From Lifetime Jobs to Churning?*

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Abstract

Job stability has been widely studied through tenure, its most straightforward indicator. However, papers providing a proper econometric analysis of tenure are few. Using data for 1991-2008, we investigate tenure in Switzerland through the estimation of a series of Cox proportional hazards models. Like most other papers in this field, our results do not show any clear decrease in job stability over the last two decades. Nevertheless, contrarily to what is usually done, we are much more careful in the treatment of why and how jobs end. We take account of the destination states and the job termination reasons. Doing so appears crucial since determinants are completely different across the possible exits. Job insecurity, which is no doubt more important than job stability, can only be investigated in this manner. An original feature of the paper is to consider industry wage differentials (industry premiums) as controls in the tenure regressions. We argue this methodology allows to account for the effect of wages on the probability of separation while circumventing the endogeneity problem between individual wages and tenure.

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1 Introduction

It is very often taken for granted that lifetime jobs have become much scarcer than in the past. However, popular wisdom is often wrong and some papers have disputed this idea, mainly in the US and UK (Burgess & Rees, 1998), while some others have provided some support (Farber, 2009; Gregg & Wadsworth, 2002). In Switzerland too, in particular during the 1990s the death of the "job for life" paradigm has had important coverage in the media, although the picture was somewhat exaggerated by single but large and visible events like the privatization of the Swiss telecommunications sector. Still, in a report on the labor market status of older workers in Switzerland (OECD, 2003a), the OECD did point to some evidence of structural changes, mainly different attitudes from employers toward the idea that workers stay on the same job throughout their career with an increasing seniority wage profile.

Understanding how tenure evolves and why is important, as it provides relevant information on the nature of the employment relationship. Does more openness in matters of trade and migration flows imply that the latter becomes less stable, as employers can rely on a larger pool of workers (either through the migrant workforce or outsourcing)? It could also be that stronger competition in the product market make workers and unions less able to extract rent through increasing wage tenure profiles. Another related factor that could jeopardize the lifelong job is the gradual shift from manufacturing to services, where employers demand more versatile skills from workers instead of more rigid specific human capital investment. Demographics may also play a crucial role when the labor supply is affected in its composition by shocks like baby booms or by migration flows. In the literature on specific human capital (Becker, 1964), and in agency models of the employment relationship (Lazear, 1979, 1981), firms are able to reduce turnover (and attendant separation externalities) through increasing wage tenure profiles. However, Valletta (1999) shows that such contracts can be either robust or fragile, depending on how adverse shocks will induce contracting parties to switch to non-cooperative behavior through quits or firing, thus inducing more or less "job security" during the business cycle.

Labor market institutions will clearly also shape the employment relationship. Employment protection (especially provisions making it more difficult to lay off workers with higher seniority) may imply opposing effects on tenure, since employers will find it costly to adjust employment through separations of tenured workers, whereas they will rely mainly on short term contracts on part of their (mainly younger) employees, so as to ensure some flexibility in labor adjustment through cyclical downturns. This "dual" nature of labor markets has been extensively documented, most notably for Spain (see for example Cabrales & Hopenhayn, 1997; Cahuc & Postel-Vinay, 2002) and other South-European countries. In fact, as noted in OECD (2003b), employment protection legislation in Spain (but also France and Italy) seems to dominate the moderating effect of short-term contracts as average tenure is substantially higher than in the UK or the USA. Switzerland clearly belongs

to the league of countries with moderate employment protection. The OECD index of overall strictness of employment protection ranked Switzerland as fifth least strict after the US, UK, Canada and Australia. One should therefore expect average (or median) tenure to be quite sensitive to the business cycle. One other important change that has taken place is the introduction of compulsory maternity leave insurance in 2005, which makes it easier for women to keep their jobs in case of a child birth. It is well known that, until recently, Swiss women often interrupted their career in their mid-career for child care reasons. The tendency is now to maintain some attachment to the labor market (e.g. through part time) and it cannot be excluded that the new law has helped in this regard.

In this paper, we investigate tenure in Switzerland to determine whether or not the duration of employment spells is declining, by trying to account for all factors that may affect the length of the job spell. We rely on the Swiss Labor Force Survey (SLFS) from 1991 to 2008, which has already been used by Sousa-Poza (2004) to analyze tenure in Switzerland. The latter study is however purely descriptive, and our approach is completely different.

We follow a still rather thin branch of the literature on tenure, by using duration models. We are only aware of very few papers (Topel & Ward, 1992; Booth, Francesconi, & Garcia-Serrano, 1999; Gottschalk & Moffitt, 1999; Bergemann & Mertens, 2004; Hirsch & Schnabel, 2010) using duration models, despite the fact that this methodology is without doubt the most appropriate to analyze tenure spells.

Unlike the bulk of the literature that is concerned with the US and the UK, we study employment stability in Switzerland. This country is an interesting case, thanks to several specific characteristics, like its education system, or the fact that bilateral agreements came into play in the middle of our observation period.

The remainder of the paper is organized as follows. Section 2 presents our dataset and its main advantages over the datasets used in the literature. Section 3 explains the difficulties encountered when analyzing tenure data and shows why duration models are appropriate for such a task. Section 2.1 displays several statistics based on elapsed tenure. Section 4 presents the results obtained with several duration models. Finally, section 5 summarizes the findings and concludes.

2 Data

We use data from the Swiss Labor Force Survey (SLFS), which is carried out every year since 1991 by the Swiss Federal Statistical Office (SFSO). It contains very detailed information about the labor status, wages, training, socioeconomic characteristics, and the composition of the respondent's household. Individuals who take part in the survey are contacted up to five years in a row, which makes the SLFS an unbalanced panel.

We restrict the sample to individuals aged between 18 and 65 (62 for women), who are not self-employed. Workers from the primary sector and

from public administration are discarded, because their employment relationships are particular.[1]

The central variable of our analysis is tenure. It is constructed from the responses to the questions: "In which year did you start working in this company?" and "Do you remember in which month?". Hence, contrarily to what is available in many surveys where tenure is coded in intervals of several years, tenure is coded precisely on a monthly basis. Moreover, the SLFS contains information about the activity status of the respondent for each of the last 12 months if he or she changed job during this period. This information enables us to check if the individual passed from one job to another directly or if he or she had to go through some inactivity or unemployment spell between the two.[2]

Since the SLFS gathers information about all individuals living in Switzerland (not only workers), we are able to identify the labor status after an individual leaves his job. We will distinguish between the following destination states: *new job* stands for job-to-job changes, *unemployment* whenever we observe a period of non-employment between two jobs, *training* refers to a job spell which ends for training or educational purposes, and *inactivity* if the labor market is left permanently for retirement or for no defined length to inactivity. In the estimations, we will not show the results for the training destination because too few transitions toward this state occur in our dataset.

Parallel to this classification of destination states, we are also able to identify the reasons why job spells end. We categorize the following termination motives: *layoff* if the separation was initiated by the firm, *quit* if it was initiated by the worker, and *other reasons* if we cannot clearly ascribe the given reason to any of these two categories. Unfortunately, the required information to construct these categories is only available from 1996 onwards.

One could even consider both destination states and termination reasons at the same time. For example, the probability that a worker quits a job for a new one could be different from the probability that a worker quits to inactivity and therefore could be modeled separately. However, to obtain reliable estimates, such an approach would require many more observations than currently at our disposal, and we leave it open to future research.

2.1 Employment Tenure through Time

We first look at some descriptive statistics on *elapsed* tenure, to be able to make some comparisons to what is traditionally used in the literature.

Figure 1 displays the evolution of median elapsed tenure for all men and women between 1991 and 2008, with the expected noticeable gap between

[1]Since we focus on tenure durations and not on earnings, the selection problem is not an issue. By definition, an individual is included in our sample (is *at risk*) only if he or she is in employment. For this reason, analyses are conducted not only on men but also on women.

[2]This information is only available from 1996 onwards.

genders.[3] With a difference of more than three years in the median tenure of the two groups in 1991 but less than two years in 2008, the spread however seems to be decreasing. In particular, median tenure does not show any clear tendency for men, but is on the rise for women during most of the observation period.

In Figure 2, the unemployment rate and the growth rate of real GDP show the evolution of the business cycle in Switzerland over the period 1991-2008. As expected, median tenure is clearly countercyclical. It increased in the early 1990s when unemployment rose and GDP growth was weak. When the economy recovered in the late 1990s, median tenure decreased. Finally, after 2000, median tenure rose again (especially for women), mirroring the rise in unemployment.

The countercyclicality of median tenure is explained by the evolution of hires and separations along the business cycle. Hires are obviously procyclical. Separations are procyclical as well because quits react more strongly than layoffs along the cycle (see Gregg & Wadsworth, (1995) p. 76, or Auer & Cazes, (2000) pp. 387-388). Hence, hiring increases during a boom, inflating the lowest bands of the tenure distribution. Separations also increase, but occur more or less uniformly at all levels of tenure. The overall effect is a fall of median tenure in a tight labor market. During a recession, both hires and separations decline. Moreover, employers usually try to retain workers who have the longest tenure and release the ones they have hired the most recently (on a *last in, first out* basis). The median tenure of the group of workers who keep their job will therefore mechanically rise in the recession.

To best account for both quits and layoffs, we will use unemployment and vacancy rates in our estimations. This latter indicator is rarely included, despite the fact that it "may be a better cyclical guide than the unemployment rate" (Gregg & Wadsworth, 2002, p. 117). One problem with vacancies in Switzerland is that the statistic is solely derived from vacancies which have been announced (on a voluntary basis) by employers to regional employment offices. It therefore only covers a fraction of available jobs at a given time, and it may not even be fully representative of the whole set of vacancies. Still, at the macroeconomic level, the index remains a good indicator of tightness in the labor market.

However, one should keep in mind that separations can originate from either quits or layoffs, which are very different in nature. In line with the literature, we define quits as worker-initiated separations, and layoffs as firm-initiated separations. Hence, workers fear layoffs as they are involuntary but not quits which are voluntary. This might explain the discrepancy between the media's coverage and what is observed in official statistics. Drawing the line between quits and layoffs is thus of primary importance and we will analyze job spells ending with a quit and those terminated by a layoff in two separate duration models, since blending the two causes of separation in the same model could in fact mask the true story. Median tenure might for instance remain unaltered for several decades, with more frequent layoffs

[3] All descriptive statistics use sampling weights.

Figure 1: Median elapsed tenure for men and women, SLFS

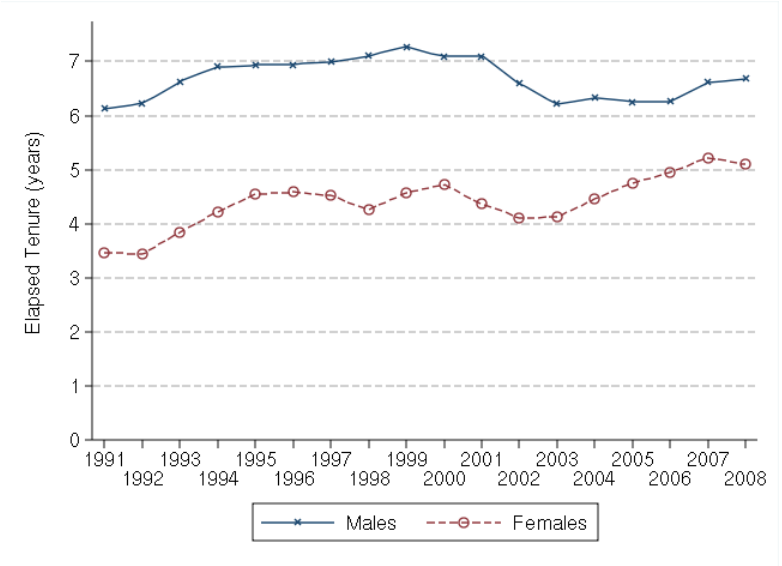
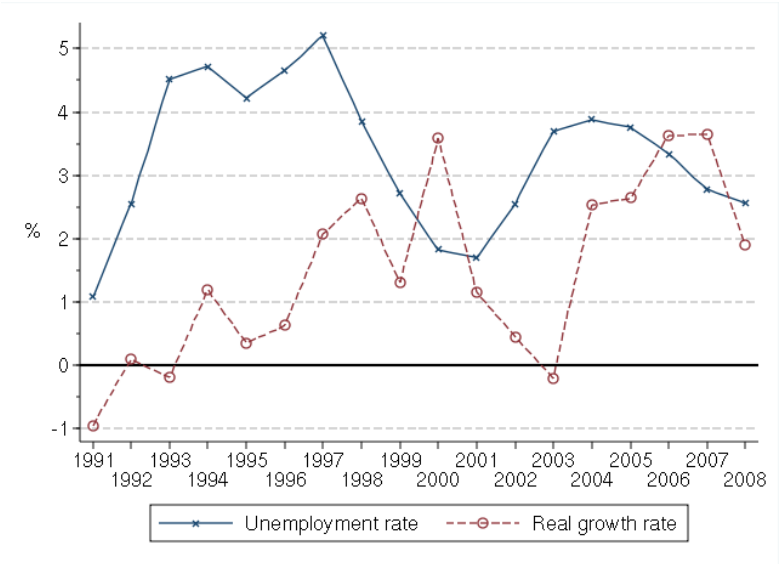


Figure 2: Annual rate of unemployment and real GDP growth rate in Switzerland



being offset by fewer quits. This distinction is pivotal to the discussion on job *stability* and job *security*, the former being associated to the size of turnover and the length of jobs, while the latter implies that job terminations have undesired consequences for workers.

Figures 3 and 4 display the evolution of median elapsed tenure for some age groups. It shows that tenure obviously rises with age. The difference between old age and youth is more pronounced for men than women. The latter having more frequent career interruptions, their chances to stay in very long job spells are obviously reduced. In other words, there is no difference in median tenure between young men and young women. We only observe significantly longer median tenures for men in groups older than 35. This clearly coincides with the age at which many women are still in a child rearing period,[4] and will quit a job either temporarily or permanently.

Between 1991 and 2008, it appears that median tenure is virtually constant. For each age group, median tenure has almost the same value in 2008 than it had in 1991. For men however, the picture does change. For the older age groups, median tenure is clearly on the decline, with 5 years less in 2008 than in 1991 for workers over 45.

Figures 5 and 6 display median tenure for some selected sectors. We again observe that the shape of tenure is much more similar for women across different sectors than for men. In the public sector, men have a much longer median tenure than in the other sectors. Both for men and women, the housing and real estate sector appears to be on the low side.

Figures 7 and 8 split individuals on the basis of hours worked. Men working part-time have lower median tenure than those working full-time. Quite surprisingly, women working part-time appear to have a slightly longer tenure than their counterparts working full-time. We note however that men working part-time are very rare in Switzerland, and it could well be that they are less attached to the labor market. The fraction of men working part-time increased from 3% to 7% between 1991 and 2008, which could explain the upward trend in the median tenure of this group. On the other side, part-time is very widespread among women, with almost one out of two female jobs being part-time in 2008.

One final decomposition is shown in Figures 9 and 10 with the evolution of median tenure for some education groups, an unusual separation in this literature, even though the differences across these groups are substantial. Here also, the various female groups are much more compact than the male ones for whom the spread in median tenure is larger. More interestingly, we observe that median tenure follow opposite paths depending on whether workers have no skills beyond compulsory schooling or hold an apprenticeship. This is particularly pronounced for men. Hence, it appears that median tenure for apprenticeship holders is particularly countercyclical, whereas it is *procyclical* for the compulsory school group.

Another interesting feature is that the relationship between median tenure

[4]The average age for women giving birth to their first child is between 27 and 30 over the period 1991-2008 (SFSO, 2009).

Figure 3: Median elapsed tenure for men by age groups, SLFS

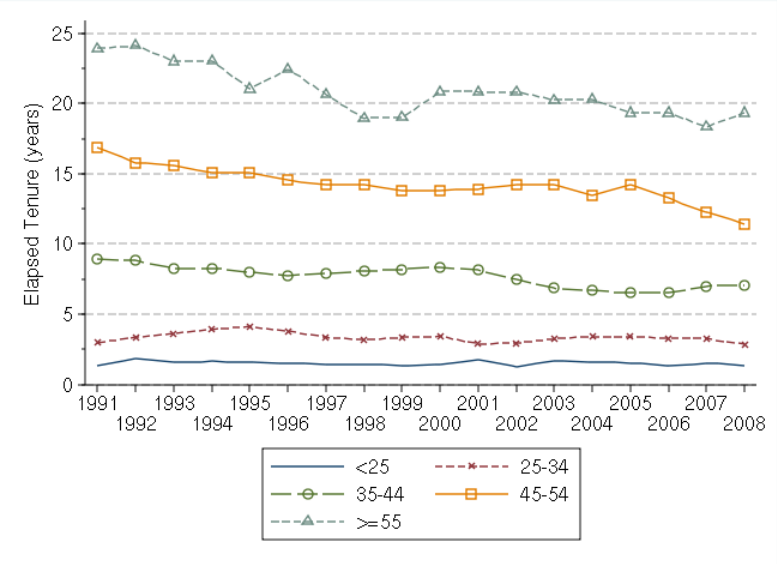


Figure 4: Median elapsed tenure for women by age groups, SLFS

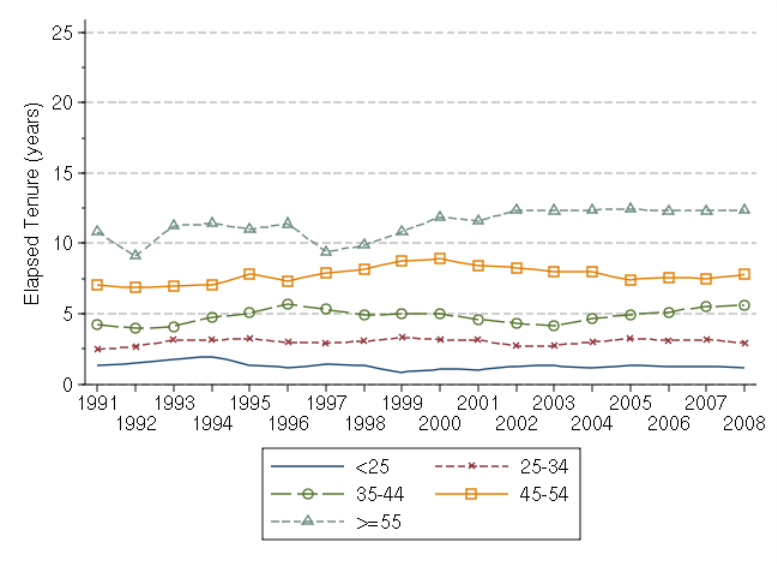


Figure 5: Median elapsed tenure for men by sectors, SLFS

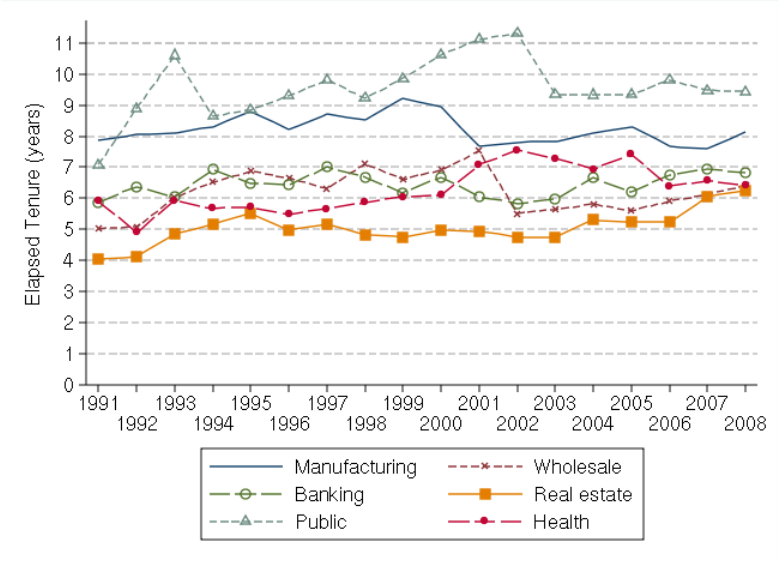


Figure 6: Median elapsed tenure for women by sectors, SLFS

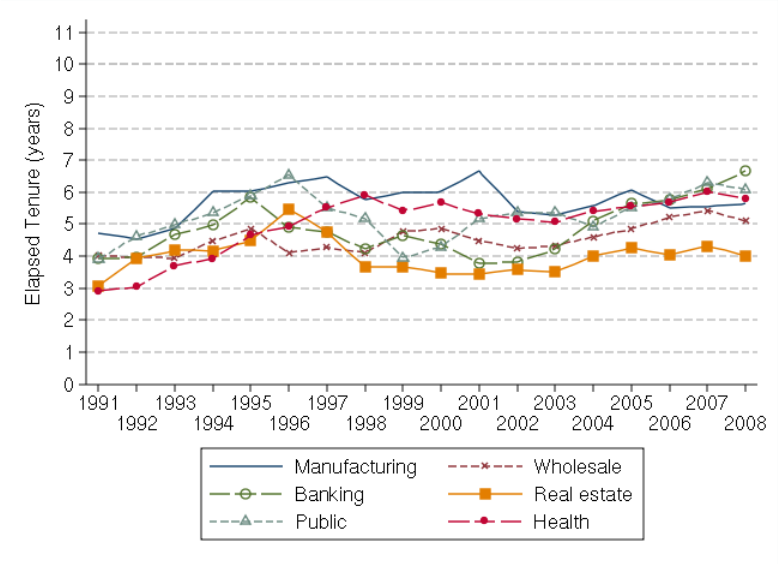


Figure 7: Median elapsed tenure for men by hours worked, SLFS

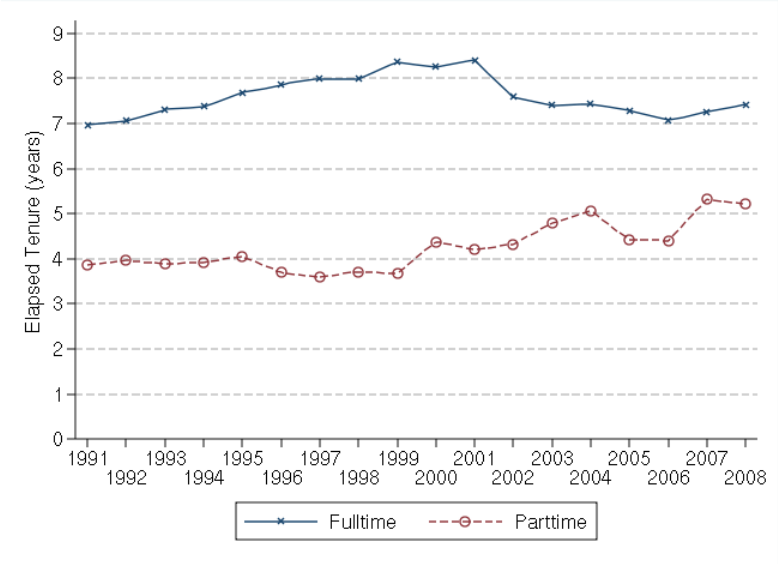


Figure 8: Median elapsed tenure for women by hours worked, SLFS

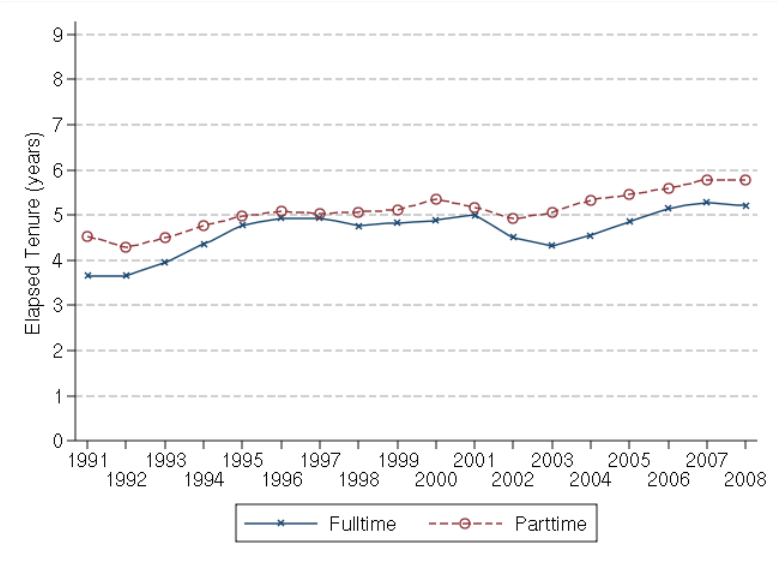


Figure 9: Median elapsed tenure for men by education groups, SLFS

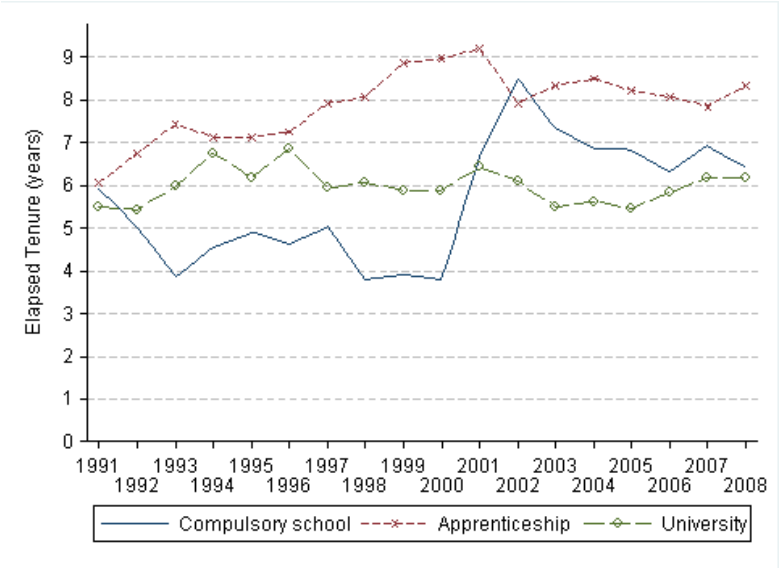
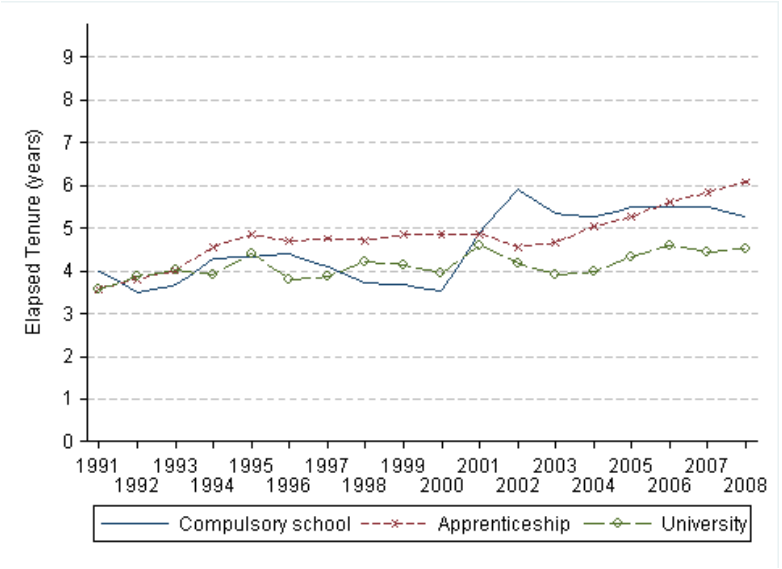


Figure 10: Median elapsed tenure for men by education groups, SLFS



is non-monotonic along education levels. The most educated group exhibits less tenure than the apprentices during the whole observation period, and, from 2002 onwards, tenure for these workers is even less than the least educated group. Median tenure is nevertheless much less volatile for the university degree holders than for any other group. These workers are thus less affected by the business cycle.

3 Modeling Tenure Data

Some problems must be addressed with panel tenure data because respondents are selected from a stock of people who occupy a state at the moment they are interviewed. In the terminology of duration models, this process is known as *stock sampling* (Lancaster, 1990) and it raises a serious statistical issue labeled *left-truncation*. "This creates a sample selection bias for the period before the observation window. The earlier the starting time of the episode and the shorter the durations, the less likely it is that these episodes will appear in the observation window" (Blossfeld & Rohwer, 2002). Long tenure spells will therefore be over-represented in the sample, and statistics based on the latter will overestimate the actual distribution of tenure.

Another way to look at this problem is to think about the difference between jobs and workers. What we wish to model is the distribution of job tenures. However, the unit of observation is the worker. Since "most jobs are short, but most workers are in long jobs" (Burgess & Rees, 1996), there is an obvious difference between what is observed and what is to be analyzed.

An effective solution to left-truncation consists in analyzing only the part of the duration that reaches into the observation window (see for example Guo, 1993). However, a proper statistical analysis of tenure is seldom used as most researchers simply use elapsed or completed tenure to make inference, even though both measures suffer from the left truncation problem.

There is no doubt that survival analysis is the most appropriate tool to analyze tenure. First, it allows to retrieve information from all the observed job spells, completed or not. Right-censoring is readily handled in duration models, but many researchers ignore this problem and use inaccurate econometric techniques like OLS on elapsed tenure spells (Mumford & Smith, 2004; Farber, 2009) or logit regressions on the probability of having held a job for less than one year (Burgess & Rees, 1998; Gregg & Wadsworth, 2002; Farber, 2009; Bratberg, Salvanes, & Vaage, 2010).[5] When using such models, one should discard the uncompleted job spells (i.e. most of the observations) in order to have clean data, but elapsed tenure is used without taking into account the fact that such job spells might last for many additional years. Another practical advantage of duration models over traditional regression models is that the whole distribution can be described with a single estima-

[5]Running a logit regression on the likelihood that a person has held a job for less than some threshold is obviously problematic if the job is still in progress. Such a measure pools job spells that will actually end very shortly with job spells that will in fact last many additional years.

tion without resorting to separate estimations for several cuts of the tenure distribution.[6]

Among the many different variants of the duration approach, the semi-parametric Cox proportional hazard model (Cox, 1972, 1975) is quite appealing. It leaves the baseline hazard unspecified and the duration dependence is therefore free to evolve non-monotonically over the job spell. The duration dependence of the hazard of job termination is certainly non-monotonic and we do not want to impose any restriction on its shape, which will be determined by the data alone.

In what follows, $S(t)$ is the survivor function, $f(t) = dS(t)/dt$ is the probability density function, and $h(t) = f(t)/S(t)$ is the hazard function. The Cox model specifies the hazard function as:[7]

$$h(t|x) = h_0(t) \cdot \exp(x'\beta) \tag{1}$$

where $h_0(t)$ is the baseline hazard function, x is a matrix of possibly time-dependent covariates, and β are the parameters of interest. This model is said to be semi-parametric since the baseline hazard function $h_0(t)$ is left unparameterized and the covariates enter the model log-linearly and multiplicatively.

Another advantage of the Cox model is the ease of interpretation of the β parameters. The ratio of the hazards of two individuals i and j is indeed time-independent and given by:

$$\frac{h_i(t|x_i)}{h_j(t|x_j)} = \exp(x_i' - x_j')\beta \tag{2}$$

Hence, the exponential of a parameter gives the hazard ratio of two individuals differing by one unit in the corresponding variable. For example, if x contains a nationality dummy for Non-Swiss, then $\exp(\beta_{\text{Non-Swiss}})$ gives the transition hazards' ratio of foreign to Swiss workers. A positive (negative) β indicates a higher (lower) hazard rate and therefore shorter (longer) job spell.

Consider now individual $i = 1, \ldots, n$ with the trivariate response $(t_{0i}; t_i; \delta_i)$, representing a period of observation $(t_{0i}; t_i]$, ending in either failure ($\delta_i = 1$) or right-censoring ($\delta_i = 0$). This structure enables us to account for two features present in our data, namely left-truncation and right-censoring.

An observation i known to fail at time t_i contributes to the likelihood function the value of the density at time t_i conditional on the entry time t_{0i}, $f(t_i|x_i)/S(t_{0i}|x_i)$. A right-censored observation, known to survive only up to time t_i, contributes $S(t_i|x_i)/S(t_{0i}|x_i)$, which is the probability of surviving beyond time t_i conditional on the entry time, t_{0i}. The log-likelihood is thus given by:

[6] In most papers of the literature, the likelihood that a worker has held a job for a very short time (usually up to one year) is modeled, as well as the likelihood of having held a job for at least several years (usually five, ten or even twenty).

[7] For a detailed presentation of duration models, see among others Kiefer (1988), Lancaster (1990), or Kalbfleisch & Prentice (2002).

$$\log L = \sum_{i=1}^{n} \delta_i \log h(t_i|x_i) + \log S(t_i|x_i) - \log S(t_{0i}|x_i) \tag{3}$$

The β parameters are implicitly included in (3). For individuals under observation when their job spell starts, $S(t_{0i}|x_i) = 1$ and the likelihood simplifies to a more usual form. In our data though, most job spells have already started when the individuals enter the panel survey and the spells are thus left-truncated. In such case, the period before the first interview must not be considered as a period at risk since, had the job ended, we would never have known it. The starting date being asked retrospectively, we condition on time spent in the job but not in the panel. This methodology is the best way to retrieve information from such spells (Guo, 1993).

The likelihood function not only contains the β parameters to be estimated but also the baseline hazard $h_0(t)$ which is unknown and unspecified. It is thus not possible to proceed directly to the maximization. Cox (1972, 1975) shows that the likelihood function can be decomposed in order to rule out the baseline hazard. The estimation of the model is then made by maximizing the following partial likelihood function:[8]

$$\log PL = \sum_{j=1}^{k} \left[\sum_{i \in D_j} x_i'\beta - d_j \log \left\{ \sum_{\ell \in R(t_j)} \exp(x_\ell'\beta) \right\} \right] \tag{4}$$

where j indexes the ordered failure times $t_{(j)}$, $j = 1; \ldots; k$, D_j is the set of d_j observations that fail at time $t_{(j)}$, d_j is the number of failures at $t_{(j)}$; and $R(t_j)$ is the set of observations ℓ which are at risk at time $t_{(j)}$ (i.e., all ℓ such that $t_{0\ell} < t_{(j)} \leq t_\ell$).

The partial likelihood contains no unknown elements and can therefore be maximized to retrieve the parameters of interest. The attendant cost is a loss in efficiency: if we knew the functional form of $h_0(t)$, we could do a better job at estimating β. Nevertheless, it can be shown that maximum partial likelihood estimates have all the standard asymptotic properties (see Kalbfleisch & Prentice, 2002, pp. 101-104).

Since we consider several possible exits from a job, competing risks models must be used. The methodology is the same as the one just described, except that a specific hazard rate is specified for each possible exit e:

$$h_e(t|x) = h_{0e}(t) \cdot \exp(x'\beta), \qquad e = 1, \ldots, m. \tag{5}$$

The overall hazard rate is given by the sum of all the specific hazard rates:

$$h(t) = \sum_{e=1}^{m} h_e(t) \tag{6}$$

[8]The original Cox model assumes no ties in the durations. Since tenure is measured in months, we obviously have ties in our data, and we use Breslow's (1974) method to handle them.

and the overall log-likelihood and partial likelihood of the model are given by:

$$\log L = \sum_{e=1}^{m} \log L_e \qquad \text{and} \qquad \log PL = \sum_{e=1}^{m} \log PL_e \tag{7}$$

From this latter equation, it is straightforward to see that the estimation of the competing risks model is simply achieved by estimating a separate equation for each possible exit. For each exit-specific estimation, spells ending in a different exit than the one under study are considered as right-censored.

4 The Determinants of Job Tenure

Our empirical findings from the Cox proportional hazard model enable us to unravel the determinants of job tenure and to make some inference about the evolution of job stability and job insecurity in Switzerland over the period 1991-2008.

In Table 1, all tenure spells are pooled in the same regression, ignoring destination states and reasons for job termination. This is the typical tenure regression used to analyze "job stability". One should however recall that the estimates are difficult or even impossible to interpret since the way a job ends may tell radically different stories. To illustrate this point, note that the coefficients for both education groups are negative, indicating that apprenticeship holders and university graduates have shorter job spells than the least educated. Whether the worker's position has improved or not following a separation will clearly depend on the nature of the separation. With a voluntary quit, chances are his position improved, whereas the situation may have worsened if the worker lost his job. In subsequent sets of estimations, we therefore use competing risks models to account for these possible different paths.

To evaluate a possible tendency of increased job instability, we include the year as a covariate. The coefficient is slightly positive (and significant for men), which tends to indicate that employment has become less stable between 1991 and 2008. However, including a single trend variable imposes a linear evolution of the hazard. To account for potential non-linearities, in alternative estimations, we replace this single variable by a complete set of time fixed effects. The results are presented graphically in Appendix A. Figures A.1 and A.2 display the time fixed effects obtained with estimations that are similar to those in Table 1. They depict the evolution of job instability for men and women. Because no clear pattern emerges from the estimated parameters, we cannot assess if job instability has decreased or increased.

Such an assessment does not imply that job insecurity has not increased though. It could be that the overall risk of job termination has remained more or less constant, but that the risk of being laid off has increased, compensated by a decrease in the risk of quits. This possibility once again underlines the need to distinguish between the several possible exits from a job. If one is investigating job insecurity, then modeling tenure without consideration of

Table 1: Hazard of job termination

	Men	Women
Education: apprenticeship	-0.100^{***}	-0.097^{***}
	(0.036)	(0.034)
Education: university	-0.047	0.010
	(0.041)	(0.043)
Age 25-35 years	-0.283^{***}	-0.331^{***}
	(0.044)	(0.043)
Age 35-45 years	-0.478^{***}	-0.595^{***}
	(0.049)	(0.047)
Age 45-55 years	-0.689^{***}	-0.804^{***}
	(0.056)	(0.052)
Age $>$ 55 years	-0.055	-0.474^{***}
	(0.055)	(0.057)
Year	0.006^{**}	0.004
	(0.003)	(0.003)
Non-Swiss	-0.047	-0.088^{***}
	(0.029)	(0.032)
Married	-0.150^{***}	0.087^{**}
	(0.031)	(0.036)
Part-time	0.346^{***}	0.191^{***}
	(0.059)	(0.042)
Part-time $\times$ Married	0.180^{**}	-0.202^{***}
	(0.086)	(0.053)
Number of children	-0.047^{***}	-0.062^{***}
	(0.017)	(0.017)
Firm $>$ 100 co-workers	-0.210^{***}	-0.185^{***}
	(0.027)	(0.029)
Regional unemployment rate	0.038^{***}	0.020
	(0.013)	(0.012)
Regional vacancy rate	0.181^{**}	0.146^{*}
	(0.088)	(0.088)
Industry wage premium	-0.610^{***}	-0.150
	(0.149)	(0.151)
Canton dummies	yes	yes
Sector dummies	yes	yes
# spells	29,445	24,766
# individuals	25,682	21,420
# failures	6,584	6,317
LogL	$-50{,}657$	$-49{,}538$
AIC	101,417	99,181
BIC	102,013	99,765

Swiss Labor Force Survey, 1991-2008.
Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

the subsequent status after the current job is not entirely satisfactory.

This crucial distinction is highlighted in Tables 2 and 3 which provide separate estimations by destination state (new job, unemployment, and inactivity) with completely different coefficients across them. In these estimations, all the coefficients are interesting per se with a straightforward interpretation.

As expected, older workers exhibit less job-to-job mobility on the labor market, since age reduces monotonically the hazard toward a new job. For the other destinations however, the effect of age is completely different. For men, the hazard rate towards unemployment is lowest for the 25-35 age group and is largest for individuals over 55. Towards inactivity, the hazard is U-shaped, being low for individuals between 25 and 45 and increasing thereafter, probably because of retirement. For women, the risk of inactivity is highest for the 25-35 age group, which corresponds to the period during which most of them give birth to their first child.

Education tends to increase the chances of moving job-to-job, and sharply reduces the risk of transiting towards unemployment or inactivity, both for men and women. It thus seems that if educated workers have shorter overall tenure, this is because they switch job more often in search of a better match.

Married men appear to be less mobile, as their hazard toward a new job is reduced by about 10% compared to single men. Their unemployment risk is also much lower. On the other hand, married women appear to become much more often unemployed or inactive than single ones. These results are in line with several other studies on the Swiss labor market (Ferro Luzzi & Flückiger, 1998; Flückiger & Ramirez, 2001; Weber, 2006).

Workers in large firms appear to suffer less separations. One possible explanation is given by the larger set of career opportunities offered to employees within the firm. Another possible reason is that large firms are certainly less sensitive to business cycle. Large firms provide some security to their employees, and can reduce turnover more easily by offering increasing wage tenure profiles.

Among the three possible destination states we consider, unemployment is the one that might be related to job insecurity. If the hazard towards this exit has increased, then we could infer that job insecurity has increased. Both for men and women, the coefficient attached to sample year is positive and significant. On this basis, it appears that transition from employment to unemployment have become more frequent and therefore that job insecurity has increased. However, with time fixed effects replacing the trend variable, the evidence is less clear-cut (see Figures A.3 and A.4). Once again, no clear pattern emerges from the coefficients, and it is hard to firmly conclude that job insecurity has increased.

In Tables 4 and 5, exits are separated according to termination reasons: layoffs, quits, and other reasons. Again, we obtain very different results across the possible exits. Of greater interest are layoffs and quits, since the "other reasons" is a residual group where several possible exits cannot easily be classified in either firm or worker initiated separations.

As expected, our results indicate that older workers are more likely to

Table 2: Hazards of job termination by destination state, Men

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.168^{***}	-0.295^{***}	-0.402^{***}
	(0.051)	(0.090)	(0.073)
Education: university	0.311^{***}	-0.604^{***}	-0.564^{***}
	(0.055)	(0.115)	(0.095)
Age 25-35 years	-0.157^{***}	-0.318^{**}	-0.643^{***}
	(0.054)	(0.129)	(0.216)
Age 35-45 years	-0.358^{***}	-0.132	-0.620^{***}
	(0.060)	(0.137)	(0.218)
Age 45-55 years	-0.694^{***}	0.126	-0.106
	(0.070)	(0.142)	(0.213)
Age $>$ 55 years	-1.212^{***}	0.576^{***}	1.769^{***}
	(0.097)	(0.149)	(0.196)
Year	-0.004	0.017^{**}	0.040^{***}
	(0.003)	(0.008)	(0.007)
Non-Swiss	-0.131^{***}	0.482^{***}	-0.002
	(0.037)	(0.081)	(0.069)
Married	-0.116^{***}	-0.486^{***}	0.056
	(0.041)	(0.089)	(0.072)
Part-time	0.157^{*}	0.337^{**}	0.678^{***}
	(0.083)	(0.168)	(0.151)
Part-time $\times$ Married	0.070	0.237	0.278
	(0.133)	(0.244)	(0.181)
Number of children	-0.013	-0.088^{*}	-0.145^{**}
	(0.020)	(0.050)	(0.057)
Firm $>$ 100 co-workers	-0.314^{***}	-0.268^{***}	0.116^{**}
	(0.035)	(0.078)	(0.058)
Regional unemployment rate	0.003	0.198^{***}	0.057^{*}
	(0.016)	(0.034)	(0.033)
Regional vacancy rate	0.451^{***}	-0.428	-0.358
	(0.103)	(0.273)	(0.241)
Industry wage premium	-0.769^{***}	-0.841^{**}	-0.180
	(0.188)	(0.425)	(0.352)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	29,444	29,445	29,445
# individuals	25,681	25,682	25,682
# failures	4,317	876	1,235
LogL	$-34{,}220$	$-6{,}731$	$-7{,}581$
AIC	68,544	13,563	15,267
BIC	69,140	14,136	15,863

Swiss Labor Force Survey, 1991-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table 3: Hazards of job termination by destination state, Women

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.180^{***}	-0.291^{***}	-0.254^{***}
	(0.051)	(0.090)	(0.061)
Education: university	0.398^{***}	-0.460^{***}	-0.381^{***}
	(0.061)	(0.120)	(0.090)
Age 25-35 years	-0.334^{***}	-0.139	0.315^{**}
	(0.053)	(0.135)	(0.134)
Age 35-45 years	-0.480^{***}	-0.279^{*}	-0.222
	(0.058)	(0.145)	(0.141)
Age 45-55 years	-0.758^{***}	-0.090	-0.362^{**}
	(0.067)	(0.151)	(0.146)
Age $>$ 55 years	-1.172^{***}	0.091	0.697^{***}
	(0.098)	(0.173)	(0.145)
Year	-0.005	0.047^{***}	0.003
	(0.004)	(0.009)	(0.005)
Non-Swiss	-0.167^{***}	0.375^{***}	-0.115^{*}
	(0.044)	(0.087)	(0.064)
Married	-0.259^{***}	0.215^{**}	0.877^{***}
	(0.051)	(0.094)	(0.077)
Part-time	0.101^{*}	-0.007	0.540^{***}
	(0.054)	(0.128)	(0.095)
Part-time $\times$ Married	-0.150^{**}	-0.357^{**}	-0.407^{***}
	(0.075)	(0.154)	(0.110)
Number of children	-0.054^{**}	-0.016	-0.037
	(0.023)	(0.045)	(0.034)
Firm $>$ 100 co-workers	-0.261^{***}	-0.150^{*}	-0.027
	(0.040)	(0.083)	(0.054)
Regional unemployment rate	-0.015	0.152^{***}	0.039
	(0.017)	(0.036)	(0.024)
Regional vacancy rate	0.105	-0.476	0.333^{**}
	(0.119)	(0.311)	(0.160)
Industry wage premium	-0.122	-1.133^{**}	0.027
	(0.204)	(0.455)	(0.285)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	24,765	24,766	24,766
# individuals	21,420	21,420	21,420
# failures	3,619	831	1,716
LogL	$-28{,}899$	$-6{,}384$	$-12{,}478$
AIC	57,900	12,871	25,060
BIC	58,473	13,455	25,644

Swiss Labor Force Survey, 1991-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table 4: Hazards of job termination by termination reason, Men

	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.144^{**}	0.158^{**}	0.001
	(0.073)	(0.076)	(0.072)
Education: university	-0.583^{***}	0.437^{***}	0.105
	(0.099)	(0.081)	(0.082)
Age 25-35 years	−0.034	-0.279^{***}	-0.265^{**}
	(0.126)	(0.078)	(0.112)
Age 35-45 years	0.159	-0.624^{***}	-0.571^{***}
	(0.130)	(0.086)	(0.122)
Age 45-55 years	0.444^{***}	-1.112^{***}	-0.838^{***}
	(0.132)	(0.107)	(0.138)
Age > 55 years	0.705^{***}	-2.049^{***}	0.633^{***}
	(0.142)	(0.169)	(0.116)
Year	−0.001	−0.012	0.013
	(0.010)	(0.008)	(0.009)
Non-Swiss	0.266^{***}	-0.224^{***}	0.017
	(0.068)	(0.053)	(0.059)
Married	-0.270^{***}	-0.179^{***}	−0.082
	(0.072)	(0.061)	(0.061)
Part-time	0.230	0.185^{*}	0.362^{***}
	(0.171)	(0.109)	(0.122)
Part-time × Married	0.389^{*}	−0.194	0.178
	(0.220)	(0.209)	(0.162)
Number of children	0.010	−0.009	-0.138^{***}
	(0.037)	(0.030)	(0.039)
Firm > 100 co-workers	-0.333^{***}	-0.265^{***}	−0.038
	(0.065)	(0.050)	(0.053)
Regional unemployment rate	0.249^{***}	-0.127^{***}	0.111^{***}
	(0.034)	(0.026)	(0.031)
Regional vacancy rate	−0.082	0.434^{**}	0.408^{**}
	(0.258)	(0.183)	(0.206)
Industry wage premium	-1.554^{***}	-0.937^{***}	0.030
	(0.375)	(0.290)	(0.324)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	25,632	25,632	25,632
# individuals	22,510	22,510	22,510
# failures	1,278	2,081	1,651
LogL	−9,425	−15,964	−11,604
AIC	18,954	32,031	23,313
BIC	19,540	32,617	23,899

Swiss Labor Force Survey, 1996-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table 5: Hazards of job termination by termination reason, Women

	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.191^{**}	0.119^{*}	0.002
	(0.079)	(0.071)	(0.074)
Education: university	-0.424^{***}	0.454^{***}	0.159^{*}
	(0.112)	(0.082)	(0.088)
Age 25-35 years	-0.313^{**}	-0.464^{***}	-0.288^{***}
	(0.130)	(0.075)	(0.095)
Age 35-45 years	-0.147	-0.764^{***}	-0.681^{***}
	(0.132)	(0.082)	(0.105)
Age 45-55 years	0.262^{*}	-1.160^{***}	-1.243^{***}
	(0.135)	(0.095)	(0.122)
Age $>$ 55 years	0.418^{***}	-1.603^{***}	-0.179
	(0.151)	(0.140)	(0.115)
Year	0.020^{*}	0.006	-0.031^{***}
	(0.011)	(0.008)	(0.009)
Non-Swiss	0.357^{***}	-0.200^{***}	-0.190^{***}
	(0.078)	(0.058)	(0.067)
Married	0.084	-0.087	0.281^{***}
	(0.085)	(0.067)	(0.077)
Part-time	0.158	0.124	0.210^{**}
	(0.102)	(0.078)	(0.089)
Part-time $\times$ Married	-0.516^{***}	-0.177^{*}	-0.132
	(0.131)	(0.102)	(0.112)
Number of children	-0.026	-0.084^{***}	-0.091^{**}
	(0.042)	(0.031)	(0.036)
Firm $>$ 100 co-workers	-0.301^{***}	-0.225^{***}	-0.123^{**}
	(0.075)	(0.053)	(0.058)
Regional unemployment rate	0.211^{***}	-0.145^{***}	0.067^{**}
	(0.037)	(0.028)	(0.028)
Regional vacancy rate	0.400	0.240	0.251
	(0.281)	(0.204)	(0.199)
Industry wage premium	-0.109	-0.451	-0.443
	(0.392)	(0.292)	(0.336)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	21,654	21,654	21,654
# individuals	18,896	18,896	18,896
# failures	1,072	1,956	1,579
LogL	$-7{,}956$	$-15{,}120$	$-11{,}782$
AIC	16,015	30,342	23,661
BIC	16,578	30,906	24,203

Swiss Labor Force Survey, 1996-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

be laid off but also that they quit much less frequently. A higher level of education decreases the layoff risk and increases the quit probability. As for the previous set of results, married men are found to keep their job longer than single ones, as they quit less and are less frequently laid off. The hazard rates for employees of large firms are lower for any of the exits considered. Notice finally that the regional unemployment rate raises the layoff hazard rate and decreases the hazard rate of quits.

Like the hazard rate towards unemployment, the hazard rate towards layoff might be considered as an indicator of job insecurity. The coefficient on year for men is unsignificant, whereas those for women is slightly positive and significant at 10%. The time fixed effects of the alternative estimation are displayed in Figures A.5 and A.6. Once again, there is no clear tendency. If any, there seems to be a slight decrease of the time fixed effects. Taken as a whole, our analysis therefore does not bring any clear evidence of an increasing job insecurity.

4.1 The Impact of Wages on Tenure

One variable of particular interest in modeling tenure is the wage rate. This variable has a definite influence on expected tenure: a higher wage provides incentives to stay longer in the same job. This relationship has been extensively analyzed from a theoretical and empirical point of view. Employers manipulate wage profiles and make them steeper with tenure to reduce turnover or provide effort incentives. But the reverse causality is also true, since wages will increase as workers acquire specific skills through tenure. For this reason, long tenured workers earn higher wages and job tenure often appears as a determinant in wage regressions. Some authors like Hirsch & Schnabel (2010) include the wage rate as a regressor in their estimations without questioning the validity of such an approach but, as stated by Gottschalk & Moffitt (1999, p. S116), "wage changes and job dynamics are clearly jointly determined", which obviously raises an endogeneity problem. Topel & Ward (1992) also include the worker's current wage in their proportional hazards model for job mobility. As expected, they find that wage has a strong negative impact on mobility.

In order to account for the effect of earnings on job tenure while avoiding the endogeneity problem, we use inter-industry wage differentials (Krueger & Summers, 1988) instead of individual wages per se. They were obtained by regressing individual wages on a set of personal characteristics and two-digit industry dummies. The coefficients on industry dummies are normalized, and therefore give the industry "premiums". They are to be interpreted as the proportionate wage difference between an employee of a given industry and the average employee. Our contention is that the industry "rent" associated to some industrial wage policy is set exogenously by employers to reduce turnover or attract the best workers, and therefore it is not affected by an individual employee's tenure.

In order to have a measure as exogenous as possible, the industry premi-

ums were computed using the Swiss Wage Structure Survey (SWSS).[9] This representative and nation-wide survey is conducted every two years since 1994. It is an establishment survey, i.e., the questionnaires are filled out by personnel officers in each firm. The SWSS is known to provide more accurate information on wages than the SLFS.

Because the SWSS is only available every even year since 1994 while the data are annual since 1991 in the SLFS, we match each year of the SLFS with the closest following year available in the SWSS.[10]

The industry wage differentials are highly correlated over time. As expected, financial services or insurance companies systematically pay an extra premium of around 20%. On the other side, retail and hotels and restaurants "underpay" their employees by more than 20%.

We observe that industry wage premiums have an unambiguously negative impact on the hazard rate whatever the exit considered, even though the estimates are not all significantly different from zero. This indicates that separation occur less frequently in industries where wages are higher in average. In those industries, workers are less tempted to move. Turnover is also more costly to firms, which are therefore less willing to dismiss employees.

To take an example, the coefficient on the industry premium in first column of Table 4 is -1.6. A worker moving to an industry where the premium is 10 percentage points higher will see his hazard rate towards layoff drop by 16 percent. This is quite sizeable considering that a difference of similar magnitude is observed between workers with only compulsory school and those with apprenticeship training.

4.2 Duration Dependence of the Hazard Rate

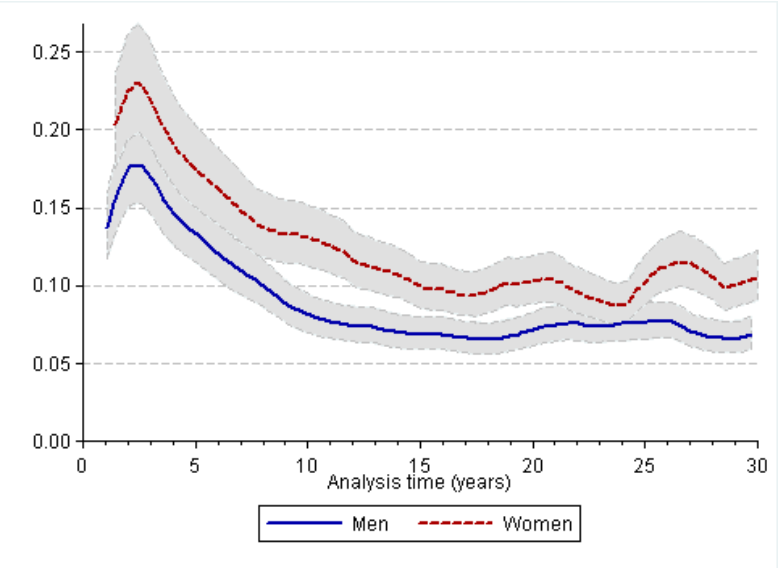
Based on the estimations in Tables 1 to 5, we plot the hazard functions, which shows how the hazard rate evolves with tenure. All hazard functions are drawn for the mode of the overall sample covariates distribution, namely for a Swiss individual aged 35-45, married, without children, with apprenticeship training, working full-time in a firm of the manufacturing sector with less than 100 co-workers, in the canton of Zürich, in 2007. Keeping the covariates at the same values allows for level comparisons between different exits as well as between men and women. We cut the time axis at 30 years of seniority because longer job spells are scarce and the trajectories would fluctuate strongly afterwards.

The hazard functions corresponding to the pooled estimations in Table 1 are plotted in Figure 11. It first confirms the well-known fact that women have shorter job spells that men, their hazard being always larger. The difference however appears to be weakly significant, with the confidence intervals at 90% sometimes slightly overlapping.

[9] We thank Roman Graf who kindly computed the industry premiums for us. The results of this first step are available on request.

[10] The years 1991-1994 are all assigned the 1994 industry premiums, 1995-1996 are assigned the 1996 values, etc.

Figure 11: Hazard rate by gender



Notes: Hazard rates are drawn for the mode of the covariates distribution, i.e., for a Swiss individual aged 35-45, married, without children, with apprenticeship training, working full-time in a firm of the manufacturing sector, with less than 100 co-workers, in the canton of Zürich, in 2007 (the last complete year under observation).
Shaded areas are confidence intervals at 90%.

We then observe that the hazard of job termination peaks within the first few years of a job spell and then decreases monotonically with tenure. It indicates that jobs have a high risk of ending early, and many jobs will last no more than a few years or even a few months. This is perfectly consistent with the results of Booth et al. (1999). Gregg & Wadsworth (2002) also reached a similar conclusion: "job survival chances rise sharply with duration. Whilst half of new jobs break down in just over a year, the remaining fifty percent will last, on average, a total of 4 years".

This non-monotonic relationship between the transition rate and tenure can be explained if jobs are "experience goods".[11] In this case, Jovanovic (1979) demonstrates that the probability of leaving a job may initially rise with tenure. The reason is that it pays to remain and collect information on a new job. Before dissolving their match, the worker and the employer must accumulate some critical amount of information to determine whether it is worth continuing their collaboration or not. This results in a transition rate that increases at the beginning of a job. Eventually, however, the probability of separation must decline with tenure.

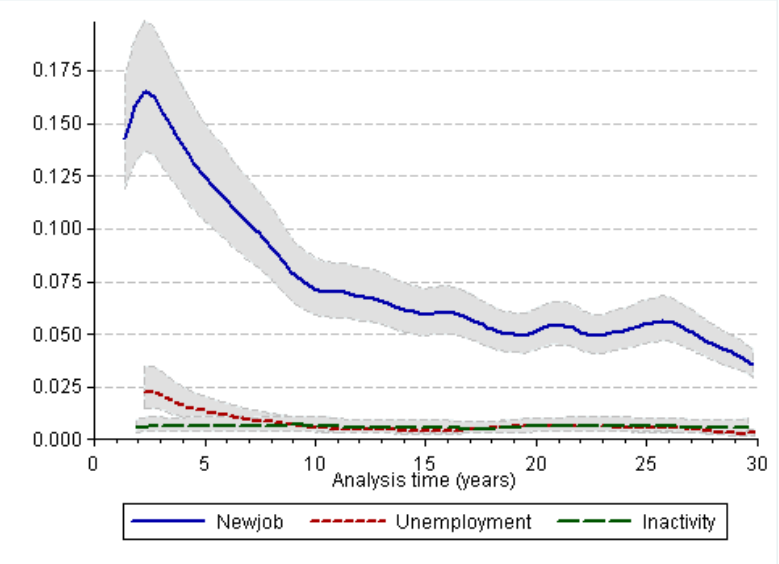
Between 15 and 30 years of tenure, the hazard rate remains virtually flat. Beyond 30 years of tenure (not shown in the graph), the hazard rate would increase very sharply, because jobs end mechanically as workers reach retirement age.

[11] A job is an "experience good" if the only way to determine the quality of a particular match is to form the match and "experience it".

Figures 12 and 13 draws the hazard functions towards the different destination states. The hazard rate towards a new job is by far the largest, at least for men. It peaks during the first few years of a job spell and then decreases until 30 years of tenure. The risk of transition towards unemployment is comparatively low and it is always decreasing during. A large and significant difference between men and women is observed for the hazard rate towards inactivity: while it is virtually nil for men, this transition rate is considerable for women. There is no apparent duration dependence for this destination state.

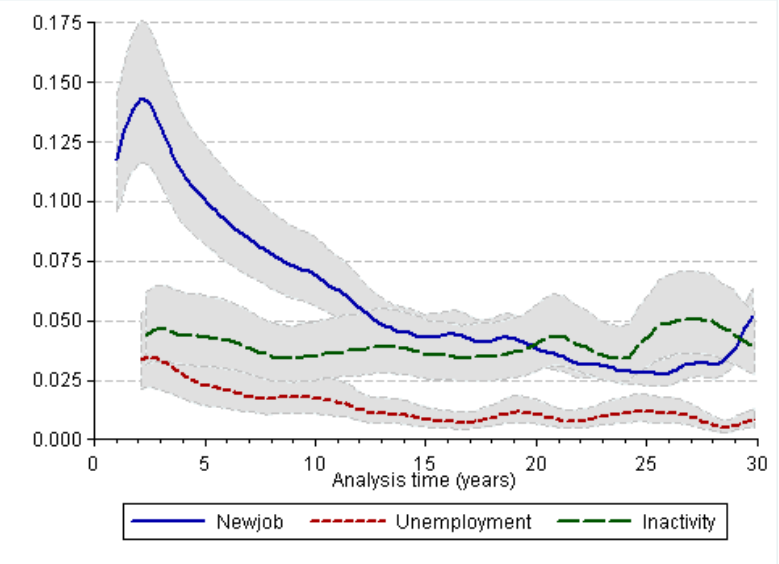
Figures 14 and 15 display the duration dependence of the hazard rates for the different termination reasons. The largest risk transition is found for quits. This hazard rate is of a similar magnitude for men and women, and its duration dependence once again shows a peak early in the spell and a continuous decrease thereafter. The hazard of layoff seems slightly higher for women than for men (even though the difference is not statistically significant), and it is always decreasing with tenure.

Figure 12: Hazard rate by destination state, Men



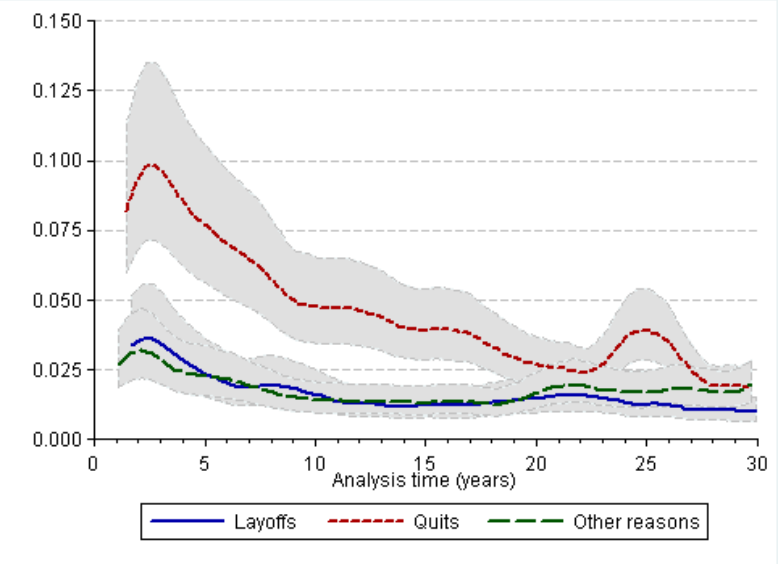
Notes: see Figure 11.

Figure 13: Hazard rates by destination state, Women



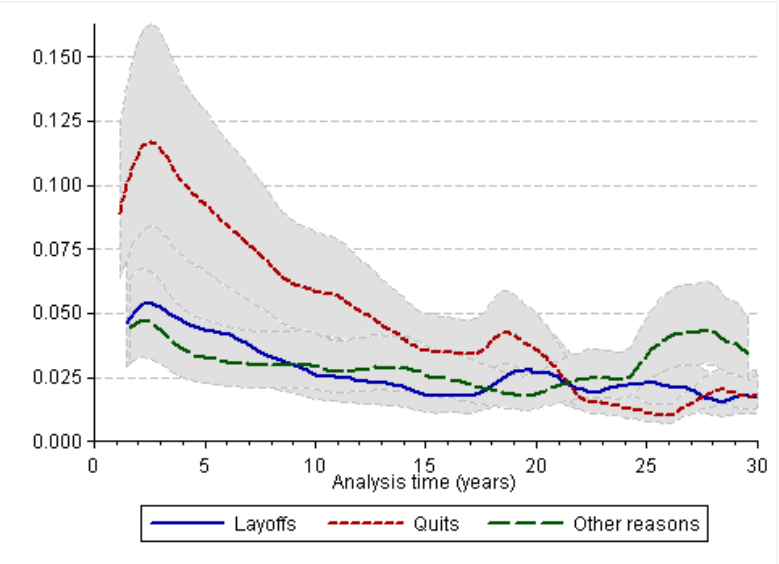
Notes: see Figure 11.

Figure 14: Hazard rates by termination reason, Men



Notes: see Figure 11.

Figure 15: Hazard rates by termination reason, Women



Notes: see Figure 11.

5 Conclusions

This paper investigates the determinants of tenure through the estimation of a series of Cox proportional hazards models. Job stability has been extensively studied in the literature, though often without the appropriate econometric model. We argue that duration analysis is a much more efficient technique to analyze tenure than OLS or logit models. Moreover, we allow individuals to move towards several destination states and jobs to terminate for various reasons by making use of competing risks models. The effects of the covariates are diametrically different across the competing risks, which not only demonstrates the importance of such separations, but also enriches our understanding of the employer-employee relationship.

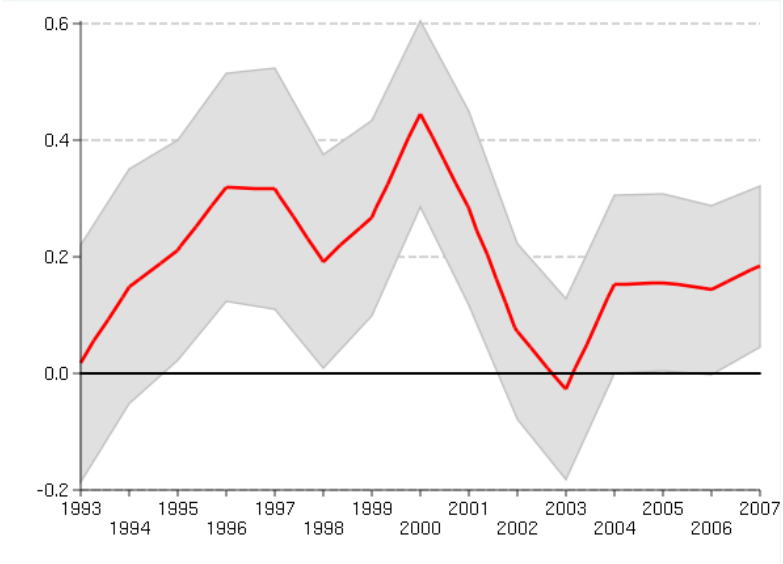
Job stability can be investigated through a regression on tenure without regard to the state of the worker after his job has ended. Our estimates do not show any clear tendency towards either increasing or decreasing tenure. However, we argue that such analysis is of rather limited interest. In our view, the concept of job insecurity is clearly more attractive, since the worker's subsequent state and/or the reason of job termination are taken into account. The evolution of transition rate towards unemployment and that of layoff separations provide useful insights into a potential rise or decline in job insecurity.

Another original contribution of this paper lies in our suggestion for solving the obvious (but often neglected) endogeneity problem associated to individual earnings in tenure regressions. We use inter-industry wage differentials as regressors, and our contention is that these "premiums" are determined, as in the efficiency wage literature, by sectoral factors like the workers' effort monitoring technology. These rents are therefore independent of individual workers' tenure, but they can clearly motivate workers to stick longer with their firm. In accordance with this hypothesis, we find this variable to have a large negative effect (though not always significant) on the hazard rates, whichever the destination state and the job termination reason.

Finally, let us mention that it would be interesting to combine both destination states and termination reasons, since these are two complementary decompositions. One could indeed imagine, for example, that the probabilities of quitting towards a new job and quitting towards unemployment or inactivity are different. The transition rate from a quit to a new job could also differ from the transition rate from a layoff to a new job. Our dataset does unfortunately not contain sufficient observations to estimate such models, which we leave in the agenda of future research.

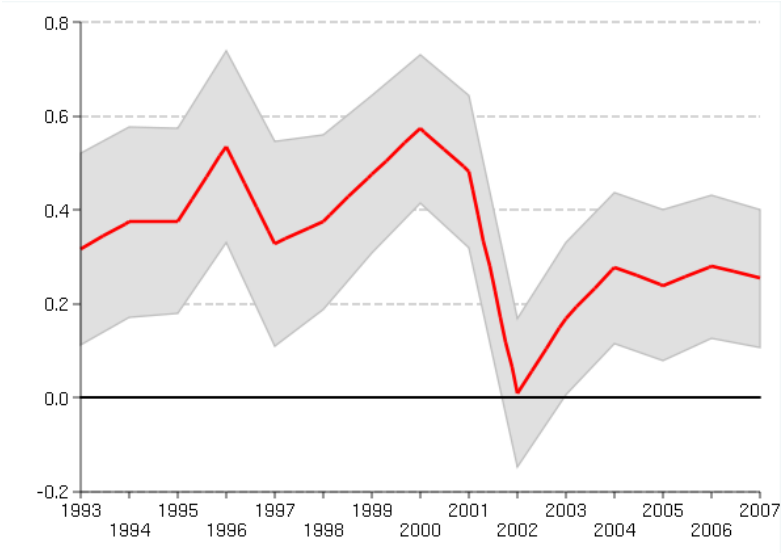
Appendix A: Evolution of Job Stability and Job Insecurity

Figure A.1: Evolution of job instability, Men



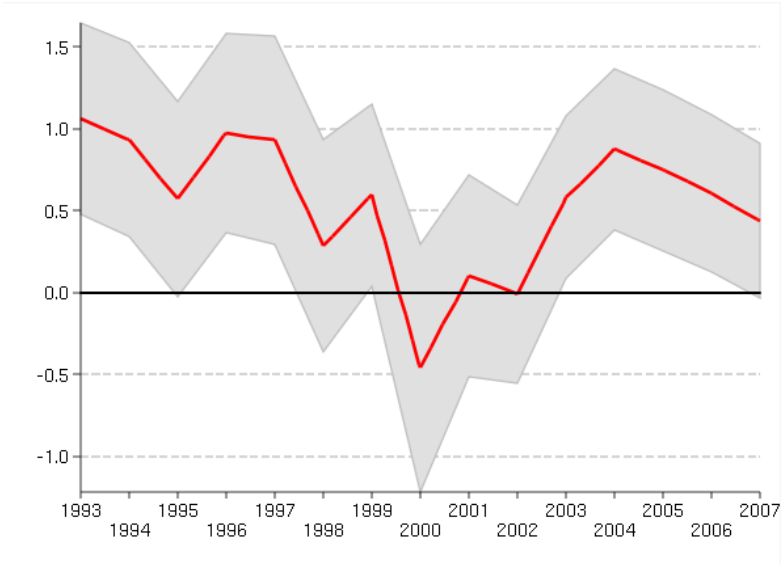
Notes: The plot displays time fixed effects from a regression similar to that in column "Men" of Table 1, where the variable "Year" has been replaced by time fixed effects.
Shaded area is confidence interval at 95%.

Figure A.2: Evolution of job instability, Women



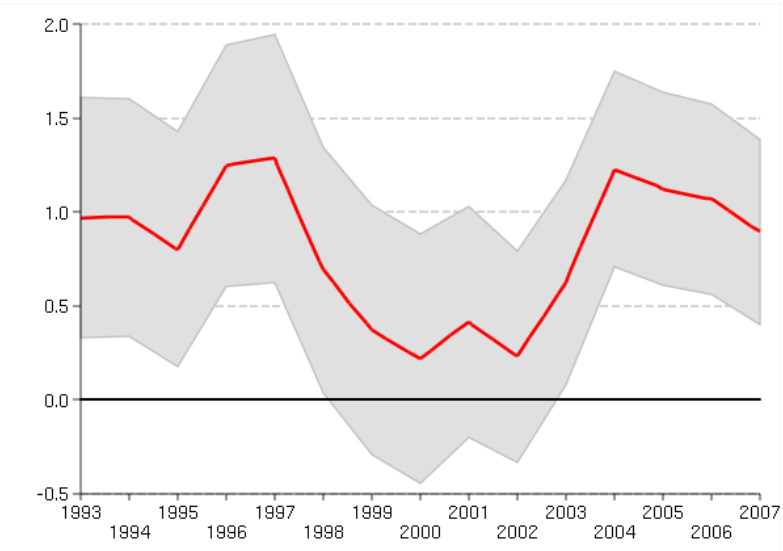
Notes: The plot displays time fixed effects from a regression similar to that in column "Women" of Table 1, where the variable "Year" has been replaced by time fixed effects.
Shaded area is confidence interval at 95%.

Figure A.3: Evolution of job insecurity (unemployment hazard rate), Men



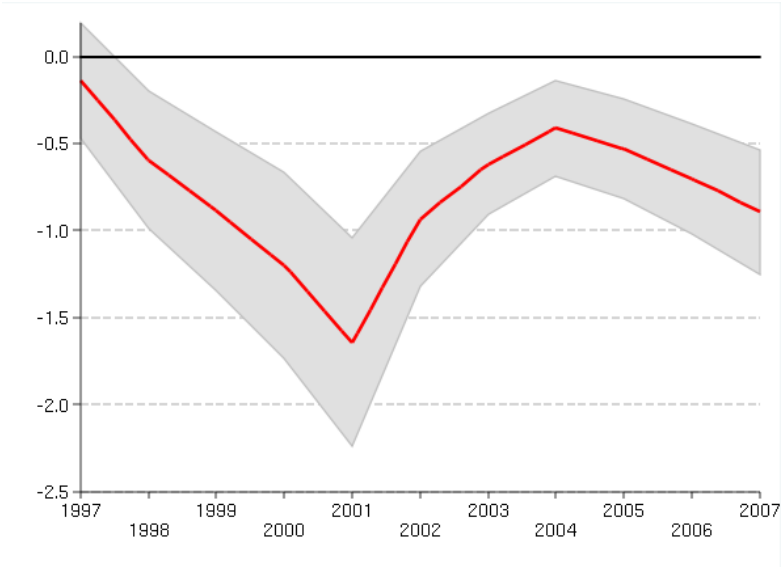
Notes: The plot displays time fixed effects from a regression similar to that in column "Unemployment" of Table 2, where the variable "Year" has been replaced by time fixed effects. Shaded area is confidence interval at 95%.

Figure A.4: Evolution of job insecurity (unemployment hazard rate), Women



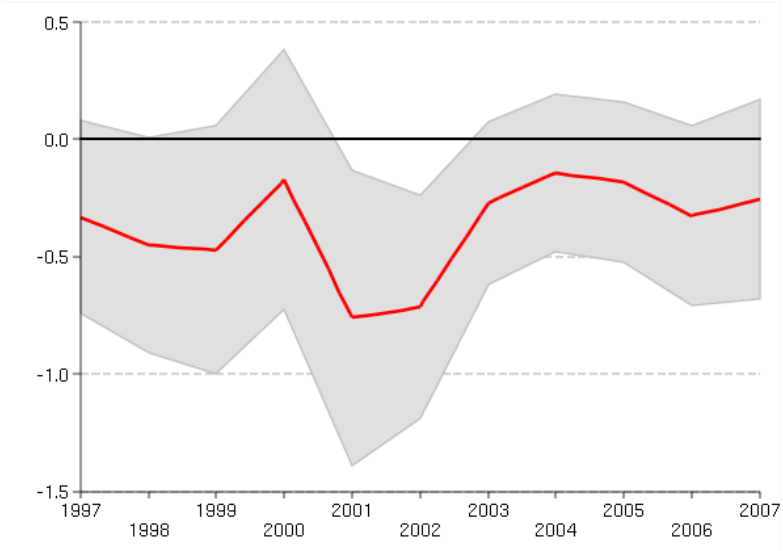
Notes: The plot displays time fixed effects from a regression similar to that in column "Unemployment" of Table 3, where the variable "Year" has been replaced by time fixed effects. Shaded area is confidence interval at 95%.

Figure A.5: Evolution of job insecurity (layoff hazard rate), Men



Notes: The plot displays time fixed effects from a regression similar to that in column "Layoff" of Table 4, where the variable "Year" has been replaced by time fixed effects. Shaded area is confidence interval at 95%.

Figure A.6: Evolution of job insecurity (layoff hazard rate), Women



Notes: The plot displays time fixed effects from a regression similar to that in column "Layoff" of Table 5, where the variable "Year" has been replaced by time fixed effects. Shaded area is confidence interval at 95%.

Appendix B: Did Things Become Worse for Old Workers?

Figure 3 (p. 8) seems to indicate that median tenure has declined for male workers over 45 years old. If this decrease in tenure for old workers is due to undesired job losses, it could explain the popular feeling of growing job insecurity. For workers over 45, losing a job might in fact have serious consequences.

Even if job instability and job insecurity do not seem to have increased for the entire active population, it could be the case for some specific groups. In order to determine if the situation has worsened for old workers over time, we use interaction terms between the year and the age group indicators. Tables B.1 to B.5 display the same estimations as in Tables 1 to 5, with the addition of these interaction terms.

In Table B.1, the coefficients on "Year $\times$ Age 45-55" and "Year $\times$ Age $>$ 55" are positive and highly significant. This shows that employment has become less stable for men over 45 years old. However, it does not necessarily mean that employment has become more insecure.

In fact, Tables B.2 and B.4 do not reveal any increase in the hazard rate towards unemployment or layoff for old male workers. The hazard rate towards inactivity and towards the "other reasons" (not classified as quits nor layoffs) has increased. Therefore, it does not seem that the growing job instability for old men was accompanied by a growing job insecurity. A possible explanation for the decline in their median tenure is that a growing share of them has taken advantage of early retirement plans, which cannot be unambiguously associated to job insecurity.

Tables B.1, B.3 and B.5 display the results for female workers, but no firm conclusion can be drawn for this group, as most of the interaction terms are unsignificant. The only strong effect is observed for prime age workers (25-55), who seem to quit more often than before, which may be due to social changes: more part-time work, more demand for leisure, etc.

Table B.1: Hazard of job termination

	Men	Women
Education: apprenticeship	-0.101^{***}	-0.098^{***}
	(0.036)	(0.034)
Education: university	-0.047	0.010
	(0.041)	(0.043)
Age 25-35 years	-0.281^{***}	-0.325^{***}
	(0.044)	(0.043)
Age 35-45 years	-0.472^{***}	-0.612^{***}
	(0.050)	(0.048)
Age 45-55 years	-0.759^{***}	-0.820^{***}
	(0.059)	(0.054)
Age $>$ 55 years	-0.091	-0.461^{***}
	(0.057)	(0.057)
Year	-0.006	0.006
	(0.007)	(0.006)
Year $\times$ Age 25-35	0.005	-0.008
	(0.008)	(0.008)
Year $\times$ Age 35-45	0.008	0.006
	(0.009)	(0.008)
Year $\times$ Age 45-55	0.040^{***}	0.007
	(0.010)	(0.010)
Year $\times$ Age $>$ 55	0.024^{***}	-0.010
	(0.009)	(0.010)
Non-Swiss	-0.043	-0.088^{***}
	(0.029)	(0.032)
Married	-0.147^{***}	0.088^{**}
	(0.032)	(0.036)
Part-time	0.349^{***}	0.192^{***}
	(0.059)	(0.042)
Part-time $\times$ Married	0.173^{**}	-0.201^{***}
	(0.086)	(0.053)
Number of children	-0.049^{***}	-0.063^{***}
	(0.017)	(0.017)
Firm $>$ 100 co-workers	-0.209^{***}	-0.184^{***}
	(0.027)	(0.029)
Regional unemployment rate	0.039^{***}	0.019
	(0.013)	(0.012)
Regional vacancy rate	0.181^{**}	0.142
	(0.087)	(0.088)
Industry wage premium	-0.613^{***}	-0.146
	(0.150)	(0.151)
Canton dummies	yes	yes
Sector dummies	yes	yes
# spells	29,445	24,766
# individuals	25,682	21,420
# failures	6,584	6,317
LogL	$-50{,}646$	$-49{,}535$
AIC	101,403	99,182
BIC	102,045	99,811

Swiss Labor Force Survey, 1991-2008.
Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table B.2: Hazards of job termination by destination state, Men

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.167^{***}	-0.289^{***}	-0.401^{***}
	(0.051)	(0.090)	(0.073)
Education: university	0.309^{***}	-0.595^{***}	-0.568^{***}
	(0.056)	(0.115)	(0.095)
Age 25-35 years	-0.156^{***}	-0.228	-0.648^{***}
	(0.054)	(0.140)	(0.223)
Age 35-45 years	-0.355^{***}	-0.015	-0.730^{***}
	(0.061)	(0.150)	(0.238)
Age 45-55 years	-0.746^{***}	0.191	-0.259
	(0.073)	(0.158)	(0.228)
Age $>$ 55 years	-1.170^{***}	0.676^{***}	1.769^{***}
	(0.100)	(0.164)	(0.201)
Year	-0.013	0.068^{***}	-0.051
	(0.008)	(0.024)	(0.036)
Year $\times$ Age 25-35	0.008	-0.058^{**}	0.089^{**}
	(0.010)	(0.028)	(0.043)
Year $\times$ Age 35-45	0.008	-0.065^{**}	0.126^{***}
	(0.010)	(0.028)	(0.044)
Year $\times$ Age 45-55	0.033^{***}	-0.044	0.139^{***}
	(0.013)	(0.030)	(0.041)
Year $\times$ Age $>$ 55	-0.017	-0.059^{*}	0.086^{**}
	(0.017)	(0.031)	(0.036)
Non-Swiss	-0.132^{***}	0.480^{***}	-0.002
	(0.037)	(0.081)	(0.069)
Married	-0.114^{***}	-0.485^{***}	0.058
	(0.041)	(0.089)	(0.072)
Part-time	0.161^{*}	0.317^{*}	0.693^{***}
	(0.083)	(0.167)	(0.151)
Part-time $\times$ Married	0.068	0.261	0.265
	(0.133)	(0.244)	(0.180)
Number of children	-0.015	-0.090^{*}	-0.149^{***}
	(0.020)	(0.050)	(0.057)
Firm $>$ 100 co-workers	-0.313^{***}	-0.269^{***}	0.116^{**}
	(0.035)	(0.078)	(0.058)
Regional unemployment rate	0.003	0.197^{***}	0.060^{*}
	(0.016)	(0.034)	(0.033)
Regional vacancy rate	0.450^{***}	-0.433	-0.357
	(0.103)	(0.274)	(0.240)
Industry wage premium	-0.765^{***}	-0.857^{**}	-0.166
	(0.188)	(0.426)	(0.351)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	29,444	29,445	29,445
# individuals	25,681	25,682	25,682
# failures	4,317	876	1,235
LogL	$-34{,}215$	$-6{,}728$	$-7{,}574$
AIC	68,541	13,564	15,260
BIC	69,183	14,183	15,901

Swiss Labor Force Survey, 1991-2008.
Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table B.3: Hazards of job termination by destination state, Women

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.174^{***}	-0.285^{***}	-0.245^{***}
	(0.051)	(0.089)	(0.061)
Education: university	0.396^{***}	-0.457^{***}	-0.385^{***}
	(0.061)	(0.121)	(0.090)
Age 25-35 years	-0.325^{***}	-0.143	0.315^{**}
	(0.053)	(0.145)	(0.135)
Age 35-45 years	-0.479^{***}	-0.177	-0.313^{**}
	(0.059)	(0.156)	(0.145)
Age 45-55 years	-0.793^{***}	0.031	-0.371^{**}
	(0.071)	(0.157)	(0.147)
Age $>$ 55 years	-1.192^{***}	0.045	0.737^{***}
	(0.103)	(0.193)	(0.144)
Year	-0.008	0.079^{***}	0.019
	(0.008)	(0.021)	(0.023)
Year $\times$ Age 25-35	-0.006	-0.013	-0.014
	(0.009)	(0.026)	(0.025)
Year $\times$ Age 35-45	0.004	-0.052^{*}	0.021
	(0.010)	(0.027)	(0.026)
Year $\times$ Age 45-55	0.024^{*}	-0.069^{**}	-0.014
	(0.012)	(0.027)	(0.026)
Year $\times$ Age $>$ 55	0.016	0.002	-0.047^{*}
	(0.019)	(0.034)	(0.025)
Non-Swiss	-0.162^{***}	0.378^{***}	-0.132^{**}
	(0.044)	(0.087)	(0.064)
Married	-0.260^{***}	0.213^{**}	0.881^{***}
	(0.051)	(0.094)	(0.077)
Part-time	0.103^{*}	-0.016	0.538^{***}
	(0.054)	(0.128)	(0.095)
Part-time $\times$ Married	-0.148^{**}	-0.355^{**}	-0.404^{***}
	(0.075)	(0.154)	(0.110)
Number of children	-0.056^{**}	-0.013	-0.043
	(0.023)	(0.045)	(0.035)
Firm $>$ 100 co-workers	-0.259^{***}	-0.153^{*}	-0.029
	(0.040)	(0.083)	(0.054)
Regional unemployment rate	-0.015	0.151^{***}	0.040
	(0.017)	(0.036)	(0.024)
Regional vacancy rate	0.098	-0.480	0.315^{**}
	(0.119)	(0.313)	(0.161)
Industry wage premium	-0.120	-1.152^{**}	0.052
	(0.204)	(0.454)	(0.285)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	24,765	24,766	24,766
# individuals	21,420	21,420	21,420
# failures	3,619	831	1,716
LogL	$-28{,}895$	$-6{,}377$	$-12{,}468$
AIC	57,900	12,861	25,048
BIC	58,517	13,456	25,677

Swiss Labor Force Survey, 1991-2008.
Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table B.4: Hazards of job termination by termination reason, Men

	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.141^{*}	0.157^{**}	-0.003
	(0.073)	(0.077)	(0.072)
Education: university	-0.575^{***}	0.436^{***}	0.105
	(0.099)	(0.081)	(0.082)
Age 25-35 years	0.220	-0.257^{***}	-0.293^{**}
	(0.184)	(0.097)	(0.132)
Age 35-45 years	0.490^{***}	-0.627^{***}	-0.653^{***}
	(0.190)	(0.109)	(0.150)
Age 45-55 years	0.680^{***}	-1.230^{***}	-1.134^{***}
	(0.195)	(0.151)	(0.194)
Age $>$ 55 years	0.808^{***}	-2.047^{***}	0.406^{***}
	(0.212)	(0.242)	(0.141)
Year	0.073^{**}	-0.011	-0.035
	(0.036)	(0.021)	(0.027)
Year $\times$ Age 25-35	-0.082^{**}	-0.008	0.015
	(0.040)	(0.023)	(0.031)
Year $\times$ Age 35-45	-0.104^{***}	0.001	0.037
	(0.040)	(0.024)	(0.033)
Year $\times$ Age 45-55	-0.075^{*}	0.033	0.095^{**}
	(0.041)	(0.032)	(0.039)
Year $\times$ Age $>$ 55	-0.038	-0.002	0.076^{**}
	(0.043)	(0.053)	(0.030)
Non-Swiss	0.270^{***}	-0.222^{***}	0.029
	(0.068)	(0.053)	(0.059)
Married	-0.271^{***}	-0.178^{***}	-0.076
	(0.072)	(0.061)	(0.062)
Part-time	0.225	0.185^{*}	0.368^{***}
	(0.171)	(0.109)	(0.122)
Part-time $\times$ Married	0.392^{*}	-0.194	0.163
	(0.220)	(0.209)	(0.162)
Number of children	0.009	-0.010	-0.141^{***}
	(0.037)	(0.030)	(0.039)
Firm $>$ 100 co-workers	-0.332^{***}	-0.265^{***}	-0.035
	(0.065)	(0.050)	(0.053)
Regional unemployment rate	0.248^{***}	-0.128^{***}	0.103^{***}
	(0.034)	(0.026)	(0.031)
Regional vacancy rate	-0.107	0.426^{**}	0.388^{*}
	(0.258)	(0.183)	(0.205)
Industry wage premium	-1.565^{***}	-0.939^{***}	0.033
	(0.376)	(0.291)	(0.326)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	25,632	25,632	25,632
# individuals	22,510	22,510	22,510
# failures	1,278	2,081	1,651
LogL	$-9{,}419$	$-15{,}962$	$-11{,}596$
AIC	18,950	32,036	23,304
BIC	19,581	32,667	23,935

Swiss Labor Force Survey, 1996-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Table B.5: Hazards of job termination by termination reason, Women

	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.195^{**}	0.116	0.007
	(0.079)	(0.071)	(0.074)
Education: university	-0.424^{***}	0.445^{***}	0.162^{*}
	(0.112)	(0.082)	(0.088)
Age 25-35 years	-0.322^{*}	-0.595^{***}	-0.263^{**}
	(0.166)	(0.091)	(0.108)
Age 35-45 years	−0.068	-0.929^{***}	-0.662^{***}
	(0.171)	(0.107)	(0.123)
Age 45-55 years	0.196	-1.328^{***}	-1.233^{***}
	(0.174)	(0.129)	(0.147)
Age > 55 years	0.322	-1.673^{***}	−0.081
	(0.201)	(0.190)	(0.134)
Year	0.013	-0.044^{**}	−0.015
	(0.031)	(0.018)	(0.022)
Year × Age 25-35	0.004	0.057^{***}	−0.014
	(0.037)	(0.022)	(0.025)
Year × Age 35-45	−0.020	0.066^{***}	−0.012
	(0.036)	(0.023)	(0.027)
Year × Age 45-55	0.021	0.067^{**}	−0.009
	(0.036)	(0.028)	(0.033)
Year × Age > 55	0.029	0.037	−0.040
	(0.042)	(0.044)	(0.029)
Non-Swiss	0.363^{***}	-0.201^{***}	-0.196^{***}
	(0.078)	(0.058)	(0.067)
Married	0.085	−0.088	0.281^{***}
	(0.085)	(0.067)	(0.077)
Part-time	0.157	0.130^{*}	0.208^{**}
	(0.102)	(0.078)	(0.089)
Part-time × Married	-0.514^{***}	-0.178^{*}	−0.132
	(0.131)	(0.102)	(0.112)
Number of children	−0.027	-0.084^{***}	-0.092^{***}
	(0.042)	(0.032)	(0.036)
Firm > 100 co-workers	-0.301^{***}	-0.224^{***}	-0.124^{**}
	(0.075)	(0.053)	(0.058)
Regional unemployment rate	0.211^{***}	-0.149^{***}	0.069^{**}
	(0.037)	(0.028)	(0.029)
Regional vacancy rate	0.391	0.222	0.255
	(0.281)	(0.204)	(0.200)
Industry wage premium	−0.107	−0.430	−0.447
	(0.393)	(0.291)	(0.336)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	21,654	21,654	21,654
# individuals	18,896	18,896	18,896
# failures	1,072	1,956	1,579
LogL	−7,955	−15,115	−11,780
AIC	16,019	30,340	23,667
BIC	16,627	30,948	24,253

Swiss Labor Force Survey, 1996-2008.
Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

Appendix C: Results with a Piecewise Constant Exponential Model

The piecewise constant exponential model constitutes an alternative to the Cox model. Both are proportional hazard models, as they specify the same hazard function:

$$h(t) = h_0(t) \cdot \exp(x'\beta) \tag{C.1}$$

The only difference between the two models lies in the way the baseline hazard $h_0(t)$ is modelled. In the Cox model, the baseline hazard is left completely unspecified. In the piecewise constant exponential model, the baseline hazard is assumed to be constant within time intervals (arbitrarily defined), but it can change across intervals. Hence, the hazard function becomes:

$$h(t) = \left\{ \sum_{m=1}^{M} h_m \cdot \delta_m \right\} \cdot \exp(x'\beta) \tag{C.2}$$

where δ_m is a dummy variable indicating the m^{th} time interval defined by the cutoff points c_{m-1} and c_m:

$$\delta_m = \begin{cases} 1 & \text{if } c_{m-1} \leq t < c_m \\ 0 & \text{otherwise} \end{cases} \qquad m = 1, 2, \ldots, M. \tag{C.3}$$

For the empirical estimations, we use one-year length intervals between 0 and 10 years of tenure, two-years intervals between 10 and 20 years, and five-years intervals after 20 years. Different partitionings have been tested and lead to very similar results. As expected, the coefficients estimated are extremely close to those obtained with a Cox model (see Tables C.1 to C.5). Figures C.1 to C.4 show the hazard rates obtained with the piecewise constant exponential models. They are naturally very similar to the ones obtained with the Cox model. One observation that is made clearer with the piecewise constant exponential model is that the peak in the hazard rates occurs in the second year of a job spell. This is consistent across all estimations.

Table C.1: Piecewise exponential hazard model for job tenure

	Men	Women
Education: apprenticeship	-0.099^{***}	-0.092^{***}
	(0.035)	(0.033)
Education: university	-0.049	0.010
	(0.041)	(0.043)
Age 25-35 years	-0.279^{***}	-0.326^{***}
	(0.044)	(0.042)
Age 35-45 years	-0.472^{***}	-0.589^{***}
	(0.049)	(0.046)
Age 45-55 years	-0.686^{***}	-0.797^{***}
	(0.056)	(0.052)
Age $>$ 55 years	-0.052	-0.466^{***}
	(0.055)	(0.056)
Year	0.006^{**}	0.004
	(0.003)	(0.003)
Non-Swiss	-0.045	-0.081^{**}
	(0.029)	(0.032)
Married	-0.152^{***}	0.089^{**}
	(0.031)	(0.036)
Part-time	0.344^{***}	0.190^{***}
	(0.059)	(0.041)
Part-time $\times$ Married	0.194^{**}	-0.201^{***}
	(0.085)	(0.053)
Number of children	-0.047^{***}	-0.062^{***}
	(0.017)	(0.017)
Firm $>$ 100 co-workers	-0.211^{***}	-0.183^{***}
	(0.027)	(0.029)
Regional unemployment rate	0.030^{**}	0.014
	(0.013)	(0.012)
Regional vacancy rate	0.166^{*}	0.136
	(0.088)	(0.088)
Industry wage premium	-0.617^{***}	-0.149
	(0.149)	(0.150)
Canton dummies	yes	yes
Sector dummies	yes	yes
# spells	29,445	24,766
# individuals	25,682	21,420
# failures	6,584	6,317
LogL	$-9{,}510$	$-9{,}740$
AIC	19,166	19,626
BIC	20,006	20,449

Swiss Labor Force Survey, 1991-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

The time axis is split every year between 0 and 10 years of tenure, every two years between 10 and 20 years of tenure, and every five years after 20 years of tenure.

Table C.2: Piecewise exponential hazard model for job tenure by destination state (Men)

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.171^{***}	-0.293^{***}	-0.418^{***}
	(0.051)	(0.090)	(0.073)
Education: university	0.313^{***}	-0.606^{***}	-0.578^{***}
	(0.055)	(0.115)	(0.095)
Age 25-35 years	-0.150^{***}	-0.326^{**}	-0.653^{***}
	(0.053)	(0.129)	(0.216)
Age 35-45 years	-0.348^{***}	-0.139	-0.631^{***}
	(0.059)	(0.138)	(0.218)
Age 45-55 years	-0.687^{***}	0.119	-0.120
	(0.069)	(0.143)	(0.213)
Age $>$ 55 years	-1.205^{***}	0.566^{***}	1.750^{***}
	(0.097)	(0.150)	(0.197)
Year	-0.006^{*}	0.018^{**}	0.043^{***}
	(0.003)	(0.008)	(0.007)
Non-Swiss	-0.122^{***}	0.480^{***}	-0.022
	(0.037)	(0.081)	(0.069)
Married	-0.116^{***}	-0.492^{***}	0.049
	(0.040)	(0.090)	(0.072)
Part-time	0.155^{*}	0.341^{**}	0.672^{***}
	(0.083)	(0.168)	(0.150)
Part-time $\times$ Married	0.071	0.242	0.317^{*}
	(0.132)	(0.245)	(0.178)
Number of children	-0.013	-0.087^{*}	-0.145^{**}
	(0.020)	(0.050)	(0.057)
Firm $>$ 100 co-workers	-0.315^{***}	-0.274^{***}	0.118^{**}
	(0.035)	(0.078)	(0.058)
Regional unemployment rate	-0.003	0.192^{***}	0.035
	(0.015)	(0.034)	(0.032)
Regional vacancy rate	0.438^{***}	-0.439	-0.393
	(0.102)	(0.274)	(0.239)
Industry wage premium	-0.769^{***}	-0.840^{**}	-0.216
	(0.187)	(0.425)	(0.349)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	29,444	29,445	29,445
# individuals	25,681	25,682	25,682
# failures	4,317	876	1,235
LogL	$-8,827$	$-2,763$	$-1,466$
AIC	17,799	5,672	3,078
BIC	18,639	6,512	3,918

Swiss Labor Force Survey, 1991-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

The time axis is split every year between 0 and 10 years of tenure, every two years between 10 and 20 years of tenure, and every five years after 20 years of tenure.

Table C.3: Piecewise exponential hazard model for job tenure by destination state (Women)

	Newjob	Unemployment	Inactivity
Education: apprenticeship	0.187^{***}	-0.291^{***}	-0.254^{***}
	(0.050)	(0.090)	(0.061)
Education: university	0.399^{***}	-0.462^{***}	-0.378^{***}
	(0.060)	(0.120)	(0.090)
Age 25-35 years	-0.325^{***}	-0.144	0.312^{**}
	(0.052)	(0.136)	(0.134)
Age 35-45 years	-0.467^{***}	-0.287^{**}	-0.228
	(0.057)	(0.145)	(0.141)
Age 45-55 years	-0.743^{***}	-0.103	-0.368^{**}
	(0.066)	(0.152)	(0.145)
Age $>$ 55 years	-1.159^{***}	0.081	0.693^{***}
	(0.097)	(0.173)	(0.145)
Year	-0.006^{*}	0.047^{***}	0.003
	(0.004)	(0.009)	(0.005)
Non-Swiss	-0.156^{***}	0.372^{***}	-0.114^{*}
	(0.043)	(0.087)	(0.064)
Married	-0.258^{***}	0.211^{**}	0.880^{***}
	(0.051)	(0.094)	(0.077)
Part-time	0.096^{*}	-0.002	0.544^{***}
	(0.053)	(0.128)	(0.095)
Part-time $\times$ Married	-0.147^{**}	-0.358^{**}	-0.409^{***}
	(0.074)	(0.154)	(0.110)
Number of children	-0.055^{**}	-0.012	-0.037
	(0.023)	(0.045)	(0.034)
Firm $>$ 100 co-workers	-0.261^{***}	-0.150^{*}	-0.024
	(0.040)	(0.083)	(0.054)
Regional unemployment rate	-0.022	0.145^{***}	0.036
	(0.016)	(0.036)	(0.024)
Regional vacancy rate	0.093	-0.486	0.329^{**}
	(0.118)	(0.312)	(0.160)
Industry wage premium	-0.121	-1.145^{**}	0.037
	(0.202)	(0.455)	(0.285)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	24,765	24,766	24,766
# individuals	21,420	21,420	21,420
# failures	3,619	831	1,716
LogL	$-8{,}085$	$-2{,}616$	$-3{,}651$
AIC	16,316	5,377	7,446
BIC	17,140	6,201	8,258

Swiss Labor Force Survey, 1991-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

The time axis is split every year between 0 and 10 years of tenure, every two years between 10 and 20 years of tenure, and every five years after 20 years of tenure.

Table C.4: Piecewise exponential hazard model for job tenure by termination reason (Men)

	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.150^{**}	0.142^{*}	-0.022
	(0.073)	(0.076)	(0.072)
Education: university	-0.601^{***}	0.393^{***}	0.081
	(0.099)	(0.080)	(0.082)
Age 25-35 years	-0.041	-0.233^{***}	-0.256^{**}
	(0.125)	(0.076)	(0.110)
Age 35-45 years	0.148	-0.567^{***}	-0.571^{***}
	(0.130)	(0.085)	(0.121)
Age 45-55 years	0.421^{***}	-1.075^{***}	-0.850^{***}
	(0.131)	(0.105)	(0.137)
Age $>$ 55 years	0.676^{***}	-2.028^{***}	0.615^{***}
	(0.142)	(0.170)	(0.116)
Year	0.087^{***}	0.076^{***}	0.090^{***}
	(0.007)	(0.005)	(0.006)
Non-Swiss	0.182^{***}	-0.322^{***}	-0.069
	(0.067)	(0.052)	(0.059)
Married	-0.267^{***}	-0.198^{***}	-0.081
	(0.072)	(0.060)	(0.061)
Part-time	0.219	0.183^{*}	0.364^{***}
	(0.171)	(0.108)	(0.122)
Part-time $\times$ Married	0.396^{*}	-0.144	0.210
	(0.219)	(0.205)	(0.159)
Number of children	0.007	-0.005	-0.126^{***}
	(0.037)	(0.029)	(0.038)
Firm $>$ 100 co-workers	-0.347^{***}	-0.272^{***}	-0.032
	(0.065)	(0.049)	(0.053)
Regional unemployment rate	0.285^{***}	-0.083^{***}	0.111^{***}
	(0.035)	(0.025)	(0.030)
Regional vacancy rate	0.296	0.439^{***}	0.486^{***}
	(0.236)	(0.157)	(0.188)
Industry wage premium	-1.426^{***}	-0.626^{**}	0.286
	(0.366)	(0.277)	(0.313)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	29,445	29,445	29,445
# individuals	25,682	25,682	25,682
# failures	1,294	2,142	1,680
LogL	$-3,631$	$-5,510$	$-3,848$
AIC	7,407	11,165	7,842
BIC	8,247	12,005	8,681

Swiss Labor Force Survey, 1996-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

The time axis is split every year between 0 and 10 years of tenure, every two years between 10 and 20 years of tenure, and every five years after 20 years of tenure.

Table C.5: Piecewise exponential hazard model for job tenure by termination reason (Women)

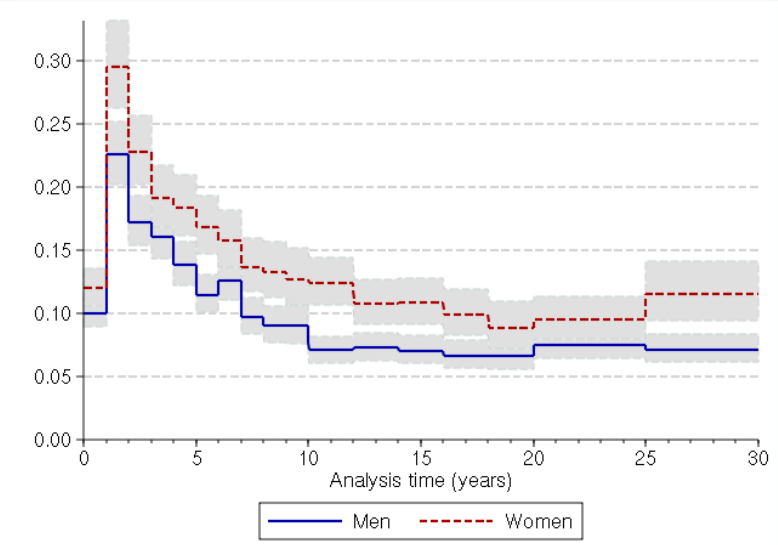
	Layoffs	Quits	Other reasons
Education: apprenticeship	-0.194^{**}	0.147^{**}	0.025
	(0.078)	(0.069)	(0.073)
Education: university	-0.458^{***}	0.419^{***}	0.127
	(0.112)	(0.081)	(0.087)
Age 25-35 years	-0.302^{**}	-0.416^{***}	-0.232^{**}
	(0.128)	(0.074)	(0.093)
Age 35-45 years	-0.152	-0.715^{***}	-0.658^{***}
	(0.130)	(0.081)	(0.104)
Age 45-55 years	0.249^{*}	-1.110^{***}	-1.181^{***}
	(0.133)	(0.094)	(0.122)
Age $>$ 55 years	0.395^{***}	-1.576^{***}	-0.139
	(0.149)	(0.139)	(0.114)
Year	0.100^{***}	0.087^{***}	0.064^{***}
	(0.008)	(0.005)	(0.005)
Non-Swiss	0.287^{***}	-0.270^{***}	-0.278^{***}
	(0.077)	(0.057)	(0.066)
Married	0.061	-0.099	0.247^{***}
	(0.085)	(0.066)	(0.076)
Part-time	0.141	0.115	0.180^{**}
	(0.101)	(0.077)	(0.088)
Part-time $\times$ Married	-0.501^{***}	-0.164	-0.099
	(0.131)	(0.101)	(0.110)
Number of children	-0.021	-0.085^{***}	-0.077^{**}
	(0.042)	(0.031)	(0.036)
Firm $>$ 100 co-workers	-0.306^{***}	-0.207^{***}	-0.124^{**}
	(0.075)	(0.052)	(0.057)
Regional unemployment rate	0.224^{***}	-0.118^{***}	0.102^{***}
	(0.037)	(0.027)	(0.028)
Regional vacancy rate	0.606^{**}	0.235	0.532^{***}
	(0.258)	(0.171)	(0.173)
Industry wage premium	0.065	-0.117	0.149
	(0.372)	(0.275)	(0.309)
Canton dummies	yes	yes	yes
Sector dummies	yes	yes	yes
# spells	24,766	24,766	24,766
# individuals	21,420	21,420	21,420
# failures	1,082	2,000	1,612
LogL	$-3,199$	$-5,237$	$-4,413$
AIC	6,545	10,620	8,972
BIC	7,368	11,444	9,796

Swiss Labor Force Survey, 1996-2008.

Standard errors in parentheses. $^{***}/^{**}/^{*}$: Significant at the 0.01/0.05/0.10 level.

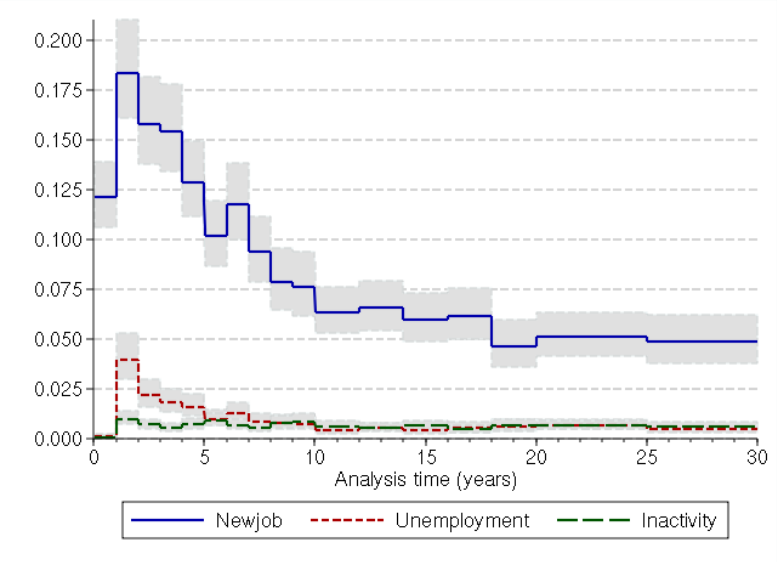
The time axis is split every year between 0 and 10 years of tenure, every two years between 10 and 20 years of tenure, and every five years after 20 years of tenure.

Figure C.1: Hazard rates by gender, piecewise exponential model



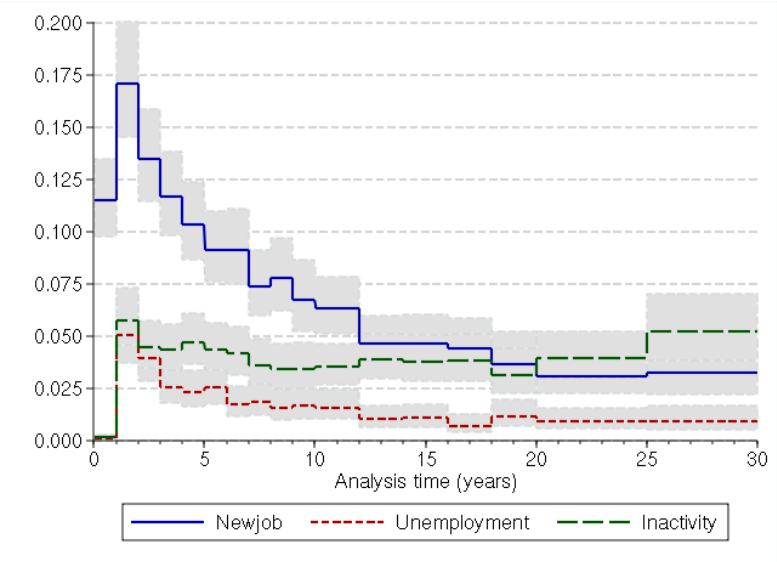
Notes: Hazard rates are drawn for the mode of the covariates distribution, i.e., for a Swiss individual aged 35-45, married, without children, with apprenticeship training, working full-time in a firm of the manufacturing sector, with less than 100 co-workers, in the canton of Zürich, in 2007 (the last complete year under observation).
Shaded areas are confidence intervals at 90%.

Figure C.2: Hazard rates by destination state, piecewise exponential model (Men)



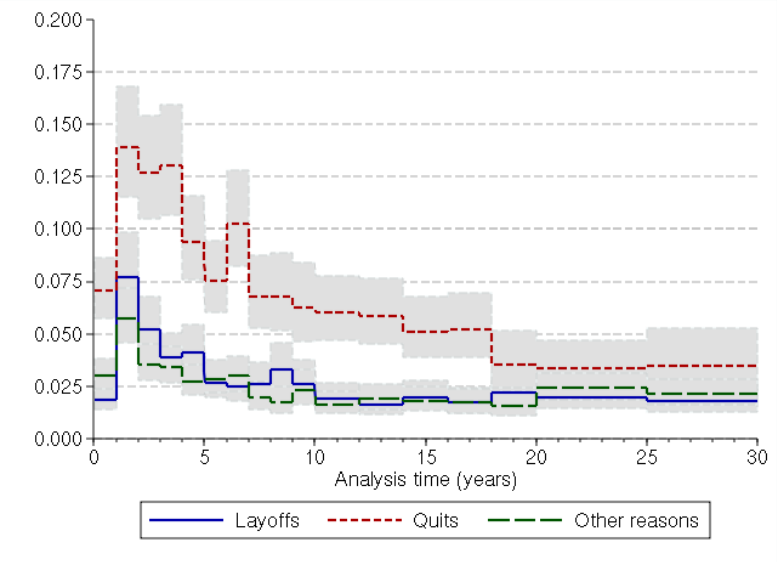
Notes: see Figure C.1.

Figure C.3: Hazard rates by destination state, piecewise exponential model (Women)



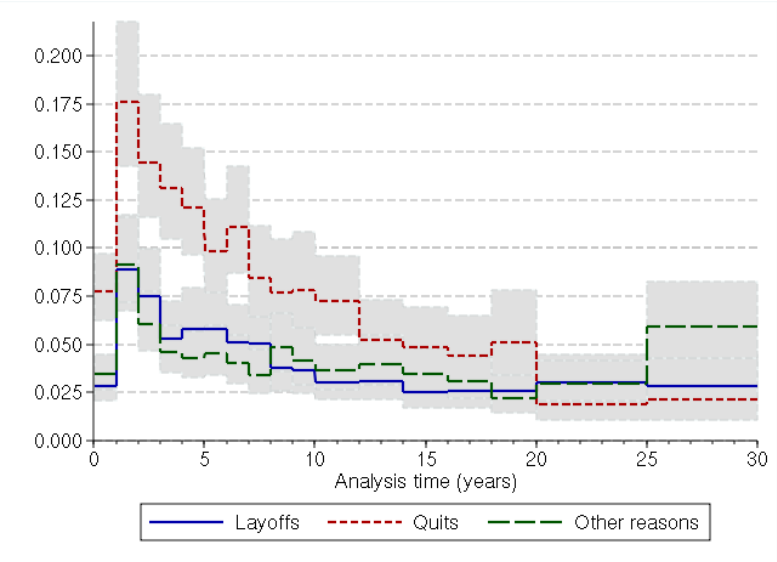
Notes: see Figure C.1.

Figure C.4: Hazard rates by termination reason, piecewise exponential model (Men)



Notes: see Figure C.1.

Figure C.5: Hazard rates by termination reason, piecewise exponential model (Women)



Notes see Figure C.1.

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