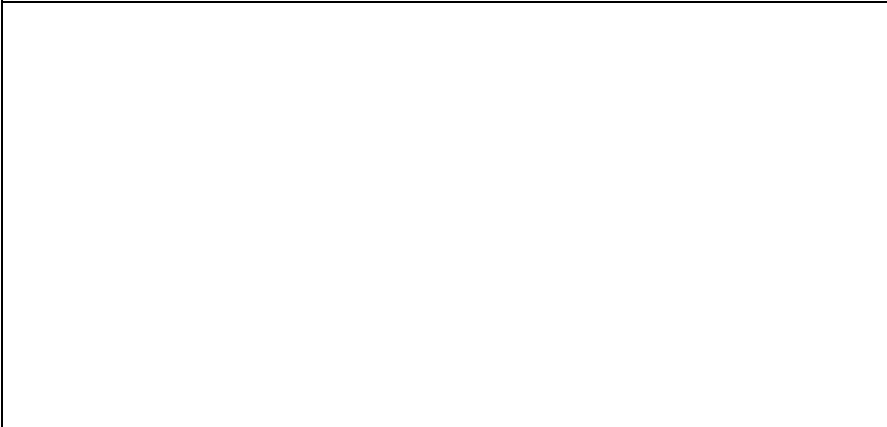
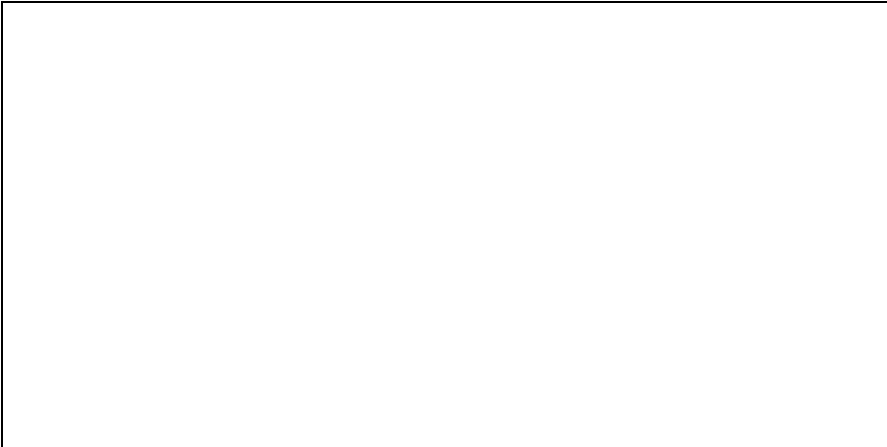


**RESEARCH
REPORTS
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**MIGRATION AND MOBILITY IN
THE EGYPTIAN LABOUR
MARKET**

Barry McCormick & Jackline Wahba

Research Report 0401



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ERF Research Project No: ERF99-UK-1008

Objectives of this Research

The objective of this project is to build a picture of various dimensions of labour mobility in Egypt during the period of adjustment. In this research project we have proposed to study three main areas: i) the changing structure of internal migration, ii) the influence of the public sector and privatisation on the transformation of the Egyptian economy; and iii) informalisation of the labour market and mobility.

Summary of Findings

1. Migration and Job Location of Egyptian Workers in the 1980s and 1990s

In this paper, we examine the pattern and structure of internal migration in Egypt and we also study the impact of economic reforms on the geographical job mobility of workers. Although as a result of economic transition, considerable population movements are expected, this has not been the case in Egypt. The data from the 1986 and 1996 Population Censuses and from the two surveys- 1988 LFSS and 1998 LMS- indicate that migration has dropped during transition and has become a relatively rare phenomenon in Egypt. On the other hand, geographical labour mobility has increased in the 90s suggesting that geographical re- location of jobs during the adjustment period. The most significant change in the pattern of labour mobility has been the increase in the number, the likelihood and rate, of workers becoming mobile- i.e. not having a fixed geographical location.

2. The Public Sector during Adjustment

The aim of the second paper is to examine the effect of economic reforms on public sector employment in Egypt. We focus on sectoral mobility, in particular from the public to the private sector, since structural adjustment requires a shift of resources from non-competitive sectors to more competitive ones and from inefficient sectors to efficient ones. We find no evidence of public-private sectoral mobility during adjustment. However, the empirical evidence indicates that there has been an increase in the probability of withdrawal from the labour market by public sector. In other words, no significant labour reallocation among *existing* workers took place during adjustment, but early retirement has been the main method used to reduce public sector employment.

3. Informalisation and Structural Adjustment in Egypt

This paper tests for whether informality has increased during the adjustment era. We examine (i) whether economic reforms have led to higher in-mobility rates to informal employment, and (ii) whether new workers are more likely to be engaged in informal employment by the end of the adjustment decade. After controlling for various individual characteristics and more importantly for life cycle effects, the main finding is that informalisation has increased in the Egyptian labour market during the 90s. The probability of being informal worker increased by 5 percentage points in the 90s. In addition, the results indicate that the predicted probability of a new entrant being informal increased mainly for females who experienced a rise of 12 percentage points in their probability of being engaged in informal employment during the 90s. Overall, the empirical evidence suggests that informalisation has increased mainly due to the rise in the probability of new entrants joining informal employment.

PART 1

**MIGRATION AND JOB LOCATION OF
EGYPTIAN WORKERS IN THE 1980s AND 1990s**

1. Introduction

The rapid pace of urbanisation in developing countries has been a source of considerable concern for policy makers. Developing countries have experienced rapid urbanisation occurring at the same time as high population growth rates and low-income levels. MENA countries, in particular, have witnessed rising levels of urbanisation that has been fuelled by high fertility rates, substantial rural-urban migration, international labour migration and the concentration of economic activity in urban areas. Furthermore, the disproportionate expansion of the largest one or two cities has created a number of huge urban agglomerations in the MENA region.

Egypt, especially, has experienced high population growth and over-urbanisation in the last five decades. It has become the second most populous country in Africa, after Nigeria, and its biggest city Cairo has grown rapidly to reach more than 12 million by the end of the 90s, amounting to 12.6 percent of the total population and 28.8 percent of the urban population. In addition, Cairo has become the largest urban centre not only in Africa but also in the Middle East and thus has grown to be one of the densest and most congested cities in the world.¹

However, with economic reforms taking place, Egypt has been involved in various policies towards gradual liberalisation of international trade, privatisation programs, and changes in labour market policy all of which may have potentially altered the pattern of labour demand and created excess supplies in certain areas of the labour market, and provided incentives for labour to reallocate between regions. In other words, it is important to investigate whether a decade of reforms has had any impact on urbanisation, by examining internal migration patterns. Thus, this paper aims to explore the changing structure and determinants of internal migration in Egypt during the period of adjustment.

The paper examines the pattern and structure of internal migration in Egypt using individual micro data, and also studies the impact of economic reforms on the geographical mobility of workers. We attempt to answer the following questions. What are the primary features of internal migration in Egypt? Is rural-urban migration still a major concern? Have there been any major changes in internal migration patterns in the last two decades? Have reforms altered the pattern, or the rate, of geographical labour mobility?

¹ See Vining (1985).

2. Previous Literature

Migration is often a response to economic incentives. The classic analysis of rural-urban migration (Harris and Todaro, 1970) attributes migration to the existence of relatively better *economic* conditions in urban areas. According to this model, migrants compare expected wages in the city to alternative rural income. If urban wages are higher than rural ones (perhaps because of government wages)², rural workers will be attracted to the city. If expected urban income is much higher than rural income, rural-urban migration may occur even if the employment prospects in the city are dim. Migrants may be willing to endure a period of unemployment if expected urban income is sufficiently high. (Mazumdar, 1987).

Aside from the higher expected urban income pulling rural people into urban areas, there may be factors “pushing” them out of rural areas. A general decline in agricultural commodity prices may contribute to a decline in rural incomes, which can be highly vulnerable to world market price fluctuations. Increased population density and environmental degradation may also lead to land shortage among rural people, encouraging out-migration. Moreover, higher agricultural productivity in the rural areas releases people and resources for migration into the city. Rural-urban migration may also follow from a risk diversification strategy. Agricultural income can be highly variable due to changes in climate, agricultural market prices, access to land, and illness. Some rural household members may migrate to urban areas to reduce family vulnerability to these risks, especially if times of economic adversity in urban areas do not normally coincide with those of rural areas. Many households straddle the rural-urban divide, and remittances between the rural household and migrants enable income smoothing. (Stark, 1990).

There is evidence showing that better services in urban areas (infrastructure, health clinics and schools) stimulates migration, the bright-lights of the cities triggers out-migration.³ Developing country government investment may have been skewed towards urban-based industries. The notion of “urban bias” emphasises the price distortions present in many developing countries that has kept the price of rural agricultural products below world levels and the price of urban industrial products above world levels. This argument is extended to attribute skewed investment in urban areas to the relative political power of urban dwellers, who could organize more easily and have greater access to government decision-makers. By influencing policy to

² For further discussion see McCormick and Wahba (2000).

³ See for example, Yap (1977), and Henderson (1988).

increase investment in urban infrastructure and industry, the urban elite could increase its income at the expense of rural agriculture.

All the above reasons have been put forward as potentially important determinants of rural-urban migration in the literature. Although there is a sizeable literature on migration in LDCs, no attempts have been made to study the impact of economic reforms on migration. There are several reasons why economic reforms may affect the pattern and rate of migration. If economic adjustments lead to a fall in rural-urban wage differential, and/or to lower probability of finding high wage job in the formal sector because of higher unemployment and the decline in the number of formal sector jobs created, rural-urban migration may decline. In addition, removing subsidies on foodstuffs and other consumer goods may bear especially on urban areas and push up the urban cost of living making urban areas less attractive, or more costly, to move into. Also, given that many LDCs cities have experienced congestion, housing problems, and high land prices, it may be that economic reforms lead to a reduction in rural-urban migration rates and hence in the growth of major cities. So, this paper investigates the impact of economic reforms on internal migration and geographical mobility of labour in Egypt.

3. The Data

Given the lack of individual level data on migration,⁴ most previous studies on internal migration in Egypt have used the Egyptian Census of Population which is carried out every ten years and focus on macro-migratory flows - gross migration flows. For example, Greenwood (1969) studies the determinants of gross inter-regional migration using the 1960 Census of the Population. Using the 1979 Internal Migration Sample Survey, the first survey on migration to cover all governorates - except Frontier ones, Toriki (1984) examines the size and characteristics of migrants. Other studies have used Census data to measure net and gross migration flows by governorate.⁵ However, very few of these studies examine the determinants of individual migration decisions as this paper does.⁶

The empirical analysis that follows is based on two nationally representative surveys: the 1988 Labour Force Sample Survey (LFSS) and the 1998

⁴ McCormick & Wahba (2000) & (2002) are the only two studies, to date, to have used individual level data namely the 1988 LFSS to study internal migration in Egypt.

⁵ For example, Hassan & Mobarek (1984) uses 1976 Census.

⁶ Aldakhil (1999) uses the 1987 Census and focuses on the patterns and determinants of inter-governorate lifetime migration flows by comparing place of birth and place of current usual residence.

Egyptian Labour Market Survey (ELMS). Both surveys use a similar sample and questionnaire design to ensure the comparability of the surveys. The surveys include extensive data concerning basic demographics, employment, unemployment, occupational history, migration, education, earnings, and parental background. The 1998 ELMS was carried out exactly ten years to the day after the 1988 LFSS to avoid any issues related to seasonal labour demand or unemployment.⁷ This paper uses the labour mobility modules in both surveys. See Wahba (2002) for a detailed discussion on the labour mobility modules.

To be able to compare the 80s and 90s, we examine the location of residence and work by comparing 1991 to 1998 in the 1998 survey and 1981 to 1988 in the 1988 survey. The analysis is based on the work location and residence of respondents at those fixed dates. One of the problems of this approach of using two fixed dates is that it understates the number of movers because it does not take into account individuals who have moved more than once or those who have moved but returned back to their original status. This study examines migration and mobility of individuals between the age of 15 and 60 at the beginning of the period i.e. in 1981 or 1991.

In addition, to using the above-mentioned surveys, we begin first our analysis by examining first the evidence from the last two population censuses, and other aggregate published information, to provide an overview of migration patterns in Egypt.

4. The Changing Structure of Internal Migration

a) Residence

An increase in a country's urban population can be due to several causes: the natural growth rate of the urban population, rural-urban migration, the re-classification of rural settlements as they grow and hit the magic number that makes them cities and towns combined with the expansion of city boundaries, and the creation of new towns. First, the 1996 Population Census shows that the proportion of urban population to the total population in Egypt has declined for the first time between 1986-1996 - see Table 1. The annual population growth rate in urban areas dropped to 1.85 percent in 1996 compared to 2.1 percent in 1986. Secondly, the number of new cities in 1996 has risen to 19 compared to 9 in 1986, attracting 418 thousand more inhabitants.⁸ Finally, the 1996 Census shows that the rate of rural to urban

⁷ The sampling and questionnaire design of the LFSS 1988 is described in detail in Fergany (1990) and that of the ELMS 1998 is described in Assaad and Barsoum (1999).

⁸ Egypt Yearbook 1999.

immigration has decreased by 1 percent between 1986 and 1996. In other words, the evidence from the Census shows that urban growth has slowed down in the 90s after more than three decades of fast growth.

Looking at the proportion of people who are residents of a governorate other than the one of their place of birth, i.e. the proportion of net lifetime internal migration as percent of total population, suggest that there are three groups of governorates which experienced positive net lifetime migration though for different reasons- Table 2. The net lifetime migration to Canal cities (Suez, Port Said and Ismailia) took place after the war when the inhabitants of those governorates returned. The Frontier governorates were also affected by the political circumstances. However, net lifetime migration to Cairo, Giza, Kalyoubia and Alexandria reflect the tendency especially in the 1960-1980 to immigrate to the two biggest cities Cairo and Alexandria and their surroundings.

Using the 1988 LFSS and the 1998 ELMS to study rural-urban migration rates, Table 3 enables us to further investigate the previous discussed overall aggregate trends. Examining the migration rates of 15-60 years old, it is clear that not only rural-urban migration has not been a prominent feature of the 80s or 90s, but it has also declined. Around one percent of rural residents moved to urban areas between 1981-88 and less than half a percent between 1991-98. In the 90s, 32 thousands moved from rural to urban compared to 62 thousands in the 80s. Most studies on migration in developing countries focus on rural-urban migration mainly because of its impact on urbanisation and city growth. It is not often realised that rural-urban migration in many LDCs is as least as significant as urban to urban migration - Lucas (1997). Egypt is no exception; rural-urban migration is less significant than urban-urban or urban rural. Among urban dwellers, almost 2.4 percent and 1.0 percent moved to rural areas between 1981-88 & 1991-98 respectively. Also, the flows were quite small during both periods. Urban to rural flow was quite similar in magnitude; 77 thousands moved from urban to rural in the 90s compared to 88 thousands in the 80s. Urban areas seem to have been net losers to rural areas in both the 80s and 90s. In the 90s, urban areas had net outflows of 55 thousands double that of in the 80s – 26 thousands. In addition, inter-governorate migration rates declined in the 90s by 0.5 percent. Even migration rates within the same governorate, but between different districts, have declined in the 90s.

With transition, the introduction of market forces, and the transformation of the economy into increased service production, one would have expected considerable population movements. Regions would have shifted production patterns and population moved in response. Instead the data from the

population censuses and from the two surveys under consideration here indicate that internal migration has dropped during transition and has become a relatively rare phenomenon in Egypt. There are several explanations for the fall in internal migration rates in Egypt in the 90s. First, during the 90s and as a result of reforms, the growth of the public sector was restrained. In the past the public sector has been responsible for great labour mobility between regions and governorates.⁹ Another explanation for the decline in rural-urban migration in the 90s is the tightness in the housing supply, induced by poorly functioning housing markets. Finally, the improvement of infrastructure and transportation has enabled workers to be able to commute longer distances to work without the need to change residence location.

b) Work Location

Of greatest interest to us is the geographical location of jobs and workers. Given the low migration rates (change of residence), we focus in the rest of the paper on job geographical locations rather than residence. We try to explore the following: how far is geographical mobility an important mechanism of labour market adjustment in times of economic restructuring?

Table 4 displays the geographical mobility in the 80s and 90s. Although in the 80s urban-urban mobility rates were the most significant type of job mobility, in the 90s rural-urban mobility rates were the highest. However, in terms of absolute numbers the story is different. First, in the 80s, rural-urban flows (76 thousands) were equal to the urban-rural flow (75 thousands) resulting in almost zero net rural-urban mobility. In the 90s, rural-urban flows were still around 72 thousands, but the urban-rural flow had halved to 37 thousands. This would suggest that in the 90s, the net rural-urban job mobility flow was positive.

Rural-rural mobility has not been a substantial movement in Egypt, while urban-urban mobility has been significant both in the 80s and 90s. In addition, intra-governorate movements have not really changed in the 90s compared to the 80s. Yet, movements within governorates have increased in the 90s. What is also important to notice here is that in the 90s, more workers were having no fixed geographical location (which we will label as mobile worker, thereafter). Thus, the analysis so far suggests that overall mobility rates have increased in the 90s compared to in the 80s, and in particular since more workers have become mobile with no fixed job location.

In the following section we examine how far the above findings survive multivariate analysis. First, we examine the determinants of the probability of

⁹ See McCormick & Wahba (2000).

geographical mobility (movement between governrates &/or regions) of workers in two periods: 1981-88 (pre-adjustment) and 1991-98 (during adjustment). Secondly, we study the determinants of the probability of rural-urban job mobility of workers over the same two periods. Finally, we look at the probability of a worker being mobile (with no fixed geographical location) in 1991 and 1998.

5. The Determinants of Geographical Job Mobility

a) *The Econometric Modelling*

We assume that in each location choice model the indirect utility of location choice j for individual i can be written

$$U_{ij} = \beta_j X_i + \varepsilon_{ij}$$

where U_{ij} is the utility from choice j by individual i , β_j is a vector of parameters which may vary between location choices, and X_i is a vector of attributes of individual i which includes characteristics of the region in which the individual works.

It is assumed that this probability may be described as a logistic function in which the probability of individual i choosing location j is given by

$$P_{ij} = \exp(\beta_j' X_i) / (1 + \sum_j \exp(\beta_j' X_i))$$

Let j be the location in the survey period (1988 or 1998) and i be the location in the reference year (1981 or 1991).

First we begin by estimating a binomial logit model of the probabilities of any geographical mobility. For a worker in the reference year, $j = 0$ if s/he stayed in the origin location; $j = 1$ if s/he moved from the origin geographical location. Mobility in this case entails either intra-governrate, or regional movements. The following independent variables are used.

To control for the individual characteristics the following explanatory variables are used. *Gender*: A male dummy is used. *Age*: five age groups dummies are used- 15-19, 20-29, 30-39, 40-49, 50-59 years old.¹⁰ *Education*: several different levels are included: illiterate, read & write, less than intermediate, intermediate, above intermediate, university and postgraduate level. *Employment and Job Characteristics at Origin*: A dummy for being employed

¹⁰ Age refers to the individual's age at the beginning of the period: 1991 for the 1991-1998 analysis and 1981 for 1981-1988.

in the public sector prior to migration is used. Also, a dummy is included if the worker was blue-collar prior to migration. In addition three dummies for the origin industry of employment are created: agriculture, manufacturing and construction.

To control for the characteristics of the origin region in which the individual worked, several variables are used. First, to capture regional characteristics, six dummies are used: Greater Cairo, Alexandria & Canal Cities, Urban Lower, Urban Upper, Rural Lower and Rural Upper. In addition to control for local labour market conditions, we include the wage and unemployment rates in origin. To add specificity to these variables we differentiate the hourly wage at origin by educational category, and differentiate the unemployment rate at origin by age category.

b) Geographical Mobility

We estimate separately the probability of geographical job mobility (movement between governorates & /or regions) between 1981-88 and 1991-98. The marginal effects of the estimates are given in Table 5. The determinants of geographical mobility are the same in the 80s and 90s. Males tended to be more mobile than females. Workers between 20-29 years old were more likely to move than other age groups. There was a positive correlation between education and the likelihood of moving. Blue-collar workers were more likely to be mobile than white-collar workers. Construction workers were the most likely to move, while agriculture workers were the least. Workers seemed to move out of areas where wages were low, however, unemployment rates did not have the expected sign, though it was not significant in the 90s.

Figures 1.1-1.4 show that the predicted probabilities for a representative worker (male, 20-29 years old, with no education who originally worked in Greater Cairo) of geographical job mobility have almost doubled for all groups in the 90s compared to the 80s. As a result of economic reforms and adjustment workers are expected to become more mobile and the findings here support that hypothesis.

c) Rural-Urban Mobility

Secondly, we estimate a binomial logit model of the probabilities of rural-urban job mobility. For a worker in the reference year, $j = 0$ if s/he stayed in the rural origin location; $j = 1$ if s/he moved to an urban location. Table 6 presents the marginal effects and Figures 2.1-2.3 show the predicted probabilities for a representative worker (male, 20-29 years old, with no education who originally worked in Upper Rural) of rural-urban job mobility. Male rural workers were more likely to move to urban areas than female

workers in the 80s and 90s. However, the probability of male workers moving was twice as much that of female workers in the 80s, but only less than 50 percent more in the 90s; i.e. the gender gap in rural-urban job mobility was narrowing. The likelihood of rural-urban mobility declined with age. However, the most interesting finding is that the probability of the most educated- rural workers moving to urban areas has fallen in the 90s compared to the 80s- see Fig 2.3. In addition, in the 80s, there was a positive correlation between the likelihood of rural-urban job mobility and education, with those with no education being the least likely to move from rural to urban areas. However, in the 90s, those rural workers with less than secondary education were the least likely to move to urban areas.

The disproportionate expansion of a country's largest one or two cities is a source of considerable concern for policy makers. Cairo has grown during the 1960-1980s rapidly. By the end of the 90s, it ranked the twenty-first in the order of world cities (Yearbook 1997). However, the last Census shows that the population of Greater Cairo as percent of total population has fallen slightly from 1986 to 1996. According to the two surveys under consideration, Greater Cairo is still the major destination of rural movers accounting for 38 percent in the 80s and 90s. Also, it has increasingly become the main destination of urban movers accounting for 65 percent in the 90s compared to 55 percent in the 80s. McCormick and Wahba (2000) examine the determinants of rural and urban migration into large cities between 1981 and 1988. Although extending that study and investigating the distinctive characteristics of rural migration to big cities and to other urban areas in the 90s would be useful, the size of the sample prevents us from doing so.

d) Mobile Workers

The descriptive statistics in the previous section show that in the 90s, the number of workers with no fixed geographical location has increased. Thus, to study this phenomenon, we estimate a binomial logit model of the probabilities of being a mobile worker with no fixed regional location- Table 7. We compare 1991 to 1998 since the 1988 LFSS has no information on mobile workers.¹¹ Male workers were more likely than females to be mobile workers. Those living in Greater Cairo were the least likely to be mobile workers. Blue-collar workers were more likely than white collar to have no fixed geographical work location, in particular those who work in construction. Also, private sector workers were as expected more likely to be mobile workers than public sector workers.

¹¹ The 1988 LFSS has no data on workers with no fixed rural/urban work location.

Figures 3.1-3.3 show that the probability of being a mobile worker (for a representative worker: male, 20-29 years old with no education who originally worked in Greater Cairo) increased between 1991 and 1998. Those with no education experienced the highest increase in becoming mobile workers by 1998. In addition, workers -aged between 20-29- were the most likely to be mobile workers. Finally, the probability of being mobile is similar for rural and urban residents of Lower and Upper Egypt.

6. Conclusion

This paper studies the changing structure, and determinants, of internal migration in Egypt during the period of adjustment. It focuses on two types of movements: migration (change of residence) and geographical mobility (geographical change of job location). Although as a result of economic transition, considerable population movements are expected, this has not been the case in Egypt. The data from the 1986 and 1996 Population Censuses and from the two surveys- 1988 LFSS and 1998 ELMS- indicate that migration has dropped during transition and has become a relatively rare phenomenon in Egypt. On the other hand, geographical job mobility increased in the 90s suggesting that labour re-location took place during the adjustment period as expected. The most significant change in the pattern of labour mobility has been the increase in the number, the likelihood and rate, of workers becoming mobile- i.e. not having a fixed geographical location.

Fig 1.1: Predicted Probability of Geographical Job Mobility by Gender (%)

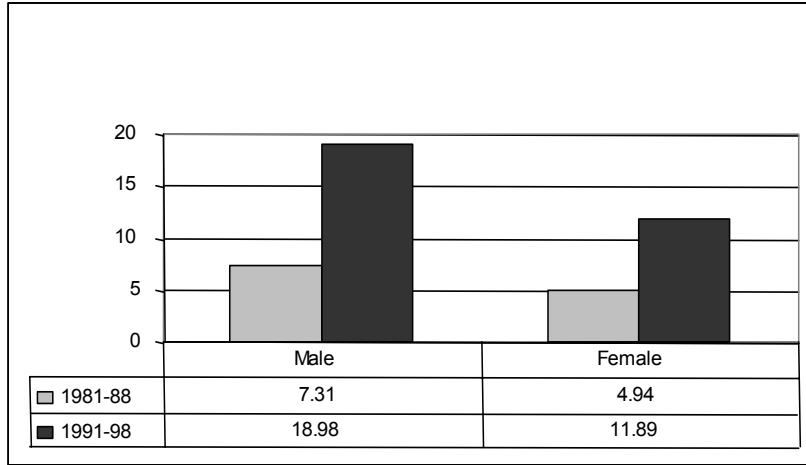


Fig 1.2: Predicted Probability of Geographical Job Mobility by Age Group (%)

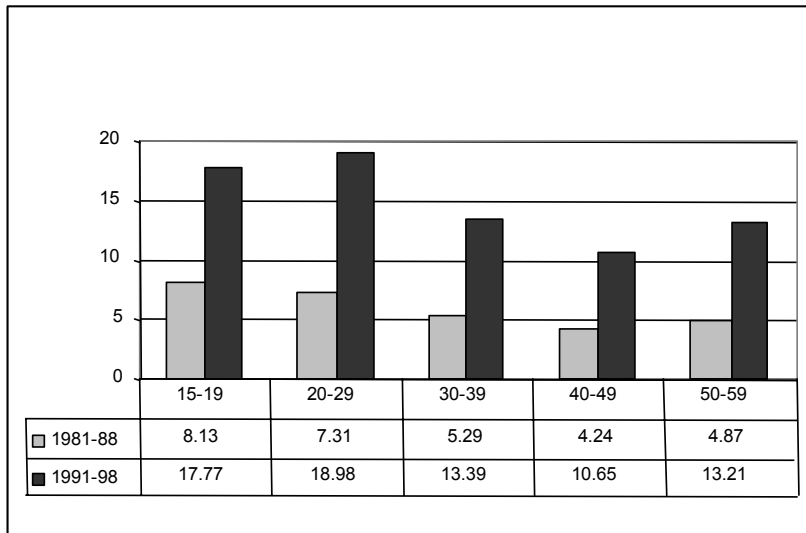


Fig 1.3: Predicted Probability of Geographical Job Mobility by Education

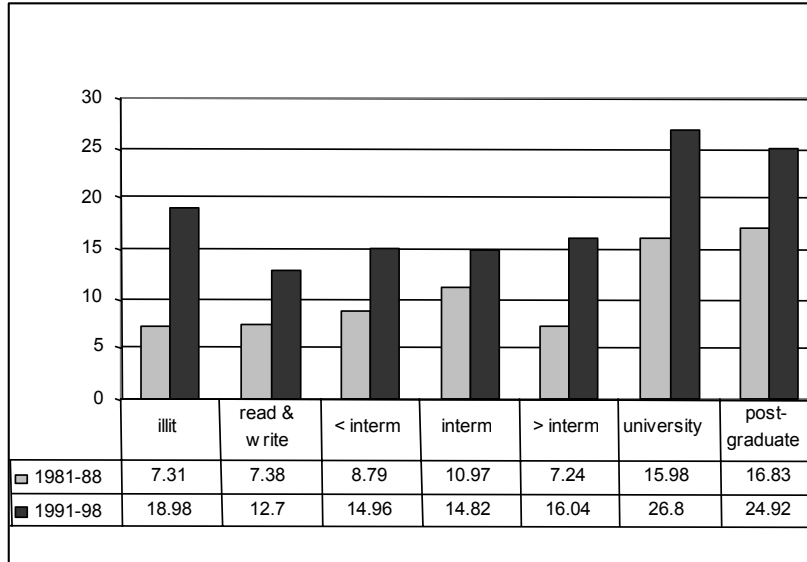


Fig 1.4: Predicted Probability of Geographical Job Mobility by Region (%)

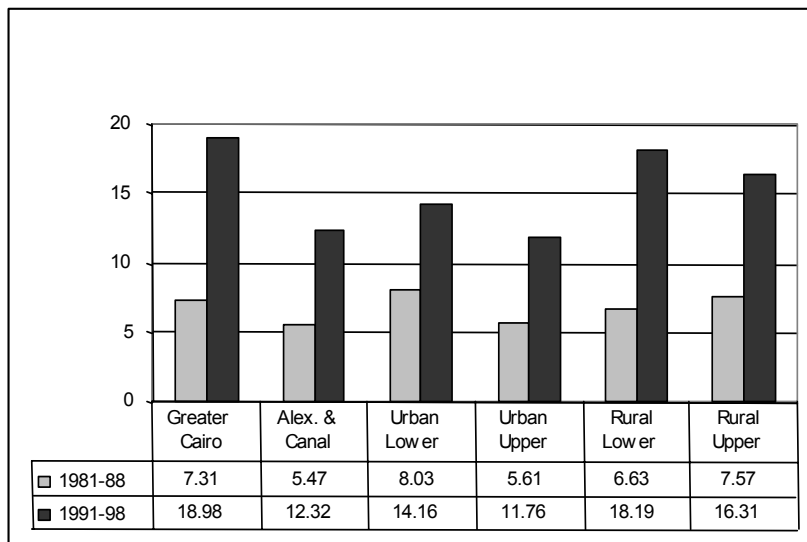


Fig 2.1: Predicted Probability of Rural- Urban Mobility by Gender (%)

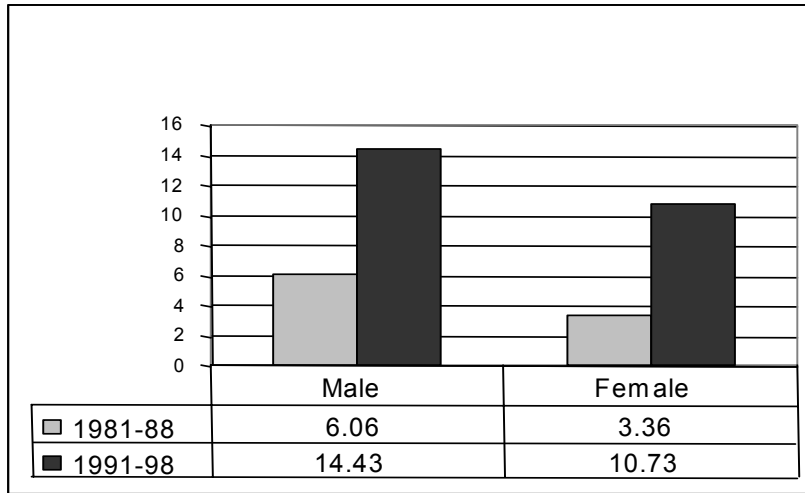


Fig 2.2: Predicted Probability of Rural-Urban Mobility by Age Group (%)

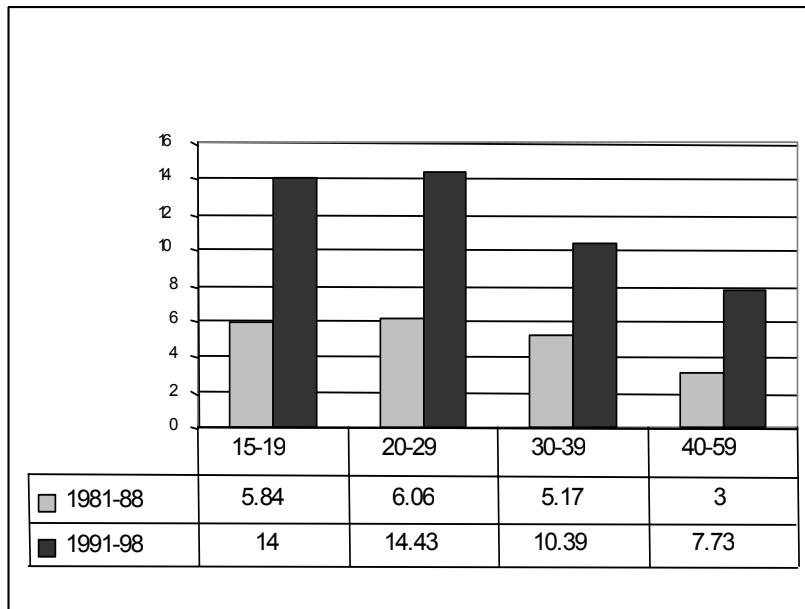


Fig 2.3: Predicted Probability of Rural-Urban Mobility by Education (%)

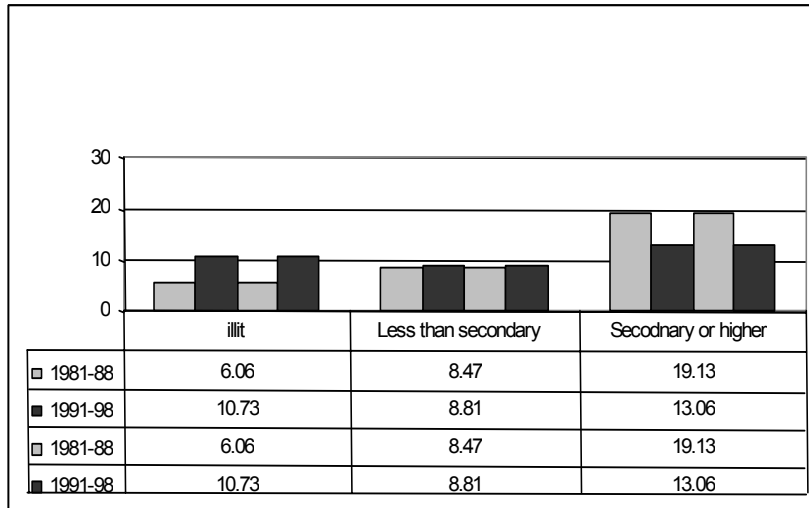


Fig 3.1: Predicted Probability of Being Mobile Worker by Gender (%)

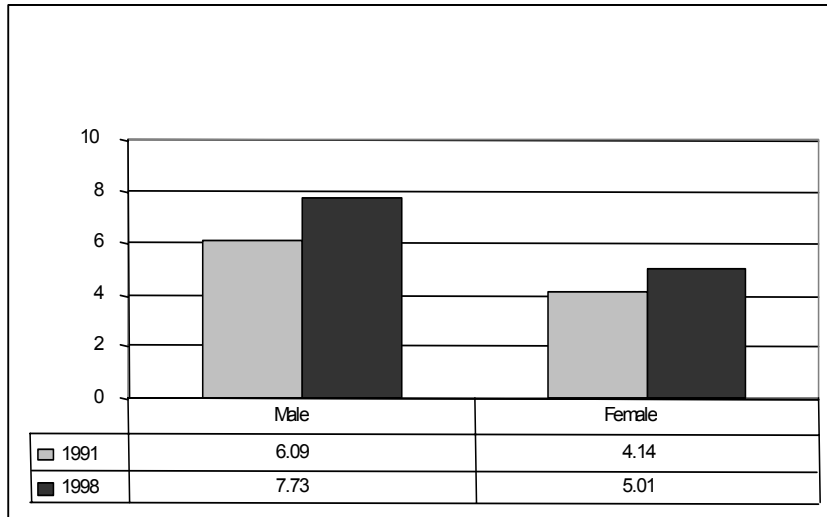


Fig 3.2: Predicted Probability of Being Mobile Worker by Age Group (%)

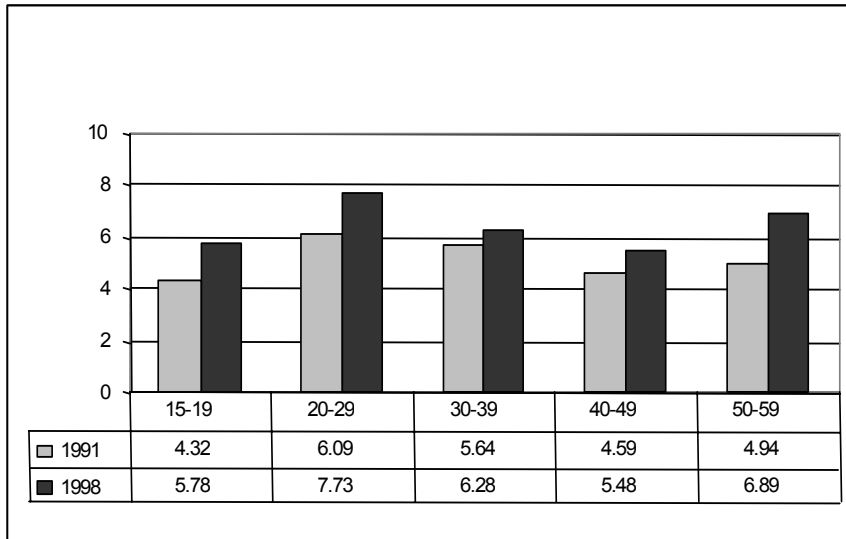


Fig 3.3: Predicted Probability of Being Mobile Worker by Education (%)

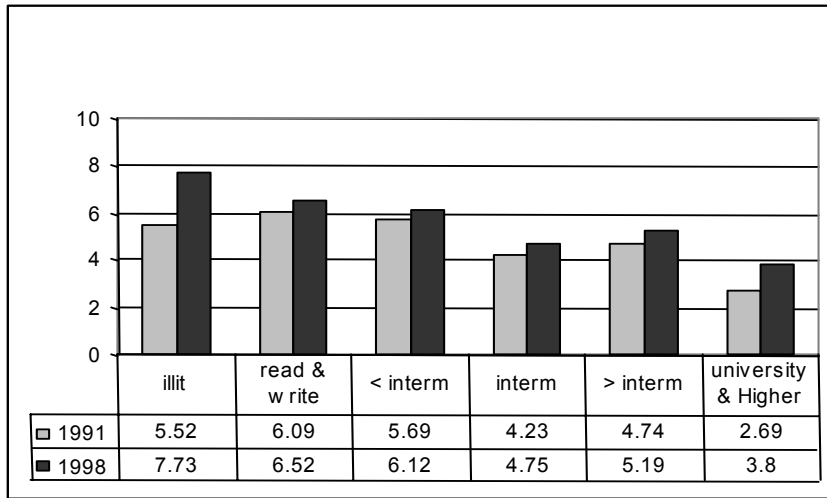


Fig 3.4: Predicted Probability of Being Mobile Worker by Region of Residence (%)

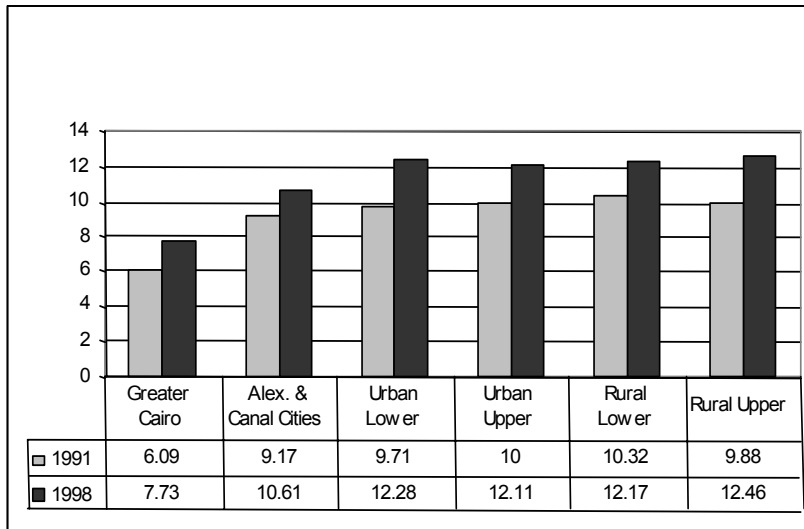


Table 1: Total & Urban Population of Egypt 1960-1996

Year	Total Population (in thousands)	Urban Population as (%) of Total Population
1960	26085	38.2
1966	30076	40.0
1976	36627	43.8
1986	48254	44.0
1996	59272	43.0

Source: Egypt Yearbook 1998.

Table 2: Demographic Profile by Governorate

Governorate	Population as % of Total Population ¹		Annual Population Growth Rate (%) ²		Net Lifetime Internal Migration ^{2*}	
	1986	1996	1960-86	1986-96	1986	1996
Cairo	12.6	11.5	2.3	1.1	10.3	3.2
Alexandria	6.1	5.6	2.5	1.3	10.2	6.4
Port Said	0.8	0.8	1.9	1.6	7.9	10.2
Suez	0.7	0.7	1.8	2.5	17.7	17.4
<i>Urban Governorates</i>			2.3	1.3		
Damietta	1.5	1.5	2.5	2.1	-6.4	-1.4
Dakahlia	7.2	7.1	2.1	1.9	-6.4	-5.6
Sharkia	7.1	7.2	2.4	2.3	-5.1	-4.2
Kalyoubia	5.2	5.6	3.6	2.8	7.7	11.9
Kafr El Sheikh	3.7	3.8	2.4	2.1	-1.8	-1.6
Gharbia	6.0	5.7	2.0	1.7	-4.1	-4.2
Menoufia	4.6	4.7	1.9	2.2	-14.2	-10.4
Behera	6.7	6.7	2.5	2.1	-1.2	-0.8
Ismailia	1.1	1.2	2.5	2.8	12.5	13.5
<i>Lower Egypt</i>			2.4	2.2		
Giza	7.7	8.01	4.0	2.5	14.6	16.6
Beni Suef	3.0	3.1	2.0	2.5	-5.6	-4.3
Fayoum	3.2	3.4	2.4	2.5	-4.7	-5.3
Menia	5.5	5.6	2.0	2.3	-2.7	-3.5
Assyout	4.6	4.7	2.0	2.4	-8.4	-8.1
Suhag	5.1	5.3	1.7	2.5	-11.1	-9.3
Quena	4.1	4.1	2.0	2.2	-8.3	-7.1
Aswan	1.7	1.6	2.9	1.9	-0.7	-0.9
<i>Upper Egypt</i>			2.4	2.4		
Red Sea	0.2	0.3	4.9	5.7	22.9	31.6
New Valley	0.2	0.2	4.7	2.3	-4.6	4.6
Matrouh	0.3	0.4	1.7	2.8	6.6	13.8
North Sinai	0.4	0.4	5.4	4.0	...	10.7
South Sinai	0.1	0.1	..	6.6	1.7	34.4
<i>Frontier Governorates</i>			3.8	3.8		
<i>EGYPT</i>			2.4	2.1		

Sources: ¹Preliminary Results of the 1996 Population Census.

²Egypt Human Development Report 1994 & 1997/8.

Notes: * Net lifetime internal migration as % of population. (Place of birth different from place of residence).

Table 3: Migration Rates (%): Place of Residence

	1981-88	1991-98
<i>Rural-Urban</i>	1.01	0.41
<i>Urban-Rural</i>	2.36	0.96
<i>Inter-governorate</i>	1.71	1.24
<i>Districts (within same governorate)</i>	3.33	2.63

Table 4: Migration Rates by Work Location (%)

	Total	Male	Female
<i>Rural-Urban</i>			
1981-88	2.44	4.20	0.37
1991-98	4.18	4.68	0.89
<i>Urban-Rural</i>			
1981-88	3.31	3.66	1.95
1991-98	1.57	1.64	1.29
<i>Rural-Rural</i>			
1981-88	0.41	0.55	0.24
1991-98	0.01	0.11	0.00
<i>Urban-Urban</i>			
1981-88	3.95	4.47	2.14
1991-98	3.32	3.79	1.73
<i>Rural-Mobile</i>			
1981-88	na	na	na
1991-98	2.49	2.67	1.31
<i>Mobile -Rural</i>			
1981-88	na	na	na
1991-98	4.94	5.25	0.00
<i>Urban-Mobile</i>			
1981-88	na	na	na
1991-98	1.50	1.82	0.31
<i>Mobile-Urban</i>			
1981-88	na	na	na
1991-98	6.69	6.93	2.86
<i>Regional (excl. mobile)</i>			
1981-88	2.54	3.50	0.96
1991-98	1.98	2.18	1.21
<i>Regional (incl. mobile)</i>			
1991-98	4.57	5.20	1.76
<i>Inter-governorate (excl. mobile)</i>			
1981-88	3.34	4.45	1.19
1991-98	3.30	3.72	1.54
<i>Inter-governorate (incl. mobile)</i>			
1991-98	4.80	5.54	1.53
<i>Districts (within same governorate)</i>			
1981-88	7.10	9.86	3.02
1991-98	9.05	9.76	5.88

Notes: Rural-urban and urban-rural movements could be within same governorate or across different governorates. Urban-urban and rural-rural movements are across different governorates. Mobile refers to having no fixed work location in a governorate or rural/urban area. Districts movements are within the same governorate.

Table 5: Determinants of Geographical Job Mobility: Marginal Effects

Variables	1981-88	1991-98
<i>Gender</i>		
Male dummy	0.024 (0.255)*	0.071 (0.225)*
<i>Age Group Dummies</i>		
15-19	0.008 (0.196)	-0.012 (0.277)
30-39	-0.020 (0.196)*	-0.056 (0.108)*
40-49	-0.031 (0.239)*	-0.083 (0.219)*
50-59	-0.023 (0.247)*	-0.058 (0.162)*
<i>Educational Levels</i>		
Read & write	0.007 (0.243)	-0.063 (0.372)*
Less than intermediate	0.015 (0.230)	0.040 (0.185)*
Intermediate	0.037 (0.256)*	0.041 (0.279)*
Above intermediate	-0.007 (0.693)	-0.029 (0.442)
University	0.086 (0.387)*	0.072 (0.346)*
Post-graduate	0.095 (0.492)*	0.060 (0.666)
<i>Occupational Dummies</i>		
Public Sector = 1	-0.003 (0.193)	0.009 (0.159)
Blue Collar=1	0.026 (0.203)*	0.053 (0.228)*
<i>Industry Dummies</i>		
Agriculture = 1	-0.019 (0.172)*	-0.0366 (0.153)*
Construction =1	0.090 (0.184)*	0.137 (0.350)*
<i>Economic Conditions</i>		
Relative Unemployment Rate	-0.010 (0.072)*	-0.023 (0.170)
Relative Wage Rate	-0.011 (0.129)*	-0.016 (0.206)

Table 5: Cont'd.

Variables	1981-88	1991-98
<i>Regional Dummies</i>		
Alex & Canal Cities	-0.018 (0.304)*	-0.067 (0.263)*
Lower Urban	0.007 (0.237)	-0.048 (0.290)*
Upper Urban	-0.017 (0.517)	-0.071 (0.345)*
Lower Rural	-0.007 (0.318)	-0.008 (0.201)
Upper Rural	0.003 (0.344)	-0.027 (0.252)
Mobile	----	-0.007 (0.957)
Log-Likelihood	-865.15	-745.38
Sample size	4543	3897

Notes: The standard error of the marginal effect is reported in parentheses. Robust (Huber/White/Sandwich) estimator of the variance was used in place of the conventional Maximum Likelihood Estimation variance estimator and observations were allowed to be not independent within cluster.

* Statistically significant at the 5% level or better. Reference group: 20-29 years old, illiterate, and working in Greater Cairo.

Marginal effects are calculated at the reference set of individual characteristics and sample means. They show the increment in the probability of migration relative to the sample mean, corresponding to the particular characteristic, relative to the reference group.

Table 6: Determinants of Rural-Urban Job Mobility: Marginal Effects

Variables	1981-88	1991-98
<i>Gender</i>		
Male dummy	0.027 (0.531)*	0.037 (0.933)
<i>Educational Levels</i>		
Less than Secondary	0.024 (0.392)	-0.056 (0.258)*
Secondary & Higher	0.131 (0.660)*	-0.014 (0.630)
<i>Age Group Dummies</i>		
15-19	-0.002 (0.344)	-0.004 (0.372)
30-39	-0.009 (0.353)	-0.040 (0.339)
40-59	-0.031 (0.622)*	-0.067 (0.396)*
<i>Occupational Dummies</i>		
Public Sector = 1	-0.017 (0.628)	-0.036 (0.843)*
Blue Collar=1	0.007 (0.608)	-0.017 (0.861)
<i>Industry Dummies</i>		
Agriculture = 1	-0.003 (0.293)	-0.022 (0.507)
Construction =1	0.034 (0.608)	0.234 (0.687)*
<i>Economic Conditions</i>		
Relative Unemployment Rate	0.012 (0.179)*	-0.023 (0.135)*
Relative Wage Rate	0.012 (0.235)	0.214 (0.814)*
<i>Regional Dummy</i>		
Upper Rural=1	-0.00004 (0.300)	-0.023 (0.200)
Log-Likelihood	-245.46	-168.28
Sample size	2180	1065

Notes: The standard error of the marginal effect is reported in parentheses. Robust (Huber/White/Sandwich) estimator of the variance was used in place of the conventional Maximum Likelihood Estimation variance estimator and observations were allowed to be not independent within cluster.

* Statistically significant at the 5% level or better. Reference group: 20-29 years old, illiterate, and working in Greater Cairo.

Marginal effects are calculated at the reference set of individual characteristics and sample means. They show the increment in the probability of migration relative to the sample mean, corresponding to the particular characteristic, relative to the reference group.

Table 7: Determinants of Being Mobile Worker: Marginal Effects

Variables	1991	1998
<i>Gender</i>		
Male dummy	0.019 (0.235)*	0.027 (0.199)*
<i>Age Group Dummies</i>		
15-19	-0.018 (0.110)*	-0.019 (0.149)*
30-39	-0.004 (0.132)	-0.014 (0.131)*
40-49	-0.015 (0.159)*	-0.023 (0.169)*
50-59	-0.012 (0.247)*	-0.008 (0.258)
<i>Educational Levels</i>		
Read & write	-0.006 (0.153)	-0.012 (0.134)*
Less than intermediate	-0.004 (0.127)	-0.016 (0.090)*
Intermediate	-0.019 (0.189)*	-0.030 (0.209)*
Above intermediate	-0.013 (0.356)	-0.025 (0.276)*
University & Higher	-0.034 (0.422)*	-0.039 (0.275)*
<i>Occupational Dummies</i>		
Public Sector = 1	-0.040 (0.291)*	-0.046 (0.186)*
Blue Collar=1	0.121 (0.529)*	0.158 (0.562)*
<i>Industry Dummies</i>		
Agriculture = 1	-0.020 (0.192)*	-0.027 (0.163)*
Construction =1	0.286 (0.193)*	0.305 (0.212)*
<i>Economic Conditions</i>		
Relative Unemployment Rate	-0.005 (0.118)	-0.001 (0.142)
Relative Wage Rate	-0.009 (0.151)	-0.010 (0.142)

Table 7: Cont'd

Variables	1991	1998
<i>Regional Dummies</i>		
Alex & Canal Cities	0.031 (0.264)*	0.029 (0.249)*
Lower Urban	0.036 (0.188)*	0.046 (0.174)*
Upper Urban	0.039 (0.184)*	0.044 (0.159)*
Lower Rural	0.042 (0.218)*	0.044 (0.169)*
Upper Rural	0.038 (0.183)*	0.047 (0.164)*
Log-Likelihood	-1121.88	-1063.65
Sample size	4966	4421

Notes: The standard error of the marginal effect is reported in parentheses. Robust (Huber/White/Sandwich) estimator of the variance was used in place of the conventional Maximum Likelihood Estimation variance estimator and observations were allowed to be not independent within cluster. * Statistically significant at the 5% level or better. Reference group: 20-29 years old, illiterate, and working in Greater Cairo.

Marginal effects are calculated at the reference set of individual characteristics and sample means. They show the increment in the probability of migration relative to the sample mean, corresponding to the particular characteristic, relative to the reference group

PART 2

THE PUBLIC SECTOR DURING ADJUSTMENT

1. Introduction

Since 1991, Egypt has undertaken a programme of reform and structural adjustment. However, the success of any economic reforms depends on the public sector and how it affects labour market outcomes. First, the ongoing economic transformation has involved, among others, the privatisation of certain public industries, and the downsizing of the government sector. Secondly, the public sector has played a major role in the Egyptian labour market, as in other MENA countries. Thus, the public sector is central to any attempts of reforms.

The aim of this paper is to examine the effect of economic reforms on public sector employment in Egypt. Although we will not be looking at particular privatised industries and what has happened to their workers, we will focus on sectoral mobility, in particular from the public to the private sector, since structural adjustment requires a shift of resources from non-competitive sectors to more competitive ones and from inefficient sectors to efficient ones. Thus, we will attempt to answer the following questions. What labour force adjustments are occurring, in particular transformation from public to private sector? Has mobility from the public to the private sectors increased over that period? What are the age/educational backgrounds of workers who are more likely to move?

Structural adjustment is likely to affect the allocation of labour in two ways: privatisation and tighter budgets should dampen public employment, while the improved incentives to the private sector ought to encourage employment there. Several methods have been used in LDCs to reduce the size of the government sector, namely: attrition and recruitment restraint, voluntary lay-off of less-productive workers, and compulsory retrenchment. Since large-scale involuntary dismissals are often politically difficult, a voluntary approach to reductions in public sector employment has been increasingly popular among LDCs' governments. The ways LDCs' governments have attempted to downsize the public sector have varied. Mazumdar (1989) finds that most African countries faced with government cutbacks in the 1980s allowed real public sector wages to be eroded, avoiding the need for retrenchment. Others studies have found that African labour markets experienced changes not only in sectoral allocation of workers, but also a reduction in participation rates during adjustment periods. For example, Krishnan et al. (1998) find evidence of a large reallocation of labour out of the public sector during adjustment in Ethiopia.

The paper is as organized as follows. Section 2 sets the scene by examining the role of the public sector in the Egyptian economy over the last few decades and Section 3 describes the data used in this study. Section 4

examines the sectoral reallocation of workers in the 80s and 90s. Section 5 studies the determinants of a public sector worker reallocating into another sector or not participating in the labour market. Section 6 concludes by summarizing the main findings.

2. The Public Sector in Egypt

Public sector employment grew rapidly in many developing countries, as well as in Arab Countries, during the 1960s and 1970s. The growth of public sector employment was often regarded as an important element in speeding a country's development, a desirable means of injecting expansion into the economy, and also a high social priority. In the 90s, government employment accounted for 7 percent of total employment in Africa, 6 percent in Asia, 9 percent in Latin America, 17 percent in OECD countries and 18 percent in MENA.¹² In Egypt, government employment accounted for 32 percent, and public enterprises for another 7 percent, contributing to almost 39 percent of public sector employment in total employment and almost half of GDP in 1998.

The public sector comprises four main categories in Egypt: central government, local government, public authorities and public enterprises. The sector covers a wide range of economic and social functions, with some engaged in productive undertakings and others in the delivery of social services. A public employment drive was undertaken after the extensive nationalisation in the early 1960s. The share of government employment in total employment was about 10 percent in 1960. Between 1960 and 1976, while the rate of growth of Egypt's labour force was 2.2 percent, that of government employment was 7.5 percent. The government provided an additional 1109 thousand jobs over the 16-year period or 46.2 percent of the total increase in employment. The crucial mechanism for generating public employment has been the employment guarantee for university and secondary school graduates. The employment guarantee gave the right to university graduates to apply for public appointment two years after graduation and to secondary school graduates after three years. The waiting period was designed to allow male graduates to complete their military service. In 1973 the employment guarantee scheme was extended to those with lower educational qualifications who were also demobilised (military) conscripts, but this extension was abrogated in 1976.

The demand and supply of workers for public sector jobs is co-ordinated as follows. Once a year the Ministry of Manpower invites applications

¹² Heller and Tait (1983) provide figures for the early 1980s.

specifying preference from eligible graduates and at the same time solicits requests from government agencies and enterprises for graduates employees. Since the latter are automatically provided with funds for financing appointments requests exceed supply. Applications are usually approved. Apart from certain specified categories in very short supply (medical doctors and teachers), public agencies are not permitted to hire graduates until two (or three) years after graduation and then only through the system just described.¹³ In 1978 public enterprises were allowed to opt out of the centralised labour force allocation scheme, to set their own hiring levels and to select their own workers. Thus, the brunt of the employment guarantee fell on the central government ministries, local government, and the public authorities.

The employment guarantee contributed to the growth in demand for secondary and university education, which has in turn, led to rapid growth in public sector employment. In 1988, 60 percent of the educated males, and 74 percent of the educated females, were employed in the public sector.¹⁴ When the growth of the public sector wage bill became unsustainable in the early 1980s, the government responded by eroding real public sector wages and extending the waiting period for government jobs.¹⁵ By 1987, the waiting period had been extended to five years for university graduates and six years for secondary school graduates. To protect employment, the government resorted to compressing the wage structure by increasing wages at the lower end while keeping wages of the more skilled at a low level. According to Said (2001), in 1987, white collar workers earned only 18 percent more than blue collar ones in the public sector, compared to 76 percent in the private sector. Moreover, in 1987 blue collar workers were on average earning the same wage rate in public and private sector while white collar workers were only earning around 67 percent of the private wage rate. However, in addition to the basic wages, workers can receive allowances for hazardous work, accommodation, and various other aspects of the job. The sum total of allowances and incentives is limited to 100 percent of the basic wage.¹⁶ This has led to the public sector becoming the preferred employer for many workers, not for wage reasons but for a combination of status, security and benefits such as free medical care and priority access to subsidised goods and services.

¹³ Hansen and Radwan (1982).

¹⁴ 1988 LFSS.

¹⁵ Assaad (1997).

¹⁶ Assaad (1997).

To sum up, the public sector has been quite pivotal in the Egyptian labour market. First, the public sector has played a major role in absorbing the increasing labour force during the past three decades. It accounted for more than 35 percent of non-agriculture employment in the 1980s. It has been the preferred sector of employment for many new entrants to the labour market, particularly women. Second, the guaranteed civil-service employment for graduates of secondary and higher educational institutions has led to the concentration of educated workers in the public sector. Third, by the early 1990s—prior to economic reforms—the public sector was overstaffed and inefficient, and its wage bills constituted a huge burden on government expenditure. Also, the growth of the private formal sector in job creation and absorption has been limited. Thus, any structural adjustment programmes in Egypt has had to start by shaking the public sector. In the rest of this paper, we examine to what extent did this take place.

3. The Data

This paper uses data from two data sets: the 1998 Egypt Labour Market Survey (ELMS) and the 1988 Labour Force Sample Survey (LFSS), mainly from the labour mobility modules in both surveys. Both surveys use a similar sample and questionnaire design to ensure the comparability of the surveys.¹⁷ The labour mobility modules covered around 5000 households each and were administered to individuals who were, or have been before in the labour force.

The labour mobility module of the October 1988 survey tried to get a long-term labour market dynamics in two ways. First it inquired about a set of employment characteristics at four points in time stretching over a period of 15 years prior to the date of the survey. Memorable events such as the outbreak of war in 1973 and the assassination of President Sadat in 1981 were used as markers to help people in their recollection. The second method was to ask about the last change in any one of the employment characteristics and the timing of that change. Similarly, the labour mobility module of 1998 survey provides employment history by two different methods. The first method is by asking about a specific point in time - August 1990: the time of Iraq's invasion to Kuwait. The second one is by asking about the last change and the change before last in any of the employment characteristics and location of residence.

¹⁷ See Fergany (1990) for details on the 1988 LFSS and Assaad and Barsoum (1999) on the 1998 ELMS 1998. See Wahba (2002) for a detailed discussion on the labour mobility modules.

To be able to compare sectoral mobility in the 80s and in the 90s, equal periods of time are studied in each decade. We examine mobility by comparing 1991 and 1998 using the 1998 ELMS and 1981 to 1988 from the 1988 LFSS. The analysis is based on the work history and employment characteristics of respondents at those fixed dates. One of the problems of this approach of using two fixed dates is that it understates the number of movers because it does not take into account individuals who have moved more than once or those who have moved but returned back to their original status within the eight year periods of study.

4. Sectoral Mobility

To examine sectoral mobility, we define four states. We distinguish between the two types of public sector, namely, “Government” which includes local, central government and public authorities, and “Public Enterprise” which is made of publicly owned industries since the impact of adjustment may be different in those sub-sectors. We also define “Private” to include private, joint venture, foreign, and other categories. In addition, since we would like to capture exits from labour market by public sector workers, we use “Not Working” to include unemployed, students and those out of the labour force.

We first examine whether there is any evidence of labour reallocation from public to private sector during adjustment. Tables 1-4 show the sectoral transition rates in the 80s and 90s by gender and age group. Tables 1 and 2 show that the transition rates from both the government and public enterprises to the private sector have decreased- almost halved – in the 90s compared to the 80s. The overall public-private sector mobility rates were 4.8 percent in the 90s and 8.1 percent in the 80s. This is the result of several changes in the mobility patterns in the 90s compared to that in the 80s. First, female civil servants in the 1990s were less likely to move and lose their government jobs, which is reflected in their higher stay rate in the 1990s compared to the 1980s, and their higher stay rate compared to males in the 1990s. This indicates that female civil servants value lifetime job security and the additional benefits they get as civil servants, so they hold on to these government jobs (see Assaad, 1996). Secondly, older public enterprise workers (35-60 years old) had lower transition rates into private employment in the 90s than in the 80s. In other words, the transition statistics do not provide evidence of an increase in the mobility rates from the public to the private sector as a result of adjustment.

Now, we examine the transition rates from the public sector to non-participation (not-working) since one of the ways the government tried to downsize the public sector was through early retirements. There is very clear

evidence that the transition rates from the public sector to non-participation has increased in the 90s, from both the government sector and the public enterprise. Tables 3 and 4 show that the rates have doubled for the older group of workers in the 90s compared to the 80s. Thus, although there is no evidence that significant labour mobility between the public and private sector has taken place as a result of adjustment, there is clear evidence of a higher labour market withdrawal rate from the public sector in the 90s.

In addition, several other important points are worthwhile noting. Since the public enterprise has been going through privatisation restructuring, the transition rates into public enterprise from those out of the labour force (students and those unemployed) in the 90s have fallen. Also, those who were not working in 1991, primarily the young, both students and new entrants to the labour market, were twice as likely to end up in the private sector than in the government sector, Tables 3 - 4, indicating that the government sector is no longer the major absorber of new entrants into the labour market. Finally, although in terms of proportions, the transition rates from non-participation and into the public sector in the 90s seem higher than in the 80s, in absolute numbers they are less. The public sector was still growing in the 90s, but at a declining rate.

5. Determinants of Public Sector Mobility

In the previous section, we have examined the mobility patterns into and out of the public sector. In this section, we control for individual characteristics to ensure that the mobility patterns observed are not due to life cycle effects or the age &/or educational composition of the samples.

We first study the determinants of public-private sector mobility. It is assumed that this probability may be described as a logistic function of various socio-economic variables. This implies that the probability of an individual of type i is characterised by a vector Z^i

$$P_i = \exp(\beta' Z^i) / (1 + \exp(\beta' Z^i))$$

Where β_j is a vector of parameters obtained by maximum likelihood estimation and $P_i = 1$ for public worker moving to the private sector and 0 for staying in the public sector. The dependent variable is the logit of the probability of moving. The factors sought to affect mobility are gender, age, education and region of work at the beginning of the period. A male dummy is used. Five age groups dummies controlling for age at the beginning of the period, i.e. at 1981 or 1991, are included: 15-19, 20-29, 30-39, 40-49, 50-59 years old. Several different educational levels are used: illiterate, read & write, less than intermediate, intermediate, above intermediate, university and higher.

Finally, to control for the characteristics of the origin region in which the individual worked, six regional dummies are used: Greater Cairo, Alexandria & Canal Cities, Urban Lower, Urban Upper, Rural Lower and Rural Upper.

We estimate the probability of public-private sector mobility between 1981-88 and 1991-98. The marginal effects of the estimates are given in Table 5. Similar patterns emerge over the two periods. Males were more likely than females to move from the public to the private sector. However, the marginal effect of being male was greater in the 90s compared to the 80s. Workers between 30-49 years old were less likely to move than other age groups in both periods. There was a negative correlation between education and the likelihood of public sector workers moving to the private sector. In other words, the likelihood of moving into the private sector was higher for uneducated public sector workers than for the highly educated ones.

However, before comparing the predicted probability of public workers moving into the private sector in the 80s to the 90s, and to enable us to get a better picture of the exit options facing public sector workers, we allow for the possibility of exiting the public sector into the private sector or into non-employment which includes unemployment and out of the labour force. We now examine the determinants of a public sector worker moving into private sector, not working, or not moving using a multinomial logit. We assume that that $P_i = 1$ for public worker moving to the private sector; $P_i = 2$ for public sector worker not working and $P_i = 0$ for staying in the public sector. Table 6 displays the estimates. The determinants of moving from the public sector to the private sector were different from those of moving from the public sector and into non-employment. First, male public workers were more likely to move into the private sector, but less likely to leave the labour force, compared to females. Secondly, those over 50 were more likely to move out of the public sector either to private employment or into non-employment compared to other workers. Those with no education were more likely than other workers, to exit the public sector. Finally, public workers in Greater Cairo were the most mobile.

To compare the 80s to the 90s, we examine the predicted probabilities. Figs 1.1-1.3 show the predicted probabilities of public sector workers moving to the private sector.¹⁸ Both males and females public sector workers experienced a drop in the probability of exiting into the private. However, females experienced a more significant drop- the probability of public-private

¹⁸ Figures 1.1-1.3 and 2.1-2.3 are based on Table 6 and refer to a representative individual: male, public sector worker, 20-29 years old with university degree who works in Greater Cairo.

movements halved to 1.2 percent in the 90s compared to the 80s, though from a low initial level (3.6 percent) - because female civil servants held on to their jobs more than males in the 90s realising the scarcity of public sector jobs. It is also clear that public-private mobility was predominated by males and tended to be very limited for females. Both young and old public sector workers experienced a fall in the probability of moving to the private sector in the 90s- Fig.1.2. Overall, workers of all age groups saw a decline in the probability of moving to the private sector from the public sector. However, Fig 1.3 suggests that the highly educated public sector workers were the only group who have witnessed a decline in their probability of moving into the private sector in the 90s compared to the 80s. All the other educational groups saw an increase in the probability of exiting the public sector to private employment. Given the high shares of university graduates in the public sector it is not surprising that the higher mobility by other educational groups did not dominate the overall mobility patterns i.e. we did not see an overall increase in public-private movement. In addition, among uneducated workers, it was only the young uneducated males who had higher probability of moving to the private sector. Uneducated female workers did not show any significant change in their probability in the 90s. Overall, the probability of public-private sector movement has declined during the adjustment period, though for some particularly females and the highly educated workers, by more than the rest.

Figs 2.1-2.3 display the probability of public sector worker exiting to non-employment in the 80s and 90s. Females had lower predicted probability in the 90s, than in the 80s, to exit the public sector to non-employment. However, males, on the other hand, had higher predicted probability in the 90s than in the 80s. Thus, males were affected by the reforms more than females: males were more likely to move from the public sector and have early retirement during adjustment. This also confirms other findings that male labour force participation rates have declined during the adjustment period.

The predicted probability of young public sector workers exiting to non-employment increased slightly in the 90s compared to the 80s. However, it is the older workers (those older than 40 years old) who experienced a dramatic increase in their predicted probability of withdrawing from the labour market during adjustment; the predicted probability almost doubled in the 90s compared to the 80s. Again, this provides further evidence that the downsizing has taken place through early retirements and workers exiting the labour force rather than through sectoral mobility.

Finally, Fig 2.3 shows that the predicted probability of public sector workers leaving to non-employment increased during reforms for all educational groups. Those with no education, in particular, had a 13 percent predicted probability of not working during the reforms period.

6. Conclusion

The Egyptian government has turned to downsizing the public sector in an effort to reduce budget deficits and address the inefficiencies in the civil service as part of the economic reform programme. This paper studies the effect of economic reforms on public sector employment in Egypt. We find little evidence of public-private sectoral mobility during adjustment. However, the empirical evidence indicates that there has been an increase in the probability of not working and withdrawing from the labour market by public sector workers. In other words, no significant labour reallocation among *existing* workers took place during adjustment, but early retirement has been the main method used to reduce public sector employment.

Fig 1.1: Predicted Probability of Public-Private Sector Mobility by Gender (%)

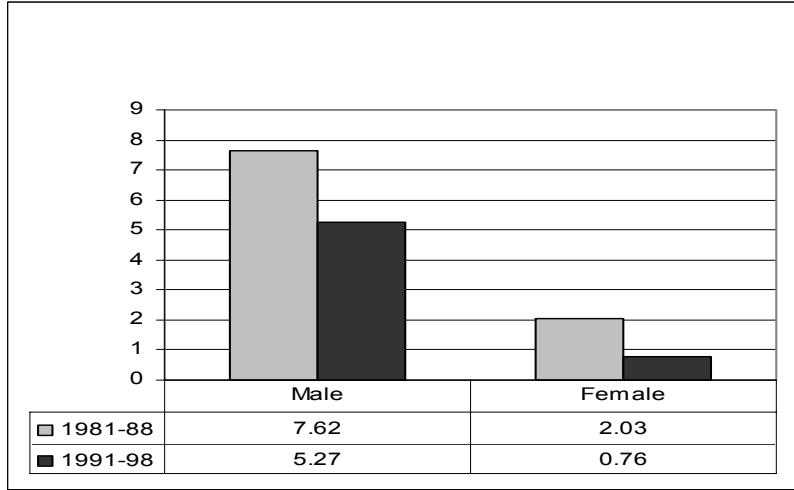


Fig 1.2: Predicted Probability of Public-Private Sector Mobility by Age Group (%)

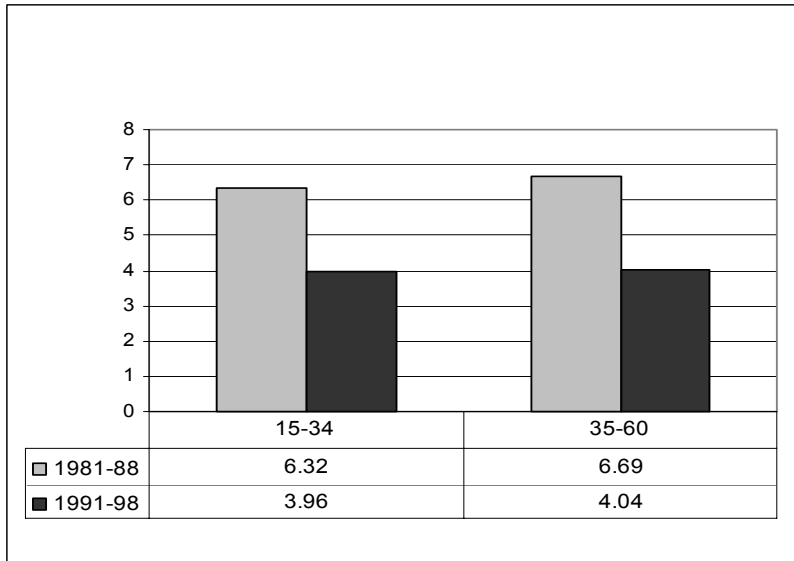


Fig 1.3: Predicted Probability of Public-Private Sector Mobility by Education (%)

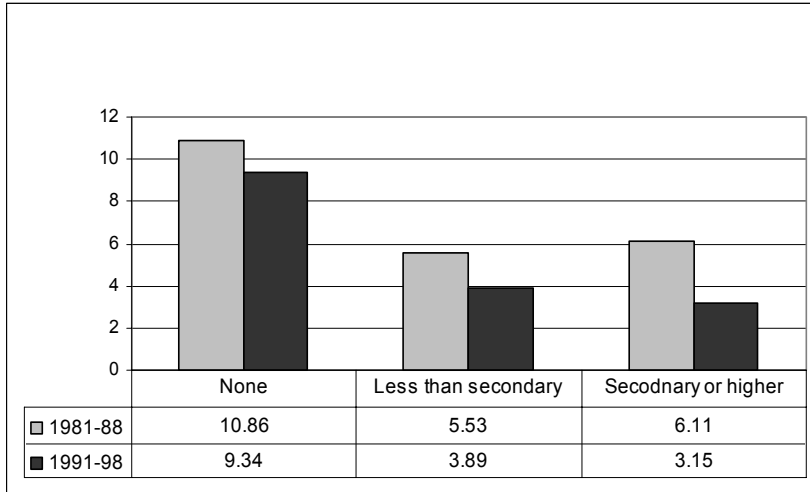


Fig 2.1: Predicted Probability of Public Sector - Non-Working by Gender (%)

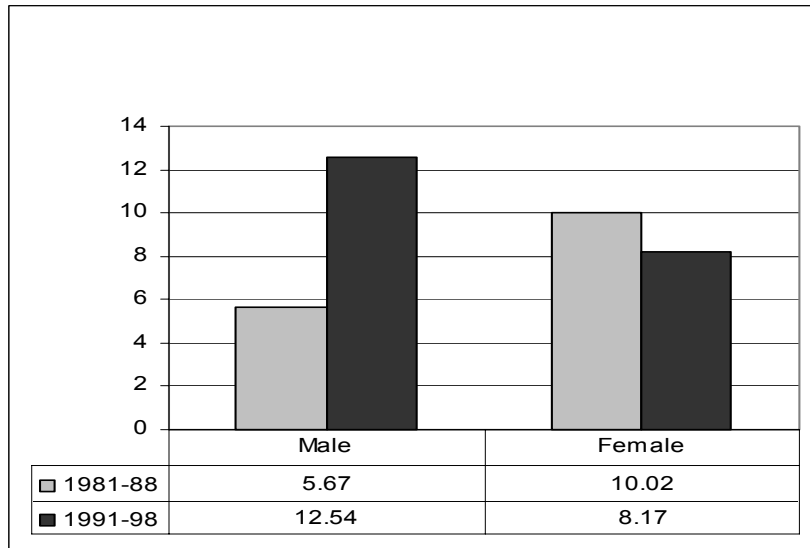


Fig 2.2: Predicted Probability of Public Sector - Non-Working by Age Group (%)

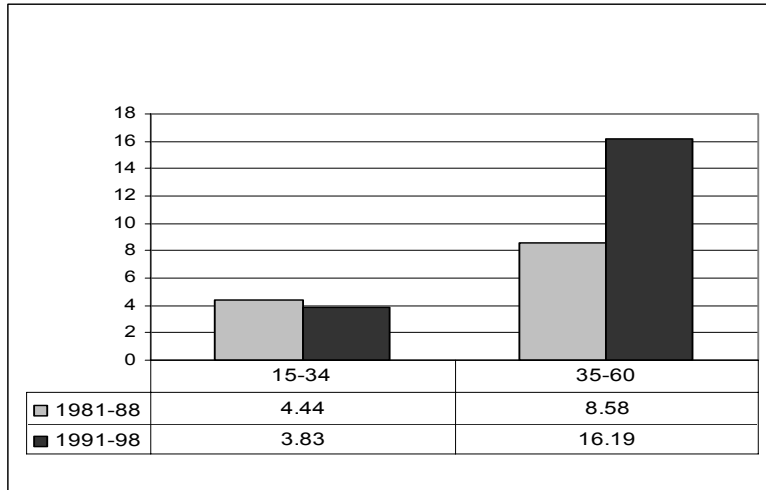


Fig 2.3: Predicted Probability of Public Sector - Non-Working by Education (%)

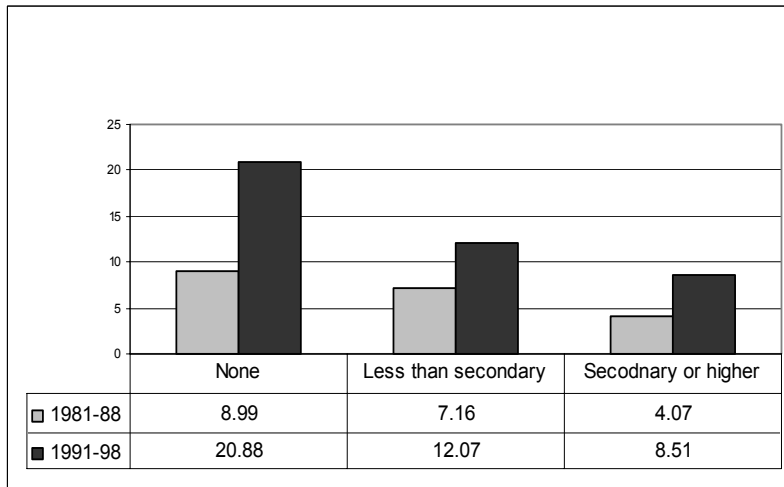


Table 1: Transition Rates by Sector between 1991-98 by Gender

Economic Sector in 1991	Economic Sector in 1998				Total
	Government	Public Enterprise	Private	Not Working	
Government	(M) 84.23	0.09	5.43	10.25	2870
	(F) 90.75	0.23	1.12	7.90	1179
	(T) 86.13	0.13	4.17	9.57	4049
Public Enterprise	(M) 4.04	71.50	7.97	16.49	1004
	(F) 0.00	72.06	1.53	26.41	1338
	(T) 3.56	71.57	7.21	17.66	1138
Private	(M) 5.54	0.86	84.42	9.19	6507
	(F) 3.29	0.00	72.67	24.04	701
	(T) 5.32	0.78	83.27	10.63	7208
Not Working	(M) 22.09	4.93	52.27	20.71	2135
	(F) 23.52	1.37	25.39	49.71	1496
	(T) 22.68	3.46	41.19	32.66	3632

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

Table 2: Transition Rates by Sector between 1981-88 by Gender

Economic Sector in 1981	Economic Sector in 1988				
	Government	Public Enterprise	Private	Not Working	Total
Government	(M) 86.74	0.76	8.45	4.05	1539
	(F) 83.74	0.61	3.97	11.68	486
	(T) 86.02	0.72	7.37	5.88	2025
Public Enterprise	(M) 3.13	78.43	10.65	7.78	947
	(F) 6.88	76.73	0.00	16.39	130
	(T) 3.59	78.22	9.37	8.82	1077
Private	(M) 4.40	2.04	88.32	5.24	4618
	(F) 0.76	0.18	85.02	14.04	1669
	(T) 3.43	1.55	87.44	7.58	6287
Not Working	(M) 23.37	10.15	46.86	9.62	1507
	(F) 12.01	2.14	12.29	73.57	2930
	(T) 15.87	4.86	24.03	55.24	4437

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

Table 3: Transition Rates by Sector between 1991-98 by Age Group

Economic Sector in 1991	Economic Sector in 1998				
	Government	Public Enterprise	Private	Not Working	Total
Government	(Y) 92.73	0.15	4.38	2.75	1864
	(O) 80.50	0.12	4.00	15.38	2185
Public Enterprise	(Y) 7.07	82.17	7.93	2.82	409
	(O) 1.59	65.61	6.81	25.99	728
Private	(Y) 7.67	1.12	83.09	8.12	4227
	(O) 1.99	0.29	83.53	14.19	2981
Not Working	(Y) 26.29	4.04	46.10	23.57	3060
	(O) 3.38	0.36	14.90	81.36	571

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

Table 4: Transition Rates by Sector between 1981-88 by Age Group

Economic Sector in 1981	Economic Sector in 1988				
	Government	Public Enterprise	Private	Not Working	Total
Government	(Y) 87.17	1.25	7.13	4.46	1099
	(O) 84.66	0.10	7.67	7.57	925
Public Enterprise	(Y) 6.40	79.10	8.17	6.34	559
	(O) 0.55	77.28	10.67	11.49	518
Private	(Y) 4.87	2.40	84.83	7.90	3723
	(O) 1.35	0.30	91.23	7.11	2564
Not Working	(Y) 19.22	5.94	27.72	47.12	3633
	(O) 0.72	0.00	7.41	91.88	805

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

Table 5: Determinants of Public to Private Sector Movement: Marginal Effects

Variables	1991-98	1981-88
<i>Gender</i>		
Male dummy	0.097 (0.427)*	0.0357 (0.451)*
<i>Age Group Dummies</i>		
15-19	0.097 (0.656)	0.057 (0.410)*
30-39	-0.060 (0.244)*	-0.029 (0.241)*
40-49	-0.088 (0.296)*	-0.027 (0.239)*
50-59	0.010 (0.225)	0.011 (0.275)
<i>Educational Levels</i>		
Read & write	-0.058 (0.417)	-0.018 (0.239)*
Less than intermediate	-0.042 (0.258)*	-0.015 (0.263)*
Intermediate	-0.075 (0.312)*	-0.035 (0.380)*
Above intermediate	-0.077 (0.418)	-0.084 (0.579)*
University & Higher	-0.069 (0.343)*	-0.008 (0.367)*
<i>Regional Dummies</i>		
Alex & Canal Cities	-0.013 (0.391)	0.017 (0.320)*
Lower Urban	-0.045 (0.347)	0.0003 (0.324)*
Upper Urban	-0.055 (0.311)*	0.022 (0.341)*
Lower Rural	-0.026 (0.206)	0.030 (0.308)*
Upper Rural	0.008 (0.284)	-0.007 (0.406)*
Log-Likelihood	-356.86	-386.69
Sample size	2368	1735

Notes: The standard error of the marginal effect is reported in parentheses. Robust (Huber/White/Sandwich) estimator of the variance was used in place of the conventional Maximum Likelihood Estimation variance estimator and observations were allowed to be not independent within cluster. * Statistically significant at the 5% level or better. Reference group: 20-29 years old, illiterate, and working in Greater Cairo.

Marginal effects are calculated at the reference set of individual characteristics and sample means. They show the increment in the probability of migration relative to the sample mean, corresponding to the particular characteristic, relative to the reference group.

Table 6: Multinomial Estimates of Public Sector Exits

Variables	1991-98		1981-88	
	Public to		Public to	
	Private	Not Working	Private	Not Working
<i>Gender</i>				
Male dummy	1.788 (0.421)*	-0.380 (0.178)*	1.159 (0.460)*	-1.477 (0.171)*
<i>Age Group Dummies</i>				
15-19	0.746 (0.645)	0.349 (0.445)	1.016 (0.442)*	2.022 (0.588)*
30-39	-0.835 (0.242)*	-0.881 (0.246)*	-0.902 (0.242)*	-0.408 (0.425)
40-49	-1.497 (0.292)*	0.203 (0.227)	-0.795 (0.241)*	-0.178 (0.460)
50-59	0.795 (0.217)*	2.860 (0.190)*	0.535 (0.287)*	2.601 (0.271)*
<i>Educational Levels</i>				
Read & write	-0.765 (0.358)*	-0.115 (0.347)	-0.452 (0.242)*	0.031 (0.311)
Less than intermediate	-0.702 (0.288)*	-0.809 (0.263)*	-0.406 (0.266)	-0.343 (0.424)
Intermediate	-1.280 (0.273)*	-0.857 (0.411)*	-1.266 (0.367)*	-0.631 (0.248)*
Above intermediate	-0.848 (0.398)*	-1.349 (0.224)*	-1.132 (0.571)*	-1.306 (0.500)*
University & Higher	-1.206 (0.312)*	-1.108 (0.225)*	-0.221 (0.358)	-0.485 (0.327)
<i>Regional Dummies</i>				
Alex & Canal Cities	-0.152 (0.388)	-0.112 (0.196)	0.289 (0.332)	-0.129 (0.288)
Lower Urban	-0.648 (0.356)*	-0.564 (0.150)*	-0.065 (0.327)	-0.626 (0.289)*
Upper Urban	-0.881 (0.310)*	-0.899 (0.136)*	0.251 (0.333)	-1.552 (0.232)*
Lower Rural	-0.492 (0.224)*	-1.370 (0.426)*	0.397 (0.308)	-1.242 (0.500)*
Upper Rural	-0.129 (0.310)	-1.274 (0.601)*	-0.287 (0.405)	-1.165 (0.604)*
Log-Likelihood	-924.34		-700.20	
Sample size	2368		1735	

Notes: Standard error is reported in parentheses. Robust (Huber/White/Sandwich) estimator of the variance was used in place of the conventional Maximum Likelihood Estimation variance estimator and observations were allowed to be not independent within cluster. * Statistically significant at the 5% level or better. Reference group: 20-29 years old, illiterate, and working in Greater Cairo.

PART 3

**INFORMALISATION AND STRUCTURAL
ADJUSTMENT IN EGYPT**

1. Introduction

Egypt has undergone a number of economic reform measures since the early 1990s, which have affected the labour market. One of the main issues of concern is whether, and the extent to which, labour market work has become informalised during the period of reform. This is important because informal employment has several drawbacks- lack of job security, lack of social security coverage, and lack of rights, to name just a few. Hence, there are concerns that as a result of economic reforms, an increase in informalisation would entail greater job instability and insecurity for more workers.

Economic reforms can lead to more informalisation of labour because adjustment requires a shift of resources from non-tradable to tradable sectors, from non-competitive sectors to more competitive ones, and from inefficient sectors to efficient ones. During reforms, informal employment is thought to expand as it absorbs displaced workers. In addition, labour markets reforms involve deregulation which lead to erosion of job security regulations and other worker protection. Thus, the growth of informalisation is seen as a likely outcome during periods of reforms because informal employment acts as a buffer between formal employment and open unemployment and, consequently, as formal sector jobs are destroyed during restructuring or recession, informal employment rises. Many developing countries have experienced an increase in informalisation during adjustment. For example, in Brazil, a shift towards unprotected employment was seen, while in Kenya and Ivory Coast a shift between formal and informal establishment in manufacturing took place. In Bolivia, informalisation was an important method of labour market adjustment, see Horton et al. (1994).

In an earlier study, Moktar and Wahba (2002) measure the degree of informality in the Egyptian labour market and find that the proportion of non-agricultural workers (over 18 years old) engaged in informal jobs - whether measured as lack of job contract or social security coverage- has increased by 5 - 6 percentage points in the 1990s. They also find that a substantial proportion of new entrants to the labour market in the 90s have ended up in informal employment. In the early 1970s, 20 percent of workers used to start their working life with informal jobs, but by 1998, 69 percent of new workers have started in informal employment. Moreover, they find evidence of higher persistence in informal employment. Thus the evidence suggests that in the 90s, the Egyptian labour market has experienced an increase in the informalisation of “*new*” workers.

This paper builds on Moktar and Wahba (2002) and tests formally whether informality has increased during the adjustment era. The paper controls for various individual characteristics, and more importantly for life cycle effects,

to be sure that the increase in informalisation, found when using simple descriptive statistics, is due to more workers being engaged in informal jobs and not due to the impact of other variables such as the age or educational composition of the sample used. Thus, we examine (i) whether economic reforms have led to higher probability of being informal worker, and (ii) whether new workers were more likely to be engaged in informal employment by the end of the adjustment decade.

The paper is as organized as follows. Section 2 describes the data used in this study. Section 3 discusses the transition to and from informal employment. Section 4 examines the determinants of the probability of a worker being employed informally before and after reforms. Section 5 studies the determinants of the probability of a new labour market entrant being engaged in informal employment and compare the pre-adjustment period with the post-adjustment one. Section 6 concludes by summarising the main findings.

2. The Data

This paper uses the 1998 Egypt Labour Market Survey, which is a nationally-representative household survey covering 5000 households. The survey includes extensive data concerning labour mobility and job history covering a number of employment characteristics such as employment status, economic sector, occupation, economic activity, job location, job stability, and job location in/out establishment. In addition, the 1998 survey has incorporated information on job contract and social security contribution to enable a better assessment of informal employment. The respondents provided employment characteristics for a specific point in time - August 1990: the time of Iraq's invasion to Kuwait, as well as giving information about the last change and the change before last in all of the employment characteristics and location of residence.

The purpose of this paper is to explore whether informality has increased or not, and amongst which groups of the labour force. Thus, this paper focuses on informal employment and workers, and does not attempt to study the informal *sector*. We only consider non-agricultural workers. We adopt the ILO 1993 definition of informality activity - that is unregulated by the formal institutions and regulations of society such as contract, labour laws, registration and taxation.¹⁹ Three measures of informality are used: (i) lack of job contract, (ii) lack of social security coverage, and (iii) lack of job contract *and* social security.

¹⁹ See Moktar and Wahba (2000) for a discussion on the definitions of, and differences between, informal employment and informal sector.

3. Mobility Into & Out of Informal Employment

The 1998 ELMS has collected information from employed persons on whether they have a job contract and social security contribution. This information is used to draw a picture of informality in the Egyptian labour market.²⁰ This section uses the existence of a job contract as its measure of formality; i.e. formal employment refers to workers who have job contracts. Since we also have information on social security, we differentiate between two types of informality. Semi-informal refers to those who have no contract, but have social security contribution; informal workers refer to those who have neither contract nor social security coverage.

For this analysis six states are defined: public formal, non-agriculture private formal (have job contract), non-agriculture private semi-formal (have no job contract, but have social security), non-agriculture private informal (have no job-contract, nor social security), agriculture, economic inactive (unemployed, female subsistence agriculture workers, and those out of the labour force).

Tables 1 and 2 show the patterns of mobility among the above six states between 1990-98 by gender and age group. First, there is no evidence to suggest that public formal – private informal mobility has been significant during the adjustment period. In fact, public formal employees were the least mobile group of workers. They tended to move mainly out of the labour force rather than to another sector. In contrast, Table 1 shows that 8 percent of private informal workers moved to public formal employment. For many, especially for the young as seen in Table 2, informal employment is a waiting stage for the public formal job. On the other hand, public formal workers do not tend to move to private formal jobs although private formal rates of transition to public formal employment is quite similar to that from private informal to public formal jobs.

Thus there is no evidence of labour moving out of public formal employment into private jobs as a result of reforms. However, private non-agriculture formal workers were the most mobile group of workers. More private formal non-agriculture workers moved into public formal work than into informal employment. Yet, the majority of private formal employees who moved, ended up out of the labour force by 1998.

Females, in particular, were more likely to leave the labour market from formal private employment - 41 percent did. In addition, females did not

²⁰ Unfortunately, similar information does not exist for the 1980s - was not collected in the 1988 LFSS to enable us to undergo a similar analysis.

move into formal private jobs from other states, reflecting the existence of barriers to the hiring of females in the private sector. However, private informal female workers were the least likely among all employed females to move into public formal jobs.

An equal proportion of those who were economically inactive in 1990 ended up in public formal jobs and in private informal ones (26 percent). Only 8 percent managed to secure a formal private job by the end of the period. Younger individuals were more likely to move into a formal private job than older individuals. Males were more likely to end up with a private informal job than with public formal work, while the opposite was true for women. Also, only 4 percent of economically inactive women moved to formal private employment by the end of the period. To sum up, there is no evidence of substantial exodus of public sector workers into private formal or informal employment during the 90s.

4. Are Workers More Likely to be Informal in 1998?

The aim of this section is to investigate whether after controlling for individual characteristics, the probability of informal employment has increased during economic reforms. Thus, we examine the probability associated with certain characteristics and also whether these determinants have changed over time. In addition, we predict the probability of a representative worker having informal job in 1990 and compare it to that in 1998.

First, we examine the data. We construct two samples. The first sample includes all non-agricultural workers between 15 and 64 years old in 1990. The second sample includes all non-agricultural workers between 15 and 64 years old in 1998. Since the Egyptian government initiated the implementation of structural adjustment programmes in 1991, we use 1990 as our source of information of the pre-adjustment period. Given that informal workers refer to those engaged in activity that is unregulated by the formal institutions and regulations of society such as labour laws, registration and taxation, we use three different indicators to explore the various dimensions of informality: (i) no job contract, (ii) no social security coverage, (iii) neither contract nor social security.

Table 3 presents the characteristics of informal and formal workers, using the three measures of informality, in 1990 and 1998. Similar patterns arise irrespective of which measure of informality is used. Thus, we will just focus in our discussion here on those who have no job contract (cols 2 & 9) to describe the characteristics of informal workers, but similar conclusions can be drawn if using the other measures of informality. The main characteristics

of informal workers are as follow. Informal workers are predominated by males. However, comparing 1998 to 1990, we find that the share of females among informal workers has risen by 3 to 4 percentage points. Formal workers (cols 1 & 8) are on average older than informal workers reflecting the fact that during the 90s, the time spent queuing for public sector jobs was longer than before, extending up to ten years in some cases after graduation. The educational composition of informal workers seems to have altered between 1990 and 1998. However, this is partly reflecting the changes in the educational composition of the total working population seen in column 7 and 14. Thus, the proportions of workers with no education or who could only read & write in the working population have fallen and so have their proportions in informal employment. Nonetheless, the share of those with only intermediate education in informal employment has increased by more than for any other educational group. Finally, examining the region of residence of informal workers, it seems that the shares of Greater Cairo and Lower Rural in informal employment have increased, while the shares of the other regions have fallen by the end of the 90s.

We estimate the probability of a worker being engaged in informal employment conditional on that individual working in non-agriculture activity; i.e. we do not control for whether an individual participates in the labour market or not, or correct for selectivity into agriculture and non-agriculture activities. To examine the changes in the determinants of being an informal worker in the 90s, we estimate two separate logit models of the probability of a worker being an informal worker using the three measures of informality discussed above: (i) in 1990, and (ii) in 1998, where it is assumed that this probability is a variable bounded by zero and one, and is described as a logistic function of various socio-economic variables. We control for the worker's gender, age, education and region of residence.

Tables 4-6 present the marginal effects using the three different measures of informality. These tables show the incremental impact in the probability, when we control for everything else, and are calculated at the reference set of individual characteristics and sample means.²¹ First, Table 4, shows that males were 24 percent more likely to have no job contacts compared to females in 1990, however, by 1998, that gap narrowed to 17 percent. The 15-19 years were the only group who were least likely to have job contracts compared to the 20-29 years old. The probability of having no job contract fell with age. However, the probability of having no job contract among those 20-29 years old seems to have increased in the 90s. Also, in 1998, illiterate

²¹ A reference individual is a male, 20-29 years old with no education, who lives in Greater Cairo.

workers were still the most likely group to have no job contract among all educational groups. The likelihood of having no job contract was negatively related to education. Those with university degrees were 56 percent less likely than those with no education to have no job contract in 1990. Region of residence also seemed to affect the likelihood of having no job contract. In 1990, workers living in Urban Lower Egypt were more likely than the rest to have no contracts, while those living in other regions were as likely as those living in Greater Cairo to have no job contracts. By 1998, only those living in Urban Lower Egypt were more likely to have no contracts, but all those living in other regions were less likely than those living in Greater Cairo to have no contracts.

Table 5 presents the determinants of absence of social security contribution and Table 6 shows the determinants of lack of job contract or social security, in 1990 and 1998. Both tables provide similar trends and indicate the following. In 1990 males were more likely than females to have no social security, and this pattern was unchanged by 1998. The youngest group (15-19 years old) were the most likely group to have no social security followed by those aged 20-29 years old both in 1990 and 1998. Those with no education were the most likely to have no social security. The probability of having no social security coverage declines with education.

Controlling for individual characteristics and life cycle effects, Table 7 shows the predicted probabilities of informality using the three different measures in 1990 & 1998. First, the results indicate that the probability of being informal worker was 5 percentage points more in 1998 than in 1990 using any of the measures of informality. Moktar & Wahba (2000) find that the proportion of non-agricultural workers who have no contract increased by 5.3 percent, and those with no social security by 5.9 percent between 1990 & 1998. Hence, this implies that the formal testing also supports the view that informality has increased in the 90s.

Secondly, it is also important to examine the extent of informality by group. An important finding is that the probability of informality increased for both male and female workers, though females experienced a bigger increase. Those less than 40 years old have witnessed a higher probability of being informal workers in 1998 compared to 1990. This confirms that the younger workers have been hit harder by economic reforms compared to the older workers. All educational levels- with the exception of those with post-graduate qualifications- have shown higher probabilities of being informal workers by the end of the 90s. Moreover, the increase in informality has been experienced by workers across all regions of residence and not only in Greater Cairo or urban areas.

5. Are New Entrants More Likely to be Informal?

In the 90s, new entrants to the labour market have been over-drawn into informal employment. In the early 1970s, 20 percent of workers used to start their working life with informal jobs, but by 1998, 69 percent of new workers started in informal employment- see Moktar and Wahba (2002). In this section, we will test whether the probability of new entrants to the labour market having informal job has increased during the adjustment era, as suggested by the descriptive statistics.

Two samples are constructed to enable us to study individuals who have entered the labour market (non-agriculture) 5 years utmost, prior to the reference point. The first sample includes those who entered the labour market between 1993 & 1998 and the second one is those who entered between 1985 & 1990; i.e. use 1998 and 1990 as the two reference points in time. This will enable us to predict the probability of a new labour market entrant being a formal worker in 1990 and compare it to 1998. We base our analysis on non- agricultural workers between 15 and 64 years old or more at the end of the period. We use lack of job contract as a measure of informality in this part of the analysis.

First, we examine the characteristics of the two groups of new entrants- Table 8. In 1990, 45.6 percent of new entrants had no job contract compared to 56.0 percent in 1998. Only 17 percent of non-contract holders were females in 1990, while by 1998, 24 percent were. Although the mean age of the non-contract holders increased by just 7 months from 22.3 to 23.0 years old, the age distribution shows that 60 percent of non contract holders were between 20 & 39 in 1998 compared to 56 percent in 1990. Another distinctive characteristics of the new entrants in 1998 is that 44 percent had intermediate education compared to 28 percent in 1990.

Table 9 displays the determinants of new entrants being informal worker. Gender affected the probability of new entrant being informal worker. Males were 35 percent more likely than females to be informal workers in 1990. However, by 1998, males were only 13 percent more likely than females to be informal implying that more females were joining informal jobs by 1998. The change in the impact of age seems only to be for the youngest group (those between 15 & 19 years old) over that period. They are the most likely to be informal with only a decline of 1 percent between 1990 & 1998. Overall, age seems to be inversely related to the probability of being informal. Education as well is negatively correlated with the likelihood of being informal worker. However, there is no apparent relationship between region of residence and the odds of being informal worker.

Figures 1-4 present the predicted probabilities of a representative new entrant (male, 20-29 year old with no education and lives in Greater Cairo) being informal worker in 1990 and 1998. The predicted probability that a male new entrant is informal increased by one percentage point only in 1998 compared to 1990. However, the main impact was felt by females who experienced 12 percentage point rise in their probability of being informal by the end of the 90s. The probability of informality increased for those younger than 40 years old, but the highest increase was experienced by those 20-29 years old. All educational levels witnessed greater likelihood of being informal; those with intermediate education experiencing almost 25 percentage points higher in 1990 than in 1998. New entrants in all regions had higher predicted probabilities of being informal in 1998 than in 1990, but the biggest increase was for those living in Lower Rural Egypt.

6. Conclusion

This paper tests for whether informality has increased during the adjustment era. After controlling for various individual characteristics and more importantly for life cycle effects, the main finding is that informalisation has increased in the Egyptian labour market during the 90s. The probability of being informal worker was 5 percentage points more in 1998 than in 1990. Although the probability of informality increased for both male and female workers, females experienced a bigger increase. Also young workers and those less than 40 years old have witnessed an especially large increase in the probability of being informal workers in 1998 compared to 1990.

In addition, the paper tests for whether new workers have been over-drawn in into informal employment in the 90s more than before. The findings indicate that the predicted probability of a new entrant being informal increased mainly for females who have experienced a rise by 12 percentage points in their probability of being engaged in informal employment during the 90s. The probability of informality increased for those younger than 40 years old, but the highest increase has been seen by those 20-29 years old. New entrants of all educational levels witnessed greater likelihood of being informal; those with intermediate education experiencing almost 25 percentage points higher in 1990 than in 1998. To sum up, even after controlling for individual characteristics, the empirical evidence suggests that informalisation has increased during the 90s mainly due to the rise in the probability of new entrants joining informal employment.

Fig 1: Predicted Probability of Informality of New Entrants by Gender

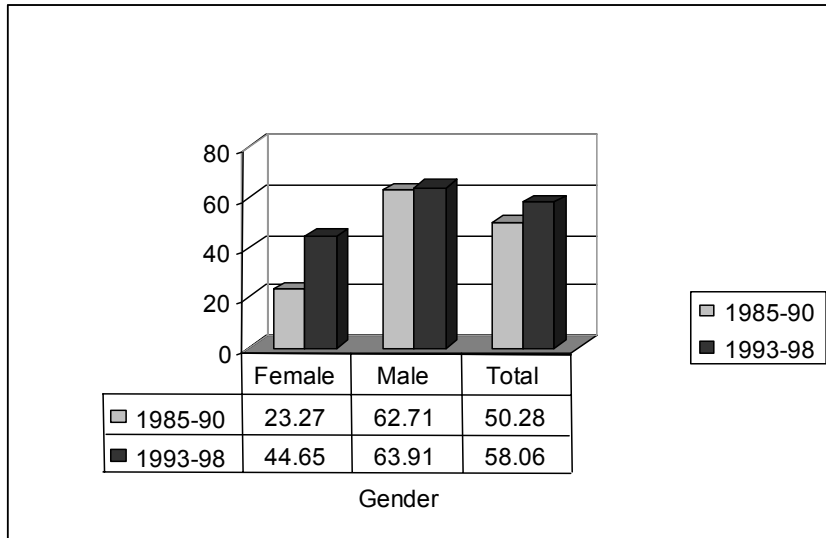


Fig 2: Predicted Probability of Informality of New Entrants by Age

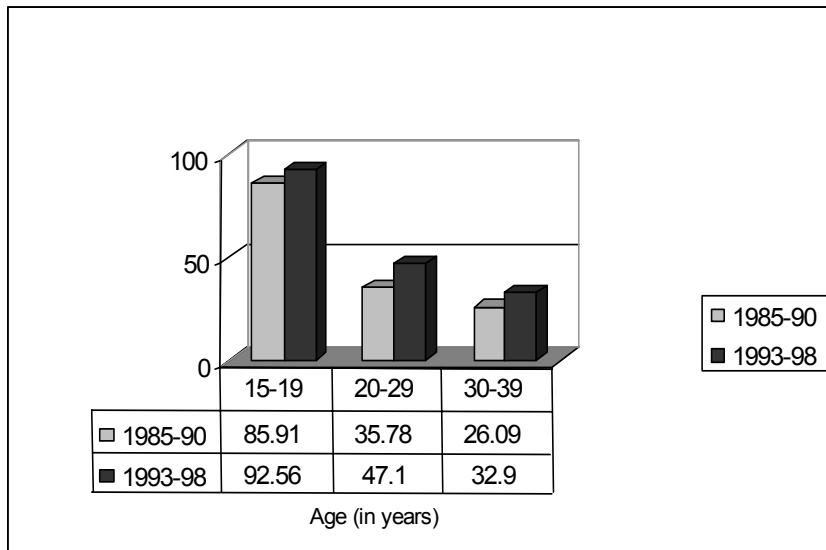


Fig 3: Predicted Probability of Informality of New Entrants by Education

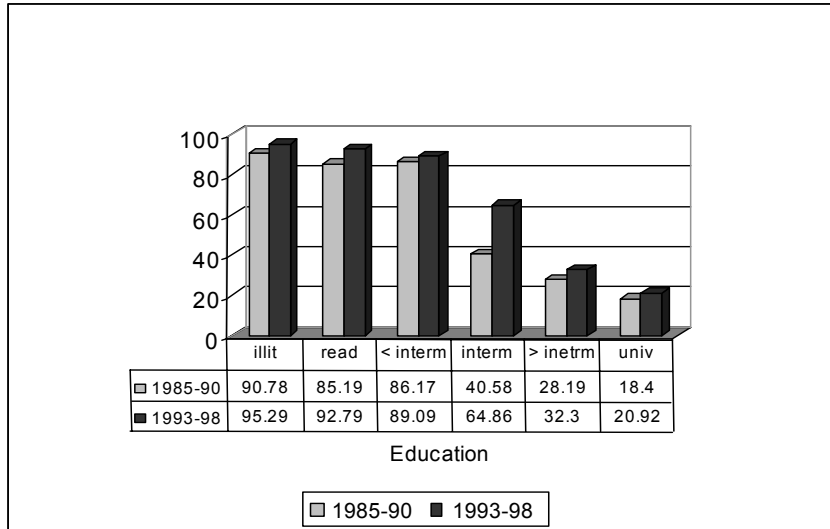


Fig4: Predicted Probability of Informality of New Entrants by Region of Residence

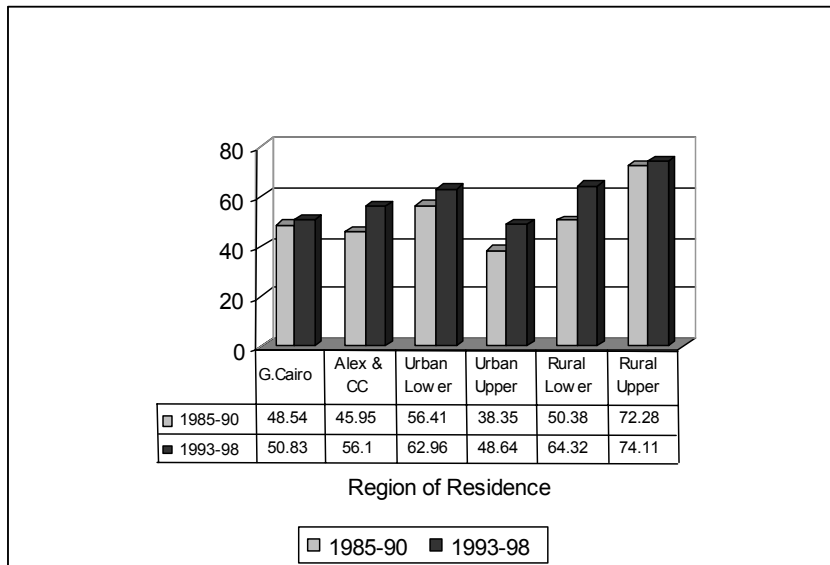


Table 1: Transition Rates between 1990-98 by Gender

	1998						Total
	Public Formal	Private Formal	Priv. Semi- formal	Priv Informal	Agric	Economic Inactive	
Public Formal	(M) 83.85	0.92	1.95	1.56	1.36	10.35	3573
	(F) 88.89	0.69	0.37	0.13	0.00	9.91	1277
	(T) 85.18	0.86	1.54	1.19	1.00	10.24	4850
Private Formal	(M) 8.55	68.80	7.04	6.39	0.65	8.56	506
	(F) 14.58	41.97	0.00	2.50	0.00	40.95	82
	(T) 9.40	65.06	6.06	5.85	0.56	13.08	588
Private Semi-formal	(M) 1.75	0.43	91.95	1.31	0.00	4.56	798
	(F) 6.37	0.00	78.91	0.00	0.00	14.72	32
	(T) 1.92	0.41	91.45	1.26	0.00	4.96	830
Private Informal	(M) 9.06	4.08	4.63	70.32	1.94	9.97	2479
	(F) 2.10	0.64	0.61	70.96	0.00	25.68	335
	(T) 8.23	3.67	4.15	70.40	1.71	11.84	2814
Agricul-ture	(M) 6.86	0.74	1.11	3.83	79.49	7.98	2311
	(F) 3.39	0.00	0.00	2.48	64.73	29.41	246
	(T) 6.52	0.67	1.00	3.70	78.07	10.04	2557
Economic Inactive	(M) 27.79	11.25	5.72	30.42	10.49	14.33	2000
	(F) 24.20	4.14	2.12	20.08	2.28	47.19	1381
	(T) 26.33	8.35	4.25	26.20	7.13	27.75	3381

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

M: Male, F: Female, T: Total

Table 2: Transition Rates between 1990-98 by Age Groups

		1998					Total	
		Public Formal	Private Formal	Priv. Semi-formal	Priv Informal	Agric		Economic Inactive
Public Formal	(Y)	89.08	2.01	1.50	2.07	0.00	5.35	777
	(O)	84.43	0.64	1.54	1.02	1.20	11.17	4073
Private Formal	(Y)	12.36	59.96	2.62	11.67	0.28	13.11	199
	(O)	7.88	67.66	7.82	2.87	0.70	13.07	389
Private Semi-formal	(Y)	7.43	1.14	79.58	3.18	0.00	8.68	149
	(O)	0.72	0.25	94.05	0.84	0.00	4.14	681
Private Informal	(Y)	11.58	3.76	3.83	68.36	1.29	11.18	1332
	(O)	5.23	3.59	4.44	72.24	2.08	12.43	1482
Agriculture	(Y)	8.54	1.06	0.28	5.59	75.17	9.36	990
	(O)	5.24	0.42	1.46	2.50	79.91	10.46	1567
Economic Inactive	(Y)	30.99	10.09	4.71	28.14	8.70	17.37	5659
	(O)	9.14	1.92	2.55	19.03	1.34	66.02	721

Note: Each entry is the % of the row. Each row adds to 100%. The last column gives the absolute number in thousands.

Y: 15-34 years old and O: is 35-64 years old in 1990.

Table 3: Characteristics of Workers in 1990 & 1998 (%)

	1990						Total sample
	Contract holders	Non-Contract holders	Social Security	No-Social Security	Contract or SS	Neither Contract Nor SS	
<i>Gender</i>							
Male	73.18	90.43	76.78	87.75	75.79	83.51	80.02
Female	26.82	9.57	23.22	12.25	24.21	16.49	19.98
<i>Age groups</i>							
15-19	1.14	11.74	1.01	15.67	0.87	15.74	5.34
20-29	22.78	31.12	22.06	35.75	15.81	34.53	26.11
30-39	35.71	25.22	35.10	23.08	31.77	24.23	31.55
40-49	25.43	16.71	25.49	13.58	29.63	13.07	21.97
50-59	14.08	10.99	14.65	8.58	18.31	7.04	12.86
60-64	0.78	2.61	1.15	2.33	2.30	2.24	1.50
Mean age in years	37.48	34.4	38.10	32.1	40.47	32.3	36.3
<i>Education</i>							
Illiterate	7.64	34.45	9.83	38.38	7.73	31.11	18.25
Read & write	9.11	18.07	11.69	14.97	8.74	11.96	12.65
Less than intermediate	12.90	24.17	14.70	23.57	13.86	24.25	17.37
Intermediate	30.62	13.40	27.89	14.05	29.40	23.07	23.80
Higher than intermediate	11.02	3.36	9.97	3.26	10.88	3.92	7.99
University	26.70	6.23	24.22	5.18	27.57	5.53	18.60
Post-graduate	2.00	0.31	1.71	0.42	1.83	0.16	1.33
<i>Region of Residence</i>							
Greater Cairo	22.90	17.39	21.61	18.58	23.82	20.81	20.71
Alexandria & Canal Cities	16.33	14.83	16.40	11.08	15.03	10.46	14.60
Urban Lower	18.98	21.67	21.01	23.25	18.40	18.84	16.46
Urban Upper	23.18	22.29	22.94	20.75	20.59	16.54	20.87
Rural Lower	11.06	11.31	10.87	12.33	14.86	19.21	15.53
Rural Upper	7.55	9.19	7.17	14.00	7.30	14.14	8.03
Sample size	2449	4054	2858	1196	3558	1864	3013

Table 3: Cont'd.

	1998						
	Contract holders	Non-Contract holders	Social Security	Non-Social Security	Contract or SS	Neither Contract Nor SS	Total sample
<i>Gender</i>							
Male	71.43	87.19	75.79	83.51	71.43	84.14	78.45
Female	28.57	12.81	24.21	16.49	28.57	15.86	21.55
<i>Age groups</i>							
15-19	0.70	12.60	0.87	15.74	0.93	16.37	6.00
20-29	17.15	28.64	15.81	34.53	16.90	33.24	22.27
30-39	32.98	24.42	31.77	24.23	31.40	24.61	29.17
40-49	29.73	16.69	29.63	13.07	29.15	13.23	23.92
50-59	17.88	10.12	18.31	7.04	18.00	7.12	14.43
60-64	1.22	3.60	2.30	2.24	2.27	2.30	2.28
Mean age in years	39.63	35.2	40.47	32.3	40.2	32.4	37.7
<i>Education</i>							
Illiterate	5.38	28.76	7.73	31.11	7.57	32.64	15.77
Read & write	6.70	13.78	8.74	11.96	8.72	12.18	9.85
Less than intermediate	11.62	24.70	13.86	24.25	13.98	24.52	17.43
Intermediate	31.76	21.54	29.40	23.07	29.52	22.49	27.22
Higher than intermediate	12.38	3.61	10.88	3.92	10.99	3.33	8.48
University	30.10	7.35	27.57	5.53	27.44	4.68	19.99
Post-graduate	2.06	0.25	1.83	0.16	1.78	0.17	1.25
<i>Region of Residence</i>							
Greater Cairo	24.52	20.62	23.82	20.81	23.95	20.40	22.78
Alexandria & Canal Cities	12.02	12.02	15.03	10.46	14.90	10.48	13.45
Urban	21.16	21.16	18.40	18.84	18.22	19.23	18.55
Lower Urban	17.11	17.11	20.59	16.54	20.55	16.32	19.19
Upper Rural Lower	17.40	17.40	14.86	19.21	15.01	19.11	16.36
Rural Upper	11.69	11.69	7.30	14.14	7.37	14.35	9.66
<i>Sample size</i>	2409	2409	3558	1864	3648	1774	5422

**Table 4: Determinants of Lack of Job Contract in 1990 & 1998:
Marginal Effects**

	1990	1998	
Male	0.241 (9.38)	0.171 (9.46)	*
<i>Age groups (ref.: 20-29)</i>			
15-19	0.262 (5.96)	0.246 (7.55)	*
30-39	-0.231 (-9.83)	-0.234 (-11.88)	*
40-49	-0.340 (-13.13)	-0.381 (-17.50)	*
50-59	-0.350 (-11.69)	-0.436 (-17.11)	*
60-64	-0.153 (-2.12)	-0.062 (-1.25)	
<i>Education (ref.: none)</i>			
Read & write	-0.240 (-7.81)	-0.258 (-8.73)	*
Less than intermediate	-0.287 (-9.93)	-0.299 (-11.46)	*
Intermediate	-0.560 (-22.04)	-0.561 (-23.14)	*
Higher than intermediate	-0.538 (-16.97)	-0.633 (-21.29)	*
University	-0.563 (-22.16)	-0.651 (-26.74)	*
Post-graduate	-0.558 (-8.21)	-0.665 (-9.72)	*
<i>Region of Residence (ref. : Greater Cairo)</i>			
Alexandria & Canal Cities	-0.023 (-0.75)	-0.011 (-0.47)	
Urban Lower	0.086 (3.15)	0.051 (2.48)	
Urban Upper	0.001 (0.05)	-0.044 (-2.04)	*
Rural Lower	-0.053 (-1.58)	-0.065 (-2.89)	*
Rural Upper	-0.042 (-1.19)	-0.068 (-2.51)	
Sample size	4054	5422	
Log likelihood	-1985.50	-2671.88	

Notes:* The difference in the marginal effect between 1990 and 1998 is statistically significant at the 5% level; i.e. the marginal effect in 1990 is not equal to that of 1998. Robust t-statistics are in parentheses. Marginal effects show the increment in the probability and are calculated at the reference set of individual characteristics and sample means.

**Table 5: Determinants of Absence of Social Security in 1990 & 1998:
Marginal Effects**

	1990	1998	
Male	0.119 (4.38)	0.033 (1.64)	
<i>Age groups (ref.:20-29)</i>			
15-19	0.366 (8.41)	0.270 (8.12)	*
30-39	-0.255 (-11.03)	-0.275 (-13.59)	*
40-49	-0.361 (-14.33)	-0.459 (-20.51)	*
50-59	-0.376 (-12.99)	-0.514 (-19.70)	*
60-64	-0.213 (-3.23)	-0.396 (-7.81)	*
<i>Education (ref.: none)</i>			
Read & write	-0.300 (-10.18)	-0.280 (-9.49)	*
Less than intermediate	-0.292 (-10.38)	-0.294 (-11.35)	*
Intermediate	-0.496 (-20.13)	-0.499 (-21.06)	*
Higher than intermediate	-0.470 (-15.09)	-0.556 (-18.35)	*
University	-0.502 (-20.01)	-0.610 (-24.82)	*
Post-graduate	-0.464 (-6.62)	-0.611 (-7.44)	*
<i>Region of Residence (ref.: Greater Cairo)</i>			
Alexandria & Canal Cities	-0.085 (-2.55)	-0.067 (-2.46)	
Urban Lower	0.023 (-0.78)	0.040 (-1.64)	
Urban Upper	-0.039 (-1.31)	-0.072 (-2.94)	*
Rural Lower	-0.057 (-1.63)	-0.034 (-1.39)	
Rural Upper	0.014 (0.37)	0.023 (0.80)	
Sample size	4054	5422	
Log likelihood	-1804.87	-2499.32	

Notes: * The difference in the marginal effect between 1990 and 1998 is statistically significant at the 5% level; i.e. the marginal effect in 1990 is not equal to that of 1998. Robust t-statistics are in parentheses. Marginal effects show the increment in the probability and are calculated at the reference set of individual characteristics and sample means.

Table 6: Determinants of Lack of Contract & Social Security Coverage in 1990 & 1998: Marginal Effects

	1990	1998	
Male	0.117 (4.23)	0.049 (2.33)	
<i>Age groups (ref.: 20-29)</i>			
15-19	0.338 (7.80)	0.298 (8.79)	*
30-39	-0.246 (-10.62)	-0.244 (-11.81)	*
40-49	-0.353 (-14.06)	-0.431 (-19.03)	*
50-59	-0.366 (-12.70)	-0.488 (-18.53)	*
60-64	-0.255 (-3.93)	-0.369 (-7.23)	
<i>Education (ref.: none)</i>			
Read & write	-0.301 (-10.34)	-0.298 (-10.06)	*
Less than intermediate	-0.294 (-10.59)	-0.316 (-12.14)	*
Intermediate	-0.495 (-20.58)	-0.508 (-21.83)	*
Higher than intermediate	-0.460 (-15.14)	-0.556 (-19.04)	*
University	-0.500 (-20.31)	-0.604 (-25.35)	*
Post-graduate	-0.460 (-6.64)	-0.583 (-7.42)	*
<i>Region of Residence (ref.: Greater Cairo)</i>			
Alexandria & Canal Cities	-0.075 (-2.22)	-0.059 (-2.08)	
Urban Lower	-0.008 (-0.26)	-0.026 (-1.04)	
Urban Upper	-0.037 (-1.23)	-0.071 (-2.76)	*
Rural Lower	-0.061 (-1.71)	-0.038 (-1.47)	
Rural Upper	0.023 (0.62)	0.024 (0.83)	
Sample size	4054	5422	
Log likelihood	-1764.86	-2432.31	

*The difference in the marginal effect between 1990 and 1998 is statistically significant at the 5% level; i.e. marginal effect in 1990 is not equal to that of 1998. Robust t-statistics are in parentheses. Marginal effects show the increment in probability and are calculated at the reference set of individual characteristics and sample means.

Table 7: Predicted Probabilities of Informality: 1990 & 1998

	No Contract		No Social Security		Neither Contract Nor Social Security	
	1990	1998	1990	1998	1990	1998
<i>Gender</i>						
Male	44.74	49.42	32.32	36.56	31.27	35.07
Female	18.23	25.73	17.38	25.64	16.49	24.12
<i>Age groups</i>						
15-19	87.36	93.10	83.86	88.94	86.89	89.92
20-29	47.28	57.37	38.03	46.70	39.61	51.18
30-39	31.44	37.14	20.73	27.59	21.34	28.56
40-49	30.11	30.85	17.61	17.35	18.16	17.09
50-59	33.85	31.28	19.17	16.12	18.16	16.79
60-64	68.50	70.02	40.84	32.88	46.54	33.65
<i>Education</i>						
Illiterate	74.48	80.63	61.46	67.16	61.84	67.20
Read & write	56.43	61.97	34.01	40.34	34.97	41.63
Less than intermediate	55.20	63.07	39.35	46.05	40.37	47.88
Intermediate	21.98	34.85	15.75	26.66	17.05	28.75
Higher than intermediate	16.65	18.99	11.30	13.06	11.97	16.04
University	13.06	16.44	6.51	7.68	7.94	9.60
Post-graduate	9.21	8.96	7.06	4.26	8.71	4.32
<i>Region of Residence</i>						
Greater Cairo	33.24	40.39	25.06	29.46	26.45	31.56
Alexandria & Canal Cities	33.50	39.57	21.40	25.45	22.02	26.65
Urban Lower	36.67	38.96	25.82	27.47	27.15	29.17
Urban Upper	47.01	50.52	30.99	33.54	31.44	34.48
Rural Lower	40.88	47.27	30.62	38.13	32.15	40.28
Rural Upper	40.49	53.86	29.46	48.47	31.56	50.17
Total	39.44	44.31	29.33	34.20	28.31	32.54

Table 8: Characteristics of New Entrants in 1990 & 1998: (%)

	1990			1998		
	Contract holders	Non-Contract holders	Total sample	Contract holders	Non-Contract holders	Total sample
<i>Gender</i>						
Male	51.38	82.89	65.50	59.87	76.45	69.19
Female	48.62	17.11	34.50	40.13	23.55	30.81
<i>Age groups</i>						
15-19	5.50	41.69	22.04	3.73	36.86	22.36
20-29	79.36	48.23	65.13	74.56	50.85	61.23
30-39	14.45	5.99	10.58	20.83	8.02	13.63
40-49	0.69	2.72	1.62	0.44	3.07	1.92
50-59	0	1.09	0.50	0.44	0.85	0.67
Mean of age in years	25.8	22.3	24.2	26.32	22.95	24.4
<i>Education</i>						
Illiterate	2.06	16.39	8.60	1.10	14.63	8.68
Read & write	1.61	9.29	5.11	0.04	3.10	1.93
Less than intermediate	4.36	27.87	15.09	3.95	22.38	14.27
Intermediate	37.39	28.42	33.29	30.48	44.23	38.19
Higher than intermediate	16.28	7.65	12.34	15.13	5.70	9.84
University	35.78	9.56	23.82	46.93	9.64	26.04
Post-graduate	2.52	0.82	1.75	1.97	0.34	1.06
<i>Region of Residence</i>						
Greater Cairo	21.10	20.44	20.79	25.88	19.45	22.26
Alexandria & Canal Cities	13.53	11.17	12.45	11.62	11.26	11.42
Urban Lower	19.95	24.25	21.92	16.89	20.14	18.71
Urban Upper	27.52	17.71	23.04	23.68	16.72	19.77
Rural Lower	12.61	11.99	12.33	15.79	20.14	18.23
Rural Upper	5.28	14.44	9.46	6.14	12.29	9.60
Sample size	436	366	802	456	581	1037

Table 9: Determinants of Lack of Contract of New Entrants in 1990 & 1998: Marginal Effects

	1990	1998	
Male	0.345 (8.66)	0.132 (5.21)	*
<i>Age groups</i>			
15-19	0.151 (3.23)	0.140 (5.20)	*
30-39	-0.172 (-2.58)	-0.114 (-2.90)	
40-49	-0.340 (-2.18)	0.038 (0.29)	
<i>Education</i>			
Read & write	-0.252 (-2.28)	-0.195 (-1.41)	
Less than intermediate	-0.254 (-2.75)	-0.376 (-3.88)	*
Intermediate	-0.607 (-7.68)	-0.588 (-6.22)	*
Higher than intermediate	-0.640 (-7.80)	-0.772 (-7.98)	*
University	-0.691 (-9.33)	-0.820 (-9.51)	*
Post-graduate	-0.665 (-5.18)	-0.799 (-5.40)	*
<i>Region of Residence</i>			
Alexandria & Canal Cities	-0.011 (-0.17)	0.039 (1.06)	
Urban Lower	0.033 (0.62)	0.047 (1.44)	
Urban Upper	-0.105 (-1.85)	-0.011 (-0.31)	
Rural Lower	-0.064 (-0.99)	0.009 (0.27)	
Rural Upper	0.080 (-1.19)	0.053 (1.28)	
Sample size	885	1087	
Log likelihood	-395.57	-503.32	

Notes: * The difference in the marginal effect between 1990 and 1998 is statistically significant at the 5% level; i.e. the marginal effect in 1990 is not equal to that of 1998.

Robust t-statistics are in parentheses.

Marginal effects show the increment in the probability and are calculated at the reference set of individual characteristics and sample means.

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