more likely to have a rapidly changing job structure (as an upsetting factor for both the job description and evaluation scheme) as a result of technological changes and work simplification. This will be discussed later in more detail.

(ii) Large firms, which always have a great number of various jobs or occupations, are obliged to modify their different job grades to accord with the National Wage and Salary Cadre while small firms placed them easily. Recently, efforts in large firms to correct their errors are likely to meet strong resistance from workers themselves.

2. Size and Earnings Levels

In this study it was expected that wages will be higher in large organisations than that in smaller ones. The data on which this expectation was based are monthly basic wages and monthly net earnings by size of industrial organisations within industries.

Our sample was too small to be regarded as definitive. Consequently, further research was done to investigate the effect of organisation size on the level of wages. All 108 firms of the Ministry of Egyptian Industry were taken as a sample in order to test the accuracy of the local sample. This sample is drawn from the disseminated data of the Ministry,⁽¹⁾ and

(1) MIMW : Report of Achievements and Business Results of Industrial Sector and Mineral Wealth in 1975, Vol 2, op cit, pp 13-24

the 'Bass Programme' designed to find out the wage mean, standard deviations, analysis of variance (ANOVA) was used to discover the significance of the differences in earnings between firms of different sizes. ⁽¹⁾ Table 10.1 summarises the results.

Table 10.1

The annual average of earnings by size of firm for the 108 firms sample of the Ministry of Egyptian Industry, 1975

Size of firms	No of firms	No of employees	Mean of ann. earnings	Standard deviation	Variance
Less than 500	3	823	384.57	26.20	686.56
500-999	10	7885	398.38	82.40	6790.06
1000 and over	95	484917	419.80	83.18	6919.90
Total	108	493625	419.40	83.16	6915.93

Source : BASS Programme

NB : - By ANOVA, F calculated equals 1396.91, see Table 1-b in Appendix III

- The differences in mean earnings by the size of firms are highly significant at the .01 level, as F calculated value exceeds 4.79 the value of F.01 with 2 and 106 df.

According to the table, mean earnings is higher in large firms than in medium firms by 3.38%, and in medium than in small firms by 3.59% (significant at .01 level). Hence, the original hypothesis is proved correct in the case of 108 firms of the Ministry of Egyptian Industry. Consequently, it might appear that organisation size has an important effect on the level of employees earnings.

(1) See - Freund, J E : Modern Elementary Statistics, op cit, pp 337-345
 - Yeomans, K A : Statistics for the Social Scientist, 2 Applied Statistics, 3rd ed, Penguin Education, Harmondsworth, Middlesex, England, 1973, pp 107-121

A. Profitability and ability to pay

A firm's ability to pay its employees good wages and benefits is also alleged to be a factor in size-of-establishment differentials in employees compensation. If there are increasing returns to scale up to a fairly large-sized plant in many manufacturing industries, then plant-size may have some relationship to capacity to pay in significant parts of the economy. Also, well-run firms grow; expanding firms and plants are likely to be considered successful and profitable.⁽¹⁾ Alternative explanations relate to the firm's control over its environment either the labour market or the product market: how employees respond to this control is a matter for controversy with some economists (Lipsey and Steiner, Rees and Schultz) believing they will pay only minimal wages while others such as Reynolds believe that greater profitability will lead to better and more stable earnings and conditions.⁽²⁾ Using the 1975 Ministry sample as a data base it does not appear that profitability shows any direct relationship to size of company.

The association of average earnings with company size is of course mediated by profitability and with the operation of incentive schemes based on production output. In order to comprehend all of the variables that might be associated with average earnings levels (including the location of the plant, capital/labour ratio etc) a multiple regression would be required. In the time available to the student he was unable to attempt this more complex analysis.

(1) Lester, R A : Pay Differentials by Size of Establishment, op cit, p 63

(2) - Lipsey, R G and Steiner, P O : Economics, Harper and Row, New York, 1966, pp 381-383
 - Rees, A and Schultz, G : Workers and Wages in an Urban Labor Market, op cit, p 7
 - Reynolds, L : Economics and General Introduction, op cit, p 271

Table 10.2

Profitability by size of firms, 1975

Size of firms	No of Firms	No of Employees	Profitability mean* %	Confidence limits (4) %	SD	Variance
Less than 500	3	823	-.02	-.210-.170	.272	.074
500 - 999	10	7885	+.16	.140-180	.063	.004
1000 and over	95	484917	+.04	.037-.043	.031	.001
Total	108	493625	+.04	.037-.043	.031	.001

Source : BASS Programme

* significant at the .01 level (see Table 12-b in Appendix III)

This is probably because most industrial selling prices are regulated by the government. Restrictions on prices and profits have been in existence since 1952 and particularly after 1957.⁽¹⁾ Moreover, although most large firms are in a position of monopoly or oligopoly profitability is more likely to be related to the type of industry rather than the size of firms. In Table 10.3 profitability varies, being very high in specific industries such as, paper and board, railway equipment, electrical engineering, clothing and drink industries; and very low in others such as shipbuilding and marine, leather, steel and copper, and sugar industries. In addition to that, the product mix could affect the profitability of the firm; the price of semi-manufactures or intermediate products are likely to be less controlled than those of consumer goods or finished products for political reasons.

This does not mean that profitability has not any effect on wage levels. On the contrary, annual increases in take-home pay might be influenced by firm's profitability whatever its size, as a result of the employees participation in the company's profit. By law, profitable firms are entitled to reward their employees for their contribution or outstanding

(1) Hansen, B and Marzouk, G : Development and Economic Policy in the UAR (Egypt), op cit, p 165

Table 10.3

Profitability by the type of industry, 1975

Code	Industry	No of Firms	No of Employees	Profitability Mean %	SD	Variance
4	Textile	25	251,530	.06	.031	.001
5	Clothing	2	14,604	.14	.063	.004
6	Jute	1	6,968	.09	.000	.000
7	Food	15	32,534	.08	.021	.001
8	Sugar	1	22,222	.00	.000	.000
9	Tobacco	2	12,687	.03	.031	.001
10	Drink	3	3,697	.14	.130	.017
11	Chemical & dyes	18	39,242	.02	.000	.000
12	Leather	2	2,297	-.04	.031	.001
13	Paper & board	2	5,177	.40	.141	.020
14	Steel & copper	5	27,316	-.02	.000	.000
15	Motor vehicle & motor cycle	2	13,897	.08	.000	.000
16	Shipbuilding & marine engineering	2	7,626	-.05	.031	.001
17	Railway equipment	2	2,732	.24	.083	.007
18	Electric engineering	7	17,967	.20	.161	.026
19	Metal goods not elsewhere specified	15	25,195	.05	.000	.000
20	Mining	4	7,934	.01	.031	.001
	Total	108	493,625	.04	.031	.001

Source : BASS Programme

efforts, (although effort is more consistent with productivity rather with profits). Consequently, profitability could have much effect on the annual pay increase, but it is not strong enough to produce a positive effect on the level of earnings.

B. Incentives and Fringe Benefits

It has been claimed by many writers that, in most industries incentive payment systems are widespread in large firms than small ones and that earnings per man-hour tended to be higher under incentive plans than with hourly paid. For example, Lester concluded that incentive pay tends to be more common among large than small establishments.⁽¹⁾ As against this other writers indicated that variation is mainly by industry than by size of establishment.⁽²⁾

Individual incentive payment systems have not been used in manufacturing firms in the Egyptian public sector since job evaluation was introduced in 1961: it was felt at that time that the two systems would conflict. Nevertheless, it could be argued that other incentive methods such as profit sharing and group bonuses might have an effect on the level of earnings which relates to the size of firms.

With regard to the profit sharing system, employees in public firms participate in company's profits (ie appropriation profit account) by a proportion of 25% as settled in Act 111 of 1961. This proportion is divided into three main portions as follows:

- 10% Cash Distribution
- 10% Social and Housing Services (on the Company level)
- 5% Central Social Services (on the State level)

The last two portions, which are considered as a deferred share of profits, will be dealt with later under the title of fringe benefits. The first portion is regarded as a direct cash share in profits and is sometimes paid in advance up to a maximum of £E50 per year. (This maximum has been recently changed to £E75 a year).

(1) Lester, R : Pay Differentials by Size of Establishment, op cit, p 62
 (2) Behrend, H : An Assessment of the Current Status of Incentive Schemes, Journal of Industrial Relations, October 1963, pp 96-109

As for the group bonus, this incentive scheme was introduced to motivate industrial workers to increase productivity and improve the quality of production. The scheme was left to company management to decide which groups received bonus and how much that bonus should be. Recently, the government came to realise that direct workers are not the only group involved in increasing productivity and that directly measurable productivity is not the only or unique factor determining company performance. The level of deprivation caused among indirect and white collar workers as a result of the concentration of bonus payment on production workers caused circular conflicts between and within different industrial groups of employees in public firms. The government tried to improve company bonus schemes through legislation introduced in 1975 to promote company-wide incentive bonus schemes.⁽¹⁾

The new wider bonus scheme relies on many factors such as production performance, sales, exports, added value and productivity increases. Finished stock, labour costs, absenteeism and total cost reductions are all included in the assessment of performance. Each factor is given a maximum number of points and measured by a specific formula in order to calculate an aggregated performance level for the whole firm.

(The Factor Scale used is contained in Appendix III). The total points of the firm are set against a categorisation of bonus levels in the manner shown in Table 10.4 to determine the size of incentive bonus as a percentage of retained profits (ie after revenue tax). The annual incentive bonus per employee is calculated by dividing the firm's incentive bonus by its total wages and salaries, and multiplied by the average month. For example, if the incentive bonus of the firm is £E15,000 and the annual total wages and salaries is £E10,000 the annual

(1) The system was confirmed by the Prime Minister on 20 July 1975

Table 10.4

The general scale-points of incentive group bonus, 1975

Total points of the firm's factors	Incentive group bonus (as percentage of retained profits)
50-60	10%
61-70	15%
71-80	20%
81-100	25%

Source : MIMW : Report of Achievements and Business Results of Industrial Sector and Mineral Wealth in 1975, Vol 1, Ministry of Industry and Mineral Wealth, Cairo, 1976, p 76

incentive bonus per employee will be as follows:

$$\text{Employee's bonus} = \frac{15,000}{10,000} \times 30 = 45 \text{ days' pay}$$

The scheme may be criticised on its complexity and remoteness from the likely frame of reference of the shop-floor worker. But one might expect the employee's bonus in large firms to be more stable than in smaller companies for several reasons. Firstly, large firms may have a higher level of performance as they employ more qualified supervisors and workers and hence achieve the minimum requirements for high bonus. Secondly, although the profit rate is not higher in large firms the government allows non-profitable firms to pay a group bonus based on their hypothetical or points performance. In this case, bonus is determined as a proportion of wages or salaries on a specific number of days as shown in Table 10.5. Thirdly, because group bonus is calculated on the basis of the employee's basic pay, which is higher in large firms, there is a double effect of job evaluation on both basic pay and group bonus. However, in the case of non-profitable companies, the size of group bonus is too small (ie very few number of days' wage or salary) to produce a great effect on earnings.

Table 10.5

Non-profitable firms' scale-points of incentive group bonus

Total points of the firm's factors	Incentive group bonus (as days' wage/salary)
50-60	3
60-70	4
70-80	5
80-100	7

Source : MIMW : Report of Achievements and Business Results, Vol 1, op cit, p 77

Using the 1975 Ministry sample total incentive payments (ie profit sharing and group bonus) were calculated to find out whether or not the size of firm has an important effect on the level of pay. It was not expected that incentive payments in large firms would be higher than that in small firms as profit sharing and group bonus rely on appropriation and retained profits respectively, which were not shown to be higher in large companies. The evidence in Table 10.6 is however somewhat surprising since employees in large companies were receiving significantly lower bonuses than those in smaller firms. To explain this we have to refer back to our earlier

Table 10.6

Annual incentive payment by size of firms, 1975

Size of firm	No of Firm	No of Employees	Incentives* per employee £E	Confidence limits	SD	Variance
Less than 500	3	823	98.42	81.81-115.03	23.48	551.67
500 - 999	10	7,885	119.59	93.61-145.57	77.94	6,075.67
1000 & over	95	484,917	87.66	82.45- 92.87	50.56	2,557.14
Total	108	493,625	88.19	82.57-93.81	58.06	3,371.73

Source : BASS Programme

* Significant at the .01 level (See Table 4-b in Appendix III)

findings that basic pay in larger companies is higher than in medium or small sized companies. Consequently, incentive payments may not have an important effect on the level of earnings in larger companies but tends to provide a higher proportion of remuneration in smaller companies.

Finally with regard to fringe benefits, which may differ between large and small firms, it is sometimes claimed that the total compensation will be higher in large firms than that in small ones in free market contexts. (1)

In Egypt, since the early sixties the government has endeavoured to offer greater security to employees in public firms and to some extent in private ones. By law, they are covered by insurance-type benefits which may be divided into three main groups as follows:

- life, accident and health insurance (2)
- pension and retirement (3)
- pay for released time (ie sick pay, paid absence and holidays) (4).

It seems likely that the size of such insurance benefits will be higher in large firms mainly because the monies transferred to the Social and Health Security Fund is calculated as a proportion of the employee's basic pay which is higher in large firms. Table 10.7 provides contrary evidence to this hypothesis.

(1) Lester, R : Size of Establishment Compensation Differentials, op cit, p 61
 Greene, M : The Role of Employee Benefits Structure in Manufacturing Industry, School of Business Administration, The University of Oregon, Eugene, Oregon, 1964, pp 32-34
 Final Report of International Seminars 1967 : Forms of Wages and Salary Payment for High Productivity, Organisation for Economic Cooperation and Development, Paris, 1970, p 121

(2) Act No 63 of 1964
 (3) Act No 50 of 1963
 (4) Presidential Decree No 3309 of 1966, Clause No 46

Table 10.7

Insurance-types and kind of benefits by size of firms, 1975

Size of firm	No of firms	No of Employees	Insurance*	Kind benefits*	Total
Less than 500	3	823	53.46	20.65	74.11
500 - 999	10	7,885	67.46	41.34	108.80
1000 & over	95	484,917	53.71	23.58	77.29
Total	108	493,625	53.93	23.86	77.79

Source : BASS Programme

* Significant at the .01 level (see ANOVA Tables 6-b and 8-b in Appendix III)

The explanations are multifold. We have demonstrated that profits are higher in medium-sized firms (largely due to their industrial location) and therefore more money will be paid in to the company-based social security fund. To this must be added the 10% of distributed profits that goes to provide company housing schemes. (The government adds to these, benefits based on individual circumstances but paid through the company.) Additional company provisions include executive cars or busing facilities for journeys to work. For example, if a plant is situated out of the industrial city orbit, the company has to offer their employees these facilities free either by using company buses or paying them travelling costs (as determined by law £E1.50 for blue collar and £E2.50 for white collar workers per month).⁽¹⁾ Secondly, luncheon vouchers are also offered free in some firms, while in other firms employees are given £E1.50 per month instead and that represents an increase in cash earnings. Large firms are more likely to own housing settlements and to offer their employees free accommodation or to charge only a symbolic rent. (In other firms they might have the same offer from the government channelled through their companies).

Therefore, the differences in kind benefits by the size of firms seem to be misleading until or unless careful consideration is given to each type

(1) Act 41 of 1958

of benefit and the manner it is offered and to whom. Our results simply suggest that there is no apparent direct relationship between the size of firm and the level of fringe benefits received. Since however benefits in kind represent up to a quarter of the annual mean earnings in the public sector, it is apparent that insofar as large companies are offering low-price housing and transport, it is likely that employees in small companies may be substantially worse off than those in medium or large firms. Employees in the latter organisations are likely to be rendered immobile because of the nature of the indirect rewards being received from their paternalistic employer.

C. Quality of labour

It is claimed that for the same type of work or for the same job, the quality of labour is higher in large firms than in small ones, and that high-quality of labour may result in some wage and benefit differential relative to low-quality labour. Lester⁽¹⁾ tried to explain the relationship between quality of labour and both size of firm and wage-benefit differentials. He suggested that the relationship could be as follows:

1. The wage benefit differential permits the higher paying plants to attract and to hold higher quality employees.
2. The disadvantages that arise from the more impersonal and confining aspects of working in large establishments necessitate the payment of higher levels of compensation to attract and hold a given quality of labour.
3. Large firms or plants are likely to need more responsible, higher quality, and hence more expensive employees, who can perform well without close supervision, whereas small firms can use marginal employees who do well only if closely supervised.
4. Large firms are more likely to hire a high percentage of well-

(1) Lester, R : Pay Differentials by Size of Establishment, op cit, pp 64-65

trained, well-qualified foremen and supervisors. Thus they may be able to develop an effective workplace organisation although some new hires may not possess uniformly high qualifications upon entrance to the job.

The ambiguity and contradictory nature of Lester's findings have been criticised by a number of other economists. ⁽¹⁾⁽²⁾ In Egypt it seems conceivable that differences in the quality of labour measured in terms of education and the nature and length of training, ethnic differences in the workforce may exist and that these differences may extend up into supervision. (To say this leaves us exposed to the type of tautology referred to earlier).

With regard to the quality of employees in general, and direct supervisors in particular, Tables 10.8 and 10.9 provide some evidence that the educational levels of employees in large firms are higher than in small and ^{Lower than} medium sized firms. This relationship is all the more surprising since larger firms employ more older employees and more women - both of which relate negatively to educational qualifications in our sample. ⁽³⁾

This accent on the quality of labour was also seen in the number of company and other trained employees in larger companies as against medium and small sized companies. (The length of training taken as a cut-off point in this sample was an effective factor in the process of wage determination.

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- (1) Rees, A and Shultz, G P : Workers and Wages in an Urban Labor Market, op cit, p 6
- (2) Owen, J : Toward a Public Employment Wage Theory : Some Econometric Evidence on Teacher Quality, Industrial and Labour Relations Review, Vol 25, 1971/2, p 222
- (3) See Table 9.4 of the intercorrelation matrix in Chapter 9

Table 10.8

Educational levels of the employees by the size of firm

Size of Firm	Employees' educational levels								Total
	U. Grad		H. School		School		None		
Less than 500	5	8.2	5	8.2	13	21.3	38	62.3	61
500 - 999	18	19.1	21	22.3	31	33.0	24	25.5	94
1000 and over	52	13.3	59	15.1	51	13.0	229	58.6	391
Total	75	13.7	85	15.6	95	17.4	291	53.3	546

Source : SPSS Programme

Chi-square (x^2) = 42.796

Contingency coefficient = 0.270

Significant at the .01 level (as 42.796 exceeds 16.812 the value of x^2 .01 with 6 degrees of freedom)

Table 10.9

Educational levels of the supervisors by the size of firm

Size of Firm	Supervisors' educational levels						Total
	H. School		School		None		
Less than 500	-	-	4	80.0	1	20.0	5 9.1
500 - 999	-	-	6	85.7	1	14.3	7 12.7
1000 and over	6	14.0	12	27.9	25	58.1	43 78.2
Total	6	10.9	22	40.0	27	49.1	55 100.0

Source : SPSS Programme

Chi-square (x^2) = 12.203

Contingency coefficient = 0.426

Significant at the .05 level (as 12.203 exceeds 9.488 the value of x^2 .05 with 4 degrees of freedom)

Table 10.10

Company and other trained employees by the size of firm

Size of firm	Total No of employees in sample	Adjusted Total Employees*	Trainees		
			No	Proportion of total %	Proportion of adjusted total %
Less than 500	61	42	15	24.6	35.7
500 - 999	94	66	30	31.9	45.5
1000 and over	391	353	182	46.5	51.6
Total	546	461	227	41.6	49.2

Source : SPSS Programme

* Adjusted number of employees was calculated by omitting the number of employees in jobs for which no training was deemed to be required.

In spite of the larger numbers of unskilled or semi-skilled workers (in aggregate terms) working in large companies, skilled workers still constitute a higher proportion of their total workforce than smaller companies. (Table 10.11). Furthermore the number of administrative employees also appear as a higher proportion of the whole. (Table 10.12). It appears possible that the growth in size of organisation affects the specialised division of labour and the administrative machinery required to coordinate the increased functional fragmentation in the manner forecast by Child and by other Aston researchers.⁽¹⁾ This being so the present workings of the Egyptian educational and training programmes appear to be adapted to the needs of the large corporations in the public sector.

The second important point to note is that if large size is associated with an accumulation of skills and education (human capital) it is not associated with the distribution of cash earnings, nor to anything like the same extent, with the distribution of (recorded) fringe benefits.

(1) Child, J : Organisations, op cit

Table 10.11

The distribution of the employees by skill levels
and size of firm

Size of firm	Workers' skill levels						Total	
	SK		SS		US			
Less than 500	12	25.5	24	51.1	11	23.4	47	13.1
500 - 999	17	27.8	22	36.1	22	36.1	61	17.0
1000 and over	116	46.2	92	36.7	43	17.1	251	69.9
Total	145	40.4	138	38.4	76	21.2	359	100.0

Source : SPSS Programme

Chi-square (χ^2) = 17.685

Contingency coefficient = 0.217

Significant at the .01 level (as 17.685 exceeds 13.277 the value of χ^2 .01 with 4 degrees of freedom)

Table 10.12

White/blue collar workers by the size of firm

Size of firm	No of firms	No of Employees	White/blue collar (mean ratio)	SD	Variance
Less than 500	3	823	.478	.063	.004
500 - 999	10	7885	.482	.118	.014
1000 and over	95	484917	.548	.063	.004
Total	108	493625	.547	.100	.010

Source : BASS Programme

NB - Analysis of Variance (F) = 48.296 (See ANOVA Table 9-b in Appendix)

- Significant at the .01 level (as 48.296 exceeds 4.79 the value of

F.01 with 2 and 106 degrees of freedom)

This is in line with the critique of present employment practises mentioned earlier; ⁽¹⁾ that is that a large proportion of skilled and educated employees are "locked-into" employment in public companies by virtue of present recruitment methods (government guaranteed induction into industry for graduates) and rewards in kind which tie employees to the company.

D. Location

One explanation for differences in earnings between firms is geographical location. Rees and Schultz ⁽²⁾ found a positive relationship between average hourly earnings and both city size and establishment size. The association between these variables in Table 10.13, taken from the 1975 survey of Egyptian firms, demonstrated a greater statistical significance than those shown in the American sample.

Table 10.13

The annual average of earnings by region for the 108 firms sample, 1975

Code	Region	No of firms	No of employees	Mean earnings*	SD	Variance
21	Cairo	56	209,571	451.12	79.85	6376.96
22	Alex & West	31	154,467	401.87	73.02	5332.34
23	Mid-Delta	8	64,151	413.72	43.71	1911.34
24	East-Delta	2	13,437	360.70	20.00	400.25
25	Canal Zone	7	13,786	437.29	137.31	18855.80
26	Near Upper	2	13,964	243.12	15.06	226.84
27	Far Upper	2	24,249	395.81	65.60	4303.62
	Total	108	493,625	419.40	83.16	6915.93

* significant at the .01 level (See ANOVA Table 11-b in Appendix III)

(1) See Chapter

(2) Rees and Schultz : Workers and Wages in an Urban Labor Market, op cit

Also, a positive relation was found between the density of residential density and both the number of large firms in the region and workers employed by the Ministry of Industry in these regions. The correlation coefficient which are shown in Table 8.6 in Chapter 8 are +0.43 and +0.58 respectively.

It was found that the highest earnings regions are Cairo, Canal Zone, Mid-Delta and Alexandria and West-Delta. This result might be ascribed to the concentration of heavy industry such as basic steel in the Cairo region and petroleum refining in the Canal Zone. While the Mid-Delta, Alexandria and West-Delta regions have a heavier concentration of residential neighbourhoods where large firms are those of the textile industry, the biggest Egyptian industry. These firms have been established in these regions by the reason of the large cotton plantations and the concentration of traditional skills. Both Near and Far Upper Nile regions are the lowest wage regions. These are the most geographically remote areas and are considered undesirable by possible entrepreneurs. The Government attempts to persuade such new employers as can be attracted to the regions to recruit from the largely agrarian labour living in the region. Skilled labour moving into the region from other parts of Egypt are paid a "strange employees' lieu allowance" for approved employment in new industry.

3. Organisational Size and Job Satisfaction

Large size may be seen to give rise to many of the dysfunctions of bureaucracy - none more so than employee alienation and dissatisfaction. (1)
The effect on employee attitudes made by organisational settings has

(1) Blauner, R : Alienation and Freedom, op cit, p 182

however been challenged by a number of sociologists, some of whom have gone so far as to suggest that workers in large firms are those who have actually chosen to work in such firms.⁽¹⁾ We have seen that there were indeed differences in the type of rewards being offered by different sized firms in our questionnaire sample. Large sized firms offer lower but more stable rewards with less reliance on bonus payments and cash benefits: smaller firms offer more immediate cash rewards.

Table 10.14

Employees satisfaction with basic pay by the size of firm

Size of firm	Sat	S Sat	S Dis	Dis	V Dis	Total
less than 500	7	21	19	14	0	61
500 - 999	6	27	35	24	2	94
1000 and over	6	65	192	117	11	391
Total	19	113	246	155	13	546

Source : SPSS Programme

Chi-square (χ^2) = 37.684

Contingency coefficient = 0.254

Significant at the .01 level (as 37.684 exceeds 20.090 the value of $\chi^2_{.01}$ with 8 degrees of freedom).

Consequently it may be logical to expect that employees in large firms will be more satisfied with their higher basic pay and hence with the job evaluation technique as a means of wage determination. Table 10.14 provides evidence that such expectations are not quite correct, particularly in the case of basic pay. Although employees in large firms have a higher level of pay, it seems possible that their higher dissatisfaction with pay stems from their lower incentive payments and ability to earn bonuses in the face of a soaring cost of living. This feeling, extracted from

(1) Ibid

interviews with respondents is to some extent borne out in the lesser significances in differences in feeling towards the total remuneration package. It suggests a personal frustration at not being able to do more to protect their standard of living and to "better themselves".

Table 10.15

Employees satisfaction with their earnings with the size of firm

Size of firm	V Sat	Sat	S Sat	S Dis	Dis	V Dis	Total
Less than 500	2	19	19	18	3	0	61
500 - 999	2	14	41	26	11	0	94
1000 and over	5	55	142	150	36	3	391
Total	9	88	202	194	50	3	546

Source : SPSS Programme

Chi-square (χ^2) = 19.020

Contingency coefficient = 0.183

Significant at the .05 level (as 19.020 exceeds 18.307 the value of $\chi^2_{.05}$ with 10 degrees of freedom.

Overall job satisfaction (Table 10.16) is in fact relatively low in all companies - and indeed in comparison with many Western surveys seems somewhat below the norm that might be expected in Europe and in America. There is no significant difference in distribution that might be attributed to the effect of organisational size however. The balance of opinion shifts slightly in favour of the job evaluation system in Table 10.17 but only half the sample responded to this question and it was clear from the distribution of the non-completed questionnaires that ignorance of the scheme was widespread among manual workers and women workers. In other words those most satisfied were those doing well out of its operations.

Table 10.16

Employees' job satisfaction by the size of firm

Size of firm	V Sat	Sat	S Sat	S Dis	Dis	V Dis	Total
Less than 500	2	16	30	12	1	0	61
500 - 999	3	21	34	25	10	1	94
1000 and over	6	63	175	115	29	3	391
Total	11	100	239	152	40	4	546

Source : SPSS Programme

Chi-square (χ^2) = 13.826

Contingency coefficient = 0.157

Insignificant at the .05 level (as 13.826 does not exceed 18.307 the value of χ^2 .05 with 10 degrees of freedom).

Table 10.17

Employees' satisfaction with the existing job evaluation plan by the size of firm

Size of firm	V Sat	Sat	S Sat	S Dis	Dis	V Dis	Total
Less than 500	2	11	12	7	1	2	35
500 - 999	2	10	17	8	4	0	41
1000 and over	15	51	78	40	14	2	200
Total	19	72	107	55	19	4	276

Source : SPSS Programme

NB : Satisfaction was expressed only by the employees who attend the plan.

Chi-square (χ^2) = 7.724

Contingency coefficient = 0.165

Insignificant at the .05 level (as 7.724 does not exceed 18.307 the value of χ^2 .05 with 10 degrees of freedom).

In the West there are three ways in which pay grievances are usually expressed. The first is through the use of grievance or appeals procedures

by individuals: the second is through joining a trade union and making a collective protest: the third is to move elsewhere. In our sample very high proportions of respondents expressed an intention to leave their present employment. One may discount this result to some extent since it seems clear that the survey was felt by some respondents at least to be a means to record their protest with no real intention of leaving. If this is so then it must reflect on the efficacy of existing grievance procedures particularly within the two companies classified as medium sized in our small sample.

Table 10.18

The distribution of employees who intend
to move elsewhere by size of firms

Size of firms	No of employees	Intended movers	
		No	%
Less than 500	61	17	27.87
500 - 999	94	72	76.60
1000 and over	391	157	40.15
Total	546	246	62.92

Source : SPSS Programme

The notion that disaffection brought about by bureaucracy is the main reason for the employees' expression of frustration is however not supported by the reasons that they give for wishing to leave. Even in large firms, pay rather than job conditions appear to be the main cause for dissatisfaction. No one reason is likely to bring about such a desire and in all sizes of firm job dissatisfaction is mentioned by a substantial proportion of respondents. In medium-sized firms it is expressed by almost everyone and only a small proportion of disaffected employees have a definite desire to change their present occupation - just to move from their present employer.

Table 10.19

The intended movers by reasons and size of firms

Size of firm	No of intended movers	Reasons for moving elsewhere					
		More money		Dissatisfied here		Occupational change	
Less than 500	17	17	100	9	52.9	10	58.8
500 - 999	72	72	100	52	72.2	23	31.9
1000 and over	157	157	100	64	40.8	45	28.7
Total	246	246	100	125	50.8	78	31.7

Source : SPSS Programme

Some indication of the focus of employee discontent may be obtained through an attempt to isolate their reference groups for pay comparisons. In the medium sized firms both white collar and manual employees were found to be rather more likely to be comparing their condition with that of management and even professional employees. As might be expected office staff are twice to three times more likely than manual to be using management as a referent. This must be explicable in terms of either social proximity or the focus of their career aspirations or both.⁽¹⁾ However it is somewhat unusual to find manual workers using management and professional groups as bench marks on such a wide scale. Given the earnings differentials between these groups it seems to indicate a somewhat unstable situation.

Table 10.20

Blue-collar employee reference groups in pay comparisons by size of firms

Size of firm	No	Blue-collar employee reference groups							
		Blue		White		Professional		Managerial	
Less than 500	40	38	95.0	21	52.5	7	17.5	11	27.5
500 - 999	41	30	73.2	13	31.7	21	51.2	21	51.2
1000 and over	197	162	82.2	51	25.9	81	41.1	100	50.8
Total	278	230	82.7	85	30.8	109	39.2	132	47.5

Source : SPSS Programme

(1) Roberts, B, Loveridge, R and Gennard J, "Reluctant Militants", op cit

Table 10.21

White-collar employee reference groups in pay comparisons by size of firms

Size of firm	No	White collar employee reference groups							
		Blue		White		Professional		Managerial	
			%		%		%		%
Less than 500	7	3	42.9	0	0.0	0	0.0	5	71.4
500 - 999	16	16	100	5	31.3	7	43.7	16	100
1000 and over	54	26	48.1	17	31.5	31	57.4	44	81.5
Total	77	45	58.4	22	28.6	38	49.4	65	84.4

Source : SPSS Programme

The level at which the comparisons are made also differs between white and blue collar employees in an interesting manner. In large companies the latter are more likely to make comparisons across the whole industry in which the employer operates. In the medium sized company many white collar employees go even further in their level of comparison. One possible explanation for this span of comparison is the existence of an active union branch. Table 10.24 shows that while on the basis of branch

Table 10.22

Blue collar employees level of pay comparisons by size of firms

Size of firm	No	Level of pay comparisons							
		Plant		Company		Industry		Other Industry	
			%		%		%		%
Less than 500	40	33	82.5	35	87.5	19	47.5	16	40.0
500 - 999	41	22	53.7	26	63.4	36	87.8	15	36.6
1000 and over	197	83	42.1	105	53.3	149	75.6	128	65.0
Total	278	138	49.6	166	59.7	204	73.4	159	57.2

Source : SPSS Programme

Table 10.23

White collar employees level of pay comparisons by size of firms

Size of firm	No	Level of pay comparisons							
		Plant		Company		Industry		Other Industry	
			%		%		%		%
Less than 500	7	7	100.0	7	100.0	2	28.6	2	28.6
500 - 999	16	13	82.1	12	75.0	15	93.8	10	62.5
1000 and over	54	38	70.4	48	88.9	34	63.0	19	35.2
Total	77	58	75.3	67	87.0	51	66.2	31	40.3

Source : SPSS Programme

Table 10.24

The distribution of white and blue collar workers attending the official TU meetings according to the size of firm

Size of firm	White collar			Blue collar			Total		
	No	Attendance		No	Attendance		No	Attendance	
			%			%			%
Less than 500	7	0	0.0	40	0	0.0	47	0	0.0
500 - 1000	18	6	33.3	43	32	74.4	61	38	62.3
1000 and over	54	33	61.1	197	147	74.6	251	180	71.7
Total	79	39	49.4	280	179	63.9	359	218	60.7

Source : SPSS Programme

attendance this may be true of manual workers in large and medium sized firms, it cannot be said to be true of office staff in our sample from medium-sized firms. Nevertheless it seems feasible to suggest that unions do provide an information source on current wage and salary fixing, whether by company/industry negotiations or Governmental decree. Whether they are seen to be effective in these roles is not something which was explored in the survey. Employees in small companies gave them no active support

at any level of the firm and discontented office workers in medium-sized firms were barely more enthusiastic in their attendance. For manual workers it seems that unions may be regarded as more effective because, with little knowledge of the job evaluation scheme and little belief that it will operate in their favour, they find the union a major source of information.

4. Conclusions

Ultimately the ability to pay is more related to the government will which always acts in favour of workers in large companies. For example, the governmental regulations on job evaluation and the National Cadre of Wages and Salaries (NCWS) allow employees in large firms to have higher positions in occupational hierarchies and a higher basic pay. Indeed the government made special provision for evaluating and weighting the firms' level within industry as a whole in considering the basis for the application of both a job evaluation plan and NCWS in Egypt.⁽¹⁾ By the Presidential Decree No 62 of 1966, which was revised by No 1863 of 1968, the level of a firm is determined by points given to specific factors, such as the number of employees, net assets, investments, production and added value,⁽²⁾ all factors which give large firms much weight in the overall evaluation. Furthermore, the highest level of firms (always large ones) have the right to elaborate the range of both job grades and pay categories they offer to employees particularly at the top of their hierarchy.⁽³⁾ Therefore top management and those whom they sponsor are placed on special grades and settle within the higher pay categories of NCWS.

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- (1) Central Agency for Public Organisation and Management : Periodical Book Group, CAPOM, Cairo, 1973, p 230
 - (2) Central Agency for Public Organisation and Management : Rules and Regulations of Job Re-evaluation in Public Organisations, 1st ed, CAPOM, Cairo, 1966, p 17
 - (3) see Table 2-b in Appendix III

In response to these unfavourable market comparisons brought about by Governmental decree medium-sized and small firms attempt to compete in bonus payments and higher cash rewards. In practice it is difficult to compete within job grades and between the broad spans of basic pay levels represented by the NCWS it appears difficult for manual workers to approach the basic remuneration levels of managers and professionals. While this is equally true in free market economies in the West the anonymity of market processes prevents such inequities from being constantly brought before the public's notice. More importantly salary differences are apparently created and legitimated by the State in Egypt. (Only salaries of the heads of nationalised industries create similar responses among the British public). Thus workers in small and medium sized companies are aware that the highest remunerations accorded to executives in large public corporations represent an underlying higher level of total remuneration all through their firm. Public sector workers on the other hand resent the vast internal differentials that exist within their place of employment and seek higher cash bonuses as possible means to reducing their relative deprivation.

CHAPTER ELEVEN

CHAPTER ELEVEN

THE ROLE OF TECHNOLOGY

1. The Influence of Technology

Several attempts have been made to provide some explanation of the way in which technology variables operate to mould social relationships. Woodward has suggested that the relationship between organisational structure and technology may be classified and that these classifications may be related to organisational success and labour-management relations.⁽¹⁾ She classified her sample of manufacturing organisations into three categories according to their degree of complexity⁽²⁾:

- unit and small batch
- large batch and continuous or mass
- process

This study, as well as others, will label these categories Types I, II and III and, in framing our hypotheses we shall concentrate on Type II in comparison with Types I and III. Type II category is typified by a high degree of product standardisation and extensive use of assembly-line techniques (as in automobile manufacturing), or machine tending (as in the textile industry), or both.

Repetitive work is expected to have a highly alienating effect, leading to the development of practices that hinder economic efficiency.⁽³⁾ Hence, the relationship between type of technology and job satisfaction may be considered as a basis for the hypothesis outlined below.

Hypothesis 1:

"In plants with a Type II technology, repetitive workers will have a higher degree of dissatisfaction with their jobs as a whole than those in plants with Type I or Type III technologies".

(1) Woodward, J : Industrial Organisation Theory and Practice, op cit, p 39

(2) Woodward, J : Industrial Organisation Behaviour and Control, Oxford University Press, London, 1970, pp 19-36

(3) See for example, Blauner, R, op cit, p 182 and Gooding, J, op cit, p 69ff

Most operations in plants with a Type II technology are auto-machine paced, where a narrow range of tasks is performed by workers, who are unlikely to be skilled; the timing of tasks is determined by pace of the machine. Skill components of such manual jobs are difficult to quantify and are in fact declining. The division of labour is such that the coordination of specialised tasks replaces the use of skills by autonomous operatives.⁽¹⁾ Skilled maintenance men and tradesmen are often obliged to fight to restore their super-manual status in such contexts and so gain a reputation for militancy in their attitudes towards management and devices such as job evaluation. By contrast, clerical and unskilled operative workers gain in status in situations in which Type II technology is employed. The manner in which factors are weighted in the job evaluation scheme adopted within a given establishment obviously tends to reflect the managements (and union officials where these are included) view of the contribution made to the firm's output by a given category of job-holders. Therefore there may be more likelihood of agreement among workers where establishments work with a single technology than in one or several using diverse machines and plant. By the same reasoning it might be expected that craftsmen and technicians would feel more satisfied with their grading in plants using Type I or Type III organisations while clerks and administrators would feel less so.⁽²⁾

In Type II organisations "large batch and mass" there will be a high degree of product standardisation and extensive use of assembly-line techniques (as in auto manufacturing). Machine tending (as in the textile industry) will be associated with fewer skilled workers and a shift of responsibility up the line. There is a bigger concentration of work groups and a high degree of contact. Unskilled manual and clerical workers can combine to improve their relative positions under these technical conditions. Skilled workers may become frustrated with their

(1) Hellriegel, D and French, W : A Critique of Jacques' Equitable Payment System, *Industrial Relations*, Vol 8, May 1968/69, p 278

(2) Eisele, C : Organisation Size, Technology, and Frequency of Strikes, *op cit*, pp 567-571

work and with their position in the social structure and they often become militant in their attitudes to management. Skilled workers may take one or more of the following actions to restore their previous high positions:

- 1) Call upon the political power of their trade union or their representatives on the board of directors, which leads to government intervention. This action has been taken to avoid a reduction in their wages, but it results in their stabilisation.
- 2) Leaving the plant for work in another organisation of Type I or Type III within their multi-plant employing firm, or outside their firm (but this movement is restricted by governmental regulations and may result in losing their previous high fringe benefits).
- 3) Using their strategic points on the production flow to impose greater economic costs on other workers and the employer.⁽¹⁾
- 4) Generating a wildcat strike (which has been forbidden by law since 1952) (Such strikes have been associated with Type II technology in USA)⁽²⁾

Before exploring these action alternatives we set out some of the assumptions built in to the above description of the social effects of technology in the following hypotheses.

Hypothesis 2:

"In plants with a Type II technology, skilled operators are more dissatisfied with job evaluation plans than those in plants with Type I or Type III technologies."

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- (1) Gennard, J : Technology, Market Forces and the Multinational Company, P 881 Industrial Relations, The Open University, 1974, Chapter 3
 - (2) Eisele, C F : Organization Size, Technology, and Frequency of Strikes, op cit, pp 567-571

Hypothesis 3:

"In plants with a Type II technology, unskilled and semi-skilled are expected to have a higher basic wage than those in plants with Type I and III technologies, while skilled operators have a lower basic wage than their colleagues in plants with the extreme types of technology".

Hypothesis 4:

"In plants with a Type II technology, net earnings of machine operators, particularly for skilled ones, are more likely to be above or at least equal to that for their counterparts in plants with the extreme types of technology."

Hypothesis 5:

"In plants with a Type II technology, machine operators, particularly skilled ones, may express a higher intention to move elsewhere than those in plants with Type I or Type III technologies."

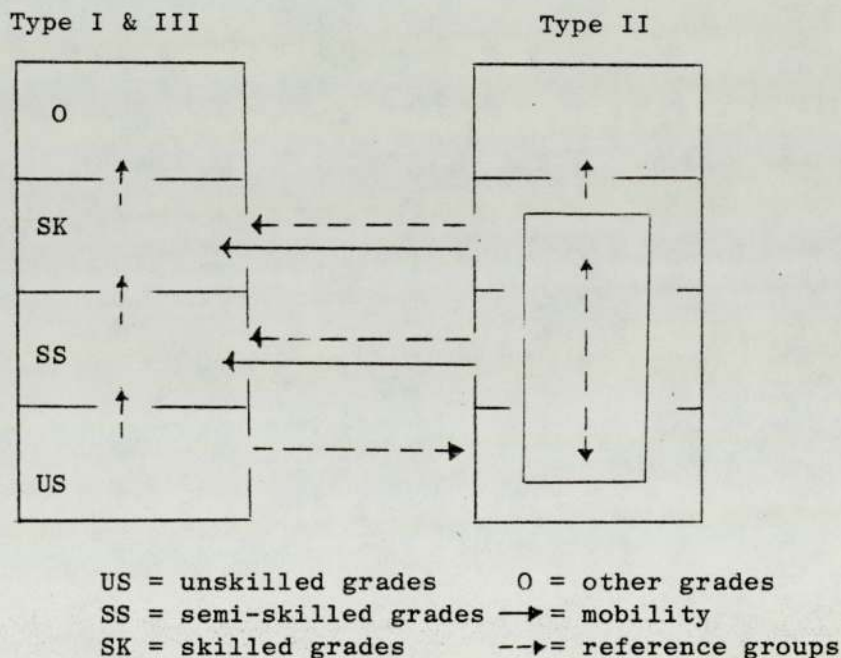
A factor remarked upon by Roberts et al (1972) was that of the impact of social interaction within the various technological constraints of the workplace upon the creation of reference groups for pay and other comparative purposes.⁽¹⁾ Large plants of the continuous process variety (Type III) tend to create communities in themselves in which reference groups are to be found within the plant but to include grades both senior (positive reference groups) and junior (negative reference groups) to their own. Small batch production often brings together various skills in confined contexts but often in circumstances in which social relationships reduce the likelihood of pay comparisons. Large or medium batch production creates conditions in which comparisons are made in a competitive atmosphere between direct and indirect workers, white and blue collar, skilled and

(1) B C Roberts, R Loveridge, J Gennard, "Reluctant Militants", Heinemann, London, 1972

unskilled etc. However the very nature of this contest creates an atmosphere in which differentials, so fragile in the technological context of their own firm, are reinforced by the use of referents from outside the company. Hence although workers in Type II technologies may not be more physically mobile as those in the other contexts (or as is illustrated in Diagram 11.a) they are more likely to extent their reference groups to others in the industry doing similar jobs to their own and to others outside their own industry. Hence the paradoxical situation appertains where internal competition leads to a heightened awareness of external referents.

Diagram 11.a

Labour mobility and reference group of machine operatives



The last assumption can therefore be stated in the substantive form of Hypothesis 6:

"As the skill level increases in plants with Type II technology comparisons are more likely to be made with colleagues in other plants with the two extreme types of technology

2. Findings

The analysis of the data proceeded through several steps, generally in the following order. First, in accordance with hypotheses 1, 2, 5 and 6 a cross-tabulation was tested for significance with chi squares (χ^2) and Contingency Coefficient (C) (χ^2 .05 and .01 levels respectively). With respect to hypotheses 3 and 4 a breakdown for basic wage and net earnings was made to find out the wage mean, standard deviation and variance. The analysis of variance (ANOVA) was then used to decide the significance of mean differentials between different groups of manual workers in the different types of technology (F test, ie F.05 and .01 levels).

With respect to Hypothesis 1 - repetitive workers in plants with a Type II technology have a higher degree of dissatisfaction with their jobs as a whole than those in plants with Type I and Type III technologies - the evidence in Table 11.1 provides qualified support in the case of machine operators generally, and strong confirmation for the unskilled operators. It is however just as strongly rejected for semi-skilled and skilled operators.⁽¹⁾ These results suggest that the relationship between the type of technology and operator job satisfaction is more complex than we hypothesised.⁽²⁾ On the other hand it is clear that the dissatisfaction of skilled operatives with the operation of the job evaluation system in Type II plants that was predicted in Hypothesis 2 holds good (Table 11.2). Some substance is given to their complaint by the results shown in Table 11.3. These data indicate a significant

(1) See also Tables 1-c, 2-c, 3-c and 4-c in Appendix III

(2) See for explanations - March, J G and Simon, H A : Organisations, John Wiley, New York, 1958, p 94

Table 11.1

The level of significance in differences in job satisfaction between different types of technological environment - (Type II compared with the combined results of Types I and III) among line and machine operatives

	N	χ^2	C
US operators	31	5.9922*	0.4025**
SS "	64	2.1627	0.1808
SK "	50	0.5002	0.0995
ALL "	145	10.8996***	0.2644****

Source : SPSS Programme

* significant at the .05 level with one df (as $\chi^2_{.05} = 3.841$)

** significant at the .02 level

*** significant at the .01 level with one df (as $\chi^2_{.01} = 6.635$)

**** significant at the .001 level

Table 11.2

The level of significance in differences in satisfaction with the job evaluation system between different types of technological environment (Type II compared with the combined results of Types I and III) among line and machine operatives

	N	χ^2 and Fisher Test	C
US operators	6	(0.2000)	0.5774
SS "	41	0.0471	0.0339
SK "	45	4.1266*	0.2898*
ALL "	92	0.7393	0.0892

Source : SPSS Programme

* significant at the .05 level with one df (as $\chi^2_{.05} = 3.841$)

NB Fisher exact probability test was used for US operators, as the two independent samples are small in size. ⁽¹⁾

(1) - For more details see Tables 5-c, 6-c, 7-c, and 8-c in Appendix III - Siegel, S : Nonparametric Statistics, op cit, p 96

Table 11.3

Basic wage differentials among operative groups
working in plants with a different type of technology

	N	Wage Mean (£E)	SD	SD ² (variance)	t ⁽¹⁾	df
Unskilled	31	13.710	1.006	1.013	} -0.6026	29
I and III	10	13.300	1.252	1.567		
II	21	13.905	0.831	0.690		
Semi-skilled	64	17.453	1.321	1.744	} -0.7036	62
I and III	47	17.383	1.226	1.502		
II	17	17.647	1.579	2.493		
Skilled	50	25.440	4.296	18.456	} +1.4520*	48
I and III	32	26.094	4.567	20.862		
II	18	24.278	3.594	12.918		
Total	145	19.407	5.346	28.576		

Source : SPSS Programme

NB * significant only at the .10 level (as $t_{.10} = 1.282$)

- B. wage differentials among skilled groups are in greater significance, as $F_{calc} = 208.6993$ which exceeds 4.61 the value of $F_{.01}$ with 2 and 142 degrees of freedom.⁽²⁾
- B. wage differentials between Type I and III and Type II technology are just insignificant, as $F_{calc} = 3.46$ which is less than 3.84 the value of $F_{.05}$ with 1 and 143 df.⁽³⁾

difference between the earnings of skilled operatives across the three types of technology, a difference that was markedly to the disadvantage of tradesmen in Type II situations. Differences in the earnings of lesser skilled operatives were also in a direction that reduced differentials, without being statistically significant. However the data contained in

(1) Freund, J E : Modern Elementary Statistics, op cit, pp 281-282

(2)(3) See ANOVA Table 9-c in Appendix III

Table 11.4 demonstrates the extent to which the dissatisfaction of skilled operatives was focussed on the job evaluation system per se (of which the unskilled operatives seem remarkably ignorant - see their response rate in Table 11.2). Across all categories of manual operatives those working in Type II technologies show higher earnings levels when fringe benefits and group bonuses are taken into consideration. As in the context of Western plants of a similar technological form, large batch production enables the achievement of high bonus payments for reasons that relate both to the technical capacity of the plant and the strategic bargaining power of those in this type of technological context. Skilled workers are contained in the same group bonus schemes as unskilled and semi-skilled workers in most Egyptian factories and are therefore at the forefront of any fractional bargaining that goes on.

Table 11.4

Earning differentials among line and machine operative groups working in different types of technology

	N	Mean Earnings £E	SD	SD ² (variance)	t	df
Unskilled:	31	20.226	4.334	18.781		
I and III	10	17.700	5.478	30.011	-0.9057	29
II	21	21.429	3.155	9.957		
Semi-skilled:	64	25.609	4.177	17.448		
I and III	47	24.723	2.983	8.900	-2.9950*	62
II	17	28.059	5.868	34.434		
Skilled:	50	34.360	6.977	48.684		
I and III	32	32.281	5.225	27.305	-5.1227*	48
II	18	39.833	6.401	40.971		
Total	145	27.476	7.578	57.432		

Source : SPSS Programme

* significant at the .01 level (as $t_{.01} = 2.326$)

NB : By ANOVA (Analysis of variance):

- Earning differentials among skilled operators groups were found in

greater significance, as F calculated = 74.0485 which exceeds 4.61 the value of $F_{.01}$ with 2 and 142 degrees of freedom.⁽¹⁾

- Earning differentials between extreme and moderate types of technology were found significant too but only at the .05 level, as F calculated = 5.8102 which exceeds 3.84 the value of $F_{.05}$ with 1 and 143 degrees of freedom.⁽²⁾

The degree to which the dissatisfaction of skilled workers in large batch plants led them to consider leaving their present job is illustrated in Table 11.5. No fewer than 72% of the skilled workers were amenable to such a move, against a negative return for similarly skilled workers in other technological contexts. On the other hand 90% of unskilled operatives in the latter context were intending to move (if the opportunity afforded itself) as against barely more than a third in Type II plants.

Table 11.5

The intention of moving elsewhere among operative groups working in plants with different types of technology

Types of Technology	Operative Groups						Total	
	US		SS		SK			
		%		%		%		%
I and III	9/10	90.00	9/47	19.10	0/32	0.00	18/89	20.02
II	8/21	38.10	7/17	41.20	13/18	72.20	28/56	50.00
Total	17/31	54.80	16/64	25.00	13/50	26.00	46/145	31.70

Source : SPSS Programme

Chi-square (χ^2 calculated) = 11.7199

Significant at the .01 level with 2 df (as $\chi^2_{.01} = 9.210$)

Contingency coefficient = 0.4506

Significant at the .01 level

(1)(2) See ANOVA Table 10-c in Appendix III

Table 11.6

Reference groups for manual operative groups working in
plants with different types of technology

	N		Reference Groups								
			Same Grade			All Manual Grades		Clerical Grade		Professional & Technical Grade	
			%		%		%		%		%
Type I and III:											
US	10	10	100.0	10	100.0	6	60.0	2	20.0	5	50.0
SS	47	46	97.9	35	74.5	28	59.6	8	17.0	11	23.4
SK	32	4	12.5	11	34.4	16	50.0	28	87.5	29	90.6
Total	89	60	67.4	56	62.9	50	56.2	38	42.7	45	50.6
Type II:											
US	21	14	66.7	18	85.7	14	66.7	13	61.9	17	81.0
SS	17	12	70.6	17	100.0	9	52.9	10	58.8	10	58.8
SK	18	18	100.0	11	61.1	1	5.6	10	55.6	9	50.0
Total	56	44	78.6	46	82.1	24	42.9	33	58.9	36	64.3
Chi-square (x^2)			27.7002*	7.2125**		19.3732*		16.4848*		16.2821*	
Contingency coef.			0.4586	0.2570		0.4555		0.4341		0.4091	

Source : SPSS Programme

* Significant at .01 level as x^2 calculated exceeds 9.210 the value of $x^2_{.01}$ with 2 degrees of freedom.

**Significant at .05 level with 2 degrees of freedom, as $x^2_{.05} = 5.991$

It is difficult to attribute meaning to these figures without some knowledge of the behaviour of these diverse groups in their work-situation. It is known that skilled workers are much more likely to be active in trade unions and in the plants using Type II technology in their central work-flow, skilled men were leaders in negotiations over working conditions and group incentives. The references used by these higher skilled men in their pay comparisons are, as may be seen in Table 11.6 much more likely

to be found among professional and technical groups than were the references made by other less skilled manual categories. In Types I and III contexts these groups were most likely to be located at plant and company level, in Type II at national industrial level (see Table 11.7). However skilled

Table 11.7

Level of comparisons for manual operatives working
in plants with different types of technology

	N	Level of Comparisons							
		Plant		Company		Industry		All Industries	
Type I and III:			%		%		%		%
US	10	10	100.0	10	100.0	4	40.0	3	30.0
SS	47	45	95.7	46	97.9	14	29.8	5	10.6
SK	32	22	68.8	32	100.0	12	37.5	7	21.9
Total	89	77	86.5	88	98.9	30	33.7	15	16.9
Type II:									
US	21	18	85.7	18	85.7	20	95.2	9	42.9
SS	17	10	58.8	8	47.1	17	100.0	2	11.8
SK	18	2	11.1	6	33.3	18	100.0	1	5.6
Total	56	30	53.6	32	57.1	55	98.2	12	21.4
Chi-square (x^2)		25.1916*		26.2237*		5.3346		8.7411**	
Contingency coef.		0.4365		0.4235		0.2430		0.4945	

Source : SPSS Programme

* Significant at the .01 level with 2 degrees of freedom, as $x^2_{.01} = 9.210$

**Significant at the .05 level with 2 degrees of freedom, as $x^2_{.05} = 5.991$

workers in Type II bargaining situations were also more likely than those in other contexts to make use of comparisons within their own grade and with those obtained by other manual grades. (1)

(1) See also Tables 11-c, 12-c, 13-c, 14-c and 15-c for reference group comparisons, and 16-c, 17-c, 18-c and 19-c for the level of these comparisons, in Appendix III

While questionnaire answers do not allow us to explore these differences in depth it seems possible from interview data to hypothesise that the textile industry, in which most of the large batch technology is to be found, constitutes a well defined geographical and occupational unit capable of being treated as a single bargaining agency from the point of view of trade union representation in the national machinery of wage and price fixing. In many ways to treat each textile firm as a separate entity for the purposes of job evaluation is something of a fiction recognised by those in the industry and particularly by the collectively-conscious and aware group of skilled machine operatives. It is probable that in a free market situation some form of formally recognised collective negotiation would have brought about standardised rates of earnings across the industry. It is ironic that an attempt to impose job evaluation at a national level has formalised a fragmented system of wage fixing across the fairly homogeneous conditions facing firms that make up the industry.

3. The Expression of Collective Grievances

Unions have been encouraged under the post-revolutionary administrative and indeed compulsory recognition was imposed on all employers including farmers (formerly excluded) and closed-shops introduced by a 60% vote of employees within any defined bargaining unit.⁽¹⁾ Since the 1950s employers have therefore been confronted with well organised employees in almost all establishments of any size. However the activities of employee representatives are formally constrained both by limiting statutes and by the enormous amount of direct benefits gained by employees directly from the State. Minimum pay scales and regulations governing employment

(1) Laws 177 of 1952; 417, 423 and 448 of 1953, 254 of 1954; and 153, 1957 and 91 of 1959

conditions in each industry are a subject for both legislation and decree. For this reason shop-floor bargaining in the British sense is not so important as parliamentary pressurising for legislative change - rather along the manner of French practice. Wildcat strikes do take place, and pressure on the bonus system is obviously expected by skilled groups in particular, but sustained pressure would not be acceptable for much the same reasons that it does not occur in France. The law insists on immediate arbitration by a government tribunal and, in any case the union relies on the statutory support of the Government for its activities and does not wish to weaken its effect on the national legislature. (1)

In 1961 half of the seats in the National Assembly were given over to the representatives of industrial unions and professional or occupational syndicates. But these representatives are prevented from forming a party or acting in any way as a consortium. This was made abundantly clear after the Mahala textile workers strike in 1975, the Cairo bus-drivers strike of 1976 and the 'bread-riots' of January 1977. These were national events of great political significance in which physical intimidation and the imprisonment of the strike leaders was required to control the protest represented in these actions.

On the other hand the political influence of the unions is likely to be of increasing consequence in the new conditions of peace that have followed the memorable treaty with Israel of 1978. The growing emphasis on commercial and manufacturing activity for peaceful ends and the opening up of the country to foreign investment from the West should enable unions and professional associations to carry more weight in their recommendations. This being so their advice to the Council on Organisation

(1) Gritly, A : The Structure of Modern Industry in Egypt, op cit, pp 552-554

and Management in respect to the present inequitable make-up of the Cadre of Wages and Salaries may ultimately bring structural change. In the short run, however, our survey suggests that skilled manual groups are the most likely to be suffering feelings of relative deprivation. The paradox that this relatively well-off stratum of the population should articulate protest, rather than the large mass of totally deprived unskilled or unemployed labour is of course one familiar in the history of industrialisation.

CHAPTER TWELVE

CHAPTER TWELVE

CONCLUSION

Job evaluation represents an artificial means to placing jobs in a hierarchy that reflects a concurrence of values in the preferences of both labour and potential employers. However when used as the basis of a national incomes policy it is extremely difficult to compare the structure of earnings that emerges from such an exercise with any relevant market benchmarks. The freely expressed preferences of individual employers and employees within national or regional markets are, by definition, constrained by the planned interventions of the state. Those that lie outside the national boundaries of the economy may be rejected by the regime as being socially and/or economically unacceptable; though this does not prevent them from becoming of subjective importance to citizens in the way they regard their acceptable level of income.

In a command economy the existence of a national goal provides the priorities for both the allocation of resources to investment (production function) and the eventual distribution of incomes and services (welfare function).⁽¹⁾ The two are linked through the operation of various controlled "markets" of which the labour market is perhaps the most structurally significant. Investment in technology affects the number and type of jobs that become available though not necessarily the distribution of income across these jobs. In a free market the entrepreneurs need for certain defined skills (defined that is largely in relation to the technology) will cause him to value some individuals above others. The private investment in skills training undertaken by the individuals seeking work will cause them to seek a premium on those skills. For many neo-classical welfare economists

(1) For a discussion of this area of economic theory see I M D Little, "A Critique of Welfare Economics", Oxford University Press, 1950 (1960 edn) especially Chapter VIII

such as Bergson and Samuelson technical efficiency remains the basis upon which incomes should be distributed - or at least calculated.⁽¹⁾ Thus whatever ultimate criteria are used for the distribution of income they should not be allowed to detract from the need to gain a maximum input of labour services for a minimum of outlay. The basis for a job evaluation structure is thus set in terms of the long term value of a given set of skills to the employer (State). Short term variations in earnings are generally intended to motivate the individuals occupying these positions to greater effort or performance in their jobs. Other short term disparities in earnings may be allowable under some view of long term optima conditions which enable the provision of supplemental income designed to enhance the well-being of the active labour force and so increase the long term effectiveness of the available pool of labour.

In a socialist economy (as against a communist one) these criteria may still apply. Marx suggested that only in an eventual state of communism could the principle of "from each according to his ability, to each according to his needs" be applied.⁽²⁾ Until that time the quantity and quality of labour service provided would form the sole basis for economic value. More lately the Marxian concept of value has been extended to incorporate the "complexity" or the "social importance" of such work in order to explain the imbalance in the distribution of rewards going to indirect workers.⁽³⁾ This concept is quite similar to that used by Jacques and others in the span of discretion or responsibility held by the job holder in capitalist countries.⁽⁴⁾

(1) See A Bergson, "A reformulation of certain aspects of Welfare Economics", Quarterly Journal of Economics, February, 1938, pp 310-334 and P A Samuelson, "Foundations of Economic Analysis", Cornell University Press, 1948, pp 219-240

(2) K Marx, "Critique of the Gotha Programme", quoted by H Phelps Brown, "The inequality of pay", Oxford University Press, 1977

(3) J Chapman, "Soviet wages under socialism", A Aboucher (ed), "The price mechanism in the Socialist Economy", Duke University Press, 1975
J M Michal, "Size distribution of earnings and household incomes in small socialist countries", Review of Income and Wealth, Vol 19, No 4, December 1973, pp 407-427

(4) Jacques, op cit

But however one defines socialism it remains true that some concept of equality in well-being must apply. For example it is evident that individual skills derive largely from a publicly provided education system in which the personal cost to the consumer of this public good is small compared to that of the personally borne disutility of working on a construction site or an assembly line. The case may be differently argued in terms of the earnings foregone by the apprentice or university undergraduate over the period of his or her training or education.⁽¹⁾ It is easier to see the strength of this argument in the case of the former than the latter whose earnings differential and life style represents a quantum difference over that of the manual worker. It is interesting that in the survey of available earnings data for Communist countries conducted by Phelps Brown, skilled and semi-skilled manual workers not only receive higher earnings than junior clerical and administrative staff but are also placed higher in attitude surveys on the status and social standing of these occupations.⁽²⁾ Earnings differentials between manual and professional groups are very much lower than in the West and are actually negative in some comparisons.

Yet it is evident that a long-term structuring of jobs according to the criterion of technical efficiency does not necessarily accord with that of the generalised distribution of welfare acceptable under the heading of equalitarianism. There is a third criterion which is that of the prevailing structure of social values by which certain jobs are grouped together as occupations of more or less distinctly different identities,

(1) G S Becker, "Investment in human capital : a theoretical analysis", Journal of Political Economy, Vol 70, No 7, July 1958, pp 737-743

(2) cf Phelps Brown, 1977, op cit, pp 38-67

statuses and honourific rewards. To some extent the occupational structure of a country represents current market forces but, particularly in well established economies like that of the United Kingdom and Egypt, occupational interests have become institutionalised and form part of socialising factors of every new entrant to the labour market - literally from the time he or she was born. To unlock the workings of the market from this subjective/historical structure is an impossible task in the short term. In the long run those groups that have gained an ascendancy over market, organisational and technological forces will of course seek to mould those forces to the long run benefit of themselves and their descendants.

Change of disjunctive or revolutionary nature is therefore difficult to bring about. Attempts to redistribute income and services according to some equalitarian welfare function will be opposed by those in privileged occupational positions through appeals to both technical efficiency and traditionally held frames of reference. For example a Czech television programme in 1968 showed an ambulance going out on an emergency call with a doctor seated beside the driver. "And who earns more", the comentator asked, "the doctor or the driver? The driver. Does that make sense?"⁽¹⁾ The answer provided called upon both a test of value according to the viewer's notion of community welfare and the doctor's contribution to it, the length of training and education required to produce a doctor, and the traditional respect accorded to the doctor's knowledge and expertise.

Clearly the structure of historical occupational relativities provides the most salient frame within which to determine a communally acceptable definition of "fairness" in most national cultures. Even so the knowledge that individuals possess of the overall structure of earnings in Western countries is remarkably limited; comparisons only seem concrete and real when made with those whose tasks or status are part of some familiar frame of reference. The low paid workers seem to feel a much more real

(1) Quoted by J Adam, "Wage Differentials in Czechoslovakia", Industrial Relations, Vol 11, No 2, May 1972, pp 157-171

sense of deprivation when comparing themselves to skilled manual workers than with university professors. But any one of the frames presented here - historical/subjective relativities, technical efficiency or equity - are expressed in many different organisational and institutional forms, many of which are contesting and contradictory. Comparisons are bound to be ad hoc and somewhat random in nature. For this reason cash differentials (or gifts in kind in Communist societies) can rise to phenomenal levels without arousing mass protest among lowly paid employees.

In Egypt the existence of the job evaluation scheme allows comparisons by even the most unskilled worker. While apparently ignorant of the manner in which his position is arrived at, the evident relative affluence of administrators and professionals calls forth sufficient resentment for them to be mentioned as a, somewhat unlikely, referent in reply to our questionnaire. But the objective situation is that the rising pool of unemployed workers in urban centres, particularly in Cairo, creates both the benefits of low cost labour and the costs of providing emergency welfare provisions. The overall effect appears to have been to weaken the bargaining power of the unskilled workers and to have reduced their earnings and those within their "wage cluster" to a bare subsistence level. The unions representing these low paid workers seem powerless to affect the livelihood of the burgeoning crowds of unorganised unemployed, temporary and peripheral workers whose fate is so closely allied to those of their members. Meanwhile workers in large firms in the public sector receive a large proportion of their earnings in kind and are offered a high degree of protection from the workings of the external market. According to our survey and the wider findings of the 1975 Ministry of Industry the "openness" of the internal markets, as represented by the proportion of overall rewards offered in cash, would appear to grow greater as one moves from large to small firms and from public to private employment. From the secure career lines and stable, protected, employment of the core sector of employment one moves

outwards to the periphery and beyond to the huge reserve pool of unemployed and under-employed active workforce.

The long run solution to this problem may come from the increased capitalisation of manual and service occupations brought about by the "Open Door" policy. On the other hand the immediate impact of this policy may be seen as being to increase earnings differentials as foreign employers have bid for the services of professional and technical staff. Longer run investment proposals can only change this state of affairs if directed towards labour intensive activity involving easily acquired skills such as construction, hoteliering, simple assembly and distribution work etc. Even so "bottle-necks" in the supply of essential technicians and junior administrators may well cause skill and educational differentials to increase rather than reduce over time.

At an organisational level differences in the cultural (historical/subjective) structures recur in national styles of organising production and ordering relationships within the firm. This at any rate was the explanation offered by Daubigny and Silvestre for consistent differences in the earnings structures that existed between seven pairs of French and German firms matched in terms of size, technology, products and similar labour markets that were studied over the mid-1960s. French firms tended to employ more administrative and technical staff and to pay them more relative to manual employees than did the German firms. It appeared that the French firms relied for direction on bureaucratic control structures, whilst the Germans collaborated in groups headed by functional specialists. Other factors such as the greater effectiveness of German unions are also cited by the authors.⁽¹⁾ A similar dichotomy between the organisational

(1) J P Daubigny and J J Silvestre, "Comparison de hierarchie des salaries entre l'Allemagne et la France", L.E.S.T., Aix-en-Provence, 1972. See also F Sellier, M Maurice, J J Silvestre, "La hierarchie d'encadrement dans l'entreprise : recherche d'un effet societal", L.E.S.T., Aix-en-Provence, 1972

and labour market structures of English and Japanese firms emerges from Dore's study of two electrical manufacturers. ⁽¹⁾

In many respects the structure of Egyptian firms and their method of recruitment (through nationally formalised qualifications) are much closer to those of France than of Germany. In this respect it may be said that Egypt is perhaps atypical of those developing countries that are currently creating an industrial infrastructure upon which develop modern industries. In fact it had two - the one French, the other British. In the mores that govern Egyptian industrial life the bureaucratic traditions are perhaps closer to those of these 19th century colonial administrations than of 20th century Germany or Japan. Unions too behave in a manner closer to that of France in their focus on the National Assembly as the source of improvements in working conditions rather than on collective bargaining. To compare occupational categories and related institutions across national boundaries is to remove them from not only their broad societal context but also from the organisational setting which legitimates their existence within that society.

The values represented in the factor comparisons of the Egyptian job evaluation scheme are those of a bureaucratic elitist society. In articulating them in this manner post-revolutionary planners have exposed them for criticism by an electorate to whom the Administration promised equity. The latter objective is being approached through the payment of welfare payments and benefits in kind. Lower skilled workers in 'core' jobs are aware that their positions are distinctly different from those in 'peripheral' workers because of the existence of this degree of security. Having achieved this basic need they are aware of their status at the bottom of their organisational hierarchy with an enormous gap in life style between themselves and their executives.

(1) R Dore, "British factory - Japanese factory : the origins of national diversity in industrial relations", George Allen and Unwin, London, 1973

Technically the problems of adjusting the NWSC in order to reflect the short term manpower needs of industry are difficult to overcome in a national scheme even if long term changes can be brought about through modifications in the national grading scheme. This does not mean that a national rate could reflect the differences in supply and demand for individual jobs, as the same level of skill cannot similarly be appreciated in different work situations. Hence a special bonus may be paid to retain or attract workers to specific occupations, industries, and locations. Also, it has been suggested that, in addition to the common factors, a nationwide system of job evaluation should include a factor which might be based on some measure of the number of unfilled vacancies in order to express the state of demand in a particular industry or occupation.

Summing up, the main function of job evaluation is to be that of standardising and systematising what are generally considered to be fair relationships between job content and income. At company level, it is seen to provide a source of internal consistency and control within the same organisation. As a means of rationalising and hence controlling and establishing the existing income structure, it is seen by many national administrators to provide a useful guide in the process of monitoring the economic and social advance of the nation and controlling the distribution of incomes.

The Egyptian experience provides valuable experience for countries such as Britain who have attempted to operate incomes policies with increasing degrees of sensitivity. For example the "gates" to pay increases in the 1960s included such factors as productivity and efficiency, mobility between jobs when directed to essential work, and the standard of living for low paid workers as well as other gross inequities. The fact that such policies are introduced in capitalist countries at a time of national insolvency has been seen by many economists to account for a large measure of their failure. They have for example been accompanied by monetary and

fiscal policies that make flexibility in the operation of such an incomes policy economically difficult and politically impossible. Union pressures at local level are however the major source of weakness of imposed incomes norms in Britain, the Netherlands and Scandanavia. These taken together with management's desire to pay higher wages to labour in short supply or to retain existing skills are the main internal reason for their failure.

In a centrally controlled economy the wage bill for an organisation is fixed centrally by job evaluation to act as a control over wage inflation and to combat managers attempts to outbid their neighbours under pressure to fulfill output plans. Despite the fact that job and income structures are accompanied by measures constraining the movement in labour costs, allowances have to be made for workers in specific labour markets, and for incentives for productive workers to achieve set targets. The administrative complexity involved in such constraints and controls is such that their implementation often leads to dysfunctional contradiction and self-negating actions. The major difference between the misallocations that arise out of these mistakes and those that stem from the workings of the free market economy is that the public are not so aware of the latter and in any case are inclined (often wrongly) to regard them as solely private costs rather than public or social costs.

The overriding problem for developing industrial nations is how to equate the need for economic growth with the objective of social justice. The basic elements of the operational problem can be derived from the way of defining economic objectives. These include (1) moving the population from agriculture to industry. This requires an increase in labour productivity in agriculture by training and mechanisation in order to supply new industries with a labour force, raw materials, and food for the active work force engaged in manufacturing. (2) Moving incomes from consumers to investment in order to build up a more advanced industrial technology.

Hence, home consumption must be re-moulded and controlled, and attempts to open foreign markets for new outputs must also be made. The allocation of investments should be organised in a way that allows different economic sectors and industries to have the required amount of capital for them to work in unison along an optimum growth. (3) The introduction of modern education and training systems are essential to supply the new established occupations. Free and compulsory education may be suggested to motivate peasants in particular to enter factories, but this will depend on the size of investment in human capital and the degree of desirable change in social pattern. (4) The cycle of deprivation confronting most of the population must be broken.

The establishment of better industrial jobs should create higher incomes and hence a higher Gross National Income. Rationally distributed and controlled by job evaluation, this income should allow the home consumption to be increased to keep alive self-generated demand. This may in turn increase the size of investment, ie individual savings, firms' retained profits, and state funds from internal and external resources.

The appropriate balance between all these factors is, however, affected by the models taken as comprising parameters for social aspirations, and the regime's power to maintain political control for long enough to achieve some acceptable level of economic growth rate and social justice. Experience shows that those developing economies that are under social-democratic regimes tend to adopt models in between the two extremes, ie the equity criterion of the communists and free market approach of capitalist regimes. But this is to beg many questions. Any type of planning or economic modelling has to make the best guesses as to the propensity and tastes of consumers and the aspirations and individual circumstances of workers. In an economy that leaves some choice to the investor the payment of subsidies or the use of tax concessions also assumes a knowledge of the preference of investors and savers. (The Egyptian Government

would like to bring about the repatriation of balances held by private citizens in foreign banks for example).

There is little doubt that job evaluation has enabled the Egyptian Government to plan its economy with far greater knowledge, and therefore certainty, than existed prior to the revolution. There is equally no doubt that the existence of the job evaluation structure and the National Cadre has been responsible for increasing the well-being of the lowest paid and most exploited groups of labour particularly in small firms and in low paying sectors of the economy. There is probably some truth in the belief that management has become more efficient as a result of the interventionary policy of the Government. It seems likely however that the complexity and longevity of the bureaucratic environment in which they work has increased their skills in bureaucratic evasion or appeasement rather than in management per se.

Nevertheless it is clear that the system, of itself, has led to aspirations and behavioural patterns which form the point from which to redesign the existing structure. This is particularly so in the light of the proposed 'Open Door' policy in which those free market pressures on the supply of skilled and technical labour which already exist within the system are likely to become more intensive. If the administration of public sector employment responds by restricting labour mobility still further it seems likely that the situation could become politically explosive.

There is clearly a need to examine existing labour sources with a view to supplementing them from the pooled of unskilled and unemployed workers in a rapid and intra-generational fashion. In particular the stock of intelligent and literate young women that are not continuing their education beyond primary school seems a potential source of trained labour. However for this to occur requires a change of social values which goes beyond the scope of

this study. Yet the existence of this complementarity between the social structure of the country and its economic problems, particularly its labour market difficulties, is basic to any solution proposed by economic planners. An analysis of this complementarity is generally rejected by neo-classical economists. It appears as central to our examination of the workings of a job evaluation system because the criteria used in such schemes, wittingly or unwittingly, reveal the existence of these wider social values. Insofar as this greater awareness leads to the articulation of aspirations, frustrations and grievances it is a source of potential change within the system. If the job evaluation leads to rigidity in response or the sublimation of deeply felt issues it becomes a source of potential political instability.

Empirical evidence on the differences in earnings between individuals and groups of employees working on the same job within the same workplace was examined. It is fair to say that in such situations Egyptian job evaluation has failed to eliminate the interpersonal differentials within the same workplace. Further analysis was carried out about the way in which age, sex, and education operates in Egyptian labour markets. It shows that educational differences remain the most significant explanation of pay differences, while sexual differences in pay are largely explained by differences in education between men and women. The discrimination against women and young workers operates to a large extent through the characteristics of their jobs and those of the promotion system and the system of cost of living allowances. Consequently, insofar as higher education and higher training are still more open to men than to women and to younger rather than older employees, changes in the labour market will lead to a greater inequality between men and women and between young than old employees.

The empirical study indicates also that interfirm differentials are affected by the size of organisation (in terms of the number of employees)

and by its location. Large firms tend to pay their employees a higher basic wage or salary as a result of an additional evaluation of the firm's level made by national planners. In response to these unfavourable market evaluations made by the Government, medium sized and small firms attempt to compete with larger employers by paying higher bonuses and cash rewards. As in European labour markets, skilled manual workers appear to be both aware of the earnings gap between themselves and administrative workers and of the effects of bonuses and fringe benefits in eroding the differential between themselves and less skilled manual workers. It is upon the latter that their bargaining tactics focus and the immediacy of the bonuses paid by medium sized firms (ie outside comparisons) appears to have more significance to skilled workers in large firms than the security offered in their higher level of basic pay. On the other hand skilled workers in small and medium-sized firms envy the security of those in larger companies. Thus the aspirations and reference groups created by the national system of job evaluation among this strategically placed group of employees make not for stability but for a dangerous source of strain in the system.

APPENDICES

APPENDIX I

APPENDIX II

APPENDIX III

APPENDIX I

Manpower Management Department
Management Centre
The University of Aston
Birmingham, UK

QUESTIONNAIRE SURVEY
ON EGYPTIAN JOB EVALUATION PLAN

For Management and Employees
in Selected Industrial Organisations in Egypt

run by

I I Bassiouni
Research PhD Student

September 1976

QUESTIONNAIRE I

MANAGEMENT

(Chief Executive - Personnel Manager - Consultants)

Name of the organisation: plant
 Company
 industrial sector

A - CHIEF EXECUTIVE

1. ORIGIN AND HISTORY:

1 - Who founded your organisation?

For the entire organisation:

For this unit:

2 - What is the date of foundation?

For the entire organisation:

For this unit:

2. STATUS OF ORGANISATION:

1 - Which one of the following does your organisation unit belong to directly?

Plant Company Industrial sector

2 - Which one of the following is your organisation unit?

Branch Head branch Principal unit

3. LOCATION:

1 - Are all your activities carried out here?

Yes No If no, where else

2 - Are there local and/or national headquarters?

Yes No If yes, where

4. TYPE OF TECHNOLOGY:

(A) TECHNOLOGY (Technical complexity - Production Method)

TYPE I : "SINGLE UNIT - SMALL BATCHES"

1. Plants that produce single or very few units to customer specifications. There is little or no product standardisation (eg a custom tailor, custom fabricator etc).
- 2-3. Plants that produce prototype production and large equipment fabricated in stages (eg turbines, ships, rolling mill equipment, special presses etc).
4. Plants that produce "small batches". There is probably some product standardisation, but customer specifications are still a factor.

TYPE II : "LARGE BATCHES - CONTINUOUS OR MASS PRODUCTION"

5. Plants that produce "large batches" of quite standardised products (eg household appliance manufactures, machine-tending industries as textiles).
6. Plants that produce "large batches" production utilising some assembly-line techniques, (household appliance manufactures would fall in this category).
7. Plants that produce "continuous or mass production" of a highly standardised product with extensive use of assembly lines (eg automobile industry etc).

TYPE III : "HIGHLY AUTOMATED - CONTINUOUS-FLOW PROCESS INDUSTRIES"

- 8-9. Plants that produce "highly automated and continuous-flow process industries. The product measures in pounds, gallons, cubic feet, etc, rather than units, (eg container manufacturing, some food processing, and modern steel mills. Category 9 is typified by refiners and much of chemical industry).

(B) TECHNOLOGY (Workflow Integration: Automaticity Mode and Range)

NB:

MODE is determined by assessing the BULK of the equipment used by the organisation on its workflow

RANGE is defined by the MOST AUTOMATIC piece of equipment the organisation is known to use.

Please indicate the single category that most accurately describes your plant equipment.

	Mode	Range
1. <u>Hand Tools and Manual Machines:</u>		
No human attribute mechanised - without self-action properties. Includes all hand tools, which increase workers' efficiency but do not replace human energy or basic control (eg hammer, trowel, sharpener, file, handsaw, etc)

	Mode	Range
2. <u>Powered Machines and Tools:</u>		
Human attributes mechanised = energy-muscles are replaced for the basic machine function. Machine action and control completely dependent upon operator, (eg spray gun, air hammer, electric hand-drill etc)
3. <u>Single-Cycle Automatics and Self-Feeding Machines:</u>		
Human attributes mechanised = dexterity - completes an action when initiated by an operator. Feeds tool to the work power. Includes all single cycle automatic machines. Operator must set-up, load, initiate actions, adjust and unload, (eg radial drill, electro-erosion machine, lathe etc)
4. <u>Automatic : Repeats Cycle:</u>		
(at this level all energy is mechanised) Human attributes mechanised = diligence - carries out routine instructions without aid by man. Start cycle and repeats actions automatically. Includes all automatic machines. Loads, goes through a sequence of operations, unloads to next station or machine. Open loop performance. Obeys internal (fixed) or external (variable) programme. (eg engine production lines, self-feed press lines, automatic assembly of switches, machines for making springs)
5. <u>Self-Measuring and Adjusting by Feedback:</u>		
(increasing mechanisation of information functions) Human attributes mechanised = judgement - measures and compares results to desired size or position and adjusts to minimise any error. Although feedback control of the actual surface of the workpiece is preferably, positional control of the machine table or tool is of great value too. (eg process controllers, dynamic balancing, feedback control of machine tool table, tape controlled machine etc)
6. <u>Computer Control and Automatic Cognition:</u>		
Human attributes mechanised = evaluation - is cognisant of multiple factors on which machine or process performance is predicated, evaluates and reconciles them by means of computer operations to determine proper control action. (eg any process or problem which can be expressed as an equation can be computer controlled)

(C) TECHNOLOGY : (workflow integration : specificity of quality evaluation)

How possible is it to measure the quality of work done?

1. Personal evaluation only
(no measuring instruments used)
2. Partial measurement
(some aspects of the outputs are measured)
3. Full measurement
(measurements are used over virtually the whole output(s)
to compare against precise specification, ie a blueprint
standard of comparison).

5. SIZE:

- 1 - How many employees are in your plant and company?

Plant Company

- 2 - How much is the annual payroll in your plant and company?

Plant Company

- 3 - How much is the value of machinery and equipment?

....

- 4 - How much is the annual depreciation of machinery and
equipment?

....

6. LABOUR AND CAPITAL INTENSIVE:

- 1 - How many machine operators are there in your organisation?

....

- 2 - How much are the production costs, total labour costs, and
direct labour costs?

Production cost Total labour cost The direct labour
cost

7. PRODUCTIVITY:

- 1 - How much is the value and quantity of your production?

- 2 - Do you have any of the productivity rates?

Yes No

If yes, please mention

....

....

8. PROFITS:

1 - How much is the total and net profit of your organisation?

Total profit Net profit

2 - How much is the distributed profit?

3 - How much are the employees' sharing in profits?

9. FRINGE BENEFITS:

What are the type and value of the fringe benefits offered to your employees?

1.

2.

3.

B - PERSONNEL MANAGER

10. JOB EVALUATION PLAN

1 - If your scheme(s) is(are) part of a wider scheme(s), please state the name and address of the company or group operating the full scheme(s)?

....

2 - How many schemes are in operation?

....

3 - For each scheme please state the following:

Type of scheme*	Year introduced	Group & No of employees concerned	
		Group	No

* please mention the code letter of the following schemes:

- (A) Ranking
- (B) Grading or Classification
- (C) Point Rating
- (D) Factor Comparison
- (E) Profile Method
- (F) Composite Method
- (G) Time Span
- (H) Decision Making Method

- 4 - Please indicate your assessment of the degree to which each type of scheme has achieved fair and logical wage and salary differentials.

Type of scheme	Completely	Very Largely	Largely	Partially

- 5 - In respect of schemes covering manual workers, are job evaluated rates the sole determinants of the wage structure?

Yes No

If no,

- a - which other types of payments are made?

Payment by results Merit payment
 Lieu bonus Plant-wide bonus
 Departmental bonus Other payments

- b - do earnings (excluding overtime) from any of these individually or in total exceed earnings from the job evaluated rate?

Payment by results Merit payment
 Lieu bonus Plant-wide bonus
 Departmental bonus Other payments

- 6 - Was the existing job evaluation scheme drawn up by or with consultants?

Yes No

- 7 - How many members did participate in each stage of the existing scheme?

Stages Members	Design	Analysis	Assessment	Settlement
Consultants				
Rep on board of directors				
Trade unionists				
Elected members by management				

8 - If the existing job evaluation scheme resulted in increasing, or unchanging, or freezing wages/salaries of some group of employees, please state their number

	Increasing	Unchanging	Freezing
Managers
Professional
Clerical
D. Manual
Ind. manual

9 - JE Costs

(1) Did the organisation calculate the cost of job evaluation scheme(s)?

Yes No

If yes,

a - please give this cost in detail

Type of Scheme	Introduction Year	Group of Employees	Total Cost

b - How much was the cost of each process for the existing scheme(s)?

Type of Scheme	Design	Analysis	Assessment	Settlement

- (2) How much was the cost of the employees' payroll during the year before and after the introduction of the existing job evaluation scheme(s)?

Group	Before		After	
	No	£E	No	£E
Managers				
Professionals				
Clerical				
D. manual				
Ind. manual				

10. VOLUNTARY LABOUR TURNOVER (QUITTING):

How many employees have quitted (eg absent without authorisation for 15 consecutive days) during the year before and after the introduction of the existing job evaluation scheme?

	Before	After
Managers
Professional
Clerical
D. manual
Ind. manual

11. LAY-OFF:

How many employees have been made redundant (eg laid-off, elimination of jobs, technological change, redundancy, etc) during the year before and after the introduction of the existing job evaluation scheme?

	Before	After
Managers
Professional
Clerical
D. manual
Ind. manual

12. DISCHARGE:

How many employees have been dismissed by the tripartite committee during the year before and after the introduction of the existing job evaluation scheme?

	Before	After
Managers
Professional
Clerical
D. manual
Ind. manual

13. ABSENTEEISM:

What are the absenteeism rates (if available) during the year before and after the introduction of the existing job evaluation scheme?

	Absenteeism rates		
	Code*	Before	After
Managers			
Professional			
Clerical			
D. manual			
Ind. manual			

* Absenteeism rates code:

A - The total absence = number of man-days lost/number of man-days planned x 100, or = number of man-days lost/average strength of work force x number of man-days worked x 100

B - The frequency rate = the number of separate absences per 1000 workers in a given period

C - The percentage of employees absent in any one period = total number of workers one or more times/average strength (excluding those absent longer than 13 weeks) x 100

D - Average length of each spell of absence = total days lost/total number of absences.

14. SICKNESS AND ACCIDENTS:

How many sick cases, with/or without accident to the employee, have occurred during the year before and after the introduction of the existing job evaluation scheme?

	Before	After
Managers
Professional
Clerical
D. manual
Ind. manual

15. TIMEKEEPING:

How many panel cases have been taken for the employees' timekeeping during the year before and after the introduction of the existing job evaluation scheme?

	Before	After
Managers
Professional
Clerical
D. manual
Ind. manual

16. GRIEVANCES:

1. - What are the jobs of the members who were involved in the grievance committee of the existing job evaluation scheme(s)?

2 - What job evaluation stage(s) did the grievance committee participate in?

3 - Has the grievance committee authority to take decisions in the job evaluation grievance?

Yes No

If no,

a) who has such authority?

- b) what is the work of such committee?
- 4 - What are the total and subjects of grievances made against the existing job evaluation scheme(s)?
- | | |
|-----------------|--------------------|
| Job title | Freezing pay |
| Job grade | Others |
- 5 - What were found to be genuine grievances?
- | | |
|-----------------|--------------------|
| Job title | Freezing pay |
| Job grade | Others |
- 6 - How many genuine grievances have been resolved?
- | | |
|-----------------|--------------------|
| Job title | Freezing pay |
| Job grade | Others |
- 7 - Why have the other genuine grievances not been solved?
.....

C - JE CONSULTANTS

17. JE CONSULTANTS:

- 1 - Which organisation did JE consultants belong to?
.....
- 2 - In what stage(s) have JE consultants participated?
- | | |
|-------------------|------------------|
| Designation | Analysis |
| Assessment | Settlement |

18. JOB ANALYSIS AND DESCRIPTION:

- 1 - How have job analysis and description been implemented?
- | | | |
|-----------------|------------------|----------------|
| At office | On the job | Together |
|-----------------|------------------|----------------|
- 2 - What was the source(s) of information in the case of office analysis?
- | | |
|------------------|--------------------|
| Managers | Supervisors |
| Org. chart | More sources |

3 - What was the source(s) of information in the case of on-the-job analysis?

- Job holder
- D. supervisor
- Both

4 - What was the method(s) adopted for collection of the required information for job analysis?

- Questionnaire
- Interview
- Observation

19. JE FACTORS AND WEIGHTS:

1 - Who had participated with the consultants in the selecting of factors applied in the existing job evaluation scheme(s)?

- Managers ERBD
- TUS EMBM

2 - Who was involved in allocating and determining weights of the selected factors applied in the existing job evaluation scheme(s)?

- Managers ERBD
- TUS EMBM

3 - Please give the applied factors and weights in the existing job evaluation scheme(s):

20. OVER-EVALUATION:

1 - Were there any attempts to over-evaluate or assess some group of jobs more than its real value?

- Yes
- No

If yes,

- a) From whom?
- b) What are these jobs?
- c) Have you been able to overcome such attempts?

Yes No

If yes, how?

If no, why?

2 - Have the results of the existing job evaluation schemes been modified?

Yes No

If yes,

a) by whom?

b) what were the reasons behind such modification?

21. Please give any idea(s) to reform the existing JE scheme(s)?

QUESTIONNAIRE II
INDUSTRIAL EMPLOYEES

Number Name Date and Time of Interview

A - GENERAL

- (1) Name of organisation:
- Plant:
- Company:
- Industrial sector:
- (2) Department or section:
- (3) Job group:
- Managerial Professional
- Clerical Manual
- Ind. Manual
- (4) Present job title:
- (5) Level of skill (clerical and manual):
- Skilled
- Semi-skilled
- Unskilled
- (6) National Cadre of Wages and Salaries (NCWS):
- (7) Trade Unions
- | Name of Trade Union | Craft/Industrial | Date of Foundation |
|---------------------|------------------|--------------------|
| | | |
| | | |
- (8) Date of birth:
- (9) Sex: Male Female
- (10) Marital status: Single Married
- (11) No of dependants (children):

(12) Educational qualifications:

1. University Graduates
 - a. PhD
 - b. MSc
 - c. HDip
 - d. B/L
2. Modest Education
 - e. Diploma
 - f. GCE
 - g. Prep/Primary Certificates
3. None
 - h. Reading and writing

(13) Length of service:

In general (since starting work)

In this company

(14) Number of previous jobs (since starting work):

(15) Nature of previous jobs:

All are the same to the present job

Some are different than the present job

All are different than the present job

(16) Wife's occupation:

Household job Salaried job

(17) Where do you live?

Company or public residence

Home

Lodgings

(18) What are the means of transport you use to go to your work?

Company means Public transports

Private car On foot

(19) Are people in your home neighbourhood industrial employees?

Yes No Do not know

(20) Are particular friends industrial employees?

Yes No

(21) Do you meet your work mates socially?

No meetings

Official meeting at TU

Social meeting at TU/Co Club

Others (mention)

C - JOB EVALUATION

1. EMPLOYEES COMPARISON

(22) Do you make pay (wage/salary) comparison with others?

Yes No

If yes:

1. What is the principal item(s) used in such comparison?

Basic pay (basic rate/basic salary)

Extra payment (bonus, distributed profits, etc)

Fringe benefits (subsidised transport, accommodation etc)

Total compensation (all formentioned above)

Take home wage/salary

2. Which one of the following helps you in such comparison?

Job title

Job componants

Pay packet

3. What is the principal reference group(s) with which you make such comparison?

Same job employees

Other managerial group

Other professional group

Other clerical group

Other manual group

4. Where does this principal reference group(s) work?

Same plant

Same company

Same industry

Other industry

5. Do you think that job evaluation is a helpful means of conducting such a comparison?

Yes No Do not know

6. Do you think that the same job evaluation scheme should be applied to cover all job group(s) with which you made comparison?

Yes No

2. EMPLOYEES PARTICIPATION IN THE SCHEME

(23) Who would you prefer to be responsible for the design of the favourite plan of job evaluation?

Management Internal experts

Consultants (in/outside) External experts

(24) Would you like employee representatives to participate in designing the favourite plan of job evaluation?

Yes No Do not know

If yes, which one of the following do you prefer to represent you in such plan design?

TUs ERBD EMBM

(25) Did you occupy your present job when it was evaluated?

Yes No

(26) Has information of job analysis been collected from your workplace? (eg your shopfloor/work office)

Yes No

If yes, by which one of the following has such information been collected?

Questionnaire

Interview

Observation

More than one

- (27) Have the derived and selected factors (to evaluate your job) been informed and/or explained to you?

Yes No

If yes,

1. By whom?

Direct supervisor

Trade Unionists

E representatives on board of directors

Elected members by management

2. Considering these factors, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

- (28) Have your representatives shared in the selectivity of weights of your job factors?

Yes No Do not know

If yes, who were those representatives?

Trade Unionists

E representatives on board of directors

Elected members by management

- (29) Have these selected weights been informed and/or explained to you before its implementation?

Yes No

If yes,

1. By whom?

Direct supervisor

Trade Unionists

E representatives on board of directors

Elected members by management

2. Considering these weights, have satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(30) Have your representatives been involved in the panel assessment?

Yes No Do not know

If yes, who were those representatives?

Trade Unionist

E representatives on board of directors

Elected members by management

(31) Have you been informed of your job grade (which was derived and determined by job evaluation) before settling its wage or salary?

Yes No

If yes,

1. By whom?

Direct supervisor

Trade Unionist

E representatives on board of directors

Elected members by management

2. Considering your job grade within comparable job hierarchies, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

- (32) Have your representatives been involved in wage settlement process or placing of job grades on pay packets of the national cadre of wages and salaries?

Yes No Do not know

If yes, who were those representatives?

Trade Unionist

E representatives on board of directors

Elected members by management

2. Employee Attitudes Towards His
Job, Pay and Job Evaluation

- (33) Has your basic pay (wage/salary) been modified by the existing job evaluation plan?

Increased pay

Freezing pay

Same pay

Do not know

- (34) Are there some of your colleagues, who are working on the same job, placed on higher pay packet than yours?

Yes No Do not know

If yes, where are they?

Same plant

Same company

Same industry

Other industries

- (35) Have you intended and/or applied to move elsewhere?

Yes No

If yes,

1. Why?

More money

Not satisfied here

Desire to change the profession

Others (mention)

2. Where?

Arab countries

Private companies

Other public companies

Others (mention)

3. Have you occupied your present job for such reasons?

Yes No

(36) Has any training programmes been assigned or specified for your promotion before the application of job evaluation?

Yes No Do not know

If yes,

1. Did you attend it?

Yes No

2. Have you been promoted to the present job according to your training attainment?

Yes No Do not know

3. How satisfied are you with such training programmes?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(37) Have you challenged job evaluation results by grievances?

Yes No

If yes,

1. To whom has such grievance been submitted?

Direct supervisor

Trade Unionists

E representatives on board of directors

Elected members by management

Grievance committee

Personnel manager

Others (mention)

2. What did you complain for in your grievance?

Job title

Job grade

Pay packet

Freezing pay

Others (mention)

3. Has your grievance been solved?

Yes No

(38) Consider your job as a whole, how far does your job permit you to plan ahead? (eg 1 day, 2 days, 1 week, 2 weeks, 1 month, 3 months, 1 year, 5 years)

Average time

Longest time

(39) Considering your job as a whole, what is the average time and longest time you must wait before you learn the results of a decision that you made?

Average time

Longest time

(40) Consider your own job, not your own abilities and capacities, but the work itself, what do you feel a fair wage or salary would be for your job?

£E

(41) Considering your job as a whole, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(42) How much is your basic wage/salary for your present job after its evaluation?

1. Record amount £E (per day, week or month)
2. Right By mistake Do not know
3. Considering your basic wage/salary, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(43) How much are your cost of living allowances given by your company?

1. Record amount £E
2. Right By mistake Do not know
3. Do you think that your cost of living allowances are enough to meet your favourite wage/salary increase?

Not enough, and should increase more

Quite enough

Enough

(44) Did you have an overtime/bonus for the last period (eg week, month or more)?

Yes No

If yes,

1. How much was it?

Record amount

Right By mistake Do not know

2. How satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(45) What are the types of fringe benefits given by your company?

1. How much is your transport subsidised?

2. How satisfied are you with transport subsidy?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

3. How much are your free meals?

4. How satisfied are you with free meals?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

5. How much are your work condition allowances?

6. How satisfied are you with work condition allowances?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

7. How much are your free housing rent?

8. How satisfied are you with free housing rent?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

9. Considering your fringe benefits as a whole, how satisfied are you with them?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(46) How much is your actual take home wage/salary for your present job after its evaluation?

1. Record amount fE

2. Right By mistake Do not know

3. Considering your actual take home wage/salary, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

4. Give reason(s) for your dissatisfaction

Rising cost of living

No saving for the future

Comparing with others

Others (mention)

(47) Examine the attached job description sheet and judge if your job description is or is not the same

Yes No

If no, give any differences

(48) Considering the existing job evaluation scheme as a whole, how satisfied are you with it?

Very dissatisfied

Dissatisfied

Slightly dissatisfied

Slightly satisfied

Satisfied

Very satisfied

(49) Have you any idea to reform the existing job evaluation scheme?

APPENDIX I

(b)

The Second Computer Programme "BASS PROG"

The programme was constructed by using the BASIC computer language, and executed on a HP2000 access. The basic aim of building up such a programme was to calculate the mean, standard deviation, and variance of the following:

1. Employee's net earnings
2. Profitability (ie rate of return on capital employed
= profits before tax/long-term liabilities)
3. Incentive payments (ie employee's cash-sharing in profit
and incentive group bonus)
4. Insurance (ie life, accident and health insurance; pension
and retirement; and sick pay, paid absence, and
holidays)
5. Kind of fringe benefits
6. White/blue collar ratio

The Analysis of Variance (ANOVA) can, therefore, be counted in order to analyse the size and nature of pay differentials existing among the 108 different firms of the Ministry of Industry in Egypt, according to their size and industry location.

LIS
BAS8

1

The second computer programme

```

10 FILES BAS81,BAS82
20 DIM E(108),F(108)
30 READ I2,1
40 FOR A=1 TO 4
50 IF A=1 THEN 140
60 IF A=2 THEN 110
70 IF A=4 THEN 210
80 J=21
90 K=27
100 GOTO 160
110 J=4
120 K=20
130 GOTO 160
140 J=1
150 K=3
160 FOR B=J TO K
170 MAT READ (1,A)E
180 FOR O=1 TO 108
190 F(O)=E(O)
200 NEXT O
210 R=X-Z1-Z2-Z3-Z4-Z5-T-T2-T3-T4-T5-Y-Y5-P1-C1=0
220 IF A=4 THEN 260
230 FOR I=1 TO 108
240 IF F(I)≠0 THEN 690
250 GOTO 290
260 B=28
270 FOR G=1 TO 108
280 I=G
290 MAT READ (1,A)E
300 W=E(I)
310 MAT READ (1,10)E
320 N=E(I)
330 X=X+(W*N)
340 T=T+N
350 Y=Y+(W^2*N)
360 R=R+1
370 MAT READ (1,5)E
380 P=E(1)
390 MAT READ (1,6)E

```

```

400 C=E[I]
410 P1=P1+P
420 C1=C1+C
430 Z1=Z1+(P1/C1)^2
440 MAT READ A1,7IE
450 W2=E[I]*1000
460 MAT READ A1,8IE
470 W3=E[I]*1000
480 MAT READ A1,9IE
490 W4=E[I]*1000
500 Z2=Z2+W2
510 Z3=Z3+W3
520 Z4=Z4+W4
530 W2=W2/N
540 W3=W3/N
550 W4=W4/N
560 T2=T2+W2^2
570 T3=T3+W3^2
580 T4=T4+W4^2
590 MAT READ A1,11IE
600 W5=E[I]
610 MAT READ A1,12IE
620 L5=E[I]
630 Z5=Z5+W5
640 Y5=Y5+L5
650 T5=T5+(W5/L5)^2
660 IF A&4 THEN 690
670 NEXT G
680 GOTO 700
690 NEXT I
700 X=INT((X/T)*100)/100
710 V=INT(((Y/T)-X^2)*100)/100
720 IF V>0 THEN 740
730 V=V*-1
740 S=INT(SQR(V)*100)/100
750 X1=INT((P1/C1)*100)/100
760 U1=INT(((Z1/R)-X1^2)*1000)/1000
770 IF U1>0 THEN 790
780 U1=U1*-1
790 S1=INT(SQR(U1)*1000)/1000
800 X2=INT((Z2/T)*100)/100
810 U2=INT(((T2/R)-X2^2)*100)/100
820 IF U2>0 THEN 840

```

```

830 U2=U2*-1
840 S2=INT(SQR(U2)*100)/100
850 X3=INT((Z3/T)*100)/100
860 U3=INT(((T3/R)-X3^2)*100)/100
870 IF U3>0 THEN 890
880 U3=U3*-1
890 S3=INT(SQR(U3)*100)/100
900 X4=INT((Z4/T)*100)/100
910 U4=INT(((T4/R)-X4^2)*100)/100
920 IF U4>0 THEN 940
930 U4=U4*-1
940 S4=INT(SQR(U4)*100)/100
950 X5=INT((Z5/Y5)*1000)/1000
960 U5=INT(((T5/R)-X5^2)*1000)/1000
970 IF U5>0 THEN 990
980 U5=U5*-1
990 S5=INT(SQR(U5)*1000)/1000
1000 PRINT A2,B,R,T,X,U,S,X1,U1,S1,X2,U2,S2,X3,U3,S3,X4,U4,S4,X5,U5,S5
1010 NEXT B
1020 NEXT A
1030 FOR E=1 TO 6
1040 PRINT
1050 PRINT
1060 READ A2,1
1070 IF E=1 THEN 1140
1080 IF E=2 THEN 1150
1090 IF E=3 THEN 1180
1100 IF E=4 THEN 1200
1110 IF E=5 THEN 1220
1120 PRINT E;"WHITE/BLUE-COLLAR"
1130 GOTO 1230
1140 PRINT E;"NET EARNINGS"
1150 GOTO 1230
1160 PRINT E;"PROFITABILITY"
1170 GOTO 1230
1180 PRINT E;"INCENTIVE PAYMENT"
1190 GOTO 1230
1200 PRINT E;"INSURANCE"
1210 GOTO 1230
1220 PRINT E;"KIND FRINGE BENEFITS"
1230 PRINT
1240 PRINT "-----"

```

```

1250 PRINT " CODE "I" NO. OF "I" NO. OF"ITAB(34);"MEAN"ITAB(50);"VAR"ITAB(64);"S. D."
1260 PRINT " NO. "I" FIRMS "I" EMPLO'S"ITAB(49);"RANGE"
1270 PRINT "-----"
-----"
1280 PRINT
1290 FOR I=1 TO 28
1300 IF I=4 OR I=21 OR I=28 THEN 1320
1310 GOTO 1330
1320 PRINT "-----"
-----"
1330 READ A2;B;R;N;X;U;S;X1;U1;S1;X2;U2;S2;X3;U3;S3;X4;U4;S4;X5;U5;S5
1340 IF E=1 THEN 1410
1350 IF E=2 THEN 1430
1360 IF E=3 THEN 1450
1370 IF E=4 THEN 1470
1380 IF E=5 THEN 1490
1390 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X5;TAB(48);U5;TAB(63);S5
1400 GOTO 1500
1410 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X1;TAB(48);U1;TAB(63);S1
1420 GOTO 1500
1430 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X2;TAB(48);U2;TAB(63);S2
1440 GOTO 1500
1450 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X3;TAB(48);U3;TAB(63);S3
1460 GOTO 1500
1470 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X4;TAB(48);U4;TAB(63);S4
1480 GOTO 1500
1490 PRINT TAB(3);B;TAB(11);R;TAB(19);N;TAB(34);X5;TAB(48);U5;TAB(63);S5
1500 NEXT I
1510 PRINT "-----"
-----"
1520 NEXT E
1530 PRINT "PROFIT AND LOSS ANALYSIS FOR DIFFERENT SIZES"
1540 PRINT
1550 PRINT "-----"
-----"
1560 PRINT "CODE NO."ITAB(24);"PROFIT"ITAB(52);"LOSS"
1570 PRINT TAB(10);"-----"
-----"
1580 PRINT TAB(14);"NO. OF"ITAB(31);"MEAN"ITAB(44);"NO. OF"ITAB(61);"MEAN"
1590 PRINT TAB(14);"FIRMS"ITAB(44);"FIRMS"
1600 PRINT "-----"
-----"

```



```
1610 PRINT
1620 FOR B=1 TO 3
1630 MAT READ A1,11E
1640 FOR Q=1 TO 108
1650 F100=E100
1660 NEXT Q
1670 C1=C2=N=R=L=P=0
1680 FOR I=1 TO 108
1690 IF F111&B THEN 1810
1700 MAT READ A1,51E
1710 IF E111>0 THEN 1770
1720 L=E111+L
1730 N=N+1
1740 MAT READ A1,61E
1750 C1=C1+E111
1760 GOTO 1810
1770 P=P+E111
1780 R=R+1
1790 MAT READ A1,61E
1800 C2=C2+E111
1810 NEXT I
1820 P=INT((P/C2)*1000)/1000
1830 IF N=0 THEN 1860
1840 L=INT((L/C1)*1000)/1000
1850 GOTO 1870
1860 L=0
1870 PRINT B,R,P,N,L
1880 NEXT B
1890 PRINT "-----"
-----
1900 END
```

Table 8.2

Codes of the Second Computer
Programme "BASS Prog"

Code	Size, industry and labour market area
	<u>Size of organisation:</u>
1	Small (0 - 499)
2	Medium(500 - 999)
3	Large (1000 and over)
	<u>Industry:</u>
4	Textile
5	Clothing
6	Jute
7	Food
8	Sugar
9	Tobacco
10	Drink
11	Chemical and dyes
12	Leather
13	Paper and board
14	Steel and copper
15	Motor vehicle and motor cycle manufacturing
16	Shipbuilding and marine engineering
17	Railway equipment
18	Electrical engineering
19	Metal goods not elsewhere specified
20	Mining
	<u>Labour market area:</u>
21	The greater Cairo
22	Alexandria and West-Delta
23	Mid-Delta
24	East-Delta
25	Canal Zone
26	Near Upper
27	Far Upper

Table 8.8

The relationship between region size and both
size of the firm and workers employed

Code	No of Firms	No of employees	Mean Earnings £E	No of Large Firms	Region Size (000)
21	56	209571	451.12	47	7,924
22	31	154467	401.87	31	4,703
23	8	64151	413.72	6	6,720
24	2	13437	360.70	2	5,759
25	7	13786	437.29	5	1,557
26	2	13964	243.12	2	5,564
27	2	24249	395.81	2	4,190
	108	493625	419.40	95	36,417

NB Correlation coefficient between region size and firms size = +0.43

Correlation coefficient between region size and workers employed
by the Ministry of Industry = +0.58

RUN
BRSS

2

The results of the second programme

1 NET EARNINGS

CODE NO.	NO. OF FIRMS	NO. OF EMPLOYS	MEAN	VAR IANCE	S. D.
1	3	323	384.57	686.56	26.2
2	10	7885	398.38	6790.06	82.4
3	95	484917.	419.8	6919.9	83.18
4	25	251530.	396.9	3698.25	60.81
5	2	14604	371.21	1133.68	33.67
6	1	6968	389	0	0
7	15	32534	352.79	1639.21	40.48
8	1	22222	376	0	0
9	2	12687	537.84	3835.68	61.93
10	3	3697	439.17	2986.21	54.64
11	18	39242.	438.97	10825.5	104.04
12	2	2297	446.83	831.93	28.84
13	2	5177	365.39	1091.84	33.04
14	5	27316	586.92	3024.06	54.99
15	2	13897	460.11	169.59	13.02
16	2	7626	434.79	8.31	2.88
17	2	2732	494.39	1702.5	41.26
18	7	17967	498.67	4393.03	66.27
19	15	25195	452.5	8674.37	93.13
20	4	7934	401.15	2664.87	51.62
21	56	209571.	451.12	6376.96	79.85
22	31	154467.	401.87	5332.34	73.02
23	8	64151.	413.72	1911.34	43.71
24	2	13437	360.7	400.25	20
25	7	13786	437.29	18855.8	137.31
26	2	13964	243.12	226.84	15.06
27	2	24246	395.81	4303.62	65.6
28	108	493625.	419.4	6915.93	83.16

2 PROFITABILITY

CODE NO.	NO. OF FIRMS	NO. OF EMPLO'S	MEAN	VAR IANCE	S. D.
1	3	823	-.02	.074	.272
2	10	7885	.16	.004	.063
3	95	484917.	.04	.001	.031
4	25	251530.	.06	.001	.031
5	2	14604	.14	.004	.063
6	1	6968	.09	0	0
7	15	32534	.08	.001	.031
8	1	22222	0	0	0
9	2	12687	.03	.001	.031
10	3	3697	.14	.017	.13
11	18	39242.	.02	0	0
12	2	2297	-.04	.001	.031
13	2	5177	.4	.02	.141
14	5	27316	-.02	0	0
15	2	13897	.08	0	0
16	2	7626	-.05	.001	.031
17	2	2732	.24	.007	.083
18	7	17967	.2	.026	.161
19	15	25195	.05	0	0
20	4	7934	.01	.001	.031
21	56	209571.	.03	0	0
22	31	154467.	.06	.001	.031
23	8	64151.	.06	.001	.031
24	2	13437	.21	.004	.063
25	7	13786	0	.001	.031
26	2	13964	.05	.001	.031
27	2	24249	.01	0	0
28	108	493625.	.04	.001	.031

3 INCENTIVE PAYMENT

CODE NO.	NO. OF FIRMS	NO. OF EMPLO'S	MEAN	VAR -IANCE	S. D.
1	3	823	98.42	551.67	23.48
2	10	7885	119.59	6075.67	77.94
3	95	484917.	87.66	2557.14	50.56
4	25	251530.	73.76	194.9	13.96
5	2	14604	99.42	906.05	30.1
6	1	6968	28.7	.15	.38
7	15	32534	41.24	624.68	24.99
8	1	22222	80.01	.12	.34
9	2	12887	139.74	70.62	8.4
10	3	3697	55.99	932.95	30.54
11	18	39242.	111.41	3205.28	56.61
12	2	2297	73.13	217.65	14.75
13	2	5177	62	2058.03	45.36
14	5	27316	151.63	877.52	29.62
15	2	13897	138.87	3013.48	54.89
16	2	7626	112.77	1150.76	33.92
17	2	2732	166.91	4870.69	69.79
18	7	17967	140.31	3110.4	55.77
19	15	25195	104.82	5318.95	72.93
20	4	7934	103.22	2355.83	48.53
21	56	209571.	102.09	3074.12	55.44
22	31	154467.	69.93	1165.75	34.14
23	8	64151.	89.1	840.9	28.99
24	2	13437	90.04	22.86	4.78
25	7	13786	119.25	3847.05	62.02
26	2	13964	43.03	524.39	22.89
27	2	24249	89.28	13455.7	115.99
28	108	493625.	88.19	3371.73	58.06

4 INSURANCE

CODE NO.	NO. OF FIRMS	NO. OF EMPLOYS	MEAN	VAR IANCE	S. D.
1	3	823	53.46	225.5	15.01
2	10	7885	67.46	1448.56	38.05
3	95	484917.	53.71	542.32	23.28
4	25	251530.	48.54	9.21	3.03
5	2	14604	48.27	155.07	12.45
6	1	6968	51.09	.07	.26
7	15	32534	60.64	14.29	3.78
8	1	22222	44.73	.03	.17
9	2	12687	81.99	20.86	4.56
10	3	3697	83.58	164.01	12.8
11	18	39242.	58.22	204.23	14.29
12	2	2297	51.37	30.95	5.56
13	2	5177	56.4	3.59	1.89
14	5	27316	69.15	565.09	23.77
15	2	13897	49.86	65.86	8.11
16	2	7626	61.23	618	24.85
17	2	2732	61.12	646.13	25.41
18	7	17967	55.99	158.85	12.6
19	15	25195	64.33	1193.52	34.54
20	4	7934	63.01	522.14	22.85
21	56	209571.	55.64	861.93	29.35
22	31	154467.	57.37	307.85	17.54
23	8	64151.	49.16	105.01	10.24
24	2	13437	38.84	.83	.91
25	7	13786	60.27	309.44	17.59
26	2	13954	32.29	64.25	8.01
27	2	24249	47.05	1416.34	37.63
28	108	493625.	53.93	734.74	27.1

5 KIND, FRINGE BENEFITS

CODE NO.	NO. OF FIRMS	NO. OF EMPLO'S	MEAN	VAR RANCE	S. D.
1	3	823	20.65	58.92	7.67
2	10	7885	41.34	311.44	17.64
3	95	484917.	23.58	468.52	21.64
4	25	251530.	17.11	94.67	9.72
5	2	14604	21.84	379.18	19.47
6	1	6968	26.83	.37	.6
7	15	32534	17.42	63.06	7.94
8	1	22222	43.38	.03	.17
9	2	12687	40.51	97.76	9.88
10	3	3697	30.02	1515.93	38.93
11	18	39242.	40.33	494.95	22.24
12	2	2297	38.74	431.24	20.76
13	2	5177	13.9	26.65	5.16
14	5	27316	30.42	1047.75	32.36
15	2	13897	25.18	286.15	16.91
16	2	7626	16.26	1603.38	40.04
17	2	2732	30.01	77.91	8.82
18	7	17967	35.95	30.6	5.53
19	15	25195	32.7	128.64	11.34
20	4	7934	26.46	103.57	10.17
21	56	209571.	29.88	410.67	20.26
22	31	154467.	12.99	353.41	18.79
23	8	64151.	21.62	210.77	14.51
24	2	13437	20.61	.27	.51
25	7	13786	36.19	333.7	18.26
26	2	13964	13.24	223.87	14.96
27	2	24249	47.83	3328.14	57.69
28	108	493623.	23.86	532.47	23.07

6 WHITE/BLUE-COLLAR

CODE NO.	NO. OF FIRMS	NO. OF EMPLO'G	MEAN	VAR IANCE	S. D.
1	3	823	.478	.004	.063
2	10	7885	.482	.014	.118
3	95	484917.	.548	.004	.063
4	25	251530.	.531	.026	.161
5	2	14604	.491	.004	.063
6	1	6968	.511	0	0
7	15	32534	.54	.016	.126
8	1	22222	.603	0	0
9	2	12687	.582	.004	.063
10	3	3697	.437	.006	.077
11	18	39242.	.539	.007	.083
12	2	2297	.525	0	0
13	2	5177	.574	.003	.054
14	5	27316	.613	.011	.104
15	2	13897	.614	.002	.044
16	2	7626	.614	.019	.137
17	2	2732	.583	.001	.031
18	7	17967	.593	.028	.167
19	15	25195	.581	.01	.1
20	4	7934	.414	.066	.256
21	56	209571.	.55	.004	.063
22	31	154467.	.549	.007	.083
23	8	64151.	.549	.034	.184
24	2	13437	.497	0	0
25	7	13786	.467	.032	.178
26	2	13964	.487	.019	.137
27	2	24249	.597	.039	.197
28	108	493625.	.547	.01	.1

PROFIT AND LOSS ANALYSIS FOR DIFFERENT SIZES

CODE NO.	PROFIT		LOSS	
	NO. OF FIRMS	MEAN.	NO. OF FIRMS	MEAN
1	1	.001	2	-.016
2	10	.167	0	0
3	73	.078	22	-.035

DONE

APPENDIX II

APPENDIX II

(a)

Classification of the developing and industrialised economies by income group (Based on estimate of National Income per capita 1972)

A - Developing Economies:

(1) Oil Exporters: (\$187-\$3673)⁽¹⁾

Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Nigeria, Venezuela, Kuwait, Libya (Arab Republic), Saudi Arabia.

(2) Higher-Income Countries: (over \$375 per capita)⁽²⁾

Argentina, Botswana, Brazil, Chile, China (Republic of), Colombia, Costa Rica, Cyprus, Dominican Republic, Fiji, Greece, Guatemala, Guyana, Israel, Jamaica, Malaysia, Malta, Mexico, Nicaragua, Panama, Peru, Singapore, Spain, Trinidad and Tobago, Tunisia, Uruguay, Yugoslavia, Zambia.

(3) Middle-Income Countries: (\$200 to \$375 per capita)

Bolivia, Cameroon, Congo (People's Republic of), Egypt (Arab Republic of), El-Salvador, Ghana, Honduras, Ivory Coast, Jordan, Korea (Republic of), Liberia, Mauritius, Morocco, Paraguay, Phillipines, Senegal, Swaziland, Syria (Arab Republic of), Thailand, Turkey, Viet-Nam, Papua New Guinea.

(4) Lower-Income Countries: (under \$200 per capita)

Afghanistan, Bangladesh, Burma, Burundi, Central African Republic, Chad, Dahomey, Ethiopia, Gambia (The), Guinea, Haiti, India, Kenya, Khmer Republic, Lesotho, Laos, Malagasy Republic, Malawi, Mali, Mauritania, Nepal, Niger, Pakistan, Rwanda, Sierra Leone, Somalia, Sri Lanka, Sudan, Tanzania, Togo, Uganda, Upper Volta, Yemen (Arab Republic of), Yemen, (People's Democratic Republic of), Zaire

B - Industrialised Countries: (\$939-\$4984)⁽³⁾

Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (Federal Republic of), Iceland, Ireland, Italy, Japan,

(continued)

Luxembourg, Netherlands, New Zealand, Norway, Portugal, South Africa,
Sweden, Switzerland, United Kingdom, United States.

Source : World Bank, Annual Report, 1974

- Notes : (1) Oil exporters group : Nigeria represents the lower limit,
and Kuwait represents the upper limit.
- (2) Higher income group : Greece is placed at the top of the
group with NI per capita \$1327
- (3) Industrialised economies : National Income per capita of,
Portugal is placed at the bottom, and the USA is placed
at the top of industrialised economies.

See : UN, Yearbook of National Accounts Statistics, Vol III,
International Tables, 1974, pp 9-14

APPENDIX II
(b)
Official Statistics and Publications

Table 1

Countries classified by size of National Income per capita in 1949 and continental division

Income Group	National Income per Capita "US Dollars"	Population		Africa	America North	America South	Asia	Europe and USSR	Oceania
		Number million	%						
Lower Income	Under \$100	609	34	Kenya - N Rhodesia -	Dominican Republic 76 Paraguay 84	Ecuador 40	Burma 36 Ceylon 67 India 57 Iran 85 Pakistan 51 Philippines 41 Thailand 36		
Middle Income	\$100-200	284	19	Egypt 100 S Rhodesia 101	Mexico 121 Brazil 112 Chile 188 Colombia 132 Peru 100 Surinam -		Japan 100 Syria 100 Turkey 125	Bulgaria - Greece 128 Spain - Yugoslavia 140	
Higher Income*	\$200-300	82	6	Union of S Africa 264	Cuba 296 Puerto Rico -			Austria 216 Hungary 269 Italy 235	
	\$300-450	305	20			Argentina 346 Uruguay 331 Venezuela 322	Israel 389	Czechoslovakia 371 Finland 348 Germany W 320 Ireland 420 Poland 300 USSR 308	
Higher Industrialized Countries	\$450-600	89	5					Belgium 582 France 482 Iceland 476 Luxembourg 553 Netherlands 502 Norway 587	
	\$600-800	89	6		Canada 870			Denmark 689 Sweden - Switzerland 849 UK 773	Australia 679 New Zealand 856
	\$900 and over	149	10		USA 1,453				

Source : UN, National and per capita Income of Seventy Countries in 1949 Expressed in United States Dollars, Statistical Papers, Series E No 1, Statistical Office of the United Nations, Department of Economic Affairs, New York, October 1950, pp 14-16 & p 28.
UN, National Income and its Distribution in Under-developed Countries, Statistical Papers, Series E No 3, Statistical Office of the United Nations, Department of Economic Affairs, New York, 1951, p 3

General

Note : The concept of income used to calculate the per capita data is national income produced within the territorial boundaries of the country or net geographical product at factor cost.

*Higher income group consists of higher developing countries and lower industrialized countries

Table 2
Indices of Economic and Social Development

	National Income (1)	Foreign Trade (2)	Energy Consumption (3)	Steel Consumption (4)	Cement Consumption (5)	Merchandise carried on railways (6)	Food Consumption (7)	Textile Consumption (8)	Life expectancy (9)	Literacy rate % of inhabitants (10)	News paper circulation (11)	Regd Radio Sets (12)
Egypt	100	56	0.22	10	54	90	2,480	3.2	38.6	15	18	11
India	57	7	0.10	3	7	120	1,620	2.1	26.7	9	6	1
Japan	100	22	0.78	80(a)	54	369	2,100	1.6	57.6	95(c)	219	91
Philippines	44	36	0.10	5	16	8	-	1.1	-	50(c)	26	4
Argentina	346	186	0.76	70	99	1,077	2,730	8.1	51.7(b)	83(c)	207	94
Brazil	112	46	0.22	20	25	144	2,340	4.0	38.4	47	30	15
Chile	188	106	0.76	28	103	420	2,350	4.8	37.4	72	79	110
Mexico	121	38	0.60	28	58	341	-	3.2	-	48	46	30
Greece	126	69	0.22	-	38	50(a)	2,490	4.0	50	59	102	19
Turkey	125	26	0.26	10	18	121	2,690	3.9	-	21	15	15
Italy	235	63	0.63	52	119	239	2,370	4.7	55.7	78	98	69
France	482	154	2.03	182	186	978	2,680	8.1	58.8	96	284	172
Australia	679	373	3.12	200(a)	157	1,292	3,210	11.6	68.4	95(c)	455	258

(1) US Dollars, per capita, 1949

(2) Per capita value of imports and exports, in US Dollars, 1950

(3) Coal equivalent, in metric tons, per capita, 1950

(4) Kilogrammes, per capita, 1947

(5) Kilogrammes, per capita, 1950

(6) Ton Kilometres, per capita

(a) Pre-war

(b) 1914

(c) Estimate for adult population

(7) Calories, per capita, 1948-9

(8) Cotton, rayon, and wool, kilogrammes, per capita, average (1948-50)

(9) At birth, average male and female

(10) Percent of population 10 years or over, pre-war

(11) Per thousand inhabitants, 1950

(12) Per thousand inhabitants, 1950

Source : Issawi, Charles : Egypt at Mid-Century, An Economic Survey, Oxford University Press, London, 1954, Table VII, p 78

Table 3

Estimates of Per Capita National Income expressed in US Dollars

1949, 1958, 1960, 1963, 1967, 1970, 1972

	1949 (1)	1958 (2)	1960 (3)	1963 (3)	1967 (3)	1970 (4)	1972 (4)
Egypt	100	111	127	152	183	202	(220)
<u>Africa</u>	75	100	120	130	150	190	-
<u>America, North:</u>	1,100	2,061	2,490	2,760	3,550	4,280	5,000
USA	1,453	2,115	2,559	2,857	3,670	4,289	4,981
<u>America, South:</u>	170	250	290	330	400	520	(630)
Mexico	121	272	315	370	499	653	747
Peru	100	163	191	222	300	293	335
<u>Asia:</u>	50						
East & S East (ex Japan)	-	100	90	100	110	110	-
India	57	64	70	85	80	93	-
Japan	100	290	421	630	1,050	1,649	2,439
Middle-East:	-	180	220	250	340	370	(580)
Turkey	125	180	197	247	337	344	423
<u>Europe:</u>	380	-	970	1,230	1,620	2,090	2,770
E. Econ Community:	-	724	1,011	1,317	1,727	2,320	3,100
West Germany	320	790	1,188	1,505	1,844	2,752	3,739
Italy	235	497	644	906	1,228	1,591	1,987
E. Free Trade Association:	-	909	1,150	1,380	1,800	2,140	2,770
UK	773	1,013	1,276	1,483	1,848	1,991	2,503
Other Europe:	-	-	360	510	780	1,030	1,410
Greece	125	326	399	519	767	1,051	1,327
<u>Oceania:</u>	560	940	1,200	1,360	1,660	2,140	2,750
Australia	679	1,124	1,438	1,646	2,040	2,633	3,426
<u>World Total</u>	230	420	520	600	760	890	(1,080)
<u>Developed Market Economy</u>	-	1,070	1,360	1,620	2,140	2,690	3,380
<u>Developing Market Economy</u>	-	110	130	140	170	190	(230)

Source: (1) UN, National and Per Capita Incomes in Seventy Countries in 1949 Expressed in United States Dollars, Statistical Papers Series E No 1, Statistical Office of the United Nations, Department of Economic Affairs, New York, October 1950, Table 1, pp 14-16; and UN, National Income and its Distribution in Under-developed Countries, Statistical Papers Series E No 3, Statistical Office of the United Nations, Department of Economic Affairs, New York, 1951, Table 2, p 3.

(continued)

- (2) UN, Yearbook of National Accounts Statistics, Vol II, 1969, Table 1A, pp 3-8
- (3) UN, Yearbook of National Accounts Statistics, Vol III, 1971, Table 1B, pp 8-12
- (4) UN, Yearbook of National Accounts Statistics, Vol III, 1973, Table 1B, pp 9-14; and Vol III, 1974, Table 1B, pp 9-14

Table 4

Compensation of Employees as a percentage of National Income in AR Egypt and in some Industrialised Countries and Developing Countries (Oil Exporters, Higher, Middle and Lower-income Countries)

Country	Code	1965	1966	1967	1968	1969	1970	1971
AR Egypt	A	2388	2459	2510	2657	2927	3086	3274
	B	979	1002	1032	1106	1180	1338	1415
	%	41.0	40.7	41.1	41.6	40.3	43.4	43.2
Industrialised Countries:								
USA	%	62.9	63.4	64.3	66.1	67.7	69.0	68.2
UK	%	64.9	65.4	64.5	64.1	64.3	65.7	65.4
West Germany	%	55.3	56.0	55.8	54.9	55.2	57.7	59.0
France	%	51.2	51.7	51.9	52.8	52.9	55.3	55.6
Japan	%	51.4	51.4	50.1	49.3	49.4	50.4	59.4
Developing Countries:								
1. Oil Exporters:								
Iraq	%	33.3	33.0	33.2	32.3	33.3	32.9	32.9
Kuwait	%	-	23.8	26.4	26.1	26.3	25.2	23.7
Libyan, AR	%	28.8	27.5	29.4	27.5	26.5	26.8	31.6
Ecuador	%	-	-	-	-	32.2	33.4	32.2
Venezuela	%	52.2	53.5	54.6	48.1	48.6	47.6	48.1
2. Higher-Income								
Argentina	%	-	40.5	41.2	40.2	39.6	41.0	-
Israel	%	55.3	58.2	56.5	53.6	52.9	53.9	53.0
Panama	%	72.8	73.3	73.7	75.7	76.4	73.3	71.8
Peru	%	43.3	42.7	44.7	44.6	-	42.1	44.4
Spain	%	49.9	51.1	53.0	52.1	52.9	53.5	55.0
Uruguay	%	48.9	44.9	49.6	46.2	48.7	48.0	48.9
Zambia	%	-	41.2	44.2	41.8	34.2	43.6	58.2
3. Middle-Income								
Honduras	%	42.4	43.0	41.8	42.5	42.0	42.1	43.7
Korea, Rep of	%	28.0	29.0	31.7	32.5	33.4	34.0	34.1
Paraguay	%	38.5	40.2	40.4	39.9	39.6	37.3	39.0
Thailand	%	24.9	23.9	25.3	26.4	26.6	27.0	27.2
4. Lower-Income								
Kenya	%	39.6	37.9	39.3	43.3	42.7	42.2	43.0
Malawi	%	24.4	25.6	26.5	26.9	26.7	26.2	23.8
Sri Lanka	%	46.8	46.3	44.1	43.9	42.6	42.8	43.7
Sudan	%	-	68.5	68.0	67.6	52.3	51.5	52.4
Tanzania	%	31.1	31.0	31.9	32.0	32.0	33.0	34.3

Source : ILO "International Labour Office" : Yearbook of Labour Statistics,

Thirty Five Issue, Geneva, 1975, Table 24

NB : A - National Income in £E million

B - Employees Compensation in £E million

% - Employees Compensation as a percentage of national income.

Table 5

Proportionate distribution of families by size of family income in Italy, 1948

Families' Rank	Income Range (000) Lire	Total Family Income		% Cumulative Family Group	% Cumulative Income
		1,000m Lire	Per Cent		
Lowest tenth	under 190	156	2.3	10	2.3
Second "	190 - 268	252	3.8	20	6.1
Third "	268 - 324	322	4.8	30	10.9
Fourth "	324 - 380	383	4.7	40	16.6
Fifth "	380 - 450	449	6.7	50	23.3
Sixth "	450 - 525	528	7.8	60	31.1
Seventh "	525 - 620	620	9.3	70	40.4
Eighth "	620 - 765	742	11.1	80	51.5
Ninth "	765 - 1,075	964	14.4	90	65.9
Highest "	1,075 up	2,284	34.1	100	100.0
Total	-	6,700	100.0	-	-

Source : UN, National Income and its Distribution in Under-developed Countries, op cit, p 29

Table 6

Proportionate distribution of families by size of family money income after Federal Income Tax in USA, 1949

Families' Rank	Income Range \$	Total Family Income		% Cumulative Family Group	% Cumulative Income
		\$ million	Per Cent		
Lowest tenth	Under 700	1,250	1	10	1
Second "	700 - 1,260	5,150	3	20	4
Third "	1,260 - 1,750	7,800	5	30	9
Fourth "	1,750 - 2,190	10,140	7	40	16
Fifth "	2,190 - 2,590	12,320	8	50	24
Sixth "	2,590 - 3,010	14,660	9	60	33
Seventh "	3,010 - 3,520	17,010	11	70	44
Eighth "	3,520 - 4,170	19,810	13	80	57
Ninth "	4,170 - 5,270	24,180	15	90	72
Highest "	5,270 up	43,680	28	100	100
Total	-	156,000	100	-	-

Source : Ibid, p 32

Table 7

Selected Economic Indicators for Developing and Industrialised Countries -
by Income Group (Average annual real rate growth and shares in GNP, 1961-65,
1966-70, 1970, 1971, 1972, 1973 "percentages")

Region	1961-65	1966-70	1970	1971	1972	1973 (P)
A - Developing Countries						
Real rate of growth:						
Total GDP	5.5	5.8	6.7	5.5	5.4	7.3
Agricultural Production	2.6	3.1	2.0	3.5	-0.9	6.1
Manufacturing Production	8.7	7.8	7.5	7.8	10.1	-
Population	2.4	2.5	2.5	2.3	2.5	2.4
GDP per capita	3.0	3.3	4.0	3.1	2.8	4.8
Gross Investment	8.1	7.0	9.8	6.3	7.8	-
Share in GNP:						
Gross Investment	18.8	19.3	19.9	20.1	20.6	-
Gross national saving	16.6	16.9	17.9	17.9	18.1	-
1. Oil Exporters:						
Real rate of growth:						
Total GDP	6.1	7.0	9.7	6.7	7.5	10.4
Agricultural Production	2.1	1.9	1.2	0.9	2.0	3.2
Manufacturing Production	7.0	7.8	9.4	10.9	9.0	10.5
Population	2.4	2.5	2.4	3.0	2.8	3.0
GDP per capita	3.6	4.4	7.1	3.5	4.9	7.2
Gross Investment	8.6	10.1	13.8	14.5	14.7	-
Share in GNP:						
Gross Investment	17.2	20.8	22.0	23.4	24.6	-
Gross national saving	19.6	21.6	23.0	26.2	25.9	-
2. Higher-income Countries:						
Real rate of growth						
Total GDP	6.1	6.1	6.9	6.6	7.5	7.1
Agricultural Production	3.8	3.1	1.2	5.5	1.5	3.9
Manufacturing Production	8.1	8.3	8.4	7.9	11.2	10.8
Population	2.4	2.4	2.4	2.4	2.4	2.4
GDP per capita	3.6	3.6	4.4	4.1	5.0	4.5
Gross Investment	7.6	7.0	9.6	6.0	10.5	-
Share in GNP:						
Gross Investment	20.3	20.9	21.3	20.9	21.5	-
Gross National Saving	19.0	18.6	19.0	18.2	18.3	-

(continued)

(continued)

Region	1961-65	1966-70	1970	1971	1972	1973 (P)
3. Middle-income Countries						
Real rate of growth:						
Total GDP	5.7	5.7	5.8	6.6	4.8	7.7
Agricultural Production	3.9	2.5	0.8	6.5	1.8	4.7
Manufacturing Production	11.7	9.6	5.7	10.1	8.9	-
Population	2.7	2.7	2.7	2.5	2.5	2.6
GDP per capita	2.9	2.9	3.0	4.1	2.3	5.0
Gross Investment	10.3	9.5	2.1	2.4	-3.8	-
Share in GNP:						
Gross Investment	16.4	19.2	19.6	19.1	18.1	-
Gross national saving	11.5	14.2	14.8	13.9	13.5	-
4. Lower-income Countries						
Real rate of growth:						
Total GDP	3.7	4.4	4.7	1.4	-0.7	5.1
Agricultural Production	1.2	3.9	3.5	1.2	-5.2	9.5
Manufacturing Production	9.1	3.4	3.3	3.3	6.5	-
Population	2.3	2.4	2.6	2.5	2.6	2.3
GDP per capita	1.4	1.9	2.1	-1.1	-3.2	2.9
Gross investment	7.6	2.7	13.8	3.1	1.9	-
Share in GNP:						
Gross Investment	16.0	14.7	15.7	16.5	16.6	-
Gross national saving	12.9	12.0	13.7	14.0	14.6	-
B - Industrialised Countries						
Real rate of growth						
Total GDP	5.2	4.6	2.7	3.3	5.2	6.2
Agricultural Production	1.7	2.1	0.8	4.8	1.1	1.0
Manufacturing Production	6.3	5.4	1.6	1.3	6.6	9.6
Population	1.2	1.0	1.1	0.9	0.9	0.9
GDP per capita	3.9	3.6	1.7	2.4	4.2	5.3
Gross Investment	6.9	5.4	2.7	1.4	6.5	-
Share in GNP:						
Gross Investment	21.6	22.2	22.8	22.4	22.3	-
Gross national saving	22.2	22.7	23.1	22.9	22.7	-

Source : World Bank, Annual Report 1974, pp 78-79

List of developing countries included in Appendix No 4 (Table (1) and Table (2))

Africa:

Algeria, Botswana, Burundi, Cameroon, Central African Republic, Chad, Congo (People's Republic of), East African Community, Egypt (Arab Republic of), Ethiopia, Gabon, Gambia (The), Ghana, Guinea, Ivory Coast, Kenya, Lesotho, Liberia, Libya (Arab Republic of), Malagasy Republic, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Upper Volta, Zaire, Zambia.

Southern Europe:

Cyprus, Greece, Malta, Spain, Turkey, Yugoslavia.

East Asia:

China (People's Republic of), Fiji, Indonesia, Korea (Republic of), Malaysia, Philippines, Singapore, Thailand, Viêt-Nam, Khmer Republic, Laos, Papua New Guinea.

Middle East:

Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Saudia Arabia, Syria (Arab Republic of), Yemen (Arab Republic of), Yemen (People's Republic of).

South Asia:

Afganistan, Bangladesh, Burma, India, Nepal, Pakistan, Sri Lanka.

APPENDIX III

APPENDIX III

1. The Questionnaire's Limitations and the Analytical Techniques

1. The decision to utilise a 'multiple choice' questionnaire was to achieve two objectives. Firstly, it was assumed that this type of questionnaire would be easier to answer without spending undue time, which it was hoped would result in a higher return. Secondly, this type of design tends to make the task of organising and analysing the answers less difficult. Unfortunately, this was not the case for some employees. In their opinion they could not adequately express their views and make their points clear in such restricted structure.

There is some validity in their objection to the style of the questionnaire; for there is little doubt that the use of "open" questions would allow the respondents to express their ideas and views in greater depth. But this would introduce a greater problem. In the design of the questionnaire, the student considered the trade-off between a complex structure which would require considerable time and effort to complete yet would give very detailed information from the very few respondents who could find such time, with that represented by the other extreme which was to design the structure in such a way that the questions could be quickly and easily answered. This, it was expected, could produce a very high response rate but the quality of data would be lower. The aim of this study was to achieve an optimum between these two extremes. It should also be borne in mind that in some questions an "others" choice was provided to make it more flexible, also, the respondents could write and comment in the space provided if he wished to do so.

2. Many employees included in the sample were not employed yet by the organisation at the time of introducing the job evaluation plan. This situation affected the answers to questions 20-30 directly and many other questions indirectly.

3. A major limitation in the design of the questionnaire relates to the fact that there was no attempt to rank alternative choices provided in the questions according to their importance. Such deficiency has actually limited the value of some questions, question 29 for instance. A consideration in not asking the respondents to rank their choices was again to reduce the effort required to answer the questions. It was assumed that there is little doubt that such extra effort could reduce the number of respondents.

Nevertheless, in order to overcome the major part of this limitation, a real percentage (ie the number of actual respondents/the group's size) of each cell in the tables were produced for those questions which were considered to be significant.

The Analytical Techniques

A computer package, Statistical Package for the Social Sciences (SPSS), was used to store and manipulate the data generated by the questionnaire,⁽¹⁾ and it proved valuable in analysing the results. Assistance was given with the writing of a simple BASIC computer programme (BASS),⁽²⁾ which was greatly used in analysing the disseminated data of the 108 firms of the Ministry of Industry in Egypt to study the effect of organisational factors on the inter-firm differentials.

The data was analysed using the following statistical techniques to test the hypotheses:

(1) Nie, N, Bent, D H, and Hull, C H : Statistical Package for the Social Sciences (SPSS), McGraw Book Company, New York, 1970

(2) See Appendix III, Section B

1. Parametric Data:

- a. As a first phase of analysis, correlation matrix was calculated in order to know the most important independent variables which could explain the total variance in the dependent variable (net earnings).
- b. Multiple regression analysis (log quadratic model) was used with dummy variables to examine the difference in basic and net earnings existing between individual or groups of employees.
- c. Analysis of Variance (ANOVA) was also used to evaluate the importance of the effect of organisational factors on earnings differentials, particularly for the disseminated data.
- d. "t-test" was calculated to find out the significance of differences in basic and net earnings between individuals working in the same workplace, and skilled groups in plants with different types of technology.

2. Non-parametric Data:

Chi-square (χ^2), Contingency Coefficient (C), and Fisher Exact Probability Test were estimated to study the attitudes of different groups of employees in different situations towards job evaluation and their satisfaction with jobs, basic and net earnings.

Selected Statistical Tables on the Questionnaire

Table 1-a

The distribution of the net earnings among employees in the sample according to their age, educational qualifications, and sex

Age	Univ Graduates				School Graduates				None			
	Male		Female		Male		Female		Male		Female	
	Mean	No	Mean	No	Mean	No	Mean	No	Mean	No	Mean	No
	£E		£E	£E		£E		£E	£E		£E	
15 -	-	-	-	-	24.07	14	21.89	9	17.90	19	-	-
25 -	43.74	27	36.13	8	31.62	52	23.80	15	22.73	70	21.00	2
35 -	68.00	23	52.00	2	38.44	68	31.00	2	26.93	99	-	-
45 -	133.00	14	-	-	50.05	19	-	-	32.03	76	-	-
55 - 65	183.00	1	-	-	44.33	3	-	-	37.73	22	21.00	1
Aver. Mean	73.69	65	39.40	10	36.40	156	23.69	26	27.49	286	21.00	3

NB : For entire population - Mean = £E35.54, SD = £E24.48, and no of employees = 546

Young employees, who were defined as those under 25 years old, represent 7.69 per cent in general, 34.62 per cent of female S graduates, 8.97 per cent of male S graduates, and 6.64 per cent of non educated male employees

Table 2-a

The distribution of basic pay among the employees in the sample according to their age, educational qualifications and sex

Age	Univ Graduates				School Graduates				None			
	Male		Female		Male		Female		Male		Female	
	Mean	No	Mean	No	Mean	No	Mean	No	Mean	No	Mean	No
	£E		£E	£E		£E		£E	£E		£E	
15 -	-	-	-	-	16.07	14	15.78	9	14.16	19	-	-
25 -	37.11	27	32.38	8	23.90	52	21.07	15	15.84	70	16.50	2
35 -	70.26	23	46.50	2	32.22	68	32.00	2	19.96	99	-	-
45 -	117.79	14	-	-	48.26	19	-	-	25.93	76	-	-
55 - 65	150.00	1	-	-	40.00	3	-	-	33.77	22	20.00	1
Aver. Mean	67.95	65	35.20	10	30.10	156	20.08	26	21.22	286	17.67	3

Source : Computer Programme, Run Name Job Evaluation, File Bass

NB : For entire population - average mean = £E29.50, standard deviation = £E23.46, and number of employees = 546 employees

Table 3-a

Correlation Matrix : intercorrelation coefficients among all the variables which could enter into SPSS multiple regression program

	Mean	SD	Age	L Ser	Sex	MS	ND	Ed	Size	Tech	NE	BP
Age	38.26	9.97	1.00									
L Service	17.82	9.95	.79*	1.00								
Sex	.92	.25	.24	.25	1.00							
M Status	.85	.22	.37	.45	.07	1.00						
N depend.	1.35	.74	.48	.44	.10	.60*	1.00					
Educat.	.61	.72	-.17	-.30	-.22	-.09	-.17	1.00				
Size	1.61	.68	.10	.09	.01	.02	-.05	-.05	1.00			
Techn.	1.37	.68	.20	.19	.02	.03	.04	-.05	.80*	1.00		
Net earn.	35.54	24.48	(.31)	.24	(.09)	.14	(.15)	(.51)	(.09)	.08	1.00	
Basic pay	29.50	23.46	.32	.24	.07	.14	.16	.57	.04	.02	.93*	1.00

Correlation matrix was calculated in order to know the most important independent variables which could explain the total variance in the dependent variable (net earnings). First, simple correlation coefficients between each of the independent variables and dependent variable were investigated. They were found as follows: net earning correlates .51 with education, .31 with age, .24 with length of service, .15 with no of dependents, .14 with marital status, .09 with sex, .09 with size of the firm, and .08 with firm's type of technology. Since it was expected that education and age or length of service would have a significant effect, and sex, marital status, and no of dependents would have no effect, the interrelationships between these independent variables may have influences on this result. A thorough investigation has been made to control the number of the independent variables which could enter the SPSS multiple regression equation. With guidance that, preference should be given to independent variable which is highly correlated with net earnings, and choice should be made among independent variables which is highly interrelated. Consequently, as correlation coefficient between age and length of service is strong +.79, preference has given to age as net earnings is highly correlated

with it +.31 which is higher than that with length of service +.24. Similarly, no of dependants has a high correlation coefficient with marital status. Preference has given to no of dependants as net earnings is highly correlated with no of dependants +.15 than that with marital status +.14. Moreover, among organisational independent variables, size is much more important than others, particularly type of technology. As they are highly intercorrelated +.80, net earnings is highly correlated with size +.09 than that with type of technology +.08. Moreover, education and sex are important independent variables as they are highly correlated with net earnings without a high intercorrelation coefficient with other independent variables.

Table 4-a

Numerical values which were given to qualitative or factorial variables in correlation matrix (in Table 3_a- Appendix III)

Variables	Numerical Values
Sex	Female = 0, Male = 1
Marital status	Single = 0, Married = 1
No of dependants	None = 0, 1 or 2 = 1, 3 or more = 2
Education	None = 0, S. graduate = 1, U. graduate = 2
Size of firm	Small = 0, Medium = 1, Large = 2
Type of technology	Type I = 0, Type II = 1, Type III = 2

NB : Age, length of service, net earnings and basic pay are quantitative variables, and they already have continuous values.

Table 5-a

Explanation of the variables used in the regressions for 1976

Variable	Mean	Standard Deviation	Explanation
Age	38.260	9.977	Age in years
Age ²	1,563.187	791.341	Age in years squared
L service	17.822	9.956	Length of service in years
L service ²	416.576	425.791	Length of service in years squared
Grad	.137	.345	U Grad = 1, Others = 0
Grad 2	.471	.500	U & S Grad = 1, None = 0
Sex	.929	.258	Men = 1, Women = 0
Sex 2	.843	.365	Married men = 1, Others = 0
Dep	.835	.371	Dependants = 1, None = 0
Dep 2	.780	.415	Men dependants = 1, Others = 0
Sec	.716	.451	Large size = 1, Others 0
Sec 2	.888	.315	Others = 1, Small size = 0
N earn			Net earnings in £E
Log (earn)	1.497	.194	Log ₁₀ (earn)
B Pay			Basic pay in £E
Log (BP)	1.397	.226	Log ₁₀ (BP)

Note : For regression equations from 1-6 only

Although explanation of the variables in the equations is given in Table 5 a in Appendix III, variables Grad, Grad 2, Sec, and Sec 2, have a quite different meaning. This will be as follows: as dummy variable Grad has value 1 for U graduates and 0 for others, and Grad 2 has value 0 for none and 1 for both U graduates and S graduates, thus the coefficient on variable Grad can be interpreted as representing the difference between U graduates and S graduates, and the coefficient on variable Grad 2 as representing the difference between S graduates and none. Similarly, the coefficient

	Dummy variable Grad	Dummy variable Grad 2
U graduates	1	1
S graduates	0	1
None	0	0

on variable Sec can be interpreted as representing the difference between large and medium size of the firm, and Sec 2 as representing the difference between medium and small size of the firm.

	Dummy variable Sec	Dummy variable Sec 2
Large	1	1
Medium	0	1
Small	0	0

Table 5.1-a
Regression Results 1976

Independent Variable	Regressions			
	(1) Net earnings x = age		(2) Basic pay x = age	
Constant	0.88830		0.83391	
x	0.00891	(255.986)	0.00666	(2.878)
x	0.00002	(1.194)	0.00005	(1.194)
Grad	0.23254	(216.465)	0.28058	(249.093)
Grad 2	0.13707	(139.619)	0.20125	(236.355)
Sex	0.11258	(31.309)	0.07509	(10.769)
Dep	0.06691	(21.599)	0.04014	(5.677)
Sec	-0.11651	(70.219)	0.04918	(9.918)
Sec 2	0.10573	(29.447)	-0.05235	(5.718)
R ²	0.65439		0.68101	
n	546		546	

NB : - F values of the coefficients are shown in brackets

- All the variables in both equations making a statistically significant contribution to the total explained variance measured by F statistic (as $F.05 < 3.83$ and $F.01 < 6.63$).
- In comparison with others, women and single employees have markedly the lowest basic pay. These differences are still highly significant (as $F \text{ sex} = 10.769$ and $F \text{ dep} = 5.677$).

Consequently, regressions 3 and 4 will investigate the differences in pay between married men and others including married women who are treated as single ones. A new dummy variable "Sex 2" is, thus, introduced which has the value 1 for married men and 0 otherwise. The coefficient on this variable can be interpreted as representing the difference between married men and single men, and the coefficient on variable "Sex" now represents the difference between single men and both married and single women. These dummy variables take the following values for each sub-category of employees:

	Dummy variable	Dummy variable
	Sex	Sex 2
Married men	1	1
Single men	1	0
Women	0	0

Table 5.2-a
Regression Results 1976

Independent Variable	Regressions			
	(3) Net earnings x = age		(4) Basic pay x = age	
Constant	0.91831		0.86845	
x	0.00811	(5.262)	0.00573	(2.091)
X ²	0.00001	(0.036)	0.00006	(1.639)
Grad	0.23429	(217.832)	0.28259	(252.117)
Grad 2	0.13759	(139.148)	0.20185	(238.247)
Sex	0.08081	(7.825)	0.03860	(1.420)*
Sex 2	0.03007	(2.410)*	0.04486	(2.528)*
Dep	0.04848	(6.419)	0.01898	(0.783)*
Sec	-0.11596	(69.465)	0.04980	(10.194)
Sec 2	0.10472	(28.814)	-0.05351	(5.984)
R	0.65594		0.68251	
n	546		546	

* Insignificant at the .05 level ($F \leq 3.84$).

The variable Sex are dropped down by basic pay equation from 20.45 per cent to 9.29 per cent. The latter percent as representing difference between married men and single men became insignificant statistically in regression 4 ($f = 1.420$). On reverse, difference between single men and women, as in variable Sex 2, is increased in basic pay from 9.43 per cent to 10.89 per cent. In addition to that, the latter percent is with no significant statistically ($F = 2.528$). This means that job evaluation reduced the significant of these differences in basic pay, while the

differences in earnings between married and single men are still significant. Also the differences in education represented in Grad and Grad 2 are getting wider in basic pay than in net earnings (regressions 3 and 4), but they are slightly increased in both basic pay regressions 2 and 4. Similarly, Sec variable, which represents the differences between large and medium size of the firm are going up in favour of large size firms. Therefore, following these source of pay differentials further analysis is required. Hence, new dummy variable Dep 2 is introduced, which has the value 1 for men's dependants and 0 otherwise including women's dependants. Thus dummy variables Dep and Dep 2 take the following values for each sub-category employees.

	Dummy variable Dep	Dummy variable Dep 2
Men's dependants	1	1
Women's dependants	1	0
None	0	0

Thus the coefficient on the variable Dep 2 can be interpreted as representing the differences in pay between men and women dependants, and the coefficient on the variable Dep now represents pay difference between women's dependants and the employees who have none.

These differences are investigated in regressions 5 and 6 in the following table.

Table 5.3-a
Regression Results 1976

Independent Variable	Regressions			
	(5) Net earnings x = age		(6) Basic pay x = age	
Constant	0.95213		0.8856	
x	0.00872	(238.326)	0.00596	(2.242)
x ²	0.00016	(0.002)	0.00006	(1.458)
Grad	0.23609	(221.492)	0.28348	(251.752)
Grad 2	0.13714	(140.336)	0.20165	(237.367)
Sex	0.03689*	(0.772)	0.01729*	(0.133)
Sex 2	0.02747*	(1.109)	0.03929*	(1.757)
Dep	-0.00900*	(0.042)	0.00888*	(0.031)
Dep 2	0.06929*	(2.056)	0.03364*	(0.379)
Sec	-0.11500	(68.489)	0.05028	(10.354)
Sec 2	0.10392	(28.522)	0.05391	(6.063)
R ²	0.65723		0.68273	
n	546		546	

Note : Dependent variables : $Y_1 = \text{Log (earnings)}$, and $Y_2 = \text{Log (basic pay)}$

* insignificant at the .05 level ($F < 3.83$)

Moreover, as the cost of living allowances are given only to those employees whose basic pay is less than £E50 per month, further analysis is required to confirm the above mentioned hypothesis. Therefore, regressions 5 and 6 have to be applied again for the employees whose monthly earnings equal £E50 or less.

Table 5.4-a
Regression Results 1976

Independent Variable	Regressions			
	(7) Net earnings x = age		(8) Basic pay x = age	
Constant	0.98377		0.92155	
x	0.00979	(12.256)	0.00646	(3.991)
x ²	-0.00004	(1.342)	0.00003	(0.391)
Grad	0.12866	(64.464)	0.15686	(71.585)
Grad 2	0.10785	(136.782)	0.17309	(263.207)
Sex	0.03315	(1.073)*	0.01637	(0.195)
Sex 2	0.01066	(0.273)*	0.01909	(0.654)
Dep	0.00714	(0.044)*	0.00844	(0.046)
Dep 2	0.04812	(1.665)*	0.00947	(0.048)
Sec	-0.08506	(49.733)	0.09148	(42.976)
Sec 2	0.09252	(32.909)	0.06486	(12.083)
R ²	0.5178		0.60955	
n	486	486		

* Insignificant at the .05 level ($F < 3.84$).

Table 5.5-a
Multiplicative Factors : 1976 Results
(Holding age constant)

Independent Variables	Net earnings expressed as proportion of referent (7)	Basic pay expressed as proportion of referent (8)
Grad	34.49	46.85
Grad,2	28.49	84.97
Sex	7.94	3.85
Sex 2	2.64	4.49
Dep	1.88	1.95
Dep 2	11.72	2.21
Sec	-21.65	23.45
Sec 2	23.73	16.12

Consequently, this result confirms the said hypothesis as all coefficients on personal dummy variables are not significant statistically, except on education variables. This means that Egyptian job evaluation plans fairly succeeded to reduce, but not eliminate, sex differentials which still high without significant. On the contrary, Egyptian job evaluation widens the inter-personal differentials on the basis of education as it was given over-weights on wage settlement process.

Table 6-a
Permanent and temporary jobs in
Egyptian public industrial sector in 1974

	Non-manual			Manual			Others		Total
	Permanent	Temporary	%	Permanent	Temporary	%		%	
Textile	29420	-	-	211865	771	0.36	31817	11.62	273873
Food	13974	553	3.81	53998	7202	11.77	3102	3.94	78829
Chemical	7669	191	2.43	36044	1725	4.57	2952	6.08	48581
Metal	13273	586	4.22	71067	4311	5.72	10134	10.20	99371
Mineral	1625	-	-	5906	90	1.50	403	5.02	8024
Total	665961	1330	2.02	378880	14099	3.72	48408	9.52	508678

NB 1 - Industrial report includes only industries which are under control and supervision of the Ministr of Industry and Mining

2 - Other employees group refers to conscripted employees whose jobs should be kept for them until their demobilisation

3 - Generally, temporary employees are 12.55 per cent including other workers.

Source : The Ministry of Industry and Mining : Report of achievements and business results of the industrial sector and mineral wealth in 1975, Vol 2, 1976, pp 13-18

Table 7-a

The annual graduates of Egyptian
schools and universities in 1973/74

	Graduates				
	Total	Male		Female	
			%		%
<u>Initiatory schools:</u>					
Primary	653,310	405,052	62	248,258	38
Preparatory	366,567	241,934	66	124,633	34
<u>Secondary schools:</u>					
1. university preparation:					
Arts	36,918	23,022	62	13,896	38
Sciences	87,340	64,001	73	23,339	27
2. market preparation:					
Commerce	47,517	23,843	50	23,673	50
Engineering	23,230	23,230	100	-	-
Agriculture	9,317	9,317	100	-	-
<u>Training schools & colleges</u>	7,807	4,450	57	3,357	43
<u>Universities:</u>					
Humanities faculties	20,349	13,023	64	7,326	36
Sciences faculties	36,314	28,688	79	7,626	21

NB : Training schools and colleges include: home economics, physical training, tourism and hotels, music, fine and applied arts, languages, social work, secretary, commerce, industry and agriculture. Some of these activities are specified only for females, while in most of the others female students are dominant.

Source : CAPMS : Statistical Yearbook, AR Egypt 1952-74, CAPMS, October 1975, pp 145-171

Table 8-a

Male and female attendance of training programmes
specified for their promotion to senior jobs or occupations

	Sample's Employees	Training Attendance					
		Total		Male		Female	
			%		%		%
Managerial	135	73	54.07	73	100	-	-
Professional	52	-	-	-	-	-	-
Clerical	79	7	8.86	7	100	-	-
D manual	145	97	66.90	95	97.93	2	2.06
Ind manual	135	50	37.04	50	100	-	-
Total	546	227	41.58	225	99.12	2	0.88

NB : There was no training programmes for professional group of
employees such as accountants

Source : SPSS Programme

Table 9-a

The distribution of the employees who intend to move elsewhere according to their main group jobs, age, and sex

	Young						Old						Total					
	Male		Female		S Total		Male		Female		S Total		Male		Female		G Total	
		%		%		%		%		%		%		%		%		%
Managerial	-	-	-	-	-	-	38	28.4	1	100	39	28.9	38	28.4	1	100	39	28.9
Professional	1	100	-	-	1	100	29	76.3	11	84.6	40	78.4	30	76.9	11	84.6	41	78.9
Clerical	5	71.4	3	33.3	8	50.0	15	30.6	6	42.9	21	33.3	20	35.7	9	39.1	29	36.7
D manual	7	41.2	-	-	7	41.2	39	31.0	0	0.0	39	30.5	46	32.2	-	-	46	31.7
Ind manual	6	75.0	-	-	6	75.0	85	66.9	-	-	85	66.9	91	67.4	-	-	91	67.4
Total	19	57.6	3	33.3	22	52.4	206	43.5	18	60.0	224	47.3	225	44.4	21	53.9	246	45.1

Source : SPSS Programme

- Generally, intended mobility is higher among young employees than older employees, and among women than men.
- Young men will have higher mobility than young women.
- Old women will have higher mobility than old men, and young women.

NB These percentages are the outcome of proportionating the above figures to its total shown in Table 10-a in this Appendix III.

Table 10-a

The distribution of the employees in the sample according to their age, sex, and main group jobs or occupation

	Young						Old						Total					
	Male		Female		S Total		Male		Female		S Total		Male		Female		G Total	
		%		%		%		%		%		%		%		%		%
Managerial	-	-	-	-	-	-	134	99.3	1	0.7	135	100	134	99.3	1	0.7	135	
Professional	1	100	-	-	1	2.0	38	74.5	13	25.5	51	98.1	39	75.0	13	25.0	52	
Clerical	7	43.8	9	56.2	16	20.3	49	77.8	14	22.2	63	79.7	56	70.9	23	29.1	79	
D manual	17	100	-	-	17	11.7	126	98.4	2	1.6	128	88.3	143	98.6	2	1.4	145	
Ind manual	8	100	-	-	8	5.9	127	100	-	-	127	94.1	135	100	-	-	135	
Total	33	78.6	9	21.4	42	7.7	474	94.0	30	6.0	504	92.3	507	92.9	39	7.1	546	

Source : SP SS Programme

NB young employees are those under 25 years old

Table 11-a

The distribution of the employees who intend to move elsewhere according to their main group of jobs, sex, and marital status

	Single				Married				Total					
	Male		Female		Male		Female		Male		Female		G Total	
		%		%		%		%		%		%		%
Managerial	3	50.0	-	-	35	27.3	1	100	36	29.5	1	100	39	28.9
Professional	7	100	1	100	23	71.9	10	83.3	33	75.0	11	84.6	41	78.9
Clerical	5	71.4	3	50.0	15	30.6	6	35.3	21	31.8	9	39.1	29	36.7
D manual	11	61.1	-	-	35	28.0	0	0.0	35	27.6	-	-	46	31.7
Ind manual	8	88.9	-	-	83	65.9	-	-	83	65.9	-	-	91	67.4
Total	34	72.3	4	57.1	191	41.5	17	53.1	208	42.3	21	53.9	246	45.1

Source : SPSS Programme

Intention for mobility was found higher among:

- single men than single women
- married women than married men
- single women than married women
- single employees than married ones, in general

Table 12-a

The distribution of male and female employees in the sample
according to their satisfaction with their jobs

	Job Satisfaction								Total	
	Dis		S Dis		S Sat		Sat			
		%		%		%		%		%
Male	43	8.48	141	27.81	222	43.79	101	19.92	507	92.86
Female	1	2.56	11	28.21	17	43.59	10	25.64	39	7.14
Total	44	8.06	152	27.84	239	43.77	111	20.33	546	100

NB : - Chi square (x^2 calc.) = 2.155, Cont.coef. = 0.0627

- Since x^2 calculated is less than 7.815, the value of x^2 statistic at the level of significance 0.05 for 3 degree of freedom, the null hypothesis has to be accepted. Thus the differences between female and male employees in the satisfaction with their jobs or occupations are insignificant, and hence they are often alike in their job satisfaction.

Source : SPSS Programme

Table 13-a

The distribution of male and female employees in the sample according to their satisfaction with the existing JE plan

	Satisfaction with JE Plan								Total	
	Dis		S Dis		S Sat		Sat			
		%		%		%		%		%
Male	23	8.95	52	20.23	96	37.35	86	33.46	257	93.12
Female	0	0.00	3	15.78	11	57.89	5	26.32	19	6.88
Total	23	8.33	55	19.93	107	38.77	91	32.97	276	100

NB : - Chi square (x^2 calc) = 4.066, degree of freedom = 3 and contingency coefficient = 0.086

- As x^2 calculated is less than 7.815, the value of x^2 statistic at 0.05 level for 3 degree of freedom, the null hypothesis has not to be rejected. Thus the differences in the satisfaction with the existing job evaluation plan between men and women are not significant.

Source : SPSS Programme

Table 14-a

The distribution of female and male employees
in the sample according to the satisfaction with their net earnings

	Satisfaction with the net earnings								Total	
	Dis		S Dis		S Sat		Sat			
		%		%		%		%		%
Male	50	9.86	184	36.29	185	36.49	88	17.36	507	92.86
Female	3	7.69	10	25.64	17	43.59	9	23.08	39	7.14
Total	53	9.71	194	35.53	202	37.00	97	17.77	546	100

NB : - Chi square (x^2 calc) = 2.4939, degree of freedom = 3, and contingency coefficient = 0.0674

- The null hypothesis has to be accepted as x^2 calculated is less than 7.815, the value of x^2 statistic at the level of significance 0.05 for 3 degree of freedom. Thus the differences between men and women in the satisfaction with their net earnings are insignificant, and hence both of them have about the same feeling about their net earnings.

Source : SPSS Programme

Table 15-a

The distribution of male and female employees in the sample in accordance with the satisfaction with their basic pay

	Satisfaction with basic pay								Total	
	Dis		S Dis		S Sat		Sat			
		%		%		%		%		%
Male	158	31.16	231	45.56	100	19.72	18	3.55	507	92.86
Female	10	25.64	15	38.46	13	33.33	1	2.56	39	7.14
Total	168	30.77	246	45.06	113	20.70	19	3.48	546	100

NB : - Chi square (x^2 calc.) = 4.110, degree of freedom = 3 and contingency coefficient = 0.086

- The differences between men and women in the satisfaction with their basic pay are not significant, as the null hypothesis does not rejected. This is because x^2 calculated does not exceed 7.815, the value of x^2 statistic at 0.05 level of significance for 3 degree of freedom.

Source : SPSS Programme

Table 16-a

Female satisfaction with their job and basic pay

Sat. with	Dis		S Dis		S Sat		Sat		Total
		%		%		%		%	
Job	1	2.56	11	28.21	17	43.59	10	25.64	39
Basic pay	10	25.64	15	38.46	13	33.33	1	2.56	39
Total	11	-	26	-	30	-	11	-	78

NB : - Chi square (χ^2 calc) = 15.876, degree of freedom = 3, contingency coefficient = 0.411

- Since χ^2 calculated exceeds 7.815, the value of χ^2 statistic at 0.05 level of significance for 3 degrees of freedom, the null hypothesis has to be rejected. Thus the difference in female satisfaction with their job and pay are significant, and hence they are more satisfied with their jobs rather than their pay.

Source : SPSS Programme

Table 17-a

Attendance of official trade unions' meetings

	Male				Female			Total
	Single	Married	S Total	Single	Married	S Total		
	%	%	%	%	%	%		
Managerial	2	82	84	-	0	0	84	
	33.3	64.1	62.7	-	0.0	0.0	62.2	
Professional	0	4	4	0	0	0	4	
	0.0	12.5	10.3	0.0	0.0	0.0	7.7	
Clerical	5	29	34	2	3	5	39	
	71.4	59.2	60.7	33.3	17.6	21.7	49.4	
D manual	14	75	89	-	(2)	(2)	91	
	77.8	60.0	62.2	-	100*	100*	62.8	
Ind manual	7	81	88	-	-	-	88	
	77.8	64.3	65.2	-	-	-	65.2	
Total	28	271	299	2	5	7	306	
	59.6	58.9	59.0	28.6	15.6	17.9	56.1	

Source : SPSS Programme

* Unreliable percentage as the total number of married women in this cell is very small

Table 18-a

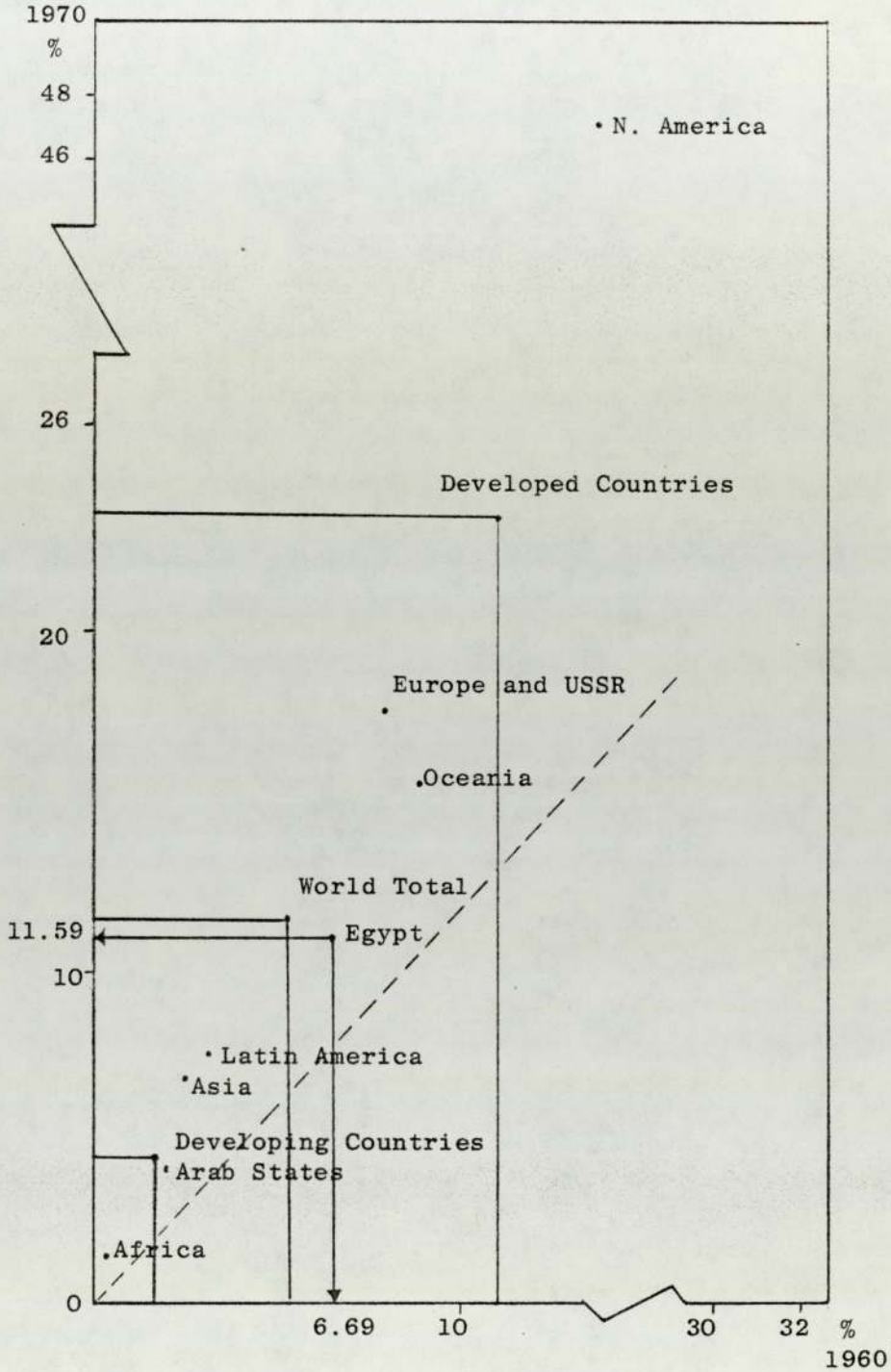
The distribution of the employees in the sample according to their sex, main group of jobs or occupations, and the level of education.

	Univ Grad				Modest Educ				None				Total				
	Male		Female		Male		Female		Male		Female			S Total			
		%		%		%		%		%		%			%		
Managerial	46	97.9	1	2.1	53	100	-	-	53	39.3	35	100	-	-	35	25.9	135
Professional	19	67.9	9	32.1	20	83.3	4	16.7	24	46.2	-	-	-	-	-	-	52
Clerical	-	-	-	-	21	48.8	22	21.2	43	54.4	35	97.2	1	2.8	46	45.6	79
D manual	-	-	-	-	24	100	-	-	24	16.6	119	98.3	2	1.7	121	83.4	145
Ind manual	-	-	-	-	38	100	-	-	38	28.1	97	100	-	-	97	71.9	135
Total	65	86.7	10	13.3	156	85.7	26	14.3	182	33.3	286	99.0	3	1.0	289	52.9	546

Source : SPSS Programme

Figure No 1

Students as percentage of population aged 20-24 (1960-70)



Source : UNESCO, Statistical Yearbook 1974, the Unesco Press, 1975, Paris, p 299

	Egyptian Students 20-24	Egyptian Population 20-24	%
1960	124,951	1,866,150	6.69
1970	276,179	2,383,023	11.59

Source : CAPMS : Statistical Yearbook, op cit, pp 157-171

Selected Statistical Tables on the Questionnaire

ANOVA for Table 10.1

In order to perform the analysis of variance test, the calculation of the Sum of Squares (SS) is required for the total (SST), between groups (SSTr), and within groups (SSE).

$$\begin{aligned} \text{Total (SST)} &= \text{the total variance (N-1)} \\ &= 6915.93 (108-1) \\ &= 740004.51 \end{aligned}$$

$$\begin{aligned} \text{Between (SSTr)} &= \text{the total variance of each group (n-1)} \\ &= 686.56 (3-1) + 6790.06 (10-1) + 6919.90 (95-1) \\ &= 712954.26 \end{aligned}$$

$$\text{Total} = \text{Between} + \text{Within}$$

$$\begin{aligned} \text{Within (SSE)} &= \text{Total} - \text{Between} \\ &= 740004.51 - 712954.26 \\ &= 27050.25 \end{aligned}$$

ANOVA Table 1-b

Source of Variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio (MS ₁ ÷MS ₂) F
1. Between groups	2	712954.26	356477.13	
2. Within groups	106	27050.25	255.19	1396.91*
Total	108	740004.51	-	-

*Significant at the .01 level, as F calculated value of 1396.91 exceeds 4.79 the value of F.01 with 2 and 106 df

Evaluation factors of firms levels

(Confirmed by the Prime Minister on 26/10/1963)

1. Net assets
2. Investments
3. Production value
4. Added value
5. Number of employees

(The 100 points have to be divided among these factors, and
this was left to the discretion of industrial sector officials)

Evaluation Table 2-b

(Accepted by the executive council of industry)

Points Grades	Firms Levels	Basic Pay	Representation lieu	Total
Less than 25	8	1200	600	1800
25 - 34	7	1350	650	2000
35 - 49	6	1500	700	2200
50 - 64	5	1650	750	2400
65 - 74	4	1800	800	2600
75 - 84	3	1900	1100	3000
85 - 89	2	2000	1500	3500
90 and over	1	2000	2000	4000

Source : Central Agency for Public Organisation and Management, Rules and Regulations of Job Re-evaluation, CAPOM, Cairo, 1966, p 17

Table 3-b

Objective measurements as a basis for incentive group bonus

Factors	Formulas	Points*	
		Part	Total
1. Production	Actual production/target		30
2. Sales:			10
a - Sales target	Actual sales/target	7	
b - Finished stock	Finished stock to sales 75/74	3	
3. Exports	Actual exports (FOB)/ target		10
4. Manpower & Wages			10
a - Wage production ratio	Wage production ratio 75/74	5	
b - Employee's productivity	Employee's productivity 75/74	3	
c - Absenteeism	Absenteeism 75/74	2	
5. Cost reduction	Cost to production 75/74		10
6. Added value:			20
a - By objective	Actual added value/target	10	
b - By time	Actual added value 75/74	10	
7. Investments	Amount of investments		10
Total	-	-	100

Source : MIMW : Report of achievement and business results of industrial sector and mineral wealth in 1975, Vol 1, op cit, pp 71-77

*Points allocation within each factor and sub-factor

<u>Factors</u>	<u>Grades</u>	<u>Points</u>
1. Production	100% - 104%	15
	105% - 109%	21
	110% - 114%	24
	115% - 119%	27
	120% and over	30

<u>Factors</u>	<u>Grades</u>	<u>Points</u>
2. Sales:		
a - Sales target	100% - 104%	3
	105% - 109%	4
	110% - 114%	5
	115% - 119%	6
	120% and over	7
b - Finished stock	Less than 90%	3
	91% - 95%	2
	96% - 100%	1
3. Exports	100% and over	Full
	90% - 100%	Partial
	Less than 90%	0
(Actual value of exports in £E)		
	200 or less	1
	201 - 600	2
	601 - 800	3
	801 -1000	4
	1001 -1200	5
	1201 -1400	6
	1401 -1600	7
	1601 -1800	8
	1801 -2000	9
	More than 2000	10
4. Manpower & Wages:		
a - Wage/Production ratio	90% or less	5
	91% - 84%	4
	95% - 96%	3
	97% -100%	2
	More than 100%	0
b - Employee's productivity	100% - 104%	1
	105% - 110%	2
	111% and over	3

<u>Factors</u>	<u>Grades</u>	<u>Points</u>
c - Absenteeism	90% or less	2
	91% - 100%	1
	More than 100%	0
5. Cost reduction	4% or less	5
	5% - 9%	6
	10% - 14%	7
	15% - 19%	8
	20% - 25%	9
	More than 25%	10
6. Added Value:		
a - By objective	100% - 104%	3
	105% - 109%	5
	110% - 114%	7
	115% - 119%	9
	120% and over	10
b - By time (the same grades and points as above in a)		
7. Invements (000£E)	500 or less	1
	501 - 1000	2
	1001 - 1500	3
	1501 - 2000	4
	2001 - 2500	5
	2501 - 3000	6
	3001 - 3500	7
	3501 - 4000	8
	4001 - 5000	9
	5001 and over	10

ANOVA for Table 10.6

Sum of squares:

$$\text{Total (SST)} = 3371.73 (108-1)$$

$$= 360775.11$$

$$\text{Between (SSTr)} = 551.67 (3-1) + 6075.67 (10-1) + 2557.73 (95-1)$$

$$= 1103.34 + 54681.03 + 240426.62$$

$$= 296210.99$$

$$\text{Within (SSE)} = \text{Total} - \text{Between}$$

$$= 360775.11 - 296210.99$$

$$= 64564.12$$

ANOVA Table 4-b

Source of Variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio ($MS_1 \div MS_2$) F
1. Between groups	2	296210.99	148105.49	
2. Within groups	106	64564.12	609.10	243.15*
Total	108	360775.11	-	-

*Significant at the .01 level, as F. calculated value of 243.15 exceeds 4.79 the value of F.01 with 2 and 106 df

Analysis of variance for Table 10.7

Table 5-b

Insurance - types by size of firms, 1975

Size of firm	No of firms	No of employees	Insurance mean £E	SD	Variance
Less than 500	3	823	53.46	15.01	225.50
500 - 1000	10	7885	67.46	38.05	1448.56
1000 & over	95	484917	53.71	23.28	542.32
Total	108	493625	53.93	27.10	734.74

Sum of Squares:

$$\text{Total (SST)} = 734.74 (108-1)$$

$$= 78617.18$$

$$\text{Between (SSTr)} = 225.50 (3-1) + 1448.56 (10-1) + 542.32 (95-1)$$

$$= 451.00 + 13037.04 + 50978.08$$

$$= 64466.12$$

$$\text{Within (SSE)} = \text{Total} - \text{Between}$$

$$= 78617.18 - 64466.12$$

$$= 14151.06$$

ANOVA Table 6-b

Source of variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio ($\frac{MS_1}{MS_2}$) F*
1. Between	2	64466.12	32233.06	
2. Within	106	14151.06	133.50	241.45
Total	108	78617.18	-	-

*Significant at the .01 level, as 241.45 exceeds 4.79 the value of F.01

with 2 and 106 degrees of freedom

Table 7-b

Kind of benefits by size of firms, 1975

Size of firm	No of firms	No of employees	Kind Benefits £E	SD	Variance
Less than 500	3	823	20.65	7.67	58.92
500 - 1000	10	7885	41.34	17.64	311.44
1000 and over	95	484917	23.58	21.64	468.52
Total	108	493625	23.86	23.07	532.47

Sum of Squares:

$$\text{Total (SST)} = 532.47 (108-1)$$

$$= 56974.29$$

$$\text{Between (SSTr)} = 58.92 (3-1) + 311.44 (10-1) + 468.52 (95-1)$$

$$= 117.84 + 2802.92 + 44040.88$$

$$= 46961.68$$

$$\text{Within (SSE)} = \text{Total} - \text{Between}$$

$$= 56974.29 - 46961.68$$

$$= 10012.61$$

ANOVA Table 8-b

Source of variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio (MS ₁ ÷MS ₂) F*
1. Between	2	46961.68	23480.84	
2. Within	106	10021.61	94.46	248.58
Total	108	56974.29	-	-

*Significant at the .01 level, as 248.58 exceeds 4.79 the value of F.01

with 2 and 106 degrees of freedom

Analysis of variance for Table 10.12

Sum of Squares:

$$\begin{aligned} \text{Total (SST)} &= .010 (108-1) \\ &= 1.07 \end{aligned}$$

$$\begin{aligned} \text{Between (SSTr)} &= .004 (3-1) + .014 (10-1) + .004 (95-1) \\ &= .008 \quad + .126 \quad + .376 \\ &= .51 \end{aligned}$$

$$\begin{aligned} \text{Within (SSE)} &= \text{Total} - \text{Between} \\ &= 1.07 - .51 \\ &= .56 \end{aligned}$$

ANOVA Table 9-b

Source of variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio (MS ₁ ÷MS ₂) F*
1. Between	2	.51	.25500	
2. Within	106	.56	.00528	48.296
Total	108	1.07	-	-

*Significant at the .01 level as 48.296 exceeds 4.79 the value of F.01 with 2 and 106 degrees of freedom

Table 10-b

The distribution of white and blue-collar workers attending the official
TU meetings according to the size of firm

Size of firm	White-collar			Blue-collar			Total		
	No	Attendance	%	No	Attendance	%	No	Attendance	%
Less than 500	7	0	0.0	40	0	0.0	47	0	0.0
500 - 1000	18	6	33.3	43	32	74.4	61	38	62.3
1000 and over	54	33	61.1	197	147	74.6	251	180	71.7
Total	79	39	49.4	280	179	63.9	359	218	60.7

Source : SPSS Programme

Analysis of variance of Table 10.13

Sum of Squares:

$$\begin{aligned} \text{Total (SST)} &= 6915.93 (108-1) \\ &= 740004.51 \end{aligned}$$

$$\begin{aligned} \text{Between (SSTr)} &= 6376.96 (56-1) + 5332.34 (31-1) + 1911.34 (8-1) + \\ &\quad 400.25 (2-1) + 18855.80 (7-1) + 226.84 (2-1) + 4303.62 (2-1) \\ &= 350732.80 + 159970.20 + 13379.38 + 400.25 + 113134.80 + \\ &\quad 226.84 + 4303.62 \\ &= 642147.87 \end{aligned}$$

$$\begin{aligned} \text{Within (SSE)} &= \text{Total} - \text{Between} \\ &= 740004.51 - 642147.87 \\ &= 97856.64 \end{aligned}$$

ANOVA Table 11-b

Source of variance	Degree of freedom df	Sum of Squares of deviations SS	Mean Squares (SS÷df) MS	Variation Ratio (MS ₁ ÷MS ₂) F*
1. Between	2	642147.87	321073.93	
2. Within	106	97856.64	923.18	347.79
Total	108	740004.51	-	-

*Significant at the .01 level as 347.79 exceeds the value of F.01 with 2 and 106 degrees of freedom

ANOVA for Table 10.2

Sum of Squares:

$$\begin{aligned} \text{Total (SST)} &= .001 (108-1) \\ &= .107 \end{aligned}$$

$$\begin{aligned} \text{Between (SSTr)} &= .074 (3-1) + .004 (10-1) + .001 (95-1) \\ &= .148 \quad + .036 \quad + .094 \\ &= .278 \end{aligned}$$

$$\begin{aligned} \text{Within (SSE)} &= \text{Total} - \text{Between} \\ &= .107 - .278 \\ &= -.171 \end{aligned}$$

ANOVA Table 12-b

Source of Variance	Degree of freedom df	Sum of Square of deviations SS	Mean Squares $\frac{SS}{df}$ MS	Variation Ratio $\frac{MS_1}{F^* MS_2}$
Between	2	.278	.1390	86.875
Within	106	-.171	.0016	
Total	108	.107	-	

* Significant at the .01 level as 86.875 exceeds 4.79 the value of $F_{.01}$ with 2 and 106 degrees of freedom.

Selected Statistical Tables on the Questionnaire

Table 1-c

Machine operators' satisfaction with their jobs
in plants with different types of technology*

Types of technology	All Job Satisfaction				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	17	19.10	72	80.89	89
II	25	44.64	31	55.35	56
Total	42	28.96	103	71.03	145

Source : SPSS Programme

Chi-square (χ^2 calc) = 10.8996 with one df

* Significant at the level of .01, as it exceeds the value of χ^2 stat (6.635)

Contingency coefficient (c) = 0.2644

Significant at the level of .001

Statistical Analysis:

A superficial glance at the table shows that machine operators in plants with a Type II technology are more dissatisfied with their jobs than those in plants with Type I and III technologies. To know how much the significance of this result χ^2 and c should be tested.

As the value obtained for χ^2 (10.8996) exceeds $\chi^2_{.01}$ (6.635) for one degree of freedom, these differences are significant.

Testing C (.2644), we may determine that $\chi^2 \gg 10.8996$ with df = 1 has probability of occurrence under H_0 of less than .001. Thus we could reject H_0 at the .001 level of significance, and conclude that there is a dependence (or relationship) between operators' job satisfaction and type of technology. That is, we conclude that c = 0.2644 is significantly different from zero.

Table 2-c

Types of technology and job satisfaction for unskilled operators*

Types of technology	US Job Satisfaction				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	0	00.00	10	100.00	10
II	11	52.38	10	47.62	21
Total	11	35.48	20	64.52	31

Source : SPSS Programme

Chi-square (x^2) = 5.9922 with one df

*Significance = .0144, and hence significant at the .05 level

Contingency coefficient (c) = 0.4025

Significant at the .02 level

Comments : Hypothesis No 1 in technology is thus strongly confirmed for unskilled operators.

Table 3-c

Types of technology and job satisfaction for semi-skilled operators

Types of technology	SS Job Satisfaction				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	9	19.15	38	80.85	47
II	7	41.17	10	58.82	17
Total	16	25.00	48	75.00	64

Source : SPSS Programme

Chi-square (x^2) = 2.1627

Significance = .1414, and hence insignificant at the .05 level

Contingency coefficient (c) = 0.1808

Comments : Hypothesis 1 in technology is just rejected for semi-skilled.

Table 4-c

Types of technology and job satisfaction for skilled operators

Types of technology	SK Job Satisfaction				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	8	25.00	24	75.00	32
II	7	38.89	11	61.11	18
Total	15	30.00	35	70.00	50

Source : SPSS Programme

Chi-square (χ^2) = 0.5002 with one dfInsignificant at the .05 level, as the value of χ^2 stat (3.841) exceeds it

Contingency coefficient = 0.0995

Comments : Hypothesis 1 in technology is strongly rejected for skilled operators.

NB : Degrees of job satisfaction are reduced to two degrees to avoid the confusion over χ^2 and c values, as 'Cochran' recommends that, for χ^2 tests with df larger than 1, fewer than 20 per cent of the cells should have an expected frequency of less than 5, and no cell should have an expected frequency of less than 1

(See Siegal, S : Nonparametric Statistics, op cit, p 178)

Table 5-c

Machine operators' satisfaction with the existing
job evaluation in plants with different types of technology

Types of technology	Satisfaction with JE Plan				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	22	37.93	36	62.07	58
II	16	47.06	18	52.94	34
Total	38	41.30	54	58.69	92

Source : SPSS Programme

Chi-square (χ^2) = 0.7393 with one df

Insignificant at the .05 level, as the value of χ^2 stat (3.841) exceeds it

Contingency coefficient (c) = 0.0892

Comments : Although machine operators in plants with Type II technology express a higher dissatisfaction with JE plan than those in plants with Type I & III technologies, this result is with no significance. Since χ^2 (0.7393) is less than $\chi^2_{.05}$ (3.841), hypothesis 2 in technology is strongly rejected for them.

Table 6-c

Types of technology and satisfaction with
JE plan for unskilled operators

Types of technology	US Satisfaction with JE				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	2	100.00	0	0.00	2
II	1	25.00	3	75.00	4
Total	3	50.00	3	50.00	6

Source : SPSS Programme

Fisher exact test (p) = 0.2000

Insignificant at the .05 level (one tailed), and at the .10 level (two tailed)

Contingency coefficient = 0.57735

Significance of the results:

In table of critical value of D (or C) in the Fisher test,

			I&III	II		
A	B	A+B	Dis.	2	1	3
C	D	C+D	Sat.	0	3	3
A+C	B+D					

the value of D = 0 at the .05 level (one tailed, and at the .10 (two tailed). Since the observed value of D = 3 is more than the critical value of D = 0, then the observed data are insignificant at the .10 level. This agrees with the Fisher exact probability P = 0.2000.

Table 7-c

Types of technology and satisfaction with JE plan for
semi-skilled operators

Types of technology	SS Satisfaction with JE Plan				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	14	51.85	13	48.15	27
II	7	50.00	7	50.00	14
Total	21	51.22	20	48.78	41

Source : SPSS Programme

Chi-square (x^2) = 0.04707 with one df

Insignificant at the .05 level, as the value of x^2 stat (3.841) exceeds it

Contingency coefficient = 0.03386

Table 8-c

Types of technology and satisfaction with JE plan
for skilled operators*

Types of technology	SK Satisfaction with JE Plan				Total
	Dissatisfied		Satisfied		
		%		%	
I & III	6	20.69	23	79.31	29
II	8	50.00	8	50.00	16
Total	14	31.11	31	68.89	45

Source : SPSS Programme

Chi-square (x^2) = 4.1266 with one df

*Significant at the .05 level, as it exceeds the value of x^2 stat (3.841)

Contingency coefficient = 0.2898

Comments : this confirms the hypothesis 2 in technology

Table 9-c

Analysis of variance for basic wage
of skilled operators groups in different types of technology

	N	Sum	Mean	SD	Sum of SQ
<u>For Skilled Groups:</u>					
Unskilled	31	425.000	13.710	1.006	30.387
Semi-skilled	64	1117.000	17.453	1.321	109.859
Skilled	50	1272.000	25.440	4.296	904.320
Total	145	2814.000	19.407	5.346	1044.566
<u>For Types of Techn:</u>					
I & III	89	1785.000	20.056	4.528	2688.719
II	56	1029.000	18.375	4.916	1329.125
Total	145	2814.000	19.407	5.346	4017.844

ANOVA TABLE

	df	Sum of SQ	Mean SQ	Variation ratio "F"
<u>For Skilled Groups:</u>				
Between groups	2	3070.4266	1535.2133	208.6993*
Within groups	142	1044.5665	7.3561	
Total	144	4114.9931		
<u>For Types of Techn:</u>				
Between groups	1	97.1490	97.1490	3.4577**
Within groups	143	4017.8441	28.0968	
Total	144	4114.9931		

Source : SPSS Programme

*Significant at the .01 level with 2 and 142 df (F = 4.61)

**Insignificant at the .05 level with 1 and 143 df (F = 3.84)

Table 10-c

Analysis of variance for net earnings
of skilled operators groups in different types of technology

	N	Sum	Mean	SD	Sum of SQ
<u>For Skilled Groups:</u>					
Unskilled	31	627.000	20.226	4.334	563.430
Semi-skilled	64	1639.000	25.609	4.177	1099.224
Skilled	50	1718.000	34.360	6.977	2385.518
Total	145	3584.000	27.476	7.578	4048.172
<u>For Types of Techn:</u>					
I & III	89	2340.000	26.292	6.008	3176.404
II	56	1244.000	29.357	9.314	4770.857
Total	145	3584.000	27.476	7.578	7947.262

ANOVA TABLE

	df	Sum of SQ	Mean SQ	Variation ratio "F"
<u>For Skilled Groups:</u>				
Between groups	2	4221.9935	2110.9967	74.0485*
Within groups	142	4048.1720	28.5083	
Total	144	8270.1655		
<u>For Type of Techn:</u>				
Between groups	1	322.9039	322.9039	5.8102**
Within groups	143	7947.2616	55.5733	
Total	144	8270.1655		

Source : SPSS Programme

*Significant at the .01 level with 2 and 142 df (F = 4.61)

**Significant at the .05 level with 1 and 143 df (F = 3.84)

Table 11-c

Same workers as a reference groups for skilled operators groups
working in plants with different types of technology

Type of technology	Comparisons with the same workers						Total	
	US		SS		SK			
		%		%		%		%
I & III	10	100.0	46	97.9	4	12.5	60	67.4
II	14	66.7	12	70.6	18	100.0	44	78.6
Total	24	77.4	58	90.6	22	44.0	104	71.7

Source : SPSS Programme

Chi-square (χ^2) = 27.7002

Significant at the .01 level (as $\chi^2 = 9.210$ with 2 df)

Contingency coefficient = 0.4586

Table 12-c

Other manual workers as a reference group for skilled operators groups
working in plants with different types of technology

Type of technology	Comparisons with other manual						Total	
	US		SS		SK			
I & III	10	100.0	35	74.5	11	34.4	56	62.9
II	18	85.7	17	100.0	11	61.1	46	82.1
Total	28	90.3	52	81.3	22	44.0	102	70.3

Source : SPSS Programme

Chi-square (χ^2) = 7.2125

Significant at the .05 level (as $\chi^2 = 5.991$ with 2 df)

Contingency coefficient = 0.2570

Table 13-c

Clerical workers as a reference group for skilled operators groups
working in plants with different types of technology

Type of technology	Comparisons with clerical workers						Total	
	US		SS		SK			
		%		%		%		%
I & III	6	60.0	28	59.6	16	50.0	50	56.2
II	14	66.7	9	52.9	1	5.6	24	42.9
Total	20	64.5	37	57.8	17	34.0	74	51.0

Source : SPSS Programme

Chi-square (x^2) = 19.3732

Significant at the .01 level (as x^2 .01 = 9.210 with 2 df)

Contingency coefficient = 0.4555

Table 14-c

Professionals as a reference group for skilled operators groups
working in plants with different types of technology

Type of technology	Comparisons with professionals						Total	
	US		SS		SK			
		%		%		%		%
I & III	2	20.0	8	17.0	28	87.5	38	42.7
II	13	61.9	10	58.8	10	55.6	33	58.9
Total	15	48.4	18	28.1	38	76.0	71	49.0

Source : SPSS Programme

Chi-square (x^2) = 16.4848

Significant at the .01 level (as x^2 .01 = 9.210 with 2 df)

Contingency coefficient = 0.4341

Table 15-c

Managerial employees as a reference group for skilled operators groups
working in plants with different types of technology

Type of technology	Comparison with managerial employees						Total	
	US		SS		SK			
I & III	5	50.0	11	23.4	29	90.6	45	50.6
II	17	81.0	10	58.8	9	50.0	36	64.3
Total	22	71.0	21	32.8	38	76.0	81	55.9

Source : SPSS Programme

Chi-square (x^2) = 16.2821

Significant at the .01 level (as $x^2_{.01} = 9.210$ with 2 df)

Contingency coefficient = 0.4091

Table 16-c

Plant level of comparisons for skilled operators groups
working in plants with different types of technology

Type of technology	Plant Comparisons						Total	
	US		SS		SK			
		%		%		%		%
I & III	10	100.0	45	95.7	22	68.8	77	86.5
II	18	85.7	10	58.8	2	11.1	30	53.6
Total	28	90.3	55	85.9	24	48.0	107	73.8

Source : SPSS Programme

Chi-square (x^2) = 25.1916

Significant at the .01 level (as $x^2_{.01} = 9.210$ with 2 df)

Contingency coefficient = 0.4365

Table 17-c

Company level of comparisons for skilled operators groups
working in plants with different types of technology

Type of technology	Company Comparisons						Total	
	US		SS		SK			
		%		%		%		%
I & III	10	100.0	46	97.9	32	100.0	88	98.9
II	18	85.7	8	47.1	6	33.3	32	57.1
Total	28	90.3	54	84.4	38	76.0	120	82.8

Source : SPSS Programme

Chi-square (x^2) = 26.2237

Significant at the .01 level (as x^2 .01 = 9.210 with 2 df)

Contingency coefficient = 0.4235

Table 18-c

Same industry level of comparisons for skilled operators groups
working in plants with different types of technology

Type of technology	Same industry comparisons						Total	
	US		SS		SK			
		%		%		%		%
I & III	4	40.0	14	29.8	12	37.5	30	33.7
II	20	95.2	17	100.0	18	100.0	55	98.2
Total	24	77.4	31	48.4	30	60.0	85	58.6

Source : SPSS Programme

Chi-square (x^2) = 5.3346

Insignificant at the .05 level (as x^2 .05 = 5.991 with 2 df)

Contingency coefficient = 0.2430

Table 19-c

Other industries level of comparisons for skilled operators groups
working in plants with different types of technology

Type of technology	Other industries comparisons						Total	
	US		SS		SK			
		%		%		%		%
I & III	3	30.0	5	10.6	7	21.9	15	16.9
II	9	42.9	2	11.8	1	5.6	12	21.4
Total	12	38.7	7	10.9	8	16.0	27	18.6

Source : SPSS Programme

Chi-square (χ^2) = 8.7411

Significant at the .05 level (as $\chi^2_{.05} = 5.991$ with 2 df)

Contingency coefficient = 0.4945

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