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"The Labor Market of Arab Israeli Men"

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Abstract

Arab men in Israel have lower labor market involvement and poorer outcomes relative to Jews, especially after the age of 40. The paper examines this state of affairs using a model of labor force participation and retirement from work. Key results indicate, inter alia, that: education and high-skills promote participation; education, in and of itself, does not alleviate poverty; and residency location and household composition are important for these labor market patterns.

The Labor Market of Arab Israeli Men

1 Introduction

The patterns of labor force involvement of Arab men in Israel show substantial differences w.r.t. Jewish men and norms in advanced economies. This paper sets out to determine the causes for this situation. The paper examines this state of affairs using a model of labor force participation and retirement from work. Key results indicate, inter alia, that: education and high-skills promote participation; education, in and of itself, does not alleviate poverty; and residency location and household composition are important for these labor market patterns. The paper is structured as follows: Section 2 briefly reviews the literature and Section 3 presents and discusses the key facts. Section 4 delineates a relevant model. Section 5 presents the empirical work, including the data and the results. Section 6 analyzes the implications of the empirical findings, including those for policy. Section 7 concludes.

2 Literature

A small literature has characterized the significant gaps between the labor market outcomes of Arabs and Jews in Israel.

Asali (2006) examined the topic of wage discrimination. In his study he documented the differentials between the wages of Jewish men and the wages of Arab men in the period 1990-2003 and estimated a wage regression in order to study the reasons for the wage differential. The observed wage differentials were decomposed into three components: differentials originating in differences in human capital, differentials originating in discrimination in occupation, and differentials originating in discrimination in wages. The study's findings attest to the existence of wage discrimination and its intensification in the course of the sample period.

Cohen and Haberfeld (2007), who studied the effect of the growth in income inequality on the Israeli labor market during the years 1975-2001, found that the discrimination toward workers from the Arab sector did not diminish from 1992 onward and perhaps even intensified.

Miari, Nevuani and Hatab (2011) found that during the years 1997-2009 distinctive wage discrimination remained constant throughout, its level fluctuating in accordance with changes in the economy, e.g., waves of immigration, the *intifada*, the number of foreign workers, etc.

Yashiv and Kasir (2011) examined the patterns of labor force participation among Israeli Arabs through 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.

Regarding the former issue, the literature in general typically focuses on early retirement relative to the mandatory retirement age (typically 65 or 67). For reviews see Krueger and Meyer (2002) and Tatsiramos and van Ours (2014). While for Arab men retirement starts much earlier, some of the explanatory factors may be the same: health problems, attrition due to work in physical jobs, the provision of disability insurance, the provision of unemployment benefits and/or social assistance, and the existence of inter-generational transfers.

Yashiv and Kasir (2015) point out the similarities and differences between the situation of Arab Israelis and Muslim minorities in Europe. The differences relate to the fact the former group is a native minority, while the latter is the result of immigration over decades. Israel has conflictual relations with the Arab world surrounding it, which impact the relations of the Jewish majority and its Muslim minority. This is not the case for Moslems in Europe. But there are also important similarities. In both cases

these are Muslim minorities in advanced economies that are economically disadvantaged; claims of discrimination are prevalent; cultural issues are important for labour market outcomes; and policy is lacking in both cases. Hence, there is some room to learn from the Israeli experience in the European case.

3 Key Facts

To introduce the relevant issues consider the stylized facts that come out of Figures 1-8. The data are taken from the Labor Force Survey of the Central Bureau of Statistics and are outlined in more detail below.

Figures 1-8

Figure 1 shows that Jewish men participate at higher rates than Arab men except at very young ages; the most striking differential is in the 40-64 age group. Figure 2 looks deeper at age groups participation for the Arabs. The top participating age groups are men between 21 and 53; over 54 there is a marked drop. The young aged 15-20 have non-negligible participation but lower than prime age men and it is declining over the years. Figure 3 shows the life cycle of Arab vs. Jewish male participation rates. It is striking that by the age group of 38-42 participation rates of Arab men start

5

declining, while it is so at 58-62 for Jewish men, i.e., 20 years later. Figure 4 shows this life cycle pattern across religions among Israeli Arab men. The shape and level are broadly similar across groups, but Christians participate more and retire later than average, and Druze men participate less and retire earlier. Figure 5 does the same comparison across five Moslem countries; Arab men in Israel participate less and retire earlier in this comparison. Figure 6 looks at the life cycle by education group, comparing Arabs to Jews. Interestingly the pattern of early retirement is true also for the Arab group with 13 and more years of education, though it is more pronounced for the lower educated groups.

Figures 7 and 8 look at the job/occupations distributions across time and over the life cycle. Arab men work in low- and medium-skill occupations far more than Jews, with the differential growing over time. This is also true across age groups, with very high concentrations of Arab men in low-skill occupations at all age groups. Note, in particular, the green colored segments at the bottom of the skill distribution of Arab men, where there is heavy concentration.

These stylized facts call attention to the links between age, skill level and labor force participation. On these dimensions, Arab men have markedly different patterns from Jews in Israel.

4 The Model

Given the stylized facts the relevant model is a model of the two key labor

supply decisions: participation in the labor force and retirement from it.

4.1 Participation

Consider the standard model of labor supply. Blundell and Powell (2004),

Blundell, Macurdy and Meghir (2007), and Blundell and Macurdy (2008)

offer reviews. I follow their notation.

Maximization problem. Each period the individual i solves the following

maximization problem

$$\max_l U(c_i, l_i, \mathbf{v}_i) \tag{1}$$

s.t.

$$c_i = y_i + w_i h_i \tag{2}$$

where U is a quasi-concave utility function increasing in consumption c

and leisure l; w are wages, y is non-labor income, and h are hours of work.

The vector $\mathbf{v}_i$ represents the individual's characteristics. Its elements affect

preferences through observed characteristics and unobserved ones. These

include, for example, demographic variables and skills. These can vary across individuals and over time.

The F.O.C. are given by:

$$U_c(c_i, l_i, v_i) = \lambda_i; \quad U_l(c_i, l_i, v_i) \geq \lambda_i w_i \tag{3}$$

where λ, the co-state variable, is the marginal utility of income. If the inequality in (3) holds with strict equality the individual does not work. Hence one can define a reservation wage w_i^R by the equation $U_l(c_i, l_i, v_i) = \lambda_i w_i^R$.

Optimal hours. Based on the F.O.C optimal hours can be derived. Define the following functions:

$$h_i^* = h_1(w_i, y_i, \mathbf{v}_i); \quad h_i^0 = h_2(w_i, y_i, \mathbf{v}_i) \tag{4}$$

If

$$\frac{U_l(c_i, l_i, \mathbf{v}_i)}{U_c(c_i, l_i, \mathbf{v}_i)} > w_i \tag{5}$$

Then the individual supplies h_i hours of work defined by:

$$h_i = h_i^* > h_i^0 = 0 \tag{6}$$

Otherwise the individual is at the threshold h_i^0 where no work is sup-

plied i.e.,

$$h_i = h_i^0 = 0 \tag{7}$$

The functions h_i^* and h_i^0 are derived from the specification of the utility function U. For a listing of some popular functions see Blundell, Macurdy and Meghir (2007, in particular pp. 4672-4676).

Wage and Non Labor Income Equations. I posit that wages and non labor income behave as follows:

$$w_i = f_1(\mathbf{z}_i, \mathbf{v}_i); \quad y_i = f_2(\mathbf{z}_i, \mathbf{v}_i) \tag{8}$$

where $\mathbf{z}_i$ are exogenous variables affecting the wage and non-labor income, beyond $\mathbf{v}_i$, such as occupation; these too may include unobservables.

Participation Equation. Combining equations (4), (6) and (8) I get the participation equation:

$$\Pr(h_i^* > 0) = p(\mathbf{z}_i, \mathbf{v}_i) \tag{9}$$

Using a logistic formulation, this retirement probability is given by:

9

$$\Pr(h_i^* > 0) = \frac{\exp(\mathbf{\Phi}_i'\mathbf{X}_i)}{1 + \exp(\mathbf{\Phi}_i'\mathbf{X}_i)} \tag{10}$$

where $\mathbf{X}_i$ is a vector of variables, which includes the variables discussed above $\mathbf{v}_i, \mathbf{z}_i$.

4.2 Retirement

Denote the state of worker i employed in sector j at time t, as E_{ijt}. One transition the worker can make is to move out of the labor force N_{ijt+1}. Using a logistic formulation, this retirement probability is given by (taking into account the other possible transitions, namely to stay or to go to unemployment):

$\Pr(N_{ijt+1} \mid E_{ijt}) = \frac{\exp(\mathbf{\Omega}_{iN}'\mathbf{Z}_{ijt})}{1 + \exp(\mathbf{\Omega}_{iC}'\mathbf{Z}_{it}) + \exp(\mathbf{\Omega}_{iU}'\mathbf{Z}_{ijt}) + \exp(\mathbf{\Omega}_{iN}'\mathbf{Z}_{it})}$ where $\mathbf{Z}_{it}$ is a vector of variables, which includes the variables discussed above $w_i, y_i, \mathbf{v}_i, \mathbf{z}_i$. In particular age, health status and other attributes of the individual may be included.

5 Estimation

The essential idea is to determine what are the effects of various explanatory variables – included in $\mathbf{v}_i, \mathbf{z}_i$ – on the afore-cited two key labor supply

decisions, participation and retirement. Then the idea is to see how these variables affect outcomes by looking at their effects on the probability of being poor. Two major explanatory variables are age and education, especially given the stylized facts described above. Beyond those, I use marital status, health status, number of children, number of earners in the household, residency location, and occupation as explanatory variables.

5.1   The Data

The data on Arab and Jewish men are taken from repeated cross-sections of the Labor Force Survey (LFS) and the Income Survey (IS) of the Israeli Central Bureau of Statistics (CBS). For the participation and transition regressions I use LFS data dating 2004 to 2011; for the poverty regression I use the IS 2011 cross-section. The transitions regressions use the panel aspect of the survey, with transitions across labor market states between adjacent quarters.

The sample ends in 2011, as in 2012 there was a major change in the LFS (and IS) sampling framework and frequency, so comparisons are difficult. Moreover, data of the kind used here are available only for 2012 and in some cases for 2013 only.

Table 1 provides sample statistics.

Table 1

Sample Statistics

The table shows some additional facts of interest: Arab men are – on average – younger than the Jewish males, less educated, have more children, are married in higher percentages, have lower health status, live predominantly in small urban areas (as compared to the Jews who are heavily concentrated in big and medium size cities) and, as seen above, are more heavily concentrated in low skill occupations.

5.2 Results

5.2.1 Participation Regressions

Table 2 shows the results of the logit participation regressions according to equation (10). It is the probability of being in the labor force regressed on linear-quadratic age and education and on marital status, number of children under 14, number of earners in the household, health, and residency location. The table reports the regression coefficients and their standard errors and the marginal effects and their standard errors, for Arab men and for Jewish men. Figures 9 and 10 plot the marginal effects for age and for education.

Table 2 and Figures 9 and 10

The table and figures reveal that:

(i) In terms of marginal effects, participation rises with age, education, number of earners, and residency in the bigger towns; it falls with the number of young children and with ill health. Being married has a positive effect in the Arab population and a negative effect in the Jewish one.

(ii) The marginal age effect is increasing and concave for both groups, and is stronger for Arab men. Though it is concave, there is no hump shape as in the raw data of Figure 3. It should be recalled that this is the marginal effect, controlling for other variables such as education, which is an indicator for skills, and health status. Thus the effects of physical jobs is at least partially controlled for. Note, though, that the decline in slope of the marginal effect is more pronounced for the Arabs than for the Jews, starting from the age of 45.

(iii) The marginal education effect has a profile which is less concave than the age profile, and is, again, stronger for the Arabs.

5.2.2 Transition Regressions

Table 3 shows the results of the logit regressions according to equation (**??**). It is the probability of moving from employment to out of the labor force, i.e., probability of retirement, on age, marital status, education, number of children, number of earners in the household, health status, industry, and

occupation. It includes time dummies. The table reports the regression coefficients and their standard errors and the marginal effects and their standard errors, for Arab men and for Jewish men. Figures 11 and 12 plot the marginal effects for age and for education.

Table 3 and Figures 11 and 12

The table and figures reveal that:

(i) In terms of marginal effects, the probability of retiring from employment is U shaped in terms of age, and rises with ill health and with more children.

(ii) The marginal age effect is U shaped for both groups. It starts to rise much earlier for the Arabs – when going from the age of 40 to 45, as compared to going from the 50s to the 60s. Hence, even though these are marginal effects, after controlling for occupation, industry, education, and health status, age still does play some role.

(iii) The marginal education effect is as follows: no studies or no diploma increases the retirement probability a lot; primary school education increases it but less than the latter; university graduates feature the lowest retirement effect.

14

5.2.3 Poverty Regressions

To assess outcomes one measure to examine is the percentage of persons under the poverty line. This line in Israel, computed by the National Insurance Institute, is defined as half the median household income per "standardized individual" (using equivalence scales). Table 4 shows logit regressions of the probability of being below the poverty line regressed on linear-quadratic age and education and on marital status, number of children, number of earners in the household, residency location and occupation. The table reports the regression coefficients and their standard errors and the marginal effects and their standard errors, for Arab men and for Jewish men. Figures 13 and 14 plot the marginal effects for age and for education.

Table 4 and Figures 13 and 14

The table and figures reveal that:

(i) In terms of marginal effects, the probability of being below the poverty line rises with age, with the number of children, a lower number of earners, rural residency, and work in lower skill occupations. Being married has a negative effect on poverty in the Arab population and a positive effect in the Jewish one.

15

(ii) The marginal age effect is linear for both groups and is much stronger for the Arabs. It seems to be rising for the Arabs somewhat from the age of 50.

(iii) The marginal education effect is flat at about 50% for the Arabs and is negative for the Jews.

6   Implications

The marginal effects of age are complicated. Note, again, that these are obtained after controlling for education, health status, and occupation. In terms of participation, age has a positive, though diminishing, effect, unlike the raw (non marginal) hump shape of Figure 3. In terms of retirement, though all controls are in place, Arab men retire more as they grow older, starting at the ages of 40-45, about two decades before Jewish men. Poverty also rises with age, again using the relevant controls.

The marginal effects of education are involved too: the effects on participation are very similar across groups, Arabs and Jews, rising with education; the effects on retirement are generally similar and as expected (less retirement with higher education) but in the 'no studies' category the Arabs retire much more; and there is a big gap between the two groups when it comes to poverty – the poverty rate declines with education for

the Jews while it is essentially higher and flat across education levels for the Arabs.

There are results which were to be expected ex-ante (in terms of marginal effects): (i) ill health reduces participation and increases the probability of retirement; (ii) living in larger, urban centers promotes participation and lowers poverty; the one exception is Jerusalem, where it is the reverse; (iii) low-skill occupation raises the probability of retirement and increases the probability of poverty.

But there are also results which are far less obvious, and even surprising:

(i) A rise in the number of children operates to decrease participation, increase retirement, and increase poverty. This is surprising in light of the fact that the sample is restricted to men. One would expect that higher family consumption needs and higher prospects for poverty would lead to an increase in labor market involvement.

(ii) Marital status has different effects for Arab men and for Jewish men. For Arabs being married increases participation, decreases retirement, and results in less poverty. For Jews, being married decreases participation, decreases retirement as well, and results in less poverty.

Other results are that more income-earners in the household leads to higher participation, higher retirement, and less poverty. The last result in

17

to be expected. The first two are somewhat contradictory. The explanation may lie in the idea that there could be both complementarity and substitutability effects of labor force involvement within the household and that these express themselves differentially.

Policy-relevant conclusions that can be drawn are as follows:

(i) Education and high skills promote participation; the results quantify these effects. Thus, Table 2 and Figure 10 provide estimates of the contribution of the marginal year of education to the rate of labor force participation.

(ii) Health status is important, so health care policies, including health in the work place, play a role in the labor market.

(iii) Education does not alleviate poverty in the Arab men population, other things being equal. Thus, education, in and of itself, "is not enough."

(iv) Residency is important, indicating a possible role for issues of physical access to employment.

(v) There are issues to be further explored concerning the effect of children. This may impact child-care policies.

7 Conclusions

Given the findings, the challenge is to understand the pre-labor market barriers, which lead to lower education, and thus lower skills, for Arab men. Barriers may also be relevant in the geographical distribution of this population. Current research, in progress, attempts to do this using a Roy model of occupational choice, which recognizes human capital acquisition barriers, as well as labor market barriers.

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Tables and Figures
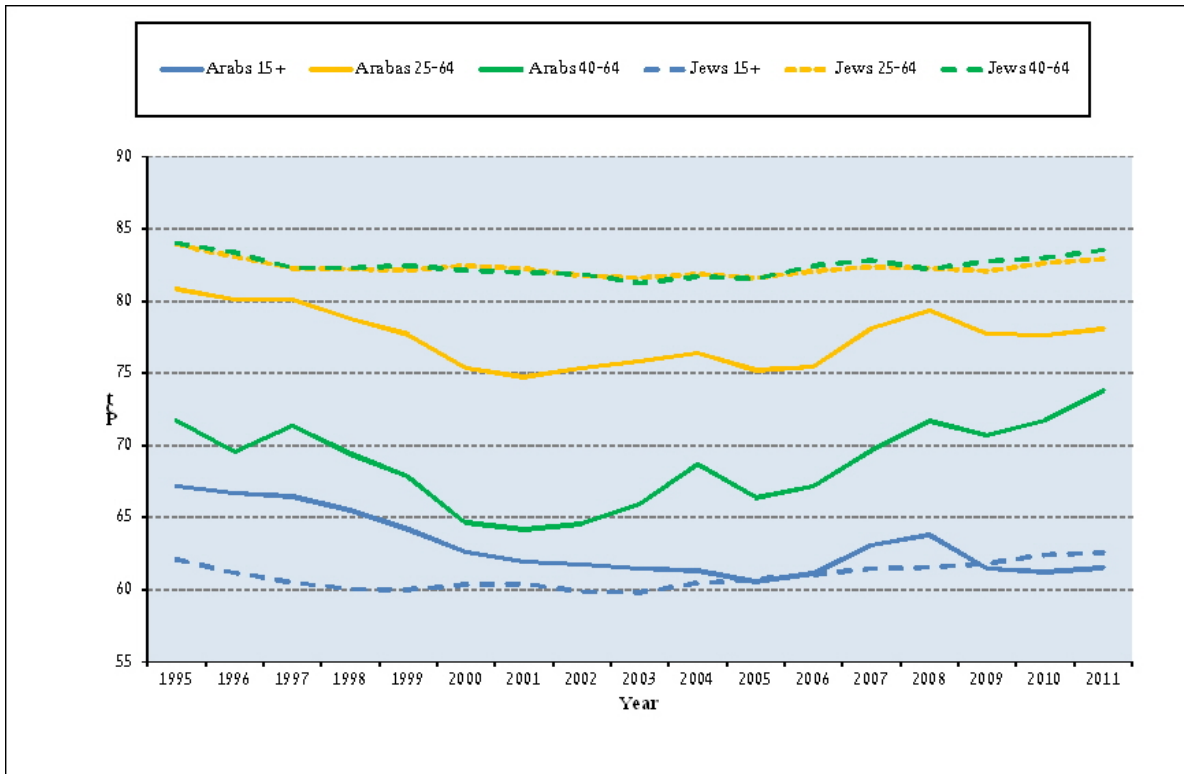
Figure 1: Arab and Jewish LFPR By Age Group
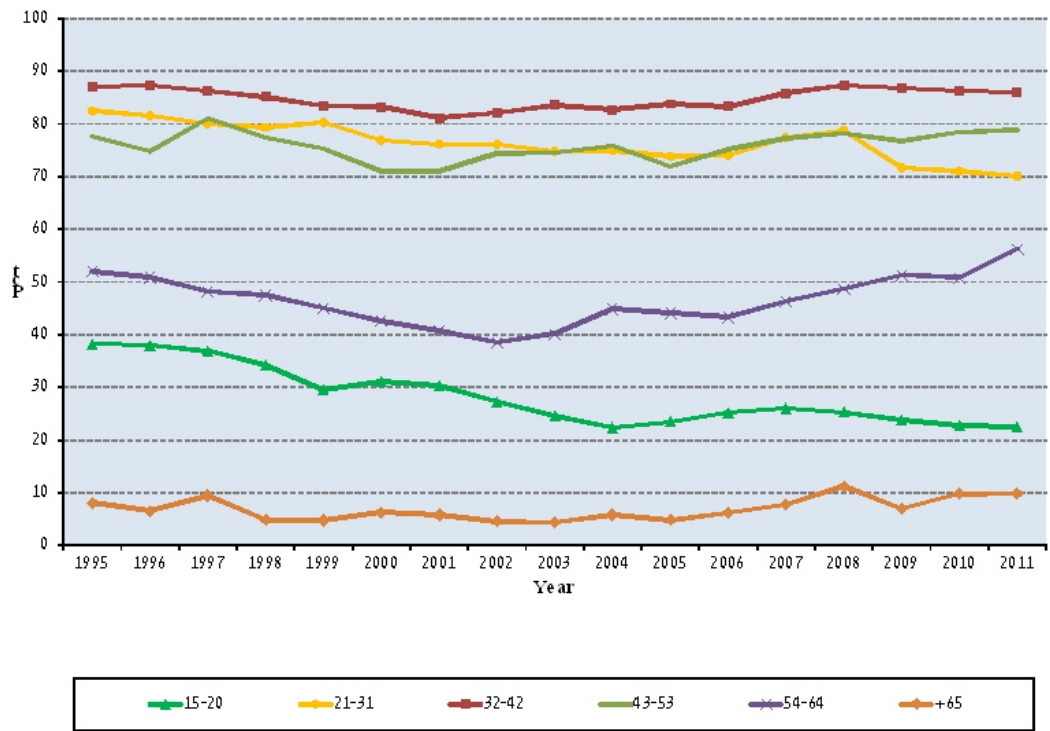
Figure 2: Arab LFPR By Age Group
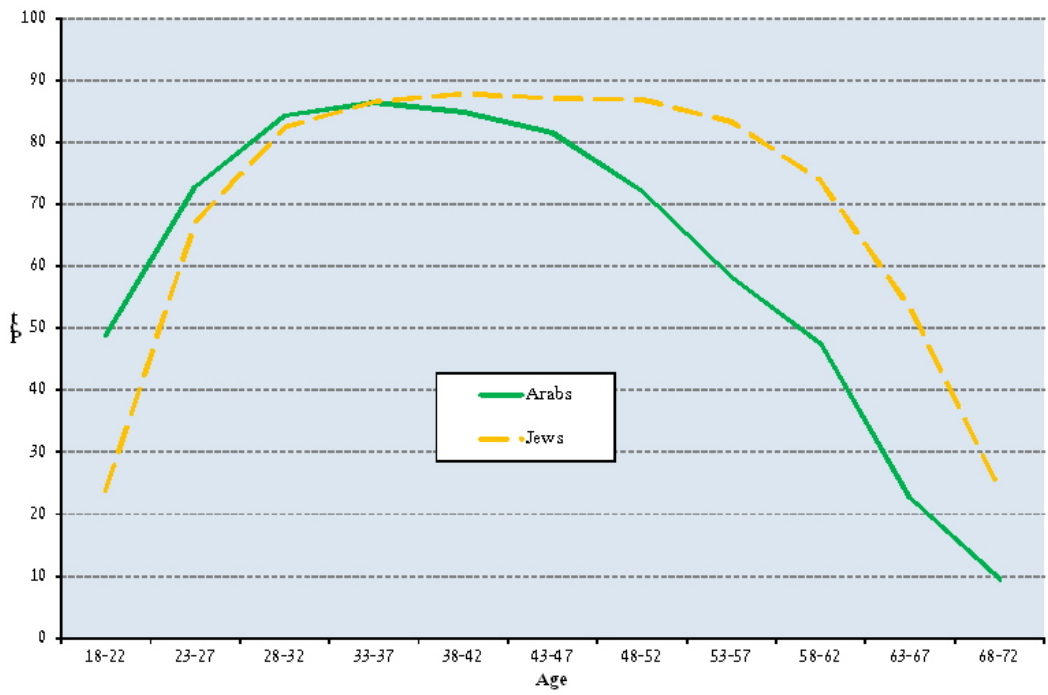
Figure 3: Life Cycle LFPR
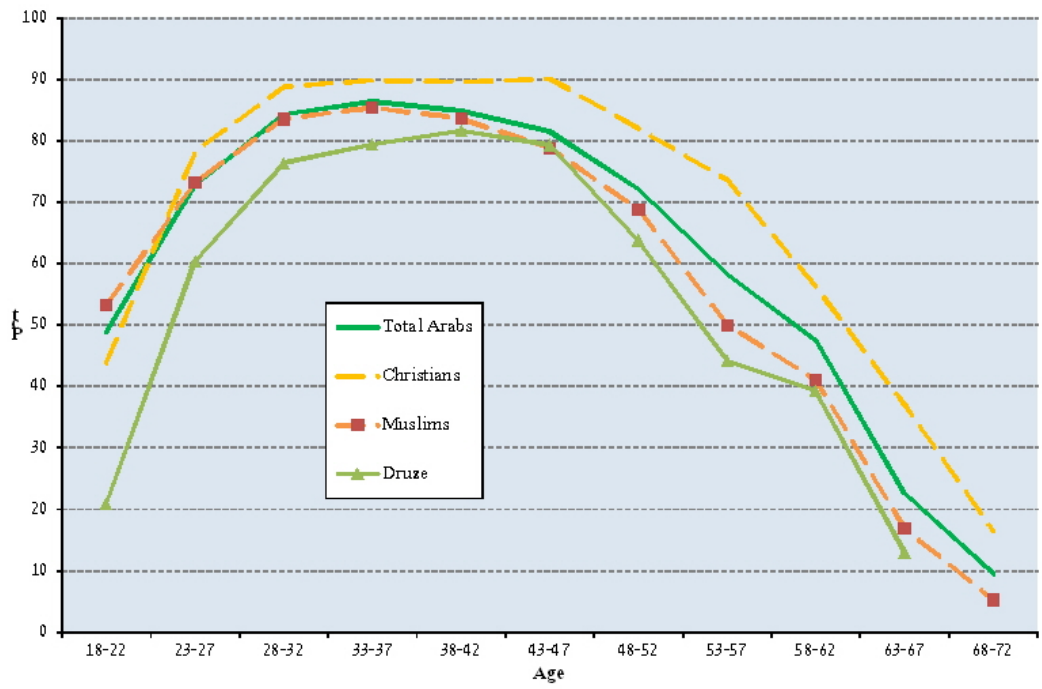
Figure 4: Life Cycle LFPR By Religion
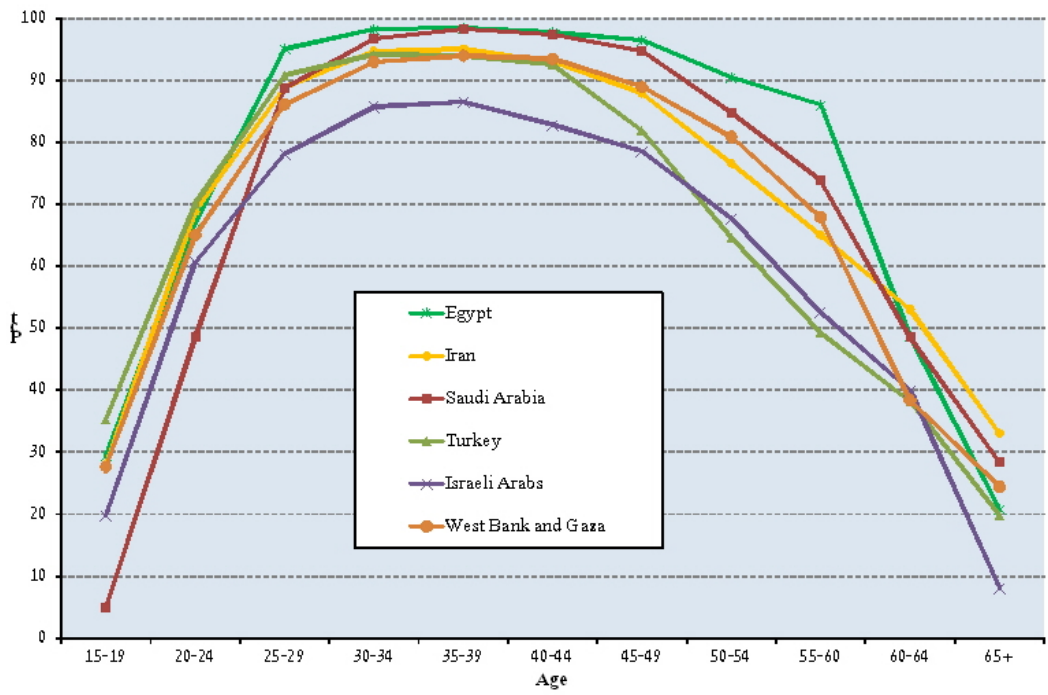
Figure 5: Life Cycle LFPR, Moslem Countries
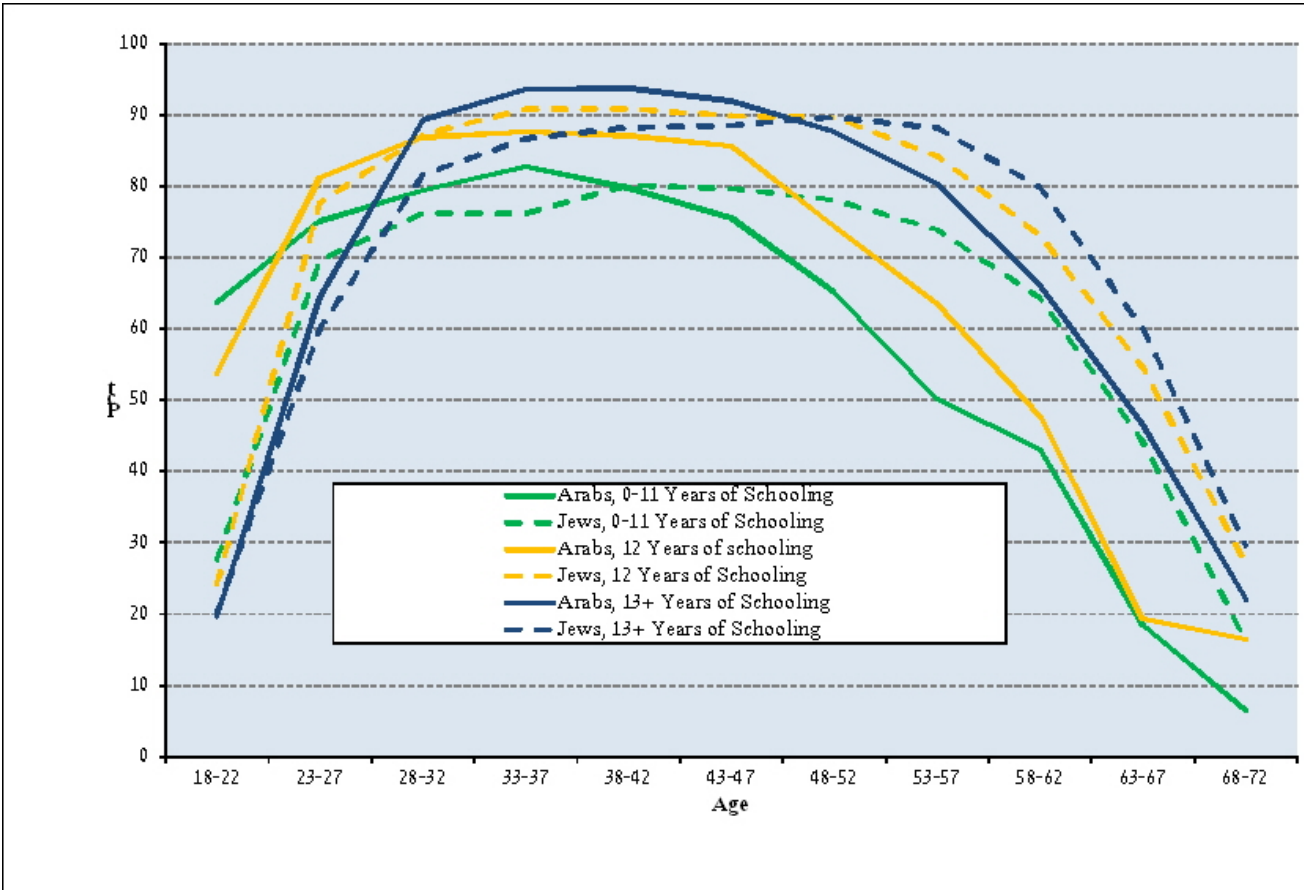
Figure 6: Life Cycle LFPR by Education Group
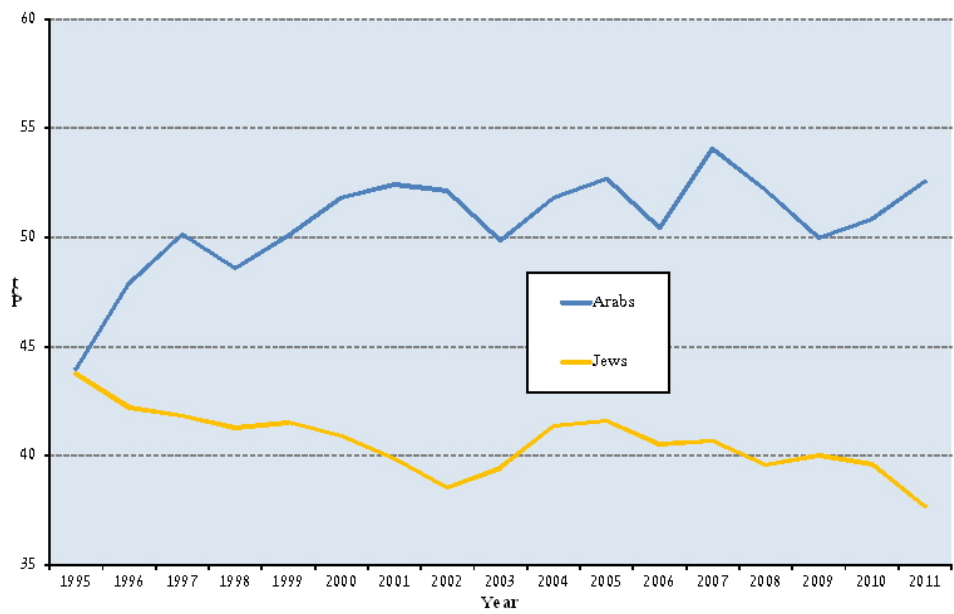
Figure 7: Percentage of Men Not Employed in High Skilled Jobs
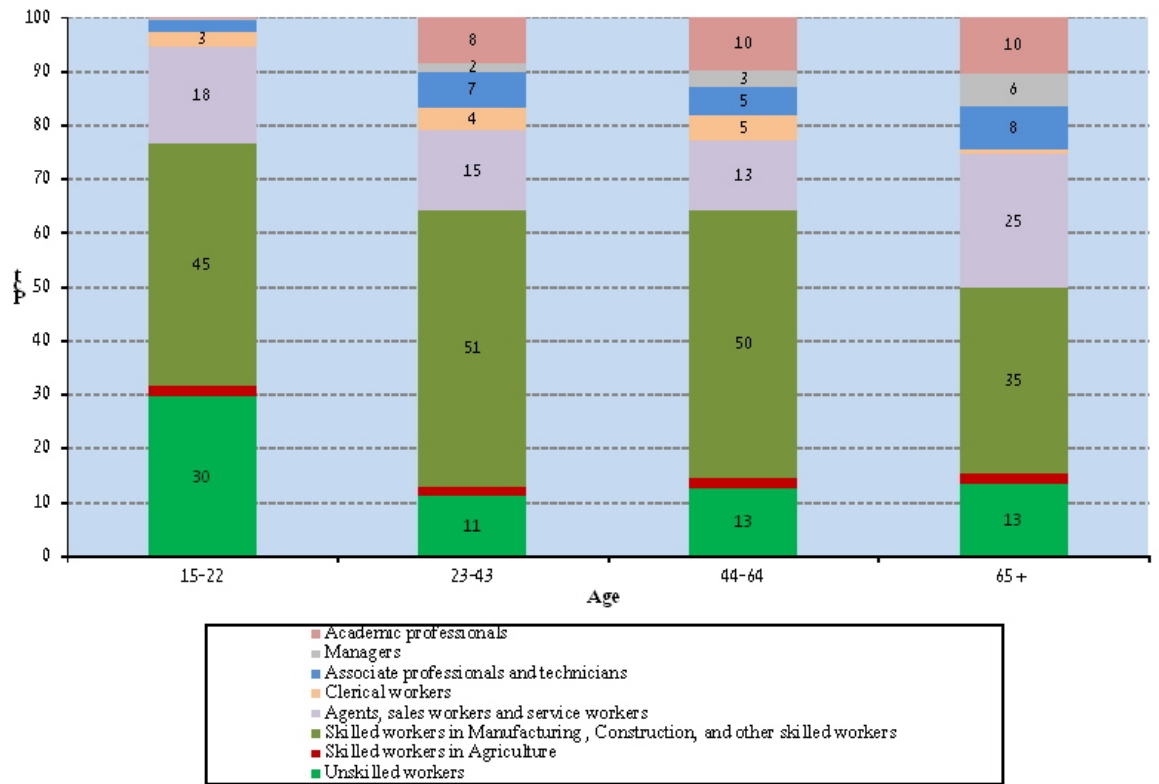
Figure 8a: Arab Men, Occupational Distribution
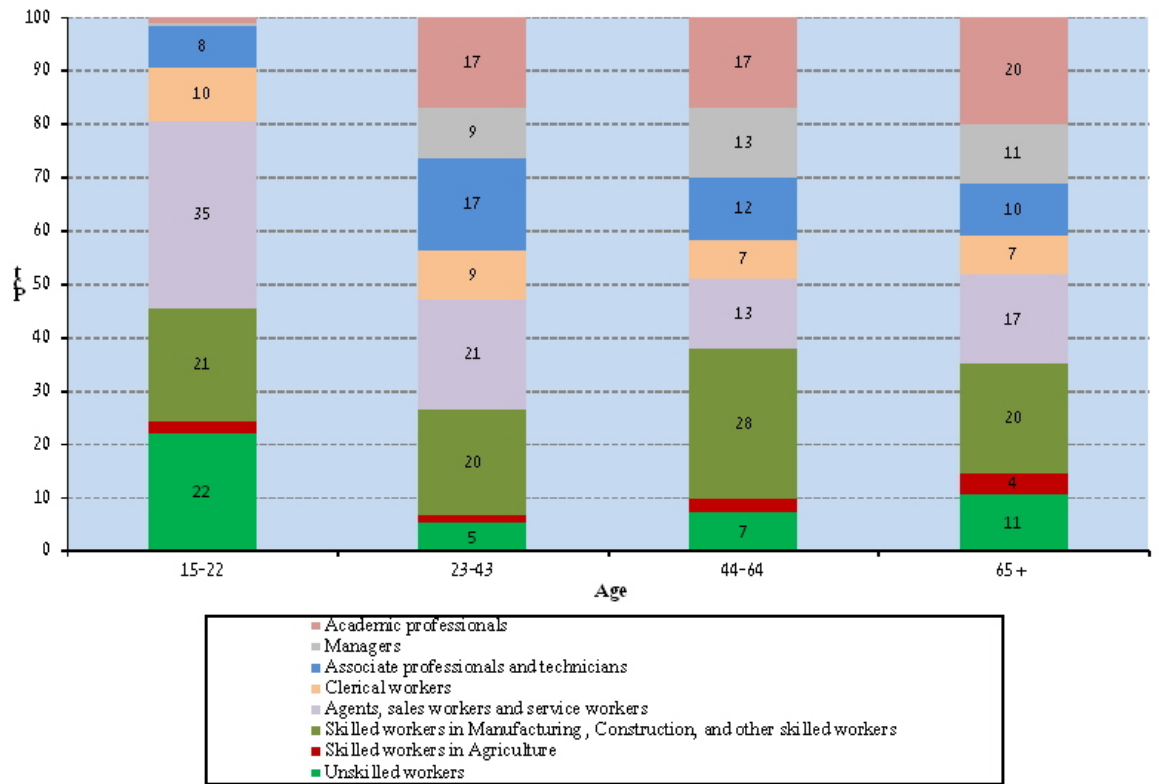
Figure 8b: Jewish Men, Occupational Distribution

Table 1
Sample Statistics

a. LFS Data 2004-2011

		Arab Men		Jewish Men	
		mean	s.d	mean	s.d
	Participation rate (%)	0.73	0.45	0.75	0.44
	Age	41.9	12.8	46.0	14.7
	Years of Education	11.0	4.0	13.6	3.7
	Married (%)	0.80	0.40	0.74	0.44
	No. of children under 14	1.7	1.8	0.9	1.3
	No. of earners in HH	1.5	1.0	1.7	1.0
	Illness (%)	0.12	0.32	0.06	0.24
RESIDENCY (%)	Jerusalem	0.156	0.363	0.072	0.258
	Tel Aviv	0.020	0.140	0.079	0.269
	Haifa	0.029	0.169	0.045	0.207
	Town, pop (in thousands) 50 to 99	0.071	0.257	0.098	0.298
	Town, pop (in thousands) 100 to 200	0.055	0.228	0.231	0.421
	Other urban	0.626	0.484	0.313	0.464
	Rural	0.028	0.165	0.094	0.291
	Rishon	0.006	0.080	0.041	0.198
	Ashdod	0.009	0.093	0.027	0.163

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		Arab Men		Jewish Men	
		mean	s.d	mean	s.d
OCCUPATION (%)	Academic	0.061	0.239	0.120	0.325
	Professionals	0.045	0.206	0.102	0.302
	Managers	0.017	0.131	0.078	0.269
	Clerical	0.029	0.167	0.062	0.241
	Services	0.097	0.296	0.122	0.327
	Agriculture workers	0.016	0.124	0.016	0.124
	Manufacturing workers	0.360	0.480	0.184	0.388
	Unprofessional	0.080	0.272	0.048	0.215
INDUSTRY (%)	Agriculture	0.020	0.142	0.019	0.135
	Manufacturing	0.138	0.345	0.158	0.365
	Electricity	0.003	0.058	0.010	0.098
	Construction	0.160	0.367	0.045	0.207
	Commerce	0.113	0.317	0.103	0.305
	Restaurants_and_Hotels	0.036	0.187	0.027	0.163
	Transportation	0.060	0.237	0.065	0.246
	Banking and Insurance	0.006	0.075	0.024	0.153
	Real Estate	0.053	0.225	0.132	0.339
	Public Administration	0.020	0.139	0.041	0.199
	Education	0.037	0.189	0.043	0.203
	Health	0.031	0.174	0.034	0.181
	Community Services	0.023	0.151	0.037	0.188
	Household Services	0.002	0.042	0.002	0.046
	Organizations	0.002	0.049	0.000	0.016
EDUCATION (%)	Primary School graduate	0.348	0.476	0.145	0.352
	High School graduate	0.154	0.361	0.215	0.411
	Matrciulation	0.154	0.361	0.166	0.372
	Higher education graduate	0.097	0.297	0.151	0.358
	BA	0.098	0.297	0.170	0.376
	MA	0.048	0.214	0.103	0.304
	PhD	0.006	0.076	0.017	0.128
	Other education	0.001	0.037	0.001	0.029
	No diploma	0.072	0.259	0.020	0.139
	No studies	0.022	0.145	0.012	0.111
	N	33,703		150,792	

b. IS 2011

		Arab Men		Jewish Men	
		mean	s.d.	mean	s.d.
	Below Pov Line (%)	0.50	0.50	0.13	0.33
	Years of Education	11.0	3.5	13.5	4.5
	Age	35.9	15.8	42.7	18.4
	Married (%)	0.58	0.49	0.60	0.49
CHILD, HH (%)	No children	0.247	0.431	0.525	0.499
	1 child	0.169	0.375	0.172	0.377
	2 or 3 children	0.359	0.480	0.234	0.423
	4 or more children	0.224	0.417	0.069	0.254
EARN, HH (%)	No earners	0.166	0.372	0.140	0.347
	1 earner	0.384	0.486	0.269	0.444
	3 earners	0.088	0.284	0.120	0.325
	4 earners	0.048	0.213	0.053	0.224
RESID. (%)	Jerusalem	0.178	0.383	0.075	0.263
	Tel Aviv	0.015	0.123	0.073	0.261
	Haifa	0.019	0.138	0.044	0.204
	Town, pop (in thousands) 100 to 200	0.003	0.052	0.209	0.406
	Town, pop (in thousands) 50 to 99	0.103	0.303	0.125	0.331
	Other urban	0.662	0.473	0.342	0.474
	Rural	0.020	0.139	0.000	0.000
	Rishon	0.000	0.000	0.042	0.200
	Ashdod	0.000	0.016	0.034	0.182
	Petah tikva	0.000	0.000	0.037	0.190
OCCUP. (%)	Academic	0.042	0.200	0.102	0.303
	Professionals	0.034	0.181	0.087	0.282
	Managers	0.013	0.112	0.059	0.235
	Clerical	0.023	0.151	0.055	0.228
	Services	0.083	0.276	0.108	0.310
	Manufacturing	0.277	0.448	0.142	0.349
	Agriculture	0.012	0.109	0.010	0.101
	Unprofessional	0.083	0.276	0.043	0.202
	N	2,865		14,123	

Table 2: Participation Regression

	coefficients		marginal effects	
	Arabs	**Jews**	**Arabs**	**Jews**
Age	0.367***	0.391***	0.028***	0.034***
	(0.002)	(0.001)	(0.000)	(0.000)
Age^2	-0.005***	-0.004***		
	(0.000)	(0.000)		
Years_of_Education	0.179***	0.138***	0.014***	0.012***
	(0.002)	(0.001)	(0.000)	(0.000)
Years of Education^2	-0.006***	-0.005***		
	(0.000)	(0.000)		
Married	1.294***	-0.137***	0.100***	-0.012***
	(0.008)	(0.003)	(0.001)	(0.000)
Children under 14	-0.004**	-0.187***	-0.000**	-0.016***
	(0.002)	(0.001)	(0.000)	(0.000)
Number of earners	1.374***	1.565***	0.107***	0.135***
	(0.004)	(0.002)	(0.000)	(0.000)
Illness	-4.909***	-4.275***	-0.381***	-0.369***
	(0.013)	(0.006)	(0.001)	(0.000)

| | coefficients | | marginal effects | |
	Arabs	Jews	Arabs	Jews
Jerusalem	-0.543***	-0.390***	-0.042***	-0.034***
	(0.013)	(0.005)	(0.001)	(0.000)
Tel_Aviv	0.561***	0.478***	0.044***	0.041***
	(0.025)	(0.006)	(0.002)	(0.001)
Haifa	-0.018	0.139***	-0.001	0.012***
	(0.021)	(0.007)	(0.002)	(0.001)
Town, pop (in thousands) 100 to 200	0.422***	-0.088***	0.033***	-0.008***
	(0.018)	(0.004)	(0.001)	(0.000)
Other urban	-0.746***	-0.187***	-0.058***	-0.016***
	(0.012)	(0.004)	(0.001)	(0.000)
Rural	-0.797***	0.409***	-0.062***	0.035***
	(0.018)	(0.006)	(0.001)	(0.000)
Rishon	-0.414***	-0.091***	-0.032***	-0.008***
	(0.041)	(0.007)	(0.003)	(0.001)
Ashdod	0.015	-0.328***	0.001	-0.028***
	(0.034)	(0.008)	(0.003)	(0.001)
Constant	-7.716***	-9.269***		
	(0.039)	(0.016)		
LR χ^2	$1.25*10^6$	$4.82*10^6$		
P-value	(0.00)	(0.00)		
Pseudo R^2	0.55	0.49		
N	1.954e+06	8.731e+06		

Notes:
1. ** $p < 0.05$; *** $p < 0.01$
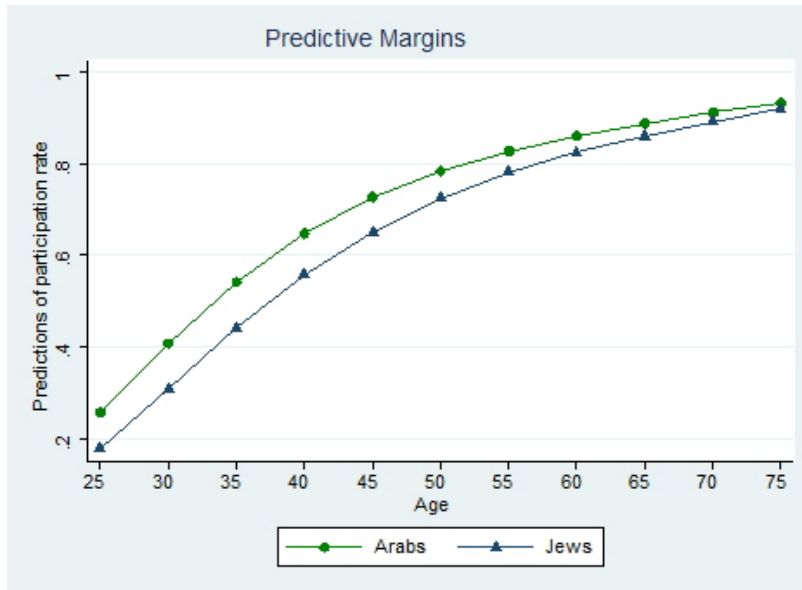2. Sample is 2004 to 2011; see Section XX and Table 1.

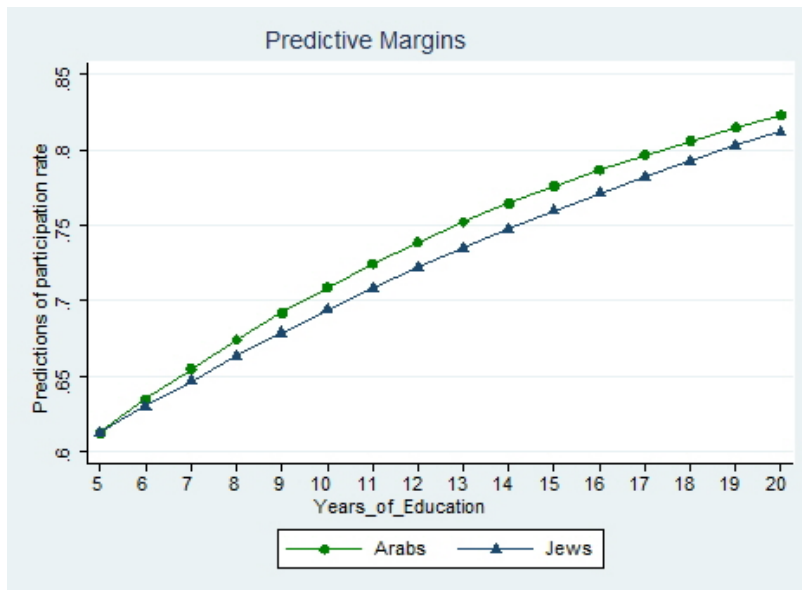**Figure 9: Marginal Effects of Age On Participation**

Figure 10: Marginal Effects of Education On Participation

Table 3: Probability of Transition from *E* to *N*

		coefficients		marginal effects	
		Arabs	**Jews**	**Arabs**	**Jews**
AGE	age15-20	-0.713***	-0.228***	-0.037***	-0.008***
		(0.159)	(0.023)	(0.007)	(0.001)
	age 21-30	-1.795***	-2.162***	-0.114***	-0.086***
		(0.159)	(0.020)	(0.011)	(0.001)
	age 31-39	-2.117***	-3.094***	-0.112***	-0.094***
		(0.158)	(0.021)	(0.009)	(0.001)
	age 40-44	-2.007***	-3.256***	-0.083***	-0.069***
		(0.159)	(0.023)	(0.005)	(0.001)
	age 45-50	-1.866***	-2.997***	-0.077***	-0.072***
		(0.159)	(0.022)	(0.005)	(0.001)
	age 51-60	-1.488***	-2.701***	-0.065***	-0.086***
		(0.158)	(0.020)	(0.005)	(0.001)
	age 61-64	-0.882***	-2.175***	-0.041***	-0.047***
		(0.160)	(0.022)	(0.005)	(0.000)
	age 65-70	0.287*	-1.058***	0.020	-0.029***
		(0.161)	(0.020)	(0.012)	(0.000)
	age 71-74	1.150***	-0.453***	0.110***	-0.015***
		(0.170)	(0.023)	(0.022)	(0.001)
MARTIAL STATUS	married	-0.962***	-0.576***	-0.067***	-0.023***
		(0.015)	(0.009)	(0.001)	(0.000)
EDUCATION	Primary School	0.884***	1.240***	0.064***	0.068***
		(0.090)	(0.031)	(0.008)	(0.002)
	High School	0.484***	0.925***	0.035***	0.043***
		(0.091)	(0.030)	(0.007)	(0.002)
	Higher education	0.253***	0.661***	0.017**	0.030***
		(0.091)	(0.031)	(0.007)	(0.002)
	Matriculation	0.693***	1.184***	0.051***	0.058***
		(0.090)	(0.030)	(0.008)	(0.002)
	BA	0.207**	0.404***	0.014**	0.017***
		(0.090)	(0.030)	(0.006)	(0.001)
	MA	0.303***	0.737***	0.021***	0.035***
		(0.091)	(0.030)	(0.007)	(0.002)
	Other education	0.491***	1.656***	0.037**	0.115***
		(0.182)	(0.077)	(0.016)	(0.009)
	No diploma	1.265***	1.703***	0.122***	0.119***
		(0.092)	(0.036)	(0.012)	(0.004)
	No studies	2.141***	1.246***	0.272***	0.074***

| | | coefficients | | marginal effects | |
		Arabs	Jews	Arabs	Jews
EARNERS	1 earner in HH	-0.014	-0.027***	-0.001	-0.001***
		(0.016)	(0.010)	(0.001)	(0.000)
	2 earners in HH	0.037**	-0.195***	0.002**	-0.007***
		(0.015)	(0.009)	(0.001)	(0.000)
	3 earners in HH	0.155***	0.050***	0.010***	0.002***
		(0.016)	(0.010)	(0.001)	(0.000)
HEALTH	Illness	1.471***	1.149***	0.154***	0.066***
		(0.035)	(0.021)	(0.005)	(0.002)
CHILDREN	No Children	-0.009	-0.080***	-0.001	-0.003***
		(0.013)	(0.008)	(0.001)	(0.000)
	2 or 3 Children	0.085***	-0.099***	0.005***	-0.004***
		(0.013)	(0.011)	(0.001)	(0.000)
	4 Children	0.260***	0.540***	0.018***	0.024***
		(0.016)	(0.017)	(0.001)	(0.001)

| | | coefficients | | marginal effects | |
		Arabs	**Jews**	**Arabs**	**Jews**
INDUSTRY	Agriculture	-0.758***	0.623***	-0.037***	0.029***
		(0.077)	(0.125)	(0.003)	(0.007)
	Manufacturing	-0.946***	0.018	-0.049***	0.001
		(0.068)	(0.123)	(0.003)	(0.005)
	Electricity	-2.328***	-0.133	-0.066***	-0.005
		(0.166)	(0.128)	(0.002)	(0.004)
	Construction	-0.451***	0.475***	-0.027***	0.021***
		(0.068)	(0.123)	(0.004)	(0.006)
	Commerce	-0.782***	-0.030	-0.042***	-0.001
		(0.068)	(0.122)	(0.003)	(0.005)
	Restaurants and Hotels	-0.696***	0.464***	-0.036***	0.020***
		(0.069)	(0.123)	(0.003)	(0.006)
	Transportation	-0.702***	-0.046	-0.036***	-0.002
		(0.069)	(0.123)	(0.003)	(0.004)
	Banking and Insurance	-0.900***	0.043	-0.041***	0.002
		(0.092)	(0.124)	(0.003)	(0.005)
	Real Estate	-0.515***	0.152	-0.028***	0.006
		(0.069)	(0.122)	(0.003)	(0.005)
	Public Administration	-0.274***	0.358***	-0.016***	0.015***
		(0.072)	(0.123)	(0.004)	(0.006)
	Education	-0.679***	0.913***	-0.034***	0.046***
		(0.072)	(0.123)	(0.003)	(0.008)
	Health	-0.783***	0.350***	-0.038***	0.015**
		(0.072)	(0.123)	(0.003)	(0.006)
	Community Services	-1.016***	0.517***	-0.046***	0.023***
		(0.072)	(0.123)	(0.002)	(0.006)
	Household Services		0.893***		0.047***
			(0.127)		(0.009)
OCCUPATION	Academic	-0.389***	-0.245***	-0.022***	-0.009***
		(0.032)	(0.014)	(0.002)	(0.000)
	Professionals	-0.246***	-0.230***	-0.014***	-0.008***
		(0.028)	(0.011)	(0.002)	(0.000)
	Managers	-0.374***	-0.705***	-0.021***	-0.021***
		(0.039)	(0.015)	(0.002)	(0.000)
	Clerical	-0.088***	-0.307***	-0.005***	-0.010***
		(0.026)	(0.012)	(0.002)	(0.000)
	Agriculture	-0.066	-0.502***	-0.004	-0.016***
		(0.045)	(0.029)	(0.003)	(0.001)
	Manufacturing	-0.242***	-0.278***	-0.015***	-0.010***
		(0.016)	(0.010)	(0.001)	(0.000)
	Unprofessional xviii	-0.070***	0.312***	-0.004***	0.013***
		(0.016)	(0.010)	(0.001)	(0.000)

		coefficients		marginal effects	
		Arabs	Jews	Arabs	Jews
TIME	D2005	-0.210***	-0.043***	-0.013***	-0.002***
		(0.018)	(0.011)	(0.000)	(0.000)
	D2006	-0.200***	-0.200***	-0.012***	-0.007***
		(0.018)	(0.012)	(0.000)	(0.000)
	D2007	-0.169***	-0.102***	-0.010***	-0.004***
		(0.018)	(0.012)	(0.000)	(0.000)
	D2008	-0.174***	-0.160***	-0.010***	-0.006***
		(0.018)	(0.012)	(0.000)	(0.000)
	D2009	-0.056***	-0.040***	-0.003***	-0.001***
		(0.017)	(0.011)	(0.000)	(0.000)
	D2010	0.014	-0.115***	0.001***	-0.004***
		(0.017)	(0.011)	(0.000)	(0.000)
	D2011	0.087***	-0.028**	0.006***	-0.001***
		(0.017)	(0.011)	(0.000)	(0.000)
	Constant	-0.118	-1.168***		
		(0.196)	(0.128)		
	LR χ^2	51,121	232,441		
	p-value	(0.00)	(0.00)		
	Pseudo R^2	0.11	0.19		
	N	870742	3.391e+06		

Notes:
1. ** $p < 0.05$; *** $p < 0.01$
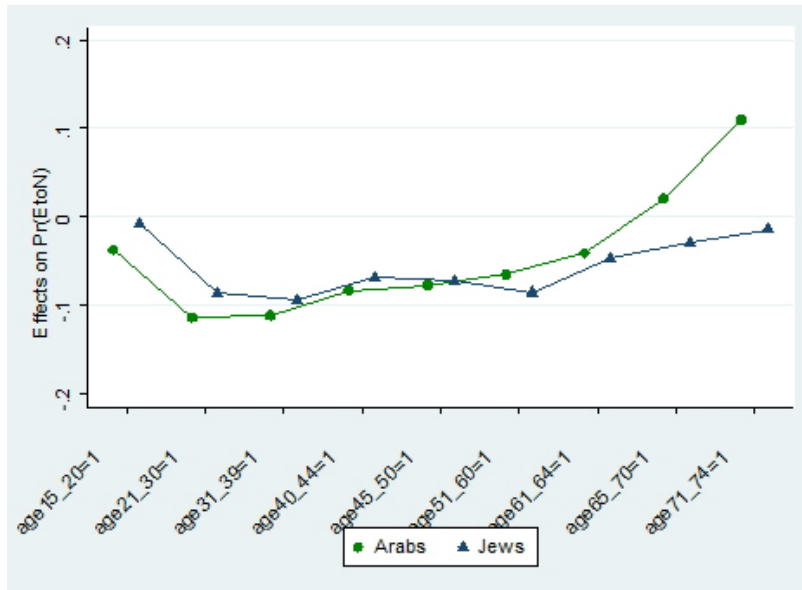2. Sample is 2011; see Section XX and Table 1.

Figure 11: Marginal Effects of Age On Retirement
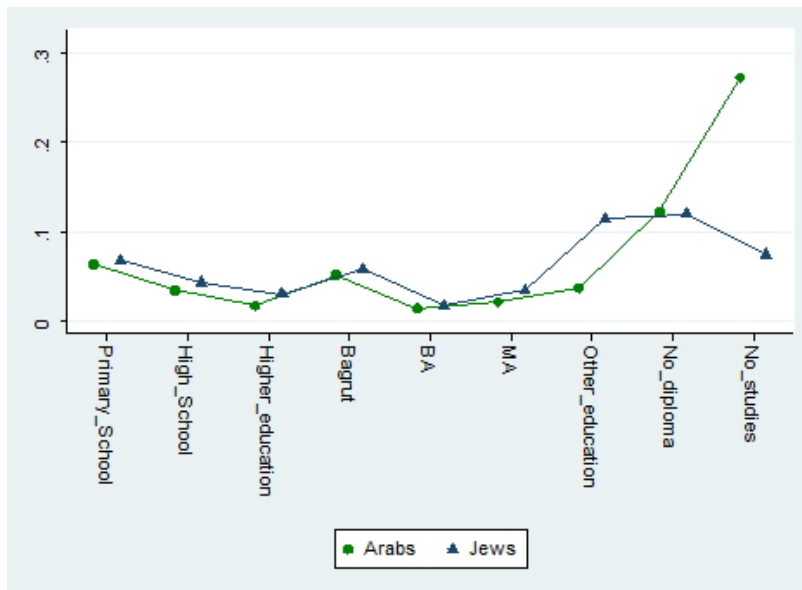
Figure 12: Marginal Effects of Education On Retirement

Table 4

Probability of Being Poor

		coefficients		marginal effects	
		Arabs	Jews	Arabs	Jews
	Age	0.040***	0.031***	0.005***	0.002***
		(0.002)	(0.001)	(0.000)	(0.000)
	Age^2	-0.001***	-0.001***		
		(0.000)	(0.000)		
	Years of Education	-0.002	-0.082***	0.000	-0.006***
		(0.005)	(0.001)	(0.001)	(0.000)
	Years of Education^2	-0.003***	0.001***		
		(0.000)	(0.000)		
	Married	-0.197***	0.339***	-0.026***	0.026***
		(0.015)	(0.007)	(0.002)	(0.001)
CHILDREN	No Children	-1.085***	-0.724***	-0.140***	-0.055***
		(0.015)	(0.009)	(0.002)	(0.001)
	2 or 3 Children	0.858***	0.359***	0.111***	0.027***
		(0.012)	(0.008)	(0.002)	(0.001)
	4 or more Children	1.497***	1.725***	0.194***	0.131***
		(0.014)	(0.010)	(0.002)	(0.001)
EARNERS	No earners in HH	4.326***	3.744***	0.560***	0.284***
		(0.018)	(0.010)	(0.002)	(0.001)
	1 earner in HH	2.499***	2.123***	0.323***	0.161***
		(0.010)	(0.007)	(0.001)	(0.001)
	3 earners in HH	-0.327***	-0.799***	-0.042***	-0.061***
		(0.017)	(0.018)	(0.002)	(0.001)
RESIDENCY	Jerusalem	1.500***	0.394***	0.194***	0.030***
		(0.012)	(0.009)	(0.001)	(0.001)
	Tel_Aviv	-0.953***	-0.193***	-0.123***	-0.015***
		(0.036)	(0.011)	(0.005)	(0.001)
	Haifa	0.025	0.098***	0.003	0.007***
		(0.031)	(0.013)	(0.004)	(0.001)
	Town, pop (in thousands) 100 to 200	-0.720***	0.209***	-0.093***	0.016***
		(0.084)	(0.006)	(0.011)	(0.000)
	Town, pop (in thousands) 50 to 99	-0.427***	-0.076***	-0.055***	-0.006***
		(0.014)	(0.009)	(0.002)	(0.001)
	Rural	0.311***		0.040***	
		(0.028)		(0.004)	

| | | coefficients | | marginal effects | |
		Arabs	Jews	Arabs	Jews
OCCUPATION	Academic	-1.562***	-1.411***	-0.202***	-0.107***
		(0.031)	(0.015)	(0.004)	(0.001)
	Professionals	-1.276***	-1.024***	-0.165***	-0.078***
		(0.027)	(0.013)	(0.003)	(0.001)
	Managers	-0.351***	-2.453***	-0.045***	-0.186***
		(0.035)	(0.028)	(0.005)	(0.002)
	Clerical workers	-0.843***	-0.544***	-0.109***	-0.041***
		(0.028)	(0.014)	(0.004)	(0.001)
	Services	-0.534***	-0.260***	-0.069***	-0.020***
		(0.016)	(0.010)	(0.002)	(0.001)
	Manufacturing workers	-0.278***	-0.520***	-0.036***	-0.039***
		(0.012)	(0.010)	(0.002)	(0.001)
	Unprofessional	0.130***	0.136***	0.017***	0.010***
		(0.016)	(0.013)	(0.002)	(0.001)
	Constant	-2.025***	-2.495***		
		(0.040)	(0.018)		
	LR χ^2	275,103	524,710		
	p-value	(0.00)	(0.00)		
	Pseudo R^2	0.41	0.33		
	N	480,047	2,087,000		

Notes:
1. ** $p < 0.05$; *** $p < 0.01$
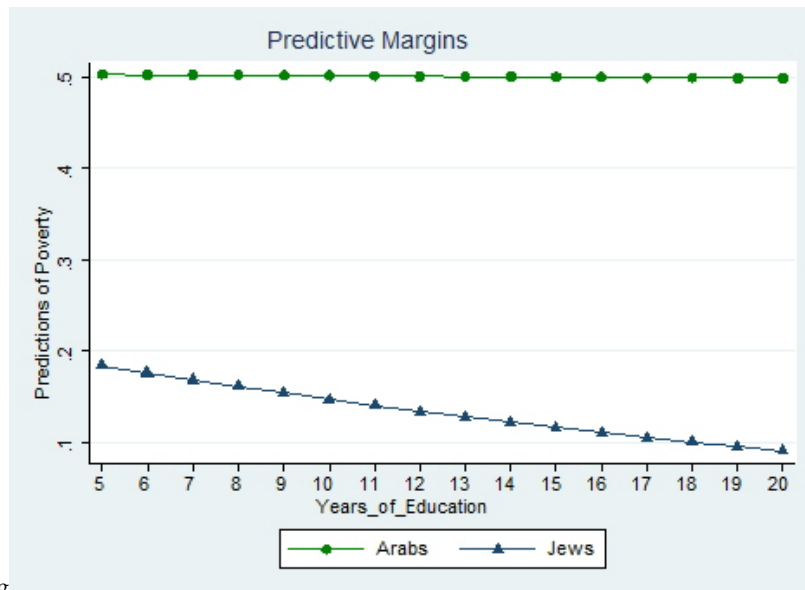2. Sample is 2004 to 2011; see Section XX and Table 1.
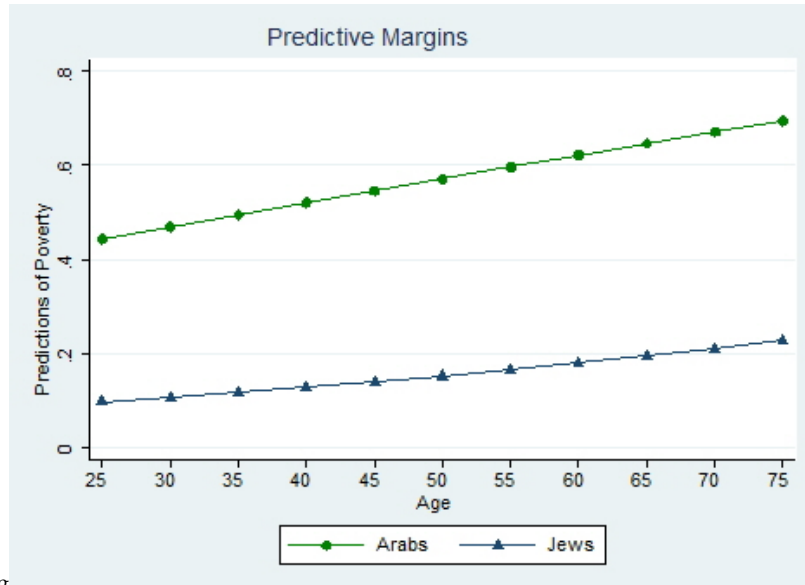
Arab-jews-

poverty

Figure 13: Marginal Age Effects on Poverty

- Arab-jews-

poverty

Figure 14: Marginal Education Effects on Poverty

xxiii