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EARLY RETIREMENT IN THE GOVERNMENT
SECTOR IN EGYPT: PREFERENCES,
DETERMINANTS AND POLICY IMPLICATIONS

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Abstract

The objective of this study is to look at factors affecting the decision of early retirement for Egyptian government sector employees. The empirical analysis is based on a 2005 nationally representative sample of 3437 government sector workers, ranging in age between 50 and 57 years. The study's main findings are: the age of 55 is shown to be the age of choice for early retirement for both men and women; women are more likely to retire earlier than men; good health status is associated with longer stay in the job; women are more educated than men; the level of education is not a determining factor for women, but it is for men; men without a university degree are more likely to retire earlier than others with a university degree; men plan to work after their early retirement; the presence of the working wife has a positive effect on her husband's decision to retire early, yet a working husband discourages his wife to retire early. Meanwhile, the policy implications discussed are: timing of the announcement of the plans; the question of voluntary vs. compulsory early retirement plans; the potential outcome of excessive payoffs and curtailing adverse selection by targeting redundant employees and preserving the most productive; and the need for the government to provide early retirees with the necessary skills and training to face their post retirement years.

ملخص

الهدف من هذه الدراسة هو النظر في العوامل التي تؤثر على قرار التقاعد المبكر بالنسبة لموظفي القطاع الحكومي في مصر. وهذا التحليل التجريبي يعتمد على عينة من 3437 موظف حكومي تمثل مختلف المناطق عام 2005، وتتراوح أعمار هذه العينة بين 50 و 57 عاما. وأهم النتائج التي توصلت إليها الدراسة هي: بالنسبة للرجال والنساء يتم اتخاذ قرار التقاعد في سن 55. وتميل النساء إلى التقاعد أكثر من الرجال. وتكون فترة البقاء في الوظيفة أطول إذا كان الموظف يتمتع بصحة جيدة. المستوى التعليمي بين النساء أعلى منه بين الرجال؛ ولكنه ليس عاملا حاسما بالنسبة للنساء بل هو حاسم بالنسبة للرجال، فالرجال الذين لا يحملون شهادات جامعية أكبر يحتمل تقاعدهم في سن أصغر من أولئك الذين أكملوا تعليمهم الجامعي. ويخطط الرجال للعمل بعد التقاعد المبكر. وللمرأة العاملة أثر إيجابي في قرار زوجها بشأن التقاعد المبكر؛ ومع هذا فإن وجود الزوج العامل يثبط من رغبة الزوجة في التقاعد المبكر.

وبالنسبة لمقترحات السياسة التي تم نقاشها فهي: توقيت إعلان الخطط. التقاعد المبكر الطوعي والإجباري. النتيجة المحتملة للإفراط في الأموال المدفوعة وتقليص الاختيار غير المؤثر عن طريق استهداف الموظفين الزائدين عن حاجة العمل مع الاحتفاظ بأكثرهم إنتاجية وضرورة أن تزود الحكومة للمتقاعدين مبكرا بالمهارات اللازمة لمواجهة مرحلة ما بعد التقاعد.

I. Introduction

One of the recommended stabilization and structural adjustment policies suggested by the World Bank and the IMF is the privatization and downsizing of the overcrowded public and government sectors. Early retirement, has been considered one of the most effective tools for downsizing. Often financed or heavily subsidized by the government, early retirement facilitates the privatization process, and mitigates the adverse social impacts of layoffs when unemployment benefits are unavailable.

In 1990, Egypt embarked on a program of economic liberalization and reform. At the heart of this program was the privatization of state-owned enterprises (SOEs), public and government sectors. The rationale for privatization and labor force restructuring is to fuel private sector interest in the businesses being privatized, such as SOEs. Shedding excess labor would render the business more attractive to prospective investors, and reduce operating costs to enhance the business's financial viability.

Privatization and structural adjustment proponents believe this process would not be efficiently realized without an effective early retirement program with fair and satisfactory compensation packages[1] or simply an arrangement that fairly compensates workers for the loss of guaranteed lifetime employment and benefits. This instrument—early retirement incentives— is often used where labor laws ban layoffs, or where labor unions are strong. Based on the proceeds generated from privatization in Egypt, a fund was created in 1997 to implement early retirement programs.

One of the features of the Egyptian economy is the dominance of state-owned enterprises. Public sector and state owned enterprises in Egypt have been characterized by overstaffing and excess employment. According to CARANA (2002a), estimates of overstaffing in typical SOEs before labor force restructuring ranged from 30% to 60%. At the start of the privatization program in 1991, Egypt's total labor force was around 15,250,000 employees. The government was by far the largest employer in the country, accounting for 37.4% of aggregate employment, or approximately 5,500,000 employees (CARANA, 2002b).

The minister of social insurance, the minister of finance and the minister of investment in Egypt have put pension reforms high on their reform agenda. Before the new reform package, which went into effect on 15 January 2006, the retirement age for women was set at 50, the same as for men. Now under a new reform package, women are eligible for early retirement at the age of 45 provided they had worked at the same enterprise for at least 19 years, whereas men are still eligible at the age of 50. Women groups believe these reforms —permitting optional early retirement for women at an earlier age than men —will result in increased marginalization of women workers. On the other hand, Egyptian economists say it will grant companies greater freedom and promote privatization. Al-Ahram (a daily newspaper) praised the reform as being "useful," and reported that the government has earmarked US $80 million for the scheme.

A considerable amount of research has been carried out concerning early retirement programs and their important economic impact. Unfortunately, most of the literature has focused on developed countries. That employment problems in developed countries vary significantly from those of developing countries is a well established fact. Developed countries are challenged with the threat of an aging labor force and low replacement rates. Whereas, developing countries suffer from the backlog of unemployment lines, coupled with increased

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[1] Kikeri (1999) reports that payment ranged from 18 months salary in the case of Brazil to two and three years salary in restructuring programs in Argentina and Bangladesh.

rates of population growth and growing labor force participation rates, especially young women in Latin America and the Middle East (ILO, 2006).

Although several studies with an Egyptian focus have discussed retirement benefits and related problems such as the need to reform the PAYG (Pay As You Go) system, and the different investment strategies regarding the fund assets (Maait, Ismail and Khorasanee (2000) and Osman and Salah, (2001)), this is the first study dealing with early retirement preferences for government sector workers and the determining factors in the decision to retire early. The purpose of the study is to identify variables affecting the decision to retire before the age of 60, the legal age of retirement, and characteristics of early retirees. With many employees accepting early retirement packages in Egypt, the need to understand the factors determining their decision is relevant.

This study aims to answer the following questions:

Is early retirement a preferred choice for government sector workers?

- What are the characteristics of workers expected to retire before the legal age of retirement?
- At what age bracket is the worker most likely to retire?
- Is wage level a determining factor in early retirement decision?
- Are double wage earners in the household more likely to retire early?
- Is the level of education a determining factor in the decision to retire early?

The rest of the paper is organized as follows: Section II is a review of the institutional background and early retirement reforms in Egypt. Section III offers a literature review on the methodology. Section IV presents data, methodology and estimation procedures. Section V discusses empirical findings of the study. Finally, Section VI provides the conclusion and policy recommendations.

II. Institutional Background and Early Retirement in Egypt

The current social security system in Egypt was established by Law 79 of 1975 which covers civil servants and employees in public and private sector enterprises. The system was then extended to include the self-employed (Law 108 of 1976), Egyptian workers abroad (Law 50 of 1978) and finally embraced casual workers (Law 112 of 1980). Law 79 of 1975 provides benefits for old-age, disability, death, work injury, illness, medical care, maternity and unemployment. The social security system is managed by two separate funds: one manages government workers and the second handles workers in the public and private enterprises, the self-employed, casual workers and Egyptians working abroad.

Early retirement is optional for employees, who wish to end their service before the legal retirement age of 60 years. It is administered with the cooperation of the holding companies, their affiliates, the Egyptian labor syndicate union and the employee. The employee must have at least 20 years of contributions. The pension is reduced by 15% if the employee is younger than 45 years, by 10% if the worker is between 45 and 49 years, and by 5% if the worker is between 50 and 54 years. The minimum pension is 50% of the average wage in the last 2 years (if the qualifying period is not less than 20 years) or 100 pounds a month. The maximum pension is 80% of average earnings or 920 pounds a month, whichever is less. Lump-sum gratuity: 15% of the average annual basic wage for each year of contribution beyond 36 (years?). (SSPTW, 2003). The size of the pension in the early retirement incentive plans depends on the worker's age, the number of working years, and the average salary over the last (how many??)years.

Early retirement age for both men and women was set at 50. Under the new reform package which went into effect on 15 January, 2006 women will have the option to retire at age 45[2] if they had worked for the same organization for at least 19 years, and receive a maximum compensation package of $7,500 and a minimum of $2,900. Critics and women's groups believe that current reforms permitting optional early retirement for women at an age as early as 45 will result in increased discrimination against women workers. They suggest that women employees who have an earlier access to lump sum money before men, and women in low income families will feel pressured to volunteer an early retirement to pay off family debt or help in household major expenditures (VOA, 2006).

A recent survey in Egypt — conducted to determine the consequences of accepting early retirement after privatizing several public sector enterprises — showed that many retirees quickly spent their compensation on family emergencies and other immediate needs, that the reduced pensions were not adequate to support their families and that early retirees did not obtain new jobs. Retirees became unproductive and burdened their families. The survey pointed out to the shortfall of the program to meet social objectives for early retirees. Workers did not have sufficient information to make a rational decision, nor were they provided by training or counseling services. In many instances, workers reported that they were pressured to volunteer for early retirement because of indications that they may receive poor treatment from new owners, face relocating to inconvenient sites and that government resources were limited and so any deferral of a decision could result in lesser compensations in the future…etc. On another front, workers eligible for a pension did not understand that early retirement pensions are in fact reduced pensions. Others did not expect changes in the availability of health benefits. (CARANA, 2002a).

III. Literature Review

Feldman (1994) adopted a traditional definition of retirement, and was followed later by others such as Beehr, Glazer, Nielson, and Farmer (2000). According to Feldman, retirement is defined as a state of exit from a current job that has been held for some time, with the intent of less commitment to work and a decision that is taken sometime after the individual's middle age. Dutcher (1999) has also provided several definitions for retirement: an individual may exit his career and remain out of the labor force; may begin a new career; may work part time in his previous organization or work part time in a new one. It may also encompass other characteristics such as: it is a sudden rather than a gradual process; it is a permanent state and in case of early retirement it is a voluntary choice, despite being subject to opportunities and/or constraints offered by employers and pension arrangements.

Previous research on early retirement —in developed countries in general and on women in particular — is limited due to lack of data. There are three common elements in the recent trends of labor markets across developed countries. First, all countries face aging of their population and labor force. Second, in all developed countries the labor force participation of older workers has decreased significantly in the last few decades. Third, most governments of developed countries stress the importance of reversing the trend toward earlier retirement from the labor force, as is the case of the European Union (de Vroom and Guillemard 2002, Herbertsson 2001.

Nearly all developed countries have a standard retirement age of 65 years. Although steps are taken to gradually raise the retirement age to 65, Japan, Germany and women in the UK still have an official retirement age of 60 years. The US has decided to increase the age of

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[2] It is well agreed upon that the age of 45 is the age at which worker's maximum productivity is achieved, according to Marchetti (2002).

entitlement to full benefits beyond the age of 65. Sweden has proposed a law to give the employees the right to remain employed until the age of 67. Moreover, in Sweden and the US mandatory retirement arrangements are abolished. Guillemard (1999) states that the above measures signal a determination of governments to put an end to the golden age of early exit and to gradually shut down retirement schemes.

Extensive literature dealing with the effect of economic incentives on retirement treats the retirement decision essentially as a labor supply issue. Workers who approach the retirement age evaluate their prospective wage and pension streams, and choose the retirement age that maximizes their expected lifetime earnings or utility. Substantial empirical evidence indicates that the incentives provided by the social security systems have an impact on the age of withdrawing from the labor force. Pensions that are actuarially unfair encourage early retirement, and countries with more generous social security benefits tend to have a lower average retirement age (Gruber and Wise (1998), Herbertsson (2001)). Boskin (1977) was one of the first to pay close attention to the effects of incentives on early retirement. Others who followed suit were: Quinn, Burkhauser, and Myers (1990), Stock and Wise (1990) and Fields and Mitchell (1984) in the US. Empirical work in Europe has also examined early retirement using an incentive-based approach. Examples include Borsch-Supan (1992) for Germany and Meghir and Whitehouse (1996) for the UK.

Of the limited literature on the issue of early retirement in developing countries are those of dismissed workers from SOEs in Turkey. Tansel (1998) and (2002) estimates the impact of privatization on dismissed workers in Turkey in the cement and petrochemicals sectors, and evaluates welfare losses associated with moving from high rent formal public sector jobs to informal and poor quality private sector jobs. About one third of the dismissed workers' sample continued to work and half of those established their own business with the help of the severance package.

On the other hand, the employer —or the demand side — has received much less attention from retirement literature. In a pure labor supply model, workers are free to choose the retirement date that is optimal for them. Yet firms may also encourage their workers to retire early. Early retirement can be a soft way to reduce or to renew the workforce.

Most of the earlier research on early retirement has focused on individual differences variables (such as gender, marital status, health status, work related factors like years of experience, and the attitude towards retirement) and their impact on the decision to retire (Beehr (1986), Pollman and Johnson (1979) and Schmitt and McCune (1981)). Other studies addressed an important set of variables that influence early retirement decision such as variables related to the opportunity for different career tracks such as secondary vs. primary jobs, and part-time vs. fulltime jobs (Doeringer (1990) and Ruhm (1990)). A third set is related to organizational variables such as wage level, pensions, type of industry, sector and size of the firm (Rosen and Jerdee (1989)). Equally important is a set of variables related to environmental conditions and the macroeconomic status such as level of retirement, taxation, GDP growth rates, inflation and unemployment rates.

Regardless of the important gender differences, most of the research on early retirement was male based (Haveman, Wolfe and Warlick (1988), Berkovec and Stern (1991), Blau (1994), Meghir and Whitehouse (1997) and Riphahn (1997)). The analyses of gender differences in early retirement are more limited. Talaga and Beehr (1995) study gender differences in retirement decisions in a large manufacturing organization (US). Their results show that retirement decisions differed between men and women primarily when dependants lived in the household, when the health of one's spouse was a consideration, and when one's spouse was retired.

A great number of studies document that husbands and wives coordinate work and retirement decisions, but there is no clear evidence as to who is leading who. Ruhm (1996) suggested that since women normally marry older men, management of retirement implies that wives are likely to retire at a younger age than their husbands. Another class of research suggests that men as a group retire earlier while women as a group do not (Clark (1988) and George, Fillenbaum and Palmore, 1984). Furthermore, the presence of children in the family appears to have only a minimal effect on women, while it significantly reduces the probability of leaving the labor force for men (Perrachi and Welch (1994) and Reitzes, Mutran and Fernandez (1998)).

There are some studies of early retirement based on data from the Nordic countries, and several of these are found in Wadensjö (1996). Pedersen and Smith (1996), using a competing-risk model with three different end-states, find that there are significant gender differences in the decision to retire early in Denmark. These results may be contrasted with those of Lilja (1996), based on Finnish data and using a competing-risk model with four destination states, who finds that the propensity for early exits does not differ significantly between men and women. Her study also shows that the presence of a retired spouse at home encourages the other spouse to consider early retirement. Furthermore, women are less likely than men to take early retirement or to retire to unemployment, and more likely to exit without an immediate pension.

Research in developed countries found that married couples are more likely to retire early than single workers. Erdner and Guy (1990) found that individuals were less likely to retire if their spouses were working. Individuals with poor health are more likely to retire early. Poor health contributes to early retirement (Muller and Boaz (1988)) and makes early retirement a necessity rather than a voluntary decision. Not all health conditions will influence the decision in the same way or direction. Anderson and Burkhauser (1985) and Colsher, Dorfman and Wallace (1988) found that poor health conditions will positively influence the retirement decision but a moderate health condition may influence workers to stay longer in the labor force. Besides, the higher the wage and the expected benefits the more likely it is to retire early because employees believe they will be able to sustain the same standards of living. Godofsky (1988) found out that downsizing organizations in the US induced early retirement by offering incentives such as 5 extra weeks of severance pay and 5 extra years of pension in addition to calculating the pension as if the individual is 5 years older.

Finally, previous research showed that education has an ambiguous relationship with the retirement decision. On the one hand, higher education increases the opportunity cost of leaving work given that education is closely related to earned income. On the other hand, accumulated savings from higher wages throughout the worker's life may double as another proxy for wealth and act as an incentive to retire early. Besides, as Quinn et al (1990) suggest, for the United States education may increase non-monetary benefits associated with work. These effects will act to prolong the working life of the more educated worker.

IV. Data and Descriptive analysis

The empirical analysis is based on a 2005 nationally representative sample of government sector workers. The survey was conducted by the IDSC (Information and Decision Support Center in December 2005). The sample resulted in 3437 current employees of government sector personnel, ranging in age between 50 and 57, covering seven governorates: Cairo, Giza, Beheira, Sharqia, Suez, Asyout, and El-Menia. The sample is representative of all three professional ranks and activities (administrative (Idary), organizational (Hay-aat) and local

(Mahale-yat)) 3. The final working sample held 33974 government employees5. The survey provides rich data on basic demographics, experience, occupation, hours of work, wages, health, income, current levels of expenditures, skills, attitude towards early retirement and planned investment after retirement[6]. In what follows, the word "expected" is synonymous with the word "preferred". That is, expected age of retirement refers to the age at which the respondent expects (or plans) to retire, not the predicted age of retirement.

In the following analysis, the preferred age of retirement is arranged into three age brackets: expected to retire on or after 50 but before 55 (from 50-54), expected to retire on or after 55 but before 58 (from 55-57) and those who don't plan to retire early are grouped into "old age" category (retiring at 60 years of age or the legal age of retirement).

Figures (1 and 2) below, Table (A-1) and Figures (A-1 through A-6) in the appendix present the distribution of respondents by their expected age of retirement and gender. Among the most important statistics are[7]:

- About 70% of the sample is expected to retire between 50 and 57—see Figure (1), with almost equal percentage for women and men (36% and 34% respectively).
- Two thirds of women who expressed their desire to retire between 55 and 57 were relatively young (between 50-53) compared with 56% of men (see Figure (A-1) in the appendix). Men exceed women in their preference to retire later. Over a third of men plan to retire at age 60, compared with 22% of women (Figure 2).
- Most of the respondents, especially women, have over 20 years of experience (which means they are eligible for early retirement if they satisfy their contribution conditions).
- Nearly all of them are working in urban regions.
- More women than men have a high level of education, most often a university degree, while close to a third, and in some cases over a third, of men have only had a primary education or lower[8].

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[3] For a complete description of survey instruments and procedures, refer to: Ramadan, Mohamed (2006). "Analysis of Early Retirement Survey", in Arabic; IDSC, January 2006.

[4] The original sample has 3437 observations, of which 40 observations had incomplete data points. The variable "Having a working spouse" had 404 missing observations, which were imputed using logit model. (see van Buren et al. (1999) for further technical details.

[5] A note on monthly wages: there were some discrepancies between total wages and the calculated wage for women. For example, there were 3 cases where employees earned 7400, 9300 and 12000 as additional wage (over and above the basic wage). These cases were treated as outliers and the values were replaced by the average wage of women. A more precise method would have been to replace these values with the mean wage of a similar individual with the same professional rank, level of education and type of organization…etc).

[6] The survey also tested which retirement plan workers choose the most, although workers were not aware of all alternatives when interviewed, as follows: The respondent was faced with the first early retirement incentive (1- retire at the age of 55 and acquire his pension as if he retired at the legal age of 60 years); if declined, he is faced with the second, and little more generous, alternative (2- if the worker is over 50 years of age, he is entitled to early retirement and upgraded to the next level of the occupational ladder (rank) starting the day before he begins his retirement, provided that his current age does not exceed 57 years); if turned down, the third alternative is revealed (3- a monthly bonus equals his average wage during the last year of service, in addition to covering his social insurance payments for five more years); if rejected, he is offered the most generous alternatives (4- a monthly bonus equals double his average wage during the last year of service, in addition to covering his social insurance payments for five more years).

[7] For a complete statistical description of the sample, refer to: Ramadan, Mohamed (2006). "Analysis of Early Retirement Survey", in Arabic; IDSC, January 2006.

[8] Illiterates are those with less than 4 years of education working in supportive jobs, according to CAPMAS (Central Agency for Public Mobilization and Statistics) definitions.

- Approximately one quarter (26%) of women who preferred to retire at old age were the primary breadwinner for the family, which may explain their preference for late retirement.
- Nearly all men in the three categories are the heads of the household, while a sizeable portion of women preferring to retire early, are spouses to heads of their household.
- Considering the professional level of the current sample, the table reveals that over two thirds of women in all retirement categories hold the highest occupational ranks[9] (first and beyond), which may explain the higher wages they receive compared to men.
- On average, men earn 82% of what women earn, which substantiates the fact that males, on average, hold lower positions/occupational ranks than females, as indicated in the previous point.
- The majority of workers have between three and five kids in their household. However, working women have a lower number of kids (3-5) compared to males (over 5 kids).
- House payments do not constitute a major expense since the common trend is either to own the household or to pay an old rent.
- Between 59-65% of men in the three retirement age categories have an out-of- the- labor-force spouse, in contrast, between 65%-85% of women have working spouses.
- One surprising outcome though is when asked if spouse would work after retirement, 84% of women retiring early (at 50-54) do not expect their spouses to work after their early retirement. Then again, close to two thirds of men preferring to retire as early as 50 to 54 of age expect their spouses to work, at least part time.
- It was interesting to find that most workers believe their current work does not require any skill, and over 75% of them report that they don't use computers at work.
- It is also obvious that women are eager to acquire new skills as over two thirds reported receiving training on new skills, compared to less than 50% of men across the board.
- When asked about sources of income after retirement, almost 88% of all respondents reported that their pension income is their main source. Over half of that money is earmarked for their kids' education or their marriage expenses. An average of 12% is saved for Hajj or tourism, whereas an average of 13% was reported as "not decided yet".
- Across the board, over a third reported they expect their spending to increase after retirement, probably reflecting their awareness of increasing level of prices in order to stay at the same level of living.
- On average women and men are equally likely to view their health as either good or excellent and a higher proportion report the same when it comes to the health status of their household members, as well as benefiting from their health insurance.
- When asked about their expectation to work after retirement, the descriptive statistics indicate the majority of women expect not to work, whereas men's preference to work after retirement dropped with increased age of retirement. For example, 61% of men expecting to retire early (50-54) plan to work after retirement, 53% of men retiring between 55 and 57 plan to work after retirement, relative to 45% of those who plan to retire at the age of 60, inevitably fighting over limited jobs with other unemployed and predictably raising the unemployment rate.
- Over 50% of men planning to work after retirement expressed their interest to take on a private venture. Except for women preferring an old age retirement, a large percentage of workers (men and women) plan to work at their own private venture. Additionally, the majority of them don't believe they need any training to work after their retirement. This

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[9] Sometimes the respondent refers to his professional rank as an equivalent to "what he is supposed to be at," and not necessarily the current rank.

is an important statement to pause at and analyze further. Of all women in the sample, only 23% reported that they need a special skill in order to start any new work after retirement, compared to only 13% for men. Simply put, most of the workers don't believe they need special training or skills to run their own business, or start a new job. Lack of skills necessary to run these businesses normally result in partial or total failure, adding further to the unemployment lines.

- When asked if they already know about early retirement plans, a sizeable number reported they don't know anything about the policy (40%-60%), whereas the media was the source of knowledge for almost a third of who reported some knowledge. In most cases, less than 10% of workers knew about early retirement plans through their jobs.

- Finally, the most important reason of not accepting early retirement has been the decline in income after retirement.

In short, men are less educated than women and therefore hold lower ranks and consequently earn lower wages. Men are also the heads of their households and the sole wage earner, whereas women are the secondary wage earners in their households. Unlike women who received training on new skills, men did not acquire any new skills but plan to work after their early retirement. In the end, it also seems that only women planning to retire between the ages of 50 and 54 are familiar with the new early retirement policy.

V. Methodology and Emperical findings

In order to assess the effect of personal and job characteristics on the decision to retire, controlling for other covariates, the probability of planning to retire at a certain age bracket is estimated using a multinomial logit model where the decision to retire is one of three choices: retire between the ages of 50 and 54, retire between the ages of 55 and 57, or retire at the legal retirement age (60 years).

The functional form of the multinomial logit model (Maddala, 1983) is employed as follows:

$$\Pr(Y_{it} = j \mid Y_{it-1} = k) = \frac{\exp(B'_j Z_i)}{\sum_k \exp(B'_k Z_i)'} \dots\dots\dots\dots\dots\dots\dots\dots\dots j, k = 1,2,3$$

Where:

$y_i = 0$ for expected old age retirees

$y_i = 1$ for expected retirees between the ages of 50-54

$y_i = 2$ for expected retirees between the ages of 55-57

The probability that the ith individual selects the jth working status is:

$$P_{ji} = exp\,(\beta'_j X_i)\,/[1 + \sum_{j=0}^{2} exp(\beta'_j X_i)]$$

Where the subscript j=0, 1, and 2 is for retirement age, X_i is a vector of independent variables and β_j is the parameter vector for retirement age category (j).

To obtain the marginal effects of a covariate xi, on the choice probability to state j, Pj, is given by:

$$\frac{dP_j}{dx_i} = P_j[\beta_j - \sum_k P_k \beta_k],$$

Where β_j and β_k are the relevant elements of the parameter vector β. (Greene, 2003).

Thus, the marginal effects are to be interpreted as the change in the probability of ending in a particular state j given a change in an explanatory variable x_{it}.

The appropriate theoretical framework for the analysis of choice of retirement age and its determinants is the life cycle model. Such a model would specify how decisions about education, labor supply, income, health and consumption are made.

Generally, life cycle models assume that people save in order to meet their financial needs during retirement. People may borrow when young, save when middle-aged, and spend their savings when retired to level off their consumption over the life cycle. In a simple life cycle model, consumers are assumed to view the future clearly. Therefore, in making their plans, workers are assumed to know how much they will earn over their lives, when they will retire, and their expectation for consumption shocks.

The decision to retire early is one of a set of joined decisions made over the individual's adult life. Furthermore, it is not necessarily a free choice. Early retirement (or exit from the paid labor market) can be forced upon the older worker by unpleasant labor market conditions, own health problems or those of a close family member. Though ignoring other factors gives the study a narrower perspective, available data is an immediate constraint.

People do not make retirement decisions based solely on economic factors. Social, personal, as well as economic variables may be important in the decision. Therefore, this study includes vectors of these variables.

A multitude of both individual levels "push factors" —attitudes towards retirement, work history and health status— and "pull factors"—added worker effect, alternative employment, expected pension wealth— are all part of the worker's decision on whether or not to retire early. Table (2) displays the most important variables used, the analysis, along with their definitions and coding. Table (A-2) in the appendix shows their descriptive statistics.

Age is included in the analysis. It is expected that early retirement decision decrease as the individual ages. The number of years of experience in the current institution may be of more importance at predicting early retirement decisions. Workers who spent a long time in one place are more likely to have accumulated higher wages and therefore accrue higher pension benefits. In contrast, those who spent less time on the job are most likely to have less pension benefits (Kilty & Behling, 1985). Therefore, they are less likely to voluntarily retire early.

For women, marital status is especially important since unmarried, widowed or divorced women tend to be financially disadvantaged. A dummy variable for being married is included.

The level of education also influences the decision to retire at a certain age. In government sector employment, income and non-pecuniary benefits are associated with the level of education. Therefore, higher education may increase the opportunity cost of leaving work. Investment in higher level of education implies that the individual intends to work more over his lifetime and retire later than others who chose not to make such an investment. Health is also a determining factor. If the individual anticipates declining health with age, he may compensate for that by saving/ working more now and retiring early.

Wealth depends on both the earning ability and the income of other family members living in the same household. The influence of wealth on the retirement decision is not clear. For example, increased wealth is expected to raise the possibility of early retirement through increased ability of independence. Nonetheless, wealth may be a proxy for both ability and social status, in which case it is expected to reduce the probability of early retirement. The number of other working members in the household is added. Another dummy representing the presence of students in the household is also included.

To test for the added worker effect, the spouse's employment status is added. It is possible that the decision to retire for working couples is dependent on their spouse's working

decision. However, married women may well feel more pressured to work as they approach the legal age of retirement if their spouse is finding it difficult to work, and less pressured to work if their spouse is comfortably well off.

In general, a higher level of income induces a higher level of consumption and allows retirement at a younger age. However, there are some complications in this simplistic view, such as the uncertainty of receiving a constant income in the future. Likewise, couples who earn two incomes are more likely to have higher accumulated savings and pension benefits.

Rank is likely to show the individual's income earning capacity over his working life rather than at the point in time of the survey. Therefore, it may also be used as a proxy for wealth. The higher the rank, the more likely that the individual has been accumulating wealth over his work life. Finally, prior knowledge of the early retirement policy may influence the worker's decision for early retirement.

Summing up, covariates included in the *X* vector are: region of residence, age, years of experience, level of education, relation to head of household, worker's health status, health status of the household; professional rank, expectation to work after retirement, work status of spouse, current wage, students present in the household, number of household members, presence of working members in the household, additional income in the household, and prior knowledge of early retirement policy.

Upon close review however, it becomes evident that many of the previously mentioned assumptions can be at odds, and the worker could fall into either category. For example, it is hypothesized that workers with lengthy years of experience may prefer to retire early since their pension benefits and savings could be high enough to comfortably make such a decision. On the other hand, long years of experience may signal close ties with the work place, and the worker is less likely to retire early. Another example is dual earning families, who may have accumulated sufficient savings for one of them to accept early retirement, at the same time, children expenses may become the reason for deciding not to.

Although wages in the public and government sectors are gender neutral, women represent a large percentage of this sector, and they normally retire at a younger age than men. Therefore, it is important to distinguish between men and women in the decision to retire at a certain age. In this analysis, I allow the covariates to have various impacts on the flow to different states for the two genders by carrying out the analysis separately for men and women.

Results of the full-blown model are presented in Table (A-3) in the appendix. Using "stepwise" regression, the model is rationalized into the most significant variables affecting the decision of early retirement.

Empirical Findings

An understanding of the factors that determine the decision for early retirement provides an insight for policy makers in their planning decisions. In this section, results of the marginal effects of the multinomial logit model are presented. Marginal effects represent the change in the probability of ending in a particular state given a change in an explanatory variable. The set of explanatory variables depends ultimately on the available data and the reliability of the data. The analysis focuses on three groups, henceforth denoted as retirement at: 50-54, 55-47 or Old Age (60) 60 years.

Table (3) shows the marginal effects of the explanatory variables on the probability of retiring at a particular age bracket, derived from a multinomial logit model for the entire sample, and by gender. Since these marginal effects are not constant for all values of the explanatory variables —as it is the case in OLS — the effects at the sample means for the

continuous variables and for the reference state for dummy variables are reported. In the case of continuous variables, the reported marginal effect is the partial derivative of the probability with respect to that variable, and in the case of a dummy variable, it represents the effect of a change from 0 to 1. Marginal effects are calculated for the entire sample as well as by gender. Only men vs. women results will be discussed in this section.

A reference man in this model is 53 years old, resides in an urban neighborhood, with 25 years of experience, not married, with an average monthly wage of LE 701, with secondary education or less, with poor health, does not benefit from health insurance, occupies a low professional rank (fourth or third), has a non working spouse and two students in his household(these two characteristics contradict each other), his monthly expenditures is 62% that of a comparable woman with the same characteristics, doesn't plan to work after retirement and doesn't know about early retirement plans.

A reference woman is 53 years of age, resides in an urban neighborhood, with 27 years of experience, earns LE 853 monthly, not married, with secondary education or less, with poor health, does not benefit from health insurance, occupies a low professional rank (fourth or third), has one student in her household, her monthly expenses total LE 1494, doesn't plan to work after retirement and doesn't know about early retirement incentives.

Results imply that region of residence does not influence the decision of retirement between the ages of 50 and 54, but residing in an urban district induces workers of both genders to retire more frequently between the ages 55 and 57, with a higher impact for women than men. Conversely, rural residents are more likely to retire at the age of 60.

Age has the expected signs. Unsurprisingly, early retirement becomes less probable as the individual approaches the legal retirement age. In accordance with the predictions of the life-cycle model, the probability of early retirement decreases (increases?)the further away from the retirement age a person is. That is, the older the worker gets, the less likely he would retire early. For each additional year, the probability of both men and women to retire at 50-54 decreases by 2 percentage points. It is also evident from the table that the probability of retiring at the old age increases by 3 percentage points for both genders.

The effect of experience on age of retirement is very small (close to zero) and has a negative effect for men and a mixed one for women. Women workers find their experience a determining factor in deciding when to retire. They seem to value their experience and prefer to stay longer in the job. That is, one additional year of experience to a female government sector worker, reduces her probability to retire at 50-54 by 0.4 percentage points, and has no significant effect afterwards. Unsurprisingly, being married is not a viable factor in retirement decision for men retiring after age of 54. Married men are less likely to retire early, at 50-54. Being married however, does affect retirement decisions for women. They are less likely to retire at the legal age of retirement, but more likely to retire at the age of 55-57. The effect of being married on the retirement decision drops by 50% when it comes to preferring to retire between 50 and 54 years of age.

An interesting result is observed with regards to levels of education. In compliance with preceding descriptive statistics, education is not a significant factor in determining the retirement age for women, since close to two thirds of the women sampled are university graduates. University graduates may have a greater investment in their human capital and therefore require a longer stay on the job for a sufficient return on their investment. For men, non-university graduates were noticed to retire earlier than university graduates especially between the ages of 55 and 57. Expressing it differently, workers with low levels of education might face a relatively difficult financial situation than university graduates, that pressures them to go into early retirement, hoping to rejoin the private sector. On the other

hand, those with higher education probably do not face such a constraint (on average there is a difference of 55% between wages of workers of both levels of education), and probably have a higher preference for work relative to leisure.

The effect of the perceived health status on the retirement decision operates in the anticipated direction. In general, good health standing is associated with the probability of staying longer in the labor market. Being in good health reduces the probability of early retirement for both genders, and its effect on women is twice that of men. Following the same reasoning, benefiting from health insurance reduces the probability to opt for early retirement.

Occupational rank proved to be a significant predictor of retirement age, for women exclusively. Occupational rank reduces the probability of retiring between the ages of 55 and 57 for women. Women with higher ranks are more likely to retire late.

The added worker effect has mixed results in this analysis. Working spouses have the opposite signs for men and women. The presence of a working wife in the household induces the husband to retire early. Yet, the presence of a working husband discourages women from retiring sooner. In other words, men with an active wife are expected to retire between the ages of 55 and 57. Women with an active spouse are more likely to retire late (at age of 60). This is a somewhat surprising result, since women are typically secondary wage earners in the household, and therefore, can afford early retirement

As previously mentioned in descriptive statistics, pension money is most probably used to help in kids education (over 50% of the respondents said they would use the pension money for their kids education and/or marriage expenses[10]). Hence, one would expect that a higher number of students in the household would influence the early retirement decision negatively, especially when the worker is the sole earner. Results confirm that as the household embraces more and more school age kids, parents of both genders are less likely to retire early.

The wage effect is as anticipated. Since government wages are pre-determined according to the level of education, the effect of wage on early retirement is not significant.

A finding that attracts attention is the effect of average expenditures in the household. Controlling for all covariates but monthly expenditures of the household does not seem to affect the retirement decision for both genders.

Contrary to descriptive statistics —which showed findings without controlling for covariates— women in general were not planning to work after retirement. However, results of Table (3) unfold that planning to work after retirement increases the probability of early retirement between ages of 50 and 54 for women by 6-percentage points, and for men to retire between 55 and 57 by 5 percentage points.

Finally, prior knowledge of the early retirement reforms increases the likelihood of retiring at the 50-54 age bracket and its effect on women is twice that on men. Prior knowledge reduces the likelihood of retiring between 55 and 57 for both genders.

In summary, prior knowledge of early retirement reforms, the presence of a working wife and expectation to work after retirement increase the probability of men to retire early. While residing in an urban region, additional years of experience, being married, with a university degree, the presence of students in the household, good health status, and benefiting from health insurance, reduce the likelihood of early retirement.

Residing in an urban area, having high years of experience, holding a high occupational rank, good health, benefiting from health insurance, the presence of school age kids in the household and having a working spouse all have a negative effect on women retiring early.

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[10] The survey doesn't provide additional information on the age or educational level of these students.

Women are more likely to retire early if they are married, planning to work after retirement, and have a prior knowledge of the early retirement policies.

The preceding discussion suggests that the early retirement decision is determined by a myriad of factors. To visualize some of these findings, the patterns of the expected age of retirement along age and years of experience are presented graphically.

Table (4) and Figure (3) depict the overall predicted probability of early retirement by gender, and by age, derived from a logit model. Primarily, the predicted probability of early retirement ranges between 27% and 93%, with an average of 70%. Contrary to what Lilja (1996) found from a Finish sample, where men exceeded women in early retirement probabilities, in this study men have a lower average probability of early retirement than women do (63% vs. 78%). Men's probabilities of early retirement also seem to drop faster than women's, shown in a steeper, downward probability for men in Figure (3). In a span of seven years, men's predicted probabilities to retire early drops by 69% as opposed to 56% for women.

Breaking up the anticipated age bracket of early retirement into two categories, 50-54 and 55-57, Figure (4) reveals that the most desirable age bracket of retirement, for both genders, is 55-57. Rates of expected retirement at 55-57 ages for both men and women are generally high but exhibit no conclusive pattern with age for both genders. Again, women have a higher probability of retiring between the age of 55 and 57 than men do. The probability of retirement at 50-54 is comparable for both genders; it starts low and declines steeply thereafter as the person ages.

Figure (5) shows the predicted probability of each age category derived from the multinomial logit model. The model emphasizes the increased preference of women over men to retire at 55-57, and displays that the number of men who prefer to retire at the legal age is higher than the number of women.

For a reference man, the predicted probability to retire at the age of 50-54 is 8%, the predicted probability to retire at the age of 55-57 is 58%, and 34% to retire at age of 60. For a reference woman, the relevant probabilities are: 10%, 68% and 22% respectively.

Figure (6) depicts these probabilities by years of experience, up to 40 years of experience. The higher the years of experience the less likely that women would retire at 50-54 which explains the downward, steeper curve for women. The effect for men is more or less constant and very low. The figure also reflects the opposite relationship for men vs. women when it comes to the probability of retiring between the age of 55-57 along years of experience. Additional years of experience raise the probabilities of retirement between 55 and 57 for women, whereas more years of experience reduces the probabilities of retiring at the same age bracket for men. This conclusion may be a result of the fact that women are more educated than men and on average may have accumulated more savings over their work life.

Another way of looking at these results is to express the probability of retirement at certain age bracket as values of some explanatory variables are changed, while all other variables are kept fixed at their mean values. The following are simulations with the most relevant variables, presented in Table (5).

Simulations produced in Table (5) suggest that a male without a university degree has a 67% probability of retiring at the age bracket 55-57, compared to 59% if he is a university graduate. That is a difference of 12 percentage points. Male university graduates are 33 percentage points more likely to retire at the old age. Having a working spouse increases the probability of retirement at 55-57 age bracket by 8 percentage points (from 61-66%) for a typical man and reduces the probability of a typical woman with a working husband to retire at the same age category by only 3 percentage points (from 0.73 to 0.71). Having a working

husband increases the likelihood of a woman to retire at the legal age of retirement by 26 percentage points. Combining the first two, there appears to be no effect for professional rank on the probability to retire before the age of 58 for men. Nonetheless, the effect of a high professional rank on early retirement drops for a typical women by almost 10 percentage points below that of a typical woman with low professional rank and rises by 52 percentage point over a women without a high rank when it comes to retiring at the legal age. Among the most important figures in this table is the gender-neutral effect of having three students versus none in the household concerned with the early retirement decision. The presence of at least three kids in the household reduces the probability of retiring before the age of 58 by 7% and 8% for men and women respectively, than their counterparts with no school-age kids present in the household.

The previous analysis is stretched to predict the number of employees retiring at different age categories, according to their type of work. Available data on the distribution of the government sector workers by age group, gender and type of activity for the fiscal year 2004/2005, Figure (7), reveals that the targeted group of workers (ages 51-60) represent 24% of all administrative workers (Idary), 19% of municipalities' workers (Mahale-yat), and 27% of all service agency workers (Hay-aat). This shows that, on average, one quarter of government sector workers are facing the decision of early retirement. There are more men than women in each work activity, especially at municipality levels.

Predicting the probability of retirement by work activity is graphed in Figure (8). Administrative workers of both genders have the highest predicted level of early retirement, 78% for men and 83% for women, followed by service agencies (72% and 82% respectively), with women exceeding men in their preference for early retirement. Men working in municipalities are the least likely to retire early. All but 45%(this is close to half??) of them prefer old age retirement. Expressing these ratios in numbers, Table (6) roughly[11] translates the predicted probability of expected age of retirement into numbers according to data drawn from the Central Agency for Organization and Management, for workers in the age bracket of 51-60. Close to 69%, or a total of 833,897 out of 1,212,913 are estimated to accept the early retirement offer. They *may* exit the overcrowded government sector just to queue up in an overflowing unemployment sector.

Currently, over 40% of workers are in the age category of 41 to 50. Within the coming ten years, early retirement reform *may* have a greater impact on reducing the workforce, contingent upon political, economic, as well as social conditions.

VI. Conclusion and Policy Implications

Conclusion

The purpose of this study is to develop and evaluate a model of employee retirement intentions. Retirement intentions are defined as intended retirement age and attitude after retirement. Such a model enables policy makers and others to identify the characteristics of employees who are likely to support or resist early retirement. Besides, there are several advantages in knowing when most of the employees will retire and how they view their retirement. A predicted level of retirement increases the flexibility in personnel staffing and restructuring of the labor force.

The most important statistics found in this sample data reveal that: Slightly less than three quarters of the sample expects to retire at the age of 57. Women surpass men in preferring to retire between the ages of 55 and 57, while men exceed women in their preference to retire at

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[11] Since the predicted probabilities are drawn from the survey of workers 50-57 years of age and the available data reports number of workers in the age category of 51-60.

the legal age of 60. Women are more educated than men; therefore they hold higher positions and earn greater wages. In general, men are the head of their households and in many cases, the primary source of income, whereas women are the secondary earner in the household. Unlike men, women were more eager to learn new skills and take on special training when offered.

A sizable number of early retirees are planning to work after retirement, inevitably fighting over limited jobs with other unemployed and predictably raising the unemployment rate. What is more alarming is the fact that over half of those expecting to work after retirement are planning to take on their own private venture. Adding lack of skills and the belief that no skills or experience are necessary for this venture may lead to partial or total failure, and eventually augmenting unemployment lines. It is also evident that early retirement schemes are not properly announced in advance, and that only a small portion of respondents know about the policy.

Estimating the multinomial logit model to examine the most important factors in the retirement decision suggests that taking on early retirement is strongly determined by many factors.

Results of the likelihood model showed that the probability of early retirement decreases the further away from the retirement age a worker is. The effect of years of experience is negative, significant but very small and close to zero. Being married is a confirmed determining positive factor for women retiring early, and a negative one for men.

The effect of health status is a determining factor in the early retirement decision: good health standing is associated with the probability of staying longer in the labor market. Levels of education are not a significant predictor for women, but non university graduate men are more likely to retire earlier than those with a university degree. This is an important result for policy purposes. If men are more likely to work after early retirement, and they are, on average, less educated than women, in addition to the fact that most of them are planning to take on their private venture, plus they do not think experience or special skills are necessary, then the probability of a successful venture becomes slim.

Occupational rank is an influential factor and reduces the probability of early retirement for women. Working spouses have the opposite effect for men and women. The presence of a working wife in the household induces the husband to retire early. Yet, the presence of a working husband discourages women from retiring early. An increasing number of school age students in the household has a negative effect on the early retirement decision. Planning to work after retirement positively influences the early retirement decision for both genders. Prior knowledge of early retirement reforms has a favorable effect at early years of retirement for both genders but declines afterwards. The wage as well and expenditure levels do not have a determining effect on the early retirement decision for both genders.

Finally, simulation analysis proved that men without a university degree are 12 percentage points more likely to retire earlier than those with a university degree, who are 33 percentage points more likely to retire at the legal age of retirement.

The presence of a working wife increases the probability of early retirement for men by 8 percentage points, than those with an out-of-the-labor-force-wife. Conversely, having a working husband in the household reduces the early retirement probability for women by 3 percentage points, but increases the likelihood of a legal age retirement by 26 percentage points, compared to women without working husbands. Women holding high professional ranks have an early retirement probability that is 10 percentage points lower than those with low professional rank, and 52 percentage points higher when it comes to retiring at the legal age. Finally, the effect of having three school age kids in the household has the same negative

effect and magnitude for both genders, on early retirement, versus households without school age children.

Policy Implications:

This study is of great concern to policy makers for its contribution to the understanding of the early retirement decision in Egypt. It is important — when designing early retirement options — to avoid encouraging the most productive people to take advantage of them. Therefore, an understanding of these variables provides great insight for specific policy decisions. It is also important for policy makers to predict the acceptance rate of early retirement, the socio economic profile of the workforce as well as the most preferred retirement age.

The issue of early retirement needs careful consideration, as there is a recognized need for increased mobility in the labor force and for a shift in employment from the public to the private sector. This, combined with significant unemployment among the younger members of the labor force, implies the need for some public sector retrenchment.

Some economists argue that it is undesirable that labor market problems be solved by generous early retirement provisions, which place a burden on the Social Insurance Funds and at the same time encourage workers to choose lower levels of social protection. Others believe that offering early retirement is becoming an increasingly popular way to terminate the "lifetime" social contract between the government and its employees.

Because normally older employees are paid more than younger employees are, and because the older workers' pay rate may not be congruent with their current productivity, losing older workers through early retirement may save money. One important policy question is whether early retirement should be imposed in an ad hoc fashion on an ineffective older employee or whether it should be the option of any older employee to request early retirement under a plan that provides economic benefits that are fixed and known to all. If the latter, then care must be taken in the conception and formulation of the financial scheme, for it is likely that an institution would want the incentives to be the same for all. Moreover, if the firm's most senior workers were at the stage of their life cycle in which wages exceed marginal productivities, the firm would best be managed by reducing "the older" employment rather than the younger generation.

This assumption is realistic provided that one can expect that there will be stability in institutional policies as well as in the aggregate behavior of workers. For example, if unemployment and the cost of living remain at high levels, continued employment after normal retirement age will be attractive and compulsory retirement will be resisted. Besides, the skepticism of early retirees about a better future may delay their acceptance for the current compensation packages. Add to that the fact that the slowing economy may deter potential interests.

Low average retirement ages, and markedly large shares of recipients getting retirement benefits, may result in a large gap between the system dependency ration (ratio of recipients to contributors) and the demographic dependency ratio (ratio of old to young in the population). Although not yet exhausted, the Privatization Restructuring Fund has limited resources to speed up the program. This has limited the government's flexibility for accelerating the program (a detailed description is provided in CARANA, 2002a). To contain the risk of excessive disbursing and to minimize adverse selection, the best strategy is to identify the activities and the workers to be separated and to target the severance offer only to workers already identified as redundant (through benchmarking studies like annual performance evaluation, combined with capping the salary of those who continue to perform unsatisfactorily, in addition to a well designed merit raise, rather than to all employees). Tailoring the severance package to worker characteristics (such as seniority or education)

also helps induce the right self selection and contain costs, while discouraging the most productive workers to take advantage of them.

Early retirement plans may occur for different reasons and their announcement may provoke wide-ranging market reactions depending upon the institutional justification for the personnel reductions. It is clear that if a reason is provided it is either cost cutting in response to decline, or wider institutional restructuring. In cases of decline that continues to deteriorate, firms may not be able to recover. In this case, it is argued that the faster the firm moves toward financial losses, announcements of continuous cost-cutting schemes such as scaling down may signal to the market that it is still in decline and may still be in a worse condition in the future. On the contrary, early retirement announcements not declared or publicized during a decline may indicate a firm adapting to a new situation rather than just a reduction in its labor force, and elicit workers to take advantage of them.

Finally, it is very important for the government to provide training workshops for early retirees on how to best invest their pension money, and open offices of help and support for these projects. In the Egyptian social contract, government, public sectors, and SOE workers are guaranteed lifetime employment and benefits. When preparing for labor restructuring encompasses high levels of surplus labor and when social safety nets and unemployment insurance in labor laws are inadequate or lacking, the government should be involved in the support and funding of special programs to deal with inexperienced small business owners and unemployment problems.

Future Research:

Some questions deserve future research. The most important being whether there are systematic differences between planned and actual retirement age. If so, what factors are accountable for them? There are several factors that make actual and planned retirement age differ. One is unexpected events that could cause the individual to modify their retirement plans, therefore change the actual retirement age. Another is the way individuals respond to unexpected events. For example, if the individual experiences a reduction in their income, he may compensate for that by working more, consuming less, or retiring early, or a combination of all three. As more and more surveys become available, it is possible to compare the planned retirement age with the actual one and determine the factors responsible of any differences.

As is always be the case in gender analysis, the reported gender differences in the predicted exit probabilities are a mix of differences in the values of the explanatory variables and in the values of the estimated parameters, respectively. One way of analyzing the two sources is to calculate the women's (counterfactual) probabilities of ending in various states using women sample-characteristics together with the estimated coefficients-vector from the multinomial logit model estimation for men.

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Figure (1): Percentage Distribution of Expected Age of Retirement of Total Sample, by Gender
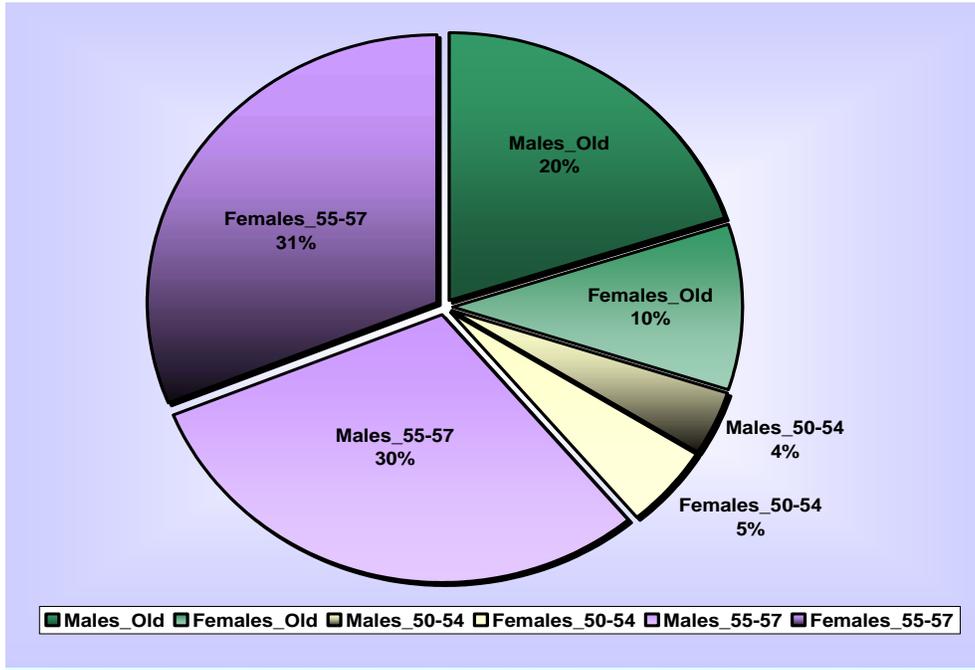
Figure (2): Distribution of Expected Age of Retirement, by Gender
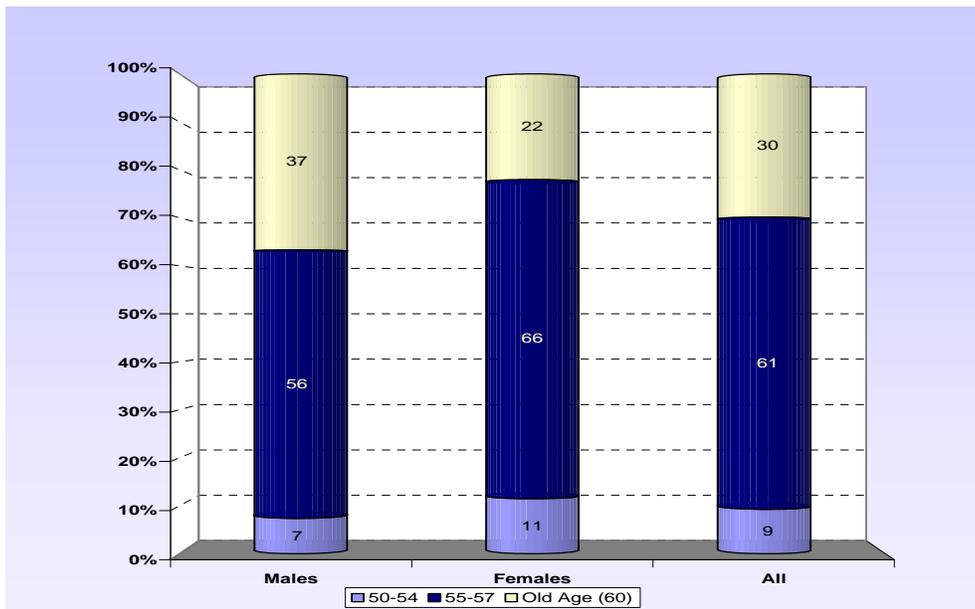
Figure (3): The Overall Predicted Probability of Early Retirement by Age and Gender
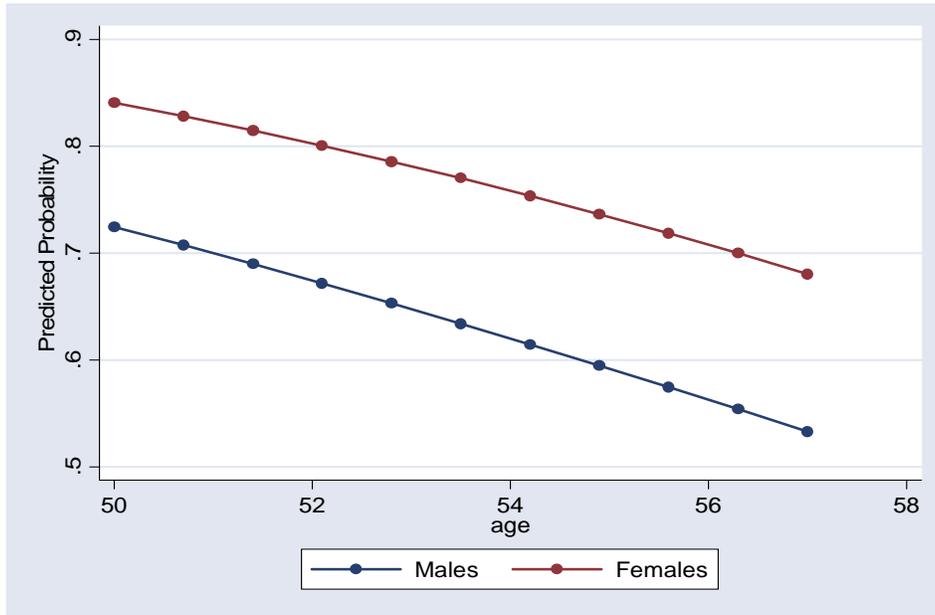
Figure (4): The Predicted Probability of Early Retirement by Age Categories and Gender
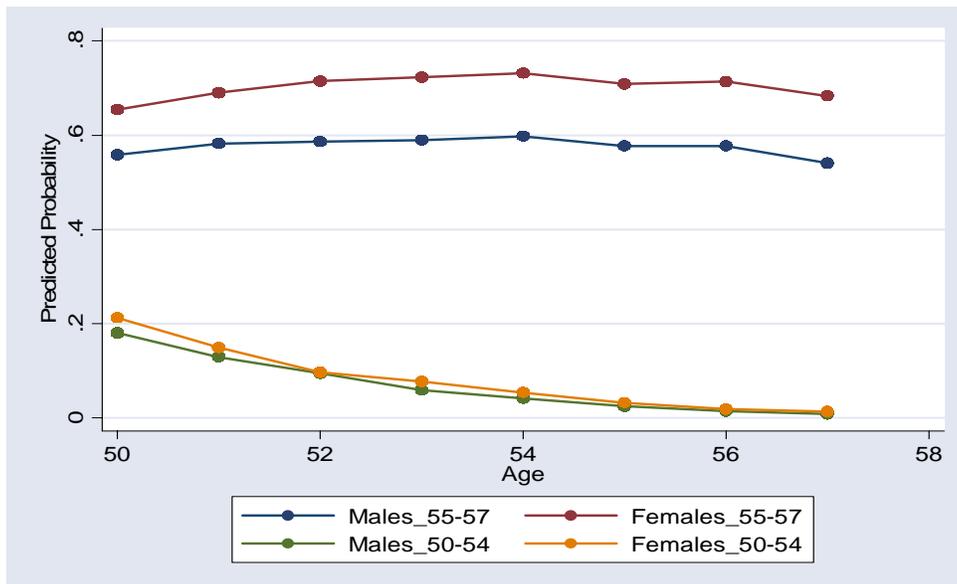
Figure (5): The Predicted Probability of Expected Age of Retirement by Gender
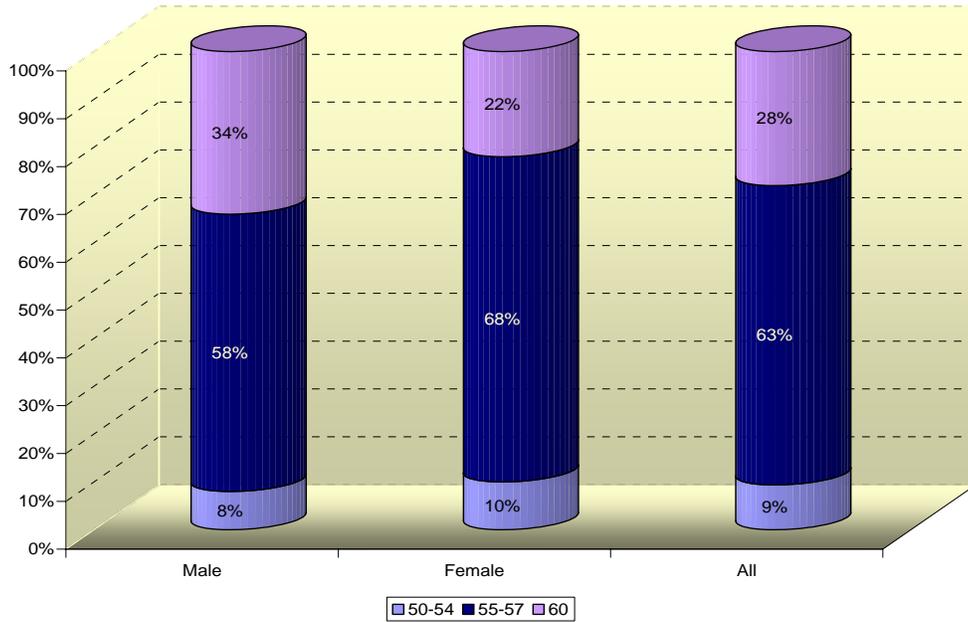
Figure (6): The Predicted Probability of Expected Age of Retirement by Years of Experience and Genders
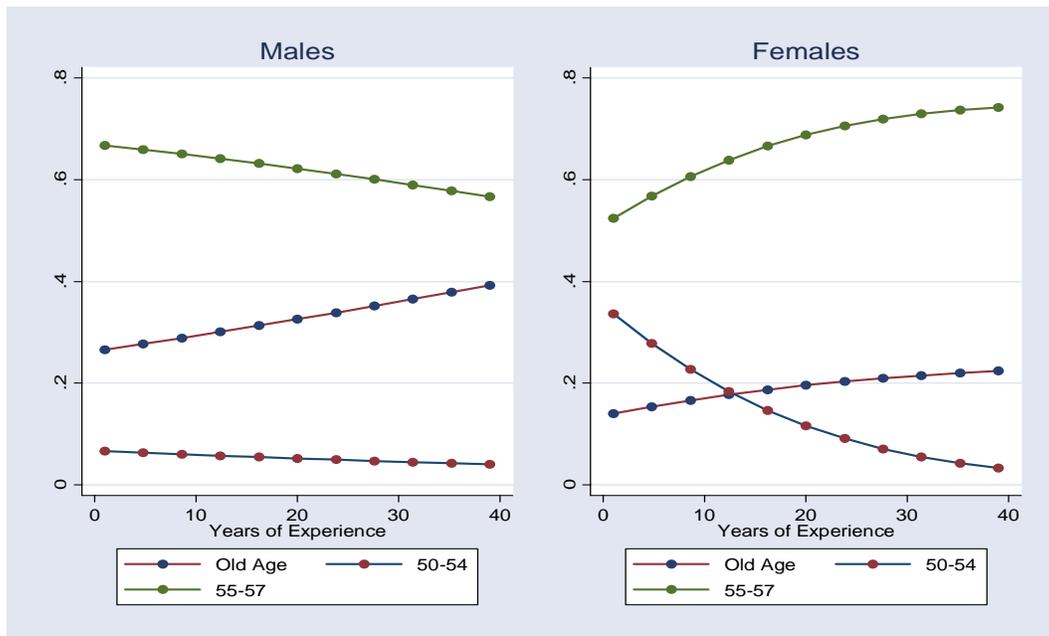
Figure (7): Distribution of Government Sector Workers by Age Group, Gender, and Work Activity--2004/2005
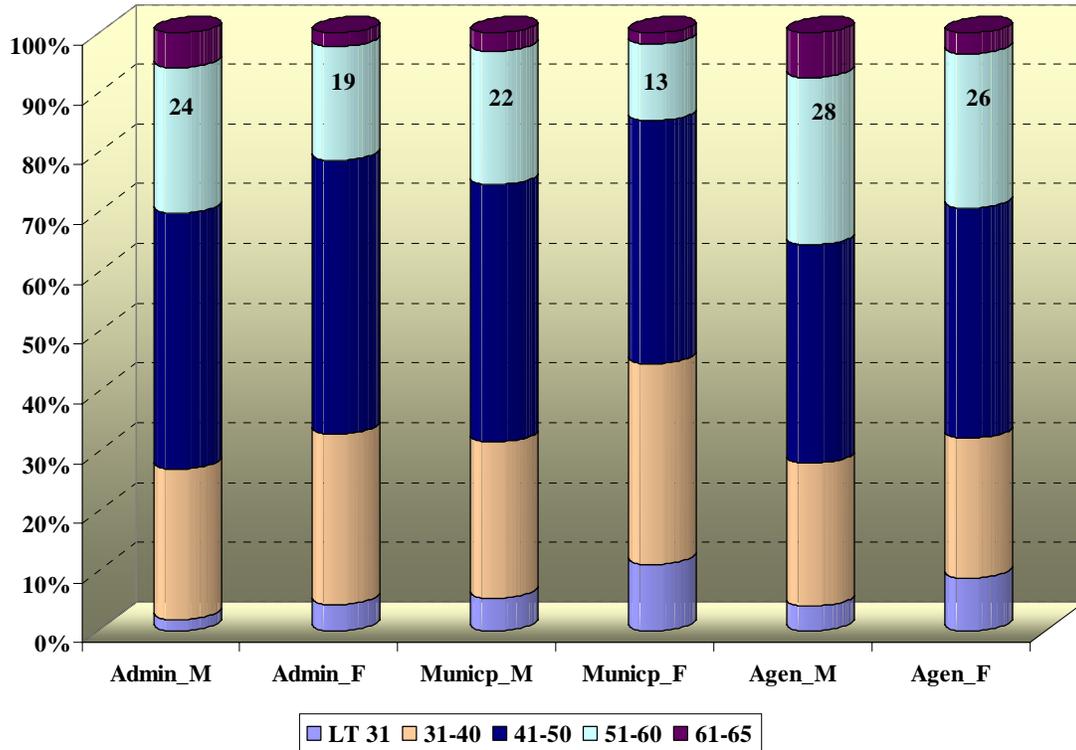
Source: The Egyptian Cabinet - Central Agency for Organization and Management.

Figure (8): The Predicted Probability of Expected Retirement by Work Activity and Gender
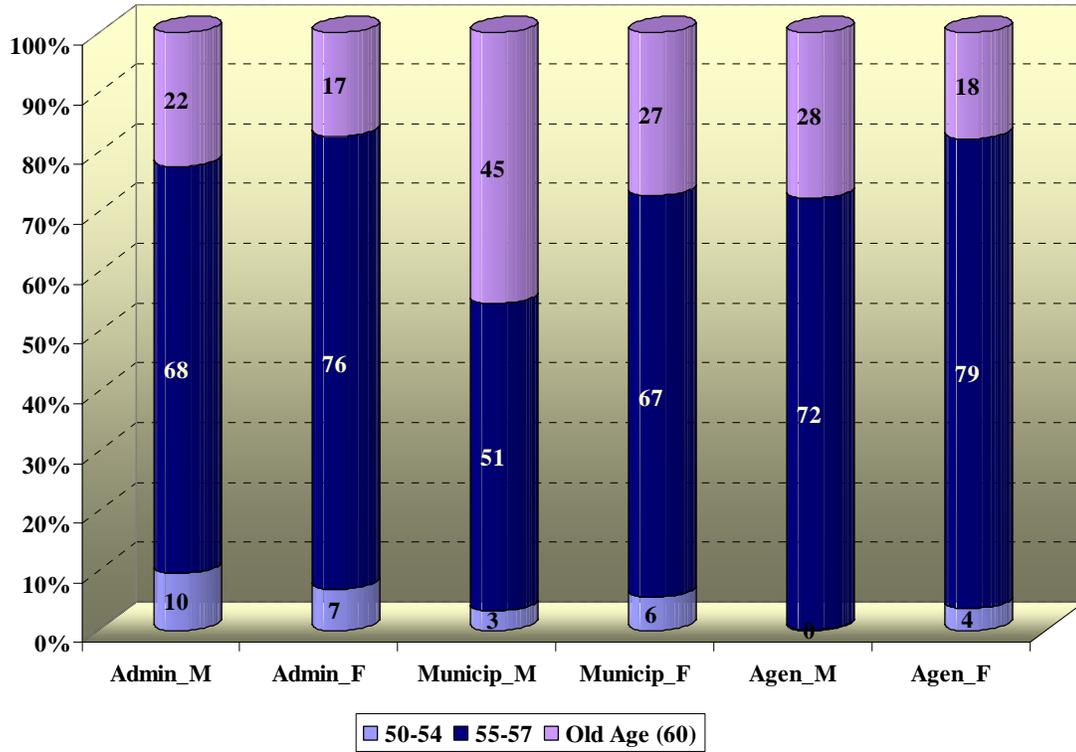
Table (2): Definition of Explanatory Variables

Variable	Definition
Region	0= Urban
	1= Rural
Age	Current Age of Respondent
Experience	Years of Experience in Current Organization
Married	0=Not Married, Widowed, or Divorced
	1=Married
Education	0=Below University
	1= University and Above
Occupational Rank	0=Below First
	1= First and Above
Average Monthly Wage	Log Average Monthly Wage
Worker Health Status	0=Poor
	1=Good/Excellent
Health Insurance Benefits	0=No
	1=Yes
Students in the HH	Number of students in the HH
Spouse Currently Working	0=No
	1=Yes
Average Monthly Expenditures	Log Average Monthly HH Expenditures
Work After Retirement	0=No
	1=Yes
Prior Knowledge of Early Retirement	0=No
Reform	1=Yes

Table (3): Marginal Effects of Expected Age of Retirement

Variables	Males			Females			All Sample		
	50-54	55-57	60	50-54	55-57	60	50-54	55-57	60
Probability for a reference worker:	**0.08**	**0.58**	**0.34**	**0.10**	**0.68**	**0.22**	**0.09**	**0.63**	**0.28**
Region (Urban=base)	-0.010	-0.146***	0.155***	0.071	-0.225**	0.154	-0.009	-0.155***	0.164***
	(0.010)	(0.034)	(0.034)	(0.072)	(0.112)	(0.111)	(0.011)	(0.030)	(0.030)
Age	-0.018***	-0.008	0.026***	-0.020***	-0.005	0.025***	-0.021***	-0.009**	0.030***
	(0.002)	(0.005)	(0.005)	(0.003)	(0.006)	(0.005)	(0.002)	(0.004)	(0.004)
Experience	-0.000	-0.003*	0.004*	-0.004***	0.002	0.003	-0.001***	-0.002	0.003**
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Marital Status(not married=base)	-0.151***	0.054	0.097	0.036***	0.072**	-0.107***	-0.007	0.049*	-0.041
	(0.057)	(0.071)	(0.064)	(0.012)	(0.032)	(0.031)	(0.012)	(0.029)	(0.029)
University Education (below univ=base)	-0.013	-0.081**	0.095**	-0.003	0.002	0.001	-0.007	-0.043*	0.050**
	(0.012)	(0.040)	(0.040)	(0.013)	(0.026)	(0.025)	(0.009)	(0.023)	(0.023)
Prof. Rank(below first=base)	0.009	-0.015	0.006	-0.020	-0.059*	0.079**	-0.005	-0.032	0.036
	(0.013)	(0.040)	(0.040)	(0.019)	(0.034)	(0.031)	(0.011)	(0.026)	(0.026)
Health Status (poor=base)	-0.034**	-0.076**	0.110***	-0.081***	0.024	0.057**	-0.057***	-0.034	0.091***
	(0.016)	(0.031)	(0.029)	(0.022)	(0.031)	(0.026)	(0.014)	(0.022)	(0.020)
Health Insurance Benfits (no=base)	-0.030***	0.022	0.008	-0.032***	0.035	-0.002	-0.027***	0.027	-0.000
	(0.010)	(0.025)	(0.024)	(0.012)	(0.023)	(0.022)	(0.008)	(0.017)	(0.017)
No. of Students in the HH	0.008***	-0.024***	0.016*	0.001	-0.025**	0.023**	0.004	-0.029***	0.024***
	(0.003)	(0.009)	(0.009)	(0.005)	(0.011)	(0.010)	(0.003)	(0.007)	(0.006)
Working Spouse (none=base)	0.008	0.051*	-0.059**	-0.029**	-0.021	0.050**	-0.007	0.013	-0.006
	(0.009)	(0.029)	(0.029)	(0.012)	(0.027)	(0.025)	(0.008)	(0.019)	(0.019)
Log Average Wage	0.007	0.057	-0.065	0.021	0.003	-0.024	0.011	0.018	-0.028
	(0.013)	(0.038)	(0.038)	(0.014)	(0.031)	(0.029)	(0.010)	(0.024)	(0.024)
Log Average Expenditures	0.007	0.024	-0.030	0.002	0.037	-0.039	0.011	0.054***	-0.065***
	(0.011)	(0.034)	(0.034)	(0.013)	(0.026)	(0.024)	(0.008)	(0.021)	(0.020)
Work after Retirement (no work=base)									
	0.010	0.048**	-0.058**	0.064**	-0.048	-0.015	0.015*	-0.005	-0.010
	(0.008)	(0.024)	(0.023)	(0.026)	(0.039)	(0.034)	(0.008)	(0.018)	(0.017)
Prior Knowledge of Early Retirement Policy (don't know=base)	0.021**	-0.037	0.017	0.048***	-0.053**	0.005	0.035***	-0.045***	0.010
	(0.009)	(0.024)	(0.024)	(0.012)	(0.023)	(0.021)	(0.008)	(0.017)	(0.016)
Observations	1818	1818	1818	1575	1575	1575	3397	3397	3397

Standard errors in parentheses   *** p<0.0 ** p<0.0: * p<0.1 .   .   .   .   .   .

Table (4): The Overall Predicted Probability of Early Retirement by Gender

	Mean	Min	Max
All Sample	0.70	0.27	0.93
Males	0.63	0.27	0.88
Females	0.78	0.40	0.93

Table (5): Predicted Probabilities of Expected Age of Retirement Evaluated at Various Values of Independent Variables

Expected Age of Retirement	University Education		Working Spouse		Professional Rank		Health Status		Health Insurance		No. of Students in the HH			
	Below University	University and Above	No	Yes	Below First	First and Above	Poor	Good	No	Yes	0	1	3	5
Males:														
50-54	0.05	0.04	0.04	0.05	0.04	0.05	0.07	0.04	0.06	0.03	0.03	0.03	0.05	0.07
55-57	0.67	0.59	0.61	0.66	0.62	0.61	0.68	0.60	0.60	0.62	0.66	0.64	0.59	0.54
Old Age	0.28	0.38	0.35	0.29	0.34	0.35	0.25	0.36	0.34	0.35	0.31	0.33	0.36	0.39
Females														
50-54	0.07	0.06	0.08	0.05	0.08	0.06	0.14	0.06	0.09	0.05	0.07	0.07	0.07	0.07
55-57	0.73	0.73	0.73	0.71	0.77	0.71	0.70	0.72	0.70	0.74	0.75	0.73	0.68	0.62
Old Age	0.21	0.21	0.19	0.24	0.15	0.23	0.16	0.22	0.21	0.21	0.18	0.20	0.25	0.31

Table (6): Numbers of Expected Age of Retirement by Work Activity and Gender

	Administrative		Municipality		Agency		Total
	Males	**Females**	**Males**	**Females**	**Males**	**Females**	
50-54	36919	2060	13557	7466	145	2145	62292
55-57	263983	22529	214705	90994	132547	46847	771605
Old Age (60)	86442	5126	189203	36885	50832	10528	379016
Total	**387344**	**29715**	**417465**	**135345**	**183524**	**59520**	**1212913**

Appendix

Table (A-1): Distibution of Respondents by Expected Age of Retirement, Egypt 2005

	Males			Females		
	50-54	55-57	Old Age (60)	50-54	55-57	Old Age (60)
Numbers	134	1017	667	181	1050	348
%	4	30	20	5	31	10
% of Total Category	7	56	37	11	66	22
Average Age (in years)	51	53	54	51	53	53
Average Wage	692	643	635	721	724	728
Age						
50	36.2	20.6	15.8	49.2	25.2	18.5
51	17.4	10.1	9.5	20.4	14.7	12.5
52	19.6	11.6	11.4	11.6	15.4	15.4
53	17.4	12.9	11.4	12.7	11.5	11.4
54	9.4	9.9	10.7	6.1	10.2	9.4
55		12.4	13.4		12.5	11.4
56		11.3	11.3		6.2	9.7
57		11.2	16.5		4.3	11.7
Years of Experience:						
1-5'	0.5	1.4	0.6	0.4	0.5	0.7
6-10'	5.0	4.1	4.0	6.3	0.5	2.6
11-15'	12.1	8.4	7.1	6.1	2.6	1.9
16-20	19.8	11.6	10.3	7.9	5.7	3.8
21-25	16.6	23.1	17.6	29.2	20.8	13.3
26+	46.0	51.5	60.4	50.1	69.9	77.8
Region:						
Urban	86.8	86.1	75.5	97.8	99.0	97.8
Rural	13.2	13.9	24.5	2.2	1.0	2.2
Level of education:						
Illiterate	18.4	26.6	28.9	7.0	5.0	3.6
Primary	10.9	14.3	9.8	1.5	1.5	1.5
Intermediate	2.3	6.2	4.0	3.7	2.4	1.8
High school_general	1.3	0.8	2.5	0.2	3.2	6.2
High school_Voc/Relg	19.9	12.7	11.0	25.3	23.4	23.3
Above secondary	3.5	3.1	2.4	4.5	6.4	4.6
University+	43.7	36.3	41.6	57.8	58.1	59.1

Table (A-1): Distibution of Respondents by Expected Age of Retirement, Egypt 2005--Cont.,

	Males			Females		
	50-54	55-57	Old Age (60)	50-54	55-57	Old Age (60)
Relation to HHH:						
head	96.4	98.4	98.2	15.6	19.3	25.8
spouse	2.6	1.6	1.8	83.0	79.4	69.8
son/daughter	0.0	0.0	0.0	0.6	0.5	2.3
son/daughter_spouse		0.0	0.1		0.1	0.4
parent	0.0	0.0	0.0	0.8	0.2	0.4
sister/brother	0.9	0.0	0.0	0.0	0.4	1.4
spouse_sister/brother			0.1			0.0
spouse_parent		0.0			0.1	
no relation		0.0			0.1	
Professional Rank:						
Fourth	14.64	19.15	13.96	9.68	5.31	4.7
Third	24.0	30.3	32.6	8.1	6.9	3.9
Second	9.0	5.2	4.5	12.1	8.2	7.0
First	26.7	20.2	23.9	40.5	36.3	36.5
Directr_Cent_Admn		0.5	1.0		1.1	0.5
Dirct_Sector		0.1			0.3	
Consultant	25.7	24.5	24.0	29.7	41.9	47.5
No. of HH Members:						
LT 3	4.4	4.6	3.5	9.8	13.9	16.6
3-5'	54.1	60.5	56.0	76.7	75.4	70.2
GT 5	41.5	35.0	40.5	13.6	10.7	13.2
Type of Home Ownership:						
own_fully paid	31.8	37.4	44.2	39.7	34.5	42.0
own_partial paid	9.5	5.7	4.9	5.7	2.9	7.1
old rent	45.8	46.1	38.3	46.6	55.0	46.0
new rent	5.6	7.8	8.5	7.1	5.4	2.9
provided by work	7.3	3.0	4.1	1.0	2.3	2.0
Spouse work:						
Yes	37.2	35.2	41.0	83.6	74.6	64.7
No	62.8	64.8	59.0	16.4	25.4	35.3
Does Work Need Skill?:						
Yes	44.0	34.7	34.2	35.6	26.4	38.1
No	56.0	65.3	65.8	64.4	73.6	61.9
Use computer at work?:						
Yes	19.0	15.2	18.1	23.2	13.9	21.8
No	81.0	84.8	81.9	76.8	86.1	78.2
Received Training on New Skills?:						
Yes	49.5	41.9	44.7	64.8	65.3	67.6
No	50.6	58.1	55.3	35.2	34.7	32.4

Table (A-1): Distibution of Respondents by Expected Age of Retirement, Egypt 2005--Cont.,

	Males			Females		
	50-54	55-57	Old Age (60)	50-54	55-57	Old Age (60)
Source of Income after Retirement:						
retirement money	88.9	92.6	93.7	72.0	88.9	89.9
gov. support		0.0	0.0		0.3	0.3
end of service reward		1.4	0.1		2.3	0.2
personal savings	2.6	1.0	0.7	4.9	0.1	0.7
extra income	3.9	0.3	0.4	0.0	3.9	0.0
spouse support	0.0	3.1	0.2	2.6	3.8	2.1
retirement income plus	4.2	0.4	2.4	14.3	0.4	3.1
inheritance	0.4	0.2	1.6	5.6	0.0	0.9
part-time job		0.1	0.3		0.2	0.0
don't know	0.0	0.5	0.1	0.6	0.1	0.4
other		0.1	0.4		0.2	2.2
deceased spouse retirement		0.3	0.0		0.0	0.4
How to Spend after Retirement:						
partnership with othe	11.7	4.7	1.6	0.8	1.3	3.9
pay mortgage		0.0	0.2		0.2	0.0
open small shop	7.2	6.9	3.3	0.6	1.3	0.7
marry or educate your	52.2	61.8	65.8	58.8	55.3	51.7
pay debt	2.1	1.1	0.5	1.8	0.2	1.7
put in bank	8.8	4.3	1.9	5.4	8.0	7.3
Hajj/tourism	2.4	9.7	10.0	15.4	21.2	14.7
not decided yet	12.2	9.6	13.5	15.4	11.0	17.6
other	3.3	1.9	3.1	1.8	1.5	2.5
Do you Think your Spending after Retirement will:						
decrease	25.4	21.3	26.4	24.8	26.9	20.8
no change	34.1	36.2	37.4	37.8	39.3	35.9
increase	40.5	42.5	36.1	37.4	33.7	43.3
Health Status:						
Weak	16.1	18.0	12.1	28.5	16.7	14.0
Good	76.2	78.8	80.9	65.5	79.7	81.2
Excellent	7.6	3.2	7.0	6.1	3.6	4.9
Health Status of HH:						
Weak	3.9	7.2	6.1	11.2	10.6	10.6
Good	89.4	89.6	86.2	81.7	84.5	83.1
Excellent	6.7	3.2	7.8	7.1	4.9	6.3
Benefit from Health Insurance:						
no	53.0	37.0	35.6	54.2	44.3	47.1
sometimes	29.8	45.8	44.8	25.4	37.5	36.9
always	17.2	17.2	19.6	20.4	18.2	16.0

Table (A-1): Distibution of Respondents by Expected Age of Retirement, Egypt 2005--Cont

	Males			Females		
	50-54	55-57	Old Age (60)	50-54	55-57	Old Age (60)
Plan to Work after Retirement:						
Yes, fulltime	35.9	22.6	22.6	2.8	3.0	4.8
Yes, parttime	25.3	30.3	22.3	13.7	6.5	5.5
No	38.8	47.1	55.2	83.6	90.5	89.8
Sector of Post Retirement Job:						
Private sector	37.5	50.0	50.5	41.7	53.8	72.6
Own private venture	62.5	50.0	49.5	58.3	46.3	27.4
Need Special Training:						
Yes	13.2	15.9	10.0	14.7	31.0	24.6
No	86.8	84.1	90.0	85.3	69.0	75.4
Spouse Plan to Work after Retirement:						
Yes, full time	1.1	1.0	0.4	1.1	0.8	0.4
Yes, parttime	61.8	0.2	0.1	15.3	0.5	5.1
No	37.2	63.6	58.3	83.6	23.8	29.0
Already working		35.2	41.2		75.0	65.5
Know about Early Retirement:						
gov. workers laws	1.7	2.7	1.3	3.2	3.4	5.8
public sector laws	8.4	1.9	2.7	4.1	1.6	2.2
other	2.8	5.2	5.7	7.7	5.5	4.8
media	39.1	30.2	32.8	46.4	36.7	38.6
don't know	48.0	60.0	57.5	38.6	52.8	48.6

Source: Author's Own Calculations

Table (A-2): Descriptive Statistics of Variables Used in the Empirical Analysis

Variables	Males		Females		All	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Region	0.173	0.378	0.014	0.116	0.107	0.309
Age	53.316	2.421	52.729	2.283	53.074	2.382
Experience	25.090	7.412	27.280	5.957	25.998	6.930
Marital Status	0.969	0.172	0.793	0.405	0.897	0.304
University Education	0.386	0.487	0.583	0.493	0.467	0.499
Professional Rank	0.471	0.499	0.797	0.403	0.605	0.489
Working Spouse	0.633	0.482	0.289	0.453	0.491	0.500
Health Status	0.840	0.366	0.827	0.379	0.835	0.372
Health Insurance	0.622	0.485	0.541	0.498	0.589	0.492
No. of Students at HH	2.014	1.384	1.253	1.138	1.700	1.342
Monthly Expenditures	1235.93	763.04	1184.54	759.64	1083.67	719.56
Monthly Wage	801.63	523.91	764.10	409.54	752.21	435.24
Work after Retirement	0.509	0.500	0.104	0.305	0.342	0.475
Knowledge about Early Retirement	0.417	0.493	0.496	0.500	0.450	0.498

Table (A-3): Marginal Effects of Expected Age of Retirement---Full Model

Variables	Males 50-54	Males 55-57	Males 60	Females 50-54	Females 55-57	Females 60	All 50-54	All 55-57	All 60
Region (Urban=base)	-0.008	-0.133***	0.141***	0.077	-0.213*	0.136	-0.004	-0.131***	0.135***
	(0.010)	(0.034)	(0.034)	(0.076)	(0.113)	(0.109)	(0.012)	(0.031)	(0.030)
Age	-0.017***	-0.008	0.025***	-0.021***	-0.002	0.024***	-0.020***	-0.006	0.026***
	(0.002)	(0.006)	(0.006)	(0.003)	(0.006)	(0.005)	(0.002)	(0.004)	(0.004)
Experience	-0.000	-0.003	0.003*	-0.004***	0.001	0.003	-0.002***	-0.002	0.003**
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Head of the HH (no head=base)	-0.041	0.007	0.034	0.044	0.000	-0.044	-0.020**	-0.066***	0.086***
	(0.042)	(0.078)	(0.075)	(0.031)	(0.045)	(0.038)	(0.010)	(0.022)	(0.021)
Marital Status (not married=base)	-0.174***	0.106	0.069	0.050***	0.119**	-0.169***	-0.020	0.055*	-0.035
	(0.067)	(0.076)	(0.071)	(0.014)	(0.054)	(0.054)	(0.015)	(0.031)	(0.031)
Education (secondary or less=base):									
Vocational Secondary/High	0.036*	-0.025	-0.011	0.001	0.018	-0.019	0.023	-0.013	-0.010
	(0.019)	(0.042)	(0.042)	(0.020)	(0.042)	(0.040)	(0.014)	(0.030)	(0.029)
University +	0.010	-0.111**	0.101**	-0.000	0.015	-0.015	0.011	-0.056*	0.045
	(0.016)	(0.051)	(0.051)	(0.022)	(0.045)	(0.042)	(0.013)	(0.033)	(0.033)
Health Status_Own (poor=base)	-0.040**	-0.079**	0.119***	-0.083***	0.026	0.057**	-0.060***	-0.039*	0.100***
	(0.018)	(0.032)	(0.030)	(0.023)	(0.032)	(0.027)	(0.015)	(0.023)	(0.020)
Health Status_HH (poor=base)	0.015	-0.002	-0.013	0.005	0.008	-0.013	0.008	0.013	-0.021
	(0.013)	(0.051)	(0.051)	(0.018)	(0.040)	(0.038)	(0.011)	(0.033)	(0.033)
Health Insurance Benefits (no=base)	-0.029***	0.024	0.005	-0.033***	0.034	-0.001	-0.028***	0.031*	-0.003
	(0.010)	(0.025)	(0.025)	(0.012)	(0.023)	(0.022)	(0.008)	(0.017)	(0.017)
Professional Rank (low rank=base)	-0.000	-0.009	0.009	-0.016	-0.068*	0.084***	-0.012	-0.042	0.055*
	(0.013)	(0.044)	(0.044)	(0.019)	(0.036)	(0.033)	(0.011)	(0.029)	(0.028)
Working Spouse (none=base)	0.018*	0.070**	-0.088**	-0.026*	-0.031	0.057**	0.003	0.014	-0.017
	(0.010)	(0.035)	(0.035)	(0.014)	(0.030)	(0.029)	(0.009)	(0.023)	(0.022)
No. of HH Members	0.002	-0.026***	0.024***	0.002	-0.011	0.009	0.001	-0.019***	0.018***
	(0.003)	(0.010)	(0.009)	(0.007)	(0.013)	(0.012)	(0.003)	(0.007)	(0.007)
No. of Working HH Members	0.005	0.023	-0.028	0.001	-0.008	0.007	0.004	0.004	-0.008
	(0.008)	(0.023)	(0.023)	(0.009)	(0.018)	(0.016)	(0.006)	(0.014)	(0.014)
No. of Students in HH	0.007*	-0.007	0.000	-0.002	-0.019	0.020	0.005	-0.012	0.007
	(0.004)	(0.011)	(0.011)	(0.007)	(0.015)	(0.014)	(0.004)	(0.008)	(0.008)
Home Ownership (new rent=0)	-0.005	0.036	-0.031	0.008	-0.082**	0.074**	0.002	-0.003	0.001
	(0.013)	(0.037)	(0.036)	(0.018)	(0.038)	(0.035)	(0.011)	(0.027)	(0.026)
Log Monthly Wages	0.014	0.043	-0.057	0.022	0.002	-0.024	0.016*	0.014	-0.030
	(0.013)	(0.041)	(0.040)	(0.014)	(0.031)	(0.029)	(0.010)	(0.025)	(0.025)
Log Extra Income	0.002	-0.004	0.002	0.003	-0.005	0.003	0.002	-0.006*	0.004
	(0.002)	(0.005)	(0.005)	(0.002)	(0.005)	(0.005)	(0.001)	(0.004)	(0.003)
Prior Knowledge of Early	0.020**	-0.035	0.015	0.049***	-0.050**	0.000	0.033***	-0.045***	0.013
	(0.009)	(0.024)	(0.024)	(0.012)	(0.023)	(0.021)	(0.007)	(0.017)	(0.016)
Work after Retirement (no	0.009	0.051**	-0.059**	0.063**	-0.046	-0.017	0.022**	0.015	-0.037**
	(0.008)	(0.024)	(0.024)	(0.026)	(0.039)	(0.034)	(0.009)	(0.019)	(0.018)
Log Monthly Expenditures	-0.009	0.040	-0.031	-0.004	0.050*	-0.047*	-0.003	0.060**	-0.057**
	(0.013)	(0.040)	(0.040)	(0.014)	(0.028)	(0.026)	(0.009)	(0.024)	(0.024)
No. of Observations	1818	1818	1818	1575	1575	1575	3397	3397	3397

Standard errors in parentheses   *** p<0.01   ** p<0.05   * p<0.1

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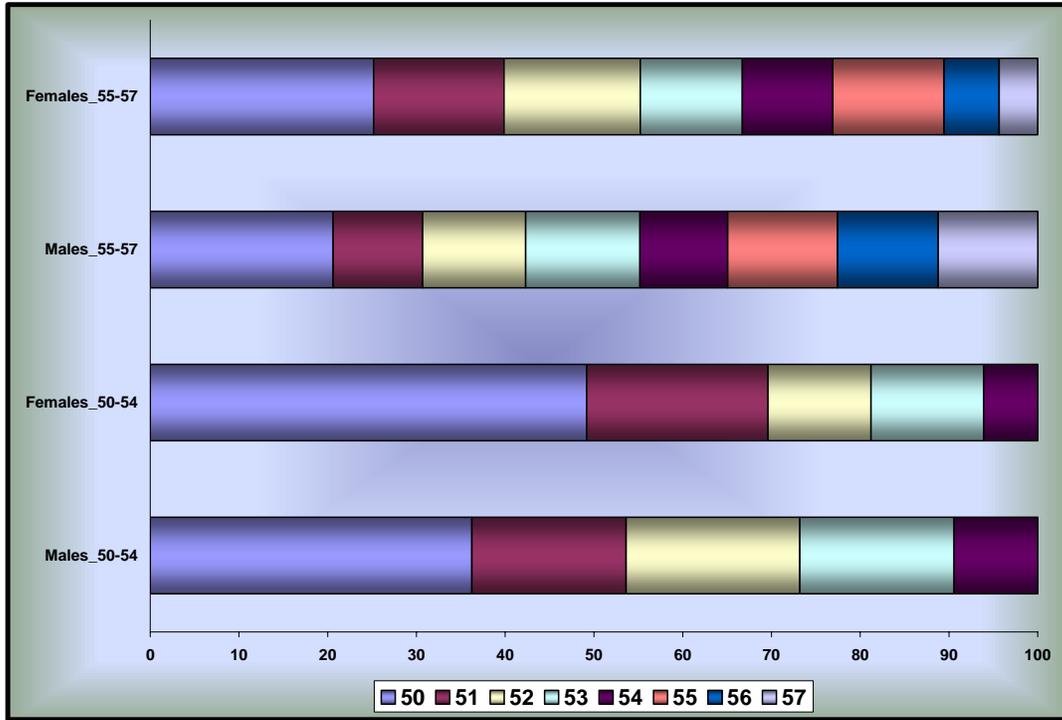**Figure (A-1): Distribution of Expected Age of Retirement by Current Age (%)**

Legend: ☐ 50 ■ 51 ☐ 52 ☐ 53 ■ 54 ■ 55 ■ 56 ☐ 57

Figure (A-2): Distribution of Expected Age of Retirement by Levels of Education (%)

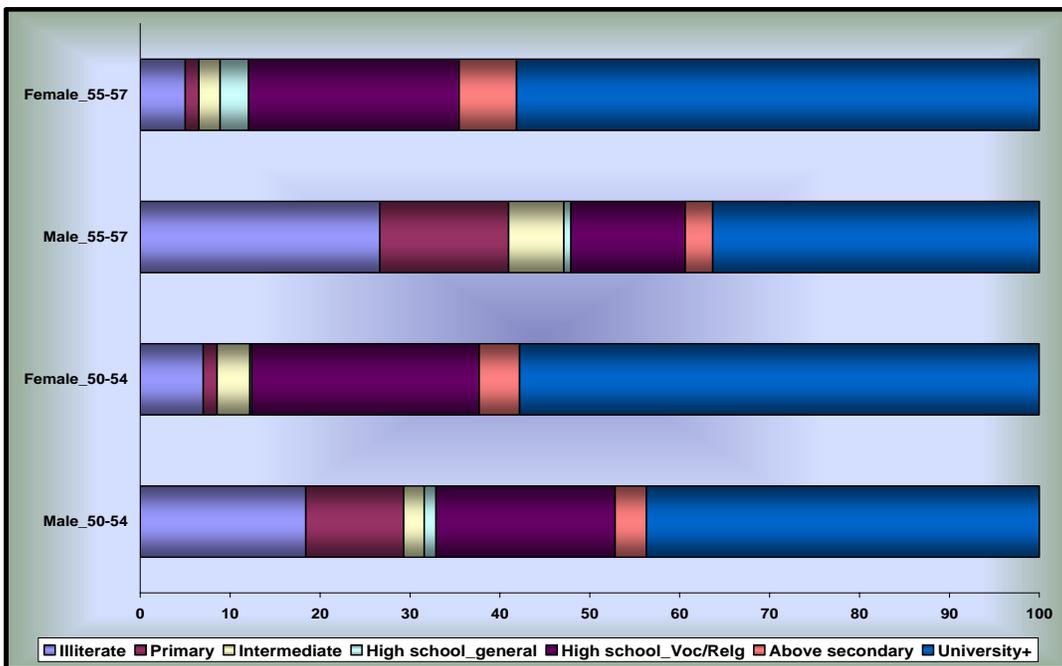Legend: ☐ Illiterate ■ Primary ☐ Intermediate ☐ High school_general ■ High school_Voc/Relg ■ Above secondary ■ University+

Figure (A-3): Distribution of Expected Age of Retirement by Professional Rank (%)
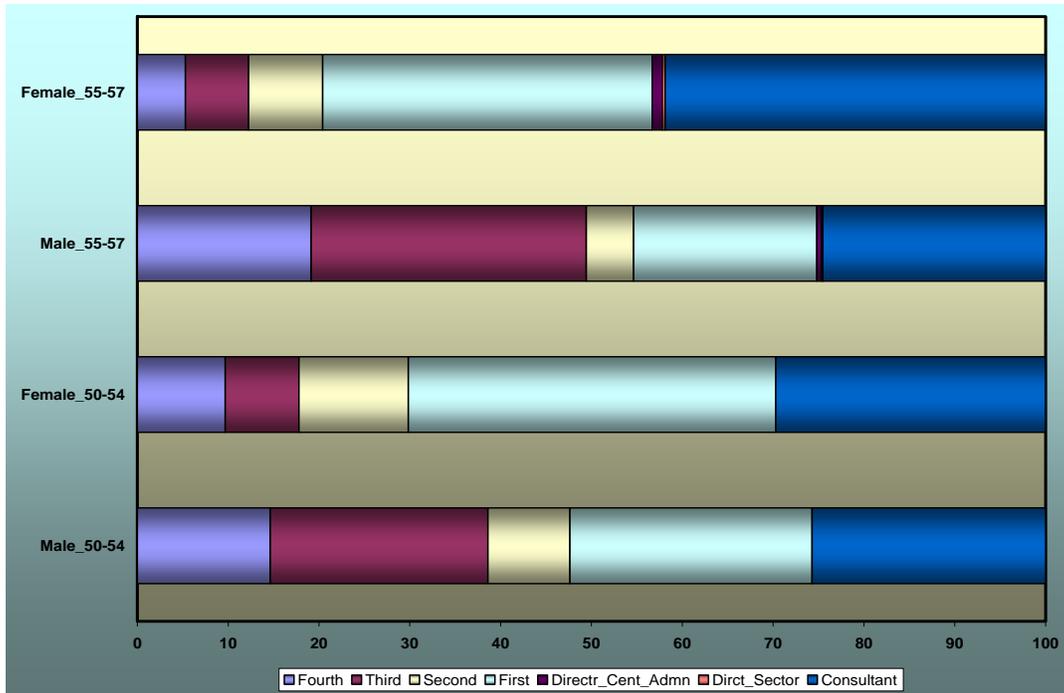
Figure (A-4): Distribution of Expected Age of Retirement by Spending Avenues of Pension Money (%)
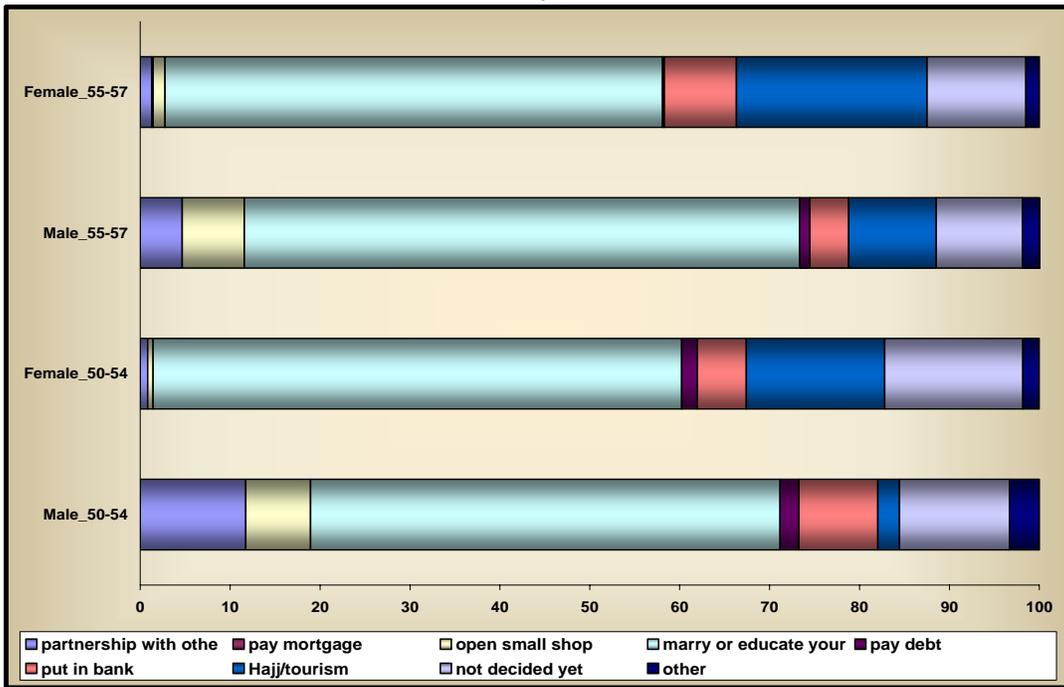
Figure (A-5): Distribution of Expected Age of Retirement by Preference to Work after Retirement (%)
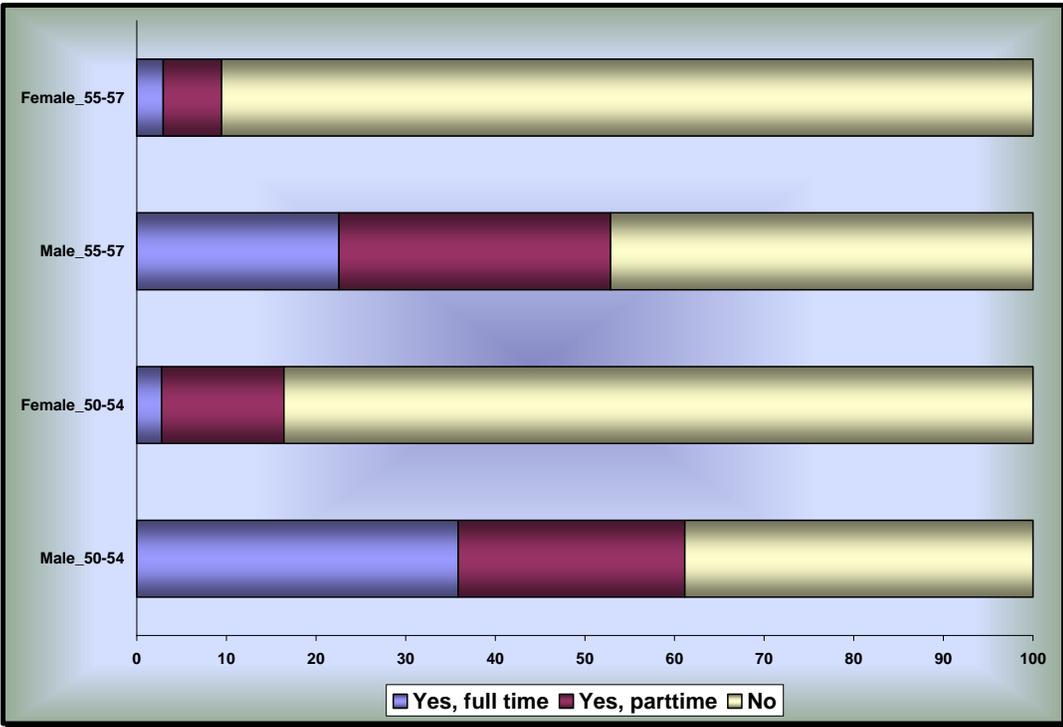

Figure (A-6): Distribution of Expected Age of Retirement by Expecting Spouse to Work after Retirement (%)