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PATTERNS OF LABOR FORCE PARTICIPATION AMONG ISRAELI ARABS

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Abstract

This study examines the patterns of labor force participation among Israeli Arabs through the analysis of the relevant data and the estimation of participation equations. There are two main findings: an atypical pattern of participation over the life cycle among Arab men, i.e., a sharp drop in participation at a relatively early age, and a low average rate of participation among women, with a large degree of variation.

Among the explanations offered are the following: the concentration of Arab men in occupations that require physical ability and, as a result, retirement at a relatively early age, and dependence on family members, and, for women, the effect of the categorization as either "modern" or "traditional" on participation patterns.

1. INTRODUCTION

This article describes the patterns of labor force participation among Israeli Arabs and analyzes the factors that determine them.

The situation of Israeli Arabs in the labor market has attracted a great deal of attention in public discourse and in economic research, both because of their high proportion of the population (one-fifth) and because their integration within the labor market is less successful than that of Jews. The situation of Israeli Arabs in the labor market has a number of characterizations, including inequality in wages and in employment opportunities. In addition, the participation rates of Israeli Arabs in the labor force also constitute an important issue, primarily in view of the low rates among Arab women and the relatively early age of retirement among Arab Israeli men. These phenomena and their effects on the socioeconomic situation of Arabs in Israel emphasize the need for government policy that

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will raise the participation rates of women and will postpone retirement among men. To this end, it is important to understand the unique participation patterns among the Arab population in Israel and the factors that explain them.

Participation patterns among Israeli Arabs cannot be fully explained by the conventional variables that in general account for participation patterns, i.e., age, education, family status, number of children and the income of other household members. In this article, we try to understand the causes of early retirement among Arab Israeli men and the low participation rates among Arab women. Use will be made of a relatively new database based on the 2005 Social Survey, which focused on the issue of participation in the labor force.

The article is structured as follows: Section 2 presents data on participation in the labor market. Section 3 suggests explanations for the situation as indicated by the data. Section 4 describes the econometric estimation of a participation equation, which includes the presentation of a model of participation, an explanation of the estimation method and a description of the results. Section 5 discusses the implications of the data and the estimation results and concludes.

2. PARTICIPATION OF ARAB ISRAELIS IN THE LABOR MARKET

There are a number of reasons for focusing on the participation of Israeli Arabs in the labor market:[1] the participation decision is a fundamental and highly significant economic choice made by the individual; the employment rate among Arabs, even more than the unemployment rate, is determined to a large extent by the participation rate; and the government policy on participation, in all its aspects, is known to have important implications. There are other important aspects of this issue, some of which were mentioned above, but they deserve a separate treatment. We will first describe the sources of the data, which will be followed by a description of the data itself from various perspectives.

a. Data sources

The data for this study were taken primarily from the Social Survey and the Labor Force Survey carried out by the CBS (Central Bureau of Statistics) in 2005.

The Social Survey is carried out annually and provides information on the living conditions and welfare of the adult population in Israel. It also examines the views of individuals in society regarding various aspects of their lives. The survey is composed of fixed components that are investigated every year and a specific topic that is investigated in detail and changes each year. In 2005, the survey included an in-depth investigation of participation in the labor force and therefore we chose it for this study. The survey includes numerous details that do not appear in the Labor Force Survey, including information regarding participation in the labor force and employment, religious characterization, use of

[1] The analysis is based on the responses of individuals on Central Bureau of Statistics surveys. We cannot rule out the possibility of unreported work.

various technological media, relationships with family members, etc. The 2005 Social Survey included 9543 individuals over the age of 20, who represent a population of about 4.3 million individuals in that age group. Of these, 500 were found not to belong to the survey's population and of the rest about 83 percent (7647 individuals) responded.

The Labor Force Survey is carried out quarterly and includes questions on participation, employment and unemployment, as well as demographic information. The survey relates to the fixed population aged 15 and above in the State of Israel. In this survey, a quarter consists of four panels, each of which is made up of about 2700 households. Each panel is investigated during two consecutive quarters; the panel then leaves the sample for two consecutive quarters and subsequently returns to it for another two consecutive quarters.[2] We focus on the survey done in 2005 in order to maintain consistency between the two surveys, i.e. the Social Survey and the Labor Force Survey.[3] For the same reason, we chose to focus on the 20+ age group in the Labor Force Survey.

[2] All four panels exist only in relatively large Jewish cities and in a number of Arab cities, such as Nazareth and East Jerusalem. In the rest, only one or two panels exist.

[3] A comparison of population estimates and estimates of labor force characteristics between the two surveys and the reasons for the gaps between them can be found in Pasternak and Bergman-Tsaban (2005).

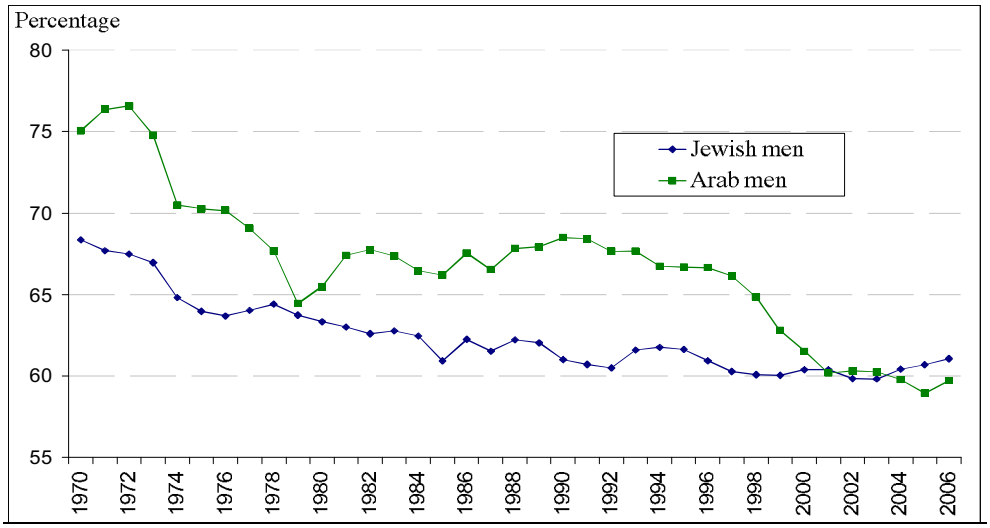
For the definitions used in the Social Survey, see
http://www1.cbs.gov.il/reader/cw_usr_view_SHTML?ID=569

For the definitions used in the Labor Force Survey, see
http://www.cbs.gov.il/reader/?MIval=cw_usr_view_SHTML&ID=328

b. The rate of participation over time

The rate of participation over time among Israeli Arabs, both men and women, is described by the following graphs:

Figure 1a
Rates of participation for men over time according to sector, 1970–2006 [1,2]

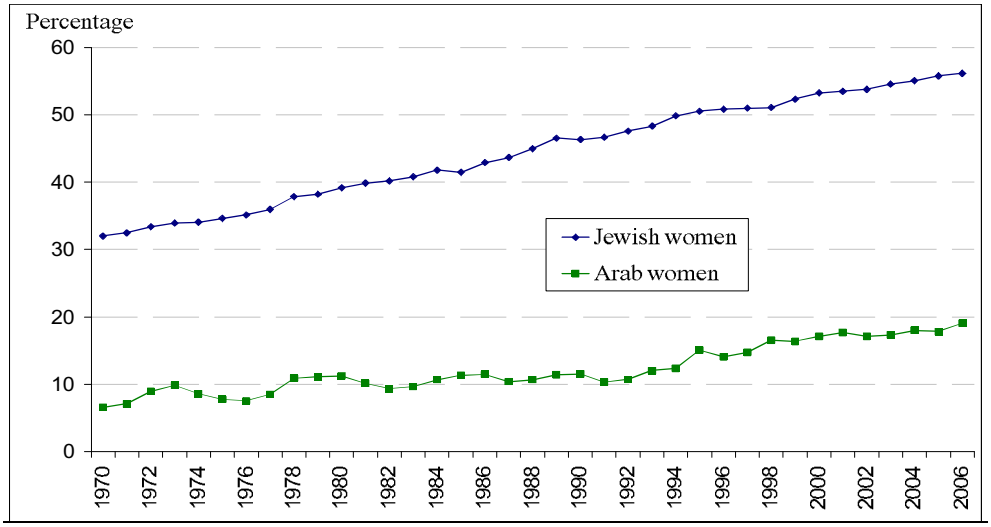


[1] For the period 1967 to 1978, an Arab is defined as a non-Jew whose father is not Jewish and whose continent of origin is not Europe or America. For the period 1979 to 2000, an Arab is defined as a Christian, Moslem or Druze whose continent of origin and that of his father is not Europe or America. Starting from 2001, an Arab can be defined with greater precision due to the use of new variables. The definition of an Arab in this graph does not take into account the new variables in order to facilitate a consistent long-term comparison.

[2] In 1982, 1983, 1984, 1985, 1998 and 2001, a change was made in the method of extrapolating the CBS's sample. The rates in those years were also calculated according to the old method of extrapolation in order to facilitate comparison between the years.

Source: Calculations based on the CBS Labor Force Survey.

Figure 1b
Rates of participation for women over time according to sector, 1970–2006[1,2]



[1]For the period 1967 to 1978, an Arab is defined as a non-Jew whose father is not Jewish and whose continent of origin is not Europe or America. For the period 1979 to 2000, an Arab is defined as a Christian, Moslem or Druze whose continent of origin and that of his father is not Europe or America. Starting from 2001, an Arab can be defined with greater precision due to the use of new variables. The definition of an Arab in this graph does not take into account the new variables in order to facilitate a consistent long-term comparison.
[2] In 1982, 1983, 1984, 1985, 1998 and 2001, a change was made in the method of extrapolating the CBS's sample. The rates in those years were also calculated according to the old method of extrapolation in order to facilitate comparison between the years.
Source: Calculations based on the CBS Labor Force Survey.

The graphs show that the rate of participation among Arab men[4] has declined while that of women has risen, which is similar to the trends in many Western countries. Juhn and Potter (2006) survey these trends in the US and attempt to explain them. Among the many explanations: for women, an increase in the level of schooling together with an increased demand for skilled labor and changes in technology that led to savings in housework, a drop in the birth rate and social changes; for men, a decline in the participation of unskilled workers due to reduced demand, together with increased dependence on various government allowances. The rates of participation also declined among Jewish men in Israel though the decline among Arab men was more pronounced. Thus, while in 1990, the rate of participation among Arab men was about 5 percentage points higher than among Jewish men, the situation reversed in recent years, with the rate of participation now lower among Arab men.[5] A possible explanation of the sharp decline in participation rates among

[4] For purposes of brevity, the terms Arab men and Arab women refer to Israeli Arabs.
[5] These findings are consistent with those of Dahan (2007) who reported on the appearance of a gap in participation rates between Moslem and Jewish men.

Arab men is the relative drop in demand for unskilled labor, which is the result of technological progress, the exposure of the economy to competing imports and the globalization process. A particularly steep decline can be seen in the 1970s, perhaps due to the replacement of Israeli Arabs by Palestinian workers. The sharp decline in participation rates among Arab men that began in the 1990s was also influenced by the entry of foreign workers into Israel.[6] Using panel data from the Labor Force Survey, Amir and Gottleib (2005) showed a "displacement" of local workers by foreign ones. Since the beginning of the 2000s, the sharp decline in the participation rates of Arab men has leveled off, apparently due to the broad cutbacks in allowances and the tightening of their criteria for eligibility, among other things.[7]

The rate of participation among Arab women doubled from 1970 to 2006, from about 10 to 20 percent, though it is still at particularly low levels. However, the rate of increase in their rate of participation was lower than among Jewish women and therefore the gap between them widened. The low rates of participation among Arab women are consistent with the findings of the CBS Social Survey with regard to the views held by the Arab population. Thus, about 24 percent of Arabs feel that it is sufficient for one spouse to work. Among Jews, this view is held by only about 12 percent of respondents. Furthermore, 97 percent of the Arabs feel that it is important for the man to work, in contrast to only about 60 percent of Jews. In families with young children and in which the respondent feels that it is important for one of the parents to either reduce his work hours or not to work at all, it was found that close to 97 percent of Arabs feel that it is preferable for the woman to do so, in contrast to 71 percent of Jews.

c. Participation over the life cycle

While the graphs above relate to trends over time, it is also of interest to look at the profile of participation over the life cycle.[8] Figure 2 presents the participation profiles for 2005 based on the CBS Labor Force Survey and Social Survey.

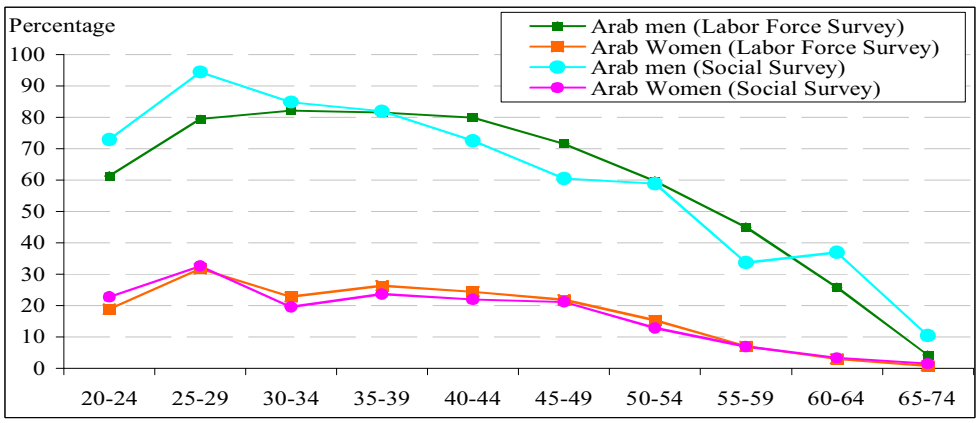
There are two main findings with regard to participation by age: (1) The rate of participation among Arab men initially increases with age until at age 45 it declines sharply. (2) The participation profile of Arab women is far below that of men although it also shows retirement at a relatively young age.

[6] See "Changes in the employment of Israeli Arabs during the last decade", 2004 Bank of Israel Annual Report, Chapter 2: Employment and Wages, Box 2.2, pp. 127–9.

[7] See the discussion in the 2007 Bank of Israel Annual Report, Chapter 8: Issues in Welfare Policy.

[8] In this study, the "participation profile over the life cycle" is applies to a single point in time, i.e. the year 2005.

Figure 2
Rates of participation by age among Arabs, 2005



Source: Calculations based on the CBS Labor Force Survey and Social Survey for 2005.

It is worth mentioning that the data from the two surveys is not identical. The Social Survey data shows a more "dramatic" decline in the participation rate, particularly among Arab men.[9] Nonetheless, according to both surveys, the participation of Arab men drops significantly after the age of 45.

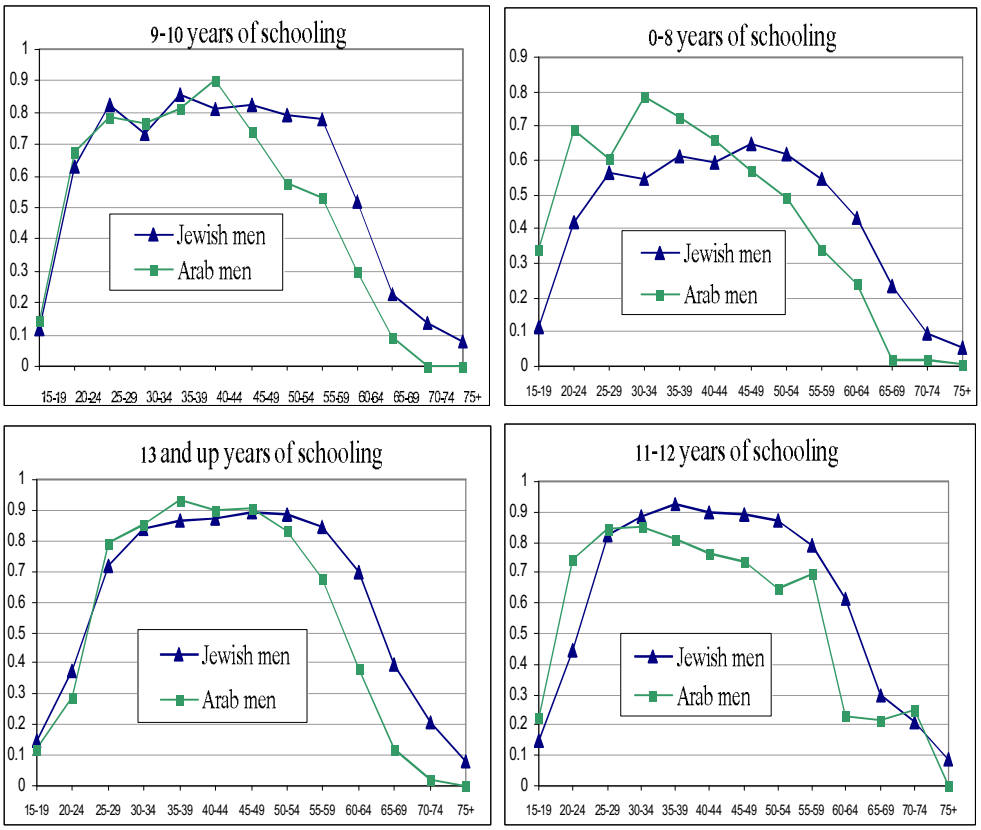
These patterns of early retirement are also consistent with the views of Arabs expressed in the Social Survey. Thus, while only 9 percent of Jews felt that the age of retirements should be up to 54 (the minimum age suggested in the survey), 22.5 percent of the Arabs felt that way.

d. Participation over the life cycle according to level of education

Several questions thus arise: Is the pattern of early retirement among Arab men related specifically to level of education? Is the phenomenon characteristic only of men with a low level of education or is it a broader phenomenon? Is the pattern of participation among Arab men due only to the relatively high proportion that have a low level of education? Figure 3a and 3b present the participation profile according to years of schooling: 0–8, 9–10, 11–12 and 13+.

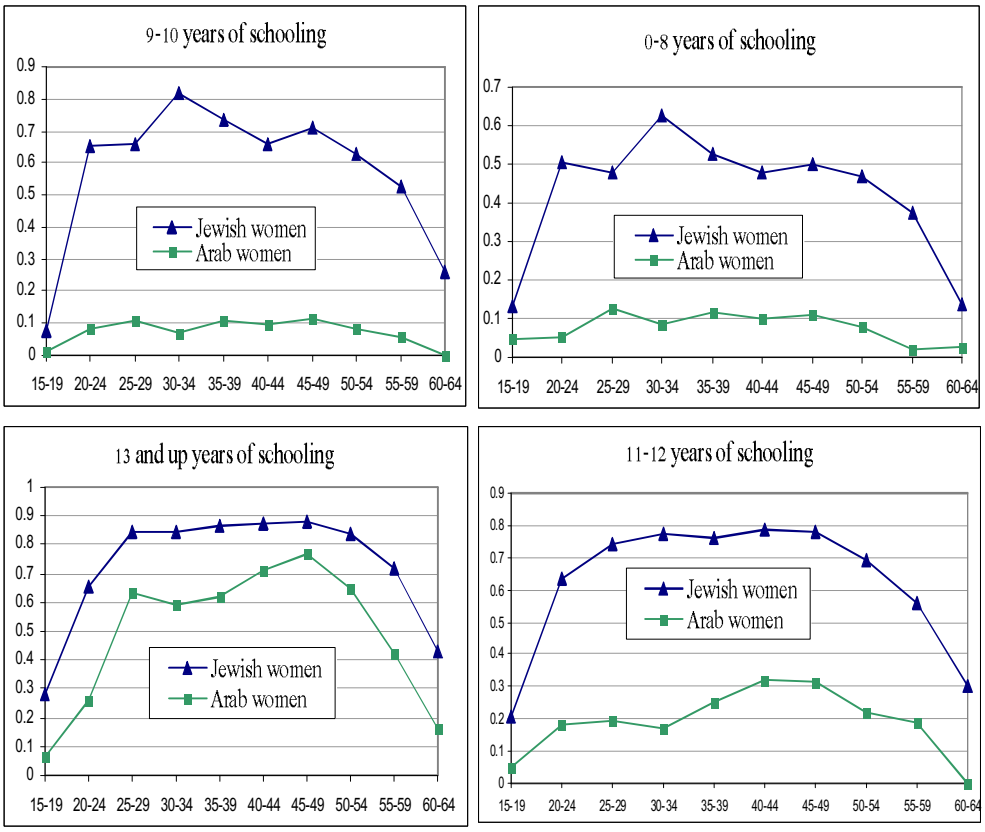
[9] Since the sample of the Social Survey is smaller, it presents a less monotonic picture over the life cycle.

Figure 3a
Participation rates of men according to age and level of schooling



Source: Calculations based on the CBS Labor Force Survey for 2005.

Figure 3b
Participation rates of women according to age and level of schooling



Source: Calculations based on the CBS Labor Force Survey for 2005.

The participation profile according to age and level of education indicates that early retirement exists at all levels of education. Nonetheless, as expected, the age at which the participation rate starts to drop—among both Jews and non-Jews—is negatively correlated with the level of education.

A comparison between Arab and Jewish men indicates that among Arabs the drop in participation always begins much earlier than among Jews. This is particularly pronounced among men with a low level of education. In Figure 3a, the graphs of the participation rate over the life cycle among men with a non-academic education (up to 12 years of schooling) show that, as expected, the patterns of participation among Arab men are similar to those described above for Arab men in general while the participation patterns of Jewish men with a relatively low level of education are not similar to those of Arab men. Thus, their participation profile is similar to what is commonly observed in the Western world, as will be described below. Retirement begins on a significant scale after the age of 60 among Jewish men in contrast to 45 among Arab men. Even when the group with 0–12 years of

schooling is divided into sub-groups according to narrower categories the early retirement of Arab men in each sub-category is particularly noticeable and, as expected, the phenomenon increases in intensity as the level of education declines.

It is worth mentioning that the pattern of early retirement among Arab men still predominates, though its intensity is reduced, even when the difference between the distributions of Arabs and Jews by level of education is neutralized.

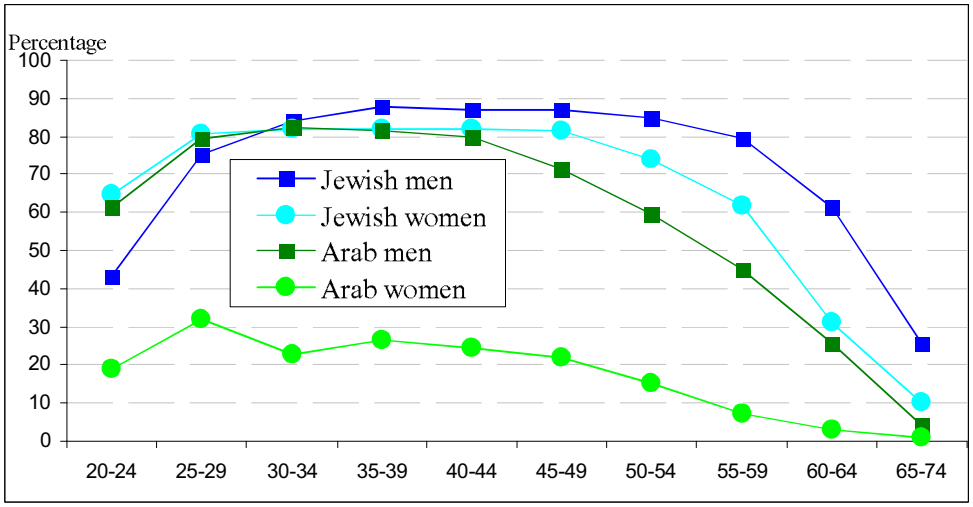
Arab women with a low level of education do not have the classic hump-shaped participation profile over the life cycle, in contrast to Jewish women who do. Their participation rate is relatively constant and very low up until the age of retirement (Figure 3b).

e. Comparison with other populations and economies

In order to determine the extent to which the participation over the life cycle profile of Arab men in Israel deviates from the norm, it is important to compare it to the participation profiles of other populations and economies.

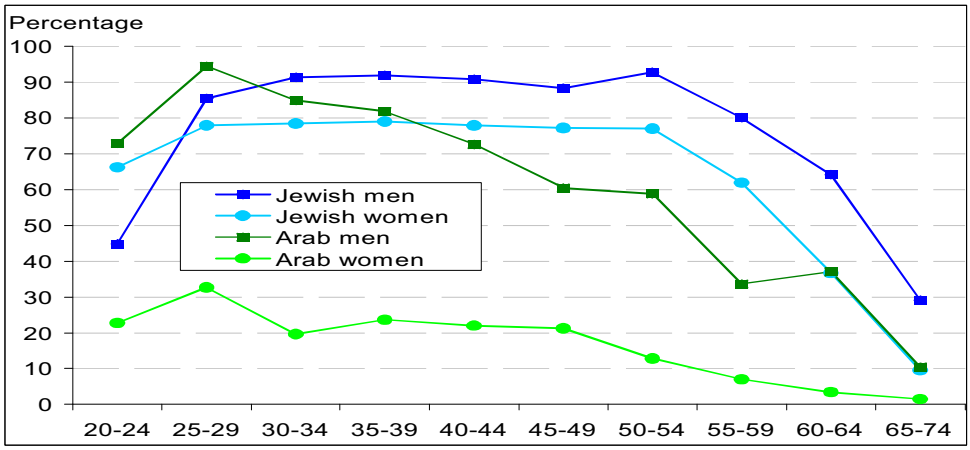
Figure 4 compares the data of the 2005 Labor Force Survey between Jews and Arabs. Figure 5 does the same using the Social Survey. Figure 6a and 6b compare the same data to those of Labor Force Surveys in a number of Western countries while Figure 7a and 7b make the comparison to a number of Arab and Moslem countries for which data was available. Finally, Figure 8 presents data from the Labor Force Survey for Jews, Arabs and Palestinians in the territories for 1987. This year was selected since the Palestinian labor market had not yet experienced the shocks of two intifadas and frequent security closures.

Figure 4
Participation rates according to age, 2005



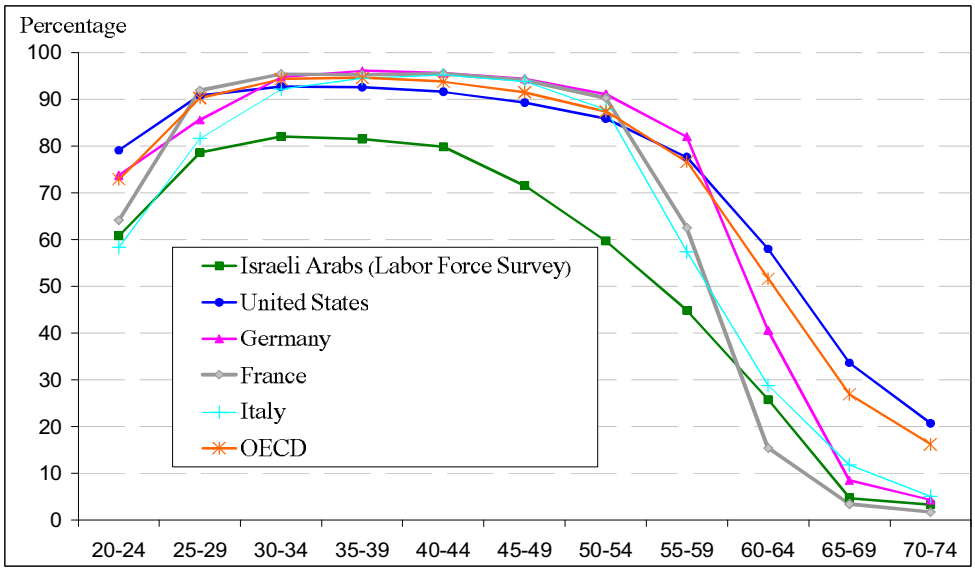
Source: Calculations based on the CBS Labor Force Survey 2005.

Figure 5
Participation rates according to age, 2005



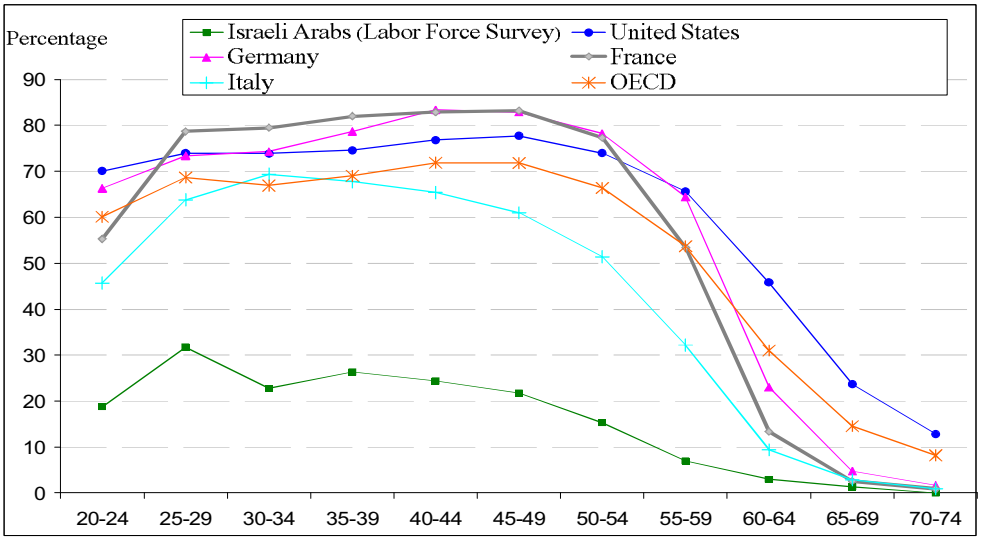
Source: Calculations based on the CBS Social Survey 2005.

Figure 6a
Participation rates among men according to age in comparison to other countries, 2005



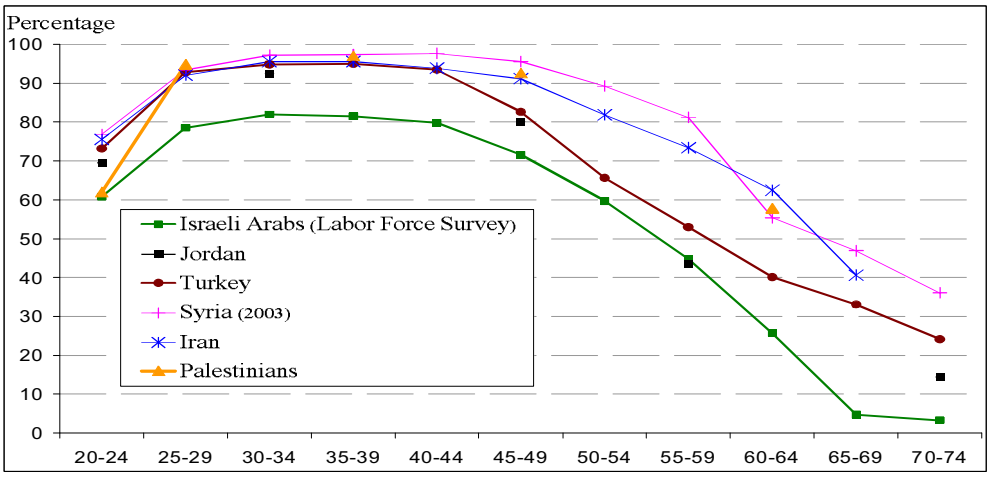
Source: CBS Labor Force Survey, 2005, www.ilo.org, www.oecd.org

Figure 6b
Participation rates among women according to age in comparison to other countries, 2005



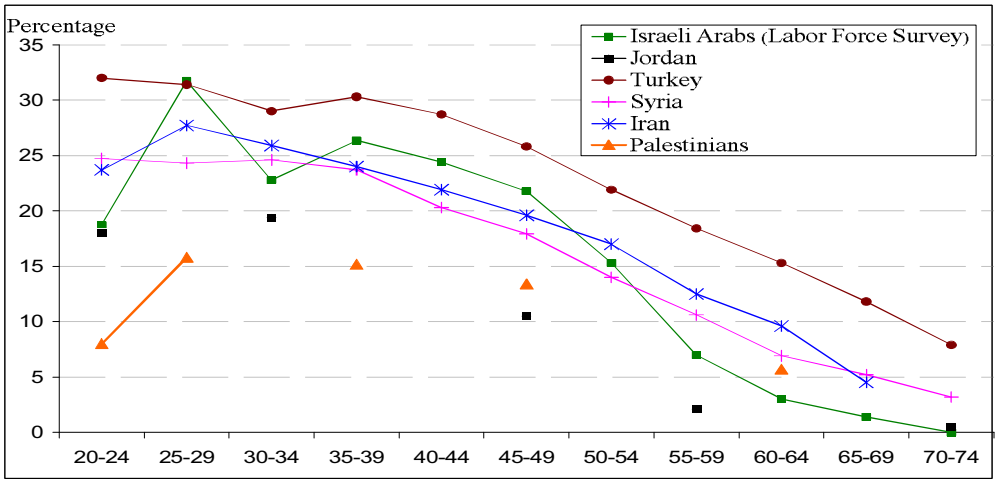
Source: CBS Labor Force Survey, 2005, www.ilo.org, www.oecd.org

Figure 7a
Participation rates among men according to age in comparison to Moslem and Arab countries, 2005



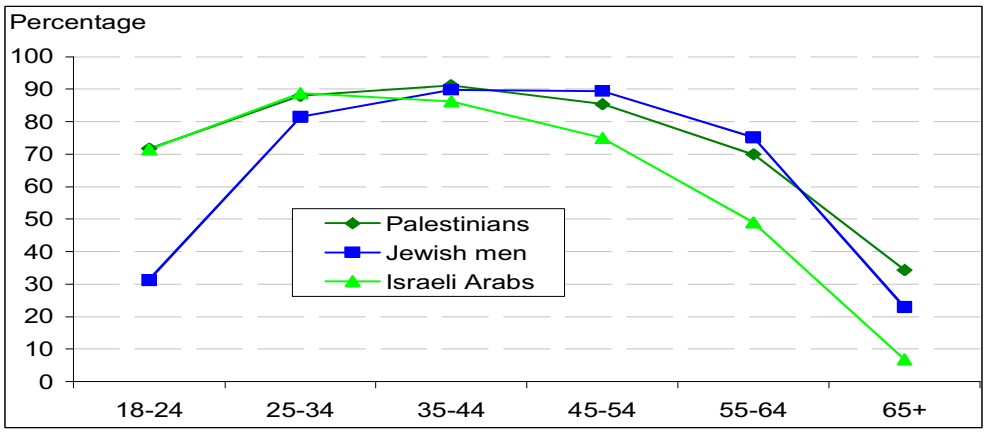
Source: CBS Labor Force Survey 2005, www.ilo.org, www.oecd.org; the Iranian Bureau of Statistics http://eamar.sci.org.ir; the Palestinian Authority http://www.pcbs.gov.ps/; Department of Statistics (DOS) of the Hashemite Kingdom of Jordan http://www.dos.gov.jo/sdb_pop/sdb_pop_e/inde_o.html; and The Syrian Labor Market, Findings from the 2003 Unemployment Survey, by Pafo, Geir Ovenson and Pal Sletten http://www.fafo.no/pub/rapp/20002/20002.pdf

Figure 7b
Participation rates among women according to age in comparison to Moslem and Arab countries, 2005



Source: CBS Labor Force Survey 2005, www.ilo.org, www.oecd.org; the Iranian Bureau of Statistics http://eamar.sci.org.ir; the Palestinian Authority http://www.pcbs.gov.ps/; Department of Statistics (DOS) of the Hashemite Kingdom of Jordan http://www.dos.gov.jo/sdb_pop/sdb_pop_e/inde_o.html; and The Syrian Labor Market, Findings from the 2003 Unemployment Survey, by Pafo, Geir Ovenson and Pal Sletten http://www.fafo.no/pub/rapp/20002/20002.pdf

Figure 8
Comparison of participation rates between Jewish men, Israeli Arabs and Palestinians, 1987



Source: The data for Jewish men and Israeli Arabs were taken from the CBS Labor Force Survey for 1987. The Palestinian data was taken from the CBS survey: "Labor Force Surveys in Judea, Samaria and Gaza". The survey data was processed by Professor Joshua Angrist. The data from this survey was provided by the ISDC and we are grateful to them for their help in processing it.

The following can be concluded from the above graphs:
The rate of participation among Arab Israeli men is lower than that among Jewish men in Israel, men in Western countries and even men in other Arab and Moslem countries. Among Arab Israeli men, the highest observed participation rate is about 80 percent in comparison to 90 percent or more in these countries.

Apart from the horizontal difference in the participation profile between Jews and Arabs, it is worth noting the differences in the profile slope in each age group. There is a steeper slope among Arab men starting from the 40–44 age group. All the other economies are characterized by a classic hump-shaped participation profile consisting of an initial rise, a leveling off and then a decline over the rest of the life cycle. The decline in Europe begins after ages 50–54 and in the US it is more gradual after ages 55–59. Among Israeli Arabs, the hump is more pointed, even relative to Palestinian men in the territories and men in other Arab and Moslem countries. Although early retirement is also common in Jordan and Turkey, the participation rates of men in these two countries is significantly higher than among Israeli Arabs.

The drop in participation rates among Arab Israeli men at a relatively young age is also evident when comparing them to Palestinian men in the territories. In 1987, Arab Israeli men were retiring already at ages 35–44 while the participation rates of Palestinian men in the territories continued to rise in this age group and only started to fall in the 45–54 age group.

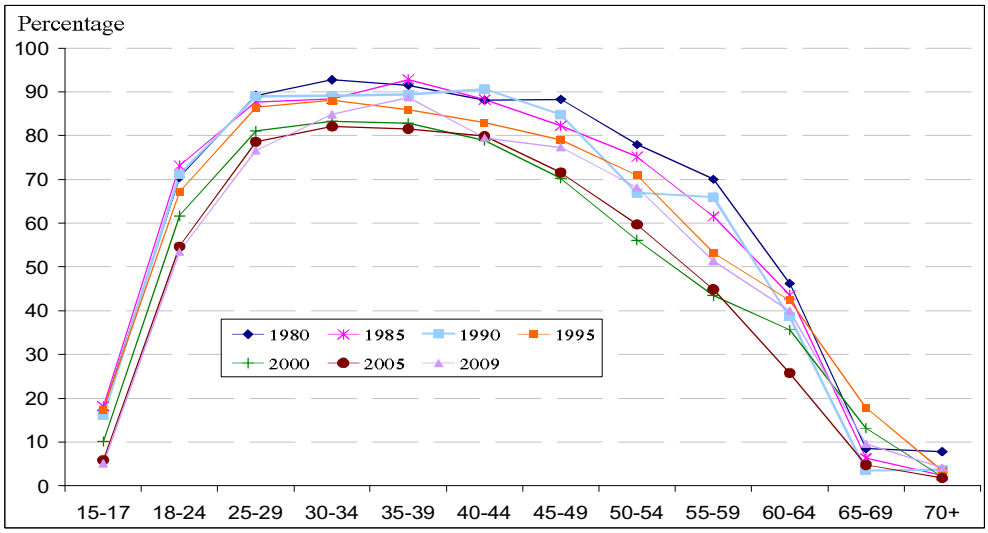
It can further be concluded from the above graphs that while the *average* participation rate of Arab men in most of the years since 1970 was greater than that of Jewish men the distribution of participation *over the life cycle* differs between Arab and Jewish men. Thus, Arab participation was higher at younger ages and lower starting from ages 40–45.

The rate of participation among Arab women in Israel is low relative to the levels prevailing in Western countries and among Jewish women in Israel. Nonetheless, the pattern of participation among Arab women is not significantly different from that commonly observed in various Arab and Moslem countries.

f. Changes in participation patterns over time

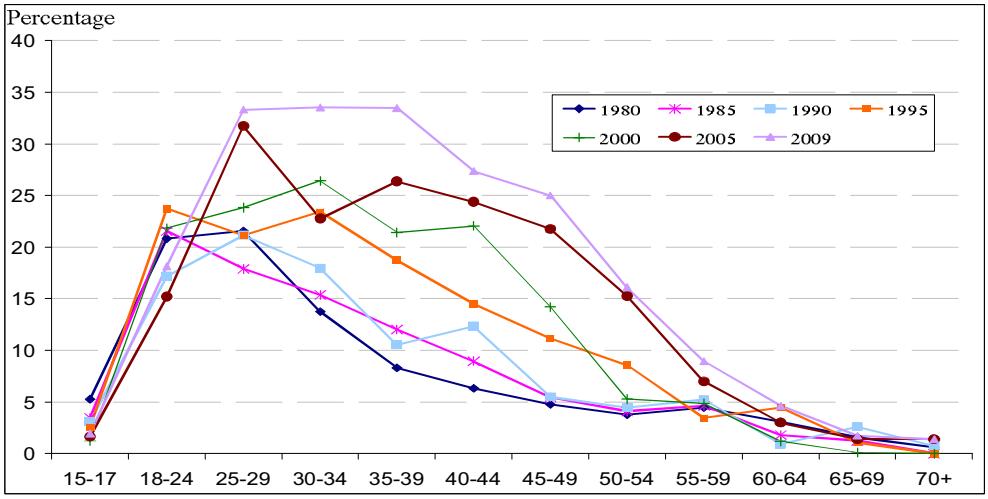
The data indicate that early retirement occurred throughout the sample period and in all of the various cohorts. In all the years, Arab men retire significantly earlier than Jewish men and among women participation rates were lower for Arab women. As evident from Figure 9a and 9b, there has been a clear downward shift over the years along the whole profile for men and an upward shift in the profile for women, primarily in the 20–60 age group. Nonetheless, the gap between Arab and Jewish women is continuing to widen.

Figure 9a
Rates of participation among Arab men according to age over time



Source: Calculations based on the Labor Force Survey. For the period 1980–2005, an Arab is defined as a Christian, Moslem or Druze whose continent of origin is not Europe or America. For 2005, an Arab is defined according to a new, more precise variable that was included in the Labor Force Survey starting from 2001.

Figure 9b
Participation rates among Arab women according to age over time



Source: Calculations based on the Labor Force Survey. For the period 1980–2005, an Arab is defined as a Christian, Moslem or Druze whose continent of origin is not Europe or America. For 2005, an Arab is defined according to a new, more precise variable that was included in the Labor Force Survey starting from 2001.

3. AN EXPLANATION OF PARTICIPATION PATTERNS AMONG ISRAELI ARABS

Previous research has, in general, explained labor force participation by age, education, family status, number of children, income of other household members, etc. However, the above description of the data points to a number of unique phenomena that require an explanation beyond that provided by these variables. What, then, can explain the participation patterns described above?

With regard to men, there are a number of possibilities:

1) Arab men are to a large extent employed in occupations and in industries that require physical ability, such as construction and agriculture. Therefore, it can be expected that with the decline in physical ability, already in the 40s, participation in this kind type of employment will begin to decline. The high number of foreign workers in Israel provides a substitute for these workers. We would mention that the Social Survey indicated that of the workers who retired during the last ten years, 54 percent of the Arabs reported some physical limitation, handicap or illness as a reason for leaving their last place of work, in contrast to only about 21 percent of Jews. Similarly, among job seekers, about 21 percent of Arabs reported that the main reason for not being able to find a job was a physical limitation, handicap or illness in contrast to only 6 percent of Jews. Furthermore, among respondents who reported a health problem, about 88 percent of the Arabs reported that it interferes with their day-to-day functioning, in contrast to only 66 percent of Jews.

Various studies have pointed to the more serious health problems among the Arab population. Dahan (2007) reported that handicaps or illnesses are the dominant reason reported by non-Jews for non-participation. The data presented there in Tables 5–7 indicate that between 50 and 70 percent of non-Jewish non-participants report a handicap or illness as the reason for non-participation. Ahdut and Gavra (2008) report that, according to the SHARE survey, 15.4 percent of the Arabs in the 50+ age group view themselves as ill or handicapped in comparison to 3.6 percent of the Jews (not including new immigrants).[10] Using the same data, Shmueli (2008) found that Arabs report significantly more serious health problems than (non-immigrant) Jews, including handicaps that interfere with daily functioning. However, in certain areas of daily functioning, such as sight and hearing, they report significantly better daily functioning. Arabs also report having less access to health services.

It appears then that physical health is one of the main factors explaining the early retirement of Arab men although as of now there are no additional data that would allow this hypothesis to be confirmed.

The option of receiving various types of government support enables men to retire when their physical abilities decline. In the US, Autor and Duggan (2003, 2007) found that the rate of participation fell as a result of an increase in Social Security Disability Insurance payments for individuals aged 25–64.

2) It is possible that the structure of Arab families and their cultural environment facilitate intergenerational support. The Social Survey indicates that the proportion of

[10] A survey of health, aging and retirement carried out since 2004 in the Scandinavian countries and up to the Mediterranean. Data was gathered in Israel during the years 2005-6.

young Arabs who support their parents is much higher than among the Jewish population, as can be seen in Table 1.

Table 1
Proportion of children who financially support their parents (percent)

	Jews	Arabs	Total
Age group			
20-24	2.5	6.0	3.2
25-29	7.3	19.6	9.7
30-34	13.0	25.2	15.5
35-39	11.7	24.7	14.3
40-44	11.6	19.7	13.1
45-49	12.9	18.5	13.6
50-54	12.0	11.7	11.9
Total	15.2	25.2	16.9

Source: Calculations based on the CBS Social Survey 2005.

Support for this hypothesis can also be found in a study by Leviathan (2008) based on the SHARE data, which showed that 40 percent of the Arab population report intergenerational residence, in contrast to only 30 percent of Jews.

With regard to women, it is widely believed that cultural barriers prevent participation. However, there are those who claim that low participation rates among women are primarily due to the limited supply of jobs available to Arab women and the low wages offered to them. It should be mentioned that the data show a significant increase in the level of education among certain groups of women. This leads to the hypothesis, which can be tested econometrically, that Arab women are likely to be either "modern" or "traditional" and that "modern" women have characteristics similar to contemporary Western women, including a high level of education and a high rate of participation. The status of being "modern" has two aspects: one related to culture and mentality and the other to the use of advanced technology ("modern knowledge"), which are of course related. It is possible to test the extent to which the "modern" variables influence participation while accounting for the effect of other variables, such as wages.[11]

Spierings and Smits (2007) examined the participation rates among more than 50,000 Arab women in Egypt, Jordan, Syria, Morocco and Tunisia and found that modern Arab women have higher rates of participation. However, their research also shows that cultural factors are not the only ones that affect the participation of Arab women in the work force.

In addition to the abovementioned variables, the participation patterns of Arab Israeli women may also be influenced by the participation of other groups in the labor market, such as Palestinian workers, foreign non-Palestinian workers and low-skilled Jewish workers.

[11] The effect of "modernity" on women's supply of labor in general is discussed in various articles. Thus, for example, Lifshitz (2004) found that in all the simulations that she ran "modern" women (defined as women from families in which both spouses are perceived as being equal) participate more than "traditional" women (defined as women from families in which the man is the main income earner). See also Eckstein and Lifshitz (2009).

4. ESTIMATION OF PARTICIPATION IN THE LABOR MARKET

What are the explanatory variables that determine participation? Up to this point, we have simply described the data. In this section, we will examine the participation decision using econometric methods, which will enable an in-depth analysis of the phenomena described above. This section will present a model of participation in the labor market and the participation equation derived from it. It will also briefly discuss the empirical methods used and the data, as well as the estimation results. The implications of the findings will be discussed in the following section.

a. The model of participation

There is a large literature on participation in the labor market.[12] Following is a basic model commonly found in the literature, which is described in Blundell and MaCurdy (2008).

The individual has a quasi-convex utility function in consumption (c) and leisure (l). The problem of the individual is to maximize utility as follows:

$$(1) \quad \max_{s.t.} U(\underset{+}{c_i}, \underset{+}{l_i}, v_i)$$

$$(2) \quad c_i = y_i + w_i h_i$$

$$(3) \quad h_i + l_i = T$$
$$c \geq 0$$
$$h \geq 0$$

where U is the utility function and v is the vector of the individual's characteristics. These characteristics can be either observable or unobservable and are likely to include cultural factors. w is the hourly wage, y is income from other sources, T is total hours available to the individual and h is number of work hours.

The solution of this problem yields the supply of work hours h as a positive function of w and a negative function of y and as a function of the vector of characteristics v_i.

$$(4) \quad h_i^* = h_i(\underset{+}{w_i}, \underset{-}{y_i}, v_i)$$

The decision to participate p_i is given by:

$$(5) \quad p_i = 1\{h_i^* > h_i^0\}$$

[12] See Blundell, MaCurdy and Meghir (2007) for a detailed discussion and in particular Section 2.

When the variable h_i^*, the hours that the individual *i* would like to work, exceeds a certain threshold h_i^0, the individual participates (p_i=1); otherwise, he does not (p_i=o). h_i^* and h_i^0 are derived from the specification of the utility function. For a discussion of the various functional forms, see Blundell, Meghir and MaCurdy (2007), particularly pages 4672–4676.

b. The participation equation

We will adopt the following functional forms for h_i^* and h_i^0:

The individual's desired work hours are given by:

$$(6) \quad h_i^* = \delta_0 + z_{1i}\delta_1 + \ln w_i\delta_2 + \ln y_i\delta_3 + \varsigma_i$$

where δ_0 is a constant, z_{1i} is a vector of exogenous explanatory variables, such as gender, age and family status, ln w_i is the log of the wage offered to the individual and ln y_i is the log of the individual's income from other sources (i.e. non-labor income). ς_i represents unobservable characteristics. The parameters in the equation are δ_0, δ_2 and δ_3 and the vector is δ_1.

The threshold h_i^0 is given by:

$$(7) \quad h_i^0 = \gamma_0 + z_{1i}\gamma_1 + \ln\ w_i\gamma_2 + \ln\ y_i\gamma_3 + \xi_i$$

where γ_1 is the vector of parameters that are not necessarily identical to δ_1, γ_0 is a constant, γ_2 and γ_3 are parameters and ξ_i are unobservable characteristics.

We would mention that the vector of characteristics v_i is captured in equations (6) and (7) by the constants δ_0 and γ_0, by the vector z_1 and by the unobservable expressions ς_i and ξ_i. We would also mention that the vector z_1 can be broken down into two components as follows:

$$(8) \quad z_{1i} = \left[z_{1i}^D, z_{1i}^C\right]$$

where z_t^D includes education and demographic variables and z_i^C includes cultural variables.

The decision to participate p_i is therefore described by the following equation:

$$(9) \quad p_i = 1\{h_i^* > h_i^0\}$$
$$= 1\{\delta_0 + z_{1i}\delta_1 + \ln w_i\delta_2 + \ln y_i\delta_3 + \zeta_i > \gamma_0 + z_{1i}\gamma_1 + \ln w_i\gamma_2 + \ln y_i\gamma_3 + \xi_i\}$$

For non-participants, the wage is not observed and therefore we assume that:

$$(10) \quad \ln w_i = \theta_0 + z_{1i}\theta_1 + z_{2i}\theta_2 + \omega_i$$

where z_{2i} is a vector of exogenous variables, θ_0 is a parameter, θ_1 and θ_2 are vectors of parameters and ω_i are unobservable characteristics. We assume "other income" is determined as follows:

$$\ln y_i = \prod(z_i) + \chi_i \quad (11)$$

where $z_i = [z_{1i}, z_{2i}, z_{3i}]$, i.e. a vector of exogenous variables that includes both the variables mentioned above and additional exogenous variables z_{3i}. χ_i are unobservable characteristics.

Therefore, after combining equations (9), (10) and (11), participation is given by:

$$p_i = 1\{\beta_0 + z_{1i}\beta_1 + z_{2i}\beta_2 + z_{3i}\beta_3 + u_i > 0\} \quad (12)$$

where β_0 is a parameter, β_1, β_2 and β_3 are vectors of parameters, the vectors z_{1i}, z_{2i}, z_{3i} are defined as above and u_i are unobservable characteristics.

This equation can be estimated in various ways, depending on the assumptions regarding the distributions of the unobserved characteristics. In what follows, we adopt the probit method.

c. The empirical method and the data

The estimation uses equation (12). The data are taken from the Labor Force Survey or the Social Survey for 2005, as discussed in Section 3.1 above. The basic regressions make use of the Labor Force Survey data; when cultural variables are added to the equations, use is made of the Social Survey instead. Care must be exercised in the interpretation of the probit regression coefficients. One key issue is that causality is not formally established here; if the independent variable in question is truly exogenous then the regression expresses causality, but this was not tested.

d. Estimation results

1. Findings from the participation regression using the Labor Force Survey

Tables 2a to 2l below present the results of the probit regressions for participation in the labor force. Column 1 presents the results for a simple regression with two explanatory variables: age and education (grouped). Column 2 presents the results when additional variables are added, including family status, number of children up to the age of 9 and up to the age of 17, the size of the city of residence, the number of additional income earners in the household and religion (for Arabs). Following the results for all of the age groups in Tables 2a to 2d, we ran the regression separately for the 20–44 and 45+ age groups (Table 2e and the subsequent tables). The goal of the analysis is to understand which factors explain the participation of Arab men and women, in addition to comparing the findings to those for the Jewish population.

Table 2a
Labor force participation regression: Jewish men over 20

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35–39)						
20-24	-1.37	***	0.04	1.48	***	0.05
25-29	-0.49	***	0.04	0.62	***	0.05
30-34	-0.17	***	0.04	0.21	***	0.04
40-44	-0.03		0.04	0.05		0.05
45-49	0.01		0.04	0.14	***	0.05
50-54	-0.08	*	0.04	0.32	***	0.05
55-59	-0.28	***	0.04	0.60	***	0.05
60-64	-0.77	***	0.05	1.08	***	0.05
65-69	-1.52	***	0.05	1.76	***	0.05
70-74	-1.99	***	0.05	2.17	***	0.06
75+	-2.44	***	0.05	2.55	***	0.06
Years of schooling (control: 11-12)						
0-8	-0.70	***	0.04	0.63	***	0.04
9.-10	-0.24	***	0.04	0.23	***	0.04
13-15	-0.12	***	0.02	0.12	***	0.02
16+	-0.01		0.02	0.01		0.03
Family status (control: married)						
Separated				0.13		0.13
Divorced				0.26	***	0.05
Widower				0.42	***	0.08
Single				0.21	***	0.04
Number of children in the family up to the age of 9				0.12	***	0.02
Number of children in the family up to the age of 17				0.07	***	0.01
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				0.42	***	0.04
Tel Aviv				0.12	***	0.05
Haifa				0.09	**	0.05
100-200 thousand residents				0.16	***	0.03
Rishon LeZion				0.10	*	0.05
Ashdod				0.22	***	0.06
Up to 50 thousand residents				0.13	***	0.03
Rural settlement				0.14	***	0.04
Number of other income earners in the household (control: none)						
1				0.45	***	0.02
2+				0.32	***	0.03
Constant	1.25	***	0.03	1.43	***	0.05
Number of observations	32,616			32,616		
Value of F-statistic	469.41			245.53		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2b
Labor force participation regression: Jewish women over 20

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-0.47	***	0.04	-0.72	***	0.04
25-29	-0.08	**	0.04	-0.20	***	0.04
30-34	-0.03		0.04	-0.04		0.04
40-44	0.03		0.04	-0.14	***	0.04
45-49	0.04		0.04	-0.31	***	0.04
50-54	-0.18	***	0.04	-0.60	***	0.04
55-59	-0.52	***	0.04	-0.92	***	0.04
60-64	-1.27	***	0.04	-1.61	***	0.05
65-69	-1.91	***	0.05	-2.21	***	0.06
70-74	-2.17	***	0.06	-2.46	***	0.07
75+	-2.80	***	0.07	-3.06	***	0.08
Years of schooling (control: 11-12)						
0-8	-0.58	***	0.04	-0.54	***	0.04
9-10	-0.17	***	0.04	-0.18	***	0.04
13-15	0.19	***	0.02	0.22	***	0.02
16+	0.49	***	0.02	0.49	***	0.02
Family status (control: married)						
Separated				0.53	***	0.09
Divorced				0.27	***	0.03
Widow				0.00		0.04
Single				-0.14	***	0.03
Number of children in the family up to the age of 9				-0.17	***	0.02
Number of children in the family up to the age of 17				-0.05	***	0.01
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.13	***	0.04
Tel Aviv				0.10	**	0.04
Haifa				-0.05		0.05
100-200 thousand residents				-0.07	**	0.03
Rishon LeZion				0.02		0.05
Ashdod				-0.17	***	0.05
Up to 50 thousand residents				-0.03		0.03
Rural settlement				0.21	***	0.05
Number of other income earners in the household (control: none)						
1				0.30	***	0.02
2+				0.40	***	0.03
Constant	0.75	***	0.03	0.90	***	0.05
Number of observations	36,135			36,135		
Value of F-statistic	489.93			260.16		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2c
Labor force participation regression: Arab men over 20

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	0.64	***	0.07	-0.23	**	0.10
25-29	0.12		0.08	0.13		0.09
30-34	0.02		0.08	0.13		0.09
40-44	0.02		0.08	-0.07		0.08
45-49	0.28	***	0.09	-0.45	***	0.10
50-54	0.54	***	0.09	-0.75	***	0.10
55-59	0.86	***	0.10	-1.07	***	0.11
60-64	1.37	***	0.11	-1.60	***	0.12
65-69	2.40	***	0.15	-2.57	***	0.16
70-74	2.55	***	0.24	-2.78	***	0.22
75+	3.13	***	0.28	-3.30	***	0.29
Years of schooling (control: 11-12)						
0-8	0.48	***	0.06	-0.45	***	0.06
9-10	0.11	*	0.06	-0.10	*	0.06
13-15	0.37	***	0.06	-0.37	***	0.07
16+	0.20	**	0.08	0.20	**	0.08
Family status (control: married)						
Separated				0.18		0.83
Divorced				-0.76	**	0.31
Widower				-0.95	***	0.33
Single				-0.69	***	0.08
Number of children in the family up to the age of 9				-0.04	*	0.03
Number of children in the family up to the age of 17				0.01		0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				0.05		0.09
Tel Aviv				0.16		0.20
Haifa				0.15		0.15
100-200 thousand residents				0.22		0.23
Up to 50 thousand residents				-0.12		0.07
Rural settlement				-0.14		0.10
Number of other income earners in the household (control: none)						
1				0.19	***	0.05
2+				0.27	***	0.06
Religion (control: Moslem)						
Christian				0.16	**	0.07
Druze				-0.23	***	0.06
Constant	1.06	***	0.07	1.18	***	0.11
Number of observations	6,873			6,873		
Value of F-statistic	67.23			36.73		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2d
Labor force participation regression: Arab women over 20

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	0.56	***	0.08	1.07	***	0.10
25-29	0.06		0.08	0.24	***	0.09
30-34	0.19	**	0.08	0.20	**	0.08
40-44	0.09		0.08	0.03		0.09
45-49	0.14		0.09	0.10		0.10
50-54	0.08		0.11	0.40	***	0.12
55-59	0.56	***	0.14	0.95	***	0.15
60-64	0.83	***	0.20	1.13	***	0.23
65-69	1.14	***	0.24	1.51	***	0.25
70-74	1.28	***	0.16	1.56	***	0.21
75+						
Years of schooling (control: 11-12)	0.64	***	0.06	0.66	***	0.07
0-8	0.59	***	0.08	0.61	***	0.08
9-10	0.65	***	0.07	0.58	***	0.07
13-15	1.27	***	0.08	1.31	***	0.08
16+						
Family status (control: married)				0.44		0.32
Separated				1.17	***	0.17
Divorced				0.05		0.15
Widow				0.60	***	0.08
Single				0.04		0.03
Number of children in the family up to the age of 9				0.05	**	0.02
Number of children in the family up to the age of 17						
Size of city of residence (control: 50-100 thousand residents)				0.67	***	0.11
Jerusalem				0.66	***	0.21
Tel Aviv				0.64	***	0.15
Haifa				1.02	***	0.28
100-200 thousand residents				0.05		0.08
Up to 50 thousand residents				0.04		0.14
Rural settlement						
Number of other income earners in the household (control: none)				0.39	***	0.07
1				0.64	***	0.08
2+						
Religion (control: Moslem)				0.37	***	0.07
Christian				0.05		0.08
Druze	0.64	***	0.06	0.88	***	0.13
Constant	6,691			6,691		
Number of observations	70.93			39.76		
Value of F-statistic	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2e
Labor force participation regression: Jewish men aged 20-44

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-1.43	***	0.04	-1.52	***	0.05
25-29	-0.49	***	0.04	-0.64	***	0.05
30-34	-0.16	***	0.04	-0.23	***	0.04
40-44	-0.04		0.05	-0.04		0.05
Years of schooling (control: 11-12)						
0-8	-0.85	***	0.07	-0.85	***	0.07
9-10	-0.14	**	0.06	-0.15	**	0.07
13-15	-0.21	***	0.03	-0.21	***	0.03
16+	-0.22	***	0.03	-0.22	***	0.04
Family status (control: married)						
Separated				-0.13		0.23
Divorced				-0.34	***	0.09
Widower				-0.94	***	0.31
Single				-0.13	***	0.04
Number of children in the family up to the age of 9				-0.10	***	0.02
Number of children in the family up to the age of 17				-0.09	***	0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.54	***	0.06
Tel Aviv				0.15	**	0.06
Haifa				-0.06		0.07
100-200 thousand residents				-0.20	***	0.05
Rishon LeZion				0.12		0.08
Ashdod				-0.26	***	0.08
Up to 50 thousand residents				-0.13	***	0.05
Rural settlement				-0.08		0.06
Number of other income earners in the household (control: none)						
1				0.41	***	0.03
2+				0.09	**	0.04
Constant	1.34	***	0.04	1.63	***	0.07
Number of observations	16,586			16,586		
Value of F-statistic	275.68			114.21		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2f
Labor force participation regression: Jewish women aged 20-44

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-0.48	***	0.04	-0.69	***	0.05
25-29	-0.08	**	0.04	-0.19	***	0.04
30-34	-0.03		0.04	-0.05		0.04
40-44	0.03		0.04	-0.15	***	0.04
Years of schooling (control: 11-12)						
0-8	-0.65	***	0.08	-0.61	***	0.08
9-10	-0.18	***	0.07	-0.24	***	0.07
13-15	0.15	***	0.03	0.20	***	0.03
16+	0.46	***	0.03	0.45	***	0.03
Family status (control: married)						
Separated				0.48	***	0.13
Divorced				0.33	***	0.06
Widow				-0.09		0.16
Single				-0.18	***	0.04
Number of children in the family up to the age of 9				-0.17	***	0.02
Number of children in the family up to the age of 17				-0.06	***	0.01
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.20	***	0.06
Tel Aviv				0.11	*	0.06
Haifa				0.03		0.07
100-200 thousand residents				-0.04		0.05
Rishon LeZion				0.08		0.07
Ashdod				-0.08		0.08
Up to 50 thousand residents				-0.03		0.04
Rural settlement				-0.07		0.06
Number of other income earners in the household (control: none)						
1				0.23	***	0.03
2+				0.34	***	0.04
Constant	0.77	***	0.03	1.00	***	0.07
Number of observations	16,547			16,547		
Value of F-statistic	88.80			53.24		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.

Source: Labor Force Survey 2005.

Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2g
Labor force participation regression: Arab men aged 20-44

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-0.62	***	0.07	-0.25	**	0.10
25-29	-0.09		0.08	0.13		0.10
30-34	0.02		0.08	0.13		0.09
40-44	-0.02		0.08	-0.04		0.08
Years of schooling (control: 11-12)						
0-8	-0.42	***	0.07	-0.41	***	0.07
9-10	-0.11	*	0.07	-0.12	*	0.07
13-15	-0.45	***	0.07	-0.46	***	0.07
16+	0.05		0.09	0.01		0.09
Family status (control: married)						
Separated						
Divorced				-1.04	***	0.36
Widower				-1.73	***	0.60
Single				-0.68	***	0.09
Number of children in the family up to the age of 9				-0.03		0.03
Number of children in the family up to the age of 17				0.01		0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				0.16		0.12
Tel Aviv				-0.18		0.23
Haifa				0.15		0.19
100-200 thousand residents				0.19		0.22
Up to 50 thousand residents				-0.12		0.09
Rural settlement				-0.11		0.13
Number of other income earners in the household (control: none)						
1				0.26	***	0.06
2+				0.34	***	0.07
Religion (control: Moslem)						
Christian				0.04		0.09
Druze				-0.30	***	0.07
Constant	1.06	***	0.07	1.18	***	0.13
Number of observations	4,568			4,566		
Value of F-statistic	25.56			15.01		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2h
Labor force participation regression: Arab women aged 20-44

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-0.53	***	0.08	-1.05	***	0.10
25-29	-0.04		0.08	-0.25	***	0.09
30-34	-0.18	**	0.08	-0.20	**	0.08
40-44	0.08		0.08	-0.07		0.09
Years of schooling (control: 11-12)						
0-8	-0.56	***	0.07	-0.60	***	0.08
9-10	-0.56	***	0.08	-0.57	***	0.09
13-15	0.60	***	0.07	0.53	***	0.08
16+	1.27	***	0.08	1.29	***	0.09
Family status (control: married)						
Separated				0.29		0.35
Divorced				1.32	***	0.23
Widow				0.44	*	0.26
Single				0.52	***	0.09
Number of children in the family up to the age of 9				-0.03		0.03
Number of children in the family up to the age of 17				-0.06	**	0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.69	***	0.13
Tel Aviv				0.82	***	0.26
Haifa				0.67	***	0.19
100-200 thousand residents				1.30	***	0.35
Up to 50 thousand residents				0.05		0.10
Rural settlement				-0.09		0.16
Number of other income earners in the household (control: none)						
1				0.46	***	0.09
2+				0.83	***	0.09
Religion (control: Moslem)						
Christian				0.37	***	0.09
Druze				0.10		0.08
Constant	-0.65	***	0.06	-0.94	***	0.15
Number of observations	4,506			4,506		
Value of F-statistic	72.45			33.82		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2i
Labor force participation regression: Jewish men aged 45+

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 50-54)						
45-49	0.08	*	0.05	0.19	***	0.05
55-59	-0.22	***	0.04	-0.26	***	0.05
60-64	-0.70	***	0.05	-0.73	***	0.05
65-69	-1.46	***	0.05	-1.38	***	0.05
70-74	-1.92	***	0.05	-1.79	***	0.06
75+	-2.37	***	0.05	-2.15	***	0.06
Years of schooling (control: 11-12)						
0-8	-0.55	***	0.04	-0.47	***	0.04
9-10	-0.21	***	0.05	-0.20	***	0.05
13-15	0.03		0.04	0.01		0.04
16+	0.24	***	0.04	0.29	***	0.04
Family status (control: married)						
Separated				0.29	**	0.14
Divorced				-0.17	***	0.06
Widower				-0.38	***	0.08
Single				-0.46	***	0.08
Number of children in the family up to the age of 9				-0.10	***	0.03
Number of children in the family up to the age of 17				-0.04	**	0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.26	***	0.07
Tel Aviv				0.08		0.07
Haifa				-0.13	*	0.07
100-200 thousand residents				-0.11	**	0.05
Rishon LeZion				0.08		0.07
Ashdod				-0.17	**	0.08
Up to 50 thousand residents				-0.13	***	0.05
Rural settlement				0.50	***	0.07
Number of other income earners in the household (control: none)						
1				0.45	***	0.03
2+				0.59	***	0.04
Constant	1.06	***	0.04	0.82	***	0.06
Number of observations	16,030			16,030		
Value of F-statistic	454.68			180.46		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2j
Labor force participation regression: Jewish women aged 45+

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 50-54)						
45-49	0.22		0.04	0.30	***	0.04
55-59	-0.35	***	0.04	-0.31	***	0.04
60-64	-1.09	***	0.04	-1.00	***	0.05
65-69	-1.73	***	0.05	-1.59	***	0.05
70-74	-1.99	***	0.06	-1.86	***	0.06
75+	-2.62	***	0.07	-2.47	***	0.07
Years of schooling (control: 11-12)						
0-8	-0.53	***	0.04	-0.49	***	0.04
9-10	-0.14	***	0.05	-0.13	***	0.05
13-15	0.26		0.03	0.26	***	0.03
16+	0.54		0.03	0.53	***	0.04
Family status (control: married)						
Separated				0.57	***	0.12
Divorced				0.27	***	0.04
Widow				0.04		0.04
Single				0.13	*	0.07
Number of children in the family up to the age of 9				-0.22	***	0.04
Number of children in the family up to the age of 17				-0.05	**	0.02
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.06		0.06
Tel Aviv				0.08		0.06
Haifa				-0.11	*	0.06
100-200 thousand residents				-0.10	**	0.05
Rishon LeZion				-0.03		0.07
Ashdod				-0.32	***	0.08
Up to 50 thousand residents				-0.03		0.04
Rural settlement				0.60	***	0.07
Number of other income earners in the household (control: none)						
1				0.38	***	0.03
2+				0.50	***	0.04
Constant	0.54		0.03	0.19	***	0.06
Number of observations	19,588			19,588		
Value of F-statistic	504.76			203.42		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2k
Labor force participation regression: Arab men aged 45+

	Column 1			Column 2		
Variable	Coefficient	Std.		Coefficient		Std.
Age group (control: 50-54)						
45-49	0.26	***	0.10	0.31	***	0.10
55-59	-0.32	***	0.11	-0.31	***	0.11
60-64	-0.81	***	0.12	-0.78	***	0.13
65-69	-1.88	***	0.17	-1.85	***	0.17
70-74	-2.02	***	0.25	-2.23	***	0.26
75+	-2.56	***	0.29	-2.54	***	0.32
Years of schooling (control: 11-12)						
0-8	-0.46	***	0.11	-0.41	***	0.11
9-10	-0.10		0.14	-0.04		0.14
13-15	0.11		0.17	0.10		0.17
16+	0.74	***	0.16	0.78	***	0.16
Family status (control: married)						
Separated				2.98	***	0.60
Divorced				-0.52		0.44
Widower				-0.62	*	0.33
Single				-0.84	**	0.39
Number of children in the family up to the age of 9				-0.08		0.06
Number of children in the family up to the age of 17				0.04		0.03
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.19		0.16
Tel Aviv				0.47	*	0.27
Haifa				0.13		0.23
100-200 thousand residents				0.63		0.73
Up to 50 thousand residents				-0.11		0.12
Rural settlement				-0.27		0.19
Number of other income earners in the household (control: none)						
1				0.04		0.09
2+				0.18	*	0.10
Religion (control: Moslem)						
Christian				0.33	***	0.11
Druze				-0.02		0.13
Constant	0.43	***	0.12	0.35	**	0.17
Number of observations	2,305			2,305		
Value of F-statistic	45.92			18.67		
Prob > F	0.00	***		0.00	***	

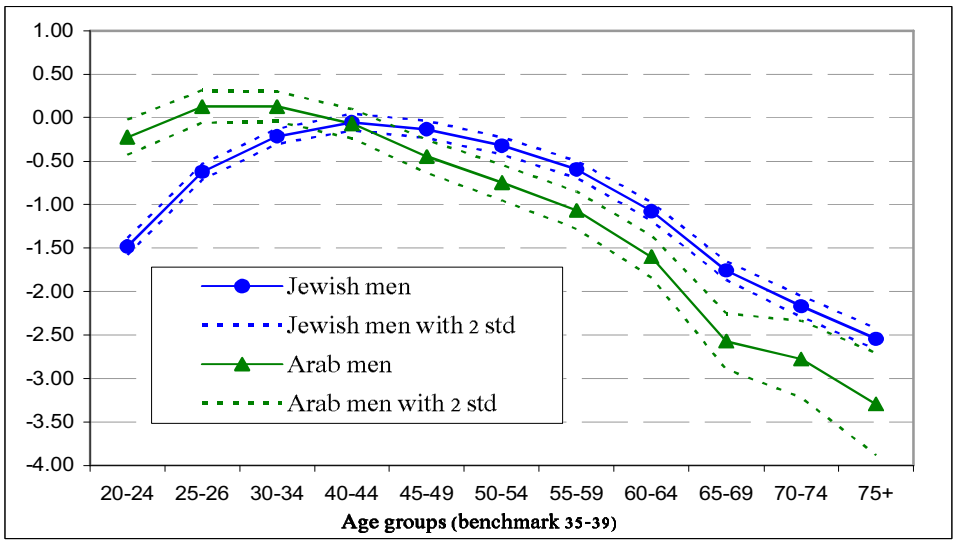
* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2l
Labor force participation regression: Arab women aged 45+

	Column 1			Column 2		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 50-54)						
45-49	0.23	**	0.11	0.35	***	0.12
55-59	0.48	***	0.16	-0.49	***	0.16
60-64	0.71	***	0.21	-0.75	***	0.25
65-69	1.06	***	0.25	-1.16	***	0.26
75+	1.24	***	0.19	-1.31	***	0.24
Years of schooling (control: 11-12)						
0-8	0.78	***	0.13	-0.77	***	0.15
9-10	0.74	***	0.18	-0.93	***	0.19
13-15	0.98	***	0.20	0.94	***	0.20
16+	1.25	***	0.22	1.21	***	0.23
Family status (control: married)						
Separated				0.84		0.57
Divorced				0.89	***	0.28
Widow				-0.04		0.18
Single				0.76	***	0.16
Number of children in the family up to the age of 9				-0.24	**	0.11
Number of children in the family up to the age of 17				-0.02		0.04
Size of city of residence (control: 50-100 thousand residents)						
Jerusalem				-0.66	***	0.21
Tel Aviv				0.25		0.37
Haifa				0.49	*	0.27
100-200 thousand residents				0.78		0.48
Up to 50 thousand residents				0.08		0.15
Rural settlement				0.27		0.28
Number of other income earners in the household (control: none)						
1				0.26	*	0.14
2+				0.26	*	0.15
Religion (control: Moslem)						
Christian				0.33	***	0.13
Druze				-0.29		0.18
Constant	0.66	***	0.14	-1.00	***	0.23
Number of observations	2,185			2,185		
Value of F-statistic	34.97			13.99		
Prob > F	0.00	***		0.00	***	

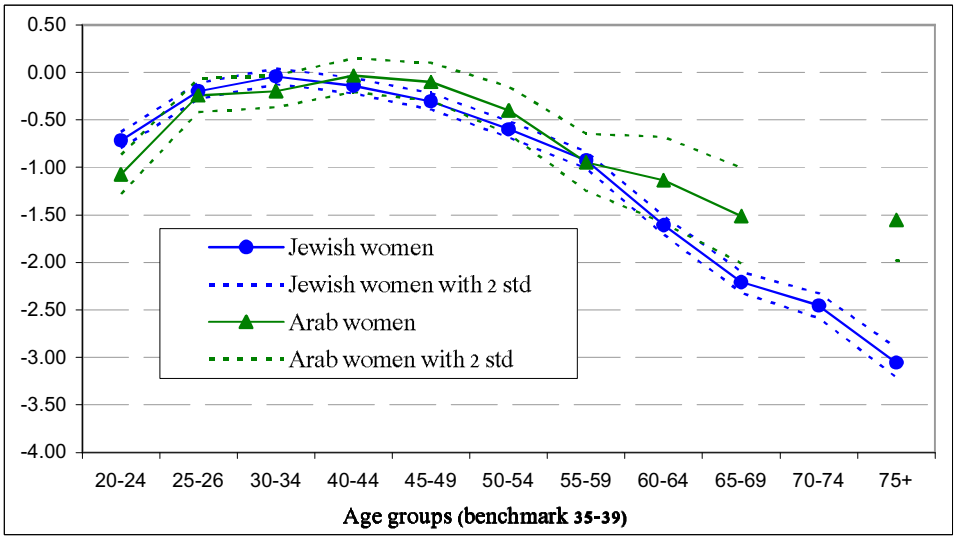
* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Figure 10a
Coefficients of the participation regression according to age: men



Source: The coefficients are taken from the participation regression and are reported in Table 2a and 2c in Column 2.

Figure 10b
Coefficients of the participation regression according to age: women



Source: The coefficients are taken from the participation regression and are reported in Table 2b and 2d in Column 2.

What can be concluded from the results presented above?

1. The effect of education is positive, as expected. The only exception is the decrease in its positive effect among the highly-educated group, particularly Arabs. This can be explained by the non-participation of students in the labor market. Thus, among men aged 45+, there is no decrease in the effect of education.

2. The coefficients by age group yield a profile that rises and then declines over the life cycle, similar to the participation rates shown in Figure 5. This implies that even when using control variables, the resulting participation profile over the life cycle has the described shape. Figure 10 presents the age coefficients in the participation regressions (from Table 2). The early retirement of Arab men can be seen in this case as well.[13]

3. Married men participate more than divorcees, widowers and singles although separated individuals have a higher rate of participation. Among Jewish women, separated and divorced women participate significantly more than married women while the difference between widows and single women is not significant. Divorced and single Arab women participate significantly more than married women, but the difference for the rest of the groups is not significant. Most of these findings can be explained by the needs of the household according to its composition. Arab women who are divorced or single (above a certain age) are more likely not to be "traditional". The findings that these women have higher rates of participation are consistent with the view that a "modern" woman has a higher tendency to participate in the labor force.

4. The effect of number of children is negative and in general significant both among women and men. Among Arab women, the effect of children up to the age of 9 is in fact not significant. The negative effect of the number of children up to the age of 17 is expressed through the effect of the child allowance and therefore it is not surprising that the effect is negative for both men and women.

5. The number of additional income earners in the household positively affects participation. In theory, this finding contradicts the above finding regarding family status since the existence of additional income earners in the household reduces the need to work (the income effect). However, it apparently reflects the tendency of people to choose a spouse similar to them (correlation between the labor market characteristics of the two spouses, including level of education).[14]

6. The effect of the size of the city of residence is ambiguous although it can be said that among Arabs residence in a village or small town has a negative effect relative to residence in large and mixed cities, a phenomenon that is not observed among Jews. It is possible that this finding reflects poor transportation to places of employment.

7. Christians participate more than Druze and Moslems.

Does age have an effect when included with other explanatory variables? The answer can be provided by dividing the sample by age group. Table 2e and the subsequent tables present findings separately for the 20–44 and 45+ age groups. Following are the findings:

[13] Early retirement among Arab men is obtained also in the joint regression for Jews and Arabs.

[14] A similar finding was obtained in various studies in Israel that used participation or employment regressions. See, for example, Flug and Kasir (Kaliner) (2003, 2006).

Effect of education: There is no qualitative difference and only small quantitative differences. The effect of age: the separate regression shows that in all the age groups, older adults participate more than implied by the aggregate regression, although there is no change in the abovementioned conclusions. The effect of family status: among Arabs, the positive effect of being "separated" on participation among the 45+ group is reinforced. The effect of the number of children does not change substantially except among Arab women: among 20–45 year olds, the effect of number of children is small and negative and there is no difference in the effect of children at different ages. Among women aged 45+, young children (up to age 9) have a strong negative influence while children up to the age of 17 have none. With regard to number of income earners, there are primarily quantitative differences. The only difference is among Jewish men, where the influence of additional income earners is stronger among the older group. Size of the city of residence: among Arab men, the negative effect is more intense among the older group. This is apparently due to the negative effect of age on mobility in small towns. There are differences in magnitude for the influence of religion but not in direction; older Christian men tend to participate more and older Druze women tend to participate less.

What is the source of the differences between Arabs and Jews? The following tables present the decomposition of the above regression (for all ages) according to the method proposed by Fairlie (2005), which differentiates between the influence of differences in the explanatory variables (between Jews and Arabs) and the influence of differences in the coefficients of these variables. Table 2m and 2n present the probabilities of participation for Arab and Jewish men and for Arab and Jewish women, the proportion of the gap that is explained by differences in the explanatory variables and the contribution of each explanatory variable to explaining the gap.

Table 2m
Fairlie decomposition of the regressions Labor force participation regression: men above the age of 20

Variable	Coefficient		Std.
Age group (control: 35-39)			
20-24	0.004	***	0.0005
25-29	0.010	***	0.0010
30-34	0.002	***	0.0005
40-44	0.000		0.0002
45-49	-0.001	***	0.0002
50-54	-0.002	***	0.0004
55-59	-0.006	***	0.0006
60-64	-0.002	***	0.0002
65-69	-0.015	***	0.0005
70-74	-0.014	***	0.0004
75+	-0.016	***	0.0004
Years of schooling (control: 11-12)			
0-8	0.035	***	0.0022
9-10	0.006	***	0.0010
13-15	-0.005	***	0.0010
16+	0.001		0.0009
Family status (control: married)			
Separated	0.000		0.0002
Divorced	-0.003	***	0.0005
Widower	-0.002	***	0.0003
Single	0.003	***	0.0005
Number of children in the family up to the age of 9	0.020	***	0.0030
Number of children in the family up to the age of 17	0.023	***	0.0039
Size of city of residence (control: 50-100 thousand residents)			
Jerusalem	0.011	***	0.0012
Tel Aviv	0.002	***	0.0007
Haifa	-0.001	*	0.0003
100-200 thousand residents	-0.008	***	0.0018
Up to 50 thousand residents	0.011	***	0.0025
Rural settlement	0.002	***	0.0004
Number of other income earners in the household (control: none)			
1	0.018	***	0.0011
2+	0.005	***	0.0004
Religion (control: Moslem)			
Christian	-0.009	***	0.0024
Druze	Omitted		
Observations = 40,284			
Total Jews = 33,411 Total Arabs = 6,873			
Probability of participating in the labor force among Jewish men = 0.67447453			
Probability of participating in the labor force among Arab men = 0.66926134			
Difference = 0.0052032			
Total explained = 0.07125148			

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 2n
Fairlie decomposition of the regressions Labor force participation regression: women above the age of 20

Variable	Coefficient		Std.
Age group (control: 35-39)			
20-24	0.011	***	0.0009
25-29	0.002	***	0.0005
30-34	0.000		0.0004
40-44	0.001	***	0.0002
45-49	0.000	**	0.0001
50-54	-0.003	***	0.0004
55-59	-0.013	***	0.0008
60-64	-0.023	***	0.0006
65-69	-0.027	***	0.0004
70-74	-0.020	***	0.0003
75+	-0.017	***	0.0004
Years of schooling (control: 11-12)			
0-8	0.045	***	0.0032
9-10	0.003	***	0.0007
13-15	0.012	***	0.0011
16+	0.018	***	0.0008
Family status (control: married)			
Separated	0.001	***	0.0001
Divorced	0.005	***	0.0006
Widow	0.000		0.0005
Single	0.001	***	0.0002
Number of children in the family up to the age of 9	0.040	***	0.0037
Number of children in the family up to the age of 17	0.022	***	0.0046
Size of city of residence (control: 50-100 thousand residents)			
Jerusalem	0.003	***	0.0010
Tel Aviv	0.002	***	0.0007
Haifa	0.000		0.0004
100-200 thousand residents	-0.002		0.0018
Up to 50 thousand residents	0.000		0.0026
Rural settlement	0.002	***	0.0004
Number of other income earners in the household (control: none)			
1	-0.008	***	0.0005
2+	0.002	***	0.0002
Religion (control: Moslem)			
Christian	0.003		0.0024
Druze	Omitted		
Observations = 43,956			
Total Jews = 37,128			
Total Arabs = 6,828			
Probability of participating in the labor force among Jewish men = 0.67447453			
Probability of participating in the labor force among Arab men = 0.66926134			
Difference = 0.0052032			
Total explained = 0.07125148			

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Labor Force Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Among men, there is almost no difference in the probability of participation (a difference of 0.005 in favor of the Jews). The analysis shows that if the differences between Arab and Jewish men were solely dependent on the distribution of the explanatory variables, there would be a difference of 0.07 in the probability of participation in favor of Jewish men. The absence of such a gap is the result of other differences, in particular differences in the regression coefficients.

Among women, there is a large gap in the probability of participation (a difference of 0.40 in favor of Jewish women). The analysis shows that the differences between Arab and Jewish women are a result of the differences in the distribution of the explanatory variables, which explain almost 0.06 of the abovementioned gap of 0.40. This is primarily the result of differences in the distribution of education.

2. Findings of the participation regression using the Social Survey

Several unique explanatory variables were added to the participation regression based on the Social Survey: extent of religiosity, knowledge of English, possession of a driving license and use of a computer. Table 3 presents the results:

Table 3a
Participation in labor force regression: men

	Jewish men			Arab men		
Variable	Coefficient		Std	Coefficient		Std
Age group (35-39)						
20-24	-1.52	***	0.18	-0.23		0.46
25-29	-0.36	*	0.18	0.79	**	0.38
30-34	0.04		0.19	0.13		0.33
40-44	-0.26		0.21	-0.43		0.34
45-49	-0.30	*	0.18	-0.93	***	0.36
50-54	-0.06		0.21	-0.85	**	0.37
55-59	-0.82	***	0.19	-1.54	***	0.41
60-64	-1.38	***	0.20	-1.67	***	0.46
65-74	-2.11	***	0.19	-2.09	***	0.49
75+	-2.83	***	0.20			
Years of schooling (control: 11-12)						
0-8	-0.32	**	0.14	-0.92	***	0.26
9-10	-0.04		0.14	-0.03		0.28
13-15	-0.08		0.09	-0.47	*	0.27
16+	0.03		0.10	0.17		0.33
Family status (control: married)						
Separated	-0.01		0.51			
Divorced	-0.05		0.17			
Widower	0.04		0.18			
Single	-0.44	***	0.14	-0.39		0.37
Size of household (control: 4)						
1	0.32	*	0.17	-0.44		0.62
2	0.22	*	0.12	0.22		0.40
3	0.02		0.11	-0.38		0.31
5-6	0.10		0.11	-0.11		0.25
7+	0.10		0.15	0.06		0.26
Region (control: Center)						
Jerusalem	-0.31	***	0.12	-0.29		0.34
North	-0.24	**	0.12	-0.25		0.30
Haifa	-0.27	**	0.11	-0.59	*	0.32
Tel Aviv	-0.06		0.10	-1.60	**	0.70
South	-0.11		0.11	-0.51		0.48
Judea, Samaria and Gaza	-0.04		0.22			
Additional income earners in household						
1	0.36	***	0.09	0.95	***	0.19
2+	0.31	***	0.12	0.55	**	0.27
Degree of religiosity (control: not						
Very religious	-1.57	***	0.16	-0.47		0.36
Religious	-0.29	**	0.12	-0.07		0.22
Not very religious	0.01		0.08	-0.24		0.23
Knows English (control: doesn't know	0.00	***	0.00	-0.03		0.23
Driving license (control: no driving	0.00		0.00	0.94	***	0.23
Knows how to use a computer (control:	0.47	***	0.08	-0.54	**	0.23
Religion (control: Moslem)						
Christian				0.97	**	0.38
Druze				-0.02		0.27
Constant	1.39	***	0.20	0.96	**	0.47
Number of observations	2,939			511		
Value of F-statistic	43.26			4.16		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.

Source: Social Survey 2005.

Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 3b
Participation in labor force regression: women

	Jewish women			Arab Women		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (35-39)						
20-24	-0.57	***	0.13	-0.48		0.32
25-29	-0.21		0.13	0.27		0.27
30-34	-0.16		0.13	-0.35		0.30
40-44	0.03		0.14	0.37		0.30
45-49	-0.01		0.14	0.27		0.31
50-54	0.01		0.14	0.45		0.35
55-59	-0.48	***	0.14	-0.05		0.45
60-64	-1.08	***	0.16	-1.59	**	0.81
65-74	-1.88	***	0.16	-0.55		0.45
75+	-2.16	***	0.18			
Years of schooling (control: 11-12)						
0-8	-0.30	**	0.13	-0.88	***	0.27
9-10	-0.22	*	0.13	-0.66	***	0.25
13-15	0.15	**	0.07	0.30		0.21
16+	0.39	***	0.08	1.10	***	0.30
Family status (control: married or widow)						
Separated or divorced or single	0.10		0.07	0.95	***	0.22
There are other income earners in the household (control: there are none)	0.20	***	0.07	0.51	***	0.20
Size of household (control: 4)						
1	0.16		0.13	-0.24		0.63
2	0.05		0.10	-0.07		0.33
3	0.05		0.10	-0.23		0.27
5-6	-0.23	**	0.09	-0.51	**	0.20
7+	-0.49	***	0.13	-0.72	***	0.22
Knows English (control: doesn't know English)	-0.10		0.08	-0.28		0.22
Driving license (control: no driving license)	0.16	**	0.07	0.66	***	0.17
Knows how to use a computer (control: doesn't know)	0.62	***	0.07	0.32	*	0.19
Satisfaction with public transportation in area of residence (control: very satisfied or satisfied)						
Not very satisfied or not satisfied at all	-0.01		0.07	-0.17		0.16
Does not use public transportation	0.01		0.07	-0.30		0.27
Constant	0.23		0.15	-0.93	***	0.35
Number of observations	3,306			513		
Value of F-statistic	38.15			6.25		
Prob > F	0.00	***		0.00	***	

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Social Survey 2005.
Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Following are the main findings:

1. **Among Arab men**, the significant explanatory variables are age, education, number of additional income earners and certain areas of residence. The results are in general consistent with the findings of the Labor Force Survey analyzed above, particularly the phenomenon of early retirement from the work force.

Of the additional variables, three are significant: possession of a driving license, whether or not the individual is Christian and use of a computer. Being a Christian and having a driving license increases the probability of participation, as expected. The significance of the "Christian" variable points to the effect of culture/religion. In contrast, the level of religiosity did not have an effect on participation. It is worth mentioning that the religiosity variable and the knowledge of English variable were not significant.

The "use of a computer" variable receives a negative coefficient, which was unexpected. This finding is puzzling although a reexamination of the regression shows that the variables for being single, being a single-individual household, residence in Haifa, Tel Aviv or the South and knowledge of English also have a negative, though not significant, sign. The coefficient for 16+ years of education is not significant, as mentioned above, while the coefficient for 13–15 years of education is negative and significant. This collection of findings may indicate two possibilities: (1) students usually have these characteristics, including use of a computer, and they are likely not to participate in the work force; and (2) highly-educated men with these characteristics did not participate or declared that they do not participate because they are not offered work appropriate to their skills.

2. Also **among Arab women**, the results are for the most part consistent with those of the Labor Force Survey. Of the additional variables, two were found to be significant: having a driving license and use of a computer, which as expected had a positive sign. An additional variable that was tested is satisfaction with public transportation, in view of the commonly-voiced claim that poor public transportation constitutes a barrier to participation. This variable was not found to be significant.

It can be concluded from Table 3b that educated divorced, separated and single women who possess a driving license and use a computer participate more; women who are mothers with a large number of children and a low level of education participate less.

These findings are consistent with the view that a "modern" woman, i.e. one who is educated, has "modern knowledge" and is not married with a large number of children, will have a higher probability of participation.[15] In order to examine these conclusions from a different perspective, we performed the following arbitrary exercise: the sample of women aged 25–44 was separated into a number of groups, including those with extreme values of the variables. Since the survey does not provide direct data on whether a woman is "modern" or "traditional", we classified them according to their characteristics. For purposes of illustration, we selected a rather narrow definition. Thus, we defined a "modern" woman as follows: 13 or more years of education; separated, divorced, single or married (or widowed) with no more than two children; uses a computer; and has a driving

[15] A discussion of variables that represent "modern knowledge" also appears in King, Naon and Walda-Tsadik (2008).

license. A "traditional" Arab woman is defined as follows: 10 years or less of education; married or widowed with three or more children; does not have a driving license; and does not use a computer.

Table 4
Distribution and rate of participation of Arab women according to degree of modernity[1] (percent)

	Proportion of population	Rate of participation
Modern women	9.2	75.4
Traditional women	19.1	1.0

[1] A "modern woman is defined here as follows: 13 years or more of schooling, separated or divorced or single or married (or widowed) with not more than two children, uses a computer and has a driving license. A "traditional" woman is defined as follows: 10 years or less of schooling, married or widowed with three or more children, does not have a driving license and does not use a computer. The calculation is based on women aged 25–44.
Source: Calculations based on the CBS Social Survey 2005.

According to this definition, Table 4 shows a high level of variation in the rate of participation between groups. "Traditional" women do not participate in the labor market (with a rate of participation of only about one percent) while the majority of "modern" women have a participation rate of about 75 percent, which is similar to rates observed in Western countries.

3. Testing of the hypothesis that early retirement among Arab men is influenced by intergenerational support

One of the explanations proposed for the early retirement of Arab men from the work force is the structure of the Arab family and their cultural mentality. The phenomenon of children supporting their parents already from a young age is more common in Arab society. Surveys results that we examined do not have any direct information that would allow us to test for this effect. Nonetheless, using the Social Survey one can define a proxy variable for the presence of adult children. In other words, this variable points to the "potential support" of parents by their children.[16]

Table 5 reports the results of the probit regression for participation in the work force, which includes the variable "presence of grown children" as an explanatory variable. The other explanatory variables included in the regression were age, education, family status, number of individuals in the household, area of residence, number of additional income earners in the household and religion (in the case of Arabs).

[16] "An individual with grown children" is defined in research as an individual with at least one child aged 20 or older. For each individual, we calculated the number of children older than 20 in the following manner: total number of the individual's children less the number of individuals in the household under 20 years old (not including the head of the household himself, in the case that he is less than 20 years old). The qualitative variable received a value of 1 if the number of children older than 20 was greater than 0. This variable is only an approximation since it is subject to bias in the case, for example, where the individual has children under the age of 20 who do not live in the household; nonetheless, it is the best approximation given the limitations of the data.

In the regressions run for Arab and Jewish men, it was found that among Arab men the presence of grown children acts to reduce the rate of participation while among Jewish men it had no effect. These findings are consistent with the cultural/mental differences between the two sectors with regard to children providing financial support for their parents. It is possible that the cultural/mental differences are a result of, among other things, the difference in economic status between the two sectors. When the presence of grown children is added to the regression, the coefficients no longer indicate earlier retirement among Arab men. Indeed, according to the regression coefficients, the decline in the rate of participation among both Arab and Jewish men begins only in the 55–59 age group. This finding is evidence of the importance of intergenerational support (from children) on the pattern of participation among Arab men.

Table 5a
Labor force participation regression: men

	Jewish men			Arab men				
Variable	Coefficient		Std.	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)									
20-24	-1.75	***	0.17	-0.28		0.46	-0.32		0.46
25-26	-0.47	***	0.16	0.64		0.41	0.59		0.41
30-34	-0.02		0.17	0.14		0.32	0.12		0.32
40-44	-0.17		0.18	-0.34		0.33	-0.25		0.34
45-49	-0.34	*	0.19	-0.88	**	0.35	-0.68	*	0.38
50-54	-0.16		0.22	-0.93	**	0.37	-0.73	*	0.40
55-59	-0.79	***	0.21	-1.69	***	0.42	-1.49	***	0.46
60-64	-1.28	***	0.22	-1.65	***	0.45	-1.43	***	0.48
65-74	-2.07	***	0.20	-2.10	***	0.50	-1.89	***	0.52
75+	-2.77	***	0.21						
Years of schooling (control: 11-12)									
0-8	-0.46	***	0.13	-0.78	***	0.23	-0.77	***	0.23
9-10	-0.08		0.13	0.13		0.26	0.16		0.25
13-15	-0.04		0.08	-0.49	**	0.25	-0.49	*	0.25
16+	-0.08		0.08	0.06		0.31	0.02		0.31
Family status (control:									
Single	0.01		0.37						
Divorced	0.22		0.14						
Widower	0.18		0.18						
Single	-0.16		0.13	-0.60		0.38	-0.62		0.38
Presence of children									
Children up to the age of 5	0.39	***	0.12	0.26		0.22	0.24		0.22
Children up to the age of 17	-0.05		0.09	0.13		0.24	0.11		0.24
Size of the city of residence									
Ashdod	-0.36	*	0.20						
Rishon LeZion	0.07		0.18						
Jerusalem	-0.74	***	0.16	1.39	**	0.57	1.36	**	0.55
Haifa	-0.33	*	0.18	1.70	**	0.82	1.66	**	0.81
100,000-199,999 residents	-0.28	**	0.14						
50,000-99,999 residents	-0.37	**	0.16	1.54	**	0.61	1.47	**	0.60
2000 to 49,999 residents	-0.25	*	0.13	1.65	***	0.55	1.61	***	0.53
Rural Jewish settlements	0.02		0.17						
Rural Arab settlements				1.32	**	0.65	1.24	**	0.63
Additional income earners									
1	0.38	***	0.07	0.73	***	0.17	0.75	***	0.17
2+	0.34	***	0.09	0.38		0.25	0.42	*	0.25
Religion (control: Moslem)									
Christian				0.95	***	0.35	0.93	***	0.35
Druze				-0.19		0.25	-0.19		0.25
Children above the age of 20	-0.07		0.14				-0.29		0.25
Constant	1.05	***	0.27	-0.94		0.73	-0.81		0.72
Number of observations	3,086			510			510		
Value of F-statistic	29.98			4.84			4.81		
Prob > F	0.00			0.00			0.00		

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Social Survey 2005. Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Table 5b
Labor force participation regression: women

	Jewish women			Arab women		
Variable	Coefficient		Std.	Coefficient		Std.
Age group (control: 35-39)						
20-24	-0.52	***	0.14	-0.51	*	0.30
25-26	-0.20		0.13	0.19		0.26
30-34	-0.12		0.13	-0.34		0.29
40-44	0.03		0.14	0.17		0.30
45-49	-0.01		0.15	0.15		0.34
50-54	-0.02		0.16	0.17		0.39
55-59	-0.52	***	0.15	-0.11		0.46
60-64	-1.07	***	0.17	-1.56	**	0.76
65-74	-1.98	***	0.17	-0.84		0.54
75+	-2.26	***	0.19			
Years of schooling (control: 11-12)						
0-8	-0.43	***	0.13	-1.00	***	0.24
9-10	-0.31	**	0.13	-0.74	***	0.23
13-15	0.25	***	0.07	0.43	**	0.20
16+	0.59	***	0.08	1.41	***	0.31
Family status (control: married)						
Single	0.43		0.29			
Divorced	0.03		0.11	1.56	***	0.60
Widower	-0.25	**	0.12	0.09		0.43
Single	0.07		0.11	0.70	**	0.30
Presence of children (control: children aged 6 to 17)						
Children up to the age of 5	0.07		0.09	0.15		0.22
Children up to the age of 17	-0.33	***	0.08	-0.26		0.24
Size of the city (control: Tel Aviv)						
Ashdod	-0.10		0.18			
Rishon LeZion	0.33	*	0.18			
Jerusalem	0.02		0.15	-0.41		0.56
Haifa	-0.22		0.15	1.40	*	0.73
100,000-199,999 residents	-0.12		0.13			
50,000-99,999 residents	0.07		0.15	0.19		0.57
2000 to 49,999 residents	-0.08		0.12	0.19		0.53
Rural Jewish settlements	0.22		0.16			
Rural Arab settlements				0.18		0.59
Additional income earners (control: none)						
1	0.19	***	0.07	0.47	**	0.21
2+	0.13		0.09	0.20		0.25
Religion (control: Moslem)						
Christian		***		0.12		0.27
Druze		***		0.21		0.25
Children above the age of 20 (control: none)	-0.22	**	0.10	-0.11		0.23
Constant	0.70	***	0.23	-1.27	*	0.70
Number of observations	3,324			509		
Value of F-statistic	28.07			4.41		
Prob > F	0.00			0.00		

* 10% level of confidence; ** 5% level of confidence; ***1% level of confidence.
Source: Social Survey 2005. Labor force participation regression: 1=participated in the labor force; 0=did not participate in the labor force.

Among Jewish and Arab women, the presence of grown children was not found to have an effect on the rate of participation. Among Jewish women, this is apparently a manifestation of the low proportion of households in which children financially support their parents while among Arab women it is a manifestation of low rates of participation, as a result of which this variable does not have much influence on these women.

5. IMPLICATIONS OF THE FINDINGS AND CONCLUSIONS

What most stands out in the findings for Arab men—both from the descriptive statistics and the participation regressions—is relatively early retirement from the work force. An important factor explaining the drop in the rate of participation among Arab men already at an early age is their concentration in occupations that require a high level of physical ability. Since physical ability declines with age, employment in these occupations falls over time. It is worth mentioning that the high proportion of foreign workers in Israel enables the replacement of workers whose physical ability has declined. The rest of the characteristics of participation are similar to what is generally found in the literature, including the effect of education and of various demographic variables.

The early retirement of Arab men from the work force is also related to the cultural characteristics of Arab society, in which the phenomenon of children supporting their parents already at a young age is common. Indeed, when the presence of grown children is added to the regression as one of the explanatory variables, the age coefficients no longer indicate early retirement.

The most prominent phenomenon among Arab women is the high level of variation in the rate of participation. Its source apparently lies in the differences between "modern" and "traditional" women from the point of view of education, family status, number of children and proficiency in various skills (such as knowledge of English and the use of a computer). There appears to be a dichotomy or some type of dual market, in which "traditional" women almost never participate. This can explain the low rate of participation in comparison to other countries. "Modern" women have quite a high rate of participation, which also explains the simultaneous increase in participation and levels of education over time, together with additional cultural changes. The finding that participation rates among Arab women are very different from those observed in Western countries and among Jewish women in Israel, though not significantly different from rates in Moslem countries, reinforces the conclusion that cultural forces are at play here.

The effect of level of religiosity on participation among Arab men and women was not found to be significant. However, religion did have an effect, particularly among men, with Christian men having a higher rate of participation than Moslem men. It is possible therefore that in fact religion (and not necessarily the level of religiosity) has an important influence on cultural characteristics that affect participation. Among Arab men and women, some of the regressions showed that area of residence influences participation, which is due in part to the limited access to employment in some Arab villages.

The patterns of participation revealed by the findings are consistent with other phenomena in the labor market for Israeli Arabs. Regarding Arab men, it can be said that their rates of participation are similar to those of Jewish men and those observed in Western countries. However, the employment of Arab men is concentrated in construction, agriculture, commerce and traditional manufacturing and therefore it is not surprising that on average their wages are lower than those of Jewish men and that they retire earlier from "physical" occupations in these industries. These employment patterns can also explain their higher unemployment rates since these industries and occupations are particularly affected by a recession and by the entry of foreign workers into the market.

Despite the rather clear-cut picture obtained in the analysis, a number of questions remain that require additional research. Regarding Arab men, it is important to understand the concentration of employment in "physical" occupations. Is it due to discrimination, level of education (which is determined by budget constraints or by discrimination), differences in tastes or various constraints on the demand for Arab workers? It is also important to understand the extent to which early retirement is made possible by inter-generational family support and by government support, such as National Insurance allowances.

With regard to Arab women, it is important to further understand the effect of cultural heterogeneity, i.e. "modern" versus "traditional". What determines this heterogeneity and how is it manifested? What are the main factors that determine whether a woman is "modern" or "traditional"?

These questions are important in the investigation of participation patterns among Arabs in the Israeli labor market and have implications for economic policy. Policy can contribute to raising the rate of participation and improving patterns of participation by, for example, delaying retirement among men. A more precise understanding of the factors that determine current participation patterns is crucial to such efforts.

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