

Transitions from Temporary to Open-Ended Jobs in Sweden – A Gender Issue?*

Ph.D. Mårten Wallette,
Department of Economics,
Lund University

Preliminary version of Friday, 08 April 2005

Abstract

This paper analyses exits from different types of temporary jobs to open-ended jobs in the Swedish labour market during the period 1987-1999. A special focus is on differences between female and male temporary workers with respect to their respective exit probabilities to open-ended jobs. The results show that temporary jobs are rather poor stepping-stones to open-ended jobs in the Swedish labour market, at least in the short run. The exit rates are largely affected by different worker/job characteristics, for example, part-time work, labour market sector, and gender. Our special focus on the gender issue further reveals that the exit rates to open-ended jobs are, in general, higher for male workers than for female workers. This finding might indicate that there is some kind of gender-based segmentation in the Swedish labour market, with respect to the probability of exiting from temporary jobs to open-ended jobs.

Keywords: temporary jobs; exit probability; gender differences; segmentation.

JEL classification: J21; J40.

*The author gratefully acknowledges valuable comments from Inga Persson, Donald Storrie, Lennart Flood, David Edgerton, Curt Wells, Tor Eriksson, and Anna Meyer. Financial support from the Swedish Council for Working Life and Social Research (FAS), The Chamber of Commerce and Industry of Southern Sweden, and the Crafoord Foundation is gratefully acknowledged.

Introduction

During the 1990s, there was a strong increase in temporary jobs in the Swedish labour market. In 1990 approximately 10 per cent of the employed workforce had temporary jobs, but by 1999 the figure had increased to roughly 15 per cent, and virtually all demographic groups were affected. Temporary jobs, of various types, have thus become an essential feature in the Swedish labour market. There is no single, or simple for that matter, explanation for the increase in such jobs in Sweden during the 1990s. Likewise, there were no significant changes in the legislation during the period that can account for this large increase. One plausible explanation is, however, the very severe decline in the demand for labour during the initial years of the 1990s, which resulted in a historically high unemployment rate, and a corresponding falling employment rate. The economic recession might have made employers more reluctant from hiring labour on a permanent basis, with an increasing number of temporary contract as a result, i.e. uncertainty about the future might have been an important factor. Another affecting factor might have been an expanding service sector. Many of the “new” temporary jobs that were created during the 1990s, were flexible jobs (i.e. on-call jobs and project jobs), while jobs such as replacement jobs instead declined during the period. Finally, the demand for temporary jobs may have increased. Higher education in Sweden expanded in the early 1990s, and to finance their studies, students might have increased their demand for temporary jobs. All in all, the explanation for the increase in temporary jobs in Sweden during the 1990s is likely to have been affected by all of the above mentioned factors, although we cannot say anything of their respective importance.

Taking the evolution of temporary jobs into account, together with the proposition that permanent jobs are, *ceteris paribus*, preferred to temporary ones, due to, for example, higher security, one important question is whether workers who hold temporary jobs exit to open-ended jobs, or if they tend to get stuck in their temporary jobs. In other words, do temporary jobs have a positive effect on the transition to open-ended jobs, and are there any gender differences in this respect? The aim of this paper is thus twofold; (i) to analyse the transition from temporary jobs to open-ended jobs in Sweden during the period 1987-1990, and (ii) to put a specific focus on differences between the genders, and between some gender specific job-characteristics. The reason for our specific gender focus is that the Swedish labour market is a gender segmented labour market, and differences between the genders with respect to the exit from temporary jobs to open-ended jobs can further add to such segmentation. We study four types of temporary jobs;

replacement jobs, probation jobs, on-call jobs, and project jobs. Our data comes from the *Swedish Labour Force Surveys* (LFS) conducted by *Statistics Sweden* (SCB) and covers the years 1987-1999. The data is analysed empirically by means of a time-discrete duration model.

The paper is structured as follows. *Section 2* describes the evolution of temporary jobs in Sweden, and the legislation on such jobs is in short presented. *Section 3* contains a theoretical discussion about temporary jobs and the possibility of gender differences. *Section 4* describes our data set and the econometric model, and in *section 5* the empirical results are presented. *Section 6* sums up and concludes.

Temporary jobs in Sweden – legislation and evolution

The principal employment relation in Sweden is, unless otherwise stated, valid until further notice. That is, the “normal” situation is that an employment in the Swedish labour market is an open-ended employment. However, the term “unless otherwise stated” implies that other contracts than open-ended ones are allowed, i.e. temporary jobs. During the 1990s, there have been some changes to the 1974 *Swedish Employment Protection Act* (LAS), but none of these changes can be regarded as being solely “responsible” for the increase in temporary jobs during the same period.¹ The employment legislation allows different types of temporary jobs to exist, and this is also one reason why we analyse different temporary jobs separately. The present legislation in Sweden stipulates that temporary contracts are allowed in the following cases (see SFR 1982:80).

- Contracts with a specified duration, during a specified season, or contracts for a specified job are allowed – if this is caused by the nature of the job.
- Contracts with a specified duration are allowed in the cases of replacement for absenteeism, work practice or work during holidays. If an employee has held a replacement temporary job within the same firm for a maximum of three years during a period of five years, the temporary contract is automatically converted to an open-ended job.
- Contracts with a specified duration are allowed, if the need for such a contract is caused by a temporary workload.
- Contracts with a specified duration are allowed for workers aged 67 or more.
- Probationary contracts with a maximum duration of six months are allowed. If nothing else is agreed between the employer and the employee and the maximum duration is reached, the probationary job is converted to an open-ended job after the trial period.
- Unspecified temporary contracts are allowed for a specified employee, with maximum employment duration of 12 months (min. 1 month) during a period of three years. A single firm may have no more than five employees who hold such temporary contracts.

As can be seen, different types of temporary jobs have different functions in the labour market, and they can be used by employers, or employees, for different reasons. Moreover, while some types of temporary jobs can be very short lasting (for example on-call jobs, other can have a longer duration (for example replacement jobs. The common feature is that they are all temporary jobs, and as such they are likely to be more exposed to various, and different, risks than open-ended jobs are. It is also the case that the legislation does not, of course, differ between the genders, i.e. looking solely on the legislation, females and males should have equal probabilities of holding temporary jobs, all things being equal.

Figure 1 gives a graphic description, by gender, of the evolution of aggregated temporary jobs for the period 1987-1999 in Sweden based on yearly averages from Statistics Sweden. The share of temporary jobs has increased for both females and males during the 1990s, and with roughly the same percentage. However, the share of female temporary jobholders has continuously been higher than the corresponding share for male workers. It also appears that the difference between female and male temporary jobholders have increased during the 1990s. For female workers it is also the case that the share of temporary jobs increased during the entire period, while the increase for male temporary workers foremost took place during the initial years of the 1990s. Considering that temporary jobs on average are more insecure than open-ended jobs, the labour market situation for females thus seems to have been more insecure during the period compared to male workers.

[Figure 1 here]

In *table 1* we have further disaggregated temporary jobs into replacement jobs, probation jobs, project jobs, and on-call jobs, and other types of temporary jobs as a residual. There is evidence of marked differences between different types of temporary jobs as well as between the genders with respect to the composition of such jobs. Replacement jobs and on-call jobs are more common among females than among males, while the opposite is the case for probation jobs and project jobs. The large differences between the genders might reflect the relatively strong gender segmentation in the Swedish labour market. Further, the evolution of the composition over time shows an interesting and rather dramatic pattern (not showed here).² Replacement jobs accounted for almost 50 per cent

of all temporary jobs in 1991, while by 1999 this share had decreased to roughly 30 per cent. On-call jobs and project jobs increased their respective shares from 8-9 per cent in 1991 to approximately 17 per cent each in 1999. One implication of this compositional change is that temporary jobs on average became more insecure during the 1990s, as on-call jobs and project jobs on average tend to be more insecure than other types of temporary jobs.

[Table 1 here]

Theoretical framework: temporary jobs and gender differences

A temporary job might have positive, as well as negative, effects for the worker, and also for the society. An important factor is whether the job truly is a *temporary* job.³ Moreover, if it is the case that some groups, i.e. temporary female workers in our case, have systematically lower exit probabilities compared to temporary male workers, this might create, or enhance, an unwanted segmentation in the labour market. The potential problem depends, to a large extent, on whether the temporary job is of a *temporary and transitory nature*, and that this transition does not differ between workers. If this is not the case, the related risk is that we might create a new form of labour market segmentation, perhaps a kind of dual labour market structure with a primary sector and a secondary sector.⁴

What factors can be expected to influence the exit rate from temporary to open-ended jobs, and are there any arguments for expected gender differences in this respect? First of all, the determinants of the exit probabilities are likely to be similar to the determinants of the incidence of holding a temporary job.⁵ Why should this be the case? Consider a worker who has a low probability of being offered an open-ended job in the first place. It is then also most likely the case that this worker has a lower probability, *ceteris paribus*, of being offered an open-ended job once she/he holds a temporary job. Wallette (2004) formulates hypotheses about job/worker characteristics that are expected to affect firms' offer probability of temporary jobs, and about job/worker characteristics that are expected to influence workers' acceptance probability. These hypotheses are, by and large, also supported by the empirical results in the same study. For example, one hypothesis is that the incidence of temporary jobs should not differ systematically between the genders when one controls for a vast number of individual and job

characteristics. This is also supported by the results; females have a higher probability of holding replacement jobs, while males are more likely to hold any other type of temporary jobs, i.e. there is no systematic difference between the genders. We thus suggest in this study that the probability of exiting from a temporary job to an open-ended job should not, on average, differ between the genders. More formally, in a competitive labour market one would not expect to find any systematic differences between the genders with respect to the transition from temporary to open-ended jobs, all things being equal. However, as we lack a perfect competitive labour market, there might be imperfections that affect the transition probabilities, and which might give rise to unwanted gender differences. For example, the existence of labour market discrimination can result in a systematic difference between the genders. Another possibility is that males and females differ regarding their respective probabilities of accepting open-ended jobs, for instance due to differences with respect to preferences for non-market activities.

As noted above, one factor that might affect the exit probabilities, and perhaps also induce differences between the genders, is labour market discrimination, i.e. Becker-type discrimination and/or statistical discrimination. Once an individual holds a temporary job, the above factors might thus be potential determinants of the exit probability, and as such, they may also give rise to gender differences. The argument regarding Becker-type discrimination is straightforward. If the incidence of holding a temporary job is affected by discrimination of Becker-type, the offer probability of open-ended jobs is most certainly also affected by the same discrimination. However, the probability of such discrimination with respect to the incidence of temporary jobs is rather low due to the lack of support for a systematic difference between the genders. As regards the effect of uncertainty (which might result in statistical discrimination) the relation between incidence and exit might be somewhat weaker. One argument is that for some workers it might be the case that the employer needs a longer screening-period, which could result in lower exit probabilities for this particular group compared to other groups, i.e. a problem related to imperfect information. However, it is relatively unlikely that such differences should exist between females and males in Sweden. This particular problem is probably more related to differences between age groups or differences between ethnic origins. A perhaps more plausible argument to explain potential differences might be that females and males differ with respect to their preferences for different types of

employment contracts, which in turn could result in differences in the transition probabilities from temporary jobs to open-ended jobs between females and males.

A related issue is also the number of working hours, i.e. part-time jobs. Taking Sweden as an example; the female labour supply in Sweden increased rapidly during the 1960s and the 1970s, and these jobs were predominately part-time jobs in the public sector. This gave, in particular, females the possibility to a paid job, combined with un-paid household job. Part-time jobs have ever since been a “typical” employment form for females. As temporary jobs often also are part-time jobs of some form, or vice versa as the causality is somewhat difficult to establish, it might be the case that females are over-represented in such jobs, and that this has a negative effect on the transition to open-ended jobs. Moreover, both temporary jobs and part-time jobs are relatively more common in the public sector than in the private one, and as the public sector is a female dominated sector, this might further affect females in particular. Another possible influence on the exit rates, and also a factor that might give rise to differences between the genders in this respect, is work absence. A high degree of work absence might serve as a negative signal to the employer (for example regarding a worker’s productivity), and as such, work absence can affect the exit rates to open-ended jobs. As females, on average, have a higher degree of work absence, the effect on the exit rates might be more severe for females than for males.

In the empirical analysis, we control for individual and job variables such as working-time, occupation, labour market sector, work absence, and others. The variables included in the empirical analysis are based on theoretical arguments, and also on what variables we actually have access to in our data set.

The data and econometric model

In the empirical analysis we use a longitudinal dataset from the *Swedish Labour Force Surveys* (LFS), which covers one month out of every quarter during the period 1987-1999.⁶ To arrange the data in a manner suitable for a single risk time-discrete analysis, the following steps have been undertaken:⁷ (i) we have excluded all individuals who did not report having a temporary job at least one of the times she/he was part of the survey. (ii) we want all individuals to hold a temporary job as a first observation in our data set. This could arise in two different ways, (1) individuals can enter the LFS holding a temporary job, or (2) individuals can enter the LFS holding anything but a temporary job, but

change labour market status to a temporary job during the survey period. In the case of (2) we rearrange our data set so that we exclude initial observations for those individuals who do not enter the LFS holding a temporary job. (iii) individuals are right censored if they exit from a temporary job to labour market status other than an open-ended job, or if they hold temporary jobs throughout the maximum of eight quarters.

We only observe an individual's labour market status during the time she/he is included in the survey. That is, we do not have any knowledge of her/his previous labour market status. Our data set is thus typically subject to left censoring in the sense that an individual might have been exposed to risk (i.e. holding a temporary job) before she/he came under observation. In a data set like ours there is, however, nothing that can be done to control for the possible problem that may arise due to left censoring.⁸

Our econometric model is a time-discrete duration model.⁹ The discrete-time hazard rate is defined as: $P_{it} = Pr[T_i = t | T_i \geq t, X_{it}] = P(T_i = t) / P(T_i \geq t)$, where T_i is the discrete random variable giving the time of occurrence of an event. P_{it} gives the probability that an event occurs at time t , given that it has not occurred before, and X_{it} is a vector of individual-specific variables. A problem that often arises when analysing panel type data is the problem of unobserved heterogeneity (see for example Jenkins, 2002). This may arise from omission of relevant variables and/or from incorrect specification, or it can be the case that the individuals differ in characteristics that are unobserved in the data set, for example in ability, motivation or effort, i.e. something that affects the data but that we are not able to observe. Failure to control for unobserved heterogeneity that may affect the hazard function can lead to inconsistent estimates and thus result in misleading inferences (Lancaster, 1990). We control for unobserved heterogeneity by including a random variable ε , with zero mean and finite variance (following Jenkins, 2002). The logit model is thus expressed as: $\log\left[\frac{P_{it}}{1 - P_{it}}\right] = a_t + \beta' X_{it} + \varepsilon_{it}$. For the baseline hazard function (α) we choose a non-parametric baseline. The binary model that we estimate to take heterogeneity into account is a random effects logit model, where the heterogeneity is assumed to have a normal distribution.¹⁰

Summary statistics for the included variables are listed in *appendix*. As a reference individual in the equations we have a 35-44 year-old married male without dependent

children, and who works full time in the private manufacturing sector. His educational attainment is comprehensive school, and he is a member of a trade union organisation.

Empirical findings and gender differences

A first illustrative approach in a duration framework is to calculate a so-called non-parametric survival function to illustrate the exit rates.¹¹ The Kaplan-Meier survival estimates show the probability for an individual of surviving within a particular state (i.e. the probability of continuing to hold a temporary job in our case) in each time period t .¹² In our case, this function differs between different types of temporary jobs.¹³ The highest exit probability is found for probationary jobs, which is most likely related to the legal framework, and also to the general purpose, for such jobs.¹⁴ For the other types of temporary jobs, the survival rates vary from 45 to 55 per cent, and the rates are diminishing by time period. These figures are not extremely low, but they are not exceptionally high either. The implication is that after eight time periods, roughly 50 per cent of the temporary job-holders have, on average, left their present temporary jobs for open-ended jobs. The lowest survival rates are found for project jobs. The results for females and males are unambiguous. The exit rates for female workers are systematically lower than for male workers. A first conclusion about the exit probabilities and gender differences is thus that female temporary workers, in general, seems to have a weaker, or more exposed, situation in the labour market as they hold temporary jobs for a longer duration compared to male temporary workers. This could in turn have a negative effect on their future labour market performance.

The survival rates are, however, uncontrolled means, and as such they do not reflect the exit rate for a specific individual with certain characteristics. The probability to leave a temporary job is affected also by different individual and job characteristics. For this purpose we estimate a model that includes several such characteristics. The estimated coefficients from the parametric model are presented in *appendix*.¹⁵ As regard the variable indicating a female worker the estimated results are rather poor. In all cases the estimated coefficient is negative, and for replacement jobs and project jobs the negative effect is statistically significant. Hence, being female has a negative effect on the probability of exiting from temporary jobs to open-ended jobs, i.e. the results might indicate a systematic difference between the genders. Other variables of interest in the model are part-time work, working in the public sector, and work absence, i.e. female dominated variables. Working part-time, short part-time (1-19h/week as well as long part-time (20-

34h/week), has a strong significant negative effect on the exit rates to open-ended jobs for all types of temporary jobs. One possible explanation for this finding might be that temporary job-holders who work full-time have more exposure-time towards the employer, i.e. they meet the employer (or similar) more often, and have thus more time to signal skills and knowledge. This might be important if, and when, the firm's staff of open-ended job-holders is to be increased. Working in the public sector has also, in a majority of the cases, a significant negative effect on the probability of exiting to open-ended jobs. The public sector has a long history of using different types of temporary jobs, and temporary jobs are in many cases considered to be "normal" employment contracts in this sector. That is, the attitude towards temporary jobs in the public sector might affect the exit rates negatively. Finally, work absence is, as expected, found to have a negative effect on the exit rates, and the effect is significantly negative in two cases.

To more thoroughly investigate the estimated gender difference and the effect of female dominated variables, we continue by calculating predicted probabilities (hazard rates) with respect to the exit to open-ended jobs.¹⁶ *Figure 2* presents the average predicted hazard rates for each year included in our study, i.e. 1987 to 1999, for females and males respectively.

[Figure 2 here]

For all types of temporary jobs, but for probation, the probabilities of exiting to open-ended jobs are rather low, and for probation jobs, project jobs, and on-call jobs, the average hazard seems to have decreased over time. The exit rate for replacement jobs decreased in the first time period of our study, and then increased during the second part. As noted earlier, the share of temporary jobs in Sweden increased from about 10 to 15 per cent during the 1990s. If the incidence increases, this might reflect that the inflow into temporary jobs has increased and/or that the exit rate to open-ended jobs has decreased. In our case, we might suspect that both of these forces have affected the development.

Perhaps more interesting are the differences in exit probabilities between female and male workers in *figure 2*. For a majority of the years in our study, the probability of exiting from temporary jobs to open-ended jobs is, on average, higher for male workers than for

female workers. *Figure 2* thus show that temporary female workers seem to have, on average, a weaker labour market situation than corresponding male workers.

Can we establish any gender differences if we study the exit rates over the time periods during which we can observe the labour market status for a particular individual? In *figure 3* we have calculated the estimated average hazard rate for females and males for each time period, i.e. from time period 0 to time period t , where t is defined as the maximum number of quarters during which we can observe an individual. The difference between the genders is striking. For each type of temporary job (but for probation jobs), male temporary workers have a higher probability of exiting to an open-ended job, than the case is for female temporary workers. The differences between the genders are also for all types of temporary jobs rather large. One conclusion is thus that there is a systematic average difference in the exit probabilities to open-ended jobs between female and male temporary workers.

[Figure 3 here]

So far we have concentrated solely on average hazard rates. Do the gender differences continue to hold if we assign each gender the same specific individual or job characteristics? As noted from the regression results, different characteristics affects the hazard rates in different ways. The number of working hours is one factor that is shown to have a strong effect on the exit rate. In *figure 4* we present the predicted hazard rates for exiting to open-ended jobs for part-time and full-time working females and males. There is a clear effect from working hours on the exit rates from all types of temporary jobs (albeit only a minor effect for probation jobs), and the gender differences are still present. Full-time working males have, by and large, the highest probability of exiting to open-ended jobs. Females who work full-time and part-time working males have rather similar exit rates regardless of type of temporary job, while part-time working females have the lowest exit rates.

[Figure 4 here]

Another factor that affects the exit to open-ended jobs is whether one works in the public or in the private sector in the labour market. *Figure 5* gives the predictions for the

hazard rates in the public and the private sector for both genders. The results are clearly discouraging for temporary workers in the public sector. Besides the somewhat similar estimates between the sectors with respect to probation jobs, it is always the case the temporary workers in the public sector have a much lower probability of exiting to open-ended jobs compared to their counterparts in the private sector. In addition, females have, in general, lower exit rates than males. In the private sector there are also striking gender differences, even though the probabilities, on average, are much higher than those in the public sector. Temporary male workers have, as noted before, higher hazard rates compared to temporary female workers (but for probation). *Figure 4* and *figure 5* thus further support our previous notion about there being systematic differences between the genders with respect to the probability of exiting to open-ended jobs from different types of temporary jobs.

[Figure 5 here]

Conclusions

Are temporary jobs stepping-stones to open-ended jobs in the Swedish labour market, and if so, do we observe any gender differences in this respect? Based on the empirical results in this paper, the answer to the first question is that temporary jobs do not seem to have a very strong stepping-stone function in the Swedish labour market, at least not in the short run, and when we control for different influencing variables. The only type of temporary job that indicates such a function is probationary jobs, which often also is the main purpose of such jobs. In all other cases, the estimated probabilities of exiting to open-ended jobs are rather low. However, the exit rates seem to increase for specific characteristics such as full-time work (instead of part-time work), working in the private sector (instead of in the public sector), and in several cases; being a male worker. Hence, the probability of exiting to open-ended jobs depends on which “type of worker” we are studying. It is worth to emphasise that the exit rates to open-ended jobs in the public sector is much lower than the corresponding rates in the private sector, both for females and for males, and for all types of temporary jobs. This indicates that temporary job-holders in the public sector, to a larger extent than in the private sector, clearly face the risk of being trapped in their temporary jobs.

Our second specific aim in this study is to illuminate any possible gender differences with respect to exit to open-ended jobs. The purpose with this is to address the possible gender segmentation aspect of temporary jobs. Virtually all results we obtain in the study show that temporary female workers have lower exit rates to open-ended jobs than corresponding male workers, and in several cases these differences are rather large. Not only do the estimated average results indicate a difference between the genders, but also when we assign each gender specific characteristics, the differences are maintained. It is, however, rather difficult to explain this finding by means of economic theory. Possible candidates for the explanation are the facts that females, to a larger extent than males, are more often employed in the public sector, more often work part-time, and have a higher degree of work absence. All these factors affect the exit rates in a negative way, and our results show that these three factors, in general, have a more negative effect for female workers. Our results in this study thus suggest that there is some kind of gender-based segmentation in the Swedish labour market with respect to the probability of exiting from temporary jobs to open-ended jobs, where temporary female workers often is the disregarded group; perhaps due to an, on average, already weak labour market for female workers.

Notes:

¹ See, for example Holmlund & Storrie (2002), and Storrie (1994), for a more extensive discussion about the legislation, and changes in the same during the 1990s.

² See for example Wallette (2004), and Holmlund & Storrie (2002).

³ Of course, having a job of any kind is probably preferred of being unemployed.

⁴ See Piore (1971) and Doeringer & Piore (1971) for the theory of dual labour markets.

⁵ A similar discussion is found in Asplund & Persson (2001). They argue that characteristics affecting the risk of being low paid are likely to be the same as those explaining the probability of leaving the status of low paid.

⁶ For a detailed description of the Swedish LFS see Statistics Sweden (1993).

⁷ See for example Jenkins (2002) and Allison (1982) for a description of how the data should be arranged in a time-discrete framework.

⁸ If the labour market history was known for the individuals in our sample, or if we had some other useful retrospective information, or if we had knowledge of the starting point of the temporary job, we could have tried to model the exit patterns based on this information. Further, if we know for sure that the risk pattern for individuals with left-censored temporary jobs differs significantly from the risk pattern for individuals for whom we know the starting point of the temporary job, we could exclude the left-censored individuals from the estimations. This, however, requires that we know if an individual is left-censored or not – which we do not know.

⁹ See for example Jenkins (2002), Jenkins (1995), and Allison (1982).

¹⁰ See for example Baltagi (1995), and Greene (2000).

¹¹ See for example Blossfeld & Rohwer (1995).

¹² It should be emphasized that “time period” does not correspond to any particular calendar time. Our measure of time period is the number of periods during which we observe an individual to hold a temporary job before exiting to an open-ended job (i.e. from period 0 to period \hat{j}).

¹³ These results are available from the author upon request.

¹⁴ For probation jobs the maximum legal duration is six months. However, collective agreements between employer organisations and trade unions can in some cases permit longer probation periods. An individual can also have several consecutive probation jobs, but in different firms. The legal framework regarding different types of temporary jobs is for example discussed in Holmlund & Storrie (2002).

¹⁵ The econometric software used in the analysis is Stata 7.0.

¹⁶ To predict the hazard in a model with unobserved heterogeneity we have to condition on the mean value of the error term, i.e. the error term is set to zero (see Jenkins, 2002).

References

- Allison, P. D. (1982) 'Discrete-Time Methods for the Analysis of Event Histories', in Leinhardt, S. (ed.), *Sociological Methodology*. 61-97, San Francisco: Jossey-Bass.
- Amuedo-Dorantes, C. (2000) 'Work Transitions Into and Out of Involuntary Temporary Employment in a Segmented Market: Evidence from Spain', *Industrial and Labor Relations Review* 53(2): 309-325.
- Asplund, R. & Persson, I. (2001) 'Low Pay – A Special Affliction of Women' in Salverda, W., Gregory, M. & Bazen, S. (eds.) *Labour Market Inequalities. Problems and Policies of Low-Wage Employment in International Perspective*. 53-81, Oxford University Press.
- Baltagi, B. H. (1995) *Econometric Analysis for Panel Data*, New York: Wiley.
- Blossfeld, H.-P. & Rohwer, G. (1995) *Techniques of Event History Modelling*, Mahwah, New Jersey: Erlbaum.
- Booth, A. L., Francesconi, M. & Frank, J. (2002) 'Temporary Jobs: Stepping Stones or Dead Ends?', *The Economic Journal* 112(480): F189-F213.
- Doeringer, P. & Piore, M. (1971) *Internal Labor Markets and Manpower Analysis*, Lexington, Mass.: D. C. Heath.
- Engelland, A., & Riphahn, R. T. (2003) 'Temporary Contracts and Employee Effort, Forthcoming in *Labour Economics*.
- Green, W. H. (2000) *Econometric Analysis*, New Jersey: Prentice-Hall.
- Güell, M. & Petrongolo, B. (2000) 'Worker Transition from Temporary to Permanent Employment: the Spanish Case', CEPR Discussion Paper No 438, Centre for Economic Performance, London School of Economics.
- Håkansson, K. (2001) 'Språngbräda eller segmentering? En longitudinell studie av tidsbegränsat anställda', forskningsrapport 2001:1, Uppsala: IFAU.
- Holmlund, B. & Storrie, D. (2002) 'Temporary Work in Turbulent Times: The Swedish Experiment', *The Economic Journal* 112(480): 245-629.
- Jenkins, S. P. (1995) 'Easy Estimation Methods for Discrete-Time Duration Models', *Oxford Bulletin of Economics and Statistics* 57(1): 129-138.
- Jenkins, S. P. (2004) 'Survival Analysis with Stata, Release 2.0, July', <http://www.iser.essex.ac.uk/teaching/degree/stephenj/ec968/> (link existed on 23 February 2005).
- Lancaster, T. (1990) *The Econometric Analysis of Transition Data*, Econometric Society Monograph, Cambridge: Cambridge University Press.
- Levin, H. (1998) *Arbetslöshet, tidsbegränsade anställningar och rörlighet på arbetsmarknaden i 1990-talets Sverige*, Licentiatserien 10/1998, Stockholm: Institutet för Social Forskning.
- Piore, M. (1971) 'The Dual Labor Market: Theory and Implications', in Gordon, D. (ed.), *Problems in Political Economy* Lexington, Mass.: D. C. Heath.
- Stata Reference Manual*, Release 7, Stata Press, Texas: College Station.
- Statistics Sweden (1993) 'The Swedish Labour Force Surveys (LFS)'. Background Facts to Labour Market and Educational Statistics, 1993:1, Stockholm.
- Statistics Sweden, *Labour Force Surveys*, 1991-1999. Data set.
- Storrie, D. W. (1998) 'Flexible Employment Contracts in Sweden 1987-96', in *Flexibility in the Nordic Labour Market*. TemaNord 1998:586, Copenhagen: Nordic Council of Ministers.
- Thoursie, A. (1997) 'Kvinnors och mäns vägar ut ur arbetslöshet – likheter och skillnader', in Persson, I. & Wadensjö, E. (eds.), *Glastak och glasväggar? Den könssegregerade svenska arbetsmarknaden*. SOU 1997:137: 229-250.
- Walette, M. (2004) *Temporary Jobs in Sweden: Incidence, Exit, and On-the-Job Training*, Dissertation no. 120, Department of Economics, Lund University.

Appendix

Summary statistics

<i>Variables</i>	Replacement		Probation		Project		On-call	
	<i>Obs.</i>	<i>Mean</i>	<i>Obs.</i>	<i>Mean</i>	<i>Obs.</i>	<i>Mean</i>	<i>Obs.</i>	<i>Mean</i>
Exit to open-ended jobs	27,334	0.07	6,728	0.21	9,830	0.07	8,184	0.05
Female	27,334	0.75	6,728	0.41	9,830	0.41	8,184	0.67
Age 16-24	27,334	0.36	6,728	0.46	9,830	0.23	8,184	0.47
Age 25-34	27,334	0.31	6,728	0.31	9,830	0.33	8,184	0.27
Age 35-44	27,334	0.19	6,728	0.14	9,830	0.21	8,184	0.12
Age 45-54	27,334	0.10	6,728	0.07	9,830	0.15	8,184	0.08
Age 55-64	27,334	0.04	6,728	0.01	9,830	0.08	8,184	0.06
Government sector	27,311	0.06	6,702	0.04	9,812	0.16	8,170	0.02
Municipality sector	27,311	0.42	6,702	0.06	9,812	0.19	8,170	0.31
County council sector	27,311	0.21	6,702	0.02	9,812	0.03	8,170	0.09
Private sector	27,311	0.32	6,702	0.89	9,812	0.62	8,170	0.58
Short part-time (1-19h)	27,329	0.08	6,726	0.06	9,823	0.14	8,149	0.44
Long part-time (20-34h)	27,329	0.35	6,726	0.15	9,823	0.17	8,149	0.33
Full-time (>34h)	27,329	0.57	6,726	0.80	9,823	0.70	8,149	0.23
Work absence	27,332	0.39	6,728	0.35	9,830	0.37	8,183	0.32

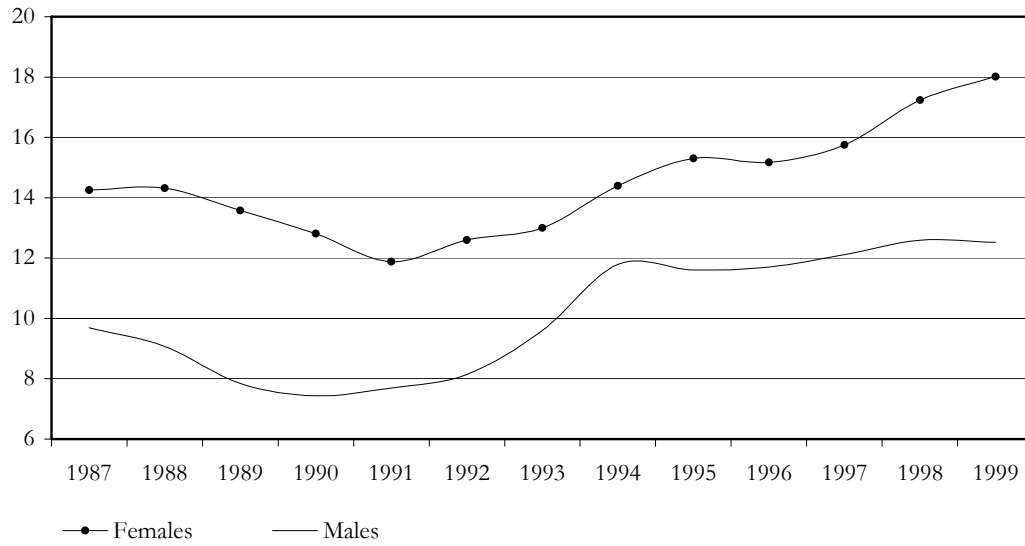
Note: The model also includes industry variables, year dummies, regional unemployment rates, overtime work, age groups, educational variables, marital status, dependant children, union membership, and baseline estimates. Descriptive statistics for these variables are available from the author upon request.

Estimated coefficients from time-discrete regression models (random effects logit). Dependent variable is exit to an open-ended job=1.

<i>Variables</i>	<i>Exit from replacement</i>	<i>Exit from probation</i>	<i>Exit from project</i>	<i>Exit from on-call</i>
Female	-0.631 (0.146)***	-0.215 (0.206)	-0.569 (0.213)***	-0.113 (0.239)
Government sector	-1.296 (0.276)***	-0.285 (0.533)	-1.947 (0.410)***	-3.019 (1.094)***
Municipality sector	-1.618 (0.251)***	-1.238 (0.569)**	-0.568 (0.342)*	-2.481 (0.649)***
County council sector	-1.539 (0.276)***	-0.952 (0.817)	0.269 (0.598)	-2.376 (0.801)***
<i>Private sector</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Short part-time work (1-19h)	-0.951 (0.192)***	-1.029 (0.419)**	-1.281 (0.299)***	-1.742 (0.318)***
Long part-time work (20-34h)	-0.677 (0.114)***	-0.639 (0.251)**	-0.594 (0.235)**	-1.015 (0.252)***
<i>Full-time work (>34h)</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Work absence	-0.212 (0.076)***	-0.241 (0.143)*	-0.177 (0.128)	-0.210 (0.176)
<i>Observations</i>	27,005	6,603	9,616	7,968
<i>Number of id</i>	9,356	3,011	3,597	3,486
<i>Estimated rho</i>	0.75	0.77	0.69	0.72
<i>LR test of rho=0 (p-value)</i>	256.15 (0.00)	103.87 (0.00)	80.31 (0.00)	30.88 (0.00)
<i>Log-Likelihood</i>	-6,216.96	-2,443.62	-2,126.23	-1,317.64
<i>Standard errors in parentheses</i>				
<i>* significant at 10%; ** significant at 5%; *** significant at 1%</i>				

Note: See note to summary statistics. A complete coefficient table is available from the author upon request.

Figure 1 Share (%) of females and males in temporary jobs in Sweden 1987-1999.



Note: The share of temporary jobs is calculated as the share of temporary jobs in total employment (excl. self-employment) for females and males separately. Yearly averages.

Source: *Statistics Sweden*. Calculations from the Swedish Labour Force Surveys.

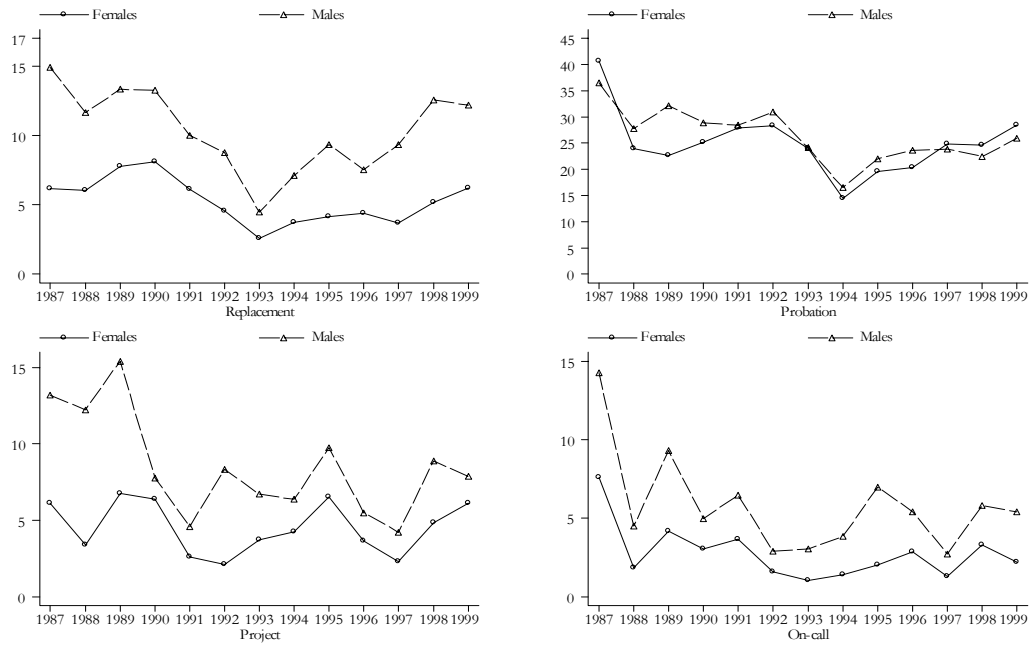
Table 1 Absolute and relative (%) composition of temporary jobs in Sweden 1987-1999, by gender.

<i>Type of temporary job</i>	<i>Females</i>		<i>Males</i>		<i>Total</i>	
		<i>%</i>		<i>%</i>		<i>%</i>
Replacement	20,377	49.5	6,757	24.8	27,134	39.7
Probation	2,245	5.5	3,228	11.8	5,473	8.0
Project	3,914	9.5	5,716	21.0	9,630	14.1
On-call	5,570	13.5	2,729	10.0	8,299	12.1
Others	9,042	22.0	8,833	32.4	17,875	26.1
<i>Total</i>	<i>41,148</i>	<i>100</i>	<i>27,263</i>	<i>100</i>	<i>68,411</i>	<i>100</i>

Note: The category “others” includes categories such as “seasonal work”, “work during holidays”, “work practice” and different active labour market programmes that are coded as temporary jobs by Statistics Sweden (mostly programmes for youths).

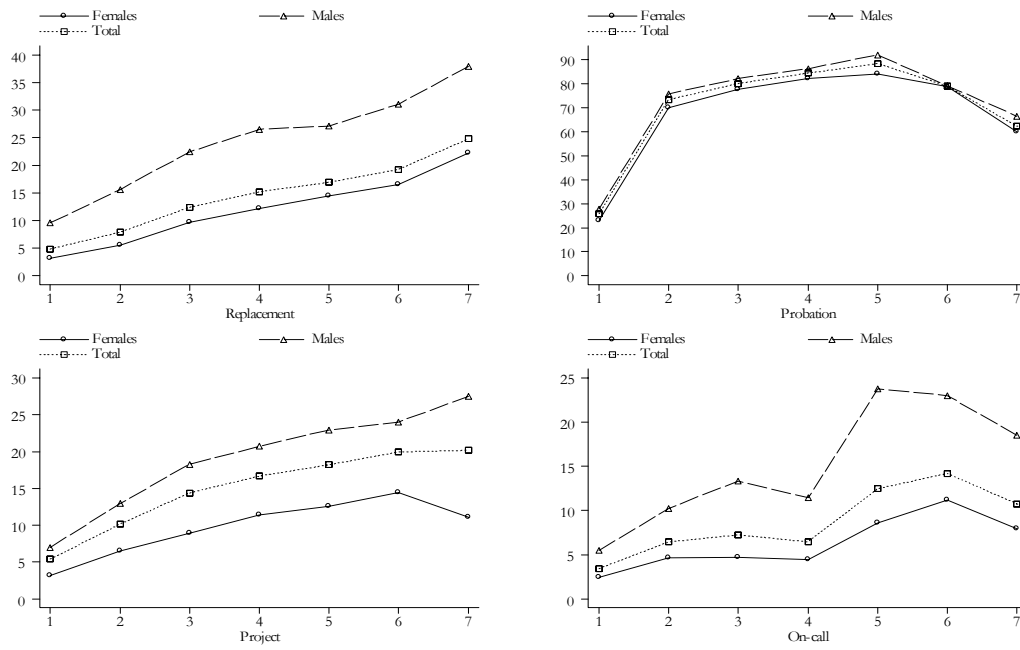
Source: *Statistics Sweden*. Calculations from the Swedish Labour Force Surveys.

Figure 2 Estimated average hazard rates (%) of exiting from temporary jobs to open-ended jobs during 1987-1999, by gender.



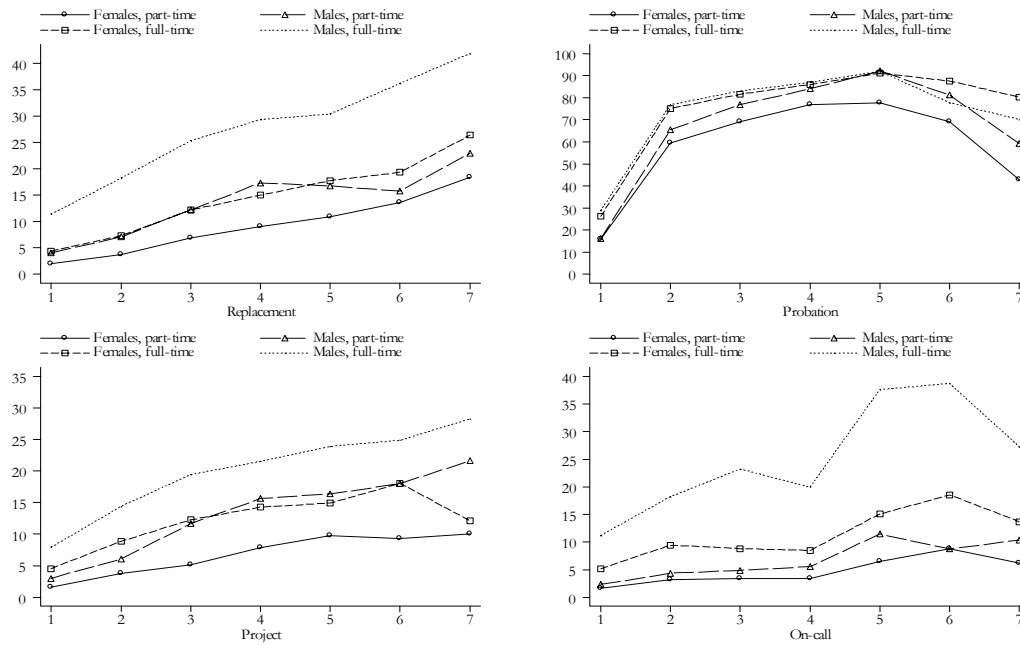
Note: Note the different scales in the figures.

Figure 3 Estimated average hazard rates (%), by gender.



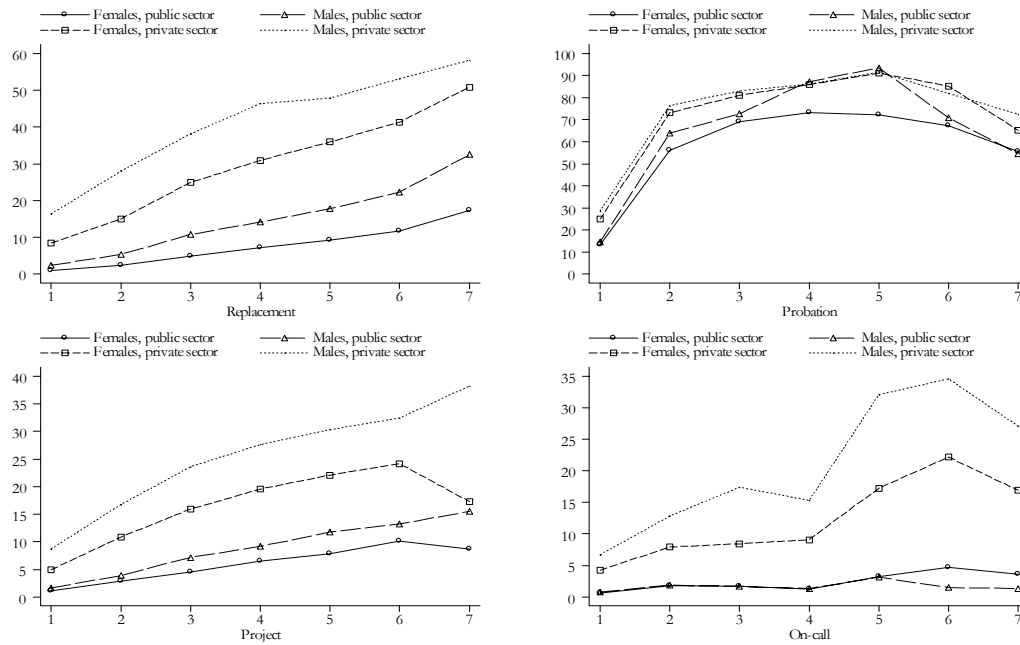
Note: Note the different scales in the figures. In time period 0, the exit rate is equal to zero by definition.

Figure 4 Estimated hazard rates (%) for part-time and full-time work, by gender.



Note. Note the different scales in the figures. In time period 0, the exit rate is equal to zero by definition.

Figure 5 Estimated hazard rates (%) for the public and the private sector, by gender.



Note: Note the different scales in the figures. In time period 0, the exit rate is equal to zero by definition.