Labor Force Participation and Retirement of Spanish Older Men: Trends and Prospects*
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Abstract

We report a recent reversal in the steep trend towards lower participation rates of Spanish older men**.** An analysis of participation rates conditional on age and education reveals that the upturn in the aggregate participation rate of men in ages 55-64 is the result of positive behavioral *and* composition effects. Our projections predict that the joint composition effect of age and education will contribute an increase of up to 4.5 percentage points to the aggregate participation rate of 55-64 year olds by the year 2020. Non – participation is an absorbing state for older men. Thus, lower participation rates of older men reflect a tendency towards earlier retirement. We confirm that transition rates to early retirement have declined during the current expansion.

1. Introduction

During the last few decades there has been a decline of labor force participation rates among older men which has been documented in several countries (see Peracchi and Welch (1994) for the US, Blöndal and Scarpetta (1998) for OECD countries and Boldrin et al. (1999) for Spain). This decline reflects a tendency towards earlier retirement and has important economic and social implications. In this paper we use data from the Encuesta de Población Activa (EPA) for the period 1977-2000 to describe trends and prospects in retirement and labor force participation rates of Spanish older men. Lower participation rates of older men contribute to the decline of worker-pensioner ratios which, in turn, is fueling concern about the sustainability of the pay-as-you-go public pension system in Spain.

The decline in participation rates was substantial during the late 1970s and most part of 1980s for all age groups over 50 years (see figure 1). Between 1977 and 1987 the participation rate declined by about 20 percentage points for those in their 60s and 5 to 10 percentage points for those in their 50s. Since the late 1980s the participation rate among the youngest (50-54) and the oldest (65-69) has been more or less stable around 90% for the former and 5-8% for the latter. But for the intermediate age groups the decreasing trend continued. Between 1987 and 1995 the participation rate dropped by almost 10 percentage points for the 60-64 age group and by 5 percentage points for the 55-59 age group. However, since 1995 it appears that a new trend may be emerging.

During the last few years we observe a reversal of the trend in participation rates in Spain: between 1995 and 2000 the participation rate of 55-64 year olds increased by 5.8 percentage points, from 54.6% to 60.4%. Although this increase is modest when compared to the past decline, it is important in light of the reversal of the trend and its implications for the national social security system. Our analysis of trends and patterns of labor supply among Spanish older men during the last 25 years highlights this recent upturn. We focus on men in ages 55-64 since, as we have seen before, the participation rates for younger or older men have been relatively stable at very high or very low levels respectively. We do not look at women because the participation rate of women over 50 has hardly changed during the past two decades.

Boldrin et al. (1999) and Jimenez-Martin and Sánchez (2000) describe retirement regulations and patterns. They highlight the strong incentives to early retirement for low-skilled workers and a corresponding continuous decline of labor force participation among older men in Spain. Earlier studies, such as Villagarcia (1995) which analyzed the period of 1987-1991 and Alba-Ramírez (1997) which examine the period 1987-1995, confirmed the importance of socio-economic variables in transitions to retirement. In our analysis we use Spanish Labor Force Survey for the period of 1977-2000. Although the survey is carried out quarterly our sample consists of second quarter data because the labor market status one year ago, which we use for the analysis of transitions, is available only for the second quarter.

In the next section we describe the trend in the participation rate during the last 24 years for men in ages 55-64. We discuss the effects of the business cycle and the composition of the population by age and education on the changes in the aggregate participation rate. In section 3, we examine the transition rates to retirement. We highlight the effect of age and education. In section 4, we present two projections which measure the contribution of composition effects (by age and education) to the aggregate participation rate of 55-64 year olds into the year 2025. Section 5 contains a summary of our findings.

2. Participation rates of men in ages 55-64: 1977-2000

In this section we consider several factors which may help us understand the evolution of the participation rate of 55-64 year olds, such as the business cycle and changes in the composition of the population by age and education. First, the business cycle could affect individuals' participation and retirement decisions both directly and indirectly through its impact on cyclical public policy variables which alter the incentives to retire. A first look at the data suggests that this is the case. During expansions the participation rate declined at a slower rate (e.g. during the second half of 1980s) and it actually increased during the second half of 1990s.

Second, the population of older workers is undergoing compositional changes by age and education. For instance, cohorts born between 1937 and 1942 during and immediately after the Spanish Civil War are between 10% and 30% smaller than the preceding and following cohorts. These smaller cohorts turned 55 between 1993 and 1998. When a small cohort turns 55, the

immediate effect is to increase the mean age of 55-64 year olds. However, as the cohort ages the mean keeps falling; eventually, the mean age falls below its original level as the small cohort becomes older than the mean age. When the small cohort turns 65, the mean age of 55-64 bounces back to 'normal'. The gradual shift of a single small cohort through the age distribution of 55-64 year olds induces an 11 year long wave in the mean age of the distribution (up – down – up, with peak and trough in years 1 and 10, respectively). As seen in figure 2 participation rates decline with age so the wave in mean age should induce a 'mirror image' wave in the average participation rate of 55-64 year olds (down – up -down). Figure 3 shows the time series of the mean age of 55-64 year olds. The wave induced by the 'Civil War effect' is apparent between 1993 and 2008. Note that the wave is longer than 11 years because there are 5 small cohorts, and the peak and trough are a bit smoother. Also, the cohort born in 1940 was of normal size; there are two 'breaks' in the wave corresponding to the entrance and exit of this cohort into and out of the 55-64 age interval.

Furthermore, the educational attainment of older workers is increasing continuously as more educated younger cohorts replace less educated older cohorts. Until the late 1980s the educational composition of the 55-64 years olds population hardly changed at all (see figure 4). For a few years during the late 1980s average education fell as the proportion in the 'no education' category increased while the proportion with primary education dropped. In the early 1990s the average education level started to increase. The increase has accelerated during the last few years as the proportion of the population with secondary or university education grew at the expense of the proportion with no education. On the other hand, the participation rates show enormous differences by education, and the differences appear to be increasing over time as seen in figure 5. For example, the difference between the university-educated and those without any education was less than 20 percentage points in late 1970s, while it is about 30 percentage points in the late 1990s. If the differences in the participation rates by education are sustained, the increasing level of education among older workers will increase the participation rates over time.

Another perspective is obtained from the analysis of age - participation profiles by birth cohort. As shown in figure 6, the participation rates declined substantially at all ages for cohorts born between the early 1920s and the mid 1930's. However, the most recent cohorts (1939-41)

show higher participation rates in the range of observed ages (55-57) than the preceding ones (1936-38). This corresponds to the upturn reported earlier in time series graphs.

Decomposition of Changes in Participation Rates

We now compute a simple decomposition of the changes in the participation rate of 55-64 year olds in order to measure the importance of some of the factors discussed in the previous section. How much of the recent increase in the participation rate is due to the changing age and education composition? How much of the change is genuine or 'behavioral', that is, due to the changes in the participation rate within group? How does the recent expansion compare to the previous one in the late 1980's? These questions may throw some light into future prospects.

The change in the participation rate between two periods, P^2-P^1, can be expressed as follows:

$$P^2 - P^1 = \sum_j P_j^2 S_j^2 - \sum_j P_j^1 S_j^1 \;\; = \;\; (\sum_j P_j^2 S_j^2 - \sum_j P_j^2 S_j^1) + (\sum_j P_j^2 S_j^1 - \sum_j P_j^1 S_j^1)$$

where *S* denotes the population share and subscript *j* denotes j^{th} group. The first term of the decomposition is the change in the aggregate participation rate holding participation rates within groups constant. It measures the contribution of changes in population composition (a 'composition' effect). The residual term is the change in the aggregate participation rate with constant population shares. It represents the contribution due to the changes in participation rates within groups (a 'behavioral' effect).[1] As shown above the average education level was increasing during the 1990's while the average age was first increasing and then decreasing.. We compute composition effects of age and education, both separately and jointly. The results are shown in Table 1 for different sub-periods.

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[1] Composition and behavioral effects have been defined above with constant 'end' period participation rates and constant initial period population shares, respectively. Clearly, an alternative decomposition could be computed reversing the reference periods used for composition and behavioral effects. The results were similar, and the table below shows the average of the two decompositions.

Table 1: Decomposition of Changes in Participation Rates

	2000-1995	1995-1991	1991-1986	1986-1977
Total Change in Participation Rates	5.85	-6.94	-4.54	-13.18
Composition effect				
- Age only	2.02	-1.45	-0.84	-0.14
- Education only	1.86	0.62	-0.30	0.25
- Age and Education	3.28	-0.92	-1.12	0.09
Behavioral effect	2.57	-6.02	-3.42	-13.09

Until the mid-1980s the 'behavioral' effect accounts for almost all the changes in the aggregate participation rate. During the late 1980s and the early 1990s the average age among men aged 55-64 increased by about 0.5 years. This increase in average age accounted for 18% of the decrease in the participation rate during the period 1986-1991 and for 20% of the decrease during the period 1991-1995. Since the early 1990s, however, the average level of education started to increase. Therefore, the composition effects of age and education were of opposite signs. The joint composition effect was still negative due to a stronger age effect and the 'behavioral' effect was again negative and large. During the second half of the 90's the average age was decreasing as the civil-war cohorts shifted through the age distribution. The increase in the level of education accelerated so both composition effects contributed to higher participation rates. The joint composition effect was large and more important than the behavioral effect. However, even the behavioral effect was positive. Therefore, the expansion of 1995-2000 stands out in the context of the last 25 years for two reasons: 1) Strong composition effects of education and age were pushing the participation rate upwards; and 2) The 'behavioral' effect was also positive for the first time. This ended the uninterrupted decline in participation rates within groups, which not even the expansion of 1986-91 had reversed.

3. Transitions of Labor Market Status, 1987-2000

In this section we study the transitions of individual labor market status over a one-year interval. The Spanish Labor Force Survey provides this information during the second quarter since 1987. We consider transitions between employment, unemployment and out of the labor force and between participation and non-participation. The transition rate 'at age a' is computed

from data on men aged a+1 at the time of the survey. We examine transition rates at ages 54-64 and we study the effect of some important variables such as age and education on the transition probabilities.

In figure 7 we observe that the transition rate from employment to non-participation has a twin-peaked shape with a major peak at the normal retirement age of 64 and a smaller peak at the early retirement age of 59. The transition rate to unemployment is almost as high as the transition rate to non-participation up to age 59, but much lower beyond the age of 60. The age profile of transition rates from unemployment to non-participation is also twin-peaked, but the transition rates are higher at all ages (see figure 8). Transition rates from non-participation to either employment or unemployment are very low, less than 3% altogether for most of the period, and they have been declining (see figures 9-10). Therefore, from here on we treat non-participation as an absorbing state and we refer to it as 'retirement'.

There are substantial differences in transition rates to retirement by education (figure 11).[2] At all ages the transition rates are higher the lower the level of education. The difference by education is greater at ages 59-63 than at younger ages. In ages 59-63 the transition rates of men without any schooling are more than twice as large as those of the university-educated. Although the twin peaks are observed for all education levels, they are least pronounced for the group with university education.

Over time, the transition rate to retirement increased substantially between the late 1980s and the mid 1990s (figure 12). The increase is most noticeable between ages 59 and 64,[3] suggesting that over time more male workers were taking early retirement. Since the mid 1990s the transition rate to retirement has declined somewhat at ages 59 to 61 but has further increased at ages 62 and 63. This suggests that in recent years more men are retiring at normal or close to normal retirement ages.

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[2] The transition rates to retirement between ages 64 and 65 were 71%, 69%, 66% and 42% for men with no schooling, primary schooling, secondary schooling and university education, respectively.
[3] The transition rates to retirement between ages 64 and 65 were 60%, 69% and 72% for the periods 1988-90, 1993-95 and 1998-2000 respectively.

As we saw in the analysis of the participation rate in the previous section, these changes in transition rates might simply reflect changes in the composition of the population by education. In order to verify that this is not the case we obtained the same age-profiles of transition rates for each education group (figures 13 through 16). During the first half of the 1990s the transition rates to retirement increased for all education groups at all ages with larger increases at ages 59 and higher. During this period the transition rate at ages 59 and 60 increased most for the lowest and the highest education categories. During the second half of the 90s the transition rate decreased only at age 59 but increased further at younger ages for men in the no-schooling category. For the primary education group, there were decreases at ages 59 to 61 but further increases at older ages. For the secondary education group, the most noticeable change is a decline between ages 60 and 63, while the decline is most noticeable between ages 57 and 60 and at age 64 for the university educated.

Parametric Analysis of Transition to Retirement

Table 2 reports estimates of a logit model of the transition to retirement. We also show sample means and the standard deviation of the covariates in the last two columns. The sample consists of men aged 54-64 years and participating in the labor force in the base year (1986-97). The dependent variable takes the value one if retired one year later and 0 otherwise. Regional dummies are included but their coefficients are not reported.

The (quadratic) time trend is consistent with the aggregate transition rate, increasing until the mid-1990s and then decreasing. The age effect also confirms the pattern shown earlier in the univariate analysis: a large jump at age 64 and a smaller jump at age 59. An interesting result is that the transition rate to retirement at ages 63 and 64 shows an increasing trend over time as shown in positive coefficients of the interaction terms of time and these ages. In order to capture the business cycle effect we included the region and year specific unemployment rate for men aged 30-44. As expected, this variable takes a significant positive coefficient, indicating a higher retirement rate during the periods of recession.

TABLE 2: TRANSITION TO RETIREMENT

(Male 54-64, 1987-98, N=83293)

VARIABLE	COEFFICIENT	STD. ERROR	Z-VALUE	MEAN	STD. DEV.
Retired	Dependent variable			.106	.308
Time (=year-87)	.044	.022	2.028	5.184	3.414
Time^2	-.003	.001	-2.327	3.853	3.846
Age 54	Reference			.125	.330
Age 55	.138	.137	1.006	.118	.323
Age 56	.245	.137	1.785	.114	.318
Age 57	.543	.131	4.141	.109	.312
Age 58	.635	.131	4.837	.103	.304
Age 59	1.525	.116	13.126	.098	.297
Age 60	1.343	.123	10.854	.082	.275
Age 61	1.226	.129	9.465	.073	.260
Age 62	1.238	.132	9.366	.064	.246
Age 63	1.557	.128	12.154	.059	.236
Age 64	4.345	.116	37.147	.050	.219
Interaction with Time					
Age 54	Reference			.640	2.098
Age 55	-.004	.022	-0.207	.593	2.002
Age 56	-.024	.022	-1.105	.577	1.974
Age 57	-.011	.021	-0.552	.560	1.951
Age 58	-.005	.020	-0.241	.531	1.899
Age 59	.029	.018	1.611	.519	1.894
Age 60	-.001	.019	-0.067	.442	1.768
Age 61	.009	.020	0.468	.390	1.667
Age 62	.019	.020	0.961	.341	1.562
Age 63	.039	.019	1.972	.315	1.511
Age 64	.040	.018	2.186	.271	1.409
Unemp. Rate (Male 30-44)	.021	.006	3.490	1.080	5.090
No education	Reference			.256	.436
Primary	-.111	.031	-3.521	.553	.497
Secondary	-.367	.049	-7.412	.112	.315
University	-1.089	.066	-16.312	.077	.267
Married	Reference			0.91	.290
Single	-.120	.053	-2.246	.067	.250
Divorced	.120	.066	1.828	.032	.178
Private Sector	Reference			.390	.487
Unempoyed	.487	.039	12.195	.093	.291
Self-employed	-1.253	.035	-35.691	.362	.481
Pubic Sector	-.065	.038	-1.683	.151	.358
Constant	-3.589	.143	-24.955		

Education has a very strong effect. In particular university educated workers show a much lower retirement rate than those with lower education. Relative to married men, divorced or widowed workers have a higher transition rate while never-married workers have a lower transition rate. Unemployed workers are much more likely to retire than those employed. Among

the employed, self-employed workers show a much lower transition rate to retirement. There is no significant difference between the public and private sectors.

4. Projecting composition effects of age and education on participation rates

In order to obtain projections of the joint distributions of age and education from 2000 to 2025 we use data from two sources: a) Projections of the age distribution of the population of males between 2000 and 2025 provided by Fernández-Cordón (1996). b) The joint distribution of age and education in the EPA sample in the year 2000. We assume that the distribution of education for each cohort observed in 2000 will remain fixed over the next 25 years.[4] We combine our projections of the annual distribution of age and education with a given profile of participation rates by age and education to obtain a time series of aggregate participation rates of 55-64 year olds between 2000 and 2025. Since the profile of conditional participation rates is fixed, the time series measures a joint composition effect of age and education. We consider two scenarios, with conditional participation rates fixed at their levels in the year 2000 or at the average of the period 1995-2000. The latter attempts to correct for the cyclical component in participation rates in 2000. The two time series are plotted in figure 17.

It is clear from figure 4 that the composition effect of education will be positive throughout the period. On the other hand figure 3 shows that the mean age, and correspondingly the composition effect of age, will oscillate. Between 2004 and 2008 and again between 2015 and 2025 an increasing mean age will dampen the effect of increasing education. In the first case the increase in mean age corresponds to the exit of the smaller Civil War cohorts from the distribution and the joint composition effect will actually become slightly negative. However, for most of the period the joint composition effect will push the aggregate participation rate up. The total increase will be quite large, as much as 4.5 percentage points by 2020 in the second scenario.

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[4] This is equivalent to the double assumption that the educational attainment of men does not change beyond the age of 30, and that age-specific mortality rates are the same across education categories. We think that any errors resulting from these assumptions are likely to be very small. For instance, if mortality rates decrease with education, our projections will slightly underestimate the increase in participation rates over the next 25 years.

At this point several caveats are in order. Our projections illustrate the changes due to composition effects of age and education under the assumption that the age and education specific participation rates will stay constant. Obviously, participation rates respond to the business cycle and other behavioral and institutional changes. In Spain, most workers who were first registered with the Social Security system before 1967 can opt for an early retirement at any time between ages 60 and 65. The penalty is fairly small: the pension payment is reduced (forever) by 8% for each year (up to 5) that retirement is moved forward.[5] The proportion of older workers with this entitlement is gradually falling and will drop to zero in about 15 years. Therefore, unless regulations concerning early retirement change, there will be fewer early retirees. Furthermore, participation rates may be endogenous with respect to the composition of the population itself. For example, as the size of the population with a university education increases the opportunities in the labor market for this group may change, which, in turn, could affect retirement decisions.

5. Summary

- Between 1977 and 1995 there was a large and constant decline in participation rates of older men in Spain. However, participation rates have been recovering for the first time during the last expansion (1995-2000). An analysis of participation rates conditional on age and education reveals that the upturn in the aggregate participation rate of men in ages 55-64 is the result of positive behavioral *and* composition effects.

- Behavioral effects were positive for the first time during the current expansion. Although participation rates are cyclical, this suggests that the decline in participation rates may be bottoming out. On the other hand, the average education of older men will increase sharply so composition effects should remain positive in the medium run. Our projections predict that the joint composition effect of age and education will contribute an increase of up to 4.5 percentage points to the aggregate participation rate of 55-64 year olds by the year 2020.

- Non – participation is an absorbing state for older men. Thus, lower participation rates of older men reflect a tendency towards earlier retirement.

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[5] This penalty does not apply once the pension reaches the lower level. Similarly, tor the high-wage earners whose pension is limited by the upper limit the effective rate of penalty would be lower.

- The age-profile of transition rates to retirement is twin-peaked, with a peak at age 60 due to early retirement and another at age 65 due to normal retirement. The peak at age 60 is higher for men with lower education.

- Transition rates to early retirement have declined during the current expansion.

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Figure 1: Participation Rates: Men
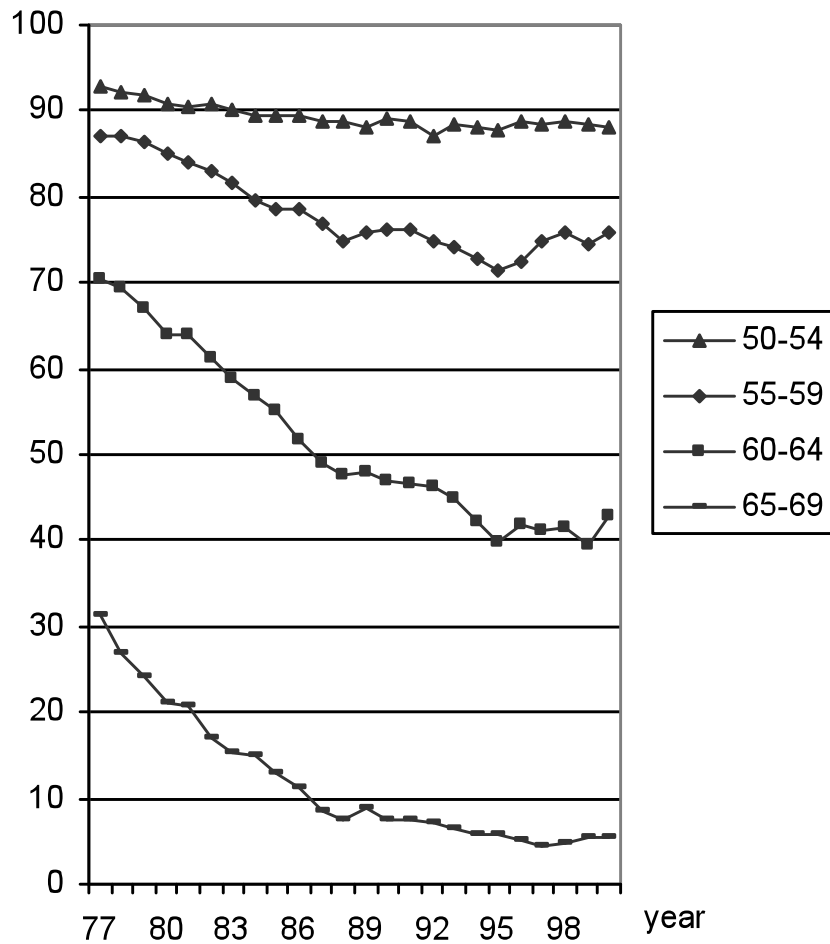
Figure 2: Participation Rates: Men
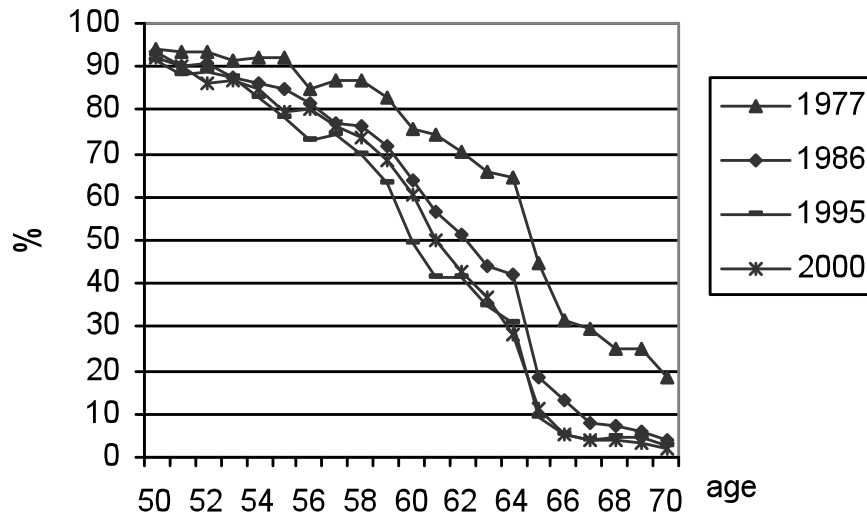
Figure 3: Mean Age of Men 55-64
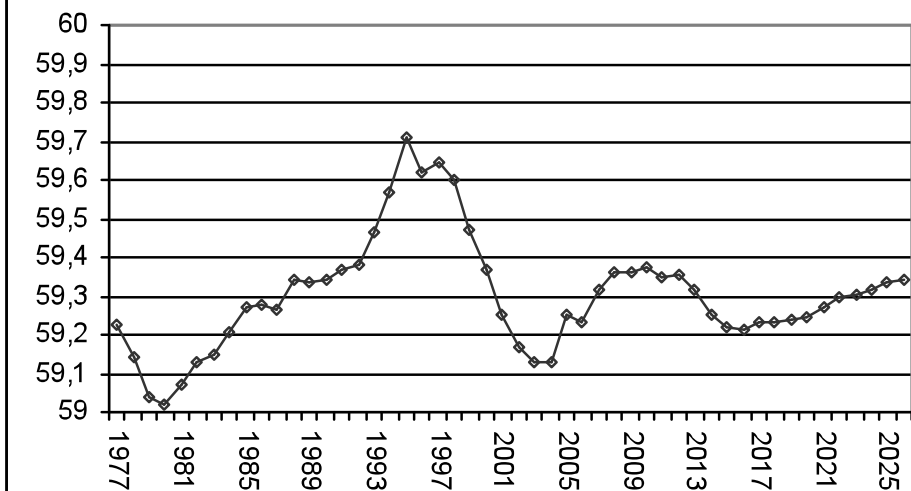
Figure 4: Population Distribution by Education: Men 55-64
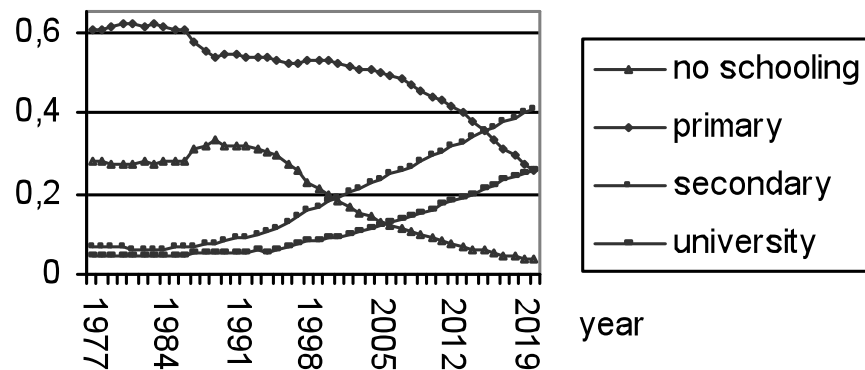
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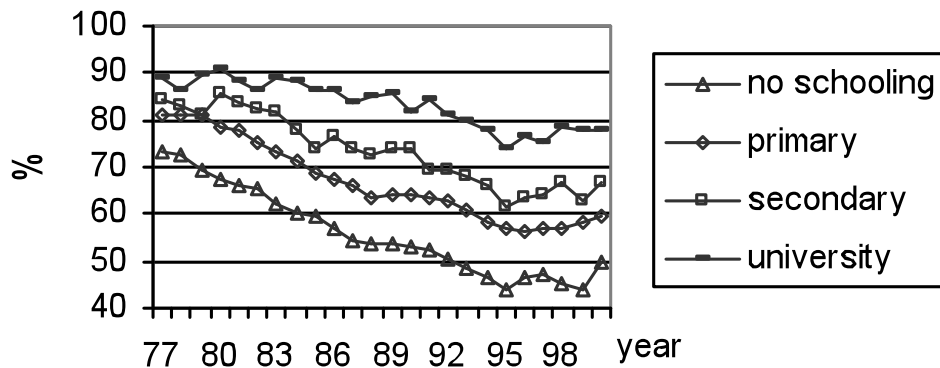
Figure 6: Participation Rates by Cohort
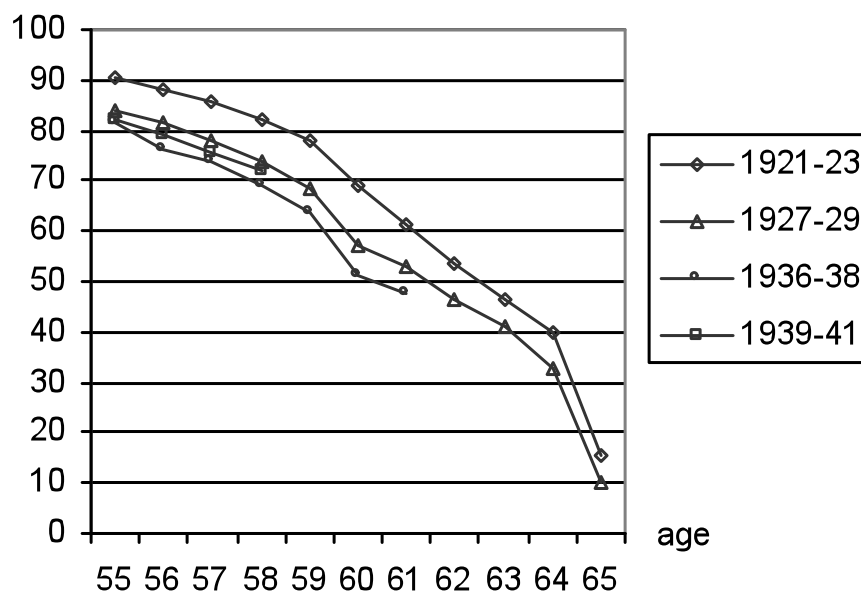
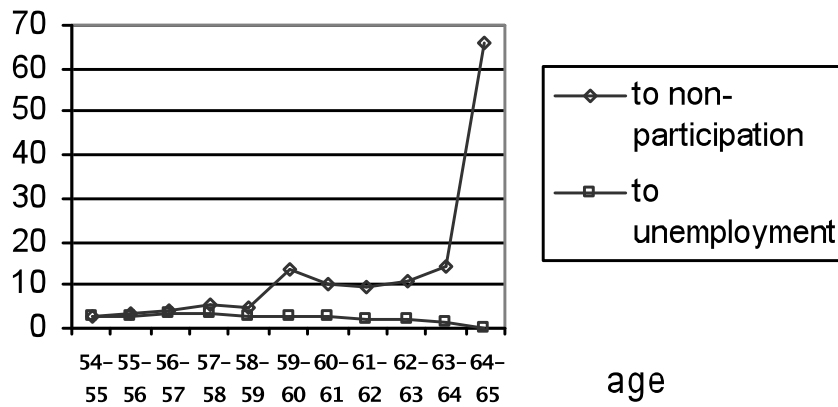**Figure7: Transition Rates (%) from Employment: 1987-2000**

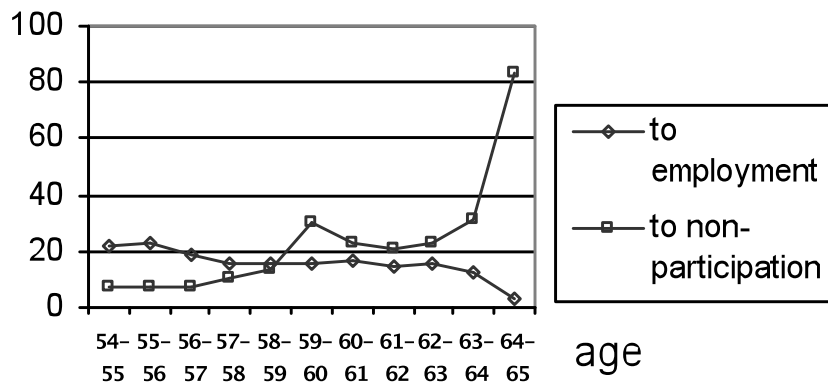**Figure 8: Transition Rates (%) from Unemployment: 1987-2000**

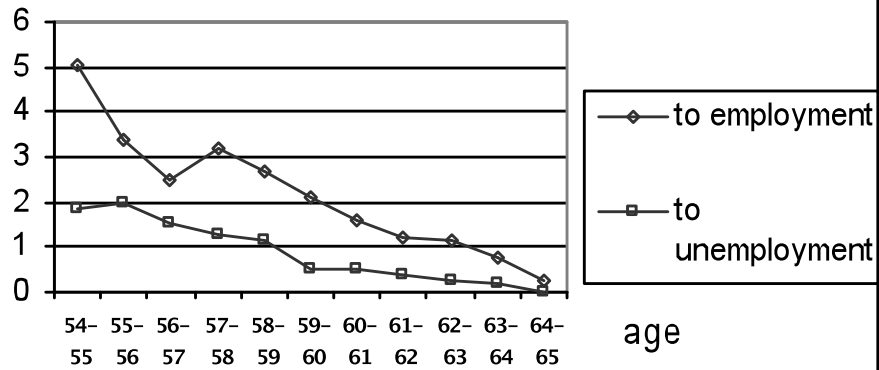## Figure 9: Transition Rates (%) from Non-participation: 1987-2000

Figure 10: Transitions from Non-Participation: Men 55-64
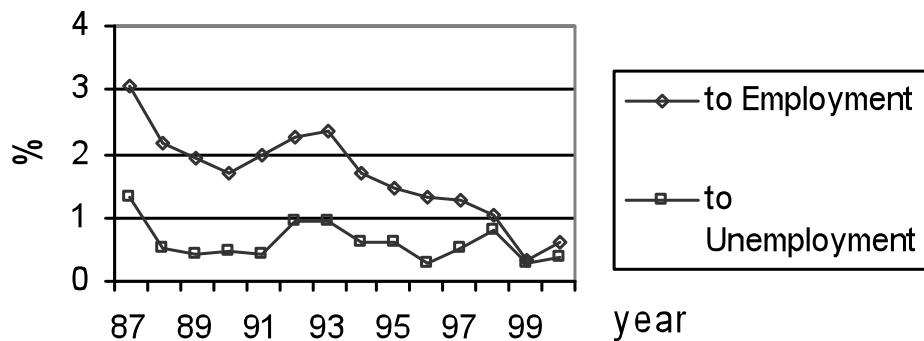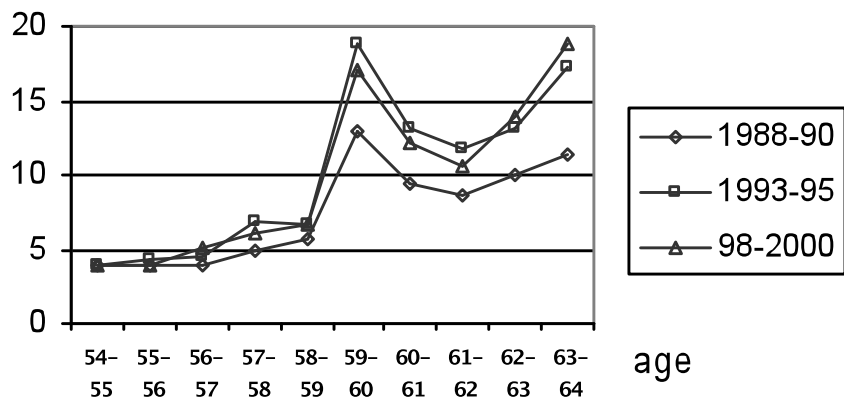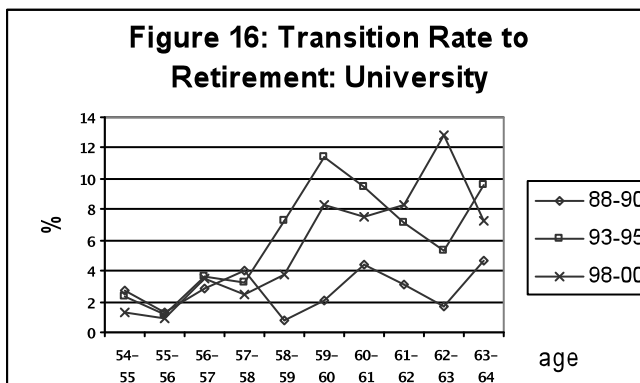
Figure 11: Transition Rate to Retirement (1987-2000)
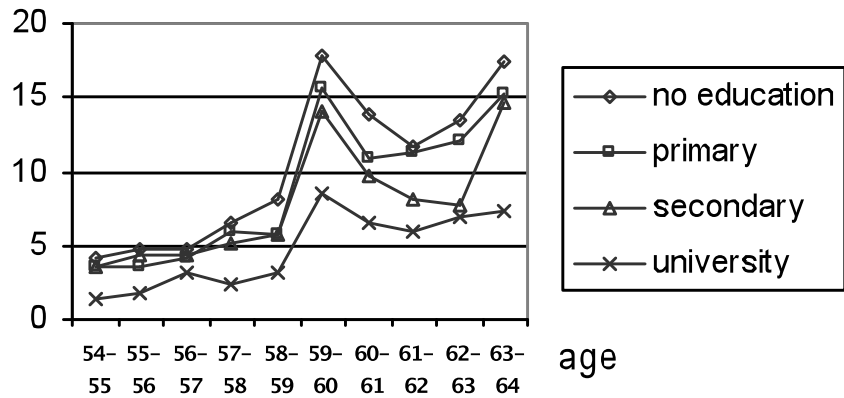
Figure 12: Transition Rate to Retirement

Figure 13: Transition Rate to Retirement: No Schooling

Figure 14: Transition Rate to Retirement: Primary

Figure 15: Transition Rate to Retirement: Secondary
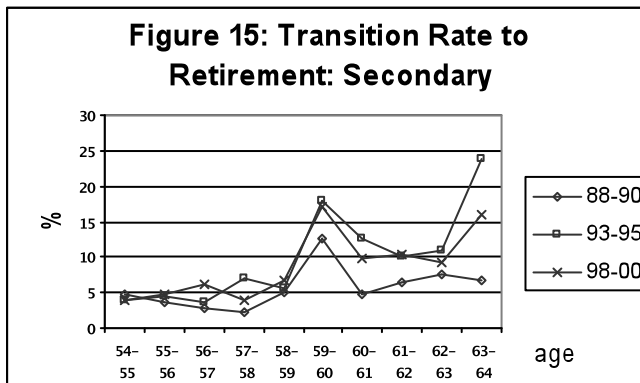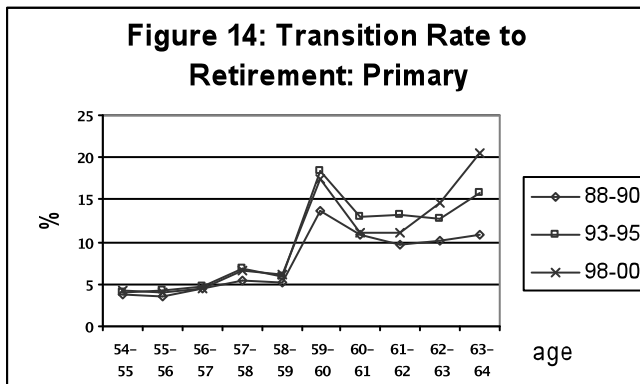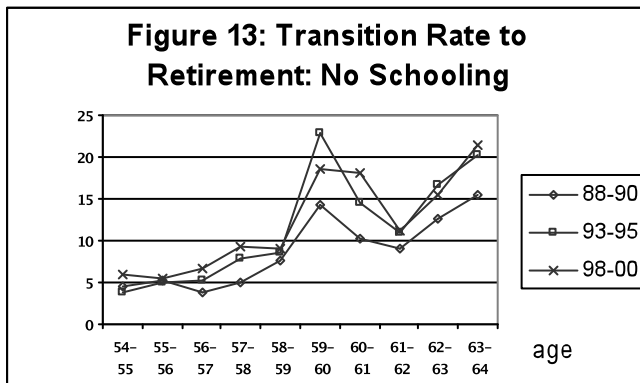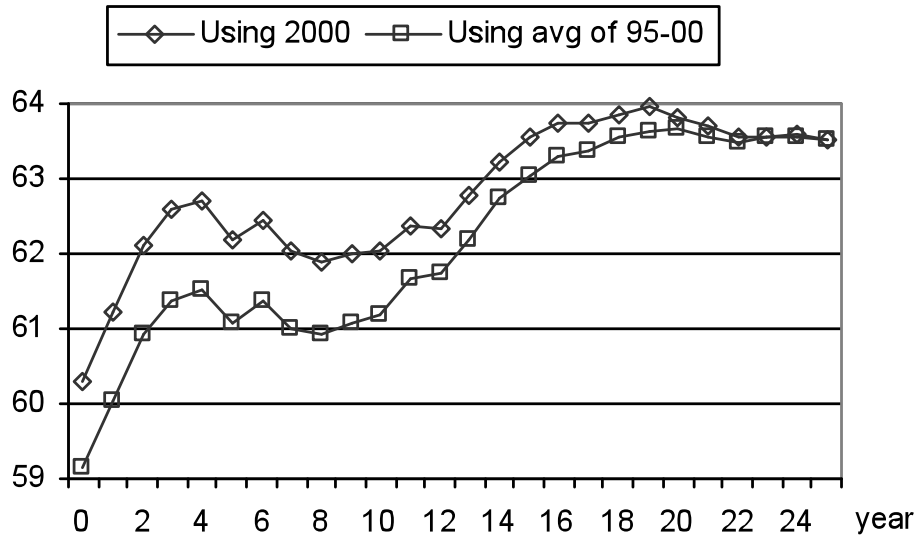

Figure 16: Transition Rate to Retirement: University

Figure 17: Predicted Participation Rate with Constant Age-Education Specific Participation Rate

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