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TRACKING THE ITALIAN EMPLOYEES' TFR OVER THEIR WORKING LIFE CAREERS

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Abstract

In this paper we evaluate the expected evolution of the Trattamento di fine rapporto over the Italian employees' working life careers. We use adiminstrative (INPS) data to disentangle the amount that is expected to be accumulated until retirement, the amount expected not to accrue because of discountinuos working careers and/or paid as an anticipated withdrawal. This is relevant in the light of the recent pension system reforms that encourage the diversion of the TFR to pension funds.

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1 Introduction

Recent pension reforms in Italy bring up to the role of the Trattamento di Fine Rapporto in financing private pension provisions for Italian employees. However, the TFR may be used over working careers before retirement in case of job termination or to finance specific needs. In this paper, we evaluate the fraction of TFR that is expected to be available at retirment for pension financing.

In particular, employees are entitled to the lump-sum leaving indemnity payments (TFR) upon job termination. For each employee, each year of the job relationship the employer accumulates a fraction (6.91%) of the annual salary which is recapitalized at a pre defined interest rate (1.5% +0.75 of the annual inflation). The accumulated TFR fund is then paid when a job separation occurs, regardless its reason, or at retirement. Under specific circumstances, the employee working more than eight consecutive years with the same employer can obtain a partial withdrawal on the accumulated TFR.

Thus, the TFR is a mandatory saving fund that may play three roles. First, it may contribute to build one's pension wealth. In case of continuous job careers until retirement the leaving indemnity represents a lump sum payment totally available to finance the individual's retirement needs. Second, in case of discontinuous job careers, the recipient may freely dispose of the amount received upon contract termination, voluntary or not. Thus, TFR represents additional private savings freely disposable to smooth consumption either for precautionary motives, for example to self-insure in case of layoff followed by an unemployment spell or for whatever purpose[1]. Third, the TFR can be used before job termination, though under some restrictions, to finance specific needs, namely residential home purchase or medical care, thus in this case it turns out to be useful to overcome liquidity constraints or to avoid to draw from other private savings.

In this paper, we take the point of view of Italian employees in the private sector and study the expected distribution of the TFR over their working life career among the three components. In particular, we disentangle how much of the TFR is expected to be accumulated until retirement and thus available as private retirement wealth, from the amount that is expected to become available during the working life career upon job termination and/or is taken as advanced withdrawal. In order to evaluate the three components we use data from the Work Histories Italian Panel (WHIP) drawn from matched employers-employees administrative archives which provide detailed information on individual job spells, earnings and the accumulated TFR. However, since these data do not convey information about wealth, consumption or savings we are unable to observe whether the TFR withdrawn before retirement is used as precautionary wealth or to increase private savings. Nevertheless, combining the information on working life careers and on the evolution of the TFR, our analysis turns out to be valuable since we are able to evaluate the expected amount that at each age fails

[1] Borella et al. (2008) find that the TFR recipients upon voluntary job termination increase the amount spent on durables.

to continue to accumulate in the TFR account due to job discontinuity or advanced withdrawing behavior.

This is relevant in the light of the recent reforms which make the annual flows of the TFR the primary source for Italian employees' private pension wealth. According to the reforms, employees must decide whether to retain the TFR within the firm or to divert it to pension funds[2]. Despite that the primary scope of pension funds is to accumulate wealth for supplementary retirement provisions, participants may obtain advanced withdrawals upon job termination and/or for specific needs, just as in the case of the TFR within the firm. The reforms will succeed in achieving adequate supplementary treatments to the extent that workers opt for diverting the TFR to pension funds but also to the extent that they do not face discontinuous job careers and/or binding liquidity constraints. The higher the risk of entering unemployment then the higher the amount that is expected to be diverted from the pension fund and that is expected to fail to accrue for retirement purposes. Moreover, even in the case of continuous working life careers, the expected amount available at retirement decreases when there's higher chance of taking advanced withdrawals for specific liquidity needs.

Prior research has studied the behavior of participants in pension funds vis à vis lump sum distribution option when they face a job separation. US data evidence that the majority of workers cash out from pension funds upon job separations (Poterba et al. 1998; Burman et al. 1999). Importantly, cashing out patterns tend to display a high degree of heterogeneity being inversely related to age, earnings and entitlements size (Yakoboski, 1997 and Engelhardt, 2002). This evidence raises the concern about the adequacy of retirement benefits, especially for low income earners and those who have accumulated lower amount of financial wealth. Indeed, Hurd and Panis (2006) find that among plans that allow for a lump sum distribution upon job separation, 20% is on average cashed out and that cashing out is more frequent among low income earners thus with higher probability of being poor also at old ages.

In particular, the empirical analysis carried out here takes the point of view of Italian employees who opt for maintaining the TFR within firms[3] and evaluate the portion that is expected to be accumulated until retirement (Retirement-TFR from now on) as well as the expected leakage that potentially undermines the accumulation of the TFR because of the threat of job separation (Buffer-TFR from now on) or due to advanced withdrawals to finance specific needs (Liquidity-TFR from now on). The first two components, Retirement -TFR and Buffer-TFR are the two sides of the same coin, being related to the employment risk faced by individuals. Other things being equal, the expected Retirement- TFR depends on the chance

[2] More precisely, after the reform, for workers employed in large firms (more than 50 employees) the TFR is accumulated in a public fund managed by the Italian Bureau for Social Security (INPS) rather than by single firms. TFR that accumulates in this public fund follows the same rules as the TFR accumulated in single firms, thus, in this paper we will refer to it as "TFR within firms".

[3] Alternatively, our analysis could equally rationalize the evolution of the TFR for workers who had chosen to divert the TFR into a pension fund whose resources are managed with the aim of replicating the rewarding of the TFR within firms (1.5% plus 0.75 of the annual inflation rate).

of being employed and of remaining employed, while the expected Buffer-TFR is related to the chance of loosing the job. The amount of the expected Liquidity-TFR is directly linked to the advanced withdrawing propensity of workers. To derive the expected composition of the TFR we rely on a probabilisitc model that tracks the TFR available to Italian employees at each age of their working life careers conditional on being employed[4].

We evidence that on average the largest amount of the accumulated TFR is expected to be available at retirement. However, the expected Buffer-TFR can overcome Retirement-TFR if the probability of separation is high and the chance of re-employment is low, namely for females, blue collars, workers in southern regions and in the construction industry. For example, for females woking in small firms it may account on average for 50% of the total potential TFR. Moreover, our empirical analysis on the expected Liquidity-TFR points out that only a minority of workers cashes out their TFR during the working life.

The paper is organized as follows. Section 2. introduces the probabilistic sequential model for the accumulation of the TFR. The dataset used for the empirical analysis is described in section 3. The econometric approach and results are reported in Section 4 and Section 5 while in section 6 we derive the expected TFR distribution between the Retirement -TFR, the Buffer-TFR and the Liquidity-TFR as defined above. Section 7 concludes.

2 The model for the accumulation of the TFR

In this section we model the evolution of the TFR and its three components over the employees' working life careers.

At year t, the TFR that is potentially available to the representative worker of working group g (with $g = 1, ..., G$)[5] is:

$$TFR_t = p^e_{t-1} TFR_{t-1}(1.015 + 0.7\tau_t) + p^u_{t-1}\pi^{ue}_t \frac{y_t}{13.5} \tag{1}$$

where, TFR_{t-1} is the stock accrued until the end of year $t-1$, τ_t is the annual inflation rate and y_t the expected annual labor income, p^e_{t-1} and p^u_{t-1} are the probability of being employed and unemployed in $t-1$ respectively[6] while π^{ue}_t is the probability to become employed in t if unemployed in $t-1$.

[4] Alternatively, we could evaluate the unconditional expected composition of the TFR at each point of the life cycle, i.e. the amount that is expected to accumulate if employed and the amount that could be accumulated but fails to accrue because of the persistence in the unemployment status.

[5] The G working groups are defined on the basis of employees' demographic and occupational characteristics observed in the data described in next section. In particular, we consider gender, cohort, type of occupation, industry, firm size and geographic area.

[6] We focus on these two states only because, as specifyed in next section, the data used in this paper convey information on job spells but does not enable to distinguish voluntary from unvoluntary non employment spells.

Given TFR_t, the stock that is expected to accrue at the end of t is:

$$\mathrm{Re}\,tirement_t = p^e_{t-1}\pi^{ee}_t TFR_{t-1}(1.015 + 0.7\tau_t\ )(1-\lambda_t) + \pi^{ee}_t \frac{y_t}{13.5} + p^u_{t-1}\pi^{ue}_t \frac{y_t}{13.5} \qquad (2)$$

where π^{ee}_t is the probability of job continuation conditional of being employed in $t-1$ and λ_t is the probability of taking an advanced withdrawal in t.

The amount that is expected to be withdrawn for specific needs is:

$$Liquidity_t = p^e_{t-1}\pi^{ee}_t TFR_{t-1}(1.015 + 0.7\tau_t\ )\lambda_t \qquad (3)$$

and, given the probability of job termination in t ($\pi^{eu}_t = 1 - \pi^{ee}_t$), the amount that is expected to be paid upon the separation, if it occurs, is:

$$Buffer_t = p^e_{t-1} TFR_{t-1}(1.015 + 0.7\tau_t\ )\pi^{eu}_t \qquad (4)$$

In this paper, we evaluate $(1) - (3)$ and the relative role of the three components:

$$\mathrm{Re}\,tirement - TFR_t = \frac{\mathrm{Re}\,tirement_t}{TFR_t} \qquad (5)$$

$$Liquidity - TFR_t = \frac{Liquidity_t}{TFR_t} \qquad (6)$$

$$Buffer - TFR_t = \frac{Buffer_t}{TFR_t} \qquad (7)$$

To evaluate $(1) - (3)$ at each point of the working careers we take as given the expcted annual labor income y_t as well as the inflation rate τ_t , and detect the transition probability distributions π^{ee}_t, π^{ue}_t and p^e_{t-1}, p^u_{t-1}, and the the probability of taking advanced withdrawals λ_t. In particular, to obtain the transition distributions between the two relevant labor market states we develop a reduced-form analysis of the employment and nonemployment duration of Italian employees in the private sector controlling for both observed and unobserved heterogeneity. In section 4.we detail the empirical analysis and report the results.

The proportion that is expected to be taken in advance for specific needs is affected directly by λ_t and indirectly by the chance of not experiencing a job separation. In section 5 we present the empirical approach and results for the advanced withdrawing behavior (λ_t) observed in the data.

In section 6 we report the results on the expected distribution of the TFR implied by the derived probability distributions. In the following section we describe the data that we use to conduct the empirical analysis.

3 The Data

In this paper we use the Work Histories Italian Panel (WHIP) provided by Laboratorio Riccardo Revelli. WHIP is a database of individual work histories, based on INPS (the Italian National Social Security Institute) administrative archives. The panel consists of a random sample (1 : 180) drawn from the full archive of a dynamic population of about 370,000 permanently and temporary employed in the private sector or self-employed or retired over the period 1985 − 2004. The dataset allows observing the main episodes of each individual's working career. The main drawbacks of the data is that they do not convey information on household composition, education, and other relevant demographic variables.

For this paper purposes, we consider blue and white collar employees working full time[7] in the private sector, aged between 20 and 60 years old. Our sample covers about 62,000workers, 72% are men and 28% are women, the median age of men is 36, while the median age for women is 33. We observe multiple job spells over the period 1985 − 2002[8]. We exclude from the analysis job spells left truncated at January 1985 since for them we cannot distinguish true new hiring, thus we end up with a total of about 145,000 single job spells[9] .

Table 1 reports the distribution of observed jobs by occupation. Males' job spells, which represent the 65% of the total number of job spells, are more densely concentrated in blue collar occupations than females' job spells (88% against 67%). Manufacturing is the largest industry for both males (38%) and females (37%), the second one for males is construction (27%) which instead accounts only for 1% of total females' jobs. The remaining industries, here called Services[10], cover 60% and 36% of females' and males' jobs respectively. Small and medium size firms (less then 20 employees) provide the majority of jobs (about 56%) for both males and females, while about 7% of job spells are provided by firms with more than 1,000 employees. The majority of jobs, 52% of the total, are located in northern regions, 17% in the central regions and 30% in south, however, the gender gap is higher in southern regions where males hold the 64% of observed jobs.

In Figure 1 we report, in left and right panel respectively, the (mean) annual earnings profiles by type of occupation for female and male workers. The earnings profile for blue and white collars exhibits upward slope over the life cycle with a reverse "U" shape reaching the maximum at the age of 50th. Annual labor income for white collars is steadily increasing till age of 40th while it is quite flat for blue collars: the average annual growth rate is about 5% and 3% for male and female white collars respectively, while for blue collars, both male and female, it is 1%. The gender gap in annual earnings, measured as the he ratio of female earnings to male earnings is increasing over the life cycle reflecting differences in education, experience, labor supply

[7] Part time workers correspond to the 8.9 percent of the sampled population.

[8] We use the restricted sample since complete information job spells for years 2003 and 2004 are not yet available.

[9] Left truncated job spells account for 16% of the total job spells.

[10] For this paper purposes, industries included in the macrosector Services are: Utilities, Trade, Transports and others.

and possibly discrimination.

In Figure 2 we report the (mean) stock of the accumulated TFR by type of occupation for males and females, respectively. The inverse "U" shaping of the TFR reflects the labor income dynamics over the working life careers. Differences in levels and growth rates of annual labor income translates in different TFR-age profiles, thus, the TFR accrued for white collars is sensibly higher than for blue collars, while the stock accumulated for females is lower with respect to males.

In addition to earnings, also job stability affects the amount of the accumulated TFR. As detailed in the previous section, to evaluate the expected distribution of the TFR we rely on the analysis of the discontinuity of job careers. Since the data used in this paper originate from administrative archives we are unable to distinguish voluntary from involuntary job interruption spells. Consequently, we cannot distinguish, among the observed non-employment episodes, true unemployment spells from the out of the labor force spells. In this paper, we treat equally all the observed job interruptions and evaluate the chance of not being employed over the life cycle and its implications for the expected TFR accumulation process. Given this clarification, hereafter, we use indifferently the term unemployment and non-employment state. In Table 2 we report the average duration of employment and unemployment spells[11] by age classes[12]. The mean duration of job spells is hump shaped with respect to age at entry, while the unemployment duration appears to be convex in initial age. In particular, employment tends on average to last longer than unemployment at middle ages suggesting a higher probability of being employed during this phase of the working life with respect to younger and older ages. If this is the case, given the observed hump shaping in labor income profile, then we should observe at middle ages the highest values of the expected Retirement −TFR, i.e. the TFR that is expected to continue to accrue until retirement.

The stock of TFR is affected also by the advanced withdrawing propensity. According to the Italian law, employees with more than 8 years of service are entitled to early withdrawals from the accrued stock during the same job to buy a primary residence for themselves or their sons or to cover exceptional medical expenses. The amount withdrawn should not be higher than 70% of the account and at firmwide level, only 10% of employees with at least 8 year seniority and up to 4% of total employees are allowed (each year) to take advanced withdrawals[13]. However, these restrictions may be overcome upon the employer approval. Indeed in our data we do find evidence that workers with less than 8 years of seniority or employed in small size firms (less than 25 employees) take withdrawals, and that the amount may be higher than the 70% of the

[11] The unemployment spells are defined as starting at the end of a recorded job spells and ending at the re-employment in the private sector (observed in the panel), provided the workers does not retire in the period 1985-2002; if re-employment does not happen before the end of 2002 or the worker does note retire I treat the unemployment spell as censored.

[12] Age is measured at the beginning of the spells.

[13] According to these limits at firmwide level firms with less than 25 employees may not allow them to take advanced withdrawals from the stock of TFR.

existing stock. Thus our analysis of the advanced withdrawing behavior is extended to include all observed withdrawals which satisfy the conditions detailed below.

In particular, to study the advanced withdrawing behavior we do create a binary variable WITH indicating whether the worker takes advanced withdrawal from the existing stock of TFR. WITH takes value 1 if there's a negative change in TFR and 0 if not. More precisely, WITH is equal to 1 if a negative change in TFR occurs before the last year of service in case of jobs that last at least 4 years and if it amounts at least to 400 euro and if it is at least 20% of the stock accrued[14]. The sample composition of the spells that last at least 4 years is reported in the last column of Table 1. In this subsample, males are slightly more represented (67%), suggesting that on average males achieve longer tenures than females[15]. The manufacturing sector provides a higher number (58%) of more tenured jobs rather than construction (9%) and the services (33%) sectors. Relatively longer contracts are more frequent in the North -West (36%). Small firms (with less than 20 employees) are under represented in the sample of more tenured job relations, while largest firms (more than 200 employees) are more represented in it.

Table 3 reports the descriptive statistics on advanced withdrawals observed on the subsample of job relationship that last at least 4. The total numbers of observed advanced withdrawals is modest, only the 4.8% of individuals-years pairs is affected by withdrawals which correspond to the 8.4% of the total number of observed job relationships lasting more than 4 years. Table 3 in first column reports the distribution of advanced withdrawals across individual and occupational characteristics over individual-year observations. The propensity to withdraw measured with respect the individual-year pairs is quite homogeneous across occupational characteristics, while it shows some peculiar differences when measured with respect the number of job relations as reported in the second column of Table 2. According to our data (see Table 3, second column) advanced withdrawals are more frequent in medium and large firms (13% in firms with more than 1000 employees, around to 9.4% in firms with $20-199$ employees, 8.4% in firms with $10-19$ employees and 6.3% in firms with less than 10 employees). The highest percentage of jobs affected by withdrawals is observed in the north-western regions (9%), while the lowest is found in southern regions (8.6%). In the manufacturing sector, the 9.7% of jobs are interested by a withdrawal while the corresponding value for construction sector is 5.7%. White collars show a higher propensity (9.3%) to withdraw then blue collars (8%) while females tend to withdraw less frequently than males (7.3% against 8.7%).

Figure 3 reports the age distribution of the propensity to withdrawal for female and male workers, by cohort and occupation. Females show on average less propensity to withdraw than males at all ages. The

[14] The choice of these arbitrary threshold is due to limit the role of the measurement error of the event of interest (Garibaldi and Pacelli, 2008).

[15] Table 1 shows that the median duration of males' employment spells is one years, sligthly less that for females (1.16 years). However, when employment spells which last more than (or equal to) 4 years are considered, the median duration for males is slightly higher (7 years vs 6.8 years).

propensity to withdraw is hump shaped with respect to age, workers aged between 30 and 40 years old are more likely to take the anticipation option than the youngest ($20-30$ years old) and the elderly ($40-50$ and more than 50). The average proportion of withdrawals is 4.8%, starting from the minimum 3%, at age 24, it increases with age and reaches a peak of about 6% around 35 years old and stabilize at a level of about 3.5% at older ages. This evidence seems to confirm that the anticipated withdrawals, being more frequent at younger and middle ages, are more likely to serve for home purchasing rather than for medical care.

4 Empirical analysis of working life careers

In this section we carry out the analysis on working life careers to derive the empirical counterparts of the process that drives the evolution of the TFR. We rely on non parametric and parametric duration analysis of employemnt and unemployment spells to determine the transition distributions among labor market states.

4.1 Non parametric analysis

In Figure 4, we plot the Kaplan-Meier (K-M) empirical hazard rates from the employment and unemployment status respectively against the length of employment/unemployment spells. In the left chart of Figure 4 we plot the hazard function for employment spells. The decreasing shape of the hazard rate is evidence of negative duration dependence for job spells. Thus, the probability of a job separation is an inverse function of the job tenure indicating that job relationships are much more unstable at their start, while they become more stable as the tenure gets longer.

The right chart of Figure 4 plots the K-M hazard function for unemployment spells. The downward-slope of the hazard is evidence of negative duration dependence indicating that the long-term unemployed have less chance of finding a new job than the short-term unemployed. Negative duration dependence is well documented in literature (see e.g. Heckman and Borjas, 1980; Flinn and Heckman, 1982; and Lynch, 1989). It may be due to the fact that long unemployment durations discourage workers to search a new job (Schweitzer and Smith, 1974). Moreover, it may be due to deterioration of skills (see e.g. Pissarides, 1992), or it may be signal of unobserved lower productivity (Vishwanath, 1989), or it may be the result of strong competion for jobs among workers. Moreover, duration dependence in unemployment may arise in a framework were job opportunities are spread through an explicitly network of social contacts (Calvó-Armengol and Jackson, 2004).

In the next subsection we proceed to analyze parametrically the nature of the relationship among the individual and occupational characteristics and the hazards allowing for unobserved heterogeneity.

4.2 Parametric analysis

4.2.1 Econometric specification

We carry out the parametric analysis of employment and unemployment spells estimating two separate continuous time parametric Weibull models to assess the impact of causal variables on the extent of the duration dependence in employment and unemployment status[16]. We privilege continuous time to discrete time techniques as in the first case results are invariant to the time unit used to record the available data (Flinn and Heckman, 1982) and thus enabling to derive the life cycle profile of the probabilities conditional on whatever length of the employment/unemployment spells. Moreover, since the presence of unmeasured variables could give rise to spurious negative duration dependence (see Heckman, 1991), we take into account the impact of unobserved heterogeneity and we allow for a multiplicative shared frailty distributed as a gamma[17].

According to the adopted approach, the instantaneous hazard rates for unemployment (u) and employment (e) spells are modelled as following:

$$h^j(t) = h_0^j(t^j)\exp\left(\beta\prime X^A\right)\theta^j \qquad \text{with} \quad j = u, e \tag{8}$$

where, t_j is the elapsed duration in a given state, $h_0^j(t^j) = \left(t^j\right)^\alpha$is the baseline hazard that here takes the Weibull distribution, $\beta\prime X^A$ is a linear combination of observed demographic and occupational characteristics, θ^j is the multiplicative effect that captures unobserved heterogeneity.

Observed heterogeneity is controlled for by a set of covariates X^A that capture individual and job characteristics.

Previous studies evidence that transitions between labor market states are affected by time elapsed in the current state but also by time spent in the previous state. (see for example Heckman and Borjas, 1980; Heckman and Flinn, 1982), thus, we allow for both duration and lagged duration dependence as well as time dependence. Among covariates we include age, daily salary which capture the time dependence, as well as the length of the previous employment (non-employment) spell which captures the lagged duration dependence. In addition we consider explanatory variables that are fixed over the spell and over the life cycle and are measured at the beginning of the spell[18], they include: cohort, gender, type of occupation, industry, firm size

[16]We choose this model instead of the widely used semiparametric proportional Cox's model because the latter does not specify a parametric form for the hazard preventing to derive the transition probabilities of interest. In many cases, the two approaches (parametric vs semiparametric) produce similar results in term the effect of explanatory variables on the hazard rate (see e.g Petrongolo, 2001).

[17]The data that we use convey information on multiple spells per workers, thus allowing for shared frailty entails modelling heterogeneity among workers as a random effect.

[18]In the duration analysis of unemployment spells, the job related covariates are fixed at the value taken at the end of the previous employment spell.

and geographic area.

4.2.2 Results

Table 4 displays the estimated coefficients and the marginal effects for the employment duration model[19]. According to our results all kinds of the allowed dependence are significant. In particular, we find evidence of negative current duration dependence, i.e. the longer the time elapsed in a job spell the more likely the worker will remain employed. We find that there's significant lagged duration dependence, i.e. the longer the previous unemployment spell the higher the risk of exiting the current employment spell. These results support the evidence that unemployment episodes may have a scarring effect on future labor market histories both in terms of subsequent earnings (Arulampalam, 2001) and in terms of subsequent risk of job separation (Arulampalam et al., 2001 and Gregg, 2001). Moreover, according to the human capital theory explanation the unemployment spell induces a deterioration of individual skills but also lower opportunity to accumulate work experience: the longer an unemployment spell the higher the loss of productivity which induces a higher probability of subsequent job termination. Indeed, the probability of being employed depends on the level of wage at the beginning of the spell which seems to act as a proxy of the workers' level of productivity: the higher the wage at the beginning of the job spell the higher the worker's productivity which contributes to lower the probability of job termination.

Our results support the evidence of time dependence, too. In our specification, time dependence is introduced by controlling for the worker's age at the beginning of the job spells. We find that the older the worker at the beginning of the spell the lower the risk of exiting it and the longer the job tenure. This pattern reverses after reaching the middle age, as evidenced by the (significant) second order term of the polynomial in age.

The risk of job separation is less likely for men than for women. Women are thus more likely to encounter discontinuous careers. Job interruptions in the construction industry are more frequent than in the manufacturing and the services industries. North- Western and Central regions are those with longer job relations, while shorter tenures characterize jobs in the South and North-East. Not surprisingly, the probability of separation is monotonically decreasing with the dimension of the firm, shorter tenures are more frequent in small firms and become longer as the average dimension increases. In our data, young cohorts face higher job instability than older cohorts, which is not surprising since young cohorts are more affected by fixed-term contracts with respect to the older cohorts.

Table 5 shows the results for the unemployment duration model. Our estimates document negative

[19] Negative marginal effects (positive coefficients for the hazard rate) indicate that the covariates reduces the duration, while positive marginal effects (negative coefficients for the hazard rate) indicate that the covariates increases the duration.

current duration dependence for the unemployment status. In addition, we support the evidence for all kinds of duration dependence. In particular, Table 5 shows that the longer the past employment spell the higher the chance of exiting the current unemployment spell becoming employed. This evidence supports the view that the longer the employment spell the greater the productivity enhancement from the working experience which may result in a higher probability of terminating the subsequent unemployment spell. Indeed, the probability of remaining unemployed depends on the level of wage at the beginning of the spell. Here, we are analyzing the unemployment duration, thus the wage measured at the beginning of the spell is the last wage received in the previous employment spell. Our result indicates that the level of wage earned upon termination of the preceding job experience taken as a proxy of the level of the workers' productivity may act as a signal affecting the chance of new job finding.

Time dependence is significant also in determining the nature of the unemployment persistence: the higher the age at entry the higher the chance of terminating the current unemployment spell, although this pattern reverses at old ages as indicated by the second order term of the polynomial in age.

The chance of exiting the unemployment status is lower for females who are more likely to be involved in non market activities than males (see e.g. Lynch, 1989).

In our specification, we evaluate the influence of last job occupation characteristics on the current unemployment duration. Workers who face job interruptions from medium and large size firms have a lower chance of getting a new job. For workers in the Northern regions, especially Eastern ones, the hazard rate of finding a job is higher than in the rest of Italy. These findings, together with the evidence on the duration of job spells support the importance of local conditions in determining the dualistic nature of the Italian formal labor market.

Finally, younger cohorts are more likely to exit from the unemployment spells with respect to older cohorts. This evidence, coupled with the significant higher instability of job relations for younger cohorts is coherent with the more widespread use of flexible contracts for young workers since middle '90s, as documented in Fugazza (2011), among others.

Importantly, in case of both employment and unemployment durations, our results are robust to the unobserved heterogeneity.

According to our results, both duration and lagged duration dependence turn out to affect significantly the transition process between the two states. Thus we have to rely on simulation techniques to derive the probability distributions of interest, namely, the transition probabilities from employment to unemployment and vicevesa (π_t^{ee}, π_t^{eu} and π_t^{ue}) as well as the unconditional probability distribution of being unemployed (p_t^u) over the life cycle. In particular, we simulate the entire working careers for the representative workers of all G working groups.who are assumed enter the labor market at the age of 20 and to retire at the age 60. For each representative worker g we simulate, according to the estimated Weibull models, a large number of possible survival times in the initial state, i.e. employment or unemployment. Using the same methodology we simulate the ongoing spells until the age of 60[20]. In Figure 5, we report the life cycle profiles for the transition distributions π_t^{ee} and π_t^{eu} implied by the simulated working life careers. Both are hump shaped with respect to age implying an hump shaped probability of being employed and thus a "U" shaped unemployement probability profile over the life cycle.

5 Empirical analysis of advanced withdrawals

5.1 Econometric specification

In this section we carry out the analysis on the advanced withdrawing behavior. The decision of taking an advanced withdrawal is modelled through a latent variable Y^*

$$Y_{it}^* = \nu_i + \gamma' X_{it}^B + u_{it} \tag{9}$$

and

$$WITH = 1 \text{ if } Y^* > 0 \tag{10}$$

$$WITH = 0 \text{ otherwise} \tag{11}$$

X_{it}^B is the vector of observed demographic and occupational characteristics for the individual i time t, ν_i is the individual random effect[21] and $WITH$ is the indicator variable introduced in section 3 denoting whether the worker i at time t takes an advanced withdrawal from the existing stock of TFR . In this work, we favour random against fixed effects since a large number of workers do not display time variation in the withdrawing behavior[22]. Among explanatory variables introduced and discussed in section 3 we include a third order polynomial in age, gender, industry, geographic area, firm size, type of occupation, the birth year cohort, the logarithm of annual earnings received in year t and the logarithm of the accumulated stock of TFR at the end of previous year $(t-1)$.

[20] In the Appendix we outline the simulation technique followed to derive the probability distributions of interest.

[21] We assume that individual specific effects are unrelated to observable characteristics restricting the distribution of heterogeneity.

[22] In section 3, we show that the 95% of individual-year pairs is not affected by advanced withdrawals.

5.2 Results

In Table 6 we report the results for the coefficient estimates and their standard errors [23]. The cubic polynomial function captures well the hump-shaped age profile of withdrawals at young ages, when probably the TFR is used to finance the home purchase and when people are more likely to face liquidity constraints. The probability of taking a withdrawal is in fact increasing with age till $35-40$ years old and then sligthly decreases (see Figure 7). These results can be reconciled with the empirical evidence on liquidity constraints. In Jappelli (1990), Cannari and Ferri (1997) and Fabbri and Padula (2001) is shown that the age has a negative effect on the probability of being liquidity constrained. Magri (2002) found that age has a positive effect on the demand of debt and that the probability of being subscriber of a mortgage increases until middle ages. Since the Liquidity-TFR plays the strongest role when individuals are young and are more likely to face binding liquidity constraints, we conjecture that it is used more likely for home purchasing than for medical care expenses.

Women are less likely to take withdrawals than men and on average blue collars are more likely to withdraw than white collars. Workers in Southern of Italy are more likely to take advanced withdrawals. The sector of activity is significantly relevant in order to disentangle which group of workers is more likely to take a withdraw from their TFR while our analysis does not evidence a clear cut relation between firm size and the chance of taking withdrawal. The data show that, with respect to workers employed in the construction industry, those who work in manufacturing and in services are less likely to take a withdrawal. Younger cohorts show a higher probability of taking advanced withdrawals. Finally, the probability is higher the lower the level of annual labor income and the higher the accumulated stock of TFR supporting the view that anticipated withdrawals from the TFR are taken to overcome liquidity constraints when also credit rationing is at playing. Taking the type of occupation as a proxy of the level of education attained we can reconcile our results with the empirical evidence on the impact of personal characteristics on both the debt market participation and on the probability of being liquidity constrained. Magri (2002) finds that less educated people and in general low income earners are more likely to face credit constraints in terms of loan size. Thus, these results seem to confirm that advanced withdrawals are taken more frequently in case of liquidity constraints combined with the higher chance of being credit rationed.

[23] The performed Wald test indicates that the coefficients are jointly significant at 10% level. The log-likelihood ratio test confirms that the panel-level variance component is important. supporting the preference for the panel over the pooled estimation.The estimator used relies on Gauss-Hermite quadtrature to evaluate the log likelihood and derivatives. Results are stable under alternative quadrature approximations.

6 Expected evolution of the TFR

In this section we report results for the expected distribution of the TFR over the life cycle ((5)-(7)). For each working group g,we evaluate the potential amount TFR_t available at each age conditional on being employed (1) as well as the three components (2)-(4) using the probability distributions obtained in section 4 (π_t^{ee}, π_t^{eu}, π_t^{ue} and p_t^u) as well as (λ_t) the advanced withdrawal behavior predicted according to the model estimated in section 5[24].

In Tables 7 and 8, we report for male and female workers the expected distribution of the TFR among the tree components $(5)-(7)$.The results are reported by working groups defined according demographic and occupational characteristics: gender, type of occupation, geographic area, industry and firm size, age and birth year cohort. In Tables 7 and 8, we focus on the expected composition of the TFR evaluated for workers belonging to three birth year cohorts (1950 -59, 1960-69, 1970-79), at the age of 25, 40 and 60 years old and working in small and large firm size (with less than 10 and more than 1000 employees, respectively).

According to our results the portion of the TFR that is expected to be accumulated until retirement represents the main component being on average about 67% against an amount of 31% that is expected to be paid upon job separation, while the remaining 2% is on average withdrawn in advance to finance specific needs. In particular, the amount that is expected to be accumulated as Retirement-TFR is positively correlated with the employment probability which is hump shaped over the life cycle with substantial heterogeneity across working groups. Males workers and white collars display the highest amount of TFR that is expected to be accumulated until retirement. As shown in Tables 7 and 8, at the age of 60, the average expected Retirement-TFR accumulated by male workers is about 71% of the total while the corresponding value for females is about 64%. The gender gap is higher for blue than white collars. For blue collars, who experience higher job instability over the life cycle, the average amount that is expected to be available as Retirement-TFR is about the 65% for males and 57% for females. The average expected Retirement-TFR for males white collars is about 77% while for females is 70%. Differences among females and males are stronger in southern regions. Workers in the North of Italy display more stable working life careers which implies an expected Retirement –TFR higher of about 8% than workers in south, a gap that is less strong for male workers (7%) than for females (9%).

Differences in job mobility imply also a great dispersion of the expected Buffer-TFR across workers. The amount potentially available as a buffer displays a "U" shaped profiles over the life cycle reflecting the dynamics of the individual probability of job separation with respect to age. At middle ages (40 years old), the difference in the amount expected to be available for blue and white collars is about 13% while the gap

[24] The annual labor income y_t is proxied by the average value observed by age, gender and type of occupation. The annual inflation τ_t is set to the value of 2%.

between females and males is about 8%, on average. For workers in southern region the potential buffer component is on average 10% higher than for workers in the North West. The different degree of job stability at industry level leads to an expected Buffer-TFR for workers in the construction industry on average 12% higher than in the manufactory industry. The average gap in the expected buffer component explained by the firm size is modest. The amount in small firms is on abverage 8% higher than in large firms. This evidence contrasts sharply with Fugazza and Teppa (2005) who perform a similar empirical analysis and find that the variation of the expected Buffer-TFR is almost explained by the average dimension of the firm. However, Fugazza and Teppa (2005) evaluate the proportion of the TFR that is expected to paid during the working life considering job separations only, which are higher for small firms. In this paper, instead, we look at the entire working life, and thus we thus we take into account the probability of job separation conditional on being employed and the chance re-employment at each stage of the life cycle. Thus, the observed relatively modest gap between small and large firms is due to the composition effect between the probability of job separation - higher for workers in small firms, and the probability of re-employment - lower if workers are dismissed by large firms. These results suggest that there is a potential relevant role for the Buffer-TFR, which is stronger for the young, the women and the blue collars who work in small firms operating in the less developed geographic areas. In the present work we estimated the importance of the TFR as a potential buffer for precautionary motives on the basis of administrative data which do not allow to evaluate the actual role played bythe TFR withdrawn.

As reported in Tables 7 and 8, the Liquidity-TFR accounts for a small proportion of the accumulated TFR for all representative workers. The proportion of the accumulated TFR that is expected to be withdrawn in advance is humped shaped over the life cycle when both the accumulated TFR and the probability of being employed are higher relatively to young and old ages. The highest values are found at middle ages for all working groups. Men and white collars exhibit the highest expected amount of withdrawing, on average 1% higher than women and blue collars[25]. Since our analysis is based on administrative data we are not able to distinguish between advanced withdrawals for home purchasing or for health reasons. However, we observe that, ceteris paribus, the Liquidity-TFR plays the strongest role when workers are relatively younger and/ or likely face binding liquidity constraints we conclude that the amount withdrawn in advance is probably mostly used to buy a house.

[25] According to results in section 5, white collars have a lower propensity to take advanced withdrawals. However, here we evaluate the expected proportion of the amount taken in advance, which is affected also by the probability of being employed.

7 Conclusions

In this paper we find that on average the main potential role of the TFR is to finance consumption upon the termination of working life careers, defined here Retirement-TFR. This evidence points to the role of this form of wealth in financing retirement accounts which is at the basis of recent reforms that encourage the diversion of the TFR to pension funds.

In particular, the Retirement-TFR is positively correlated with the probability of experiencing continuous job careers and is negatively related to the propensity of taking advanced withdrawals during the same job. The individual employment probability profiles is derived taking into account both the probability of job separation and the chance of re-employment over the life cycle evidencing substantial heterogeneity across workers according to demographic characteristics and belonging to different industries, regions and occupations. In particular, some working groups face relative high job instability due to high probability of job separation and lower chance of re-employment, namely females, blue collars, workers in the construction industry and in southern regions. Our results show that for these working groups the TFR that it is expected to be accumulated until retirement may be relatively modest threatening its role as retirement wealth. The main limit of our analysis is that we do not have information on consumption and saving decisions nor on how the TFR obtained at job separation is spent, which prevents us to measure how much of it is used as precautionary savings or to increase other forms of private savings. However, our results are obtained taking into account the risk of job separation as well as the probability of re-employment, thus, if we do not provide a precise measure of the role of TFR, at least we are able to indicate the expected amount that fails to accumulate until retirement.

The empirical analysis on the determinants of withdrawals points out that only a minority of workers cashes out their TFR during the working life. Our results seem to be consistent with those on the demand of mortgages and on home ownership. Indeed, since withdrawals from TFR are more frequent at young ages we conclude that it is likely used by individuals to face home purchasing rather than for health.

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8 Appendix

8.1 Simulating the working careers

In this Appendix, we outline the simulation methodology used to obtain the profiles of the expected life cycle working careers from the estimated transition intensities from employment to unemployment and vicevesa.

According to results reported in section 4, the transition process between the two states of interest (employment and non-employment) is as a non-homogeneous semi Markov chain. Both duration and lagged duration dependence turn out to affect significantly the transition process between the two states. Thus, to derive the transition probability distributions at each point of the working life we have to rely on MonteCarlo simulation techniques.

In particular, for each representative worker g, we simulate the entire working careers. We assume that working life careers stat at the age of 20 and lasts at the age of 60 years old. At the age of 20, the representative worker may be either employed or unemployed, being the initial probability distribution of the two states is taken from the empirical fraction of employed to non employed at that age. We simulate the survival time T in the initial state employment (unemployment). In particular, we simulate a large number N ($N = 5000$) of lengths for the first employment (unemployment) spell by drawing from the Weibull distribution with shape and scale parameters that depends on the value of the covariates as well as the estimated coefficients (see Table 3 and 4). As the aim is to generate the working histories for the average representative worker of each group g, the parameter governing the individual heterogeneity θ is set to 1. The survival time T is thus function of the individual and job characteristics that remain fixed over the life cycle but also on characteristics that vary over the life cycle: the age and the daily salary at the beginning of the spell and the duration of the previous simulated unemployment (employment) spell[26] Using the same methodology we simulate the ongoing spells. Thus, for each representative worker, we end up with N simulated working histories, i.e. sequences of employment and unemployment spells. From each sequence, we can determine the employment status at each age and by averaging across sequences we can obtain the both the conditional and the unconditional probability of being employed /unemployed at each point of the life cycle.

[26] In simulations, the daily salary at the beginning of the spell is proxied by the average daily salary observed by age, gender and type of occupation.

Tables

Table 1 Summary statistics on the sample composition

Individual and occupational characteristcs		Employement spells		Unemployment Spells[1]	Employment spells length≥4 years
Female		0.35		0.35	0.33
Male		0.65		0.65	0.67
	Females	Males	All		
Manufacturing	0.38	0.37	0.37	0.42	0.58
Construction	0.01	0.27	0.18	0.18	0.09
Services	0.60	0.36	0.45	0.40	0.33
North West	0.30	0.27	0.28	0.28	0.36
North East	0.32	0.22	0.26	0.23	0.24
Center	0.19	0.16	0.17	0.18	0.19
South	0.19	0.35	0.29	0.31	0.22
Firm size					
1 - 9	0.41	0.40	0.40	0.40	0.28
10 - 19	0.15	0.16	0.16	0.16	0.15
20 - 199	0.27	0.30	0.29	0.29	0.33
200 -999	0.09	0.08	0.08	0.08	0.12
> 1000	0.07	0.06	0.07	0.07	0.13
Blue collar	0.67	0.88	0.80	0.81	0.74
White collar	0.33	0.12	0.20	0.19	0.26
Cohort 1940 - 49	0.12	0.12	0.12	0.16	0.28
Cohort 1950 - 59	0.19	0.20	0.20	0.21	0.24
Cohort 1960 - 69	0.39	0.39	0.39	0.37	0.33
Cohort 1970 - 79	0.30	0.29	0.29	0.27	0.16
Median					
Age at entry	26	28	27	29	28
Daily salary	56.49	66.00	63.09	60.39	64.76
Annual earnings	15,615.08	17,850.98	17149.16		19,772.4
TFR	2,985.00	3,110.93	3,073.95		5,282.615
Duration (in years)	1.16	1.00	1.08	0.69	6.92
Num. spells	50,992	94,905	145,897	100,246	45,571
Num subjects	17,445	44,737	62,182	62,182	28,459

Source: WHIP, Work Histories Italian Panel, years 1985-2002.
Note: In case of unemployment spells, occupational characteristics refer to the last job spells preceding the current unemployment spell.

Table 2

Average duration (in years)		
Age class	Employment	Unemployment
20 - 25	2.99	3.2
25-30	2.72	2.9
30-40	2.72	2.7
40-55	2.5	1.8
> 55	1.4	2.75

Source: WHIP, Work Histories Italian Panel, years 1985-2002

Table 3

Advanced Withdrawalas		
Individual and occupational characteristics	Percentage of observations	Percentage of employment spells
Female	0.05	0.08
Male	0.05	0.09
Industry		
Manufacturing	0.05	0.097
Construction	0.06	0.057
Services	0.05	0.078
Geographic Area		
North West	0.05	0.09
North East	0.05	0.086
Center	0.05	0.086
South	0.06	0.069
Firm size		
1 – 9	0.05	0.063
10 – 19	0.05	0.084
20 – 199	0.05	0.094
200 -999	0.04	0.096
> 1000	0.05	0.131
Type of occupation		
Blue collar	0.05	0.08
White collar	0.05	0.093
Num. Observations	367,797	45,571

Source: WHIP, Work Histories Italian Panel, years 1985-2002

Table 4
Employment Duration Maximum Likelihood Estimates of the Weibull model with unobserved heterogeneity

Variable	**Coefficients**	**Marginal Effects**
Age	-0.068***	0.091***
	[0.004]	[0.005]
Age^2/10	0.009***	-0.012***
	[0.001]	[0.001]
Gender (ref. Male)		
Female	0.197***	-0.256***
	[0.013]	[0.016]
Industry (ref. Services)		
Manufacturing	-0.457***	0.659***
	[0.011]	[0.018]
Construction	0.119***	-0.152***
	[0.015]	[0.018]
Firm size (ref. 1- 9)		
10-19	-0.125***	0.175***
	[0.012]	[0.017]
20 - 199	-0.247***	0.352***
	[0.011]	[0.016]
200 - 999	-0.475***	0.803***
	[0.017]	[0.036]
> 1000	-0.427***	0.71***
	[0.02]	[0.041]
Geographic area (ref. South)		
North West	-0.437***	0.659***
	[0.015]	[0.025]
North East	-0.201***	0.285***
	[0.015]	[0.023]
Center	-0.306***	0.46***
	[0.016]	[0.027]
Type of occupation (ref. Blue collar)		
White Collar	-0.817***	1.492***
	[0.014]	[0.036]
Length previous unemployment spell	0.155***	-0.208***
	[0.003]	[0.004]
Log daily salary at the beginning of the spell	0.101***	-0.135***
	[0.012]	[0.016]
Cohort (ref. 1979- 79)		
Cohort 1940-49	-0.010	0.015
	[0.028]	[0.038]
Cohort 1950 -59	-0.144***	0.202***
	[0.021]	[0.031]
Cohort 1960-69	-0.185***	0.255***
	[0.015]	[0.021]
Constant	1.129***	
	[0.081]	
α	0.895***	
	[0.003]	
θ	1.036***	
	[0.01]	
Log-likelihood	-58380.53	
N. observations	145,897	

Note: *** p<0.01, ** p<0.05, * p<0.1 ; standard errors are in brackets.
Source: WHIP, Work Histories Italian Panel, years 1985-2002

Table 5

Unemployment Duration Maximum Likelihood Estimates of the Weibull model with unobserved heterogeneity

Variable	**Coefficients**	**Marginal Effects**
Age	0.068***	-0.033 ***
	[0.004]	[0.002]
$Age^{2}/10$	-0.007***	0.004***
	[0.000]	[0.000]
Gender (ref. Male)		
Female	-0.914***	0.558***
	[0.015]	[0.011]
Industry (ref. Services)		
Manufacturing	-0.021*	0.002
	[0.011]	[0.005]
Construction	-0.191***	0.087***
	[0.015]	[0.008]
Firm size (ref. 1- 9)		
10-19	0.105***	-0.057***
	[0.011]	[0.005]
20 - 199	0.042***	-0.032***
	[0.01]	[0.005]
200 - 999	-0.080***	0.019**
	[0.017]	[0.008]
> 1000	-0.147***	0.055***
	[0.02]	[0.01]
Geographic area (ref. South)		
North West	0.932***	-0.363***
	[0.015]	[0.006]
North East	1.021***	-0.377***
	[0.016]	[0.006]
Center	0.500***	-0.201***
	[0.017]	[0.006]
Type of occupation (ref. White collar)		
Blue Collar	-0.415***	0.16***
	[0.014]	[0.005]
Length previous employment spell	0.035***	-0.197***
	[0.003]	[0.002]
Log daily salary at the beginning of the spell	0.016***	-0.016***
	[0.005]	[0.002]
Cohort (ref. 1979- 79)		
Cohort 1940-49	-0.331***	0.113***
	[0.029]	[0.014]
Cohort 1950 -59	-0.581***	0.03**
	[0.023]	[0.013
Cohort 1960-69	-0.439***	-0.165***
	[0.017]	[0.012]
Constant	-0.583***	
	[0.065]	
α	0.850***	
	[0.002]	
θ	2.292***	
	[0.014]	
Log-likelihood	-128188.96	
N. observations	100,246	

Note: *** p<0.01, ** p<0.05, * p<0.1 ; standard errors are in brackets.

Source: WHIP, Work Histories Italian Panel, years 1985-2002

Table 6 Advanced withdrawing behaviour –Estimates of the multi-period logit model with random effetcts

Variable	Coefficients	Marginal Effects
Age	0.238***	0.007***
	[0.047]	[0.001]
$Age^{2}/10$	-0.050***	-0.002***
	[0.012]	[0.000]
$Age^{3}/100$	0.003***	0.000***
	[0.001]	[0.000]
Gender (ref. Male)		
Female	-0.173***	-0.005***
	[0.022]	[0.001]
Type of occupation (ref. Blue Collar)		
White Collar	-0.240***	-0.007***
	[0.023]	[0.001]
Geographic area (ref. Center)		
North West	-0.139***	-0.004***
	[0.026]	[0.001]
North East	-0.124***	-0.004***
	[0.028]	[0.001]
South	0.261***	0.009***
	[0.031]	[0.001]
Firm size (ref. >1,000)		
1 - 9	0.252***	0.008***
	[0.033]	[0.001]
10-19	0.330***	0.011***
	[0.035]	[0.001]
20 – 199	0.288***	0.009***
	[0.03]	[0.001]
200 – 999	-0.032	-0.001
	[0.034]	[0.001]
Industry (ref. Services)		
Manufacturing	-0.145***	-0.005***
	[0.022]	[0.001]
Construction	0.283***	0.010***
	[0.035]	[0.001]
Log earnings $_{t-1}$	-0.406***	-0.013***
	[0.029]	[0.001]
Log TFR $_{t-1}$	0.712***	0.022***
	[0.018]	[0.001]
Tenure (Log years)	0.029	0.009
	[0.029]	[0.001]
Cohort (ref. 1940-49)		
Cohort 1950 -59	0.143***	0.005***
	[0.040]	[0.001]
Cohort 1960-69	0.294***	0.009***
	[0.052]	[0.002]
Cohort 1970 -79	0.406***	0.014***
	[0.060]	[0.002]
Constant	-11.348***	
	[0.580]	
σ_v	0.819	
	[0.042]	
ρ	0.169	
	[0.015]	
Log-Likelihood	-66192.225	
N. observations	367,797	

Note: *** p<0.01, ** p<0.05, * p<0.1. Source: WHIP, Work Histories Italian Panel, years 1985-2002

Table 7 Expected Distribution of TFR – Male workers

A) Cohort 1950-59

		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
Manufacturing																	
Retirement -TFR	25	0.66	0.72	0.69	0.71	0.77	0.83	0.80	0.81	0.77	0.82	0.80	0.81	0.86	0.90	0.88	0.89
	40	0.66	0.72	0.69	0.70	0.77	0.83	0.80	0.81	0.78	0.83	0.81	0.81	0.87	0.90	0.89	0.89
	50	0.63	0.71	0.68	0.69	0.77	0.83	0.80	0.81	0.77	0.83	0.81	0.81	0.87	0.91	0.89	0.89
Buffer-TFR	25	0.33	0.26	0.30	0.28	0.21	0.16	0.19	0.17	0.22	0.16	0.18	0.17	0.12	0.09	0.10	0.10
	40	0.32	0.25	0.28	0.26	0.20	0.14	0.16	0.15	0.20	0.14	0.16	0.15	0.11	0.07	0.09	0.08
	60	0.35	0.27	0.30	0.28	0.21	0.15	0.17	0.16	0.21	0.14	0.17	0.16	0.11	0.07	0.09	0.08
Liquidiity-TFR	25	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02
	40	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.02	0.03	0.03	0.04
	60	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.03
Construction																	
Retirement -TFR	25	0.54	0.63	0.59	0.59	0.66	0.73	0.70	0.71	0.66	0.72	0.68	0.70	0.77	0.83	0.80	0.81
	40	0.55	0.61	0.59	0.60	0.66	0.73	0.70	0.71	0.66	0.72	0.69	0.71	0.78	0.83	0.81	0.81
	60	0.52	0.60	0.57	0.57	0.63	0.72	0.69	0.70	0.64	0.72	0.69	0.69	0.77	0.83	0.81	0.81
Buffer-TFR	25	0.45	0.36	0.40	0.39	0.33	0.25	0.29	0.27	0.33	0.26	0.30	0.28	0.21	0.15	0.18	0.16
	40	0.43	0.36	0.38	0.37	0.31	0.24	0.27	0.25	0.31	0.24	0.27	0.25	0.19	0.13	0.16	0.14
	60	0.47	0.39	0.41	0.40	0.35	0.25	0.29	0.27	0.34	0.25	0.28	0.28	0.21	0.14	0.16	0.15
Liquidiity-TFR	25	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	40	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.03	0.04	0.04	0.05
	60	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.04
Services																	
Retirement- TFR	25	0.58	0.65	0.62	0.63	0.70	0.77	0.74	0.75	0.70	0.76	0.72	0.74	0.81	0.86	0.83	0.84
	40	0.60	0.64	0.61	0.62	0.71	0.78	0.74	0.75	0.70	0.77	0.74	0.74	0.81	0.86	0.84	0.84
	60	0.56	0.63	0.60	0.61	0.68	0.76	0.73	0.74	0.69	0.76	0.73	0.74	0.81	0.87	0.84	0.85
Buffer-TFR	25	0.42	0.34	0.36	0.35	0.29	0.22	0.25	0.24	0.29	0.22	0.26	0.24	0.18	0.13	0.15	0.14
	40	0.39	0.33	0.36	0.34	0.27	0.20	0.23	0.21	0.27	0.20	0.23	0.22	0.16	0.11	0.13	0.12
	60	0.43	0.35	0.38	0.37	0.30	0.22	0.25	0.23	0.29	0.21	0.25	0.23	0.17	0.11	0.14	0.12
Liquidiity-TFR	25	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02
	40	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.04
	60	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03

(continued) - Expected Distribution of TFR – Male workers

		Cohort 1960-69															
		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
		Manufacturing															
Retirement -TFR	25	0.63	0.71	0.67	0.68	0.72	0.79	0.76	0.77	0.75	0.82	0.78	0.80	0.83	0.88	0.85	0.86
	40	0.64	0.72	0.67	0.70	0.73	0.80	0.76	0.78	0.77	0.83	0.79	0.80	0.84	0.88	0.86	0.86
	60	0.61	0.71	0.66	0.68	0.72	0.80	0.76	0.78	0.75	0.83	0.79	0.81	0.84	0.89	0.87	0.88
Buffer-TFR	25	0.36	0.28	0.32	0.30	0.27	0.20	0.23	0.21	0.24	0.16	0.20	0.18	0.16	0.11	0.13	0.11
	40	0.33	0.25	0.30	0.26	0.24	0.17	0.20	0.18	0.21	0.14	0.17	0.15	0.14	0.09	0.11	0.10
	60	0.37	0.26	0.32	0.29	0.27	0.18	0.21	0.19	0.23	0.14	0.18	0.16	0.14	0.09	0.11	0.09
Liquidiity-TFR	25	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
	40	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.03	0.03	0.03	0.04
	60	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.04	0.02	0.02	0.02	0.03
		Construction															
Retirement -TFR	25	0.52	0.61	0.57	0.58	0.61	0.70	0.66	0.67	0.64	0.72	0.66	0.70	0.74	0.81	0.77	0.78
	40	0.55	0.62	0.57	0.59	0.63	0.70	0.66	0.68	0.66	0.73	0.68	0.71	0.75	0.81	0.78	0.79
	60	0.51	0.59	0.56	0.57	0.60	0.70	0.65	0.67	0.64	0.73	0.68	0.71	0.74	0.82	0.78	0.79
Buffer-TFR	25	0.47	0.38	0.42	0.40	0.38	0.29	0.33	0.30	0.34	0.26	0.31	0.27	0.25	0.17	0.21	0.19
	40	0.43	0.35	0.40	0.37	0.35	0.26	0.30	0.28	0.31	0.22	0.28	0.24	0.22	0.15	0.18	0.16
	60	0.48	0.39	0.42	0.41	0.39	0.28	0.32	0.30	0.34	0.24	0.29	0.25	0.23	0.15	0.19	0.17
Liquidiity-TFR	25	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.03
	40	0.02	0.03	0.03	0.04	0.02	0.04	0.03	0.04	0.03	0.04	0.05	0.06	0.03	0.04	0.04	0.05
	60	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.04
		Services															
Retirement- TFR	25	0.55	0.63	0.59	0.61	0.64	0.72	0.67	0.69	0.67	0.74	0.69	0.73	0.76	0.83	0.79	0.81
	40	0.57	0.64	0.59	0.61	0.65	0.73	0.69	0.71	0.69	0.76	0.71	0.74	0.78	0.84	0.81	0.82
	60	0.53	0.62	0.57	0.60	0.63	0.72	0.67	0.69	0.67	0.76	0.71	0.73	0.77	0.84	0.80	0.82
Buffer-TFR	25	0.45	0.36	0.40	0.37	0.36	0.27	0.32	0.29	0.32	0.24	0.29	0.25	0.23	0.16	0.19	0.17
	40	0.42	0.33	0.39	0.35	0.33	0.24	0.28	0.26	0.29	0.21	0.25	0.22	0.20	0.13	0.16	0.14
	60	0.46	0.36	0.41	0.38	0.36	0.26	0.31	0.28	0.31	0.22	0.26	0.24	0.21	0.13	0.17	0.15
Liquidiity-TFR	25	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
	40	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.04
	60	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.03

(continued) - Expected Distribution of TFR – Male workers

		Cohort 1970-79															
		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
		Manufacturing															
Retirement -TFR	25	0.61	0.67	0.62	0.65	0.72	0.78	0.76	0.77	0.72	0.78	0.75	0.76	0.83	0.87	0.85	0.86
	40	0.61	0.66	0.64	0.65	0.73	0.78	0.76	0.77	0.72	0.79	0.75	0.76	0.83	0.87	0.85	0.85
	60	0.58	0.66	0.63	0.64	0.71	0.79	0.75	0.76	0.71	0.78	0.75	0.76	0.83	0.88	0.86	0.86
Buffer-TFR	25	0.38	0.32	0.36	0.33	0.26	0.20	0.23	0.21	0.26	0.20	0.23	0.21	0.16	0.11	0.13	0.12
	40	0.37	0.31	0.33	0.31	0.25	0.18	0.21	0.19	0.25	0.18	0.21	0.19	0.14	0.10	0.11	0.10
	60	0.40	0.32	0.35	0.34	0.27	0.19	0.22	0.21	0.27	0.19	0.22	0.20	0.15	0.10	0.12	0.11
Liquidiity-TFR	25	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
	40	0.02	0.03	0.03	0.04	0.03	0.03	0.04	0.04	0.03	0.04	0.04	0.05	0.03	0.03	0.04	0.04
	60	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.03	0.03
		Construction															
Retirement -TFR	25	0.51	0.55	0.53	0.55	0.61	0.67	0.65	0.65	0.60	0.67	0.61	0.64	0.72	0.78	0.75	0.77
	40	0.52	0.57	0.53	0.54	0.61	0.67	0.64	0.65	0.62	0.67	0.63	0.65	0.73	0.79	0.76	0.76
	60	0.49	0.55	0.54	0.53	0.58	0.66	0.64	0.63	0.60	0.66	0.63	0.64	0.72	0.78	0.76	0.76
Buffer-TFR	25	0.48	0.44	0.46	0.44	0.38	0.32	0.34	0.33	0.38	0.31	0.37	0.33	0.26	0.20	0.22	0.21
	40	0.47	0.40	0.44	0.43	0.36	0.29	0.32	0.30	0.35	0.29	0.33	0.30	0.23	0.17	0.20	0.18
	60	0.50	0.44	0.45	0.45	0.40	0.31	0.34	0.34	0.39	0.31	0.35	0.33	0.26	0.18	0.21	0.20
Liquidiity-TFR	25	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03
	40	0.01	0.03	0.02	0.03	0.02	0.04	0.04	0.04	0.03	0.04	0.04	0.05	0.03	0.04	0.04	0.05
	60	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.04
		Services															
Retirement- TFR	25	0.54	0.59	0.56	0.58	0.65	0.71	0.68	0.70	0.64	0.70	0.67	0.69	0.76	0.82	0.79	0.80
	40	0.54	0.59	0.56	0.59	0.65	0.72	0.68	0.70	0.65	0.71	0.67	0.68	0.77	0.83	0.80	0.80
	60	0.52	0.57	0.56	0.56	0.63	0.71	0.67	0.68	0.64	0.71	0.67	0.69	0.76	0.83	0.80	0.80
Buffer-TFR	25	0.46	0.40	0.43	0.41	0.34	0.28	0.31	0.28	0.34	0.28	0.31	0.29	0.22	0.16	0.19	0.18
	40	0.44	0.38	0.42	0.38	0.32	0.25	0.29	0.27	0.32	0.25	0.29	0.27	0.20	0.14	0.17	0.15
	60	0.47	0.41	0.43	0.42	0.36	0.27	0.31	0.29	0.35	0.27	0.30	0.28	0.22	0.15	0.18	0.16
Liquidiity-TFR	25	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
	40	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.03	0.03	0.04	0.04
	60	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03

Table 8 Expected Distribution of TFR - Female workers

		Cohort 1950-59															
		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
		Manufacturing															
Retirement -TFR	25	0.49	0.59	0.56	0.57	0.55	0.65	0.61	0.63	0.61	0.71	0.65	0.70	0.68	0.77	0.71	0.75
	40	0.53	0.65	0.59	0.62	0.59	0.70	0.64	0.68	0.67	0.76	0.71	0.75	0.73	0.81	0.77	0.79
	60	0.53	0.63	0.58	0.62	0.59	0.69	0.62	0.67	0.67	0.77	0.70	0.74	0.73	0.82	0.77	0.80
Buffer-TFR	25	0.51	0.40	0.44	0.42	0.45	0.34	0.39	0.36	0.38	0.28	0.34	0.29	0.32	0.22	0.28	0.24
	40	0.46	0.34	0.39	0.36	0.40	0.29	0.34	0.30	0.31	0.21	0.26	0.23	0.25	0.17	0.21	0.19
	60	0.46	0.36	0.41	0.37	0.40	0.30	0.37	0.32	0.32	0.22	0.28	0.24	0.26	0.17	0.22	0.18
Liquidiity-TFR	25	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	40	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.02	0.02
	60	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02
		Construction															
Retirement -TFR	25	0.44	0.55	0.51	0.52	0.48	0.60	0.55	0.58	0.55	0.66	0.61	0.64	0.62	0.71	0.66	0.70
	40	0.46	0.58	0.54	0.56	0.52	0.65	0.59	0.62	0.61	0.71	0.66	0.68	0.67	0.76	0.71	0.74
	60	0.48	0.57	0.52	0.56	0.54	0.63	0.58	0.62	0.61	0.70	0.63	0.68	0.67	0.76	0.70	0.74
Buffer-TFR	25	0.56	0.44	0.48	0.47	0.52	0.40	0.44	0.42	0.44	0.33	0.38	0.35	0.38	0.28	0.33	0.29
	40	0.53	0.40	0.44	0.41	0.47	0.33	0.39	0.36	0.38	0.26	0.31	0.28	0.31	0.22	0.27	0.23
	60	0.52	0.41	0.47	0.42	0.45	0.36	0.41	0.37	0.38	0.28	0.35	0.29	0.32	0.22	0.28	0.24
Liquidiity-TFR	25	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	40	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.03
	60	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.01	0.02	0.02	0.03
		Services															
Retirement- TFR	25	0.43	0.52	0.50	0.51	0.47	0.57	0.53	0.55	0.53	0.62	0.59	0.61	0.58	0.67	0.61	0.66
	40	0.45	0.55	0.52	0.54	0.51	0.60	0.57	0.59	0.57	0.67	0.63	0.66	0.64	0.73	0.67	0.71
	60	0.47	0.54	0.50	0.52	0.50	0.57	0.54	0.58	0.57	0.66	0.60	0.63	0.62	0.72	0.65	0.70
Buffer-TFR	25	0.56	0.48	0.50	0.49	0.53	0.43	0.47	0.45	0.47	0.37	0.41	0.38	0.41	0.32	0.38	0.33
	40	0.54	0.44	0.48	0.45	0.49	0.38	0.42	0.39	0.42	0.31	0.35	0.32	0.35	0.25	0.31	0.27
	60	0.53	0.45	0.49	0.47	0.49	0.42	0.45	0.41	0.42	0.33	0.39	0.35	0.37	0.27	0.33	0.28
Liquidiity-TFR	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
	40	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
	60	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02

(continued) - Expected Distribution of TFR – Female workers

		Cohort 1960-69															
		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
									Manufacturing								
Retirement -TFR	25	0.54	0.64	0.61	0.62	0.64	0.74	0.70	0.72	0.69	0.77	0.73	0.75	0.78	0.85	0.81	0.83
	40	0.57	0.66	0.62	0.64	0.67	0.75	0.71	0.73	0.71	0.79	0.75	0.76	0.80	0.86	0.83	0.84
	60	0.53	0.65	0.60	0.61	0.64	0.75	0.70	0.72	0.69	0.79	0.74	0.76	0.79	0.86	0.83	0.84
Buffer-TFR	25	0.45	0.35	0.38	0.36	0.35	0.25	0.29	0.27	0.30	0.21	0.26	0.23	0.21	0.14	0.18	0.15
	40	0.41	0.32	0.36	0.33	0.32	0.22	0.27	0.24	0.27	0.18	0.23	0.20	0.18	0.12	0.15	0.13
	60	0.46	0.34	0.39	0.37	0.35	0.24	0.29	0.26	0.30	0.20	0.24	0.22	0.20	0.12	0.15	0.14
Liquidiity-TFR	25	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01
	40	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.03
	60	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
									Construction								
Retirement -TFR	25	0.46	0.55	0.51	0.53	0.53	0.64	0.60	0.61	0.57	0.67	0.62	0.64	0.67	0.76	0.72	0.74
	40	0.48	0.57	0.54	0.54	0.55	0.65	0.61	0.62	0.60	0.68	0.64	0.66	0.70	0.77	0.74	0.75
	60	0.45	0.54	0.51	0.51	0.52	0.63	0.58	0.59	0.57	0.67	0.63	0.65	0.67	0.77	0.73	0.74
Buffer-TFR	25	0.54	0.44	0.48	0.47	0.47	0.35	0.39	0.38	0.42	0.32	0.37	0.34	0.32	0.23	0.27	0.24
	40	0.51	0.42	0.45	0.44	0.43	0.33	0.37	0.35	0.38	0.29	0.33	0.30	0.28	0.20	0.23	0.21
	60	0.55	0.45	0.48	0.48	0.48	0.36	0.41	0.39	0.42	0.31	0.35	0.33	0.31	0.21	0.25	0.23
Liquidiity-TFR	25	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
	40	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.04
	60	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03
									Services								
Retirement- TFR	25	0.48	0.57	0.53	0.54	0.56	0.66	0.62	0.64	0.60	0.69	0.64	0.67	0.70	0.78	0.74	0.76
	40	0.50	0.59	0.54	0.57	0.58	0.68	0.63	0.65	0.62	0.71	0.66	0.69	0.72	0.80	0.76	0.78
	60	0.47	0.56	0.52	0.53	0.55	0.66	0.60	0.63	0.60	0.70	0.65	0.67	0.70	0.79	0.75	0.77
Buffer-TFR	25	0.52	0.42	0.46	0.45	0.44	0.34	0.37	0.35	0.39	0.30	0.35	0.31	0.30	0.20	0.25	0.22
	40	0.49	0.39	0.44	0.41	0.41	0.30	0.35	0.32	0.36	0.27	0.31	0.28	0.26	0.18	0.22	0.19
	60	0.52	0.43	0.47	0.46	0.45	0.33	0.38	0.36	0.39	0.29	0.33	0.31	0.29	0.19	0.23	0.21
Liquidiity-TFR	25	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	40	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03
	60	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02

(continued) - Expected Distribution of TFR – Female workers

		Cohort 1970-79															
		Blue Collars								White Collars							
		Small firms: 1-19				Large firms: >1000				Small firms: 1-19				Large firms: >1000			
	Age	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center	South	NorthWest	North East	Center
		Manufacturing															
Retirement -TFR	25	0.54	0.62	0.58	0.59	0.62	0.72	0.66	0.70	0.66	0.74	0.69	0.72	0.75	0.82	0.78	0.80
	40	0.56	0.64	0.58	0.61	0.64	0.73	0.68	0.70	0.68	0.75	0.71	0.73	0.77	0.84	0.81	0.81
	60	0.52	0.61	0.57	0.59	0.61	0.71	0.66	0.68	0.66	0.75	0.70	0.73	0.76	0.84	0.80	0.82
Buffer-TFR	25	0.46	0.37	0.41	0.40	0.37	0.27	0.33	0.29	0.33	0.24	0.29	0.26	0.24	0.17	0.20	0.18
	40	0.43	0.34	0.40	0.36	0.34	0.25	0.30	0.27	0.30	0.22	0.26	0.23	0.21	0.14	0.17	0.15
	60	0.47	0.37	0.42	0.39	0.38	0.27	0.32	0.30	0.33	0.23	0.28	0.25	0.23	0.15	0.18	0.16
Liquidiity-TFR	25	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
	40	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.03	0.03
	60	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02
		Construction															
Retirement -TFR	25	0.46	0.53	0.51	0.51	0.52	0.60	0.58	0.59	0.56	0.62	0.58	0.61	0.65	0.73	0.69	0.71
	40	0.47	0.54	0.51	0.53	0.54	0.62	0.58	0.60	0.57	0.65	0.60	0.63	0.67	0.74	0.71	0.72
	60	0.45	0.52	0.50	0.50	0.51	0.60	0.56	0.57	0.54	0.64	0.60	0.61	0.64	0.74	0.69	0.71
Buffer-TFR	25	0.53	0.46	0.48	0.48	0.47	0.39	0.41	0.40	0.43	0.36	0.41	0.37	0.34	0.25	0.30	0.28
	40	0.53	0.44	0.48	0.46	0.45	0.36	0.40	0.38	0.41	0.32	0.37	0.34	0.31	0.23	0.26	0.24
	60	0.54	0.47	0.50	0.49	0.49	0.38	0.43	0.41	0.45	0.34	0.39	0.37	0.34	0.24	0.29	0.26
Liquidiity-TFR	25	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
	40	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.04
	60	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.03
		Services															
Retirement- TFR	25	0.48	0.55	0.52	0.54	0.54	0.62	0.58	0.61	0.58	0.66	0.62	0.63	0.66	0.75	0.71	0.73
	40	0.50	0.57	0.52	0.54	0.57	0.64	0.59	0.62	0.61	0.67	0.62	0.66	0.69	0.77	0.72	0.75
	58	0.47	0.54	0.50	0.52	0.53	0.62	0.59	0.60	0.57	0.66	0.62	0.64	0.67	0.76	0.72	0.74
Buffer-TFR	25	0.52	0.44	0.47	0.46	0.46	0.37	0.41	0.38	0.41	0.33	0.37	0.35	0.33	0.24	0.28	0.25
	40	0.50	0.42	0.47	0.44	0.42	0.34	0.39	0.36	0.38	0.30	0.36	0.31	0.29	0.21	0.25	0.22
	60	0.53	0.46	0.49	0.47	0.47	0.37	0.40	0.38	0.42	0.32	0.36	0.34	0.31	0.22	0.26	0.24
Liquidiity-TFR	25	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	40	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.03
	60	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02

Figures

Figure 1 Mean Annual Earnings

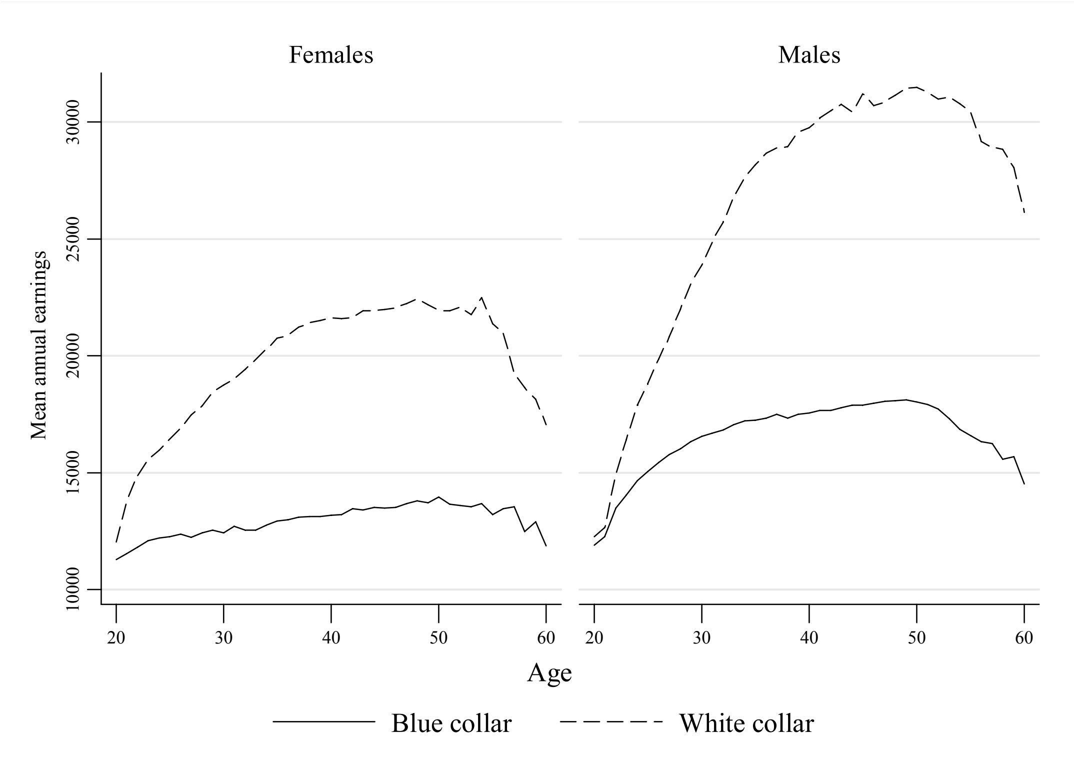


Figure 2 Mean TFR stock

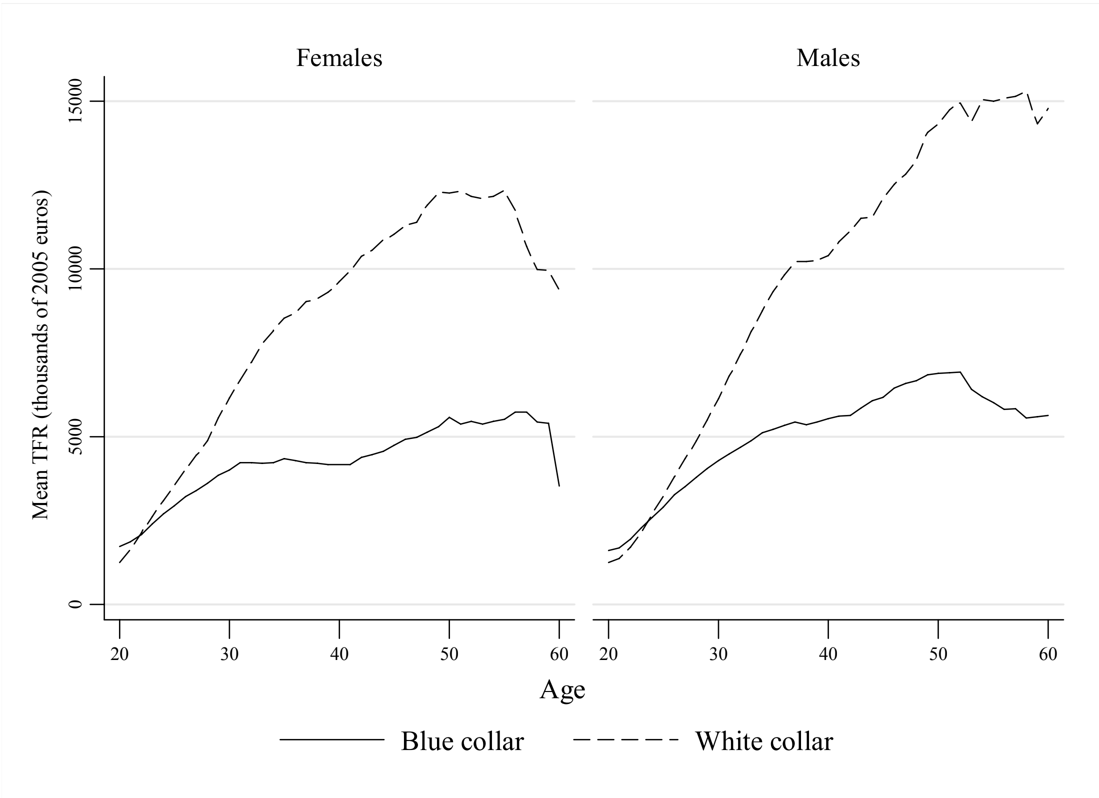
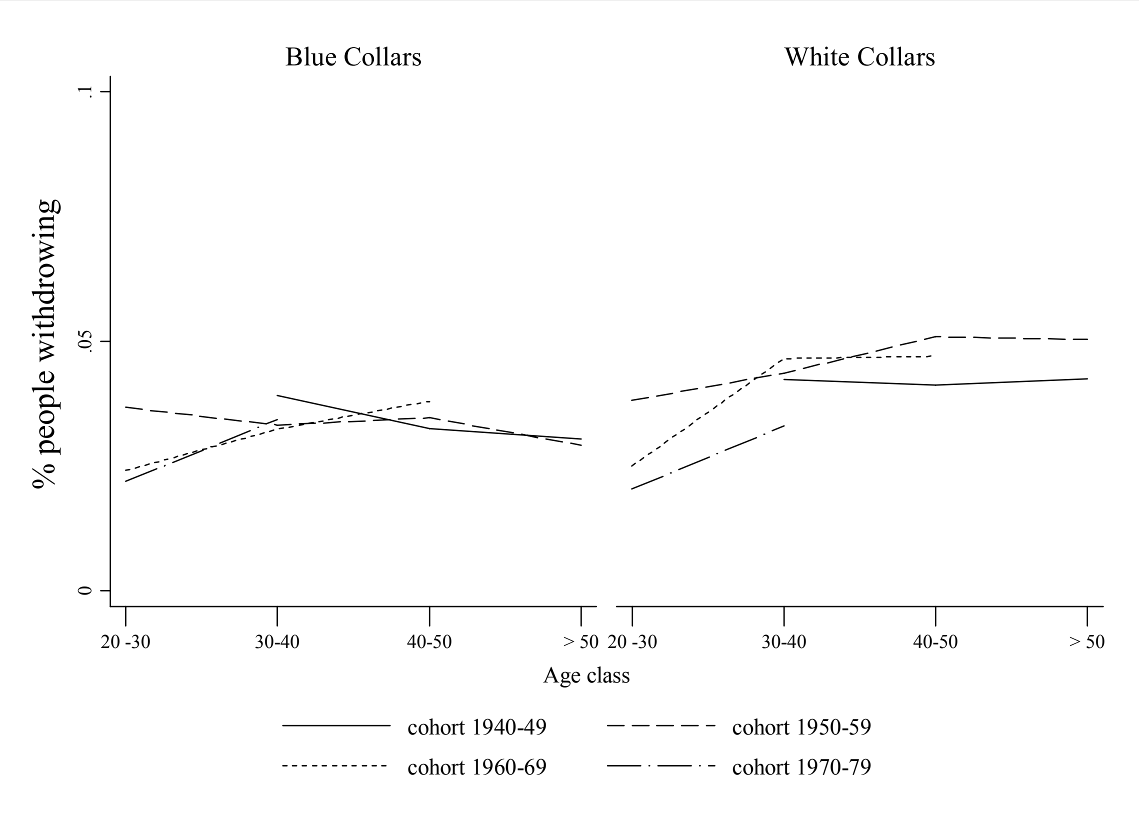


Figure 3 Advanced withdrawal behaviour

4a) Females



4b) Males

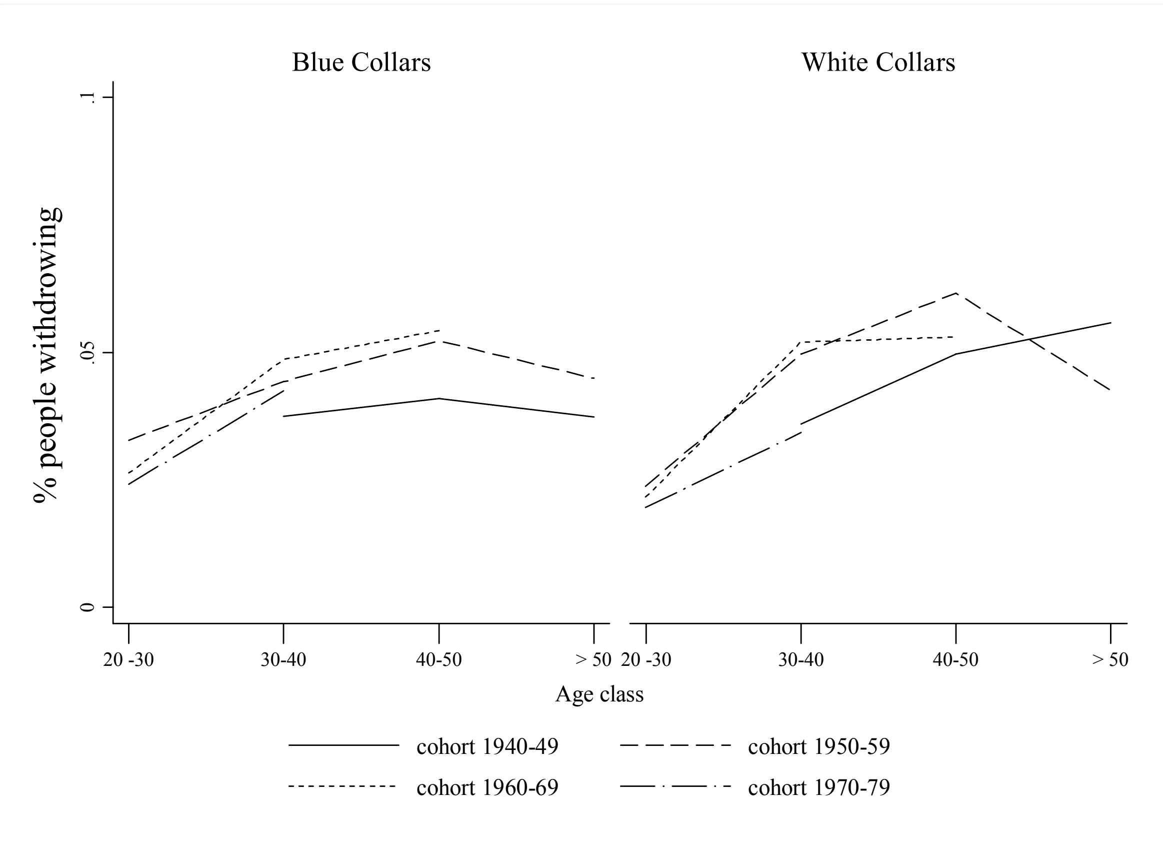


Figure 4 Smoothed hazard estimates

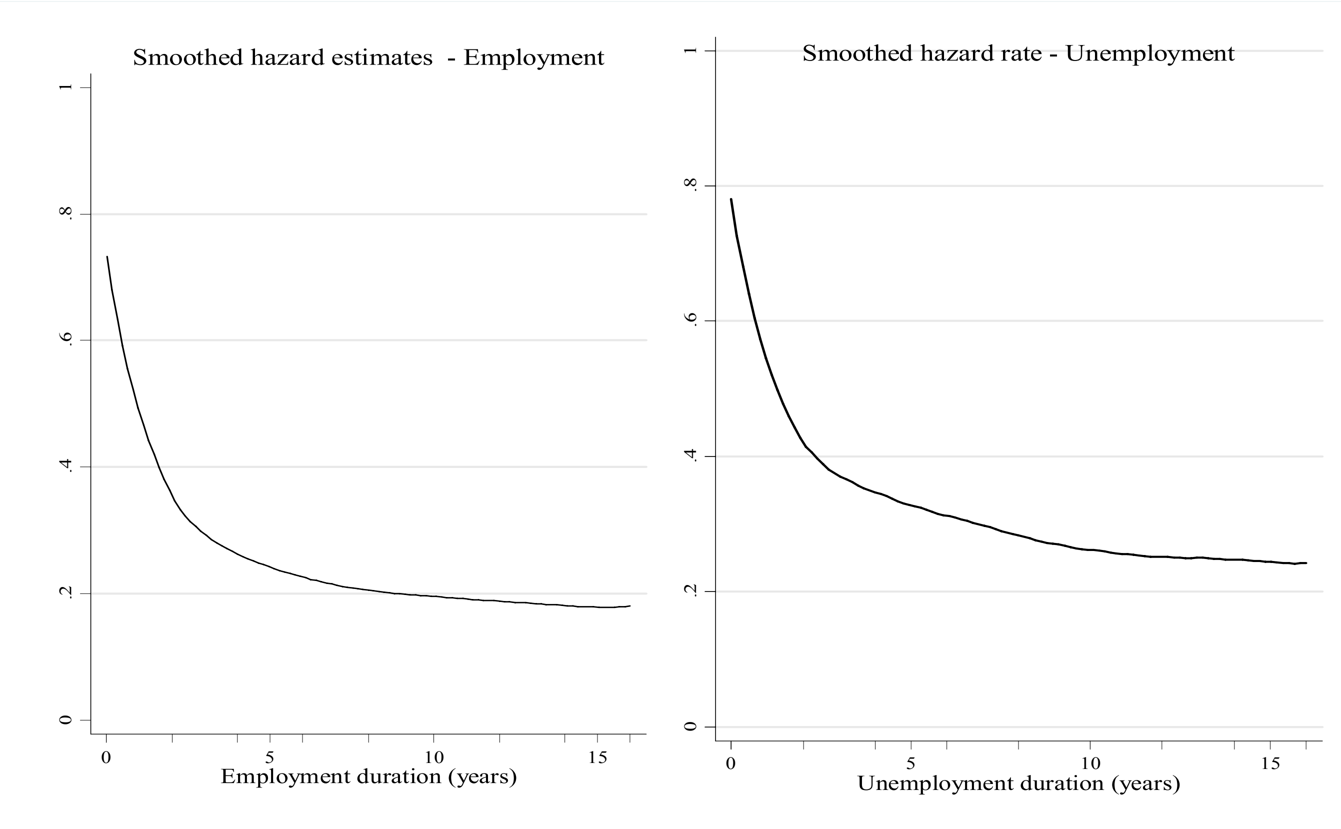


Figure 5 Transition probability distributions

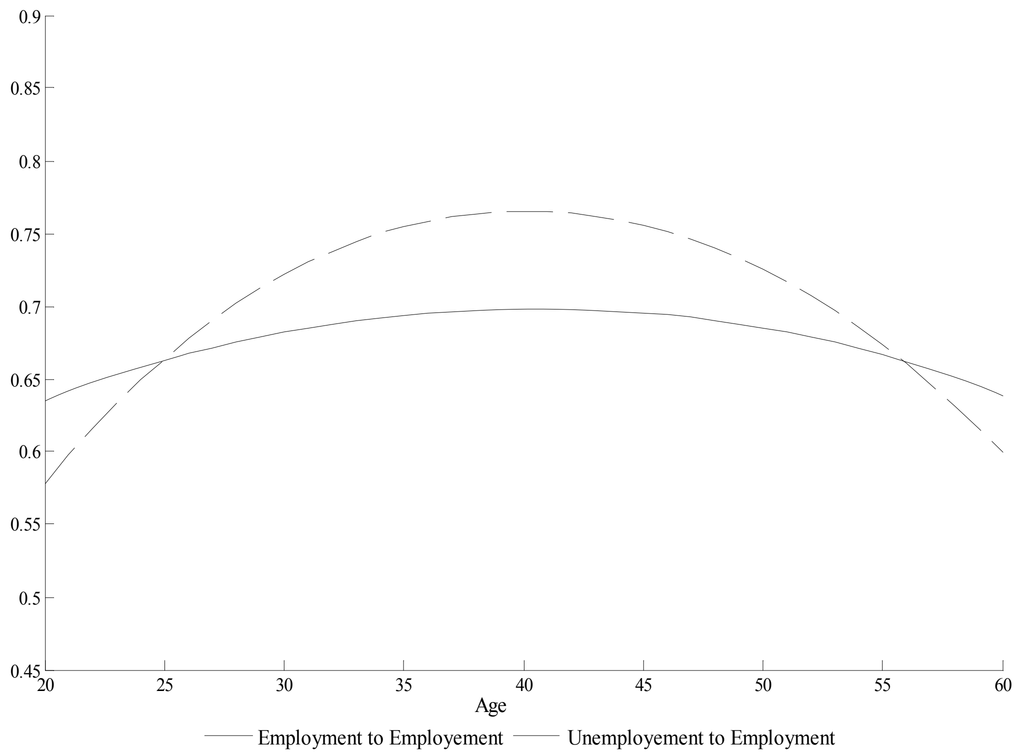
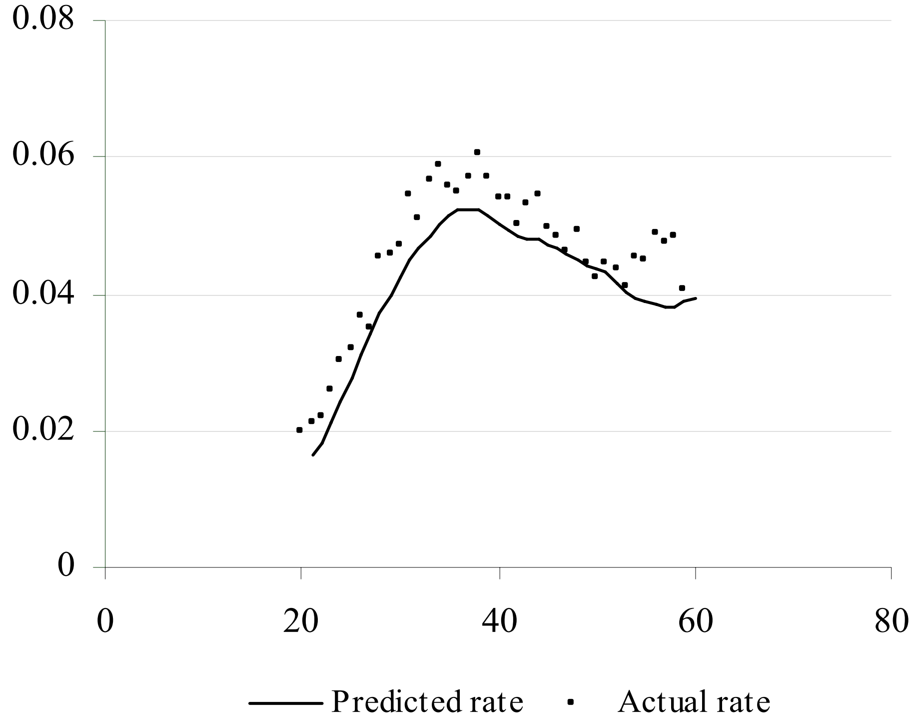


Figure 6 Withdrawal rate by age



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