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Economic and social consequences of temporary employment

Marloes Zijl

Economic and social consequences of temporary employment

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Economic and social consequences of temporary employment

ACADEMISCH PROEFSCHRIFT

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aan de Universiteit van Amsterdam
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prof. mr. P.F. van der Heijden
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Effecten voor werklozen ..... **Fout! Bladwijzer niet gedefinieerd.**
Effecten voor tijdelijke arbeidskrachten ..... **Fout! Bladwijzer niet gedefinieerd.**
Effecten voor werkgevers ..... **Fout! Bladwijzer niet gedefinieerd.**
Synthese ..... **Fout! Bladwijzer niet gedefinieerd.**

Chapter 1

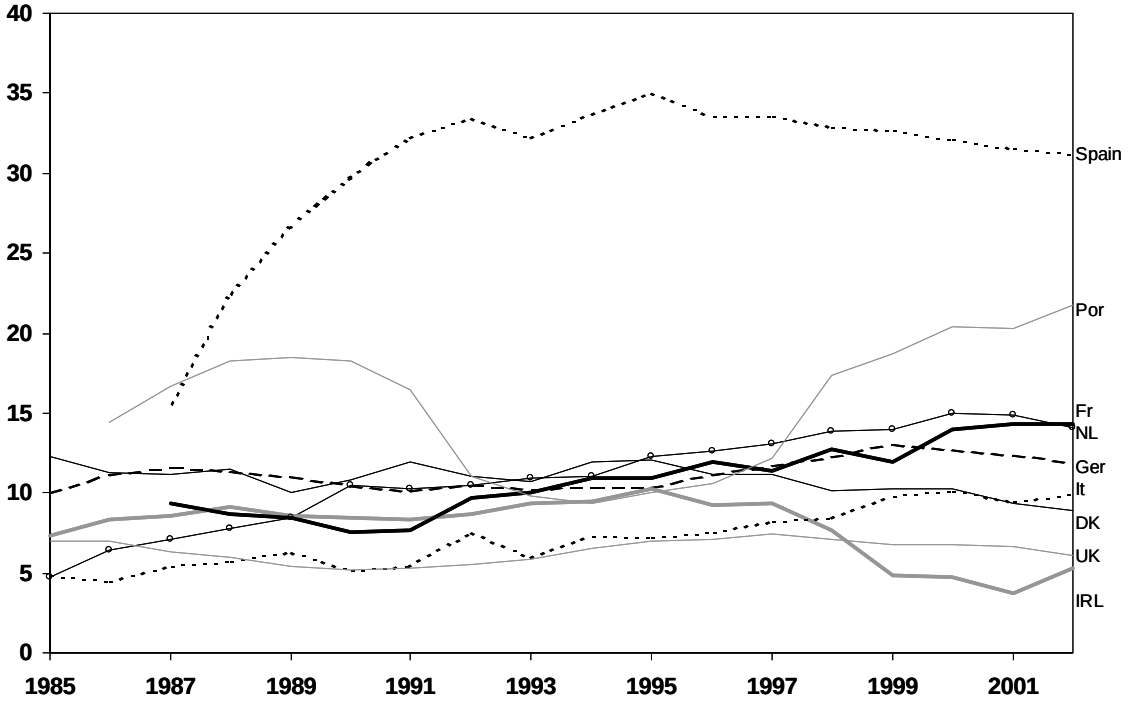
1 Introduction

1.1 The rise of temporary employment

Temporary employment has been on the rise in most Western societies. A major share of employment growth since the early 1990s has taken place in temporary jobs. Figure 1.1 provides an overview for some EU countries. Spain takes an exceptional lead position, with one-third of employment on a temporary basis. Only Portugal comes close, with 20 percent of employees in temporary employment. Temporary work has grown steadily to a level of 15 percent of employment in France and the Netherlands, which overtook Germany, with a rate of about 12 percent. Italy and Denmark (like Austria and Belgium, which are not shown in figure 1.1) have a share of 8-10 percent of temporary work. The UK and Ireland have the lowest share of temporary work of about 5 percent.

Temporary contracts have become a regular component of the European labour markets. Most countries in figure 1.1, including the Netherlands, show a steady increase of temporary employment over the last twenty years. There are some exceptions however. Whereas in Germany and the UK the share of temporary employment seems to have reached a stable level, in countries such as Denmark and Spain, and most significantly Ireland, the use of temporary employment has decreased in the last few years. In Portugal, the share of temporary contracts shows a clear business cycle pattern, with a decline in recession times and an increase when the economic tide swelled anew. This is what one expects to happen: since temporary workers are easier to dismiss, they are the first to be laid off when product demand falls. In a recession, therefore, few temporary workers remain. Yet, only Portugal provides any evidence of this pattern.

Figure 1.1 Temporary contracts in the EU-15 as a percentage of total employment (in persons)



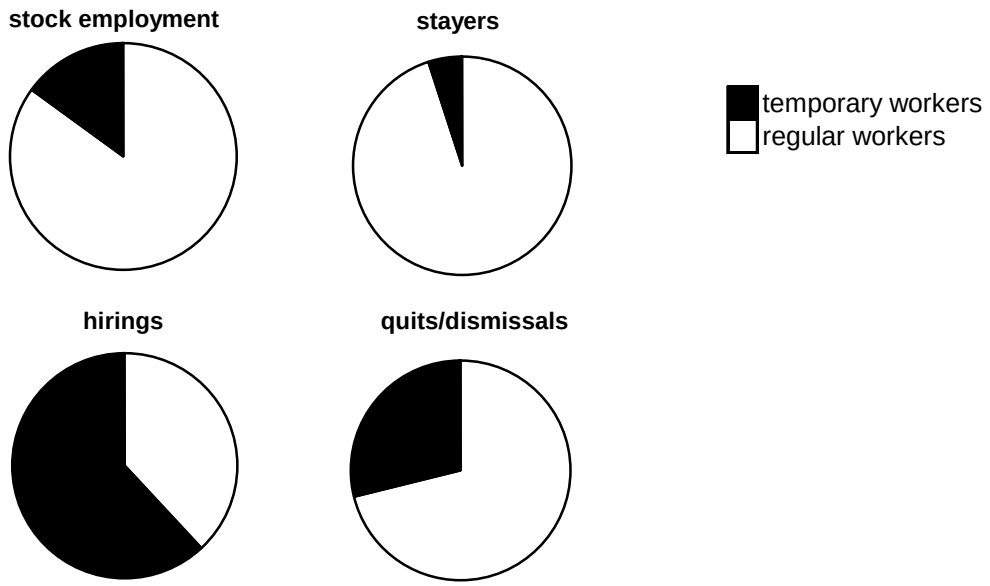
Source: OECD LMS 2001, Eurostat LFS 2002, 2003, thanks to Ernest Berkhout.

This thesis focuses on the role of temporary employment in the Netherlands. The Netherlands is an interesting case study for studying the effects of temporary employment. It is generally acknowledged that temporary work arrangements are designed with the aim of avoiding stringent employment protection and high firing costs. Firing costs are incurred if the employer dismisses a worker who is employed on an indefinite contract. These costs consist of severance payments paid to the employee, but more importantly of the implicit costs of lengthy layoff procedures. As OECD (1999) shows, the Netherlands scores high on these procedural inconveniences. The Netherlands has a rather complicated system of dismissal legislation. If the employer can show to the Centre for Work and Income (CWI) that a dismissal is legitimate he gets a so-called layoff permit, which means he does not have to pay any severance payment. A dismissal is legitimate in case of financial necessity, unsuitability or blameworthy behaviour of the employee. Nowadays less than half of all dismissals run through the Centre for Work and Income. Instead employers go to court. These procedures are shorter than the lengthy CWI procedures and chances of success are higher. However, judges do impose severance payments. These severance payments are related to the monthly wage. Generally a worker who is laid off receives one monthly wage per year of service. This may be higher or lower depending on who is to be blamed most (the employer or the employee) and is somewhat higher for workers aged over forty.

Figure 1.2 provides insight into the share of temporary employment in the flows on the Dutch labour market. It clearly shows a big difference between the shares of temporary

contracts in the stock versus the flow of workers. The share of temporary contracts in the stock of employment is about 15 percent. But they comprise almost two-third of new hires and one-third of all quits/dismissals.

Figure 1.2 Share of temporary employment in stock and flows on Dutch labour market in 2002



Source: AVO, own calculations (see chapter 4)

1.2 Definition of temporary employment

The term *temporary employment* is quite broad and ambiguous. In practise it consists of many types of employment contracts. Authors differ both in terms of the type of contracts they include in their definition and the name they use. Terms such as *non-standard, atypical, flexible, adaptable, contingent, precarious and alternative work arrangements* are used interchangeably. Generally, definitions include fixed-term employment and temporary agency employment. The inclusion of work arrangements such as freelance employment, on-call work, part-time employment and self-employment in the definition differs substantially. Sometimes even functional flexibility is included. The US Bureau of Labor Statistics (BLS) distinguishes *contingent employment* from *alternative work arrangements*. The four main forms of alternative work arrangements are temporary help agency workers, contract company workers, independent contractors and on-call workers. This overlaps considerably with the BLS definition of contingent workers, which, however, does not include independent contractors. The prevailing definition of contingent work – the one also used by BLS – originates from Polivka and Nardone (1989): "any job in which an individual does not have an explicit or implicit contract for long-term employment or one in which the minimum hours worked can vary in a non-systematic manner".

This thesis, which focuses on employment contracts that allow employers numerical flexibility in terms of the size of their workforce, uses the definition of Polivka and Nardone. Functional flexibility is thus excluded from my definition, as are part-time employment and self-employment. My definition of temporary employment thus includes direct-hire fixed-term employment, on-call work, temporary agency work and contract work. Table 1.2 provides an overview of the characteristics of these work arrangements.

Table 1.2 Characteristics of work arrangements

Work arrangement	*De Jure* employer	*De Facto* employer	Assumption of continued employment by *de Jure* employer	Assumption of continued employment by *de Facto* employer	Work directed by
Regular	Org. A	Org. A	Yes	Yes	Org. A
Direct-hire fixed term	Org. A	Org. A	Sometimes	Sometimes	Org. A
On-call labour	Org. A	Org. A	Sometimes	Sometimes	Org. A
Temp agency work	Agency	Org. A	Sometimes	No/Sometimes	Org. A
Contract work	Contract company	Org. A	Yes	No	Contract company

Note: Based on Kalleberg et al. (2000)

A regular work arrangement is characterised by an employment relationship in which one firm ("organisation A") is both the *De Jure* employer and the *De Facto* employer, and this relationship is assumed to continue. This firm is also the one that directs the work performed by the employee. As shown in figure 1.1 most employees are employed in these traditional work arrangements.

Direct-hire fixed-term contracts (including seasonal work) differ from regular contracts in the sense that they have a pre-arranged end-date. They are explicitly designated to end at the completion of a task or at a certain date. Sometimes fixed-term contracts have the intention to be converted into a regular contract. This is the case when the fixed-term contract is used for screening purposes, as an extended probationary period. Like regular workers, workers on fixed-term contracts are employed directly by the firm they work for ("organisation A").

On-call workers also are employed directly by the firm at whose premises they work ("organisation A"). Their contract may be of indefinite duration or fixed-term. Their distinguishing feature is that the minimum number of hours worked can vary in a non-systematic manner, dependent upon the employer's needs.

Temporary help agencies employ workers and send them out to client firms to work on an hourly basis at the client's premises and under the client's direction. These agencies recruit and screen employees, sometimes provide training, and are responsible for hiring and firing, issuing payslips, withholding payroll taxes and making required employer contributions for social security. The defining characteristic of temporary agency work is the triangular employment relationship in which the temporary agency is the legal employer, while the client company ("organisation A") supervises the employee (Kalleberg, 2000). The work is directed by the firm at whose premises the employee works, not by the agency.

Similar to temporary agency work, a triangular relationship is also present between contract workers, contract companies and their clients. Contract companies, in contrast to temporary help agencies, supervise their employees' work. Employees of contract companies

may work either at the clients' site or offsite (the latter is called subcontracting) (Purcell and Purcell, 1998).

1.3 Outline

The robust growth of temporary employment raises questions about the economic and social impact of temporary work arrangements. The objective of this study is to investigate the impact of temporary work on all stakeholders. Chapter 2 sets up a framework in which the impact of temporary employment could be evaluated taking all stakeholders into account. This chapter includes a summary and discussion of the literature.

Chapter 3 analyses how temporary jobs affect the unemployed. It is often argued that the existence of temporary work is especially beneficial to currently unemployed workers, because it provides them with opportunities to gain work experience, acquire human capital and enlarge their social network. These arguments imply that temporary work might act as a stepping-stone towards regular employment, as it increases the opportunities for unemployed workers to find stable employment and earn higher wages in the future. The chapter explores to what extent temporary jobs act as stepping-stones for unemployed individuals in the Netherlands, taking into account that individuals who (self-)select into temporary work are not a random selection of the total population of unemployed workers.

Chapter 4 analyses how temporary work affects wages of workers in temporary work arrangements. Earlier literature has found evidence of a lower pay for temporary workers. The present study determines to which extent this holds for fixed-term and on-call workers in the Netherlands and argue that uncertainty plays a major role in the compensation of temporary workers.

Chapter 5 investigates the relationship between temporary work and job satisfaction. Using a research strategy that controls for both observed and unobserved characteristics of individual workers, the study determines which work arrangements lead to high or low job satisfaction. Which job aspects are more important in which arrangements, and how does this affect the overall satisfaction with a job?

The employers' point of view is taken in chapter 6, and an attempt is made to determine what their reasons are for using temporary contracts. The study evaluates the attractiveness of several work arrangements for employers by estimating their willingness to pay for the characteristics of the work arrangements.

Chapter 7 summarises the findings. The results are synthesised and an overall evaluation is given of the social and economic impact of temporary employment.

Chapter 2

2 Framework of analysis

In this thesis I discuss the economic and social effects of the rise in temporary employment. In order to discuss these effects properly, all stakeholders should be taken into account. This means we have to determine the effects of the existence of temporary employment on unemployed individuals, temporary workers, regular workers, employers and the macro effects for society as a whole. In this chapter I give insight in all potential effects and provide an overview of the literature, which I discuss.

2.1 Consequences for the unemployed

For the unemployed, temporary employment might be beneficial because it gives them opportunities to enter the labour market. It is a potential instrument to shorten unemployment duration and might increase chances of finding (regular) employment. As such it might increase their future earnings. There is also a possibility that temporary employment reduces future earnings. This happens if temporary employment is persistent and associated with lower compensation than regular work or when having had a temporary job is regarded as a negative signal for future employers.

2.1.1 Unemployment duration

Using data from the Spanish labour force survey, Bover et al. (1998) estimated duration models of unemployment. They found that unemployment durations are strongly related to the share of fixed-term contracts in the economy, even after controlling for business-cycle effects. Fixed-term contracts were found to have a sizable positive effect on the hazard of leaving unemployment. They argued, however, that these contracts will also almost certainly raise the hazard of entering unemployment. The existence of temporary employment thus increases the frequency with which individuals become unemployed, but reduces the duration. Blanchard and Landier (2002) considered French data for young workers since the early 1980s, however, and concluded that the reforms substantially increased turnover without a substantial reduction in unemployment duration.. I analyse this subject for the Netherlands in Chapter 3 of this thesis.

2.1.2 Probability of finding regular employment

It is often argued that the existence of temporary work might be beneficial to currently unemployed workers, because it provides them opportunities to gain work experience and acquire human capital, to deepen the attachment to the labour market, and to search more effectively for more desirable jobs. Temporary work might improve probabilities of finding regular employment. Some individuals that would otherwise not have been able to find a regular job, might find work using temporary employment as a stepping-stone.

Research on Australia and European countries gives indication that a stepping-stone effect seems to exist. The main pitfall when analysing the stepping-stone effect is that individuals that (self) select into temporary work are not a representative sample of the total group of unemployed workers. Most researchers address this issue by correcting for observed differences between those individuals who are observed in temporary work and those that do not. There are however also strong indications that unobserved differences, such as motivation to work, might be of influence. This issue is not taken into account in most analyses and might lead to an overestimation of the stepping-stone effect. Presented by country, the results are as follows:

Germany. Using propensity score matching and thereby controlling for observables, Hagen (2003) found that entering into fixed-term contracts increased future employment probabilities (including both fixed-term and regular contracts) and the probability of obtaining a permanent contract. It decreased the probability of stepping out of the labour force. But having held a fixed-term contract also increases the probability of entering into fixed-term employment once more and holding fixed-term contracts in the future. McGinnity and Mertens (2004) used multinomial logit models that correct for observed characteristics of German fixed-term workers. They found that many temporary workers – at least 40 percent – move into permanent jobs, often with the same employer. For some temporaries however, particularly those with low human capital, temporary employment leads to unemployment.

Italy. Using duration analysis and thereby correcting for both observables and unobservables, Gagliarducci (2004) found that time spent in temporary jobs increases the chances of getting a permanent position. A mitigation he makes is that whereas one temporary job experience is helpful, repeated experiences may instead have a negative effect in the search for stable jobs. Ichino et al. (2005) used propensity score matching whereby controlling for observables on a sample of agency workers in Italy. They found that in Tuscany agency work increases probabilities of regular employment by almost 50%. In Sicily this effect is much smaller, hardly statistically significant and not robust in sensitivity analysis.

Australia. Using duration analysis in which they correct for both observed and unobserved heterogeneity, Chalmers and Kalb (2001) found that disadvantaged unemployed job seekers could increase their chances of finding regular employment by accepting casual work in their search for permanent work, at least during periods of relatively strong employment growth. However, the experiences within these disadvantaged groups vary markedly.

For the UK, Booth et al. (2002) showed that the median duration of fixed-term contracts before exits into permanent jobs is about 3 years. They estimated a duration model correcting for both observed and unobserved heterogeneity and found that it are especially young men who make the transition from temporary to regular work.

Evidence on the US gives little indication of a stepping-stone effect:

- Using a log-linear duration equation correcting for self-selection into transitional jobs using a standard Heckman specification Hotchkiss (1999) found evidence that job searchers who take a transitional job – defined as a job they do not view as permanent and during which they continue to search - can expect to be searching for permanent employment almost eight months longer than a searcher who does not take a transitional job.
- Autor and Houseman (2002) used a policy experiment in the state of Michigan to find that moving welfare clients who otherwise would have been unemployed into temporary agency jobs does not help them to attain steady employment. It also does not help to reduce program recidivism over the longer term.
- Amuedo-Dorantes and Bansak (2003) used data from the US Longitudinal Survey of Youth for the years 1994, 1996, 1998 to determine the likelihood of living in poverty in the near future. They found that holding a contingent job does not by itself increase the individual's likelihood of life in poverty in the future, nor does it increase the likelihood of being on welfare once other characteristics have been accounted for. Instead, it is the low pay, limited weekly working hours, limited weeks employed during the year and limited fringe benefit that cause poverty and being on welfare.

Like the US, Spain seems to show little evidence of a stepping-stone effect of temporary jobs:

- Amuedo-Dorantes (2000) estimated a duration model for temporary employment in Spain controlling for observed characteristics. She found very low exit rates from temporary employment to permanent employment.
- Güell and Petrongolo (2003) used the Spanish labour force survey from 1987-2002 to concentrate on individual transitions out of the first fixed-term contract that they observe during the survey period. Using duration analysis controlling for observed and unobserved characteristics they found that the overall transition rate from fixed-term to permanent contracts is less than 10 percent.
- Casquel and Cunyat (2004) estimated a duration model for fixed-term employment in Spain, taking both observed and unobserved heterogeneity into account. They found that for high-educated workers fixed-term contracts lead to permanent positions. By contrast, young workers, women, less educated workers and workers with a history of unemployment get stuck in fixed-term contracts.

I analyse this subject for the Netherlands in Chapter 3 of this thesis.

2.1.3 Future earnings

Temporary employment might affect future earnings. This can be either positive or negative. When temporary work shortens unemployment duration and increases the probability that an individual finds regular employment, it might increase future earnings. On the other hand, when temporary employment is persistent, or when having had a temporary job is perceived as a negative signal, it might lead to lower future earnings. Booth et al. (2002) found that British workers who had one- to three fixed-term contracts differed in both starting wage and subsequent wage growth. In most cases, these workers started out with a lower wage, but experienced a higher wage growth, as a result of which the differences diminished over time. Having a fixed-term contract at the start of the career did not seem to permanently damage

the wage profile for women. Men who started off with a seasonal/casual job, however, had the lowest wage to start with and the smallest wage growth. And men who started off with a fixed-term job had not yet caught up after ten years, even though the difference decreases over time.

In their study of West-German temporary-agency workers, Kvasnicka and Werwatz (2002) found that the average earnings of workers, both male and female, start to fall well in advance of the actual temporary-agency spell, drop significantly at the time workers hold an agency job, but recover fully and immediately to the average wage level thereafter. This earnings profile is in line with that estimated by Segal and Sullivan (1997) for temporary-agency workers in the state of Washington. It suggests the existence of a so-called Ashenfelter's dip, indicating that the earnings of agency workers would have recovered anyway, even if they had not taken on agency work. Also, Autor and Houseman (2002) studied the effect of temporary-agency employment among welfare-to-work clients. They found that moving welfare clients who would otherwise have been unemployed into temporary-agency jobs provides some benefits to these workers, primarily by increasing their short-term, but not long-term earnings.

2.2 Consequences for the flexible workforce

Obviously, temporary employment has consequences for the workers who are actually employed in these work arrangements. Compared to regular workers, they face differences in job security, ability to combine work and family life, working conditions, training, wages and job strain. All of these differences eventually accumulate to affect job satisfaction.

2.2.1 Job security

By the nature of their contracts, temporary workers experience less job security than regular workers. The contracts they work on are often designed to help employers escape employment protection legislation. Perceived job insecurity, however, has no one-to-one relation with temporary employment. In the literature, *type of contract* is one of the objective measures of job insecurity, which appears to be imperfectly correlated with subjective job insecurity perceived by the workers. Most research still finds a negative relation between temporary employment and perceived job security.

Clark and Postel-Vinay (2005) used longitudinal data for twelve European countries to determine the relationship between reported job security. They found that (after controlling for selection into job types) workers feel most secure in permanent public-sector jobs, least secure in temporary jobs, and somewhere in-between in permanent private sector jobs. This is in line with findings by Klein Hesselink and Van Vuuren (1999). They analysed the Dutch labour force survey to determine differences in perceived job security between the self-employed, permanent full-time workers, permanent part-time workers, fixed-term contract workers and temporary-agency workers. The results clearly indicate that employees with a fixed-term or temporary-agency contract worry most about their future employability. Similarly, De Witte and Näswal (2003) found negative associations between temporary employment and subjective job insecurity in Sweden and the Netherlands. In Belgium, however, this relationship was much weaker, and in Italy it existed only marginally.

Sverke et al. (2000) used data from Swedish healthcare workers to compare regular workers to contingent workers (fixed-term employment, agency work, contract work, independent contractors). They found that contingent workers experience more job insecurity, measured using a scale designed to reflect overall concern about the future of a worker's present job. Parker et al. (2002) used longitudinal difference-in-difference analysis to determine the effect of flexible employment on perceived job security. Their study involved two surveys 18 months apart in a UK company that manufactures and assembles large vehicles. They found a negative relationship, assessed on a four-item scale, between having a contingent contract (i.e. not having an implicit- or explicit contract for ongoing employment) and perceived job security. Thus, although there seems to be no one-to-one relationship between perceived job security and the nature of the employment relation, the literature is fairly unanimous in concluding a negative relation between temporary contracts and a worker's feelings of job security.

2.2.2 Ability to combine work and family life

For some workers, mostly women, temporary work offers opportunities to combine work and family life. This is especially true for temporary-agency work and on-call work. In these types of contracts, workers have more flexibility in designing their own working hours. For instance, they can state that they will not work after school is out, or during school holidays. In regular jobs this is much harder. Albert and Bradley (1998) analysed the accountant profession using a sample of 175 professional accountants permanently employed in a large London accountancy firm and 50 employees of a London-based temporary-employment agency specialised in accountants. They found that women working as temps experience much more control over their working conditions than those working regularly. This might be an indication that agency work allows highly skilled women greater latitude for combining their work and family life.

On the other hand, some researchers suggest that job instability negatively influences family formation. Ahituv and Lerman (2005), for instance, used dynamic selection models to show that higher perceived job instability leads to lower probabilities to marry and also lower probabilities to remain married for US men. De la Rica and Iza (2005) estimated duration models of time until marriage and time until birth of the first child in Spain. They found that, relative to permanent contracts, holding temporary contracts delays marriage for males, but not for females. Regarding the birth of the first child, they found that having a temporary contract hinders entrance into motherhood, particularly at young ages. Non-working, however, does not delay motherhood. This is consistent with a career-planning motive that serves to delay motherhood for those women who wish for a professional career, and has no effect on those who have no such ambitions. With respect to the labour market situation of husbands, De la Rica and Iza found that both non-working partners and partners with a temporary contract delay the birth of a first child. The disincentive effect of a non-working husband is larger than the effect of a husband on a temporary contract.

2.2.3 Working conditions, health and safety and work accidents

Many concerns regarding temporary employment are focussed on the working conditions under which this work is performed. There is even a special EU directive (Council Directive

91/383/EEC of June 1991) focussed on the equal treatment of temporary- and regular workers with respect to working conditions. A bad example of what can happen to the flexible workforce in terms of work hazards stems from Sweden. It concerns a case of poisoning related to the major tunnelling project at Hallandsås in 1997. Workers had suffered physical complaints from exposure to a certain sealing material for a number of months prior to the ultimate catastrophe, but did not make an issue of them. According to the media reports, workers remained silent because they feared that taking any initiative would reduce their opportunities to obtain renewed contracts (Aronsson, 1999).

The question is whether a higher accident rate among temporary workers is due to their work arrangements or to the characteristics of the workers in these contracts. Rousseau and Libuser (1997) studied the mining and petrochemical industry in the US. They found that causes of risk from the use of contingent workers stem from the attributes of the workers themselves, as well as from the characteristics of the employing organisation. Individually, contingent workers tend to be younger, more inexperienced and less well trained. Obviously there are many characteristics for which these authors cannot correct, since their research strategy does not allow for selection on unobservables. It might be particularly these unobservables, such as talent, risk attitude, etcetera that might induce risky behaviour. At the organisational level, risk increases when contingent workers are substituted for core workers while maintaining the same basic organisational structure. When the organisation is adapted to the use of contingent workers, the risk is reduced substantially (e.g. by communication about safety standards, better monitoring and coordination of the work of core- and contingent workers).

Many other authors have shown that both individual- and job characteristics codetermine the rate of work accidents, and that *regular vs. temporary contracts* is only a minor issue in this relation. Hernanz and Toharia (2004) used probit analysis to correct for individual- and job characteristics. They found that the higher or lower probability that temporary workers experience vis-à-vis their open-ended counterparts can be explained, to a very large extent, by the nature of the jobs they hold in terms of *proneness to work accidents* and not by any *intrinsic characteristics* that could be attributed to the fact that they hold a temporary contract. This is in line with findings of Amuedo-Dorantes (2002), who analysed Spanish establishment- and employee-level data from 1997. She found that once working conditions, employee characteristics and establishment characteristics are controlled for, temporary employees are not more, and are even somewhat less, prone to both work accidents and work illnesses. The Oaxaca-Blinder decomposition carried out by Hernanz and Toharia (2004) determined to what extent differences between contract types are the result of different characteristics, and to what extent they are due to the contract itself. Results from this analysis suggest that effects in both Italy and Spain are similar. Job- and personal characteristics of the temporary workforce tend to be associated with higher work accident probabilities. But the intrinsic nature of the contract is associated with higher accident probabilities for *permanent* workers.

The papers discussed so far did not control for the selection issues mentioned above. Bardasi and Francesconi (2003) showed that selection on unobservables is important in analysing the relationship between the nature of the employment relationship and health issues. They analysed ten waves of the British household panel survey and found that taking account of selection issues leads to the conclusion that mental and physical health are unaffected by temporary-employment status. However, Guadaloupe (2003), who also

controlled for these selection biases and reporting biases, found a purely contractual effect of temporary employment that increased the accident probability by 5 percentage points. We may thus conclude that the relationship between the type of employment contract and the rate of work accidents is not as clear as it may seem in advance, and the available results call into question whether there is any relation at all, either positive or negative.

2.2.4 Training and human capital accumulation

Theoretically, the relationship between temporary employment and the provision of employer-funded training hinges on firms' investment strategies in specific- and general human capital. A firm with a short-term labour force faces a reduced incentive to invest in training. Like any investment, the costs of training need to be earned back. The firm pays a wage below the worker's productivity in order to recover the investment costs. The shorter a worker remains with the firm, the shorter the payback period. Thus, the shorter the expected duration of a worker's employment contract, the less incentive a firm has to invest in his training.

Conclusions on the relationship between training intensity and type of employment contract are rather uniform. Almeida-Santos and Mumford (2004a and 2004b) used linked employer-employee data to analyse the incidence of employer-provided training in Australia and Britain. In both countries they found that fixed-term employment is associated with a lower probability of recent training, after controlling for other personal and job characteristics. Booth et al. (2002) analysed the first seven waves of the British Household Panel Survey 1991-1997 with pooled probit regressions. They found that both men and women in fixed-term or seasonal jobs have 7-20 percent lower probabilities of receiving work-related training than their permanent counterparts. Draca and Green (2004) analysed the intensity of training provided by employers to workers in different working arrangements, using the 1997 Survey of Employment and Training Experience (SETE) conducted by the Australian Bureau of Statistics. They concluded that not only do workers in temporary employment face a substantially diminished probability of receiving employer-funded training, but these differences are even more marked for training intensity (i.e. hours in training and number of courses). For Spain, Albert et al. (2005) found that workers with temporary contracts not only are less likely to be employed in firms that provide training, but, once they are in those firms, are also less likely to be chosen to participate in firm-provided training activities.

2.2.5 Wages

A glance at simple descriptive statistics shows that fixed-term and on-call workers earn substantially less than regular workers, whereas contract workers and freelance workers earn more (see e.g. Addison and Surfield, 2005; Cox Edwards and Grobar, 2001). Obviously this might be due to workers' characteristics. Fixed-term workers are generally younger and lower educated, whereas contract workers and independent contractors are higher educated than the average. Many authors (e.g. Addison and Surfield, 2005; McGinnity and Mertens, 2004; De la Rica and Felgueroso, 2002; Booth et al., 2002) find that OLS estimation substantially reduces the wage differential compared to descriptive statistics. Longitudinal analysis helps to correct for unobserved characteristics as well. Authors applying panel data

techniques usually find only small or even no wage differential between regular and temporary workers.

McGinnity and Mertens (2004) applied fixed effect analysis on a longitudinal dataset of German employees. Not all wage differences between fixed-term and regular contracts can be explained from worker characteristics. A negative wage effect of 6 percent for men and 3 percent for women remains after controlling for observed and unobserved characteristics. Kvasnicka and Werwatz (2002) applied fixed-effect analysis on an administrative dataset of West-German workers. They found that temporary help agency workers receive lower wages, even after controlling for observed and unobserved time-invariant characteristics and previous earnings. This wage gap is estimated at 12 percent for men and 10 percent for women. Booth et al. (2002) applied fixed-effect analysis on a longitudinal dataset of British employees. The fixed effects estimates showed negative wage gaps of 11 percent for men in seasonal/casual jobs and women on fixed-term contracts and 7 percent for men on fixed-term contracts and women in seasonal casual jobs. For the US Addison and Surfield (2005) found that the negative wage differential of on-call work is completely attributable to characteristics of workers. The wage effect for contract work and independent contracting is small after controlling for observed and unobserved characteristics. Segal and Sullivan (1995) concluded from their fixed effect analysis that wage differentials between temporary agency workers and regular workers in the US are not completely attributable to the characteristics of workers. Especially for pink and blue collar workers a negative wage differential remains. In chapter 4 of this thesis I analyse the relationship between wages and type of employment contract in the Netherlands.

2.2.6 Job strain

Temporary employment might be related to job strain by several positive or negative associations. Parker et al. (2002), for instance, found that lower participative decision-making, and to a lesser extent the lower job security, of temporary workers contributed to increased job strain. These negative effects, however, were outweighed by the lower levels of stressful role demands (i.e. role overload and role conflict) experienced by these workers. Gardner and Oswald (2001) applied OLS analysis on a pooled dataset of the 1991-1999 waves of the British Household Panel Survey. They analysed the effect of holding a temporary job on distress, measured by several items in the general health questionnaire. They found that holding a temporary job leads to higher mental stress only in the private sector. In the public sector, the type of contract has no significant influence on the amount of distress workers experience. Sverke et al. (2000) measured role ambiguity, role conflict, role overload and mental distress of contingent- (fixed-term, temporary-agency, contract workers, independent contractors) and regular workers in the Swedish healthcare sector. They found slightly more role-related ambiguity among contingent workers, but role conflict and role overload showed no relation with type of contract. Also, mental distress did not vary systematically with type of employment contract. Isaksson and Bellagh (2002) showed that the extent to which female temporary-agency workers in Sweden experience high or low stress levels depends on the contract preference. If these women worked on the contract of their choice, they experienced lower levels of work-related distress.

2.2.7 Job satisfaction and life satisfaction

All these factors together - job security, ability to combine work and family life, wage, working conditions, work accidents, training and job strain – are determinants of a persons well-being. Again, it is important to take into account that temporary workers are not a random selection of workers. They might be younger, less educated, or low talented. Therefore, when analysing the relation between the nature of the employment contract and satisfaction, one should allow for differences in observed and unobserved characteristics between temporary and regular workers.

The relationship between temporary work and job satisfaction has been analysed by Kaiser (2002). He used the European Community Household Panel to analyse the effect from fixed-term contract on satisfaction with job security and overall job security. He did not use the longitudinal aspect of the data but instead pooled the years of observation. As a result he did not allow for unobserved selection effects that result from temporary workers being not a random selection of workers. The negative effect on overall job satisfaction he found is small but statistically significant in Germany, the Netherlands, Portugal and the UK, but not in Denmark. Booth et al. (2002) used the British Household Panel Survey 1991-1997 to perform pooled ordered probit analyses. They found that seasonal/casual workers are less satisfied than regular workers, but workers on a fixed-term contract do not differ significantly from regular workers. Again, these authors did not use the longitudinal aspects of the data to control for selection on unobservables. Bardasi and Francesconi (2003) analysed the first ten waves of the British household panel study, 1991-2000. They found that effects of temporary employment on job satisfaction persist even after taking selection issues into account by fixed effect analysis and difference-in-difference analysis. This holds especially for seasonal/casual jobs. The effect on life satisfaction is not statistically significant.

De Witte and Näswal (2003) disconnected job security from type of contract. They disentangled the effect of subjective job security from the effect of employment contracts and found that subjective job insecurity leads to lower job satisfaction, not temporary employment per se. This holds for all four countries in their study: Belgium, the Netherlands, Sweden and Italy. Since temporary work appears to be imperfectly related with feelings of job insecurity they conclude that feelings of job insecurity are more important than temporary employment. Moreover, they argue that it might be especially the permanent employees who regard feelings of job insecurity as a violation of the psychological contract, whereas temporary employees regard it as part of theirs. As a result feelings of job insecurity might lead to larger consequences for permanent workers than for temporary employees. De Witte and Näswal indeed find that in Belgium and Sweden job insecurity is only associated with reduced job satisfaction among permanent workers.

Some studies focussed on the effect of voluntary versus involuntary choice for temporary work arrangements. Krausz (2000) for instance focussed on Canadian temporary agency workers and found a significant difference in satisfaction and preferences between workers who voluntarily choose this type of work and those who would rather have a permanent job. For the first group, which does not seek permanent work, work holds a less central position in their lives. However, or possibly as a result of this, they are more satisfied with their agency work. They show lower role conflict and prefer shorter affiliations with each client, whereas others prefer longer assignments at each client. The employee's motive for working on this type of contract is thus an important determinant of his satisfaction. Ellingson et al. (1998) analysed a sample of US Midwestern agency workers and found that

both overall assignment satisfaction and temporary work satisfaction are positively related to voluntary choice for agency work.

2.3 Consequences for regular workers

The existence of temporary employment also has its effects on workers employed in regular employment arrangements. Because of the fact that temporary workers are the first to be dismissed when product demand falls, we might expect job security for regular worker to improve as the share of temporary workers increases. Also, the career opportunities of regular workers might depend on the number of temporary employees in the firm and some authors even find an effect on their wages. This segregation within a firm's workforce might influence the trust that employees have in their organisation. Equity consideration might lead to negative feelings among regular workers, even though their individual position might be enhanced by the fact that other people occupy temporary position.

2.3.1 Job security

As product demand decreases, employers feel the need to dismiss workers. If there is a layer of temporary workers in the organisation, regular workers are shed against dismissal. The temporary workers will be the first to leave the firm and only if the situation is really bad will regular workers be dismissed as well. As a result job security for regular employees is higher. Gramm and Schnell (2001) empirically tested this hypothesis on a sample of manufacturing and scrap processing industries in Alabama. They found that a higher proportion of workers in flexible staffing arrangements reduces temporary layoffs - a phenomenon used in the US to temporarily dismiss regular workers in bad times and hire them again once product demand increases.

2.3.2 Career

Barnett and Miner (1992) found interdependence between the career opportunities of core and temporary help agency workers in a large US utility company. The presence of temporary help agency employees slowed mobility among permanent workers in lower ranks and increased it among advanced workers. For regular workers in the low segment the hiring of agency workers in the higher segment eliminated opportunities of being promoted to the higher segment. As a result they had to wait longer before they were promoted. For regular workers in the high segment, the hiring of agency workers meant the elimination of rivalry, since agency workers had much lower chances of being promoted within the high segment.

2.3.3 Wage

Bentolila and Dolado (1994) investigated a large sample of Spanish manufacturing firms over the period 1985-1988 to test their theory that the bargaining power of the permanent workforce increases as the share of temporary workers increases. Indeed they found that the interests of temporary employees are basically discarded in wage bargains. Each percentage

point increase in temporary employment is associated with up to 0.33 percent increase in wages of permanent employees. The results for Denmark, France, West Germany and the UK are less strong, but still roughly favourable to the hypothesis.

A completely opposite picture is drawn by Katz and Krueger (1999), who estimated effects of the temporary help industry on the wage level. They concluded that the increased labour market competition enhanced by the growth of the temporary agency industry played a role in restraining wage growth in tight US labour markets in the 1990s. This is in accordance with case study evidence from Houseman et al. (2003), who studied compensation of temporary agency workers in the US. In the health care sector employers experienced labour market shortages. In this industry temporary agency nurses were found to receive higher wages than nurses with a regular contract. In this way, wages of regular nurses are stabilized at a relatively low level. Would no temporary agency nurses have been available, wages of regular nurses would have risen as a result of the tight labour market.

2.3.4 Trust

Pearce (1993) studied a large aerospace company in the US. She found that employees in organisations with more contractors report lower trust in their organisation. She interprets this as a signal that employees question the fairness of their organisation. A similar interpretation was given by Geary (1992), who studied three large American electronic plants in the Irish Republic. Permanent employees perceived the abuse of their temporary colleagues as unfair. This indicates that apart from efficiency effects, the issue of equity is a key factor when analysing the effects of temporary employment.

2.4 Consequences for employers

The absence of firing costs is the main raison d'être for temporary-work arrangements. Foote and Folta (2002) argue that temporary-agency workers represent a significant option value to firms because they allow the firm to avoid the irreversible costs it would otherwise incur if it had to dismiss regular employees. These costs consist of non only severance payments and other firing costs, but also long-term consequences such as reputation damage, which inhibits a firm's ability to attract quality employees in the future, or reductions in morale, trust and productivity of those who remain after a layoff action, or loss of identity with the organisation. Since a long-term relationship is not part of the psychological contract between firms and temporary workers, firms can dissolve the temporary relationship without suffering these same costs. As such, temporary workers provide a real option for avoiding future costs. As a result, a firm that would delay expansion because the (expected) costs of firing the new workers in the future are higher than their (expected) productivity may have a positive value of expansion using agency workers, since their (expected) firing costs are much lower. Compared to a situation without temporary workers, a firm's workforce might be expected to increase faster when product demand grows and to decline faster when product demand falls. The speed of adjustment is thus higher. The result for the average size of the workforce over the cycle is not clear. A firm that can adapt its workforce more easily to product demand has a higher productivity level. The firm does face, however, also some potential disadvantages to temporary employment. Performance and work effort of temporary workers might differ

from that of regular workers, and temporary workers might exhibit less organisational citizenship behaviour.

2.4.1 Adjustment costs

Goux et al. (2001) estimated a model of labour demand that accounts for the dynamics arising from the relative costs of hiring and firing workers on regular or temporary contracts. They used a panel of 1000 French firms for which they measured the number of entries and exits for both work arrangements between 1988-1992. Unsurprisingly, they found evidence that it is much less costly to adjust the number of temporary workers than to adjust the number of regular workers.

2.4.2 Speed of adjustment

Bentolila and Saint-Paul (1992), using data for 1214 industrial firms over the period 1985-1988, found that the cyclical response of employment is larger after temporary contracts were made available to firms. The speed of adjustment of firms is thus higher when temporary contracts are available than when they are not (as was predicted by Foote and Folta, 2002). This increased elasticity was found to be more marked when firms are in recession than in expansion, indicating that it is mainly the downward adjustment of the workforce that is served by temporary contracts, and not so much the upward adjustment. Using an approach similar to that of Bentolila and Saint-Paul, Hagen (2001) estimated a dynamic labour-demand equation using a German establishment panel database for 1995-2000 containing all West German establishments with at least one employee. He, too, finds evidence that total employment within the firm adjusts more rapidly than permanent employment, indicating that temporary contracts lead to an increased speed of adjustment at the firm level.

2.4.3 Performance: commitment, work effort and organizational citizenship behaviour

Work effort might be either positively or negatively related to work on a temporary basis. If temporary workers feel less attached to the employer and are less satisfied with their work, they may suffer from motivational problems. According to Ang and Slaughter (2001), social-exchange theory explains differences in workplace attitudes and behaviours between temporary- and regular workers. The norm of reciprocity is central to social-exchange theory. If temporary workers receive less from their employers, this might explain less positive work attitudes and diminished organisational citizenship behaviour. Torka (2003), for instance, found that Dutch temporary workers are not necessarily less committed to their employers than regular workers are, simply because they do not always receive less from their employers than their regular colleagues do. Their commitment depends highly on the human-resource management strategy used by their employer and is indeed, as social-exchange theory predicts, two-sided. If an employer shows commitment to temporary workers, temporary workers show commitment to the firm.

Economic reasoning predicts greater work effort from temporary workers than from regular workers whose jobs are protected by employment protection. If individuals expect a temporary job to be a stepping-stone towards regular work, they might make an extra effort

to prove they are worthy of a regular contract. Engellandt and Riphahn (2003), for example, used the Swiss Labour Force Survey and presented evidence that temporary workers provide higher effort than permanent employees. Their *probability of working unpaid overtime* exceeds that of permanently employed workers by 60 percent. Case-study evidence by Geary (1992) in three large electronic firms in Ireland indicates that fixed-term workers were the first to work overtime, since they believed it was inadvisable to refuse to work overtime. Their permanent colleagues, who felt this abuse of temporaries as a burden, subsequently felt obliged to work overtime as well.

Following Ang and Slaughter (2001), work effort can be characterised as in-role behaviour (i.e. behaviour that is formally required of all job incumbents), as opposed to extra-role behaviour (behaviour that goes beyond existing role expectations, and is not mandated by the employer but benefits the organisation). The latter is also known as *organisational citizenship behaviour*. De Witte and Näswal (2003) found (after controlling for demographic characteristics) that temporary employees in Belgium, Sweden and Italy were not associated with either higher or lower organisational commitment than permanent workers. In the Netherlands, the association is positive. They found that feelings of job insecurity lead to lower organisational commitment. In Belgium and Sweden, this only holds for permanent employees. Temporary employees regard job insecurity as part of their psychological contract; it therefore does not come at the expense of lower commitment. A similar conclusion is drawn by Van Dyne and Ang (1998), who conducted a study among service workers in banking and health care. They found that if temporary workers have a positive attitude about their relationship with the employer, they do engage in organisational citizenship behaviour. They exhibit less of this behaviour on average, however, than regular workers. In an overview study, Pearce (1998) finds that temporary employment is not associated with lower organisational commitment.

2.4.4 Managerial control and human resource management

Temporary-work arrangements bring with them all kinds of extra needs regarding human-resource management and managerial control. As argued above, commitment of temporary workers depends to a large extent on the managerial strategy that is applied. Koene and Van Riemsdijk (2005), Cardon (2003) and Lautsch (2002) all provide taxonomies of human-resource practises that can be applied in case of temporary workers. Koene and Van Riemsdijk distinguished treating temporary workers as expendable, making no distinction between regular- and temporary workers and giving special attention to temporaries. The first management strategy leads to worse results than the second, while the third is superior. Lautsch (2002) argued that the human-resource strategy concerning temps should be consistent. Either they are treated differently from regular workers, which leads to negative results (unless the explicit aim is separation at the end of the contract), or they are treated the same as regular workers, which allows them to be integrated into the firm. A two-tier system, where the aim is to keep temporaries for a longer period in the organisation, but on different terms than the regular workers, does not work. This is confirmed by Geary (1992), whose case study provided evidence that a core-periphery split in the workforce creates all kinds of managerial problems. He found considerable disquiet amongst temporary- and permanent employees resulting from the perceived inequality between the two groups. Management

experienced problems such as difficulty with training temporaries, reduced commitment of the primary workforce, difficulty with terminating temporaries' contracts once they had become integrated, and conflicts between temporary- and permanent staff.

2.4.5 Productivity

All of these factors together – adjustment costs, speed of adjustment, performance, work effort, organisational citizenship behaviour, and managerial control – are determinants of productivity. Since some factors affect productivity positively and others negatively, the relation between temporary work and productivity is not ex-ante clear. We may even expect it to depend on whether the association is positive or negative. This expectation is confirmed by findings in the literature. Diaz-Mayhans and Sanchez (2004) performed a stochastic frontier analysis to measure the technical efficiency of Spanish manufacturing firms during the period 1990-2001. They find a negative relation between the proportion of fixed-term contracts and technical efficiency. Also Dekker and Kleinknecht (2003), using difference-in-difference analysis for the Netherlands, found a negative association between the share of temporary workers in the workforce and labour productivity growth. This holds only for manufacturing firms, not for those in the service industry. Aguirregabiria and Alonso-Borrego (1999) used a dynamic labour-demand model and estimated it using a large panel of Spanish firms. They tested for the effect of the introduction of temporary-employment contracts on the Spanish labour market in 1984. Although they found evidence of increased turnover, both the effects on productivity and the value of the firms were found to be negligible. Nayar and Willinger (2001), on the other hand, found a positive relation between temporary employment and productivity. They systematically examined the financial implications associated with increased reliance on contingent (i.e., temporary/part-time) labour in the US. Using measures of performance from income statement and balance-sheet data, and stock returns, they find that the adoption of this labour practice is associated with subsequent superior performance. Concurrently, no increase in systematic risk and standard deviation of stock returns is observed. The increase in performance with no concurrent increase in systematic risk and standard deviation of returns perhaps explains the increasing popularity of this labour practice.

2.5 Macro-effects

Not only individual workers and firms are affected by the availability of temporary work. There are also macro effects associated with this type of employment, which may, for instance, affect tax revenues and unemployment benefits. If overall employment grows, tax revenues increase. And a lower unemployment level is associated with lower expenditures on unemployment benefits.

2.5.1 Level of employment and unemployment

The literature is not unanimous on the issue of the effect of temporary employment or dismissal costs in general on the overall employment level. The overview study of Ljungqvist

(2002) showed that early general equilibrium analyses by Burda (1992), Hopenhayn and Rogerson (1993) and Saint-Paul (1995) displayed a negative effect of firing costs on employment, whereas later general equilibrium models by Alvarez and Veracierto (1998) and Mortensen and Pissarides (1999) concluded that firing costs affect employment positively. Ljungqvist shows that the results of these theoretical models depend crucially on the model features and assumptions. In search and matching models with the standard assumption of a constant relative split in the match surplus between firms and workers, layoff costs tend to increase employment by reducing labour reallocation, whereas employment effects tend to be negative in models with employment lotteries, due to the diminished private return to work.

Some work has also been done on partial equilibrium models, such as Bentolila and Saint-Paul (1992 and 1994), Bentolila and Bertola (1990) and Aguirregabiria and Alfonso-Borrego (1999); these also fail to shed light on the consequences of firing costs on employment levels. Lower firing costs are associated with an increased response to shocks, with ambiguous effects on the average employment level. Also the empirical work on this subject is inconclusive. Hunt (2000) found little evidence of increased employment in Germany after the 1985 Employment Promotion Act reduced firing costs. Bentolila and Saint-Paul (1992) found evidence mainly for the increase in cyclical response in Spain after the 1984 reform, with uncertain effects for the average level of employment. Aguirregabiria and Alonso-Borrego (1999) showed positive effects of this same reform for the level of Spanish employment. Experiments using the estimated model showed positive effects of the reform on employment between 2.5 and 4.5 percent.

Katz and Krueger (1999) analysed how the growth of the temporary-help services sector was related to the decrease in the non-accelerating inflation rate of unemployment (NAIRU) in the US. In the 1990s, the NAIRU declined by 0.4 percentage points. They explained this finding as a result of the impact of the temporary-help industry on improving labour matching and increasing competition on the labour supply side. Katz and Krueger thus expect that the existence and growth of the temporary-help industry is likely to represent structural changes in the efficiency of the labour market and, as a result, on the unemployment rate.

2.5.2 Speed of adjustment

The model developed by Bentolila and Saint-Paul (1992) predicts that the availability of temporary employment increases the size of total employment's response to aggregate shocks, while decreasing its persistence. Stylised facts from aggregate Spanish employment confirm this finding. However, other studies do not confirm it. Nunziata and Staffolani (2005) analysed country-level data from the Eurostat Labour Force Survey for the period 1983-1999 in combination with an OECD indicator of employment protection to estimate an error-correction model. They find that the speed of adjustment for temporary- and permanent employment is pretty much similar, indicating that temporary employment does not increase the speed of adjustment of the economy. The exception is younger workers, for whom the speed of adjustment is around three times higher for temporary than for permanent employment. This suggests that the number of permanent contracts for young employees is slow to adjust compared to temporary employment. Hunt (2000) used industry-level data to estimate the effect of the deregulation of the use of fixed-term contracts in Germany in 1985.

She found no evidence of increased employment adjustment. Using the same data, Abraham and Houseman (1994) did not find an effect on the speed of adjustment, either.

2.5.3 Segmentation

A main concern about temporary employment is that it might lead to dual labour markets, with well-paid secure jobs for the insiders and low-paid insecure jobs for the outsiders. This issue is related closely to the stepping-stone effect of temporary employment for unemployed workers. In a segmented market, no stepping-stone effect exists. Then, temporary jobs are dead-end jobs (Booth et al., 2002). The literature mentioned above reported evidence of stepping-stone effects, which implies that the labour market is not segmented, but is instead a two-step market in which disadvantaged individuals can use the first step to reach the second, which they otherwise would not have been able to reach. This does not seem to be true for all countries. Especially the US and Spain, the countries with, respectively, the lowest and the highest employment protection for regular workers, show little evidence of stepping-stones.

2.6 Conclusion

This chapter described the consequences of the existence of temporary employment for multiple stakeholders. It is clear that *theoretically*, from an economic perspective, temporary employment provides potential advantages for unemployed individuals, regular workers, employers and society as a whole. For unemployed workers, temporary jobs might be stepping-stones that serve to increase their human capital and improve their job-finding probabilities. For regular workers, the existence of a temporary workforce acts as a buffer that shields them against dismissal. For employers, firing costs are reduced; this lowers barriers to employment adjustment and thus increases their productivity and profitability over the business cycle. For society as a whole, this should lead to higher employment and lower unemployment levels. But economic theory also provides some countervailing arguments. Investment in human capital, for instance, is lower for temporary workers, since they are expected to remain at the firm for a shorter period of time. This might lead to lower productivity at both the firm- and macro level, and thus to lower employment levels. Also the more psychological perspective stresses potential disadvantages. Workers in temporary-work arrangements experience asymmetrical psychological contracts; this reduces their job satisfaction and motivation. They receive lower job security and lower payment than their regular colleagues, which might lead to feelings of inequality; this, in turn, negatively affects both temporary- and regular workers.

Empirical findings are mixed. With respect to unemployed individuals, the empirical literature shows evidence of temporary work as a stepping-stone towards regular employment in some countries, but not in all. Especially the US and Spain, the countries with, respectively, the lowest and the highest employment protection for regular workers, show little evidence of stepping-stones. Unemployment duration is shorter when temporary employment exists, but chances of finding regular employment are not necessarily increased.

Regarding temporary workers themselves, the empirical evidence is inconclusive. Most of the empirical literature concludes that temporary workers are paid less than their regular counterparts, which might be due to uncertainty about their ability. Working

conditions are not necessarily worse, but training opportunities are. And temporary workers experience more uncertainty with respect to their employer's expectations. On the other hand, temporary workers are better able to combine work and family life, and experience less role overload. Overall, temporary workers are not necessarily worse off, in terms of job satisfaction, than regular workers.

Also for regular workers, the empirical evidence finds some advantages of temporary employment used by their firm, in terms of higher job security, but also some disadvantages, in terms of lower wage growth. Research findings confirm that equity considerations lead regular workers to feel uncomfortable because of the differences between their own work arrangements and those of their temporary colleagues. As a result, the trust of regular workers in their employer is lower if the organisation employs higher shares of temporary workers.

For employers, this diminished trust is one of the negative effects, as are the extra needs (documented in the empirical literature) regarding human-resource management that are associated with temporary workers. On the other hand, empirical findings confirm that firing costs are reduced by the use of temporary workers, and this leads to a higher speed of adjustment of the workforce to business-cycle shocks. Overall, the effects on productivity and profitability are mixed.

For society as a whole, the literature is not unanimous regarding the effect of temporary employment on employment levels. Curiously, the higher speed of adjustment that was found on the firm level is not confirmed by research on the macro level. This implies that the efficiency of an economy with high shares of temporary employment is not necessarily higher than the efficiency of an economy that makes little use of these work arrangements. With respect to equity considerations, temporary employment leads to segmentation of the labour market, which happens when temporary jobs are dead-end jobs instead of stepping-stones. This has occurred in some countries.

Chapter 3

3 Stepping-stones for the unemployed: the effect of temporary jobs on the duration until (regular) work[1]

3.1 Introduction

It is often argued that the existence of temporary work is beneficial to currently unemployed workers, because it provides them opportunities to gain work experience and acquire human capital, to deepen the attachment to the labour market, and to search more effectively for more desirable jobs. Temporary job experience may be informative about the ability and motivation of the individual (screening or signalling). Some studies show that employers indeed use atypical contracts as a way of screening for permanent jobs (e.g. Storrie, 2002; Houseman et al., 2003). This chapter examines the extent to which temporary work facilitates individual unemployed workers to move from unemployment to regular work, that is, the extent to which temporary work acts as a stepping-stone towards regular work.

The empirical analysis in this chapter follows the 'timing of events' approach formalised by Abbring and Van den Berg (2003). Longitudinal survey data of individuals are used to estimate a multi-state duration model. The model specifies the transition rates from unemployment to temporary jobs, from temporary jobs to regular work, and from unemployment directly to regular work. Each transition rate is allowed to depend on observed and unobserved explanatory variables as well as on the elapsed time spent in the current state. To deal with selection effects, the unobserved determinants are allowed to be dependent across transition rates. For example, if more motivated individuals have less trouble finding permanent jobs but are also over-represented among those in temporary jobs, then a casual observer who does not take this into account may conclude that there is a positive causal effect even if in reality there is none.[2] Also subjective responses on whether the individual desires to have a regular job are exploited. The multi-spell nature of the data is used to reduce the dependence of the results on functional form specifications. The 'timing of

[1] This chapter is based on De Graaf-Zijl, Van den Berg and Heyma (2004).

[2] Purcell et al. (1999), Feldman et al. (2001) and Von Hippel et al. (1997) have found low levels of motivation among temporary workers.

events' approach exploits variation in observed moments of transitions in order to empirically distinguish between causal effects and selection effects. Somewhat informally, if a transition to a temporary job is often quickly succeeded by a transition into a regular job, for any constellation of explanatory variables, then this is strong evidence of a causal effect.[3] Here the specific model framework developed by Van den Berg, Holm and Van Ours (2002)[4] is adopted, for two reasons. First, it allows in a natural way for 'lock-in' effects of temporary jobs, meaning that they may involve a temporary standstill of search activities for other jobs. Secondly, it allows for heterogeneous treatment effects, meaning that the effect of having a temporary job on the transition rate to regular work may vary across observed and unobserved individual characteristics. Because of lock-in effects and effect heterogeneity, the parameter estimates are hard to interpret.

The estimation results also shed light on whether the individuals with a high incidence and/or duration of unemployment flow into temporary work more often, and whether they benefit more from a stepping-stone effect of temporary work. More in general, we address whether individuals who benefit from temporary work also have a high transition rate into temporary work. This is of importance from a policy point of view. If certain types of individuals barely flow into temporary work although their average duration until regular work would be substantially reduced by it, then it may be sensible to stimulate the use of temporary work among this group, for example by helping individuals to register at temporary work agencies.

The effects of the existence of temporary jobs on the transition rate from unemployment directly into regular work (i.e. without intervening temporary work spell) are beyond the scope of this chapter. It can be argued that this effect is negative if a temporary job facilitates a move to a regular job and if unemployed individuals are aware of this. However, the data do not allow for identification of this effect. Also equilibrium effects are abstracted from. Temporary employment might improve the economic performance of firms because there is less need to hoard workers as an insurance against a sudden upswing in demand (Pacelli, 2002; Kahn, 2000, Von Hippel et al., 1997). Also, the use of temporary workers may reduce cyclical swings in labour productivity, since firms might be better able to shed workers quickly during a downturn (Estevão and Lach, 1999). And temporary contracts imply lower layoff costs and could therefore stimulate employment creation. However, as shown in chapter 2, the literature is not unanimous on the issue of the effect of temporary employment on the overall employment level.

To the extent that the data allow, the relation between job characteristics of regular jobs and whether or not they were directly preceded by a spell of unemployment or whether there was an intermediate spell of temporary work (see also Booth et al., 2002; Houseman, 2001) is analysed.[5]

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[3] The approach does not require exclusion restrictions, instrumental variables, or conditional independence assumptions. Recently, a number of studies have appeared in which the 'timing of events' approach is applied to analyze the effects of dynamically assigned treatments on duration outcomes (see Abbring and Van den Berg, 2004, for an overview).

[4] Chalmers and Kalb (2001) used the same method to analyse the effect of casual jobs, i.e. jobs without holiday and sick leave entitlements, using the Survey of Employment and Unemployment patterns 1994-1997 from the Australian Bureau of Statistics.

[5] We are unable to check whether temporary work is associated with lack of training opportunities, as suggested by Farber (1997, 1999), Arulampalam and Booth (1998), and Amuedo-Dorantes (2002).

This chapter is organised as follows. Section 3.2 presents the data set, defines temporary jobs, discusses some variables used in the analyses, and provides descriptive statistics. Section 3.3 presents the model. Section 3.4 discusses the estimation results, which we illustrate with some graphical overviews. Conclusions are drawn on the stepping-stone effect of temporary employment, covariate effects, the role of unobserved heterogeneity and the quality of the jobs found. Section 3.5 concludes.

3.2 Data

In this chapter the OSA labour supply panel, a longitudinal dataset collected by the Dutch Institute for Labour Studies (OSA), is used. The OSA labour supply panel follows a random sample of Dutch households over time since 1985, by way of biannual face-to-face interviews. The survey concentrates on individuals who are between 16 and 64 years of age, and who are not full-time students. Therefore only households with at least one person in this category are included. All individuals in the household who fall under this category - head of the household, partner, children and other household members - are interviewed. This results in some 4000 individuals per wave. All households that cooperate in a wave are asked to participate again two years later except if all household members became over 65 years of age. An attempt is made to locate family (members) who moved. If household members refuse to participate then the other members are surveyed anyway. If the whole household refuses, a replacement household is approached. A replacement household matches the refusing one by sex, age, family size and region. Data from 1988 to 2000 are used in this chapter. The 1988 wave consists of 4464 individuals. In 2000, about a quarter of them is still in the panel. In 1990, 1992, 1994, 1996, 1998 and 2000 refreshment samples were drawn, so that in 2000 the sample size was 4185. Van den Berg and Lindeboom (1998) and Van den Berg, Lindeboom and Ridder (1994) study the effect of attrition in the OSA data on the estimates of the transition rates between unemployment and employment and between jobs. They find that although attrition is sometimes sizeable, it does not have discernible effects on the estimates of these rates. These two studies also provide ample background information on the data as well as references to other studies using these data.

In the OSA panel, an effort is made to collect extensive information on the labour market histories of the individual respondents. Individuals are asked about their labour market status two years ago - the previous interview date - about all transitions made since then, and about the current labour market status. For every transition we observe when it happened, why it happened, by which channel the new position was found and what the respective labour market positions were. Regarding the labour market position after a change, individuals can choose from: other function with same employer, employee at other employer, self-employed, co-working partner of self-employed, no paid job but looking for one, no paid job and not looking for one, military service, and full-time education. From these labour market histories one obtains the sequence of labour market states occupied and the sojourn times in these states. People are defined to be unemployed when they do not have a job but are looking for one. One does not need to receive unemployment benefits to be unemployed.

Regular work is defined as being in a job that is a permanent job or being in a job with a limited-duration contract that is supposed to become permanent. In the Netherlands,

starting on a one-year contract in a job is rather common, and practically everybody gets a subsequent offer of a permanent contract for the same job. These one-year contract jobs are not the temporary jobs we are interested in here, since these are by definition a starting point for regular employment. Instead, temporary jobs are defined as the more contingent types of jobs: fixed-term jobs, temporary agency work, on-call contracts and subsidised temporary jobs. It should be noted that in the Netherlands, contrary to certain other countries, unemployed individuals who are registered at commercial temporary work agencies but are currently not assigned to an employer, do not receive wage income and are considered to be unemployed. This also applies to the data used in this chapter. Some studies treat part-time employment as a form of non-standard employment. Since the major share of part-time employment in the Netherlands is on a voluntary basis part-time employment is treated in the same way as regular employment. This implies that it can be either regular or temporary, depending on the duration of the contract.

Concerning the employment positions at the survey moments the wage, number of hours worked, industry, occupation, type of work, type of contract, etcetera are observed. For periods between survey moments less information is available, and this leads to two problems. First, we do not observe many characteristics of jobs that start and end between two consecutive interviews. Notably, the wage of such jobs is not often observed. This implies that the set of explanatory variables to be used is mostly restricted to background characteristics of the individual (listed below). Secondly, it is not always clear whether a job that starts and ends between two consecutive interviews is temporary or not. In case of doubt the type of contract is inferred from other variables. The stated channel by which the job was found – this can be a temporary help agency – and the stated reason why transitions into and out of the job are made – to get more job security or because of the end of contract, are used to this end. In some cases these variables are missing, and the unemployment spell is right-censored at the moment of the transition into such a job. The latter occurred in 12% of all spells.

Then the duration between the start of unemployment and the moment at which the individual moves into either regular or temporary work can be measured. This is what we call the unemployment spell. Subsequently, the duration from the start of a temporary job until the moment at which the individual moves to a regular job can be measured. This is what we define to be the temporary job spell. The latter duration period may include intermittent temporary jobs and periods of unemployment in between. All these durations may be right-censored due to a transition to another labour market state, or due to reaching the end of the observation window. Spells of regular employment are not considered in the model.

Unemployment spells that started before the first interview are not included in the analysis, so that there are no initial conditions problems that arise with interrupted spells. The indicated selection results in a sample of 976 individuals. All individuals have become unemployed at least once during the time period 1988-2000. Up to three spells of unemployment are used per individual. This results in 1175 spells.

Table 3.1 provides some descriptive statistics of the labour market positions of individuals at interview dates. E.g. 16 percent of the unemployed are in temporary employment two years later. These numbers are roughly consistent with earlier findings both in the Netherlands and other Western countries (e.g. Dekker and Kaiser, 2000; Segal and Sullivan, 1997). Transitions from temporary jobs to regular work are frequent, and, indeed, more frequent than transitions from unemployment to regular work. This suggests that

temporary employment might serve as a stepping-stone towards regular work. Figure 3.1 shows the total number of observed labour market transitions in the sub sample used here. Note that some types of transitions do not play a role in the empirical analysis below, in particular the transitions to and from 'not in the labour force', the transitions to unemployment, and the transitions from regular (or permanent) employment to temporary employment.

Table 3.1 Labour market transitions in the sub sample, 1988-2000 (percentages).

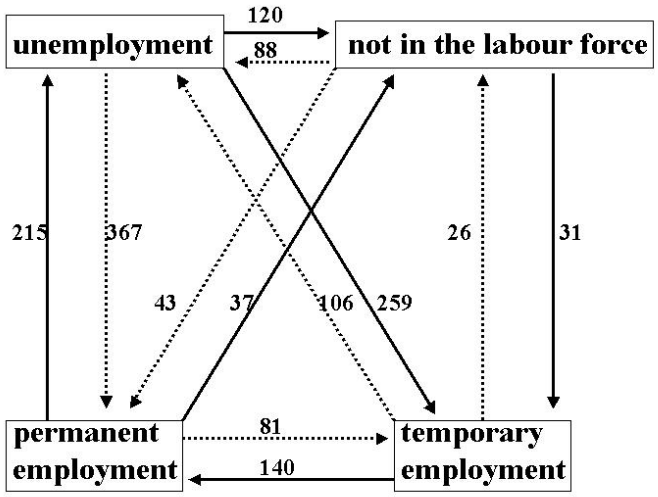
	Labour force status survey year t+2				
Labour force status survey year t	Out of the labour force	Unemploy-ment#	Temporary employment	Regular employment	Share in labour force 1998*
Out of the labour force	58%	26%	7%	9%	23%
Unemployment	22%	32%	16%	30%	3%
Temporary employment	6%	21%	35%	38%	9%
Regular employment	3%	18%	8%	71%	64%

Transitions to unemployment are relatively frequent in the sample since only those who are observed to become unemployed at least once are selected.

* Calculations based on OSA wave 1998. Regular employment includes 4% fixed-term contracts with extension to permanent at the end (if screening is successful).

A number of individual characteristics are recorded at the first interview, and an attempt is made to keep track of changes in time-varying characteristics such as family composition, marital status and level of education. These characteristics are used as explanatory variables. In the analysis all explanatory variables concern the situation at the start of the unemployment spell, i.e. not time-varying. Appendix 3.1 gives some sample averages. Information on the labour market tightness, notably the unemployment/vacancy ratios per education level, is gathered from Netherlands Statistics (CBS).

Figure 3.1 Labour market transitions in the data set



3.3 The model specification

3.3.1 The transition rates

In the introduction of this chapter mentioned the distinguishing features of the 'timing of events' methodology that we apply. The model framework of Van den Berg, Holm and Van Ours (2002) is adopted, which was constructed to study the existence of stepping-stone jobs in the Dutch medical profession. In the current context, the model specifies the transition rates from unemployment to temporary employment, from unemployment to regular employment, and from temporary employment to regular employment. In general, the transition rate or hazard rate θ_{ij} is defined as the rate at which an individual flows from one state i to another state j, given that (s)he survived in state i until the current moment. The indices i and j are definef to have values: 1 = unemployment, 2 = temporary employment, and 3 = regular employment. A mixed proportional hazard model is specified for each transition rate. Let observed characteristics be denoted by x_{ij} and the baseline hazard by $\lambda_{ij}(.)$, for the transition rate from state i to state j. In addition, β_{ij} is a vector of parameters to be estimated. The multiplicative random effects v_{ij} are state and exit destination specific. Then,

$$\theta_{ij}(t \mid x, v_{ij}) = \lambda_{ij}(t) e^{\beta_{ij}^{/} x_{ij} + v_{ij}}$$

and the corresponding survival function equals

$$S_i(t \mid x, v_{ij}) = e^{-\sum_{j=1, j \neq i}^{j=3} \int_0^t \theta_{ij}(s \mid x, v_{ij}) ds}$$

Note that this imposes that the hazard rates only depend on the elapsed duration in the current state and not on earlier outcomes.[6]

Recall that an unemployment spell is defined to be the time span between entry into unemployment and entry into either regular or temporary work. A temporary job spell is defined as the time span between the start of the first temporary job and entry into regular employment. As a result a temporary job spell may consist of multiple periods of (short) unemployment and temporary job spells. The total spell between the start of unemployment and regular employment is the sum of the unemployment spell and, if applicable, the temporary job spell. In the data more than one of these 'total' spells per individual is observed. For a given individual, the values of v_{ij} are assumed to be identical across different spells. To deal with selective inflow into temporary work and permanent work, we test how the v_{ij} for a given individual are related. For example, the observed transition rate from temporary work to regular work may be higher than the observed rate from unemployment to regular work just because individuals for whom it is easy to find regular work tend to self-select into temporary work. Then v_{12} is positively related to v_{13} and v_{23}. It is also possible that persons who most easily find regular work find less easily a temporary job, which means that v_{12} and v_{13} are negatively related.

The individual likelihood contributions are unconditional on the unobserved heterogeneity terms (see e.g. Lancaster, 1990). With unobserved heterogeneity, the likelihood function is not separable in the parameters of different transition rates. Abbring and Van den Berg (2003) analyse the identification of these types of models. It turns out that the availability of multiple spell data is useful in the sense that fewer assumptions are needed for identification, and therefore the empirical results are less sensitive to aspects of the model specification. See also Abbring and Van den Berg (2004) for comparisons to inference with latent variable methods and panel data methods. In particular, in multi-spell duration analysis, as in fixed effects panel data analysis, the results do not critically depend on the assumption that observed and unobserved explanatory variables are independent.

An important condition for identification concerns the absence of anticipation of the moment of treatment. This basically means that the individual should not know more about the moment of treatment than is captured by the modelled distribution of the duration until treatment. In the current context, anticipation occurs for example if the individual stops looking for regular work (or actually has an increased transition rate into regular work) upon the moment it is decided that he will enter a temporary job in a certain time period from now. If this were the case and the researcher does not observe the moment of this decision then the estimates of current transition rates are determined by future events. However, such a scenario seems unlikely in the present set-up. From a dynamic (search) point of view it is unlikely that people know in advance the exact moment at which they will find a temporary job. In any search model, the moment at which a match between a worker and a temporary job is realized is not fully in the hands of the unemployed worker, especially since temporary workers are often called at short notice. The worker can at most determine the rate at which the match is realized, and this leaves some randomness in the realized moment. This implies

[6] With random effects, including individual past labour market outcomes as explanatory variables is difficult as it gives rise to initial conditions problems, unless the data contain a natural starting point of each individual labour market history. By implication, the individual treatment effects defined below do not directly depend on e.g. past annual earnings, but at most on the observed and unobserved determinants of past outcomes.

that the way in which search frictions are usually modelled – as random arrivals of trading opportunities – has fruitful applications in the literature on treatment evaluation and it is used as such in this chapter. Against this one may argue that some individuals are registered at temporary work agencies as looking for such jobs, but that this is unobserved, and that these individuals may have a higher rate of moving from unemployment to temporary work. However, this is captured as unobserved and observed[7] heterogeneity. The model framework used in this chapter is designed to disentangle selection effects from a causal effect. This selection effect can perfectly well be a self-selection effect, as is the case if some individuals search for temporary jobs and others do not.

3.3.2 Parameterisation

Following the literature the duration dependence functions (or baseline hazards) $\lambda_{ij}(t)$ is taken to have piecewise constant specifications. Let t denote the elapsed duration, ζ refer to the successive intervals and $I_\zeta(t)$ denote time-varying dummy variables that are equal to 1 iff t is in the interval ζ. The piecewise constant duration dependence function can then be written as

$$\log \lambda_{ij}(t) = \sum_{\zeta=1,2,\ldots} \lambda_{ij\zeta} I_\zeta(t)$$

A duration axis is subdivided into 8 quarterly intervals for the first two years, followed by 2 half-year intervals for the third year and an open interval for durations of more than 3 years. These intervals capture the empirical shapes rather well.

The distribution of the unobserved heterogeneity term v is taken to be multivariate discrete with mass points, and the locations of the mass points as well as the associated probabilities are unknown parameters. Let v_{ijn} denote a realisation of the random variable v_{ij}. Each individual has a set of v_{12}, v_{13} and v_{23}. For each v_{ij} two possible realisations are allowed. In addition, if $v_{13} = v_{13n}$ then $v_{23} = v_{23n}$. This assumes that individuals who more easily find regular work from unemployment also find regular work more easily from a temporary position. This specification results in four different types of individuals (four different combinations of mass points), where a type is characterized by a unique set of values of v_{12}, v_{13} and v_{23}, and six different mass points. Note that the combination of mass points (v_{12},v_{13},v_{23}) replaces the constants in the vector of regression coefficients, and can thus all be identified. The relation between the elements (v_{12},v_{13},v_{23}) is not imposed to be monotone. As noted above, the extent to which v_{12} is related to v_{13} and v_{23} determines the extent to which selectivity affects the relation in the raw data between having temporary work or not on the one hand, and the rate of entering regular work on the other.

[7] The data contain an explanatory variable indicating whether the individual, when unemployed, prefers temporary work to regular work.

3.3.3 Quantities of interest

Which model quantities are informative on the treatment[8] or stepping-stone effect? This treatment effect is not represented by a single model parameter. To see this, note that in the current parameterisation the transition rate from unemployment into regular work depends on the time since entry into unemployment, whereas the rate from temporary work to regular work depends on the time since entry into temporary work. Both of these have their own duration dependence patterns. Ruling out the difference in duration dependence patterns would be absurd in the light of the fact that temporary jobs may involve a lock-in effect, causing the transition rate into regular work to be lower right after having entered a temporary job and higher some time later. As a result of the different duration dependence patterns, the usual treatment effect that results from comparing the hazard rate from unemployment to (regular) work with and without the treatment cannot be calculated. Instead the overall effect of temporary work is assessed using outcome measures that aggregate over effects on the hazard rates. For this purpose the cumulative probability of moving into a regular job, at various points of time after entry into unemployment, is used.

The aim is to compare the probability of moving into regular work directly from unemployment with the probability of moving into regular work from unemployment via temporary work. These probabilities are quantified by using the estimated model. The cumulative probability of moving into regular work within t periods after having entered unemployment equals

$$\int_0^t \theta_{13}(\tau)S_{13}(\tau)S_{12}(\tau) + \theta_{12}(\tau)S_{12}(\tau)S_{13}(\tau)(1-S_{23}(t-\tau))\,d\tau \tag{3.1}$$

where the indices of S refer to the corresponding duration variable (i.e. S_{12} is the survivor function of the duration from unemployment into temporary work). The first part of the expression equals the probability of moving into regular work by way of a direct transition from unemployment, whereas the second part equals the probability of moving into regular work by way of temporary work. Logically, the probability of moving into regular work directly from unemployment does not converge to 1 as t goes to infinity if $\theta_{12}>0$. The relevant population estimate of (3.1) follows by integration of the total expression over the distribution of observed and unobserved characteristics.

The decomposition of (3.1) into its two terms does *not* capture a treatment effect. To see this, note that both terms are positive even if there is no individual treatment effect, i.e. if the states of unemployment and temporary work are equivalent in the sense that the transition rate from temporary work to regular work at any calendar time point equals the transition rate from unemployment to regular work that would have prevailed at that point. Instead, the decomposition of (3.1) represents the population fraction of unemployed individuals who find regular work through either the temporary work channel or the direct channel.

[8] The present use of the term "treatment" is somewhat out of line with the common use, because the move into a temporary job is to a large extent driven by the behavior of the individual under consideration.

Treatment effect on duration until regular work

One can define a sensible treatment effect by comparing the actual magnitude of expression (1) to the magnitude in a situation where temporary employment is not available. The probability of moving into regular work within t periods in the absence of temporary work can be quantified by simply imposing in (1) that the transition rate into temporary work θ_{12} equals zero, resulting in the expression $\int_0^t \theta_{13}(\tau) S_{13}(\tau) d\tau$. This holds for the general model parameterisation where θ_{23} is also allowed to depend on the time τ since entry into unemployment, as well as for the actual parameterisation. [9] Appendix 3.2 demonstrates this formally. The treatment effect that calculated here might be called the stepping-stone effect. It indicates to what extent the duration until regular work is shortened by the existence of temporary jobs.

Some comments are in order. First, in the absence of temporary work, some of the individuals who would otherwise have moved into regular work by way of a temporary job move into regular work directly from unemployment. Therefore, the cumulative fraction of individuals moving into regular work calculated exceeds the observed fraction of individuals who move directly from unemployment into regular work. The estimated cumulative probability of moving into regular work from unemployment, which in the presence of temporary work converges to one minus the cumulative probability of moving into temporary work from unemployment, is thus extrapolated to converge to 1 as t goes to infinity. This assumes the same pattern of duration dependence and relative effects of the explanatory factors. This means that potential effects of the mere existence of temporary jobs on the transition rate from unemployment directly into regular work are not considered. Secondly, all these calculations at the micro level assume that on the macro level the absence of temporary jobs does not affect the magnitude of the direct transition rate from unemployment to regular work (recall the discussion in Section 3.1). There are many reasons why this assumption may be incorrect. Notably, there may be equilibrium effects on the demand and supply of regular jobs. Thirdly, it is not possible to nonparametrically test whether the curve described by (1) is different from the curve obtained by imposing $\theta_{12}=0$, simply because the curve obtained by imposing $\theta_{12}=0$ is counterfactual and therefore cannot be estimated nonparametrically.

Treatment effect on (re)employment

In addition, another treatment effect can be defined as the effect of temporary employment on the probability of reemployment. The cumulative probability of moving into (regular or temporary) work within t periods after having entered unemployment equals

$$\int_0^t \theta_{13}(\tau) S_{13}(\tau) S_{12}(\tau) + \theta_{12}(\tau) S_{12}(\tau) S_{13}(\tau)\, d\tau \tag{3.2}$$

[9] The fact that we allow β_{13} to be different from β_{23} and that we allow v_{13}/v_{23} to be different across individuals means that we allow the individual effects of temporary work to differ between individuals. The average effects can then be obtained by averaging the individual effect over x and v.

Equivalent to the quantification of the treatment effect on the duration until regular work, the treatment effect on the reemployment probability can be quantified by imposing in expression (2) that the transition rate into temporary work θ_{12} equals zero, resulting in the expression $\int_0^t \theta_{13}(\tau) S_{13}(\tau) d\tau$.

The difference between these two expressions is the treatment effect that measures the extent to which unemployment is shortened by the existence of temporary employment. Even if an effect of the existence of temporary work on the duration until regular work, as described in above, cannot be identified, one might identify an effect on the unemployment duration if the temporary job spell is simply an alternative for an equally long time searching from unemployment. The results presented in the next section show that this is exactly what happens.

3.4 Estimation results

3.4.1 Exit rates

The estimates of the shapes of the individual transition rates as functions of the elapsed durations in the states under consideration are presented first. Given the initial level of a transition rate (i.e., upon entry into the state under consideration), the shape of this rate is described by the parameters of the duration dependence function (see the estimates in Table 3.2a). Figure 3.2 plots the individual transition rates as functions of the elapsed duration in the present state for an individual with average observed (x) and unobserved characteristics (v), using the estimated model.[10] Tables 3.2b and 3.2c present the parameter estimates of the covariate effects and the unobserved heterogeneity distribution; these are discussed in detail later in this section. The curves in figure 3.2 are informative on the effect for the average individual.

[10] The average unobserved characteristics are calculated by multiplying the estimated v_{ij}'s with the estimated corresponding probabilities (p's).

Table 3.2a Estimation results for the log duration dependence functions.

	Unemployment to temporary	Unemployment to regular	Temporary to regular employment
4 - 6 months	0.278 (0.114)	0.536 (0.120)	-0.063 (0.193)
7 - 9 months	0.257 (0.133)	0.485 (0.125)	0.101 (0.121)
10 - 12 months	0.519 (0.176)	0.728 (0.117)	0.394 (0.137)
13 - 15 months	-0.167 (0.198)	0.687 (0.120)	0.704 (0.155)
16 - 18 months	0.396 (0.191)	0.692 (0.145)	0.523 (0.137)
19 - 21 months	0.646 (0.242)	-0.165 (0.249)	0.855 (0.132)
22 - 24 months	1.235 (0.243)	1.369 (0.159)	1.735 (0.184)
25 - 30 months	1.332 (0.272)	1.402 (0.159)	1.738 (0.193)
31 - 36 months	0.550 (0.377)	1.963 (0.201)	1.777 (0.226)
> 36 months	1.246 (0.249)	1.749 (0.214)	1.691 (0.235)

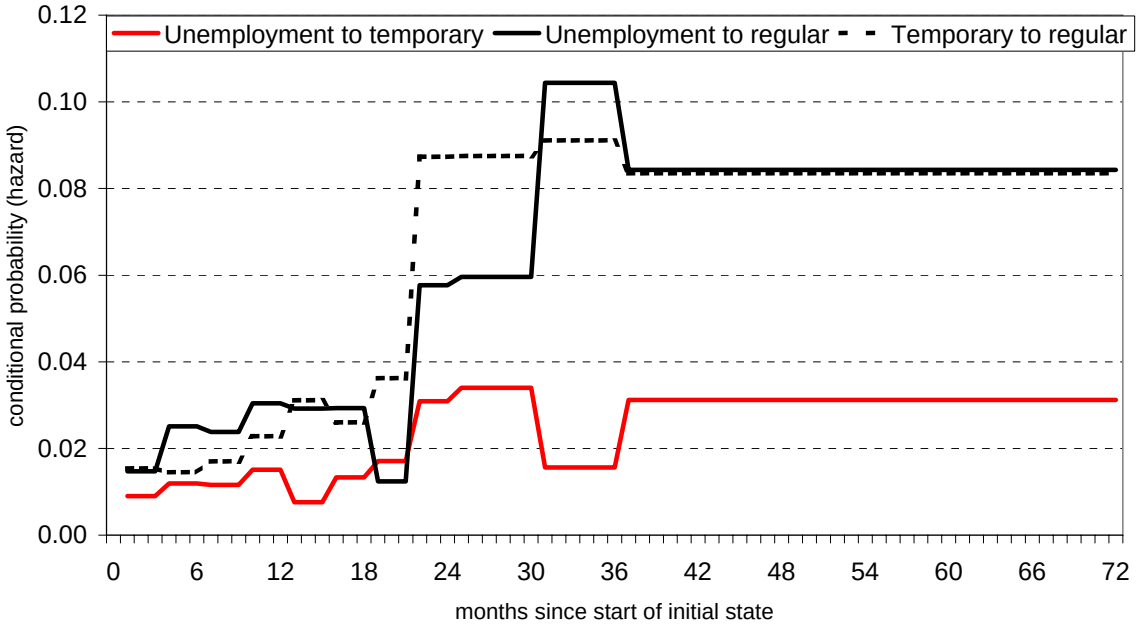
Standard errors in parentheses

Evidently, from unemployment, the rate into temporary work is smaller than the rate into regular work. However, once in temporary employment, the rate of flowing into regular work is at some time after the start of the search larger than otherwise. One might expect that workers who accept a temporary job are initially strongly attached to that job, for example for contractual reasons. In some sense this is true: the transition from temporary into regular employment substantially increases after a period of one-and-a-halve year. As a result, newly employed temporary workers have a slightly lower rate into regular work than unemployed workers. However, the exit rate from temporary work becomes higher than the exit rate from unemployment after one-and-a-halve year in temporary employment. After 30 months we are left with only 225 observations in the data, which makes the estimated hazards, and the observed jumps in the transition rates, rather imprecise. These jumps in the hazard rates could be due to the loss of wage related unemployment benefits for a major share of the unemployed.

The transition rate from temporary work to regular work increases during the temporary job. This indicates that the accumulation of human capital may be a major reason for employers to prefer individuals who have occupied a temporary job. An increasing size of the social network among employed workers may also explain this. Apparently, for prospective employers, being in a temporary job constitutes more than just a (positive) signal that one has been found acceptable for such a job.

Note that these estimation results are not due to selection effects, because observed and unobserved heterogeneity are corrected for. As indicated before, the selection effect that is corrected for might well be a self-selection effect, as is the case if some individuals search for temporary jobs and others do not. This selection is captured as unobserved and observed heterogeneity, with respectively the mass points for unobserved heterogeneity and an explanatory variable indicating whether the unemployed individual prefers temporary work to regular work. Because the unobserved heterogeneity terms correct for the fact that individuals that are still in unemployment at long durations have low job finding probabilities, the estimated hazard rates in a model without unobserved heterogeneity terms are higher at low durations and lower at long durations than in figure 3.2. This holds especially for transitions from unemployment. In the model without unobserved heterogeneity the transition rate from temporary work to regular work is higher than the transition rate from unemployment to regular work at all points of duration.

Figure 3.2 Estimated transition rates for the average individual.



3.4.2 Share of individuals finding regular employment via temporary work

Now the quantification of the overall effect of temporary work on the cumulative probability of moving into regular work, as presented in section 3.3.3, is discussed. The solid curve in Figure 3.3 displays the probability of moving into regular work whether directly or via the temporary work channel, as a function of the time since entry into unemployment. This is obtained by using the estimated model to calculate expression (3.1) for each individual in the sample and for all possible combinations of v_{ij}*'s* weighted by the estimated p's. Similarly, the dashed curve visualises the probability of moving into regular work without an intermediate spell of temporary work, applying the decomposition of expression (3.1). As described in section 3.3.3, this decomposition shows the share of individuals finding regular employment via temporary work. After 6 months, 12 percent of the flow into regular work consists of transitions through temporary work, while after 72 months this percentage has increased to 43.

Figure 3.3 Estimated probability of moving to regular work, directly or through temporary work.

3.4.3 Effect on duration until regular work

Figure 3.4 gives an impression of the treatment effect of temporary work on the duration until regular work, as presented in section 3.3.3. The dashed curve in Figure 3.4 plots the estimated counterfactual probability of moving into regular work if there is no temporary employment. This is obtained by imposing in expression (3.1) that the transition rate into temporary work equals zero, taking again averages across individuals in the sample and across the v_{ij}*'s*. For comparison, the solid curve of Figure 3.3 is repeated in Figure 3.4. The two curves are virtually the same, indicating that the probability of finding regular work is the same in a situation with temporary employment as it is in a situation where no temporary employment exists. If anything, the probability of finding regular employment is at some points during the job search duration somewhat lower in a situation with temporary employment. The lock-in effect of temporary work is on average slightly larger than the positive effect of temporary work on reaching regular work. This effect is not driven by the stringent definition of temporary employment used (see section 3.2). Robustness checks using broader definitions of temporary jobs show approximately the same results. Estimates of a model without unobserved heterogeneity show a similar stepping-stone effect. The reduction of the stepping-stone effect by correcting for unobserved heterogeneity reduces is

negligible. In the next subsections the question whether this result is an average result or whether it is uniformly valid for all types of individuals is examined.[11]

Figure 3.4 Estimated cumulative probability of finding regular work, with and without temporary employment

3.4.4 Effect on duration until (re)employment

Figure 3.5 shows the effect of the existence of temporary employment on the duration until (re)employment as described in section 3.3.3. The dashed curve in Figure 3.5 plots the estimated counterfactual probability of moving into (regular or temporary) work if there is no temporary employment. This is obtained by imposing in expression (3.2) that the transition rate into temporary work equals zero, taking averages across individuals in the sample and across the v_{ij}'s. The solid curve of Figure 3.5 presents the (re)employment probability in the current situation in which regular and temporary jobs coexist. Clearly, the (re)employment probability at any search duration is lower in the absence of temporary employment than in the current situation. This holds especially in the first months after the start of unemployment. As time since the start of unemployment increases, the job finding probability in the absence of temporary employment slowly converges to the job finding probability in the situation where temporary employment exists. This means that even though temporary employment does not increase the probabilities of finding a regular job, it

11 Some recent studies consider the effect of temporary work on long run employment outcomes using models without potentially selective unobserved heterogeneity (Amuedo-Dorantes, 2000, and Hagen, 2003). Hagen found a stepping-stone effect of temporary work in Germany, Amuedo Dorantes found none for Spain. Gagliarducci (2005) considers the effect of the number of temporary jobs, taking selection effects into account.

does lead to a decrease in the unemployment duration. Instead of being unemployed, people are employed in temporary jobs.

Figure 3.5 Estimated cumulative reemployment probability, with and without temporary employment

3.4.5 Covariate effects

Table 3.2b presents the covariate effects on the individual transition rates. Note that a positive sign indicates a higher transition probability and a shorter duration. The comparison of the coefficients for "unemployment to regular" to the coefficients for "temporary to regular" is informative on the variation of the stepping-stone effect across different types of individuals. Given the presence of a stepping-stone effect, the comparison of the coefficients for "unemployment to regular" to "unemployment to temporary" is informative on the relevance of this effect for obtaining regular work. Before making these comparisons, the coefficients themselves are discussed.

The transition rates into regular work are higher in labour markets with many vacancies per unemployed individual. This is generally found in the literature. However, it does not hold for the rate into temporary work. Apparently, this rate is less sensitive to business cycle fluctuations. Bover and Gomez (1999) found this effect for Spain as well. The results also show that in general it is easier to become employed if one wants to work more hours, although men find temporary work more easily if they prefer to work part-time. Older unemployed individuals need more time to move into regular and temporary positions, as do individuals from the ethnic minorities group. Unemployed individuals who prefer temporary work to regular work, as might be expected, do not make the direct transition from unemployment to a regular job often.

Having a partner has a strong positive effect on the direct transition from unemployment to regular work. This effect is well known (for an overview of studies on this issue, see Ginter and Zavodny, 2001). There is no generally accepted reason for this phenomenon. Partners may make individuals more productive and therefore more attractive to employers. Alternatively, individuals who are successful on the labour market may have characteristics that also make them attractive on the marriage market. The effect is larger for working partners than for non-working partners, which supports the selection hypothesis.

Men with children at home have a higher transition rate from temporary to regular work. These men may be under high pressure to provide a satisfactory level of family income and thus may be eager to transform their insecure temporary job into a more secure regular position. Also a negative effect for men with a partner is found, perhaps indicating that having a partner reduces the urgency for provision of a satisfactory level of family income by the man alone.

Table 3.2b Estimation results of covariate effects [12]

	Unemployment to temporary	Unemployment to regular	Temporary to regular job
Age / 10	-0.331 (0.068)**	-0.514 (0.057)**	-0.284 (0.083)**
Female	-1.719 (0.478)**	0.997 (0.365)**	0.065 (0.998)
Ethnicity (ref: native Dutch)			
Male ethnic minority	-1.513 (0.185)**	-0.423 (0.253)*	0.713 (0.165)**
Female ethnic minority	-1.435 (0.180)**	-0.791 (0.067)**	-1.275 (0.543)**
Education (ref: intermediate)			
Low education level	-0.264 (0.131)**	-0.528 (0.117)**	0.121 (0.120)
High education level	-0.306 (0.097)**	0.207 (0.101)**	0.446 (0.130)**
Region (ref: Randstad)			
West	1.686 (0.207)**	0.500 (0.136)**	-0.126 (0.172)
North	0.582 (0.153)**	-0.694 (0.140)**	-1.147 (0.204)**
East	0.876 (0.176)**	0.471 (0.136)**	-0.323 (0.162)**
South	1.251 (0.189)**	0.149 (0.134)	-0.921 (0.132)**
Children (ref: no children)			
Man with children in household	-0.065 (0.221)	0.216 (0.140)	1.669 (0.161)**
Woman with children in household	-0.317 (0.156)**	-0.700 (0.136)**	-0.587 (0.230)**
Partner (ref: no partner)			
Man with working partner	0.226 (0.213)	0.662 (0.144)**	-0.460 (0.154)**
Woman with working partner	0.252 (0.147)*	1.141 (0.136)**	0.692 (0.122)**
Man with non-working partner	-0.258 (0.291)	0.467 (0.144)**	-0.600 (0.217)**
Woman with non-working partner	-0.186 (0.168)	0.509 (0.112)**	
Desired working hours per week			
Men: desired working hours/10	-0.051 (0.086)	0.557 (0.095)**	0.009 (0.206)
Women: desired working hours/10	0.432 (0.098)**	0.115 (0.064)*	0.059 (0.133)
Temporary job preferred to regular job at start of unemployment	-0.249 (0.174)	-0.766 (0.180)**	0.077 (0.117)
Vacancy/unemployment ratio	0.274 (0.172)	1.296 (0.266)**	1.498 (0.222)**

Standard errors in parentheses. * indicates two-sided significance at a 10% level, ** at a 5% level

[12] There are no observed transitions from temporary work to regular work by women with a non-working partner.

Potential stepping stone effect

The comparison of the coefficients for "unemployment to regular" to the coefficients for "temporary to regular" is informative on the variation of the stepping-stone effect across different types of individuals. From a policy point of view, it is particularly interesting to focus on disadvantaged groups, notably ethnic minorities – defined as the four largest groups originating from Surinam, Dutch Antilles, Morocco and Turkey –, low educated and women. For example, according to Netherlands Statistics non-western ethnic minorities have unemployment rates that are more than four times as high as native Dutch individuals – in 2003: 17.6 versus 4.3 percent (unemployment benefits and social assistance). The stepping-stone effect may be larger for ethnic minorities if employers who are reluctant to hire ethnic minorities can screen them by way of a temporary contract. In that case, it makes sense to stimulate unemployed immigrants to register at temporary work agencies. Table 3.2b shows that there is a difference between male and female ethnic minorities. For males, the stepping-stone effect is much higher for ethnic minorities than for native Dutch males, since the coefficient for temporary to regular work is positive and the coefficient from unemployment to regular work is negative. Clearly, this supports policy measures that stimulate the use of temporary work by ethnic minorities, for example by helping them to register at temporary work agencies. For females, both coefficients for ethnic minorities are smaller than for native Dutch females. Even more so for temporary to regular work than from unemployment to regular work. This implies a smaller stepping-stone effect for women from ethnic minorities than for native Dutch women.

The potential stepping-stone effect varies with other characteristics as well. It is higher for low educated than for high educated, for men compared to women, for singles compared to persons with a partner, for men preferring to work part-time compared to men preferring a full-time job, for people preferring regular work compared to individuals preferring temporary work and for individuals in the Randstad compared to other regions.

Use of stepping-stone effect

Given the presence of a stepping-stone effect, the comparison of the coefficients for "unemployment to regular" to "unemployment to temporary" is informative on the relevance of this effect for obtaining regular work. In the better phase of the business cycle, with many vacancies and low unemployment, the use of temporary jobs as the stepping-stones is smaller than in recessions. Focussing on ethnic minorities an eye-catching result is that ethnic minorities, both males and females, make little use of temporary jobs. For male ethnic minorities we have just shown that the potential benefit of temporary employment as a stepping-stone towards regular work is substantial. This adds to the support for policy measures that stimulate the use of temporary work by ethnic minorities. The same holds for individuals with intermediate education levels. Compared to higher educated individuals, they have a higher potential benefit from temporary jobs, but they use it less often.

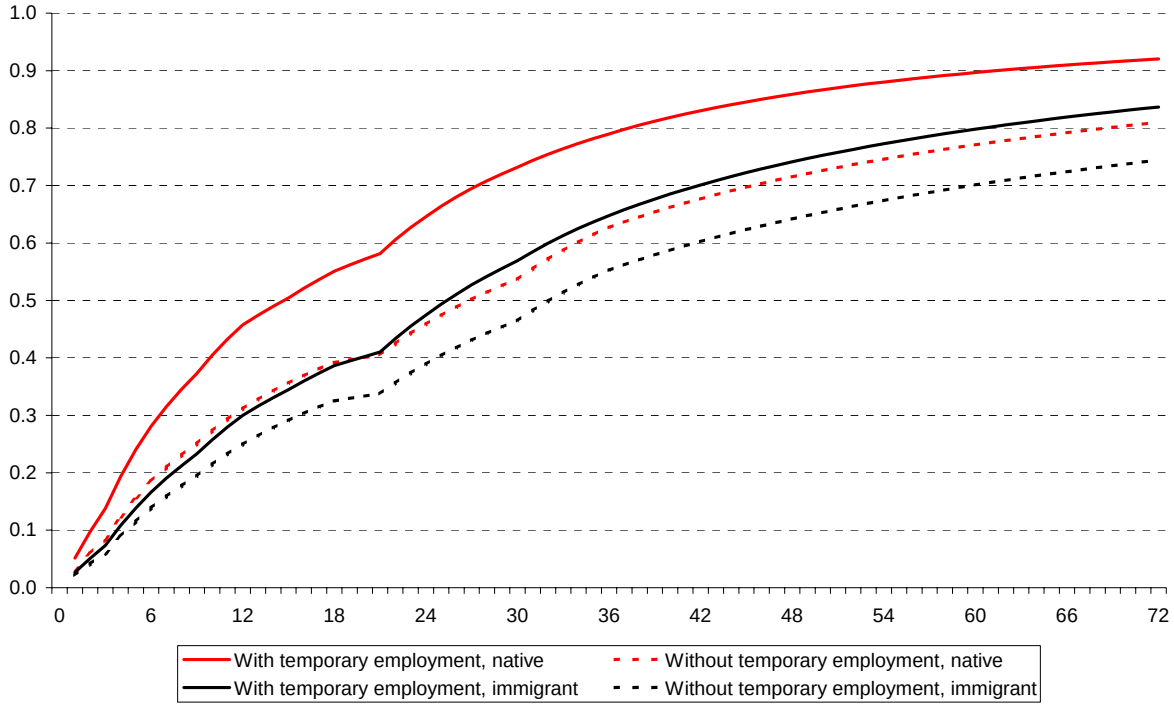
Looking at other characteristics, the use of temporary employment is higher for men compared to women, for men without children compared to men with children, for women with children compared to those without children, for singles compared to individuals with a partner and for men preferring full-time jobs compared to men preferring to work part-time.

It is the combination of the potential stepping-stone effect and the take-up that determines the actual treatment effects. To illustrate this, figures 3.6a and 3.6b show the

equivalents of figures 3.4 and 3.5 for males from ethnic minorities versus native Dutch men. As these figures show, the men from ethnic minority group experience a higher stepping-stone effect that native Dutch men. Their probability of having found regular work after six years is 4.3 percentage points (or 6 percent) higher in a situation with temporary employment than in the situation without. For native men we see no such effect. On the overall probability of finding employment, the effect of temporary employment is higher for native men than for those from ethnic groups. Native Dutch men have 11 percentage points (or 13.5 percent) higher probability of having found employment in a situation with temporary employment than in a situation without this type of work. For ethnic men the difference is 9 percentage points (or 12.5 percent).

Figure 3.6a Estimated cumulative probability of finding regular work, with and without temporary employment, for males from ethnic minorities versus native Dutch men

Figure 3.6b Estimated cumulative reemployment probability, with and without temporary employment, for males from ethnic minorities versus native Dutch men



3.4.6 Unobserved heterogeneity

Table 3.2c presents the estimates of the parameters of the unobserved heterogeneity distribution. These concern the general specification discussed in Section 3.3, allowing for realisations of all possible combinations of the value of the unobserved heterogeneity term in the transition rate from unemployment to temporary work on the one hand, and the values of the unobserved heterogeneity terms in the other transition rates on the other. This results in four types of individual values of the vector of unobserved heterogeneity terms (see Table 3.2c). The largest group is the one that has low probabilities of moving to both regular and temporary job based on their unobserved characteristics; the smallest group has high probabilities for both. Together these two groups, with a positive relation between the probability of finding temporary and regular work, are the majority. This implies a positive correlation between abilities to find regular work and abilities to find temporary work. The stepping-stone effect shown in figure 3.4 would have been higher, had this relation been the other way around.

Table 3.2c Estimation results for unobserved heterogeneity

	$V(13_1)$ = -5.335 (0.382)** (low) $V(23_1)$ =-4.488 (0.969)** (low)	$V(13_2)$ = -2.767 (0.299)** (high) $V(23_2)$ = -2.601 (0.834)** (high)
$V(12_1)$ = -6.233 (0.540)** (low)	0.370 (0.005)** (type 1)	0.245 (0.004)** (type 3)
$V(12_2)$ = -3.654 (0.410)** (high)	0.218 (0.003)** (type 2)	0.167 (0.001)** (type 4)

Standard errors in parentheses. ** indicates two-sided significance at a 5% level.

As always in models with unobserved heterogeneity, the heterogeneity distribution estimates are difficult to interpret. First, they are determined by the set of included covariates. Secondly, the discrete heterogeneity distribution should be interpreted as an approximation of the true distribution. Keeping this in mind, note that for all groups it holds that $v_{23} \geq v_{13}$, which indicates a positive stepping-stone effect. Type 1 individuals have a relatively low probability of finding both regular and temporary employment, but benefit from the stepping-stone effect of temporary jobs. Type 2 individuals have a lower probability to find regular work directly from unemployment but a higher probability to find temporary work, whereas for Type 3 it is the other way around. Type 2 individuals have a high stepping-stone effect. For Type 3 individuals $v_{23} \approx v_{13}$, so their stepping-stone effect is smaller, and for certain elapsed durations and covariates it is small in absolute value. Type 4 individuals have a high probability of finding both regular and temporary employment, and like type 3 individuals experience a lower stepping-stone effect than type 1 and type 2 workers. The variances and correlations of the unobserved heterogeneity terms are all significantly different from zero. This implies that a model that does not take the selection into temporary work into account is misspecified and leads to incorrect inference on the stepping-stone effect.

In general, the main results are robust with respect to a range of model specification features like the set of included covariates, the duration dependence intervals, and the numbers of mass points of the heterogeneity distribution. The model is tested against models without unobserved heterogeneity terms, with more heterogeneity terms and with different splines of duration dependence. None of the models was preferred to the current model according to the likelihood ratio test.

3.5 Quality of jobs found

A limitation of analyses of treatment effects on unemployment durations is that they typically ignore effects on the type and quality of the accepted job. Unfortunately, the data do not allow us to address this issue in detail either, since the wages that are earned, the hours worked, and the fringe benefits are not observed. The dataset only supplies job characteristics at survey dates of jobs held at survey dates, but it does not supply job characteristics at the moment of job acceptance, and it does not supply characteristics of jobs held in between survey dates. However, the data allow us to address the stability of the jobs. Ideally, this would have to be included in the duration model above. But the number of observations is limited, and inclusion of two other transitions, from temporary jobs to unemployment and from regular jobs to unemployment, is unfeasible. For this reason, simple duration models for the duration of the regular job simply are estimated, where the way it is found - directly or by way of temporary employment - is used as an explanatory variable (see appendix 3.3).

The results indicate that the duration of the regular job does not depend on whether it is directly preceded by a temporary job or by unemployment. Simple t-tests also show that the reason why people separate from the regular job does not differ significantly between directly and indirectly found regular jobs. Regarding the exit state we do see a slight difference: jobs found by way of temporary employment end less often in unemployment and more often into a transition to another temporary job. However, this difference is not statistically significant. Together, this does not suggest that the jobs found by way of temporary work are very different from those found directly from unemployment.

3.6 Conclusion

This chapter analysed the effect of temporary employment for the employment opportunities of unemployed individuals. Two treatment effects are distinguished. The *stepping-stone effect* is defined as the effect of temporary employment on the duration until regular work. As shown, this duration is not affected by the existence of temporary jobs. The probability of finding regular employment hardly differs between the counterfactual situation, in which no temporary jobs exist, and the current situation in which regular and temporary employment coexist. The effect of temporary employment on unemployment duration is unambiguously negative, which implies that the *re-employment effect* of temporary work is positive. In the counterfactual situation without temporary employment, job-finding probabilities are lower at any job search duration, as compared with the situation with temporary jobs. Thus, even though individuals need to search as long for a regular job, they are employed – in temporary positions – instead of unemployed in the meanwhile. All of these results were obtained while correcting for selection effects associated with moving into temporary work.

The above effects are the same for virtually all workers, including those workers with a relatively weak labour market position. Male ethnic minorities have a high stepping-stone effect on the transition rate to regular work, but they rarely flow into temporary jobs, so they do not benefit from the effect. This suggests that policy measures should be taken to stimulate the use of temporary work by ethnic minorities – for example, by helping them to register at temporary work agencies.

It should be re-emphasised that the potentially negative effects of the existence of temporary jobs on the transition rate from unemployment directly into regular work (i.e. without intervening temporary job spell) are abstract from in this chapter. Also equilibrium effects of a general increase in (the number of individuals in) temporary work are not included. Section 2.5 contains a list of the literature pointing towards potential beneficial equilibrium effects on profits and employment of policy interventions that facilitate the creation of temporary jobs. The effect of temporary work on the rate of moving into regular work may decrease if firms replace regular jobs by temporary jobs. Indeed, because of congestion, the effect may even decrease if the number of workers in temporary jobs increases more rapidly than the number of regular jobs.

Appendix 3.1. Sample statistics of explanatory variables

Table 3.A1 Sample averages of explanatory variables

variable	average
Age (at start unemployment)	33
Female	0.56
Ethnic minority	0.04
Education:	
Low	0.32
Medium	0.55
High	0.13
Region:	
Randstad	0.19
West	0.24
North	0.13
East	0.20
South	0.24
Children:	
No children at home	0.57
Man with children at home	0.15
Woman with children at home	0.27
Partner:	
Single	0.46
Man with working partner	0.12
Woman with working partner	0.29
Man with non-working partner	0.11
Woman with non-working partner	0.05
Desired number of working hours	32
Temp job preferred (at start unemployment)	0.07
Vacancies/Unemployment ratio	0.19

Appendix 3.2. The treatment effect on the probability of moving into regular work

Consider the model extension where θ_{23} depends on the time t since entry into temporary work as well as on the current time $\tau=t+t_{UE}$ since entry into unemployment, where t_{UE} denotes the moment of the transition into temporary work, so $\theta_{23}:=\theta_{23}(t,\tau)$. Lets define $S_{23}(t,t_{UE})$ as the survival function of the duration in temporary work if the transition into in temporary work occurs at t_{UE}, so

$$S_{23}(t,t_{UE}) = \exp(-\int_0^t \theta_{23}(z,t_{UE}+z)dz)$$

We have to modify expression (1) accordingly, to

$$\int_0^t \theta_{13}(\tau)S_{13}(\tau)S_{12}(\tau) + \theta_{12}(\tau)S_{12}(\tau)S_{13}(\tau)(1-S_{23}(t-\tau,\tau))\,d\tau \qquad (3.3)$$

Absence of treatment effects means that for all t and τ there holds that $\theta_{23}(t,\tau)=\theta_{13}(\tau)$. This implies that $S_{23}(t-\tau,\tau)= S_{13}(t)/S_{13}(\tau)$. If we substitute this into expression (3.3) and elaborate on this then we simply obtain $S_{13}(t)$. The latter is also obtained if we substitute into (3.3) that $\theta_{12}=0$. (Notice that the first parts of expressions (3.1) and (3.3) do not change when imposing that for all t and τ there holds that $\theta_{23}(t,\tau)=\theta_{13}(\tau)$.)

Appendix 3.3 Analysis of the quality of the regular job

Table 3.A2. Duration analysis of regular jobs.

	Weibull		Exponential	
	estimate	standard error	estimate	standard error
Intercept	3.842	0.307	3.788	0.279
Female	-0.216	0.256	0.223	0.234
Ethnic minority	0.277	0.515	0.255	0.470
Job found indirectly	0.1946	0.181	0.173	0.165
Education				
Low	0.372 *	0.171	0.363 *	0.156
High	0.310	0.219	0.314	0.200
Region				
West	-0.599 *	0.295	-0.546 *	0.270
North	-0.621	0.337	-0.568	0.306
East	-0.495	0.296	-0.445	0.269
South	-0.292	0.289	0.239	0.262
Re-entrant	0.200	0.310	0.193	0.282
Children at home				
Man with children at home	0.109	0.291	0.111	0.266
Woman with children at home	0.589 *	0.236	0.562 *	0.216
Working partner				
Man with working partner	0.309	0.328	0.289	0.299
Woman with working partner	-0.096	0.420	-0.103	0.382
Man with non-working partner	0.307	0.290	0.278	0.264
Woman with non-working partner	-0.117	0.251	-0.094	0.228
Log Likelihood	-563.54		-565.26	

* significant at 5%-level

Table 3A.2 Exit destinations of regular jobs found through temporary work or directly

destination	Regular job found by way of temporary job	Regular job found directly from unemployment
Other regular job	67%	67%
Temporary job	23%	15%
Unemployed	4% *	12% *
Out of the labour force	4%	3%
Unknown	2%	4%

* difference significant at 5%-level

Chapter 4

4 Wages of on-call and fixed-term workers[13]

4.1 Introduction

The variety of temporary employment contracts serves the purpose of providing flexibility to employers in a world where employment protection impedes smooth adjustment of the workforce. The need for flexibility stems from innate uncertainties of production. Regarding labour, these uncertainties can be divided in two types: quantity and quality uncertainty. Quantity uncertainty originates from imperfect foresight in future product demand. Having imperfect knowledge on the amount of labour they will require next period, employers have a need for numerical flexibility in the total number of working hours. Quality uncertainty on the other hand originates from the fact that employers are ex-ante unable to fully observe a worker's ability. As a result, they have a need for flexibility in the sense that they want to dismiss workers whose ability does not match the firm's requirements. Legal probationary periods are often considered too short to determine a worker's qualities.

In this chapter I analyse the importance of quality versus quantity uncertainty in wage determination of flexible workers.[14] I show that economic rationale provides clear-cut predictions with respect to the compensation of flexible employment. Quality and quantity uncertainty have different wage implications. Workers generally dislike uncertainty and therefore want to be compensated for it. Whether an employer is willing to provide this compensation differs between quality and quantity uncertainty. An employer who can shift (part of the) quantity uncertainty to the worker is prepared to pay this worker more for this unstable job than he would if this same worker would occupy a stable job. On the other hand, an employer who is uncertain about a worker's ability is willing to pay him less than he would if he knew for sure that the worker would meet job requirements. Therefore economic rationale implies a higher wage for contracts that mainly serve to shift quantity uncertainty

[13] This chapter is based on De Graaf-Zijl (2005b)

[14] The issue of compensation of temporary versus regular workers has been analysed before. E.g. Segal and Sullivan, 1998; Booth, Francesconi and Frank, 2002; Hagen, 2002, McGinnity and Mertens, 2004; Addison and Surfield, 2005, who all use fixed-effect analysis to measure wage differentials between contract types. They generally find negative wage differential for temporary work. The specific role of uncertainty has not been addressed explicitly.

from employer to employee and a lower wage for contracts mainly used to cope with quality uncertainty.

My empirical strategy is to use the difference between on-call (flexible hours) and fixed-term employment as identification for the wage impact of quality versus quantity uncertainty. I argue that on-call work is mainly used to shift quantity uncertainty from employer to employee and therefore a positive wage differential between on-call and regular workers is to be expected. Fixed-term contracts are used for this purpose as well, but also serve to screen the quality of potential future regular workers. As a result, the wage differential between fixed-term and on-call workers shows the effect of quality uncertainty.

I estimate wage differentials using a unique administrative dataset from the Dutch Ministry of Social Affairs and Employment. This dataset provides extremely detailed information on wages and other payments to workers, such as personal bonuses, profit sharing, shift allowance and inconvenience allowance. Furthermore, the dataset provides observations on multiple workers per firm. This implies that the data allow me to investigate the importance of firm-specific effects, which I calculate as the firm-effect in a standard wage regression. These firm-specific effects contribute to the justification of the conditional independence assumption laying at the basis of the (propensity score) matching technique that I use. Mahalanobis matching is performed using tenure, working hours, age, gender and the propensity score, in which I include education level, job level, type of vacancy, industry, occupation, firm size and the firm-specific effect. I argue that this information provides all characteristics that determine selection into on-call and fixed-term employment, such that the actual observation of individuals is due to randomness or quality uncertainty. Since it is the effect of quality uncertainty that I want to measure, it should not be included in the list of matching variables.

This chapter is organised as follows. In section 4.2 I present the analytical framework that I use in this chapter. It shows the economic rationale behind the effect of quality and quantity uncertainty on wages and formulates hypotheses. In section 4.3 I describe the data that I use to analyse wage differentials, discuss some variables that I use in the analyses, and provide descriptive statistics. Section 4.4 gives a detailed description of the estimation method, with special attention for the conditional independence assumption laying at the basis of (propensity score) matching techniques. In section 4.5 I present the estimation results that confirm the predictions based on the analytical framework. Section 4.6 discusses the results of a policy change on both the use and the compensation of on-call and fixed-term contracts. Section 4.7 concludes.

4.2 Analytical framework

The main purpose of this chapter is to determine the effect of uncertainty as a reason for wage differentials between regular and flexible workers. Other research that focussed on wage differentials usually found negative wage differentials (see e.g. Segal and Sullivan, 1998; Booth, Francesconi and Frank, 2002; Hagen, 2002, McGinnity and Mertens, 2004; Addison and Surfield, 2005), but the effect of uncertainty has not been addressed explicitly. Economic rationale does provide clear-cut predictions with respect to the compensation of flexible employment. The argument starts with the recognition that employers experience two types of uncertainties regarding their workforce: quantity and quality uncertainty.

Quantity uncertainty originates from uncertainty about future product demand. Having imperfect knowledge about the amount of work in the next period, employers are uncertain about the number of workers (or working hours) they will need next period. Therefore, they have a need for numerical flexibility in the number of workers (or working hours). Quality uncertainty on the other hand stems from the fact that employers are ex-ante unable to fully observe a worker's ability. This factor plays a main role in search models that include temporary employment, such as Blanchard and Landier (2002).

The two types of uncertainty have different implications for wages. Workers generally dislike uncertainty and therefore want to be compensated for it. Whether an employer is willing to provide this compensation differs between quality and quantity uncertainty. An employer who can shift (part of the) quantity uncertainty to the worker is prepared to pay this worker more for this unstable job than he would if this same worker would occupy a stable job. This is the theory of compensating wage differentials, founded on Rosen's (1974) seminal work. Assuming workers are risk averse, the lack of certainty is a negative job characteristic and is compensated by a higher wage. Rosen's theory is based on a model of perfect matching, where all workers get matched to their desired jobs, and does not allow for on-the-job search. Hwang, Mortensen and Reed (1998) have shown that, in the presence of on-the-job search, the equilibrium job distribution need not show evidence of compensating wage differentials. Instead they derive a positive relationship between wages and non-wage job amenities, despite the fact that workers' indifference curves are downward sloping (see also Lang and Majumdar (2003) for the same result in a non-sequential search framework). They show that in a labour market characterised by frictions in matching workers with firms, high-cost firms can coexist with low-cost firms in equilibrium. Firms with greater cost efficiencies in producing a job amenity not only offer greater value of that amenity, but also offer job bundles that have an overall higher value. They do so because their lower costs mean greater opportunity costs in having vacancies go unfilled. For my framework this implies that I can write the wage of workers providing numerical flexibility (w_f) as:

$$w_f = w_b(1+\alpha) \qquad \text{with } -1 < \alpha < \infty \tag{4.1}$$

where w_b is the basic wage, for workers on 'regular' contracts, i.e. who do not provide numerical flexibility because they work a fixed number of hours and are protected by employment regulations.

In a situation where employees are protected against dismissal, an employer who is uncertain about a worker's ability is willing to pay him less than he would if he knew for sure that the worker would meet job requirements. Therefore I can write the wage of workers with uncertain ability to meet requirements (w_u) as:[15]

$$w_u = w_b(1-\gamma) \qquad \text{with } 0 < \gamma < 1 \tag{4.2}$$

A similar framework has been explored by Moretti (2000), who uses individual unemployment history as an approximation for the quality uncertainty and determines α by

[15] One expects a big wage jump for workers who stay after the period of quality uncertainty. To test this hypothesis panel data are needed, which I do not have. McGinnity and Mertens (2004) and Addison and Surfield (2005) address this issue. McGinnity and Mertens find evidence of this wage jump at the change of contract. The evidence in Addison and Surfield is only weakly in support of this hypothesis.

comparing seasonal agricultural workers in the US with workers in similar permanent jobs. In this chapter I use a different identification strategy. I use the wage differential between fixed-term workers, regular workers and on-call workers as identification for determining α and γ. Both fixed-term and on-call contracts provide numerical flexibility to the firm. A situation of quality uncertainty on the other hand is typically one where fixed-term contracts are used to avoid potential firing costs. Firing costs are incurred if the employer dismisses a worker who is employed on an indefinite contract. These costs consist of severance payments paid to the employee, but more importantly of the implicit costs of lengthy layoff procedures. As OECD (1999) shows, the Netherlands scores high on these procedural inconveniences. To avoid firing costs employers prefer fixed-term contracts as extended probationary periods if they are uncertain whether an applicant meets job requirements.

So fixed-term contracts are used for both quality and quantity uncertainty. On-call contracts are only used to skive off quantity uncertainty. From estimating wage differentials between on-call workers and regular workers I can determine α.[16] Subsequently I can derive γ from the wage differential between fixed-term and on-call workers.

Some case study evidence on this issue is provided by Houseman et al. (2003), who study the use of temporary agency workers in the US. This study, carried out in 2000, finds two different pay regimes for temporary agency workers. In the health care sector temporary agency nurses are paid higher than nurses with a regular contract. In this way, wages of regular nurses are stabilized at a relatively low level. Had these temporary agency nurses not been available, wages of regular nurses would have risen as a result of the tight labour market. Temporary agency nurses are thus compensated for providing quantity flexibility. In the automobile sector the authors find a completely different situation. Here too labour market shortages are a reason for using temporary agency workers. In this sector everyone who desired a regular contract had long since found it and no on-call workers were available in these years. Only a group of 'risky' workers, with criminal records, spotty work history and little or no education or experience in manufacturing settings, was left. These 'risky' workers are hired from temporary help agencies and get paid a lower wage than regular workers in the same company. These temporary agency workers get a wage penalty for their quality uncertainty.

4.3 Data

In this chapter I use a unique administrative dataset collected by the Dutch Ministry of Social Affairs and Employment. For this so-called Terms of Employment Developments database (AVO) an annual sample is drawn from both employers and employees in the private sector. In the first step a stratified sample (by industry and firm size) of employers is drawn, and subsequently a sample is drawn from the employees in those organisations. Each year a new sample of employers and employees is drawn, so the data have no panel character. Civil servants visit the selected firms and collect information on the terms of employment of the selected employees from the wage administration. They do so for two set moments, namely

[16] To eliminate the effect of low-paying versus high-paying firms I use firm fixed-effects in the model estimation. See section 4.4 for further details.

October of the current year and October one year earlier. Apart from a detailed list of terms of employment also some personal and firm characteristics are gathered. The variable that is essential in my analysis, the type of contract, is available in the AVO on 1997 and 2002. These data distinguish open-ended contracts, with or without flexible working hours, and fixed-term contracts, with or without flexible working hours. Unlike most other variables, the type of contract is not available at two moments in time. We only know the type of contract at the last date. For the analysis this implies that I cannot determine the effect of an individual changeover from one contract to another.

In this chapter I focus on low-educated workers for reasons of homogeneity. Since this group forms the major share of both fixed-term and on-call workers the number of observations is sufficient to focus on this sub-sample. Table 4.1 gives an overview of the compensation variables in the pooled dataset and their average values for the four employment contracts for low-educated workers. All financial elements are corrected for inflation (to 1998 prices) and converted into Euros. The quality of the dataset is clearly shown by the details in which wages are measured. All wage components are registered separately.

The AVO-data distinguish seven types of gross wage components. The first and obviously the largest one is the basic wage belonging to the function the employee occupies. It is presented here as the basic monthly wage that a worker receives. A second wage component consists of personal bonuses, extra payments on top of the basic wage e.g. related to personal performance. The third wage component, tariffs and provision, is a specific type of payment related to effort, e.g. related to sales. The most important category of employees that is rewarded on this basis is salesmen. The fourth wage component is the shift allowance, extra payments related to working in shifts, at irregular hours, during evening, night or weekend. The fifth component is the inconvenience allowance, based on filthy or unpleasant work. Wage in kind represents the monetary value of the wage components that are not paid in money but in goods (e.g. board and lodging). Finally the remaining wage component consists of extra periodical payments not mentioned above, such as commuting allowance. All these wage components together add to the gross monthly wage. Dividing this by the number of working hours (excluding overtime) gives the gross hourly wage. We can clearly see that workers in regular contracts have the highest hourly wage, on all components of the wage. The only exception is tariffs and provisions, which per hour are highest for the people with flexible working hours. Adding extra yearly payments, such as profit sharing, or extra payments according to the collective agreement, does not change this fact. I should note that overtime payments are excluded from the wage presented here, and is not used in the analysis. Reason is that I do not know the number of hours worked overtime. Table 4.1 shows that overtime payment is registered, but the number of overtime hours is not. As a result I cannot control for overtime and overtime payment in my analysis. This does not appear to be a great problem, since the pattern in overtime payment per type of contract mimics the other pay components.

Table 4.1 Compensation of low-educated workers by employment contract

	Indefinite term, hours not flexible (=regular)		Fixed-term, hours not flexible (=fixed-term)		Indefinite term, hours flexible (=on-call)		Fixed-term, hours flexible (=mix)*	
	1997	2002	1997	2002	1997	2002	1997	2002
Wage								
basic monthly wage	€ 1353	€ 1512	€ 1127	€ 1182	€ 507	€ 497	€ 419	€ 384
personal bonus	€ 3	€ 7	€ 4	€ 2	€ 1	€ 1	€ 1	€ 0
tariffs and provisions	€ 8	€ 5	€ 5	€ 3	€ 1	€ 0	€ 0	€ 0
shift allowance	€ 32	€ 34	€ 10	€ 24	€ 12	€ 9	€ 4	€ 5
inconvenience allowance	€ 3	€ 2	€ 0	€ 1	€ 0	€ 0	€ 0	€ 0
wage in kind	€ 1	€ 0	€ 1	€ 1	€ 0	€ 0	€ 1	€ 0
other wage	€ 13	€ 16	€ 10	€ 7	€ 2	€ 1	€ 0	€ 0
total monthly wage	€ 1413	€ 1576	€ 1157	€ 1218	€ 523	€ 508	€ 425	€ 390
total hourly wage	€ 9.43	€ 11.13	€ 7.77	€ 9.10	€ 7.40	€ 8.09	€ 6.12	€ 6.30
extra payment collective agreement	€ 65	-	€ 15	-	€ 6	-	€ 3	-
profit sharing	€ 108	€ 122	€ 34	€ 17	€ 0	€ 2	€ 1	€ 1
other extra payments	€ 130	€ 288	€ 32	€ 133	€ 3	€ 73	€ 1	€ 14
total hourly wage incl. yearly payments	€ 9.59	€ 11.00	€ 7.81	€ 9.00	€ 7.41	€ 8.00	€ 6.12	€ 6.00
overtime pay	€ 63	€ 68	€ 41	€ 38	€ 8	€ 7	€ 16	€ 15

* this group is excluded from the model estimation.

In table 4.2 I present personal and job characteristics of the four employment contracts. We can clearly identify some aspects on which the types of contracts differ from one another. Not surprisingly tenure is smallest in temporary jobs. Since these contracts automatically expire at the end of the agreed term, and a maximum sequence of three temporary contracts with the same employer applies, tenure in temporary jobs can never be long. Because tenure differs to such a large extent between these types of contract I will give special attention to the way to treat tenure in my analysis (see section 4.4). Tenure in on-call jobs is longer than in temporary jobs, but not as long as in regular jobs. Another unsurprising observation is that working hours are substantially smaller in on-call jobs than in both regular and temporary jobs.

A lower age and a higher female participation in temporary and on-call jobs are observations that are in agreement with earlier findings in the literature. Females especially occupy on-call jobs to a larger extent than males. And younger workers are especially over-represented in temporary jobs. Even within the group of low-educated workers, the education level is somewhat lower in on-call jobs. This is not true for temporary jobs. Accordingly function levels are also lower for on-call contracts, which to a lesser extent also holds for temporary contracts. There are some differences between function types and industry. On-call work is mostly found in the health care sector. Firm size does not seem to be of great importance for the types of contracts. Fixed-term workers more often occupy jobs originating from vacancies that were difficult to fill. This might be explained by the fact that employers who cannot find a regular worker for a certain position are inclined to hire agency workers to fill the position temporarily until a suitable candidate is found.

Table 4.2 Personal and job characteristics of low-educated workers per employment contract

	Indefinite term, hours not flexible		Fixed-term, hours not flexible		Indefinite term, hours flexible		Fixed-term, hours flexible	
	1997	2002	1997	2002	1997	2002	1997	2002
age	37.3	38.28	28.6	31.28	34.9	33.6	27.3	25.06
female	0.32	0.40	0.32	0.50	0.84	0.70	0.69	0.50
Job characteristics								
tenure	7.8	8	0.3	0.8	4.3	3.8	0.8	0.5
hours per week	34.3	31.6	34.1	30.1	15.9	14.1	15.6	13.1
large part-time (>40%)	0.16	0.23	0.20	0.32	0.35	0.32	0.27	0.29
small part-time (<40%)	0.07	0.12	0.07	0.14	0.54	0.63	0.61	0.66
collective agreement	0.79	0.86	0.64	0.86	0.93	0.85	0.75	0.81
hard to fill vacancy	0.01	-	0.16	-	0.01	-	0.05	-
low job level	0.22	0.22	0.27	0.34	0.73	0.52	0.61	0.60
medium low job level	0.66	0.68	0.68	0.62	0.26	0.46	0.38	0.37
medium high job level	0.12	0.10	0.05	0.04	0.01	0.02	0.02	0.03
high job level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Occupation								
technical	0.45	0.43	0.49	0.39	0.06	0.08	0.10	0.14
administrative	0.09	0.09	0.07	0.08	0.02	0.03	0.01	0.02
IT	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
commercial	0.11	0.12	0.14	0.12	0.28	0.19	0.25	0.18
care	0.33	0.34	0.29	0.40	0.65	0.66	0.63	0.66
creative	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
executive	0.02	0.02	0.00	0.00	0.00	0.00	0.01	0.00
Industry								
agriculture	0.03	0.03	0.05	0.04	0.01	0.05	0.08	0.01
mining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
manufacturing	0.23	0.24	0.12	0.14	0.03	0.06	0.03	0.04
public utilities	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
construction	0.11	0.12	0.10	0.12	0.00	0.00	0.01	0.02
trade	0.23	0.23	0.23	0.26	0.30	0.27	0.34	0.22
hotels and restaurants	0.04	0.04	0.07	0.05	0.06	0.24	0.29	0.46
transport	0.09	0.06	0.07	0.04	0.03	0.07	0.05	0.05
finance	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
business services	0.08	0.08	0.27	0.14	0.41	0.06	0.06	0.09
health care	0.12	0.12	0.06	0.14	0.12	0.18	0.09	0.06
culture and recreation	0.04	0.04	0.03	0.06	0.02	0.08	0.04	0.04
Firm size								
1-4 employees	0.14	0.14	0.16	0.19	0.09	0.17	0.21	0.32
5-9 employees	0.08	0.08	0.11	0.10	0.03	0.17	0.10	0.11
10-19 employees	0.10	0.10	0.08	0.11	0.06	0.10	0.09	0.19
20-49 employees	0.13	0.13	0.14	0.15	0.05	0.20	0.22	0.11
50-99 employees	0.08	0.10	0.05	0.08	0.03	0.09	0.07	0.09
100-199 employees	0.09	0.08	0.07	0.07	0.04	0.07	0.05	0.07
200-499 employees	0.11	0.15	0.10	0.12	0.08	0.06	0.17	0.04
>=500 employees	0.26	0.21	0.29	0.18	0.61	0.15	0.08	0.07

4.4 Empirical method

To analyse the wage differentials econometrically, I use kernel matching. The main idea behind this approach is that of conditional independence. That is, if we know all variables *Z* that influence the selection into temporary contracts, we can take assignment to temporary employment to have been random: $(Y_{1i}, Y_{0i}) \perp C_i, Z_i$. Comparing two individuals with the same observable characteristics *Z*, one of whom has a temporary contract (*C*=1) and one of whom has a regular contract (*C*=0), is like comparing those two individuals in a randomised experiment (Heckman, Lalonde and Smith, 1999). This means that matching estimators try to resemble an experiment by choosing a comparison group from the regular employees such that the selected group is similar to the temporary employees in observable characteristics. Then, the average treatment effect on the treated can be calculated as:

$$E(Y_1 - Y_0 \mid Z, C = 1) = E(Y_1 \mid Z, C = 1) - E(Y_0 \mid Z, C = 0)$$

If the number of *Z* variables is small, we can estimate this equation by matching individuals directly on *Z*. We could stratify the data into subgroups with the same value of *Z* and calculate the average wage differential between the temporary and regular workers in each subgroup. As the number of variables increases, forming these subgroups with identical *Z* becomes harder. Therefore Rosenbaum and Rubin (1983) suggest the use of the propensity score to reduce the dimensionality of the matching problem. They show that if $(Y_{1i}, Y_{0i}) \perp C_i, Z_i$ then $(Y_{1i}, Y_{0i}) \perp C_i, p(Z_i)$, where $p(Z_i)$ is the propensity score – the probability of being in a temporary job given *Z*. This propensity score can be estimated by standard binary choice methods like probit or logit.

In this chapter I use Mahalanobis matching on tenure, working hours, age, gender and a propensity score that is based on education level, function level, type of vacancy, industry, occupation, firm size and a firm-specific effect. Separate (Mahalanobis) matching on tenure and working hours is necessary because these issues are major distinguishing features of the type of employment contract, but are essentially endogenous with respect to the type of contract. Separate (Mahalanobis) matching on age is applied because age is to a larger extent a determinant of wages than of employment contracts. Separate matching on gender was necessary to improve before-after variable differences between on-call and regular workers. All-in-all a large amount of personal and job characteristics are included in Z. Van der Valk (2005) shows that the main personal characteristics determining temporary and flexible work are age, gender, ethnicity and having young children (especially for women). Hagen (2003) finds that previous employment history is an important determinant of temporary work. The main personal information that I miss in Z concerns ethnicity, having children and the individual's labour market history. Having children might not be such an important omission since age is included in the data. Individual labour market history is a main determinant of quality uncertainty. Therefore – given the set-up of this study – it is not a problem that the data lack information on labour market history. Since it is just the effect of this uncertainty that I want to measure, I do not want to have it in my Z. Would it be included in Z, I would not be able to determine the effect of quality uncertainty. It would be cancelled out by matching on this feature. Therefore I argue that I have enough information to assure that I can establish two individuals who have approximately the same characteristics, except for

their level of quality uncertainty, such that the fact that one receives a regular job and the other does not is either random or a result of quality uncertainty.

One of the advantages of matching is that one only compares the comparable. People who by their nature can only be in one of the situations are disregarded. This is called the 'overlap problem' or 'common support problem'. You only look at people who can be in either situation and who are 'accidentally' observed in one of them. In general this improves the quality of the matches and thus of the results. However, Lechner (2001) notes that by imposing the common support restriction some high quality matches may be lost at the boundaries of the common support. In my application I apply the common support restriction, since I regard it as an essential feature for the estimation method.

4.5 Estimation results

Estimation results for the propensity score are given in table 4.A1 in the appendix 4.1. The results confirm that both fixed-term and on-call contracts are used mostly at the lowest job levels. On-call work and fixed term contracts are relatively often used for relatively easy repetitive tasks. This is in accordance with the conclusion from De Graaf-Zijl (2005a) that these types of employment contracts are especially attractive in situations with little firm-specific human capital. Among the low-educated workers those with only primary education have the lowest probabilities of working on fixed-term contracts. This might be explained from the fact that this group consists mostly of older workers, who have gained experience that compensated their lack of education. Fixed-term contracts are often used whenever a vacancy was hard to fill. This implies that firms choose to fill the vacancy temporarily with a person that needs screening or one that will be replaced once a more suitable candidate is found. Regarding industry table 4.A1 shows that fixed-term contracts are used relatively often in construction, trade and business services. On-call work is mostly used in restaurants and catering industry, but also in health care, trade, transport and culture and recreation. With respect to occupation we see that fixed-term contract are least used in executive functions, whereas on-call contracts are used mainly in care, commercial or creative functions. The firm size pattern is unclear. An interesting finding from the propensity score estimation is that firms that pay relatively well – and thus have a positive firm-specific effect derived from the fixed-effect wage analysis (see table 4.A2) – use relatively less fixed-term and on-call contracts.[17] This is in accordance with findings of De la Rica (2003), who analyses a large sample of Spanish workers. She also finds evidence of segregation of fixed-term workers into low-paying firms. A possible explanation for this phenomenon is that high wages are paid by high-surplus firms and these do not need flexibility. Also, these findings are in accordance with the theoretical model of Hwang, Mortensen and Reed (1998), who derive a model in which firms with greater cost efficiencies offer job bundles that have an overall higher value – in terms of both wage and non-wage job amenities – than the bundles of less efficient firms.

Table 4.3 shows the results of the Mahalanobis matching on tenure, working hours, age, gender and the propensity score for low-educated workers in 1997. These matching

[17] Robustness checks show that the matching results do not crucially depend on the inclusion of the firm fixed effect in the propensity score.

results are clearly in line the predictions based on my analytical framework. Low-educated on-call workers receive a wage premium of 4.8 percent, whereas low-educated workers on a fixed-term contract receive a wage penalty of 5.3 percent compared to regular workers.[18] This implies that the estimated wage premium for taking over quantity uncertainty α is 0.048. The estimated wage penalty for quality uncertainty γ is 0.101. Tables 4.A3b and 4.A3d in the appendix 4.1 show that matching on observables successfully reduced the bias in most variables. As robustness check, the same analysis was repeated for the year 1998. The estimated wage differentials are very similar to those in 1997.

The negative wage differential found for fixed-term workers is in accordance with earlier findings using different estimation techniques (e.g. Segal and Sullivan, 1998; Booth, Francesconi and Frank, 2002; Hagen, 2002, McGinnity and Mertens, 2004; Addison and Surfield, 2005). Most of these studies use fixed-effect analysis and find that an individual earns less when he works on a fixed-term contract than if this same individual works on a regular contract. The findings from these papers are in accordance with the predictions from the model based on quality uncertainty too. If one follows an individual over time and first observes him in a fixed-term job that later on is converted into a regular job, one expects this person to receive a wage rise at the conversion of the contract because at that moment quality uncertainty has vanished.

Table 4.3 Estimation results propensity score matching for low educated employees (kernel with Mahalanobis matching on tenure, age, sex, working hours and propensity score)[19]

	Average hourly wage of matched flex	Average hourly wage of matched regular	Difference in Euro	Boot-strapped standard error	Diff. in %	Number of matched flex
1997						
Fixed-term versus regular	€ 7.843	€ 8.279	- € 0.436*	0.060	- 5.3%	2155
On-call versus regular	€ 8.255	€ 7.877	+ € 0.378*	0.189	+ 4.8%	1236
1998						
Fixed-term versus regular	€ 7.859	€ 8.289	- € 0.430*	0.042	- 5.2%	2099
On-call versus regular	€ 8.887	€ 8.493	+ € 0.394*	0.141	+ 4.4%	852

* = statistically significant at 95% confidence level

4.6 Results of a policy change

In January 1999 the so-called Flexibility and Security Act was constituted. This new act aimed at increasing opportunities for employers to use flexible and temporary labour, and at the same time increasing employment rights of the flexible workforce. Table 4.4 shows that the use of flexible and temporary employment has shifted since 1999. In 1997 13 percent of

[18] Both on-call and fixed-term workers have been matched to a control group of regular workers. In order to estimate γ matching on-call workers directly with fixed-term workers would have been sufficient. However, the control group was too small in this case.

[19] When estimating differences between fixed-term and regular workers all workers who work a flexible number of working hours are excluded from the analysis. When estimating wage differentials between on-call and regular employees all individuals on contracts with definite durations are excluded.

all workers was employed on a fixed-term contract and 13 percent on an on-call basis. In 2002 these numbers were 15 percent and 5 percent respectively.[20]

Table 4.4 Share of temporary and flexible employment in stock and flow

	Indefinite contract Hours not flexible		Fixed-term contract Hours not flexible		Indefinite contract Hours flexible		Fixed-term contract Hours flexible	
	1997	2002	1997	2002	1997	2002	1997	2002
Share in stock of employment	76%	81%	10%	13%	10%	3%	3%	2%
Share in people 'staying'	88%	93%	1%	4%	10%	3%	1%	1%
Share in flows:								
Coming	35%	35%	45%	53%	9%	3%	11%	9%
Leaving	63%	66%	18%	24%	11%	5%	7%	5%

Source: AVO, own calculations

Even though the effect of the policy change on the use of fixed-term and on-call contracts cannot be disentangled from other circumstances that have changed between 1997 and 2002, the shift in the use seems a logical consequence of the policy change. The conditions for using fixed-term contracts have been relaxed by the Flexibility and Security Act. Before 1999 employers could conclude only one fixed-term contract with a worker. The second contract with the same worker was automatically of indefinite duration. Since 1999 employers have the right to close more than one fixed-term contract with the same worker. Only the fourth contract, or the last contract in a sequence of contracts of which the period between the start of the first contract and the end of the last contract exceeds 36 months, is automatically indefinite. Using fixed-term workers has thus become more attractive since 1999 and this may explain the slight increase in the use of these contracts between 1997 and 2002.

Regarding on-call work the Flexibility and Security Act enhanced the legal position of workers in this work arrangement in a number of ways. It restricted the period during which the employer can fully shift the underutilisation risk to the employee. Before 1999 zero hour contracts could last indefinitely. The employer did not need to pay the worker when there was insufficient work. Since 1999 zero hour contracts are restricted to the first six months of the contract. From that moment on employers need to pay a worker even if there is insufficient work. The amount of payment depends on the average number of hours the worker was called on during the three preceding months. Another feature introduced by the Flexibility and Security Act is the minimum payment of three hours. Even if the actual duration of the call does not exceed two hours, a worker should be paid three hours wage. Finally the Flexibility and Security Act removed the legally doubtful existence of an employment contract in some cases of on-call work. It states that a worker who worked at

[20] Fixed-term workers clearly play a more dominant role in the flows than in the stock of employment. The fact that the share of temporary workers in the quits/layoffs is much lower than in hirings, might suggest that conversion of fixed-term into open-ended contracts is an important phenomenon (see also Zijl and Van Leeuwen (2005) for an overview of studies analysing this phenomenon). The finding that the share of fixed-term contracts among 'stayers' has increased only slightly, even though legally employers are now allowed to offer a sequence of three fixed-term contracts, corroborates this suggestion. These individuals are registered as regular workers (since this item is measured at the last interview date).

least 20 hours per month during three months presumptively has an employment contract. All three adjustments introduced by the Flexibility and Security Act concerning on-call contracts reduced attractiveness of this type of contract for employers and can therefore explain the significant reduction of the use of on-call work between 1997 and 2002.

Table 4.5 shows that also compensation of on-call and fixed-term workers has shifted between 1997 and 2002. As shown in the previous section, on-call workers received a wage premium in 1997, which can be interpreted as a compensation for the fact that they took over a significant part of the quantity uncertainty of employers. In 2002 this wage premium has vanished; it is no longer statistically significant and even negative. As argued before, on-call workers nowadays automatically become more or less regular part-time workers after 6 months. This may explain why on-call workers no longer receive a wage premium. They no longer take over a substantial part of the quantity uncertainty from the employer. The wage penalty for fixed-term contracts on the other hand has slightly diminished. This too can be explained as a result from the policy change. Employers may nowadays offer a sequence of fixed-term contracts to the same employee. As a result the quality uncertainty of the group working on this type of contract is smaller than it was in 1997, when employers were allowed to offer no more than one fixed-term contract per employee.

Table 4.5 Estimation results propensity score matching for low educated employees (kernel with Mahalanobis matching on tenure, age, sex, working hours and propensity score)

	Average hourly wage of matched flex	Average hourly wage of matched regular	Difference in Euro	Boot-strapped standard error	Diff. in %	Number of matched flex
2002						
Fixed-term versus regular	€ 9.705	€ 10.085	- € 0.381*	0.055	- 3.8%	3000
On-call versus regular	€ 7.989	€ 8.240	- € 0.252	0.147	- 3.0%	641

* = statistically significant at 95% confidence level

NB: Hourly wages in 1997 (table 4.3) have been calculated excluding the number of holidays and shorter working hours. Hourly wages in 2002 have been calculated using the number of hours including holidays and shorter working hours, since holidays were no longer included in the data.

The policy change has implication for the determination of α and γ from the analytical framework. Based on table 4.5, the estimated α for 2002 is –3.0 percent and the estimate for λ is 0.8 percent. However, I must stress that the model framework is no longer appropriate because of the policy change. On-call workers no longer take over a substantial part of the quantity uncertainty from the employer. This implies that the wage differential between regular and on-call workers can no longer serve as a good approximation for α, which in turn implies γ cannot be determined.

4.7 Summary and conclusion

This chapter analysed an administrative dataset from the Dutch Ministry of Social Affairs and Employment using an analytical framework in which uncertainty plays a major role. Two types of uncertainty were distinguished. Quantity uncertainty originates from imperfect

foresight in future product demand. Quality uncertainty on the other hand originates from the fact that employers are ex-ante unable to observe fully a worker's ability. The two types of uncertainty have different implications for wages. An employer who can shift part of the quantity uncertainty to the worker is prepared to pay this worker more for this unstable job than he would if this same worker would occupy a stable job. An employer who is uncertain about a worker's ability is willing to pay him less than he would if he knew for sure that the worker would meet job requirements. This study used the wage differential between fixed-term workers, on-call workers and regular workers as identification for determining the positive compensation for quantity uncertainty and the negative wage effect of quality uncertainty. Both types of contract provide numerical flexibility to the firm. However, fixed-term contracts are also used in situations of quality uncertainty in order to avoid potential layoff costs. Using propensity score matching I have analysed wage differentials and found that in 1997 on-call workers received compensation for providing quantity flexibility. Compensation of fixed-term contracts on the other hand is dominated by the negative wage effect of quality uncertainty.

These results were found for the situation before the introduction of the Flexibility and Security Act in 1999. This chapter demonstrated that the positive wage effect for on-call work was not longer present in 2002. This might be the result of an unintended effect of the policy change. The new act has introduced more security for on-call workers, who nowadays automatically become more-or-less regular part-time workers after 6 months. This implies that on-call workers in the Netherlands no longer assume a substantial part of the quantity uncertainty from the employer, which makes them less attractive. It has led to a substantial decrease in the use of these contracts and also a significant reduction of the wage-premium of on-call work. Fixed-term contracts, however, have seen their use extended as a result of the Flexibility and Security Act. Employers may nowadays offer a sequence of fixed-term contracts to the same employee. This has broadened the use of fixed-term work and led to a slight increase in the use of fixed-term work arrangements. Additionally, as a result of this extended use, the quality uncertainty of the group working on this type of contract is smaller than it was in 1997, when employers were allowed to offer no more than one fixed-term contract per employee. This may be the cause of the slightly smaller negative wage differential for fixed-term workers in 2002 compared with 1997.

Appendix 4.1

Table 4.A1 Propensity score estimates (probit, standard errors in parentheses)

	fixed-term				on-call			
	1997		2002		1997		2002	
Education level (reference: lower vocational)								
primary education	-0.441 (0.046)	**	-0.223 (0.041)	**	-0.176 (0.051)	**	-0.054 (0.069)	
lower general education	0.005 (0.035)		0.020 (0.028)		0.089 (0.040)	*	0.019 (0.049)	
Job level (reference: intermediate task level)								
very simple repetitive tasks	0.972 (0.080)	**	0.742 (0.069)	**	1.245 (0.086)	**	1.556 (0.145)	**
reasonably simple, mainly repetitive tasks	0.860 (0.058)	**	0.646 (0.052)	**	0.853 (0.070)	**	1.217 (0.132)	**
less simple, mainly repetitive tasks	0.550 (0.054)	**	0.367 (0.048)	**	0.481 (0.067)	**	0.763 (0.128)	**
less simple, varied tasks	0.121 (0.056)		0.144 (0.049)	**	0.290 (0.070)	**	0.303 (0.135)	*
compound difficult tasks	-0.260 (0.245)		-0.193 (0.218)		-0.057 (0.244)		-	
executive or analytical tasks	-0.296 (0.555)		-		-		-	
Type of vacancy								
mvvac	1.615 (0.063)	**	-		-		-	
Industry (reference: manufacturing)								
agriculture	-		-0.001 (0.074)		-		0.733 (0.109)	**
mining	-		0.176 (0.120)		-		-	
public utilities	0.110 (0.107)		-0.817 (0.181)	**	-0.546 (0.266)		-	
construction	0.198 (0.040)	**	0.103 (0.041)	*	-0.365 (0.103)	**	-	
trade	0.127 (0.043)	**	0.265 (0.035)	**	0.264 (0.054)	**	0.520 (0.072)	**
restaurants and catering	0.375 (0.082)	**	0.028 (0.071)		0.993 (0.079)	**	1.000 (0.094)	**
transport	0.391 (0.052)	**	-0.004 (0.049)		0.660 (0.063)	**	0.421 (0.091)	**
finance	-0.183 (0.105)		-0.119 (0.107)		0.295 (0.109)	**	-	
business services	0.417 (0.048)	**	0.228 (0.045)	**	0.569 (0.062)	**	0.151 (0.100)	
health care	0.046 (0.067)		0.165 (0.055)	**	0.734 (0.063)	**	0.683 (0.095)	**
culture and recreation	0.047 (0.069)		0.083 (0.061)		0.484 (0.075)	**	0.803 (0.093)	**
Occupation (reference: administration)								
technical	0.077 (0.052)		0.015 (0.045)		0.024 (0.077)		-0.165 (0.116)	
IT	0.236 (0.147)		-0.265 (0.197)		-		-	
commercial	0.063 (0.069)		0.025 (0.058)		1.194 (0.081)	**	0.560 (0.118)	**
care	-0.010 (0.054)		-0.005 (0.046)		0.513 (0.072)	**	0.427 (0.107)	**
creative	0.481 (0.361)		-0.068 (0.198)		1.187 (0.348)	**	0.947 (0.228)	**
executive	-0.522 (0.185)	**	-0.471 (0.141)	**	-0.120 (0.219)		-	
Firm size: (reference: 20-49 employees)								
1-4 employees	0.025 (0.073)		-0.022 (0.068)		0.318 (0.091)	**	-0.352 (0.117)	**
5-9 employees	0.047 (0.056)		-0.098 (0.054)		0.066 (0.081)		-0.190 (0.085)	*
10-19 employees	-0.103 (0.049)		-0.138 (0.049)	**	0.383 (0.065)	**	-0.297 (0.085)	**
50-99 employees	-0.074 (0.043)		-0.068 (0.040)		0.379 (0.061)	**	-0.400 (0.072)	**
100-199 employees	-0.024 (0.043)		-0.007 (0.041)		0.378 (0.061)	**	-0.056 (0.070)	
200-500 employees	-0.043 (0.043)		0.013 (0.040)		0.401 (0.063)	**	-0.772 (0.083)	**
>=500 employees	-0.092 (0.048)		-0.275 (0.045)	**	0.431 (0.063)	**	-0.625 (0.085)	**
Firm specific effect	-0.750 (0.100)	**	-0.408 (0.090)	**	-0.645 (0.125)	**	-2.055 (0.182)	**
Intercept	-1.829 (0.077)	**	-1.345 (0.068)	**	-2.975 (0.107)	**	-2.883 (0.172)	**

** = statistically significant at 99% * = statistically significant at 95%

Table 4.A2 (Log) wage regression with firm specific fixed effects

Age	0.170 (0.003) **	
$(Age)^2$	-0.004 (0.000) **	
$(Age)^3$	0.000 (0.000) **	
Tenure	0.015 (0.001) **	
$(Tenure)^2$	-0.001 (0.000) **	
$(Tenure)^3$	0.000 (0.000) **	
Female	-0.049 (0.004) **	
Education (ref: lower vocational)		
primary school	-0.019 (0.005) **	
lower general	-0.006 (0.004)	
Vacancy hard to fill	-0.014 (0.008)	
Weekly working hours	0.001 (0.000) **	
Job level (reference: intermediate task level)		
very simple repetitive tasks	-0.333 (0.009) **	
reasonably simple, mainly repetitive tasks	-0.307 (0.006) **	
less simple, mainly repetitive tasks	-0.205 (0.005) **	
less simple, varied tasks	-0.114 (0.005) **	
compound difficult tasks	0.247 (0.013) **	
executive or analytical tasks	0.195 (0.038) **	
Industry (reference: manufacturing)		
public utilities	0.068 (0.042)	
construction	0.077 (0.014) **	
trade	-0.059 (0.012) **	
restaurants and catering	-0.048 (0.022)	
transport	-0.059 (0.016) **	
finance	0.058 (0.023) *	
business services	0.009 (0.015)	
health care	-0.014 (0.019)	
culture and recreation	-0.025 (0.019)	
Occupation (reference: administration)		
technical	0.015 (0.006) **	
IT	0.000 (0.017)	
commercial	0.028 (0.008) **	
care	0.004 (0.006)	
creative	0.015 (0.035)	
executive	0.087 (0.010) **	
Firm size: (reference: 20-49 empl.)		
1-4 employees	-0.076 (0.014) **	
5-9 employees	-0.031 (0.014) *	
10-19 employees	-0.023 (0.013)	
50-99 employees	0.037 (0.015) *	
100-199 employees	0.048 (0.017) **	
200-499 employees	0.082 (0.017) **	
>=500 employees	0.095 (0.019) **	Nobs = 19346
Intercept	-0.153 (0.037) **	$R^2 = 0.590$

** = statistically significant at 99% * = statistically significant at 95%

Table 4.A3a Differences in characteristics between regular workers and fixed-term workers 1997, before and after matching

	unmatched		matched		
Variable	fixed-term	regular	fixed-term	regular	% reduction bias
tenure	0.20	8.70	0.18	1.01	-90%
age	28.64	37.37	28.54	29.12	-93%
weekly working hours	35.32	35.71	35.81	35.95	-66%
female	0.311	0.253	0.297	0.297	-100%
education level					
primary education	0.089	0.115	0.091	0.096	-83%
lower general	0.229	0.187	0.215	0.228	-69%
lower vocational	0.682	0.698	0.693	0.676	14%
job level					
very simple repetitive tasks	0.061	0.032	0.055	0.037	-37%
reasonably simple, mainly repetitive tasks	0.292	0.169	0.289	0.294	-96%
less simple, mainly repetitive tasks	0.392	0.326	0.397	0.395	-97%
less simple, varied tasks	0.203	0.345	0.205	0.226	-85%
intermediate task level	0.050	0.116	0.051	0.044	-89%
compound difficult tasks	0.002	0.010	0.002	0.002	-97%
Industry					
public utilities	0.013	0.017	0.013	0.004	143%
manufacturing	0.335	0.410	0.338	0.280	-23%
construction	0.142	0.142	0.149	0.183	7618%
trade	0.150	0.144	0.151	0.159	41%
restaurants and catering	0.035	0.019	0.035	0.041	-65%
transport	0.096	0.083	0.099	0.099	-98%
finance	0.013	0.023	0.013	0.026	28%
business services	0.135	0.068	0.121	0.110	-83%
health care	0.044	0.051	0.043	0.047	-39%
culture and recreation	0.037	0.042	0.038	0.051	158%
Occupation					
administrative	0.086	0.089	0.082	0.090	263%
technical	0.552	0.566	0.565	0.524	184%
IT	0.010	0.006	0.010	0.012	-51%
commercial	0.069	0.064	0.068	0.085	227%
care	0.279	0.251	0.270	0.286	-42%
creative	0.001	0.000	0.001	0.000	-37%
executive	0.003	0.023	0.003	0.002	-96%
Firm size					
1-4 employees	0.038	0.030	0.035	0.051	108%
5-9 employees	0.078	0.060	0.074	0.095	13%
10-19 employees	0.094	0.108	0.093	0.140	217%
20-49 employees	0.186	0.181	0.191	0.220	401%
50-99 employees	0.153	0.169	0.160	0.144	2%
100-199 employees	0.172	0.151	0.170	0.151	-9%
200-499 employees	0.160	0.164	0.154	0.134	374%
>=500 employees	0.120	0.129	0.122	0.066	542%
Firm specific effect	-0.028	-0.004	-0.023	-0.015	-65%

Table 4.A3b Differences in characteristics between regular workers and on-call workers 1997, before and after matching

	unmatched		matched		
Variable	on-call	regular	on-call	regular	% reduction bias
tenure	4.5	8.7	4.2	4.2	-99%
age	35.0	37.4	34.3	34.3	-100%
weekly working hours	18.2	35.7	19.8	19.9	-99%
female	0.683	0.253	0.731	0.731	-100%
education level					
primary education	0.162	0.116	0.156	0.225	48%
lower general	0.328	0.186	0.335	0.328	-95%
lower vocational	0.510	0.698	0.509	0.447	-67%
job level					
very simple repetitive tasks	0.136	0.033	0.118	0.168	-52%
reasonably simple, mainly repetitive tasks	0.329	0.170	0.326	0.338	-92%
less simple, mainly repetitive tasks	0.329	0.327	0.338	0.337	-70%
less simple, varied tasks	0.153	0.344	0.160	0.125	-82%
intermediate task level	0.050	0.116	0.055	0.031	-64%
compound difficult tasks	0.003	0.010	0.004	0.001	-62%
Industry					
public utilities	0.001	0.017	0.002	0.002	-96%
manufacturing	0.149	0.412	0.175	0.200	-90%
construction	0.010	0.143	0.012	0.026	-90%
trade	0.228	0.144	0.231	0.265	-60%
restaurants and catering	0.094	0.019	0.070	0.066	-94%
transport	0.127	0.084	0.110	0.062	10%
finance	0.023	0.023	0.025	0.023	800%
business services	0.146	0.065	0.142	0.105	-54%
health care	0.165	0.051	0.177	0.209	-72%
culture and recreation	0.057	0.042	0.056	0.042	-10%
Occupation					
administrative	0.036	0.089	0.045	0.063	-67%
technical	0.148	0.570	0.167	0.151	-96%
commercial	0.228	0.064	0.230	0.246	-90%
care	0.583	0.253	0.552	0.536	-95%
creative	0.002	0.000	0.002	0.000	-16%
executive	0.003	0.023	0.004	0.003	-99%
Firm size					
1-4 employees	0.042	0.030	0.042	0.076	198%
5-9 employees	0.052	0.060	0.048	0.100	540%
10-19 employees	0.134	0.108	0.109	0.175	157%
20-49 employees	0.104	0.182	0.113	0.143	-62%
50-99 employees	0.164	0.169	0.160	0.136	379%
100-199 employees	0.146	0.149	0.160	0.149	233%
200-499 employees	0.157	0.162	0.158	0.126	510%
>=500 employees	0.201	0.129	0.209	0.094	58%
Firm specific effect	-0.040	-0.005	-0.034	-0.035	-97%

Table 4.A3c Differences in characteristics between regular workers and fixed-term workers 2002, before and after matching

	unmatched		matched		
Variable	fixed-term	regular	fixed-term	regular	% reduction bias
tenure	0.7	8.8	0.7	1.6	-89%
age	31.4	39.0	31.2	31.8	-92%
weekly working hours	32.8	33.5	33.0	33.2	-83%
female	0.351	0.303	0.347	0.347	-100%
education level					
primary education	0.107	0.109	0.108	0.099	314%
lower general	0.278	0.225	0.276	0.278	-97%
lower vocational	0.615	0.666	0.616	0.623	-86%
job level					
very simple repetitive tasks	0.066	0.039	0.060	0.057	-88%
reasonably simple, mainly repetitive tasks	0.265	0.165	0.264	0.250	-86%
less simple, mainly repetitive tasks	0.392	0.364	0.398	0.418	-27%
less simple, varied tasks	0.224	0.321	0.227	0.230	-97%
intermediate task level	0.050	0.103	0.050	0.044	-89%
compound difficult tasks	0.002	0.007	0.001	0.001	-98%
Industry					
agriculture	0.025	0.027	0.025	0.031	197%
mining	0.009	0.009	0.009	0.007	671%
public utilities	0.002	0.015	0.002	0.001	-97%
manufacturing	0.340	0.396	0.345	0.307	-31%
construction	0.097	0.099	0.098	0.106	275%
trade	0.251	0.180	0.251	0.241	-86%
restaurants and catering	0.030	0.030	0.029	0.045	6479%
transport	0.066	0.090	0.066	0.084	-25%
finance	0.009	0.018	0.009	0.013	-56%
business services	0.099	0.070	0.092	0.098	-76%
health care	0.065	0.061	0.066	0.060	46%
culture and recreation	0.042	0.041	0.042	0.045	405%
Occupation					
administrative	0.083	0.094	0.083	0.097	27%
technical	0.485	0.501	0.489	0.454	120%
IT	0.003	0.005	0.003	0.005	29%
commercial	0.100	0.071	0.099	0.106	-74%
care	0.322	0.307	0.319	0.331	-23%
creative	0.003	0.003	0.003	0.003	-74%
executive	0.004	0.020	0.004	0.004	-98%
Firm size					
1-4 employees	0.036	0.031	0.036	0.043	15%
5-9 employees	0.063	0.061	0.062	0.067	135%
10-19 employees	0.081	0.088	0.081	0.106	307%
20-49 employees	0.142	0.130	0.143	0.155	-3%
50-99 employees	0.179	0.180	0.179	0.195	2874%
100-199 employees	0.176	0.149	0.178	0.149	8%
200-499 employees	0.207	0.184	0.204	0.175	31%
>=500 employees	0.115	0.159	0.116	0.109	-84%
Firm specific effect	-0.012	-0.002	-0.010	-0.009	-91%

Table 4.A3d Differences in characteristics between regular workers and on-call workers 2002, before and after matching

	unmatched		matched		
Variable	on-call	regular	on-call	regular	% reduction bias
tenure	3.6	8.6	3.5	3.4	-97%
age	33.0	38.8	31.6	31.4	-98%
weekly working hours	14.5	32.8	14.2	14.3	-100%
female	0.652	0.335	0.677	0.677	-100%
education level					
primary education	0.157	0.119	0.165	0.146	-50%
lower general	0.414	0.238	0.393	0.444	-71%
lower vocational	0.429	0.644	0.442	0.410	-85%
job level					
very simple repetitive tasks	0.155	0.045	0.137	0.133	-97%
reasonably simple, mainly repetitive tasks	0.398	0.181	0.385	0.419	-84%
less simple, mainly repetitive tasks	0.347	0.374	0.370	0.354	-39%
less simple, varied tasks	0.085	0.307	0.092	0.081	-95%
intermediate task level	0.015	0.092	0.017	0.013	-96%
Industry					
agriculture	0.078	0.031	0.040	0.041	-98%
manufacturing	0.099	0.420	0.117	0.114	-99%
trade	0.327	0.208	0.368	0.332	-70%
restaurants and catering	0.151	0.035	0.118	0.122	-97%
transport	0.104	0.106	0.085	0.067	832%
business services	0.051	0.080	0.057	0.089	15%
health care	0.082	0.072	0.098	0.130	211%
culture and recreation	0.108	0.048	0.117	0.105	-81%
Occupation					
administrative	0.023	0.091	0.028	0.044	-77%
technical	0.111	0.469	0.133	0.104	-92%
commercial	0.204	0.083	0.228	0.254	-79%
care	0.644	0.354	0.605	0.595	-97%
creative	0.019	0.003	0.005	0.003	-89%
Firm size					
1-4 employees	0.036	0.031	0.040	0.073	490%
5-9 employees	0.117	0.060	0.105	0.126	-64%
10-19 employees	0.093	0.085	0.100	0.110	23%
20-49 employees	0.221	0.126	0.157	0.144	-87%
50-99 employees	0.153	0.175	0.180	0.198	-18%
100-199 employees	0.211	0.135	0.213	0.135	4%
200-499 employees	0.088	0.198	0.105	0.088	-84%
>=500 employees	0.081	0.166	0.100	0.126	-69%
Firm specific effect	-0.079	-0.004	-0.051	-0.048	-97%

Chapter 5

5 Job satisfaction and the role of temporary employment contracts[21]

5.1 Introduction

As shown in chapter 2, the issue of job satisfaction in temporary employment has received some attention in recent years (see e.g. Kaiser, 2002; Booth et al., 2002; Bardasi and Francesconi, 2003; D'Addio et al., 2003). It is generally found that individuals working in temporary jobs experience less job satisfaction than individuals in regular jobs. Several factors are potentially causing this phenomenon. An obvious possibility is that temporary contracts are indeed less satisfactory than regular jobs. De Witte and Näswal (2003) give some explanations why this might be the case.[22] But it is also possible that those workers employed in temporary jobs are less satisfied with their work irrespective of their type of contract. Or perhaps the happiness of temporary workers is determined by different factors than happiness of regular workers. It is also conceivable that temporary contracts are used in different types of jobs, e.g. where heavy or dirty work is common. Or possibly temporary employment is more common in a certain phase when people are not feeling too well anyhow, such as periods of recession. To determine whether temporary employment indeed causes lower job satisfaction, we need an empirical strategy that allows disentanglement of confounding factors.

The increased attention for well-being analysis has brought more attention for the methodological issue of analysing satisfaction data. Ferrer-i-Carbonell and Frijters (2004) provide an overview of research methodologies. Distinguishing two key areas of distinction between research methodologies, they find that assuming ordinality or cardinality of happiness scores makes little difference, whereas allowing for fixed effects does change results substantially compared to cross-section (or random effects) analysis. Another extension was made by Van Praag et al. (2003), who view life satisfaction as an amalgam of various domain satisfactions. This results in a system of equations, which they estimate using Seemingly Unrelated Regression. Van Praag and Ferrer-i-Carbonell (2004) have developed a

[21] This chapter is based on De Graaf-Zijl (2005c).

[22] According to De Witte and Näswal (2003) lower job satisfaction in temporary work arrangement might be the result of higher job stress caused by more aggravating work characteristics, asymmetrical psychological contracts or deprivation due to a lack of a corporate family.

methodology with which panel data methods and multiple equation analyses are made feasible, while at the same time not fully depending on a cardinal concept of utility. In this chapter I use a combination of fixed effect analysis and Seemingly Unrelated Regression to analyse job satisfaction in the Netherlands, focussing on the role of temporary employment contracts. I use the Dutch Socio-Economic Panel for the years 1995-2001.

The outline of this chapter is as follows. In the next section I present the model and the estimation method. Section 5.3 describes the data and gives descriptives. Section 5.4 presents estimation results showing the anatomy of overall job satisfaction as an amalgam of satisfaction with several job aspects, and the way it is related to temporary work arrangements. In section 5.5 I discuss policy relevance of the outcomes. Section 5.6 concludes.

5.2 Model and estimation

The model used in this chapter is inspired by Van Praag et al. (2003). They apply a model that is a little more sophisticated than the standard model in which satisfaction is explained using objective variables such as age, income, gender and education. Their model assumes that life satisfaction is an aggregate of various domain satisfactions, such as health satisfaction, financial satisfaction, job satisfaction, housing satisfaction, leisure satisfaction etcetera. Likewise I argue that a job cannot be described as a one-dimensional characteristic. It consists of several job aspects, such as job security, financial rewards, working hours and job content. Therefore I use a model similar to the one used by Van Praag et al. (2003), i.e. Seemingly Unrelated Regression, to explain overall job satisfaction (JS) as a construct of job aspect satisfactions (JAS), which are in turn related to objective characteristics of individuals (i) and their jobs:

$$JS_{it} = JS(JAS_{1it}, \ldots, JAS_{Jit}; \alpha_i) \tag{5.1}$$

$$JAS_{jit} = JAS_j(X_{jit}, \alpha_{ji}) \qquad \text{with } j = 1,2,\ldots,J \tag{5.2}$$

In this system of equations X_j stands for the sub-selection of observed objective job and personal characteristics that influence aspect-satisfaction j and α reflects a latent component of unobserved personality traits that influence both general job satisfaction and job aspect satisfactions. These α-characteristics are assumed to be time-invariant. This implies that they are automatically taken care of by fixed effect estimation. The use of fixed-effect estimation has been found by Ferrer-i-Carbonell and Frijters (2004) to change results considerably compared to cross-section analysis. Fortunately my data allow me to use this method. In this way the common unobservable factor α in the JAS and JS is taken into account and we may view the equations (5.1) and (5.2) as a recursive system, estimated by Seemingly Unrelated Regression.

In my dataset, satisfaction questions are asked using a 6-point Likert scale. The usual approach in the economic literature is to treat satisfaction in an ordinal way. That is, we assume that the numerical evaluations 1,2,3,…,6 indicate six satisfaction levels, where a

score of 6 is better than a score of 3. A cardinal approach, which is usual in psychological literature on well-being, assumes that a person scoring 6 is twice as satisfied as the same person scoring 3 and that the difference between a satisfaction answer of 5 and 6 is the same as the difference between 3 and 4. The cardinal treatment of satisfaction is unpopular in economics, even though Ferrer-i-Carbonell and Frijters (2004) show that results between ordinal and cardinal research methodologies hardly differ. Instead economists use ordered probit or logit analysis in order to treat satisfaction answers as ordinal. However, as Van Praag and Ferrer-i-Carbonell (2004) show, the usual ordered probit methodology does imply an implicit cardinalisation to some extent. They use this implicit cardinalisation to recast the problem in such a way that it can be tackled by OLS. In doing so they avoid a number of technical and computational difficulties of ordered probit when dealing with panel data sets and multiple equation models. Their approach implies transformation of the response category k to $\ln(z_i)$, where

$$\ln(z_k) = \frac{n(\mu_{k-1}) - n(\mu_k)}{N(\mu_k) - N(\mu_{k-1})}$$

N is the normal distribution function, n is the normal density function and μ_k are the values for which holds that $N(\mu_k)-N(\mu_{k-1})$ is the fraction of respondents belonging to response category k. Using this transformation, first advocated by Terza (1987), ensures that the explanatory variables in (1) vary over the whole real axis and are no longer bound to integer values between 1 and 6, so we do not need to use dummy variables any more. Also dependent variables in (5.1) and (5.2) now vary over the whole real axis, which implies OLS can be used. Van Praag and Ferrer-i-Carbonell call this approach "probit adapted OLS" (POLS). It enables not only the estimation of equation (5.1) without using a large amount of explanatory dummy variables, but also makes fixed effect estimation and multiple equation models computationally feasible. They show that results from POLS are almost the same as ordered probit results, except for a multiplication factor. The resulting trade-off ratios are virtually identical, as are t-ratios.

5.3 Data and descriptive statistics

In this chapter I use the Dutch Socio-Economic Panel (SEP). Netherlands Statistics started this panel survey in 1984 with 4000 households. In 1986 they reached a number of 5000 households by natural creation of new households (children leaving the household or divorce) and recruitment of new households. They have kept the number of households on this level ever since, by balancing natural creation and recruitment of new households with attrition. Non-response (48%) at the start of the survey and later panel attrition caused a certain degree of selectivity. To correct for this selectivity, Netherlands Statistics have calculated weights based on demographic statistics (size of municipality, age, sex and marital status).

All household members older than 16 years of age are interviewed once a year in April about their socio-economic situation with questions on education, labour force participation, income, wealth and satisfaction. Per household one individual answers questions on the living situation and wealth. Finally, demographic features of all household members – including those aged under 16 – such as sex, date of birth, marital status,

nationality and position in the household are registered. The face-to-face surveys are carried out using portable computers and computer-controlled questionnaires (CAPI). National Statistics ensures the longitudinal character of the dataset by checks on date of birth and sex. I have made additional checks on age and sex. Furthermore I have corrected all monetary variables in the dataset for inflation to ensure proper comparison over the years. The health variable ("How healthy are you in general?") has been transformed such that 1 is very bad and 5 is very good. I have added year dummies and vacancy to unemployment ratios that vary by education level and (the first quarter of the) year, from publicly available data sources of Netherlands Statistics.

Key variables in the dataset for the purpose of this chapter are questions on job satisfaction and questions on the type of contract. The latter questions have been introduced in 1995. Therefore I use seven waves of the panel from 1995 till 2001. Table 5.1 gives an overview of the job satisfaction responses per contract type. Satisfaction questions are asked on a scale from 1 to 6, where 1 means very dissatisfied and 6 very satisfied. Clearly, some differences between contract types are discernable, most of which – with the exception of satisfaction with working hours and working conditions – are in favour of regular contracts. Satisfaction with job security is the issue that varies most, on which the temporary contracts show by far the lowest satisfaction. Only agency work is associated with statistically significant lower overall job satisfaction.

Table 5.1 Descriptive outcomes job (aspect) satisfaction by employment contract (1995-2001, pooled data)

	agency work	on-call work	fixed-term contract	regular contract
overall JS	4.544 (0.985) ***	4.675 (0.905)	4.747 (0.946)	**4.759 (0.865) *** **
wage satisfaction	4.020 (1.230) ***	4.085 (1.234) ***	4.245 (1.208) ***	**4.411 (1.010) *** **
job security satisfaction	3.161 (1.610) ***	3.570 (1.643) ***	3.766 (1.549) ***	**4.848 (1.144) *** **
working hours satisfaction	**4.749 (1.081) *** **	4.479 (1.275) *	**4.708 (1.145) ** **	4.600 (1.098) ***
working times satisfaction	4.887 (1.075)	4.790 (1.074)	4.874 (1.080)	4.831 (1.053)
job content satisfaction	4.333 (1.222) ***	4.777 (1.140)	4.812 (1.114)	**4.849 (0.963) *** **
working conditions satisfaction	**4.441 (1.225) ** **	**4.469 (1.100) ** **	**4.526 (1.181) *** **	4.327 (1.142) ***
commuting distance satisfaction	4.732 (1.210)	4.826 (1.214)	4.716 (1.326) ***	**4.815 (1.223) *** **
Number of observations	594	305	1529	23455

*** = difference statistically significant at 99% confidence level Standard errors in parentheses
** = difference statistically significant at 95% confidence level
* = difference statistically significant at 90% confidence level
Bold = positive difference with other contract(s)

5.4 Results

In this section I present the estimation results of the seven job aspect satisfaction equations and the overall job satisfaction equation, estimated by fixed effect probit adapted OLS (see section 5.2). I start with the results of the general job satisfaction and proceed with the job aspect satisfactions in order of importance according to the JS results. The explanatory variables in each job aspect satisfaction equation are chosen with a view on the literature, intuitive plausibility and the availability in the data set. For most non-dummy variables I use

the standard logarithmic specification (see Van Praag and Ferrer-i-Carbonell, 2004). All JAS equations include non-reported dummy variables for missing values. Furthermore every JAS equation includes time effects, decomposed in two elements. On the one hand I have included the vacancy/unemployment (V/U) ratio. This ratio captures the business cycle effect and the outside opportunities of the workers. If there are many vacancies per unemployed individual, workers have many outside options. An individual has few outside options if unemployment is high and vacancies are scarce. The V/U ratio varies per year and by education level. Apart from this V/U-ratio I have included time fixed effects to capture additional year effects. Robustness checks have shown that results are not sensitive to selection of the sample, such as limiting the sample to job switchers or private sector employees.

5.4.1 Overall job satisfaction

Estimation results for equation (5.1) are shown in table 5.2 and graphically illustrated in figure 5.1. The first column gives results for all workers; the other columns give results for the types of jobs separately. Clearly, most of the individuals have multiple observations: the 6952 individuals in the sample result in 25883 job observations. Some of these individuals hold different types of jobs during the observation period, as a result of which the total number of workers of the four contract types is larger than the number of individuals. The fact that individuals shift between types of contract enables me to identify effects of contract type using fixed effect analysis.

General job satisfaction is mainly determined by happiness with job content, which holds true for all types of workers. Clearly job content is much more influential than conditions or terms under which the job is performed. The weight of all other job aspect satisfactions differs between employment contracts. On average a Dutch worker weighs the remaining aspect satisfactions in the following order of importance: working conditions, working hours, wage, working times, commuting distance and job security. Workers in fixed-term jobs derive satisfaction from about the same aspect satisfactions as regular workers, but – apart from the fact that job content is the main determinant – agency workers and on-call workers are completely different. Commuting distance for example is much more important if someone works as temp agency or on-call worker. Wage satisfaction has practically no weight at all in these jobs. And interestingly for on-call workers the satisfaction with job security has a much larger weight than in other jobs.

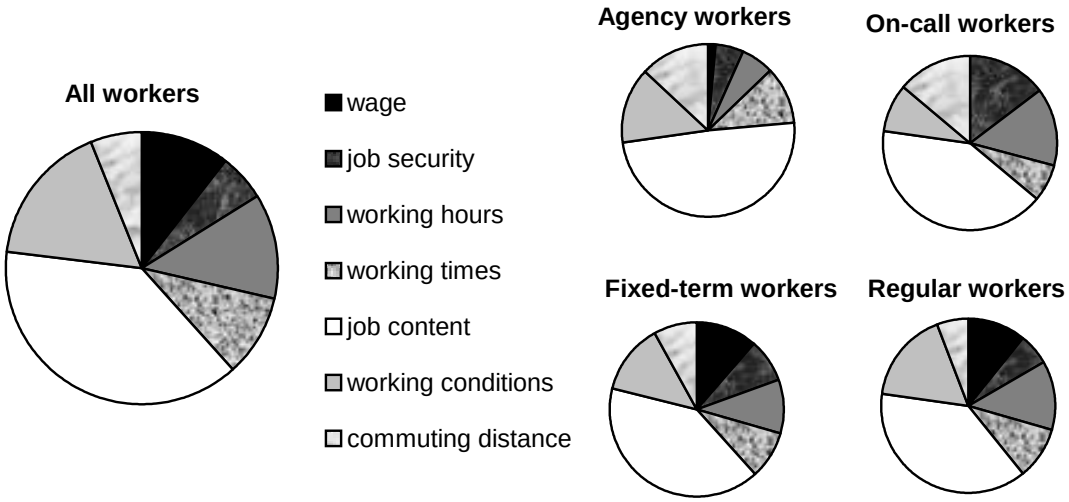
Table 5.2 Estimation results overall job satisfaction, fixed effect POLS analysis

	everyone		agency workers		on-call workers		fixed-term workers		regular workers	
satisfaction with wage	0.061 (0.006)	***	0.008 (0.032)		-0.031 (0.050)		0.067 (0.020)	***	0.062 (0.007)	***
satisfaction with job security	0.032 (0.005)	***	0.031 (0.024)		0.093 (0.035)	***	0.049 (0.015)	***	0.034 (0.006)	***
satisfaction with working hours	0.072 (0.006)	***	0.034 (0.036)		0.093 (0.045)	**	0.058 (0.023)	**	0.074 (0.007)	***
satisfaction with working times	0.056 (0.007)	***	0.064 (0.042)		0.044 (0.053)		0.054 (0.025)	**	0.055 (0.007)	***
satisfaction with job content	0.223 (0.007)	***	0.283 (0.037)	***	0.261 (0.056)	***	0.240 (0.023)	***	0.219 (0.007)	***
satisfaction with working conditions	0.098 (0.006)	***	0.081 (0.034)	**	0.055 (0.054)		0.077 (0.021)	***	0.098 (0.006)	***
satisfaction with commuting distance	0.036 (0.006)	***	0.076 (0.029)	**	0.089 (0.044)	**	0.048 (0.016)	***	0.034 (0.006)	***
Number of individuals	6952		459		232		1133		6429	
Number of observations	25883		594		305		1529		23455	
Pseudo R^2	0.305		0.304							

*** = statistically significant at 99% confidence level
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

Standard errors in parentheses

Figure 5.1 Relative importance of job aspect satisfactions in overall job satisfaction



5.4.2 Job content satisfaction

Satisfaction with job content is clearly most important for overall job satisfaction. Table 5.3 shows how this content satisfaction relates to observed job characteristics. Interestingly, this satisfaction relates more to function level than to function type. Workers are least satisfied on

the lowest function levels and most satisfied on the intermediate levels. The highest function levels take in an intermediate position.[23] Working in an executive function results in a higher satisfaction with the job content irrespective of the number of subordinate employees and irrespective of the function level. A worker is least satisfied with his job content if employed on a temporary agency contract. Agency workers are typically sent by their agency on short placements at client firms, which they have not chosen for themselves, to work on tasks they also have not always chosen themselves. Even though agency workers can refuse placements, their influence on their type of job and the organisation they work for is generally less than for workers who work for a firm directly. This might be the reason why agency work is associated with lower content satisfaction.

Working hours determine the satisfaction with job content as well, with people working more than 17 hours per week being more and more satisfied with the content of their job as they work more hours. Apparently small jobs are on average less interesting than more substantial ones. Also tenure influences the pleasure workers derive from their job content. People who are new in their job generally find their work content more interesting than people who have performed the same job for years, which is intuitively plausible. Two other factors related to satisfaction with job content are not really job related. When an individual was unemployed before he started working in the current job he is less satisfied with it. This might reflect his inferior bargaining position at the start of the job, which causes the job content to be not really what he prefers. The other non-job related variable that is associated with job content satisfaction is health. People who become less healthy experience decreases in satisfaction with their job content. This probably has little to do with their job itself. As next sections will show a decline in health causes decreasing satisfaction with all aspects of the job.

[23] Adding or deleting 'executive position' as explanatory variable does not change this result.

Table 5.3 Estimation results job content satisfaction, fixed effect POLS analysis

Variable	Coefficient		
ln(tenure)	-0.142 (0.030)***		
ln(tenure)^2	0.003 (0.010)		
previously unemployed	-0.084 (0.029)***		
health status	0.085 (0.011)***		
executive position	0.090 (0.041)**		
number of subordinates	0.007 (0.039)		
ln(weekly working hours)	-0.815 (0.491)*		
ln(weekly working hours)^2	0.143 (0.071)**		
function level (reference: lower medium)			
lowest	-0.247 (0.050)***		
lower	-0.052 (0.019)***		
higher medium	0.053 (0.022)**		
higher	-0.001 (0.034)		
highest	0.043 (0.077)		
job type (reference: administrative)			
technical	-0.018 (0.028)		
agricultural	-0.032 (0.072)		
education	0.098 (0.062)		
medical	0.016 (0.035)		
transport	-0.013 (0.052)		
legal	0.032 (0.049)		
social/cultural	0.030 (0.038)		
employment contract (ref: regular)			
agency work	-0.201 (0.047)***		
on-call	-0.055 (0.069)		
fixed-term	0.025 (0.029)		
V/U-ratio	-0.192 (0.149)		
year dummies (ref: 1997)			
1995	0.030 (0.021)		
1996	0.046 (0.018)**		
1998	-0.002 (0.027)		
1999	0.020 (0.042)		
2000	0.072 (0.075)	Number of individuals	6982
2001	0.103 (0.081)	Number of observations	25883
intercept	1.029 (0.858)	Pseudo R^2	0.022

*** = statistically significant at 99% confidence level
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level
Standard errors in parentheses

5.4.3 Working conditions satisfaction

Table 5.4 gives results of the working conditions satisfaction analysis. Clearly, the availability of training is the main facility determining satisfaction on this point, for both men and women. For women, training and education opportunities are even more important than for men. Availability of childcare facilities increases satisfaction with working conditions

too, curiously only for men and not for women. On average in my sample a quarter of all men with small children and half of the women with small children have access to these facilities. Since half of all women with small children do not have these facilities, selection of women into jobs with childcare provision is not the reason for this curious finding. For men, employer provided sports facilities increase this aspect of job satisfaction as well. Having a company car or lease car does not significantly influence this aspect satisfaction, neither for men, nor for women.

Tenure has the largest effect on satisfaction with working conditions. As people have been working in the same job for a longer time, they become less satisfied with the conditions. This continues up until 28 years of tenure, which is not often reached. Working hours are influential as well. As the workweek lengthens, workers become less satisfied with the conditions under which they have to perform their job. Minimum satisfaction is reached at a workweek of 44 hours, and contracts of more hours are uncommon in the Netherlands. So part-time workers either work under better circumstances or they are bothered less by the same circumstances. This last explanation is not illogical. A person who sits at a desk for 20 hours might experience less negative consequences than he would if he sat at the same desk for 40 hours. Health is also an important factor. Someone who experiences a decline in health becomes less satisfied with his working conditions.

Regarding employment contracts, some effects are found. Fixed-term workers and agency workers appear to be more satisfied with their working conditions than regular workers and on-call workers. Both fixed-term workers and agency workers work in an organization for a short period of time. However, if this were the explanation, it would have been picked up by the tenure effect.

Table 5.4 Estimation results working conditions satisfaction, fixed effect POLS analysis

Variable	Coefficient			
ln(tenure)	-0.340	(0.031)***		
ln(tenure)^2	0.051	(0.010)***		
previously unemployed	-0.019	(0.030)		
health status	0.087	(0.011)***		
executive position	0.010	(0.019)		
ln(weekly working hours)	-1.482	(0.514)***		
ln(weekly working hours)^2	0.196	(0.074)***		
facilities - women				
childcare if child <= 4 years	0.054	(0.063)		
childcare if no child <= 4 years	-0.004	(0.031)		
training	0.121	(0.026)***		
sport facilities	0.038	(0.035)		
car	0.015	(0.090)		
facilities - men				
childcare if child <= 4 years	0.116	(0.042)***		
childcare if no child <= 4 years	0.049	(0.026)*		
training	0.075	(0.019)***		
sport facilities	0.049	(0.024)**		
car	0.046	(0.037)		
employment contract (ref: regular)				
agency work	0.087	(0.049)*		
on-call	-0.025	(0.072)		
fixed-term	0.075	(0.031)**		
V/U-ratio	0.006	(0.156)		
year dummies (ref: 1997)				
1995	0.012	(0.022)		
1996	0.027	(0.019)		
1998	-0.036	(0.028)		
1999	-0.043	(0.044)		
2000	-0.058	(0.078)	Number of individuals	6982
2001	-0.025	(0.085)	Number of observations	25883
intercept	2.777	(0.898)***	Pseudo R^2	0.028

*** = statistically significant at 99% confidence level Standard errors in parentheses
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

5.4.4 Working hours satisfaction

Not surprisingly satisfaction with working hours is mainly determined by working hours itself, as table 5.5 shows. What might be surprising is the shape of the relation. Both men and women are most satisfied with their working hours if they work around 15 hours a week. Working more (or less) hours decreases satisfaction. In the Netherlands women usually work part-time and men work full-time. Apparently this is not because they are most satisfied with this number of working hours. From table 5.5 we might conclude that men who reduce their working hours get happier as well. Still Sousa-Poza and Henneberger (2002) indicate that 70

percent of the Dutch workforce would rather not change his or her number of working hours, whereas 19 percent would like to work more and earn correspondingly more and only 11 percent prefers to work less hours and earn correspondingly less money. The relation I find depends on the presence of a partner in the household. When living together with a partner, workers are generally more satisfied with their working hours, but are less satisfied if they work longer hours. Intuitively children in the household could influence the number of hours people prefer to work if they like to spend time with their children. I do not find this effect. Individuals in executive positions usually work longer hours in practice, but this too is not found to be related to their preferences.

Regarding type of employment contract, on-call work is typically different from the other types. If employed on an on-call basis both the number of hours and the timing of hours differ per day or week, which means that workers have little certainty about when and how much they will work. As a result it is not surprising to find that working on-call decreases satisfaction with working hours. Agency workers also might work different hours per placement. Since these placements are generally longer than a week, variance is smaller than for on-call workers. As a result agency work does not result in low working hours satisfaction. The same holds for fixed-term employment.

Again tenure is of major influence. On the issue of working times, individuals are least satisfied if they have been employed on the same job for 15 years. All in all people seem to be better off in terms of job satisfaction if they change jobs every so often. Also the health effect is present again. Here, some year effects are found as well. In 1995 and 1996 workers were more satisfied with their number of working hours, which is hard to explain. If any effect was to be expected, it would have been after July 2000. At that moment a new act became operative, which states that any employee can request a change in his number of working hours and the employer should grant this wish unless he has demonstrable ponderous arguments why he cannot. In my dataset I have only one observation after this date, namely April 2001. I do not find a significant increase in working hours satisfaction after 2000, but this might be caused by the short period since the introduction of the new act. It generally takes some time to adapt to new regulation. Employees need to learn about it, decide if and how to use it and employers need to learn how to implement its consequences. Even in 2003 an evaluation showed that only 50 percent of workers knew about their right to request longer or shorter working hours (Mu consult, 2003).

Table 5.5 Estimation results working hours satisfaction, fixed effect POLS analysis

Variable	Coefficient				
women					
ln(weekly working hours)	7.085	(0.669)	***		
ln(weekly working hours)^2	-1.119	(0.100)	***		
men					
ln(weekly working hours)	6.885	(0.613)	***		
ln(weekly working hours)^2	-1.051	(0.085)	***		
partner					
partner in household	1.28	(0.366)	***		
partner * hours	-0.341	(0.101)	***		
children					
children in household	-0.192	(0.253)			
children * hours	0.051	(0.070)			
executive position					
executive position	0.261	(0.271)			
executive * hours	-0.089	(0.075)			
ln(tenure)	-0.164	(0.030)	***		
ln(tenure)^2	0.031	(0.010)	***		
previously unemployed	-0.033	(0.029)			
health status	0.069	(0.011)	***		
employment contract (ref: regular)					
agency work	0.011	(0.047)			
on-call	-0.326	(0.069)	***		
fixed-term	0.034	(0.029)			
V/U-ratio	-0.107	(0.149)			
year dummies (ref: 1997)					
1995	0.057	(0.021)	***		
1996	0.051	(0.018)	***		
1998	0.014	(0.027)			
1999	-0.003	(0.042)			
2000	0.037	(0.074)		Number of individuals	6982
2001	0.048	(0.081)		Number of observations	25883
intercept	-11.174	(1.097)	***	Pseudo R^2	0.041

*** = statistically significant at 99% confidence level Standard errors in parentheses
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

5.4.5 Wage satisfaction

The use of explanatory variables in the wage satisfaction analysis in table 5.6 has been inspired by findings from the literature on life satisfaction, financial satisfaction and overall job satisfaction. This literature shows that it is not only, not even mainly, a person's own income that determines satisfaction but rather the income of a comparison group (see e.g. Clark and Oswald, 1996 and Ferrer-i-Carbonell, 2005). Ferrer-i-Carbonell (2005) argues that the relation between satisfaction and comparison income is not always symmetric. In some cases happiness of individuals is negatively affected by an income below that of their

reference group, whereas individuals with an income above that of their reference group do not experience a positive impact on well-being. I order to test these hypotheses I have included in the wage satisfaction analysis several wage related variables.

First I included both hourly and monthly wage and the results show that satisfaction is more related to the (log) monthly wage rate than the (log) hourly wage rate. Excluding one of the two variables, or working hours, from the regression does not change this finding. In my view this is rather surprising. From an economic point of view it is the wage per time unit worked that is the relevant unit to compare jobs. Taking on more than one job can always compensate a low monthly wage due to few hours.

Next, I added two comparison wage variables: one for the (log) positive difference between own wage and comparison wage and one for (log) negative differences. Reference groups have been defined as individuals with the same education level in the same age group. I find that the difference between own wage and reference wage is as important for wage satisfaction as the wage itself. This effect is symmetric: the effect of a positive difference is as large as the effect of a negative difference. It holds both when defined in terms of monthly wage or in terms of hourly wage.

Another financial element included in this analysis is the share of the individual's wage in monthly household income. So here I test whether, corrected for the wage level itself, the income compared to that of the other household members influences wage satisfaction. The results indicate that, given the height of the hourly wage, an individual is more satisfied with his or her wage if its share in household income becomes more substantial. Other household characteristics have no further influence on wage satisfaction. Neither the partner, nor the child dummies have significant effects.

To continue, some financial fringe benefits have been included in the analysis. Participation in an employer provided pension scheme, in a salary saving scheme, provision of corporate bonds or options, profit sharing and lease cars/company cars were available in the dataset. It is the company or lease car and the salary saving scheme that have positive effects on wage satisfaction.

Wage satisfaction, in contrast to the other job aspect satisfactions presented so far, appears to be labour market related. This effect is shown in the V/U-ratio. The higher the number of vacancies per unemployed on their education level, i.e. the more outside options a worker has, the less satisfied workers are with their wages. They might have the feeling that others are better off than they are, and feel they have a choice for a higher wage elsewhere. This makes them less satisfied with their current wage. In recessions they see many unemployed workers receiving no wage at all and feel they have few outside options themselves, which makes them more satisfied with the wage they receive. Plus they know employers are not doing well and are not always able to pay higher wages. The year dummies show a completely opposite relation. The better years, 1998 until 2001, result in a higher wage satisfaction. Apparently wage satisfaction is negatively related to the education level specific labour market situation, but positively to the national business cycle.

Furthermore we see the by now familiar patterns regarding tenure, health and previous unemployment. Individuals are least satisfied at 18 years of tenure, are more satisfied if they are healthier and are less satisfied if they were unemployed directly before they found the current job. With respect to the type of employment contract the interesting conclusion is that workers are somewhat more satisfied with their wage if they work on a fixed-term contract. From the literature we know that fixed-term workers earn less than

regular workers, even if we control for their characteristics (see e.g. Segal and Sullivan, 1998; Booth, Francesconi and Frank, 2002; Hagen, 2003, McGinnity and Mertens, 2004; Addison and Surfield, 2005, De Graaf-Zijl, 2005b). In chapter 4 I have shown that employers' uncertainty about a worker's ability is a main reason for this relation. The effect found in table 5.6 might lead us to conclude that workers understand this reason behind their lower payment. If a worker enters a firm on a fixed-term contract and understands that his employer is uncertain about his ability to perform the job, he is satisfied with the wage he gets. When he subsequently receives a regular contract, he knows that the employer has observed his ability during the last period and he is therefore less satisfied if he still receives the same wage.

Table 5.6 Estimation results wage satisfaction, fixed effect POLS analysis

Variable	Coefficient		
wage			
ln(net monthly wage)	0.011 (0.004)***		
ln(gross hourly wage)	0.023 (0.023)		
ln(reference hourly wage) positive	0.024 (0.008)***		
ln(reference hourly wage) negative	-0.027 (0.008)***		
share in household income	0.145 (0.030)***		
additional financial benefits (yes/no)			
pension	0.029 (0.018)		
salary saving	0.038 (0.017)**		
shares/option	0.025 (0.037)		
profit sharing	0.039 (0.026)		
car	0.068 (0.032)**		
household characteristics			
partner	0.011 (0.031)		
children	-0.034 (0.046)		
ln(tenure)	-0.239 (0.030)***		
ln(tenure)^2	0.041 (0.010)***		
previously unemployed	-0.153 (0.028)***		
health status	0.022 (0.010)**		
ln(weekly working hours)	-0.050 (0.478)		
ln(weekly working hours)^2	0.031 (0.069)		
employment contract (ref: regular)			
agency work	-0.049 (0.046)		
on-call	-0.046 (0.067)		
fixed-term	0.050 (0.028)*		
V/U-ratio	-0.378 (0.144)***		
year dummies (ref: 1997)			
1995	-0.034 (0.020)*		
1996	-0.024 (0.017)		
1998	0.065 (0.026)**		
1999	0.106 (0.041)***		
2000	0.197 (0.072)***	Number of individuals	6982
2001	0.393 (0.080)***	Number of observations	25883
intercept	-0.282 (0.838)	Pseudo R^2	0.034

*** = statistically significant at 99% confidence level
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level
Standard errors in parentheses

5.4.6 Working time satisfaction

Satisfaction with working times is explained very poorly using the SEP dataset. Reason is that the data contain no information on occurrence of irregular working hours, working weekends or night shifts, overtime or the start and end moments of a regular working day. Therefore the only variables included in the working times satisfaction analysis are the general ones also used in the other JAS regressions. Individuals are less satisfied with their working times as they work in the same job for a longer time. They are most satisfied if they work about 20 hours per week. The more healthy they are, the more satisfied. Some business

cycle effects appear to be present. The years 1995 and 1996, which are the worst years during my observation period, show the highest satisfaction levels. This might be related to overtime: generally workers need to work more hours in the best parts of the business cycle. An alternative explanation is that workers are happy to have any work, regardless working times, if the economic situation is bad. Finally, we observe that agency workers are more satisfied with their working times than all other workers.

Table 5.7 Estimation results working time satisfaction, fixed effect POLS analysis

Variable	Coefficient		
ln(tenure)	-0.092(0.030)***		
ln(tenure)^2	0.007(0.010)		
previously unemployed	-0.006(0.029)		
health status	0.057(0.011)***		
executive position	-0.002(0.018)		
ln(weekly working hours)	2.519(0.487)***		
ln(weekly working hours)^2	-0.431(0.070)***		
employment contract (ref: regular)			
agency work	0.138(0.047)***		
on-call	-0.006(0.068)		
fixed-term	0.030(0.029)		
V/U-ratio	-0.006(0.148)		
year dummies (ref: 1997)			
1995	0.073(0.021)***		
1996	0.044(0.018)**		
1998	0.003(0.026)		
1999	-0.004(0.042)		
2000	0.015(0.074)	Number of individuals	6982
2001	0.049(0.081)	Number of observations	25883
intercept	-3.571(0.851)***	Pseudo R^2	0.019

*** = statistically significant at 99% confidence level Standard errors in parentheses
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

5.4.7 Commuting distance satisfaction

Satisfaction with commuting distance is the job aspect satisfaction that is best explained from observed variables, as can been seen from the relatively high R^2 value (0.384). Not surprisingly, it mainly depends on commuting distance itself. As distance increases, satisfaction drops substantially. Also situations in which individuals have no fixed working place are experienced as satisfaction-reducing job characteristics. This is in accordance with findings by Van Ommeren et al. (2000), who have shown that individuals in the Netherlands experience negative utility from commuting. They estimated the marginal willingness to pay in case of a working day of eight hours to about –0.20 Euro per kilometre. As I show in table 5.8, an employer-provided car diminishes this effect. If an employer provides the car, an individual values the distance less negative than he would without the car. The same holds for individuals with children. They also value commuting distance less negative than they

would if they had had no children. This might be explained from the fact that many people with children choose to live in greener, quieter environments outside the cities, where they usually work. So the commuting distance is a deliberate choice for the sake of their children and as such is experienced as less dissatisfactory. Furthermore, individuals find larger commuting distance less problematic if they work more hours per week. Working longer hours per day decreases the relative amount of commuting time and as such make it less unattractive.

Table 5.8 Estimation results commuting distance satisfaction, fixed effect POLS analysis

Variable	Coefficient		
ln(commuting distance in km)	-0.736(0.077)***		
no fixed working place	-1.591(0.035)***		
employer provided car			
car	-0.169(0.041)***		
car * ln(distance)	0.063(0.012)***		
executive position			
executive position	0.031(0.029)		
executive * ln(distance)	0.000(0.010)		
partner			
partner in household	0.043(0.045)		
partner * ln(distance)	-0.012(0.015)		
children			
children in household	-0.065(0.031)**		
children * ln(distance)	0.030(0.011)***		
working hours			
ln(weekly working hours)	-0.408(0.395)		
ln(weekly working hours)^2	0.035(0.057)		
working hours * ln(distance)	0.065(0.021)***		
ln(tenure)	0.038(0.024)		
ln(tenure)^2	-0.011(0.008)		
previously unemployed	-0.005(0.023)		
health status	0.015(0.009)*		
employment contract (ref: regular)			
agency work	-0.011(0.038)		
on-call	-0.084(0.055)		
fixed-term	0.003(0.023)		
V/U-ratio	0.042(0.120)		
year dummies (ref: 1997)			
1995	0.045(0.017)***		
1996	0.018(0.014)		
1998	0.001(0.021)		
1999	-0.020(0.034)		
2000	-0.039(0.060)	Number of individuals	6982
2001	-0.048(0.065)	Number of observations	25883
Intercept	2.173(0.701)***	Pseudo R^2	0.384

*** = statistically significant at 99% confidence level
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

Standard errors in parentheses

5.4.8 Job security satisfaction

By their nature agency workers, on-call workers and workers on fixed-term contracts experience less job security than regular workers. The contracts they work on are often designed for reasons of avoiding employment protection legislation. However, perceived job insecurity has no one-to-one relation with flexible employment. In the literature, as the overview in chapter 2 has shown, type of contract is one of the objective measures of job insecurity, which is imperfectly correlated with subjective job insecurity perceived by workers. Furthermore, temporary employment is by no means involuntary for all workers. Based on the Eurostat labour force survey Berkhout and Van Leeuwen (2004) show that the share of people who are voluntarily working as temporary worker ('did not want a permanent job') is more than a third in the Netherlands. If working on a temporary contract because they voluntarily choose to do so, employees might value the lack of job security – or more positively formulated the high variety – as positive instead of negative.

Table 5.9 shows that in my dataset on-call work, fixed term contract work and agency work all lead to lower satisfaction with job security. This holds on average, but some circumstances aggravate it, and others diminish it. Working more hours per week for instance diminishes the effect of on-call and fixed-term work. So workers especially dislike the job security of on-call work if they are on average called for only a small number of hours. And they dislike fixed-term work most if it is part-time. Also, the security offered by on-call work is valued more negatively if household income depends on it to a larger extent. If there are enough other income sources in the household the lack of security offered by on-call work is not deemed to be as problematic. The same effect is found for children. Once a child is present, the lack of security offered by fixed-term work seems to matter less. Easier to explain is the relation with the labour market situation. In a situation where an individual has many outside options (high V/U-ratio), negative effects of agency work and fixed-term contracts partly disappear. Since it is easier to find another job the lack of security is not so bad. In a sense, security regarded as the chance to be in work next month, is higher in these situations. Year dummies show an additional effect in the same direction, on top of the V/U effect.

Table 5.9 Estimation results job security satisfaction, fixed effect POLS analysis

Variable	Coefficient			
employment contract (ref: regular)				
agency work	-1.411	(0.632)**		
on-call	-2.143	(0.651)***		
fixed-term	-2.051	(0.370)***		
partner				
partner in household	0.034	(0.032)		
partner * agency work	-0.039	(0.115)		
partner * on-call	-0.113	(0.186)		
partner * fixed-term	-0.093	(0.068)		
children				
children in household	0.004	(0.022)		
children * agency work	-0.064	(0.088)		
children * on-call	-0.060	(0.135)		
children * fixed-term	0.178	(0.055)***		
executive position				
executive position	0.025	(0.018)		
executive * agency work	0.189	(0.133)		
executive * on-call	0.191	(0.189)		
executive * fixed-term	0.086	(0.068)		
working hours				
ln(weekly working hours)	-0.268	(0.490)		
ln(weekly working hours)^2	0.041	(0.070)		
working hours * agency work	0.052	(0.169)		
working hours * on-call	0.485	(0.181)***		
working hours * fixed-term	0.374	(0.100)***		
hourly wage				
gross hourly wage	0.029	(0.020)		
hourly wage * agency work	-0.009	(0.040)		
hourly wage * on-call	-0.045	(0.061)		
hourly wage * fixed-term	-0.032	(0.029)		
household income				
share personal wage in household income	0.017	(0.035)		
share * agency work	0.038	(0.101)		
share * on-call	-0.515	(0.175)***		
share * fixed-term	0.027	(0.073)		
ln(tenure)	0.026	(0.030)		
ln(tenure)^2	-0.028	(0.010)***		
previously unemployed	-0.008	(0.028)		
health status	0.069	(0.011)***		
vacancy/unemployment ratio				
V/U-ratio	-0.067	(0.145)		
V/U-ratio * agency work	1.026	(0.207)***		
V/U-ratio * on-call	0.339	(0.274)		
V/U-ratio * fixed-term	0.350	(0.110)***		
year dummies (ref: 1997)				
1995	-0.042	(0.020)**		
1996	-0.072	(0.017)***		
1998	0.113	(0.026)***		
1999	0.126	(0.041)***		
2000	0.212	(0.072)***	Number of individuals	6982
2001	0.213	(0.079)***	Number of observations	25883
Intercept	0.106	(0.859)	Pseudo R^2	0.081

*** = statistically significant at 99% confidence level
** = statistically significant at 95% confidence level
* = statistically significant at 90% confidence level

Standard errors in parentheses

5.5 Policy considerations

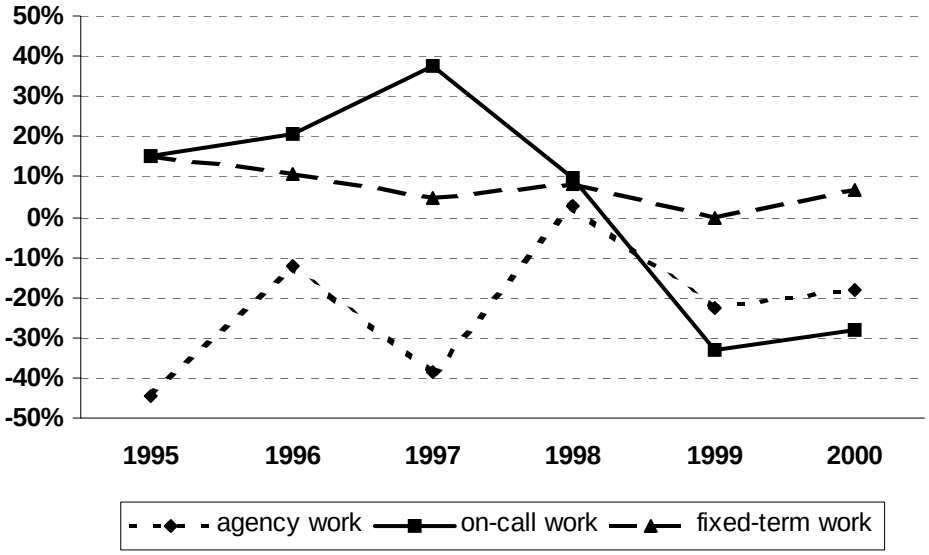
The Dutch government is planning to relax employment-protection regulation. The current Dutch system is quite complicated, and is regarded by OECD (1999) as one of the most cumbersome of all OECD countries. The National Action Plan of the Dutch Ministry of Social Affairs and Employment (2004) announced implementation of a number of steps aimed at removing obstacles in dismissal procedures. The Cabinet is considering reviewing the application of the *Lifo* principle (last in first out) in connection with the procedure for business economic dismissal. The Cabinet also announced that the imputability test in the unemployment benefit system ought to be reviewed in order to counter the pro forma dismissal procedures currently in practice. The reason behind this test is that workers that are dismissed through their own fault are not eligible for unemployment insurance. Also under discussion is simplification of the "dual system of dismissal" regulation, whereby firms can choose between going through a lengthy procedure at the Centre for Work and Income (CWI) and going to court (with higher chances of success, but also higher severance payments). In the process of adjusting the employment-protection regulation, the Dutch government has encountered opposition from the trade unions (see Klaassen, 2005). The unions are willing to discuss simplification of the employment-protection regulation, but not the reduction of employment protection by shutting down the CWI procedure or dismissal of the *Lifo* principle that protects workers with long tenure. My analysis has shown that workers' job satisfaction depends only to a minor extent on their satisfaction with job security. I may therefore conclude that there is little reason for trade unions to be overly concerned about the level of employment protection. Aiming their resources at the improvement of working conditions— after job content the most important job aspect, according to my analysis— might be more cost effective.

In 1999, the Dutch government implemented a major policy change regarding employment protection by introducing the Flexibility and Security Act. This act had two aims: to increase opportunities for employers to use flexible and temporary labour, and to increase employment rights of the flexible workforce. The Netherlands is currently one of the OECD countries with the least stringent regulation on temporary forms of employment (OECD, 2004). The results in this paper show that workers in fixed-term and on-call work arrangements, although less satisfied with their job security, are generally as satisfied with their jobs as when they have regular work arrangements. Only agency workers are less satisfied. This cannot be fully attributed to their lack of job security, but is due mainly to the fact that they are less satisfied with the content of their work.

To get an impression of the development of job satisfaction of workers in contingent-work arrangements since the introduction of the Flexibility and Security Act, I calculated the difference in overall job satisfaction between regular workers and workers in the other arrangements for each year in the dataset. Although some caution is required in causal interpretation, results in figure 2 indicate that overall job security of contingent workers did not increase after 1999. What stands out when comparing the development since 1999 is that on-call work has had negative job satisfaction results since that time, which it did not have beforehand. Regarding on-call work, the Flexibility and Security Act enhanced the legal

position of workers thus employed in a number of ways. It restricted the period during which the employer can fully shift the underutilisation risk to the employee. Before 1999, zero-hour contracts could last indefinitely. The employer did not need to pay the worker when there was insufficient work. Since 1999, zero-hour contracts are restricted to the first six months of the contract. From that moment on, employers must pay a worker even if there is insufficient work. The amount of payment depends on the average number of hours the worker was called on during the three preceding months. Another feature introduced by the Flexibility and Security Act is the minimum payment of three hours. Even if the actual duration of the call does not exceed two hours, a worker should be paid three hours' wage. Finally, the Act removed the legally doubtful existence of an employment contract in some cases of on-call work. It states that a worker who worked at least 20 hours per month for three months presumptively has an employment contract. De Graaf-Zijl (2005b) already showed that these adjustments reduced the attractiveness of on-call work for employers and led to a significant reduction in the use of on-call work between 1997 and 2002 and to reduction of the wages of on-call workers. Figure 5.2 shows that it did not increase the job satisfaction of workers in these arrangements. Again this indicates that improvement of job security does not automatically lead to higher job satisfaction.

Figure 5.2 Development of relative job satisfaction compared to regular workers by type of work arrangement



5.6 Summary and conclusion

Job satisfaction is a weighted average of satisfaction with several aspects of a job, such as job content, wage and job security. This chapter analysed it as such and determined the weights of the job aspects. I found that satisfaction with job content is the main determinant of job

satisfaction. All other aspects are comparatively less important in overall job satisfaction. On average, a worker weighs the remaining aspect satisfactions in the following order of importance: working conditions, working hours, wage, working times, commuting distance and job security.

All job aspect satisfactions can be explained from observed job and personal characteristics. Some relations hold for every aspect in more or less the same way. A decline in health, for instance, is associated with a less satisfaction with practically every job aspect. Also the tenure profile is quite universal. When starting afresh in a new job, a workers values all aspects higher than he does in the same job after a few years. This decline either continues until retirement or has its minimum after at least 15 years. We may thus conclude that job satisfaction decreases as people work in the same job for more years. Another rather general finding concerns the previous labour market situation. When an individual was unemployed before he started working in the current job he is less satisfied with most of its aspects. This might reflect his inferior bargaining position at the start of the job, which causes the job to fall short of his ideal. Also outside options determine more than one job aspect satisfaction. The more outside options a worker has, the less satisfied he will be with his wage, but the more satisfied he will be with job security he is.

Other aspects influencing job-aspect satisfactions are typical for the job aspect under consideration. Satisfaction with job content relates more to function level than to function type. Workers are least satisfied on the lowest function levels, and most satisfied on the intermediate levels. The highest function levels occupy an intermediate position. Satisfaction with working conditions is determined mostly by the availability of training. Also appreciated is the availability of childcare facilities and employer-provided sports facilities. Having a company car or lease car does not significantly influence this aspect-satisfaction. Not surprisingly, satisfaction with working hours is determined mainly by the actual working hours. Both men and women are most satisfied with their working hours if they work around 15 hours a week. Thus, the division of women into part-time jobs and men into full-time jobs does not seem to be related to satisfaction. Wage satisfaction is determined mostly by the (monthly) wage, the difference in wage level with the reference group and the share of the wage in household income. Satisfaction with working times is explained very poorly, because the data contain no information on occurrence of irregular working hours, working weekends or night shifts, overtime or the beginning and ending times of a regular working week. The worst years, from a business-cycle point of view, are those resulting in the highest satisfaction levels. Several explanations for this finding can be put forward. In insecure times, people may be happy just to have a job. People have fewer outside opportunities, which makes them more content with what they have. Another factor is that work overload might be smaller if business is worse. Satisfaction with commuting distance is the job-aspect satisfaction that is best explained from observed variables. Not surprisingly, it depends mainly on actual commuting distance. As distance increases, satisfaction drops substantially. Moreover, situations in which individuals have no fixed working place are experienced as satisfaction-diminishing job characteristics. Obtaining an employer-provided car, having children and working more hours per week make larger commuting distances less burdensome. Finally, satisfaction with job security is mainly determined by the type of employment contract. On-call work, fixed-term contract work and agency work all lead to lower satisfaction with job security. This holds on average, although some circumstances

(high share in household income) aggravate it, whereas others (working more hours per week, having children, more shortages on the labour market) diminish it.

This chapter focussed specifically on the relation between job (aspect) satisfaction and employment contract types. Results show that individuals weigh job aspects differently when working on on-call or agency contracts than when regularly employed. Commuting distance is much more important if someone is working as temp agency or on-call worker. Wage satisfaction has practically no weight at all in these jobs. And for on-call workers satisfaction with job security has a much larger weight than in other jobs. Apart from different weights attached to job aspects, employment contracts influence satisfaction with job aspects as well. Most importantly, since job content is the main determinant of overall job satisfaction, agency work results in less satisfaction with job content. Agency work also differs from the other arrangement in that it is associated with higher satisfaction with working conditions, higher satisfaction with working times and lower satisfaction with job security. In sum, agency work results in a lower overall job satisfaction than the other work arrangements. Agency work is the only arrangement for which this holds. The overall job satisfaction of fixed-term and on-call work arrangements does not differ significantly from regular employment. Nevertheless they do differ on some aspects. When employed in a fixed-term work arrangement, an individual is more satisfied with working conditions and wage and less satisfied with job security than regular workers. When working fixed-term a worker is more satisfied with his wage than he would be if he were to receive the same wage in a regular job. On-call work is mainly different with respect to working hours, with diminished satisfaction with working hours, which are typically fluctuating and uncertain under this type of contract. This also results in a lower satisfaction with job security.

The fact that both fixed-term and on-call work arrangements do not lead to lower overall job satisfaction, although they lead to considerably lower satisfaction with job security indicates that job security is not a main concern to employees. Also, the low satisfaction of agency workers is mainly due to their dissatisfaction with the content of their work and their lack of job security plays only a minor role. This leads me to conclude that trade unions need not be overly concerned about the level of employment protection. Aiming their resources at the improvement of working conditions – after job content the most important job aspect according to my analysis – might be more cost effective. Also, the fact that since 1999 job satisfaction of on-call workers has decreased relative to regular workers (while their job security was increased significantly by a policy change) indicates that job security is of secondary importance for employees.

Chapter 6

6 The attractiveness of temporary employment for employers[24]

6.1 Introduction

Temporary work arrangements offer potential ways to avoid adjustment costs and as such represent an option value to the firm (see Foote and Folta, 2002). Severance payments are nonexistent for temporary contracts. And temporary work agencies reduce search costs by providing workers instantaneously. As such, they may help increasing the speed of adjustment of the workforce to economic shocks and thus the speed of adjustment of the overall economy.

A whole series of literature investigates the consequences of firing costs on employment. As I have shown in chapter 2, these have shown mixed results. In this chapter I measure the influence of adjustment cost on the hiring decisions of employers. I focus on adjustment costs that are reduced by temporary employment. Overall, adjustment costs include (see Hamermesh and Pfann, 1996):

- Search costs (advertising, screening and processing new employees);
- Costs of training new employees (including disruptions to production as previously trained workers' time is devoted to on-the-job instructions of new workers);
- Overhead cost of the staff dealing with worker recruitment and worker outflow;
- Severance pay and cost caused by mandatory advance notice periods (firing costs).

Temporary employment can be divided in a broad range of contracts, such as direct hire temporary work (fixed-term contracts), temporary agency work, on-call work, freelance work and contract work. Each of these contracts influences one or more of the adjustment costs mentioned above. In this chapter I estimate employers' willingness to pay for these characteristics of the work arrangements. Also, I determine which work arrangements are attractive for which type of vacancies and for which type of employers.

I apply conjoint analysis to estimate the importance of several adjustment costs. Conjoint analysis uses profiles of 'products' - in my case employment contracts - which differ on several attributes. The attributes discern employment contracts from each other. The

[24] This chapter is based on De Graaf-Zijl (2005a). Randstad Holding NV provided the funding for the data collection.

attributes are either implicit or explicit adjustment costs. Each respondent is shown ten profiles and is asked to indicate the attractiveness of the combination of attributes on the profiles, on a scale from 1-10. I use an orthogonal design of the profiles, to ensure maximum efficiency. Data were gathered among a sample of 1000 Dutch individuals that are all involved in the process of filling vacancies (e.g. company directors, divisional and departmental heads and HRM staff). I analyse the data using several estimation techniques and calculate the willingness to pay for the employment contracts' attributes. I analyse differences between industries, occupations, education levels, required work experience, small and large employers.

The outline of the chapter is as follows. In the next section I present some theoretical considerations. I determine how attributes of temporary employment contracts influence adjustment costs and what this implies theoretically for the attractiveness for (types of) employers. In section 6.3 I describe conjoint analysis in general and how it can be used as an empirical strategy to measure the attractiveness of the constituent characteristics of temporary employment contracts. Section 6.4 presents the data collection. Section 6.5 gives the estimation results, using different estimation techniques, and presents implicit prices of the attributes. In section 6.6 I show the consequences for the attractiveness of temporary employment contracts. I determine which elements make the contracts attractive and for which type of firms or vacancies they are most attractive. Section 6.7 concludes.

6.2 Theoretical considerations

Temporary work arrangements offer potential ways to avoid adjustment costs. A firm's adjustment costs consist of hiring costs, firing costs and quit costs. The total costs are determined by the amount of turnover and the (hiring, firing and quit) costs per worker. In this chapter I consider the attractiveness of different types of non-standard employment contracts. Each contract has some characteristics that influence a firm's adjustment costs. It is these characteristics that I am interested in. They consist of the contracting out of selection, the term of availability, the term of notice for employees, the provision of replacement in case of quits, the term of notice for employers, the severance payments, the duration of stay and the flexibility of working hours. In this section I discuss the theoretical effect of these elements on (adjustment) costs and therewith the theoretical attractiveness and theoretical willingness to pay for employers.

When faced with a vacancy firms can choose to organise a selection procedure themselves or contract the selection of the applicant out to an external agency.[25] The contracting out of the selection of applicants has two effects for employers. If the employer organises selection procedures himself, he incurs costs of advertising and screening and has to invest his own time in the selection procedure. Thus, hiring costs decrease when these activities are contracted out, which firms are willing to pay for.[26] On the other hand contracting out versus self-organised application procedures might affect the quality of the worker-firm match. Thus, contracting out might be either positive or negative for productivity, depending on who is better able to find the best match. Overall, it is uncertain

[25] E.g. temporary help agency, contract agency or recruitment agency.
[26] This is one of the reasons why there is a market for temporary help agencies.

whether employers prefer to select workers themselves or contract the selection out to an external party.

The term on which applicants are available influences hiring costs. The sooner a suitable applicant is available the shorter hiring procedures are. This means less of the employer's time is invested in the hiring procedure. Also the period of labour shortage is reduced if an applicant is available on short term. Both effects imply a reduction of the (explicit and implicit) hiring costs. This implies employers prefer shorter terms of availability which they should be willing to pay for.

The term of notice for employees influences quit costs. The shorter the employees' term of notice is, the higher is the probability that the firm experiences decreased productivity in the period between one worker quitting and the arrival of a new worker. This means that the implicit costs of quitting rise. Therefore, employers prefer longer terms of notice for their employees, so they can reduce the period of reduced productivity due to labour shortage. This implies firm are theoretically willing to pay for a longer term of notice for employees.

The period during which a firm experiences decreased productivity because one worker quits and another has not yet arrived can be considerable shorter if a replacement worker is provided. If an external party provides immediate replacement when an employee quits, quit and hiring costs decrease. This might be quite valuable to a firm, which accordingly is willing to pay for immediate replacement.4

The term of notice for employers is related to firing costs. The longer employers' term of notice, the higher the indirect costs of (reduced productivity during) dismissal procedures. So firing costs are higher, the longer the employers' term of notice is. Obviously, the same holds for the amount of severance payments, since these make up the direct cost element of firing costs. Not surprisingly, I state that employers prefer shorter notice periods and lower severance payments and are willing to pay for that.4

The duration of the period that a worker stays at the same employer reduces turnover, and therefore influences adjustments costs via the number of adjustments. The duration of stay might affect productivity as well. When firms invest more in workers who stay longer, as is shown in the literature (see Almeida-Santos and Mumford, 2004a and 2004b; Booth et al, 2002; Draca and Green, 2004), productivity is enhanced if tenure increases. On the other hand, productivity over the cycle is positively related to a shorter duration of stay, since firms have less superfluous personnel if natural attrition is higher. As a result it is theoretically uncertain whether employers prefer short or long durations of stay.

As Nickell (1978) already showed, employees' willingness to work overtime reduces the need to hire and fire in order to adjust the workforce to fluctuating product demand. Thus, flexibility of working hours reduces the amount of turnover and influences adjustment costs in that way and is valuable for employers.

Theoretically the impact of the abovementioned issues differs between types of firms. Firms operating in markets that experience high fluctuations in demand have a higher need to adjust their workforce and therefore have higher turnover than firms operating in more stable markets. Thus, the former are more sensitive to issues affecting hiring and firing costs. Furthermore, some production processes are more sensitive to the absence of a worker. As a result quit costs differ between firms. In firms that are sensitive in this respect, strategies that reduce the number of quits have more impact on costs and will therefore be more valuable

than in other firms. Likewise, when hiring costs are high, e.g. in occupations with shortages of labour supply, firms attach high value to strategies to reduce the need to hire. And a firm that generally has high turnover caused by quits is sensitive to strategies that reduce quit costs per quitter: employee's term of notice and replacement.

6.3 Conjoint analysis

In this chapter I measure the importance of adjustment costs in employers' hiring behaviour. I ask employers for the importance of several issues in their decision to hire new personnel. It is commonly known that self-explicative methods lead to socially acceptable or strategic – and thus biased – answers. Furthermore, if individuals choose between options that differ on several elements, asking them directly for the considerations on the basis of which they choose doesn't properly take into account the multi-dimensionality of the choice. It is better to let them make the actual choice. Therefore, when analysing preferences, conjoint analysis is often used. This method stems from marketing research and psychology, but is used in economics and sporadically in labour economics as well. A good example is Van Beek, Koopmans and Van Praag (1997). They use conjoint analysis to determine employers' preferences for characteristics such as gender, ethnicity, age, work experience, and unemployment history. De Wolf and Van der Velden (2001) use conjoint analysis in an employer recruiting setting as well. They study employers' selection behaviour to analyse the extent to which selection procedures differ between academic positions, focussing on the relative importance of general and specific competences.

The conceptual foundation of conjoint analysis arises from the consumer theory developed by Lancaster (1966). This theory assumes that utility is derived from the characteristics of products. A major implication is that the overall utility for a product can be decomposed into separate utilities for its constituent characteristics (Louviere, 1994). This implies that we can use the characteristics of products as arguments of the utility function. Conjoint analysis is used in marketing research to improve understanding of consumers' preferences for multi-attribute products. For instance, when introducing a new product the producer is interested in the relative importance of attributes of that product, such as technical specifications, colour, brand name, weight, package, price and so on. Using conjoint analysis one can infer implicit weights for each of the attributes.

In this chapter I perform conjoint analysis on employment contracts, with attributes such as firing costs, notice periods, term of availability and wage costs. This means that I analyse employer preferences, just as Van Beek, Koopmans and Van Praag (1997) and De Wolf and Van der Velden (2001). Traditionally conjoint analysis focussed on analysing consumer preferences. However, McFadden (1984) indicates that problems involving profit-maximizing firms can be analysed by methods paralleling the treatment of utility-maximizing consumers.

The typical conjoint question presents each respondent with a number of commodity descriptions or situations, which differ according to the attributes. Survey respondents are then asked to either rank the profiles according to desirability, rate their desirability, choose the most desirable profile or indicate whether they would accept each profiled product. The inclusion of price as one of the attributes is standard, and allows for the derivation of implicit prices of the attributes. Mackenzie (1993) empirically compared three different response

formats – ratings, rankings and binary choice – and argues rating provides informational efficiencies in econometric estimation over the other two response modes.

I have used a traditional conjoint question with rating response option. Data resulting from such a survey look as follows: *"On a scale from 1 (very undesirable) to 10 (very desirable) how would you rate an employee with the characteristics and wage costs listed below?"*

	profile 1	profile 2	profile 3	.	profile s
attribute 1	q_1^1	q_1^2	q_1^3	.	q_1^s
attribute 2	q_2^1	q_2^2	q_2^3	.	q_2^s
……..	.	.	.	.	.
attribute k	q_k^1	q_k^2	q_k^3.	.	q_k^s
price	p^1	p^2	p^3	.	p^s
rating	r^1	r^2	r^3	.	r^s

q=attribute level (characteristics), *p*=price (wage costs), *r*=rating

Standard analyses of conjoint rating proceed by regressing responses, often using OLS, on a linear function of the attributes: $r^{ij} = \alpha + \beta_1 q_1^i + ... + \beta_k q_k^i + \beta_p p^i + \varepsilon^{ij}$, where j is an individual and i is a profile. This implies that attribute levels (q^i) and price (p^i) are regressed on ratings. Technically the use of OLS leads to biased coefficients, since the ε^{ij} are not independent. Adding an individual specific term α^i removes this bias. Furthermore OLS estimation does not take into account the fact that ratings are bounded between 1 and 10. Therefore Roe, Boyle en Teisl (1996) use a tobit model. The difference with OLS is that it treats the ratings as censored at both ends of the rating scale. As OLS, the tobit model treats the ratings as a cardinal measure of utility. This requires an assumed transformation from ratings space to utility space, which carries the implicit assumption that the utility distance between each unit change in ratings is constant. A method that relaxes this last assumption is an ordered probit or logit model. In this model the ratings have no cardinal interpretation, that is, a rating of eight is not twice as far from a rating of six as a rating of seven.

It is also possible, assuming transitivity of preferences, to transform the ratings into rankings of the profiles and analyse the rankings. Boyle et al. (2001) show that it is possible to recode ratings to rankings and directly analyse the data using a random utility framework. Rank data can be analysed using a rank-ordered logit model. Rank order estimation exploits all rank information by implicitly assuming that each rank is made as part of a sequential random utility selection process. The alternative ranked first is assumed to have been chosen because it yields higher utility than the other alternatives. It is assumed that respondents repeat this random utility maximization with the remaining commodities. A censored, rank-ordered logit model, as used by Boyle at al. (2001) can be used to analyse the recoded ratings that include ties. Censored, rank-order logit accommodates instances where only partial orderings of the data are available, as is the case of ties in the ratings recoded to ranks. This modelling framework allows the researcher to avoid making subjective decisions of whether tied ratings should be assigned the higher or lower rank.

Irrespective of the econometric specification, estimated coefficients can be used to determine the marginal rate of substitution between attributes x and y ($MRS_{ab}=\beta_x/\beta_y$) and the marginal value (implicit price or "willingness to pay") of attribute x (β_x/β_p). Measures of

compensating variation (CV) between attribute levels *h* and *g* of attribute *x* can be simulated by: $CV_{h-g} = \frac{\hat{\beta}_x (q_h - q_g)}{\hat{\beta}_p}$.

6.4 Data

The data I use were gathered in August 2004[27] among 1000 Dutch individuals who by the nature of their employment position are involved in the process of filling vacancies. This includes company owners and directors (306), divisional and departmental heads (424), but also human resource managers or personnel and organisation staff (109) and some other senior personnel (161). Of the respondents 73 percent is male and 27 percent female. All respondents participate in the Interview/NSS Internet panel. People who participate in this panel fill in web-based surveys on a regular basis and get paid for it on the basis of the length of the survey. In this case respondents received 2 Euro for completing the questionnaire. A major advantage of the use of an Internet based survey is that it enabled me to give each respondent 10 randomly selected profiles out of a total set of 100 profiles. These 100 profiles were constructed in a way that guarantees orthogonality. That is, no linear relations existed between any of the 100 different profiles. Furthermore I used the restriction that each attribute level had to be used at least a minimum number of times on the 100 profiles. This minimum was determined using the formula $MIN_i = \frac{100}{m_i} * 0.8$, where m_i is the number of attribute levels for attribute *i*.

I asked respondents to describe a job opening within their firm. This vacancy was preferably open at the time of the survey. If there was no such job opening present, respondents were asked to describe a recently filled vacancy[28] or otherwise a vacancy that could occur in the (near) future. I asked for the type of job that this vacancy applied to, the minimum required educational level, the minimum required years of work experience, the number of hours per week that the vacancy applies to and the gross monthly wage that is usually paid to a worker who fulfils the minimum requirements. Table 6.1 gives an overview of the vacancies described by the respondents.

[27] This is a period during which the Dutch economy showed the first signs of recovery after the 2001-2003 recession. Obviously this might influence the results in this chapter, since employers' preferences might depend on the phase of the business cycle.

[28] I assume that respondents can separate the hypothetical questions that I asked of them from the characteristics of the applicant that was actually hired.

Table 6.1 Vacancies described by respondents

Characteristic	Share in sample	Share in vacancies in 2003 (source: Netherlands Statistics, CBS)
Required education level		
Low	0.27	0.30
Medium	0.36	0.41
High	0.37	0.29
Required experience		
None	0.30	
1 - 3 years	0.45	
4 - 5 years	0.22	
> 5 years	0.03	
Gross wage		
< 1000 Euro per month	0.15	
1000 – 1999 Euro	0.36	
2000 – 3000 Euro	0.28	
>3000 Euro per month	0.21	
Occupation		
Production personnel	0.17	
Administrative	0.11	
Sales	0.11	
IT	0.08	
Executive	0.08	
Health care and social work	0.07	
Education	0.06	
Catering	0.04	
PR, marketing, communication	0.04	
Transport	0.03	
HRM, P&O	0.03	
Call centre operator	0.02	
Research and development	0.02	
Logistics, purchase	0.02	
Agricultural	0.01	
Juristic	0.01	
Military	0.01	
Other	0.10	

Next, respondents were shown ten profiles of applicants, which they were asked to rate with a grade from 1 to 10. I explicitly stated that the applicant was sufficiently qualified in all profiles. These profiles consisted of nine attributes: contracting out selection, term of availability, term of notice employee, provision of replacement when quit, term of notice employer, severance payment, duration of stay, flexibility of working hours and wage cost.

Special attention was given to the best way to include the price attribute, i.e. wage costs. Van Beek (1993) argues one should be very careful with wage costs as price attribute on this type of profiles. Reason is that employers use wage costs to signal worker's quality. Therefore I have chosen to clearly state on top of the profile the gross monthly wage that this worker will be paid, together with the education level and the years of work experience. These issues did not vary. They were simply copied from the answers the respondents themselves gave when they were asked to describe the job opening. What varied on the profiles was the *mark-up* employers pay on top of the gross wage. It was explicitly stressed that wage costs are not the same as gross wages, and the difference between the two was explained in a pop-up ("wage costs exceed gross wages because as employer one needs to

pay social premiums, or because costs have to be paid to external agencies from which employees are hired"). In this way I hoped to disentangle wage costs from quality. As I will show later, I succeeded in this purpose. Respondents valued high wage costs as negative.

In order to prevent dominating or dominated profiles, the 'mark-up' was chosen to be representative for the attractiveness of the other attributes, such that a clearly very attractive profile would not be cheaper than a clearly unattractive one. For each profile I calculated an 'attractiveness' A, the sum of the rank of the attribute-scores. The mark-up was calculated as a function of A plus a random component:

$mark-up = \min + N\left(-\frac{A-\overline{A}}{\sigma_A} + rand(0,1) - 0.5\right) * \max$, where N is the standard normal distribution function and $rand(0,1)$ is a draw from a uniform distribution between 0 and 1. The maximum mark-up (max) was set at 50 percent and the minimum mark-up (min) at 0.

Also, special attention was given to balancing the answers. Different individuals may use different centering points on the scale 1-10. A person who starts with giving a high rating has less room left to give higher ratings for more attractive alternatives. In order to make respondents familiar with the response scale and to stabilize answers, I started each conjoint set with two warm-up profiles (see appendix 6.2). One of these profiles was (in my opinion) the worst combination of attribute levels and the other the best combination. These profiles were shown next to each other on the screen to make it possible for respondents to compare them. These profiles were not used in my analysis, they were just meant to give respondents a feeling of what is good and what is bad. Subsequently each respondent was given a random selection of ten profiles out of the hundred that I made in total. Respondents were asked to rate the attractiveness of these profiles on a scale from 1 to 10.

In addition to these conjoint questions, I asked respondents for background characteristics, such as firm size, industry, sensitivity to business cycle fluctuations and seasonal fluctuations, region, gender and function in the organisation. Table 6.2 gives an overview.

Table 6.2 Firm characteristics

Characteristic	Share in sample	Share in vacancies in 2004 (source: Netherlands Statistics CBS)	
Industry			
Agriculture	0.02		0.02
Manufacturing	0.07		0.08
Construction	0.02		0.06
Public utilities	0.01		0.003
Trade	0.13		0.17
Transport and communications	0.06		0.05
Hotels and catering	0.04		0.06
Financial service	0.05		0.05
Business services	0.19		0.24
Public administration	0.05		0.04
Health care and social work	0.12		0.13
Education	0.07		0.03
Culture and other service	0.14		0.06
Stability of product market			
Very – rather stable	0.31		
Intermediate	0.45		
Very – rather unstable	0.24		
Firm size			
1-9 employees	0.20	1-10 employees:	0.35
10-19 employees	0.09	10-100 employees:	0.32
20-49 employees	0.11	>100 employees:	0.33
50-199 employees	0.15		
200-499 employees	0.13		
>=500 employees	0.32		
Region			
Randstad (4 major cities)	0.15		0.20
West	0.33		0.32
North	0.08		0.06
East	0.22		0.17
South	0.21		0.25

6.5 Estimation results

Table 6.A1 (in appendix 6.1) gives an overview of the results using different estimation techniques. As discussed in section 6.2 several estimation techniques are used in the conjoint literature. In the first column of table 6.A1 I show the results of a standard OLS estimation. Next tobit results are presented that take into account that ratings are bounded between 1 and 10. The third column presents an ordered logit model, which relaxes the assumption of cardinal utility. The rank ordered logit model, presented in column 4 relaxes the assumption of measurable utility even further.

All methods presented in the first four columns of table 6.A1 are applied to a dataset with 10,000 observations, where the 10 observations per person are treated as independent observations. The basic assumption behind these estimation techniques is that the error term is (normally) independently distributed. However, the observations are clearly not independently distributed since each set of 10 ratings belongs to one and the same person. Ferrer-i-Carbonell and Frijters (2004) show that in analysing self-reported satisfaction

questions results are far more sensitive to the way multiple observations per individual are treated than to whether utility is treated as a cardinal or ordinal measure. To test whether this is also the case for conjoint data, I used panel data techniques that take into account that we have multiple observations per respondent. In the column 5 and 6 of table 6.A1 results of fixed effect and random effect analyses are presented. The coefficients of the random effects estimation, are practically the same as the fixed effect results. Nevertheless, the Hausman test rejects the absence of systematic differences ($\chi2(16)=42.62$). Also, I apply random effect variants of the tobit and ordered logit models These are presented in the last two columns of Table 6.A1. Comparing the random effects tobit model with the simple tobit model, the Wald test ($\chi2(16)=1731$) rejects the hypotheses that both models are the same.

Results from different estimation techniques do not seem to differ much and the economic impact of the differences is small. The only exception is the ordered logit model estimated with random effects. In that model all coefficients are smaller than in the other models, as a result of which the implicit prices and compensating variations are again similar to those calculated using the results of the other estimation techniques. For all other models, the coefficients are in the same order of magnitude and statistical significance hardly differs. The (methodological) conclusions can be summarised as follows:

- Generally the lower bound of a rating scale of 1-10 is experienced by respondents as a restriction (see appendix 6.2). Therefore Tobit estimation is preferred to methods that do not take the (upper and) lower bound into account. Nevertheless, even though the results are statistically different, in economic terms differences are small.
- Cardinal utility is a reasonable assumption. (Rank) ordered logit results differ little from the results of other estimation techniques. This is in accordance with findings from Ferrer-i-Carbonell and Frijters (2004) in their analysis of satisfaction data.
- Even though the Hausman test indicates fixed-effects analysis is preferred, in economic terms results are not sensitive to random versus fixed effect analysis.
- The linear specification is not a restriction. Non-linear terms, such as quadratics, log-linear specifications and cross terms of attributes were not found to be appropriate.

6.6 Contract attributes

In this section I discuss the empirical conclusions drawn from Table 6.A1. In Table 6.3 I present estimated implicit prices and compensating variations, calculated from the random effect tobit estimations.[29] These implicit prices and compensating variations give a concise overview of the relative importance of the attributes in employers' appraisal.

[29] In Table A2 I show the correlations between the ten profiles resulting from this estimation method. Correlations are small and do not appear to be systematic.

Table 6.3 Willingness to pay (WTP) and compensating variation (CV)

	WTP	CV in availability	CV in layoff cost per monthly wage per year worked
Availability (months, range in profile 0-5 months)	-0.037		0.6
Selection (reference: self)			
Recruitment agency	-0.135	3.7	2.3
Contracting company	-0.176	4.8	3.0
Temporary help agency	-0.193	5.2	3.3
Long term expectations (reference: employee likely to remain with you on the current level)			
Employee likely to become valuable experienced employee	0.025	-0.7	-0.4
Employee likely to leave for another employer soon	-0.470	12.7	8.0
Term of notice for employee (reference: 1 month)			
Employee cannot leave before the end of the contract	0.003	0.0	0.0
Term of notice 2 months	-0.007	0.2	0.1
No term of notice	-0.070	1.9	1.2
Replacement (reference: no replacement)			
Replacement immediately taken care of	0.087	-2.4	-1.5
Working hours (reference: only during fixed hours)			
On-call basis	0.186	-5.0	-3.2
Irregular working hours not a problem	0.195	-5.3	-3.3
Term of notice for employer (reference: 2 months)			
No term of notice	0.064	-1.7	-1.1
Immediate layoff at end of contract	0.047	-1.3	-0.8
Layoff cost (severance payment in monthly wage per year worked, range on profile 0-6 monthly wages)	-0.059	1.6	

Irrespective of the econometric technique, one attribute clearly dominates the others. The expected duration the applicant will work for the employer has by far the highest price elasticity. The magnitude of this effect might however be related to the way the attributed was measured on the profiles. As mentioned before, measuring this issue on a continuous scale would have had added value and made interpretation easier. As it is now we can see that leaving 'soon' lowers willingness to pay with 47 percent, equivalent to more than a year later availability and 8 extra monthly wages per year worked of severance pay. The impression that an applicant is likely to leave soon is considered to be a very unattractive feature. Theoretical predictions presented earlier were unclear. On the one hand a longer duration of stay leads to an increased need to dismiss those workers who stay longer if the tide goes down. On the other hand workers who remain longer might have a higher productivity and there are less disruptions of the production process because of the number of quits and replacement hires is lower. The outcome presented in table 6.3 indicates that the first (negative) effect is dominated by two other (positive) effects. The long-term expectations in a sense represent the importance of investment costs. A firm invests in a new employee in several ways, most notably by providing (firm-specific) human capital, but also by costs of advertisement, interviewing and doing the chapter work. These costs are associated with hiring a new worker, and are lost if the worker leaves the firm. They are irreversible. In making the decision to hire someone, an employer takes into account how long he expects him to stay. The firm pays him a wage below his productivity in order to recover costs spent. But if the worker leaves sooner than expected, it means a loss to the firm.

Employers have wrongly estimated the option value of the investment in the new worker, when the worker leaves too soon, i.e. before the irretrievable hiring costs have been earned back. As a result an employer will either pay a lower wage to an individual who is expected to leave soon[30], or not hire him at all. Comparing a worker who is likely to leave soon with a worker who is likely to remain for a long time on the current level, an average employer is willing to pay an extra 47 percent surplus on the wage for a worker of whom he has the impression that he will stay longer, which is substantial. Based on this finding I conclude that irretrievable hiring costs are substantial. Strikingly I find little difference in attractiveness between applicants with high probabilities to become valuable senior employees and applicants with high probabilities to remain working at the current level. Beforehand I had expected this difference to be valuable to employers. Apparently this is not the case. A possible explanation is that nowadays employers expect employees not to stay with them for more than a few years anyway and prefer to recruit senior personnel from outside their organisation instead of training them themselves.

Another important attribute has to do with flexibility of the worker within the firm (internal flexibility) resulting from flexibility of working hours. This too fits theoretical predictions. Employees' willingness to work overtime or irregular working hours reduces the need for hiring and firing and increases productivity. On-call work is an extreme example hereof. Someone who wishes to work only during fixed hours is considered a lot less attractive than someone who is prepared to make irregular hours. An employer is willing to pay an extra 19 percent on top of the wage for a temporary employee. There is little difference in attractiveness between being prepared to work irregular hours and being prepared to work only the hours that the employer needs, i.e. on-call.

A feature that is also very important for employers is the selection process. According to my theoretical considerations contracting out the selection of new employees could either increase or decrease labour costs. Contracting out lowers hiring costs, since advertising and screening costs disappear. The effect on productivity, through the quality of the worker-firm match, is theoretically uncertain. My estimation results show that contracting out the selection process is generally deemed unattractive. Even though selection does take a substantial amount of their time, employers highly value making their own selection. Alternative selections, irrespective whether they are performed by recruitment agencies, temporary help agencies or contract companies, are regarded as significantly less attractive than own selection. The implicit price shows that a penalty of 14-19 percent of the wage has to be accounted for if the employer cannot select the worker himself. This might be interpreted as a risk premium.

Organizing a selection procedure does take time. Especially since applicants are generally not available on as short a term as for example agency workers. In the meantime the firms' production is reduced because of labour shortage. Therefore it is not surprising, and in accordance with theoretical considerations, to find that employers value quick availability. On the profiles I included availability varying between zero and five months. For each month that the applicant is available sooner, an employer is willing to pay a 3.5 percent higher wage. Non-linear terms in availability were found not to improve the model fit.

Normally firms experience a disruption of their production process when a worker is absent, because of sickness or because he quits. Would replacement be provided in these

[30] Future research should focus on what is considered to be 'soon'. Including the number of months/years the worker is expected to stay can answer this question.

cases, something which is done by temporary help agencies, it would reduce quit costs and therefore be appreciated by employers. As table 6.3 shows, firms are willing to pay 9 percent on top of the wage for this service.

The impact of dismissal related costs is relatively insubstantial, even though their effect is statistically significant. As Bentolila and Bertola (1990) already stated, hiring costs are more important in hiring decisions than firing costs. As mentioned before, firing costs consist of direct and indirect costs. Direct costs are severance payments. The Netherlands has a rather complicated system of dismissal legislation. If the employer can show to the Centre for Work and Income (CWI) that a dismissal is legitimate he gets a so-called layoff permit, which means he does not have to pay any severance payment. A dismissal is legitimate in case of financial necessity, unsuitability or blameworthy behaviour of the employee. Nowadays less than half of all dismissals run through the Centre for Work and Income. Instead employers go to court. These procedures are shorter than the lengthy CWI procedures and chances of success are higher. However, judges do impose severance payments. These severance payments are related to the monthly wage. Generally a worker who is laid off receives one monthly wage per year of service. This may be higher or lower depending on who is to be blamed most (the employer or the employee) and is somewhat higher for workers aged over forty. On the profiles I stated – in accordance with current practises in the Netherlands – the number of months per year of service that employers would need to pay in case they needed to dismiss the worker that is currently applying for their vacancy. The range that I used varied from zero to six months per year of service. The implicit price calculated on the basis of the estimation results shows that per extra month wage paid per year of service the employer wants to have 6 percent lower wage costs, which is not far from actuarial neutrality. This means that in fact they let the worker pay for the privilege of receiving severance payments. This is in accordance with theoretical predictions by Lazear (1990).

The indirect component in firing cost is caused by the employers' term of notice and the length of dismissal procedures. Employers who decide a worker's productivity no longer exceeds wage cost, whether for person-related reasons or because of decreased product demand, have to continue paying this worker during the dismissal procedure and the term of notice. Currently employers' term of notice is related to job tenure. It is one month in case tenure is shorter than five years, two months for tenure 5-10 years, three months for tenure 10-15 years and four months for someone who works more than fifteen years at the same employer. On the profiles the term of notice for employers varied between no term of notice, 2 months notice or automatic layoff at end of contract. The estimated coefficient is statistically significant, but the impact is relatively small compared to the other attributes. For an extra month employers want to be compensated by 3 percent lower wage costs.

A shorter term of notice for employees increases quit costs. It is a factor of uncertainty on the employer side. In case no such term of notice is in place, employers constantly run the risk of disruptions in the production process. The longer the term of notice for the employee, the more time employers have to find suitable replacement. In the Netherlands all direct-hired workers have a term of notice of one month. On the profiles, employees' term of notice varied between no term of notice, 1 month, 2 months and not allowed to leave before the end of the contract. In accordance with my theoretical predictions, employers value the existence of a notice period for employees. Would employees have no term of notice, the employer would like to be compensated by 7 percent

of the gross wage. However, employers are indifferent between notice periods of one or two months or prohibition to leave until the contract ends.

Naturally, wage costs are important for employers too. As already mentioned, wage costs were included on the profiles as the gap between total employers' wage costs and gross wage. According to OECD (2004) compulsory social security contributions for Dutch employers in 2003 were 9 percent of the gross wage of an average employee without children and 5-7 percent for married average earners with children. Pension premiums, of about 13 percent (of which on average two thirds is paid by the employer), are not included in this figure, as are some other fringe benefits. All in all employers' wage costs are about 20 percent higher than employees' gross wages. This figure will differ between low paid and high paid workers. High paid workers generally receive more fringe benefits such as profit sharing, lease cars and better pensions arrangements. On the profiles the surcharge of wage costs over gross wages varied between zero and fifty percent. The higher wage costs compared to wages were, the less employers valued the profiles.

6.7 Firm characteristics

Several firm characteristics might be expected to influence the relative weights of the attributes of temporary work arrangements. This implies we expect some attributes to be more important in some firms than in others. In this section I compare theoretical expectations with empirical outcomes. A main conclusion is that empirical results show that firm characteristics matter only at the margin. Overall, conclusions are similar irrespective of firm type.

The main distinctive feature affecting adjustment costs is demand fluctuation. Some firms operate in environments more prone to fluctuations in demand than others. As a result these employers have a higher need for labour force adjustment: hirings will be high in one year and firings in another. This implies that in these firms costs are more sensitive to hiring costs and firing costs than other firms. Also they are theoretically less sensitive to changes in the number of quits, since these reduce the need to dismiss. In the survey I asked employers to indicate the volatility of the market they operated in, using a 5-point Likert scale. Table 6.A3 shows that indeed employers in more volatile markets attach less value to expected duration of stay. If these firms know they will need workers only for a short period of time, the fact that they leave soon is not problematic. Other issues do not differ statistically significant between both types of employers. Importance of hiring and firing costs-reducing strategies are predicted to differ based on theory, but are empirically found to have a similar effect on attractiveness for employers in both types of industries. This might have several causes. Respondents might have misunderstood the attribute scale of severance payment. Severance payments were stated in terms of monthly wages due at dismissal. This seems a pretty abstract notion, if it were not the regular way to determine severance payments used in court (currently approximately one month salary per year of service). Another possibility is that respondents misunderstood the question on demand fluctuations. Therefore I test for differences between industries based on self-reported industry.

Regarding industry public versus private markets is the key issue, since firms operating in private markets are more sensitive to business cycles. As a result I expect them to be more sensitive to hiring costs and firing costs and less sensitive to the duration of stay

(see above). Table 6.A4 shows results by industry, where education and health care/social sector are the (semi) public industries. In accordance with theoretical predictions, education is an exception with respect to (hiring cost affecting) long-term expectations. Only in education do respondents highly value prospects of valuable experienced employees. The perception that someone is likely to stay for a long time is not enough in this sector. The health care and social sector on the other hand, does not differ from the private sector in this respect. And again, firing costs are found to differ little and not systematic between public and private markets. Only in manufacturing severance payments are statistically significant.

With respect to firm size I theoretically expect hiring and quit costs to be lower in large firms. These firms generally have their own recruitment staff, which implies lower hiring costs per recruited worker. Quit cost are lower because it is easier to organise internal replacement. As a result theoretically small firms will attach more value to strategies reducing number of hires and quits. Attributes striking at this point are the duration of stay and flexibility of working hours. Results for small and large firms are shown in Table 6.A5. Predictions are not confirmed. Duration of stay and flexibility of working hours do not differ systematically by firm size.

6.8 Job characteristics

Not only firm characteristics are expected to affect the weight of attributes. Job characteristics might be influential as well. Required education and experience level for instance could be associated with higher hiring costs. And firm specific human capital might be more important in some occupations than in others. Tables 6.A6-6.A9 present results for these job characteristics.

The higher the education level, the higher hiring costs are. Therefore, I theoretically expect strategies that reduce hiring costs, i.e. duration of stay and flexibility of working hours, to be more important at higher function levels. Also, quit costs are higher for higher function levels, for the reason that it is harder to find replacement and the production process will be disrupted for a longer time. Table 6.A6 confirms that a higher required education level is associated with higher valuation of expected duration of stay, and especially the likelihood of becoming a valuable senior employee. For flexibility of working hours theoretical predictions are not confirmed. On the contrary, on-call working is appreciated more for lower education levels. Replacement is more valuable for occupations with lower required education levels. Again, this is not in accordance with theoretical predictions that strategies that reduce quit costs are more important for higher education levels. But it is common sense that workers at higher function levels are harder to replace, as result of which employers might distrust externally provided replacement for these higher levels.

Table 6.A7 presents results according to different levels of required work experience. Hiring costs are higher the more work experience is required, since experienced workers are harder to find. Also quit costs are higher, because these workers are harder to replace. So theoretically the more work experience is required the more value is attached to strategies reducing the number of hires and quits. Indeed table 6.A7 shows that it is highly appreciated if these workers are not likely to leave the firm soon. They are simply too valuable for that. Contrary to theoretical predictions, flexibility of working hours is more important in jobs where little experience is required.

Regarding occupation some occupations have more labour market shortages than others. This survey was held in 2004, when there were not many shortages on the labour market in general. Of the occupations mentioned in table 6.A8 only management and medical vacancies were hard to fill. This implies that these occupations experience higher hiring and quit costs than the others, as a result of which theory predicts duration of stay to be more important here. This prediction is not confirmed. Also, flexibility of working hours, theoretically predicted to be more important in these occupations, are not. What is clear is that these two occupations behave differently when it comes to contracting out the recruitment process in order to reduce hiring costs. The use of recruitment agencies is deemed an acceptable strategy for management functions, but not for medical personnel.

6.9 Temporary employment contracts

It is generally acknowledged that temporary and flexible types of employment have been created to escape from stringent employment regulation. Once the probation period has passed it is hard to dismiss workers on indefinite contracts in many countries and in the Netherlands as well. Procedures are time consuming and often severance payments need to be paid. Fixed-term contracts are often used as extended probationary periods, after which employees who perform on a satisfactory level are offered an indefinite contract. Also, fixed-term contracts are used for activities that are known in advance to last only for a certain period of time. Temporary agency workers (TAW), contract workers or freelance workers may be used for this reason as well. In this section I use the conjoint results to determine which aspects make temporary employment contracts more or less attractive for employers in different situations. Table 6.4 gives an overview of the characteristics of the contracts and how their characteristics influence their attractiveness.

Table 6.4 Contract characteristics and influence on appraisal compared to regular contract

	Contracting out selection	Term of availability	Term of notice employee	Replace-ment	Term of notice employer	Severance pay	Duration of stay	Flexibility working hours
Fixed-term						+	–	
TAW	– –	+	–	+	+	+	– –	
Contract work	– –	+	0		+	+	–	
Freelance			0		+	+	–	
On-call								++

+ = positive effect on appraisal
– = negative effect on appraisal
0 = difference has no effect on appraisal

Direct-hire fixed-term contracts differ relatively little from indefinite contracts. The main difference is that no severance payments and dismissal procedures are due at the end of the contract. Goux et al. (2001) show that hiring fixed-term workers is only slightly less difficult than hiring regular ones. Obviously, lower firing costs are the reason why these contracts are used, either for screening purposes or to absorb shocks in workload. As a result it is

unsurprising that fixed-term contracts are valued highest in industries that are sensitive to business cycle fluctuations such as manufacturing, for production, administrative and management personnel. Were the lower firing costs the only difference between fixed-term and regular workers, then employers would be willing to pay an employee who works on a fixed-term contract 6 percent more than the same employee on an indefinite contract. This is not what we find in wage analyses; the literature usually finds a negative wage effect of fixed-term contracts (see e.g Booth, Francesconi and Frank, 2002; Hagen, 2002, McGinnity and Mertens, 2004; Addison and Surfield, 2005). Clearly this means that firing costs are not the only difference. In terms of the analysis, it is the duration of stay that causes another difference. The duration of stay of workers hired on fixed-term contracts is generally shorter than for regular workers, especially when used to absorb shocks. Therefore it is also unsurprising that several authors have found fewer training investments in temporary workers compared to regular workers (e.g. Almeida-Santos and Mumford, 2004a and 2004b; Booth et al, 2002; Draca and Green, 2004): the pay back period is shorter. When used for screening purposes, a fixed-term contract is usually explicitly contracted with the intensity to become permanent at the end of its term, if both parties are satisfied. In that case, expected duration is not so much shorter than for workers who work on an indefinite contract from the start, and thus it is not the reason for lower valuation and payment in that case. But screening is often the result of uncertainty about the worker's ability, which results in a risk deduction on the wage (see chapter 4).

Temporary agency work (TAW) differs from regular contracts on many aspects. Some aspects make them attractive to employers, others unattractive. Attractive features are the direct availability of workers, replacement, no notice period for employers and no severance payments. Unattractive is the fact that selection is performed by the agency, the absence of notice period for workers and the limited duration of the stay. Generally agency workers form no long-term relations with their employer, even though some 15 percent of agency workers eventually find a regular job at one of their employers (Ecorys-Nei, 2003). This is the main reason why agency work is not attractive for an average vacancy, but only in specific cases. E.g. when little firm-specific human capital is involved, as was already indicated by Davis-Blake and Uzzi (1993) and discussed by Matusik and Hill (1998). This is in accordance with my simulation results based on characteristics of the contract. These indicate that agency work is most attractive for employers seeking production personnel and least attractive for employers looking for IT and medical staff. This coincides with the finding that agency work is more attractive for low educated jobs than for jobs requiring a high education level. Similarly they are more attractive for jobs requiring no experience than for vacancies demanding more work experience. Looking at firm characteristics, my simulations reveal that based on its characteristics agency work is valued higher in firms that experience high fluctuations in demand. A fact that is not surprising and was already found by Davis-Blake and Uzzi (1993) for the US. Furthermore, agency work is most attractive in the service sectors and least attractive in the health care industry. Large firms are more attracted to the characteristics of agency work than small firms.

Contract work resembles agency work in many aspects. On the attractive side: workers are directly available, no severance payments are due and the employer has no term of notice. On the negative side, selection is contracted out to a contract company, and the duration of stay is short, even though contracting work generally has a longer duration than agency work. Contracting is often used for specific purposes, if a worker has specific

knowledge that a firm needs for a short time. That makes this contract type not very attractive for regular vacancies. As already indicated by James (1998), task involving firm-specific human capital are more likely to be fulfilled by direct-hired employees than by contract workers. My simulations based on the contract's characteristics indeed indicate that contracting is more attractive in case higher education and more experience are required. Employers looking for production personnel or shop assistants do not value the characteristics of contract workers, but those recruiting for management or IT functions do. Regarding firm characteristics, the simulations reveal that contracting is more attractive in sectors susceptible to fluctuations in demand. It is most attractive in the service sectors but least attractive in manufacturing or trade. Small firms are more susceptible to the positive aspects of contracting than large firms.

Freelance workers are independent contractors that are usually hired by firms to perform specific tasks. Positive aspects of freelance contracts for employers are the absence of severance payments and term of notice. Nevertheless, these workers too are temporarily passing through the firm, as a result of which pay back periods for irretrievable hiring costs are short. So for an average vacancy freelance work is not attractive. As contracting, the characteristics of freelance work make it relatively attractive for IT and management functions. But contrary to expectations it is more attractive in cases where little experience is needed. It is more attractive for employers in unstable environments. However, it is also relatively attractive in education, where in practise freelance employment is not used so often, even though it does exist. It is mostly used in private education, not funded by the government, which is a minor part of the Dutch education system (Burger et al, 2004).

On-call work is attractive because it supplies the valued working hours flexibility to employers. According to my simulations employers are willing to pay an extra 18 percent on top of the wage for this feature. De Graaf-Zijl (2005) shows that indeed on-call workers receive a wage premium. As shown in Table 6.3, employers have however little preference for contracts on an on-call basis relative to other workers who are willing to work irregular hours. Since many workers on the other contracts – both regular and temporary ones – are willing to work irregular hours, the wage premium is in practise lower than 18 percent. On-call work is most attractive in sectors that experience high fluctuations in demand, in service sectors and education, in large firms, for low educated jobs requiring no experience.

6.10 Conclusions and discussion

This chapter estimated the relative importance of several implicit and explicit adjustment costs in the hiring decisions of employers. My empirical analysis focussed on the attractiveness of standard versus non-standard employment contracts as instruments to reduce adjustment costs. Each contract consists of a number of constituent characteristics that influence adjustment costs, either by reducing the amount of turnover or by minimising the turnover costs— hiring-, firing- or quit costs— per worker. I estimated employer willingness to pay for each of these characteristics. The results of the empirical analysis indicate that strategies that reduce turnover and (potentially) increase productivity are much more important than strategies to reduce hiring-, firing- and quit costs per worker.

The expected duration that a new worker will stay at the firm was found to be the main determinant for attractiveness to employers. Employers are willing to pay an extra 47

percent on top of the wage for someone who is likely to remain for some time instead of leave soon, which is equivalent to waiting more than a year longer until an applicant is available. A longer duration of stay is the main turnover-reducing strategy available. Another strategy, flexibility of working hours, was also found to be of major importance in employer choices. Why would employers find these strategies so attractive? The most obvious explanation: irretrievable hiring costs are substantial. In addition to search-, advertisement- and screening costs, training costs may be the most important. If these costs per worker are substantial, a firm has two options: Either reduce hiring costs per worker or reduce the number of times these costs need to be made. The empirical results show that employers prefer the latter strategy to hiring-cost-reduction strategies such as the contracting out of advertisement and screening.

Temporary contracts do not reduce turnover, but enhance it. The attractive feature of temporary-work arrangements is that they reduce firing costs, and some arrangements also reduce hiring- and quit costs per worker. Reduction of firing costs is the main raison d'être for many temporary-employment contracts. The entire range of temporary contracts shares the common benefit of avoiding dismissal procedures and severance payments. Compared to the turnover-reduction strategies, firing costs were found to be of minor importance in the hiring decisions. Employer willingness to pay for avoiding severance payment was estimated as 6 percent, which is nearly actuarially neutral and implies that firms let workers pay for the privilege of receiving severance payments. My results show that the less attractive features of the alternative contracts, such as the shorter duration of stay and the contracting out of the selection process, in most cases overshadow the positive aspects of reduced firing- and/or hiring costs.

This is in accordance with the finding that indefinite contracts are still the rule on the Dutch labour market. According to data from Netherlands Statistics and the Ministry of Social Affairs and Employment, 6 percent of employees works on-call or as agency worker and 15 percent has a fixed-term contract (see de Graaf-Zijl, 2005b). Especially since there is some overlap between these categories, these numbers imply that by far the major share of workers has a regular contract. The majority of new hires are on fixed-term contracts. It should be noted that these are mainly fixed-term contracts designed to convert into open-ended contracts after a certain period, mostly one year (Bekker et al., 2005, p. 48). This corresponds with the empirical results in this chapter. These contracts have the advantage of low dismissal costs, but do not have the disadvantage of a short duration of stay that is related to most temporary contracts. We have to keep in mind that in my analysis respondents had the current situation in mind, that is a situation where permanent and temporary contracts coexist. It is therefore dubious to draw conclusions on preference for a completely different system of labour market regulation.

Results indicated that some temporary-work arrangements are more attractive in some situations than in others. Fixed-term contracts are valued most in industries that are sensitive to business-cycle fluctuations such as manufacturing— for production-, administrative- and management personnel. The fact that these fixed-term contracts are more attractive for firms in fluctuating markets implies that the contracts are used not only as screening devices (as is suggested in some theoretical model such as Blanchard and Landier (2002)), but also as a way to accommodate to fluctuations in demand. This conclusion is in line with those of Hagen (2001) for Germany. Temporary-agency workers do not form long-term relations with their employer, which is the main reason why agency work is unattractive for an average

vacancy, but only in specific cases (e.g. when little firm-specific human capital is involved). Another negative aspect of agency work is that employers dislike contracting out the selection of their workers. This explains why direct-hire fixed-term contracts are more popular among employers than agency- and contract workers. My results show that agency work is most attractive for employers seeking production personnel for low-educated jobs requiring no experience, in businesses with high fluctuations in demand. Large firms are more attracted to the characteristics of agency work than small firms. Contract work is often used for specific purposes, if a worker has specific knowledge that a firm needs for a short time. This contract type is not very attractive for regular vacancies. Contracting is more attractive when higher education and more experience are required, for management or IT functions in the service sectors that experience many fluctuations in demand. Small firms are more susceptible to the positive aspects of contracting than are large firms, which seems logical because small firms are bound to experience more situations in which they will need specific knowledge that they do not have in-house. Freelance work, like contracting, is relatively attractive for IT and management functions. Surprisingly, however, it is also relatively attractive in cases where little experience is needed and in education, where freelance contracts are not used so often in practise, although they do exist in private education. On-call work is, as expected, most attractive in sectors that experience high fluctuations in demand, in service sectors and education, in large firms, for low-educated jobs requiring no experience. However, regular personnel that are willing to work flexible hours are as attractive as on-call workers in most cases.

Appendix 6.1 Table 6.A1 Estimation results of conjoint data using different estimation techniques

	OLS	Tobit	Ordered logit	Rank order logit	Fixed effect	Random effect	Tobit (random effects)	Ordered logit # (random effects)
Availability (in months, range 0-5 months)	-0.139**	-0.145**	-0.125**	-0.104**	-0.107**	-0.112**	-0.113**	-0.070**
	(0.048)	(0.051)	(0.044)	(0.035)	(0.039)	(0.038)	(0.041)	(0.026)
Selection (reference: self)								
Recruitment agency (0-1)	-0.398**	-0.411**	-0.396**	-0.346**	-0.398**	-0.398**	-0.414**	-0.222**
	(0.054)	(0.057)	(0.050)	(0.039)	(0.043)	(0.043)	(0.046)	(0.029)
Contracting company (0-1)	-0.500**	-0.514**	-0.511**	-0.448**	-0.524**	-0.520**	-0.538**	-0.286**
	(0.072)	(0.077)	(0.067)	(0.052)	(0.058)	(0.058)	(0.062)	(0.039)
Temporary help agency (0-1)	-0.512 **	-0.524**	-0.540**	-0.544**	-0.584**	-0.574**	-0.588**	-0.299**
	(0.084)	(0.090)	(0.078)	(0.060)	(0.068)	(0.067)	(0.071)	(0.045)
Long term expectations (reference: employee likely to remain with you on the current level)								
Employee likely to become valuable experienced	0.041	0.036	0.063	0.096*	0.080	0.074	0.076	0.030
employee (0-1)	(0.057)	(0.061)	(0.053)	(0.040)	(0.046)	(0.046)	(0.048)	(0.030)
Employee likely to leave for another employer	-1.360**	-1.422**	-1.293**	-1.212**	-1.368**	-1.367**	-1.432**	-0.740**
soon (0-1)	(0.051)	(0.054)	(0.048)	(0.039)	(0.041)	(0.041)	(0.043)	(0.028)
Term of notice for employee (reference: 1 month)								
Employee cannot leave before the end of the	0.019	0.024	-0.008	0.001	0.006	0.008	0.008	-0.007
Contract (0-1)	(0.068)	(0.073)	(0.063)	(0.049)	(0.055)	(0.054)	(0.058)	(0.036)
Term of notice two months (0-1)	-0.053	-0.050	-0.076	-0.034	-0.023	-0.027	-0.022	-0.035
	(0.059)	(0.063)	(0.054)	(0.042)	(0.047)	(0.047)	(0.050)	(0.031)
No term of notice (0-1)	-0.248**	-0.250**	-0.280**	-0.245**	-0.197**	-0.204**	-0.212**	-0.144**
	(0.064)	(0.069)	(0.060)	(0.047)	(0.052)	(0.052)	(0.055)	(0.034)
Replacement (reference: no replacement)								
Replacement immediately taken care of (0-1)	0.207**	0.212 **	0.219**	0.261**	0.260**	0.253**	0.267**	0.122**
	(0.044)	(0.047)	(0.041)	(0.032)	(0.035)	(0.035)	(0.038)	(0.023)
Working hours (reference: only during fixed hours)								
On-call basis (0-1)	0.521**	0.542**	0.513**	0.488**	0.554**	0.549**	0.567**	0.296**
	(0.061)	(0.065)	(0.056)	(0.045)	(0.049)	(0.049)	(0.052	(0.033)
Irregular working hours not a problem (0-1)	0.548**	0.573**	0.535**	0.529**	0.573**	0.569**	0.594**	0.311**
	(0.054)	(0.058)	(0.050)	(0.040)	(0.044)	(0.043)	(0.046)	(0.029)
Term of notice for employer (reference: 2 months)								
No term of notice (0-1)	0.137	0.142	0.130	0.178**	0.193**	0.185**	0.195**	0.078
	(0.087)	(0.093)	(0.081)	(0.062)	(0.070)	(0.070)	(0.074)	(0.047)
Immediate layoff at end of contract (0-1)	0.173*	0.187*	0.155*	0.130*	0.129*	0.153*	0.144*	0.096*
	(0.080)	(0.086)	(0.075)	(0.057)	(0.064)	(0.064)	(0.069)	(0.043)
Layoff cost (severance payment in monthly wage per	-0.166**	-0.168**	-0.179**	-0.172**	-0.175**	-0.174**	-0.179**	-0.101**
year worked, range 0-6 months)	(0.058)	(0.062)	(0.054)	(0.041)	(0.047)	(0.047)	(0.050)	(0.031)
Wage cost – gross wage (gap in percentage, range 0-	-2.614**	-2.672**	-2.679**	-2.930**	-3.013**	-2.957**	-3.047**	-1.488**
50%)	(0.429)	(0.459)	(0.397)	(0.311)	(0.346)	(0.345)	(0.367)	(0.230)
Intercept	6.629**	6.612**	-	-	6.651**	6.648**	6.648**	-
	(0.196)	(0.210)			(0.159)	(0.162)	(0.173)	

** = statistically significant at 99% confidence level

* = statistically significant at 95% confidence level

#: estimated with GLLAMM procedure in Stata 8 (without adaptive quadrature)

Table 6.A2 Correlation between residuals of profiles 1-10

	e_1	e_2	e_3	e_4	e_5	e_6	e_7	e_8	e_9	e_{10}
e_1	1.000									
e_2	0.478	1.000								
e_3	0.384	0.485	1.000							
e_4	0.352	0.425	0.446	1.000						
e_5	0.356	0.425	0.416	0.461	1.000					
e_6	0.342	0.435	0.399	0.440	0.447	1.000				
e_7	0.328	0.429	0.408	0.442	0.403	0.487	1.000			
e_8	0.332	0.382	0.414	0.422	0.426	0.408	0.463	1.000		
e_9	0.281	0.328	0.379	0.407	0.403	0.417	0.439	0.519	1.000	
e_{10}	0.289	0.320	0.375	0.376	0.350	0.443	0.406	0.436	0.500	1.000

Table 6.A3 Results (random effect tobit) by sensitivity to business cycle (standard deviation in parentheses)

	Not or hardly sensitive to business cycle	Very or rather sensitive to business cycle
Availability (in months, range 0-5 months)	-0.178*	-0.081
	(0.075)	(0.085)
Selection (reference: self)		
Recruitment agency (0-1)	-0.462**	-0.409**
	(0.084)	(0.094)
Contracting company (0-1)	-0.648**	-0.450**
	(0.112)	(0.128)
Temporary help agency (0-1)	-0.650**	-0.554 **
	(0.131)	(0.148)
Long term expectations (reference: employee is likely to remain with you on the current level)		
Employee likely to become valuable experienced employee (0-1)	0.255**	0.225*
	(0.089)	(0.101)
Employee likely to leave for another employer soon (0-1)	***-1.474***	***-1.132***
	(0.079)	***(0.090)***
Term of notice for employee (reference: 1 month)		
Employee cannot leave before the end of the contract (0-1)	0.177	0.064
	(0.107)	(0.148)
Term of notice two months (0-1)	0.126	0.019
	(0.090)	(0.105)
No term of notice (0-1)	-0.251*	-0.020
	(0.099)	(0.114)
Replacement (reference: no replacement)		
Replacement immediately taken care of (0-1)	0.306**	0.298**
	(0.068)	(0.077)
Working hours (reference: only during fixed hours)		
On-call basis (0-1)	0.610 **	0.584**
	(0.096)	(0.109)
Irregular working hours not a problem (0-1)	0.589**	0.610 **
	(0.084)	(0.095)
Term of notice for employer (reference: 2 months)		
No term of notice (0-1)	0.200	0.225
	(0.136)	(0.153)
Immediate layoff at end of contract (0-1)	0.120	0.153
	(0.127)	(0.142)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 m.)	-0.192*	-0.197*
	(0.091)	(0.100)
Wage cost – gross wage (gap in percentage, range 0-50%)	-3.762**	-3.278 **
	(0.671)	(0.761)
Intercept	6.778 **	6.451 **
	(0.317)	(0.357)
	N=313	N=241

** = statistically significant at 99% confidence level bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%
* = statistically significant at 95% confidence level

Table 6.A4 Results (random effect tobit) by industry (standard deviation in parentheses)

	Business services	Other services	Trade	Manufacturing	Health care and social work	Education
Availability (in months, range 0-5 months)	-0.176	-0.141	0.068	-0.093	-0.133	-0.084
	(0.095)	(0.115)	(0.115)	(0.147)	(0.120)	(0.155)
Selection (reference: self)						
Recruitment agency (0-1)	-0.426**	***-0.252***	**-0.339****	***-0.160***	***-0.728****	**-0.666****
	(0.106)	(0.128)	(0.127)	(0.172)	(0.131)	(0.175)
Contracting company (0-1)	-0.605**	*-0.427***	-0.497**	*-0.356*	-0.605**	*-0.938***
	(0.144)	(0.173)	(0.171)	(0.230)	(0.174)	(0.221)
Temporary help agency (0-1)	-0.688**	-0.531**	-0.495**	-0.499*	-0.798**	-0.638**
	(0.164)	(0.194)	(0.197)	(0.266)	(0.205)	(0.267)
Long term expectations (reference: employee likely to remain with you on the current level)						
Employee likely to become valuable experienced employee (0-1)	0.037	**0.255**	0.059	*-0.105*	**-0.132**	**0.353***
	(0.114)	(0.132)	(0.132)	(0.191)	(0.140)	(0.175)
Employee likely to leave for another employer soon (0-1)	**-1.381****	**-1.233****	***-1.593****	**-1.654****	**-1.554****	***-1.069****
	(0.099)	(0.123)	(0.116)	(0.162)	(0.127)	(0.170)
Term of notice for employee (reference: 1 month)						
Employee cannot leave before the end of the contract (0-1)	-0.017	*0.225*	*-0.190*	-0.203	0.078	0.084
	(0.134)	(0.167)	(0.162)	(0.217)	(0.165)	(0.222)
Term of notice two months (0-1)	**-0.186**	**0.193**	-0.123	*-0.235*	-0.003	0.096
	(0.117)	(0.141)	(0.138)	(0.188)	(0.141)	(0.189)
No term of notice (0-1)	-0.200	*0.001*	-0.064	-0.396*	-0.256	*-0.466**
	(0.129)	(0.155)	(0.148)	(0.202)	(0.158)	(0.204)
Replacement (reference: no replacement)						
Replacement immediately taken care of (0-1)	***0.102***	*0.342***	***0.494****	0.326*	***0.043***	*0.391***
	(0.088)	(0.103)	(0.101)	(0.141)	(0.110)	(0.139)
Working hours (reference: only during fixed hours)						
On-call basis (0-1)	0.467**	0.659**	0.615**	0.507**	0.458**	0.409*
	(0.123)	(0.145)	(0.146)	(0.189)	(0.149)	(0.204)
Irregular working hours not a problem (0-1)	*0.421***	*0.705***	0.581**	0.497**	0.622**	0.452**
	(0.107)	(0.130)	(0.128)	(0.168)	(0.132)	(0.174)
Term of notice for employer (reference: 2 months)						
No term of notice (0-1)	0.486**	0.055	0.225	0.270	0.175	0.285
	(0.174)	(0.215)	(0.197)	(0.278)	(0.211)	(0.275)
Immediate layoff at end of contract (0-1)	0.232	0.160	0.298	0.020	-0.019	0.162
	(0.159)	(0.195)	(0.183)	(0.262)	(0.201)	(0.260)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 months)	-0.094	-0.171	0.028	-0.346*	-0.182	-0.089
	(0.117)	(0.138)	(0.134)	(0.186)	(0.144)	(0.186)
Wage cost – gross wage (gap in percentage, range 0-50%)	-3.455**	-3.443**	-2.294**	-3.903**	-1.961	-2.759*
	(0.860)	(1.038)	(1.020)	(1.312)	(1.058)	(1.348)
Intercept	7.005**	6.045**	5.982*	7.121**	7.004**	6.086**
	(0.396)	(0.498)	(0.469)	(0.619)	(0.514)	(0.677)
Number of observations	N=183	N=128	N=132	N=70	N=120	N=71

** = statistically significant at 99% confidence level bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%

* = statistically significant at 95% confidence level

Table 6.A5 Results (random effect tobit) by firm size (standard deviation in parentheses)

	1-10 employees	10-50 employees	50-200 employees	200-500 employees	>500 employees
Availability (in months, range 0-5 months)	-0.093	-0.049	0.050	-0.129	-0.233
	(0.095)	(0.105)	(0.113)	(0.134)	(0.172)
Selection (reference: self)					
Recruitment agency (0-1)	*-0.510***	-0.477**	-0.411**	*-0.176*	-0.288
	(0.105)	(0.120)	(0.126)	(0.145)	(0.192)
Contracting company (0-1)	-0.650**	-0.641**	-0.525**	-0.419*	-0.667**
	(0.144)	(0.163)	(0.166)	(0.193)	(0.263)
Temporary help agency (0-1)	-0.612**	-0.665**	-0.462**	-0.492*	-0.666**
	(0.168)	(0.189)	(0.198)	(0.216)	(0.360)
Long term expectations (reference: employee likely to remain with you on the current level)					
Employee likely to become valuable experienced employee (0-1)	0.052	0.144	-0.005	-0.145	0.070
	(0.115)	(0.124)	(0.138)	(0.156)	(0.204)
Employee likely to leave for another employer soon (0-1)	*-1.331***	*-1.608***	-1.378**	-1.387**	-1.265**
	(0.101)	(0.114)	(0.121)	(0.131)	(0.179)
Term of notice for employee (reference: 1 month)					
Employee cannot leave before the end of the contract (0-1)	-0.146	0.125	0.134	0.003	-0.136
	(0.138)	(0.145)	(0.163)	(0.178)	(0.248)
Term of notice two months (0-1)	-0.082	-0.028	0.116	-0.139	0.099
	(0.118)	(0.131)	(0.139)	(0.162)	(0.207)
No term of notice (0-1)	-0.152	*-0.397***	*-0.048*	-0.124	0.056
	(0.129)	(0.142)	(0.151)	(0.169)	(0.243)
Replacement (reference: no replacement)					
Replacement immediately taken care of (0-1)	0.319**	0.339**	0.133	0.293**	0.160
	(0.087)	(0.099)	(0.104)	(0.111)	(0.163)
Working hours (reference: only during fixed hours)					
On-call basis (0-1)	0.417**	0.384**	0.599**	0.575**	0.803**
	(0.124)	(0.138)	(0.150)	(0.156)	(0.220)
Irregular working hours not a problem (0-1)	0.467**	0.561**	0.594**	0.350**	0.740**
	(0.111)	(0.120)	(0.128)	(0.143)	(0.191)
Term of notice for employer (reference: 2 months)					
No term of notice (0-1)	*0.084*	*0.588***	0.217	0.153	0.095
	(0.177)	(0.195)	(0.206)	(0.237)	(0.312)
Immediate layoff at end of contract (0-1)	0.089	0.412*	0.261	0.016	0.082
	(0.162)	(0.178)	(0.189)	(0.230)	(0.276)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 months)	-0.221*	0.022	-0.235*	-0.105	-0.230
	(0.114)	(0.131)	(0.139)	(0.164)	(0.204)
Wage cost – gross wage (gap in percentage, range 0-50%)	-3.412**	-3.361**	-3.296**	-2.288*	-3.331**
	(0.852)	(0.960)	(1.016)	(1.149)	(1.598)
Intercept	6.058**	6.175**	6.375**	6.189**	6.449**
	(0.384)	(0.452)	(0.464)	(0.516)	(0.705)
Number of observations	N=202	N=168	N=79	N=66	N=121

** = statistically significant at 99% confidence level bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%

* = statistically significant at 95% confidence level

Table 6.A6 Results (random effect tobit) by minimum required education level (standard deviation in parentheses)

	Low	Medium	High
Availability (in months, range 0-5 months)	-0.076	-0.134*	-0.126
	(0.080)	(0.068)	(0.067)
Selection (reference: self)			
Recruitment agency (0-1)	-0.407**	-0.383**	-0.441**
	(0.089)	(0.076)	(0.075)
Contracting company (0-1)	-0.480**	-0.447**	-0.645**
	(0.122)	(0.102)	(0.100)
Temporary help agency (0-1)	-0.618**	-0.542**	-0.596**
	(0.139)	(0.119)	(0.116)
Long term expectations (reference: employee likely to remain with you on the current level)			
Employee likely to become valuable experienced employee (0-1)	*0.152*	**-0.067**	**0.155***
	(0.095)	(0.081)	(0.078)
Employee likely to leave for another employer soon (0-1)	**-1.263****	**-1.542****	-1.450**
	(0.083)	(0.072)	(0.071)
Term of notice for employee (reference: 1 month)			
Employee cannot leave before the end of the contract (0-1)	-0.044	0.106	-0.037
	(0.112)	(0.097)	(0.094)
Term of notice two months (0-1)	-0.066	0.033	-0.032
	(0.097)	(0.084)	(0.082)
No term of notice (0-1)	-0.125	-0.137	-0.336**
	(0.106)	(0.093)	(0.090)
Replacement (reference: no replacement)			
Replacement immediately taken care of (0-1)	**0.408****	*0.232***	**0.199****
	(0.073)	(0.062)	(0.062)
Working hours (reference: only during fixed hours)			
On-call basis (0-1)	***0.804*****	*0.577***	***0.379*****
	(0.102)	(0.086)	(0.086)
Irregular working hours not a problem (0-1)	0.701**	0.587**	0.518**
	(0.090)	(0.077)	(0.074)
Term of notice for employer (reference: 2 months)			
No term of notice (0-1)	0.055	0.180	0.287*
	(0.144)	(0.124)	(0.121)
Immediate layoff at end of contract (0-1)	0.153	0.194	0.068
	(0.133)	(0.114)	(0.112)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 months)	-0.186*	-0.185*	-0.177*
	(0.096)	(0.083)	(0.081)
Wage cost – gross wage (gap in percentage, range 0-50%)	-2.464**	-3.332**	-3.168**
	(0.715)	(0.609)	(0.596)
Intercept	6.137**	6.708**	6.982**
	(0.335)	(0.285)	(0.283)
Number of observations	N=264	N=354	N=368

** = statistically significant at 99% confidence level

* = statistically significant at 95% confidence level

bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%

Table 6.A7 Results (random effect tobit) by required work experience (standard deviation in parentheses)

	No experience required	One to three years experience required	Four or five years experience required
Availability (in months, range 0-5 months)	-0.186*	-0.082	-0.137
	(0.076)	(0.060)	(0.087)
Selection (reference: self)			
Recruitment agency (0-1)	-0.423**	-0.462**	-0.334**
	(0.085)	(0.068)	(0.097)
Contracting company (0-1)	-0.612**	-0.518**	-0.499**
	(0.114)	(0.091)	(0.132)
Temporary help agency (0-1)	-0.583**	-0.673**	-0.449**
	(0.130)	(0.106)	(0.154)
Long term expectations (reference: employee likely to remain with you on the current level)			
Employee likely to become valuable experienced employee (0-1)	*0.220**	0.065	*-0.076*
	(0.087)	(0.072)	(0.105)
Employee likely to leave for another employer soon (0-1)	**-1.399****	**-1.389****	**-1.625****
	(0.081)	(0.064)	(0.092)
Term of notice for employee (reference: 1 month)			
Employee cannot leave before the end of the contract (0-1)	*0.139*	0.035	*-0.161*
	(0.108)	(0.086)	(0.121)
Term of notice two months (0-1)	0.074	0.017	-0.157
	(0.093)	(0.074)	(0.106)
No term of notice (0-1)	-0.178	-0.163*	-0.345**
	(0.102)	(0.082)	(0.147)
Replacement (reference: no replacement)			
Replacement immediately taken care of (0-1)	0.371**	0.255**	0.262**
	(0.070)	(0.055)	(0.079)
Working hours (reference: only during fixed hours)			
On-call basis (0-1)	**0.728****	0.557**	**0.433****
	(0.097)	(0.078)	(0.111)
Irregular working hours not a problem (0-1)	**0.733****	0.594**	**0.452****
	(0.086)	(0.068)	(0.096)
Term of notice for employer (reference: 2 months)			
No term of notice (0-1)	0.279	0.217*	0.080
	(0.136)	(0.111)	(0.157)
Immediate layoff at end of contract (0-1)	0.212	0.174	-0.027
	(0.126)	(0.102	(0.146)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 months)	-0.132	-0.178*	-0.251*
	(0.091)	(0.074	(0.106)
Wage cost – gross wage (gap in percentage, range 0-50%)	-2.933**	-3.220**	-3.127**
	(0.675)	(0.543)	(0.781)
Intercept	6.193**	6.714**	7.189**
	(0.319)	(0.257)	(0.386)
Number of observations	N=291	N=444	N=291

** = statistically significant at 99% confidence level bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%

* = statistically significant at 95% confidence level

Table 6.A8 Results (random effect tobit) by occupation (standard deviation in parentheses)

	Administrative/ Secretarial	Technicians/ Production personnel	Shop assistant/ Sales personnel	Management function	IT personnel	Medical personnel
Availability (in months, range 0-5 months)	-0.135	-0.154	0.111	-0.027	-0.148	-0.089
	(0.097)	(0.116)	(0.126)	(0.143)	(0.143)	(0.152)
Selection (reference: self)						
Recruitment agency (0-1)	**-0.383****	**-0.419****	**-0.370***	***-0.076***	**-0.405****	***-0.883*****
	(0.109)	(0.133)	(0.136)	(0.161)	(0.158)	(0.167)
Contracting company (0-1)	-0.618**	-0.663**	-0.443*	-0.290	-0.426*	-0.531*
	(0.145)	(0.181)	(0.185)	(0.216)	(0.218)	(0.220)
Temporary help agency (0-1)	*-0.667***	-0.652**	-0.460*	*-0.180*	-0.649**	*-0.855***
	(0.166)	(0.214)	(0.217)	(0.240)	(0.244)	(0.264)
Long term expectations (reference: employee likely to remain with you on the current level)						
Employee likely to become valuable experienced employee (0-1)	0.062	*0.266*	*-0.100*	-0.024	*0.327*	*-0.134*
	(0.115)	(0.145)	(0.148)	(0.170)	(0.171)	(0.172)
Employee likely to leave for another employer soon (0-1)	-1.496**	-1.476**	-1.463**	-1.581**	-1.323**	-1.324**
	(0.101)	(0.128)	(0.128)	(0.153)	(0.148)	(0.168)
Term of notice for employee (reference: 1 month)						
Employee cannot leave before the end of the contract (0-1)	-0.095	-0.068	-0.048	-0.088	0.165	0.133
	(0.136)	(0.168)	(0.180)	(0.195)	(0.199)	(0.206)
Term of notice two months (0-1)	-0.008	0.115	-0.242	0.059	0.069	0.043
	(0.118)	(0.148)	(0.153)	(0.172)	(0.174)	(0.185)
No term of notice (0-1)	-0.197	-0.127	-0.140	-0.052	-0.319	-0.386
	(0.132)	(0.162)	(0.167)	(0.196)	(0.186)	(0.196)
Replacement (reference: no replacement)						
Replacement immediately taken care of (0-1)	0.317**	***0.539*****	**0.210**	***0.086***	***0.059***	0.284*
	(0.088)	(0.111)	(0.112)	(0.126)	(0.140)	(0.141)
Working hours (reference: only during fixed hours)						
On-call basis (0-1)	0.507**	0.703**	0.519**	0.525**	0.315	0.448*
	(0.123)	(0.152)	(0.160)	(0.177)	(0.181)	(0.189)
Irregular working hours not a problem (0-1)	0.541**	0.679**	0.497**	0.575**	0.402*	0.607**
	(0.109)	(0.136)	(0.142)	(0.154)	(0.159)	(0.171)
Term of notice for employer (reference: 2 months)						
No term of notice (0-1)	0.010	-0.052	0.243	0.055	0.252	0.032
	(0.179)	(0.219)	(0.224)	(0.256)	(0.263)	(0.270)
Immediate layoff at end of contract (0-1)	0.016	**-0.287**	**0.405***	0.033	*0.197*	-0.094
	(0.161)	(0.207)	(0.203)	(0.236)	0.236	(0.256)
Layoff cost (severance payment in monthly wage per year worked, range 0-6 months)	-0.319**	**-0.457****	**-0.039**	-0.351*	-0.113	*-0.097*
	(0.119)	(0.147)	(0.149)	(0.173)	(0.172)	(0.181)
Wage cost – gross wage (gap in percentage, range 0-50%)	*-4.016***	*-4.771***	*-1.469*	-2.616*	-3.501**	*-1.941*
	(0.866)	(1.058)	(1.117)	(1.270)	(1.294)	(1.313)
Intercept	7.358**	7.234**	5.967**	6.714**	6.763**	6.700**
	(0.411)	(0.501)	(0.509)	(0.606)	(0.592)	(0.652)
Number of observations	N=169	N=109	N=104	N=81	N=80	N=71

** = statistically significant at 99% confidence level bold italic = difference statistically significant at 99% confidence level, bold at 95%, italic at 90%

* = statistically significant at 95% confidence level

Appendix 6.2 Response overview

In order to make respondents familiar with the response scale and to stabilize answers, I started each conjoint set with two warm-up profiles. One of these profiles was the combination of attribute levels I considered to be the worst and the other the best. Like all other profiles these 'best' and 'worst' profile related to an applicant who meets the minimum requirements of the vacancy. These are stated – together with the accessory monthly wage – on top of the profiles.

Education = high school **Work experience = 1 year** **Gross monthly wage = 1500 Euro** **Hours per week = 40**	**Education = high school** **Work experience = 1 year** **Gross monthly wage = 1500 Euro** **Hours per week = 40**
Available in 2 months	**Directly available**
Selection by temporary help agency	**You select the worker yourself**
High probability that employee leaves for another employer soon	**High probability that workers becomes valuable senior employee in your organization**
Employee has no term of notice	**Employee may not leave before end of contract**
You take care of replacement in case of sickness yourself	**Replacement in case of illness or quit taken care of**
Employee available during standard working hours only	**Employee works the hours per week that you need**
You have a term of notice of 2 months, severance payment 2 gross monthly wages per year of service	**You can fire the employee directly at no cost**
Wage cost = 2250 Euro per month	**Wage cost = 1500 Euro per month**

Respondents were asked to rate the attractiveness of these profiles on a scale from 1 to 10. These profiles were not used in my analysis, they were just meant to give respondents a feeling of what is good and what is bad. Figure 6.A1 and 6.A2 show that respondents indeed gave low ratings to the 'worst' profile and high ratings to the 'best' profile.

Figure 6.A1 Ratings of the 'worst' profile

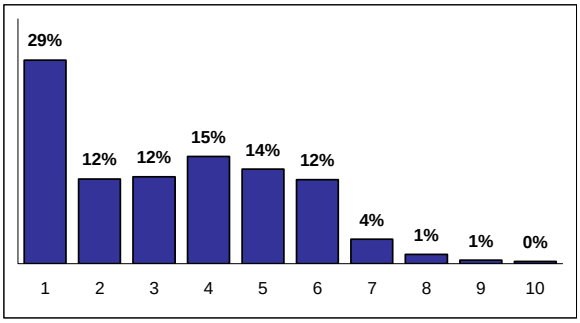
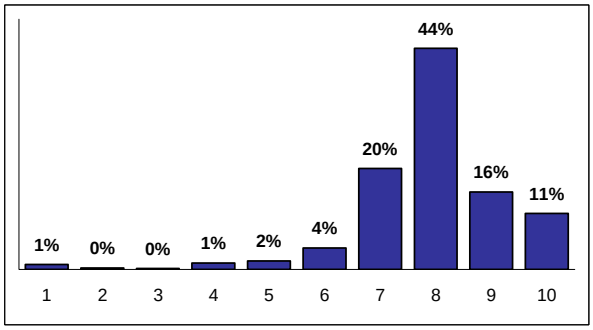
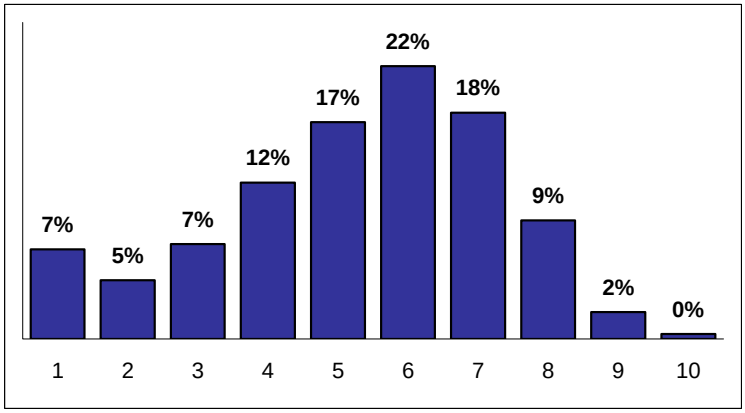


Figure 6.A2 Ratings of the 'best' profile



Subsequently each respondent was given a random selection of ten profiles of the hundred orthogonally designed profiles that I made in total. Respondents were again asked to rate the attractiveness of these profiles on a scale from 1 to 10. These are the profiles that I used in my analysis. OLS assumes normality. Eyeballing Figure 6.A3 this seems to be a reasonable assumption in my case. The only deviation from the regular clock-shaped normal distribution is the high occurrence of rating 1. As a result the measures for skewness and kurtosis depart somewhat from those of the normal distribution (skewness 0, kurtosis 3). This is a signal that respondents feel the lower bound of 1 to be not low enough, which is a reason to prefer tobit estimation.

Figure 6.A3



mean = 5.294
st.dev. = 2.003
skewness = -0.454
kurtosis = 2.629

Chapter 7

7 Summary and conclusion

This study has investigated the social and economic impact of temporary work from multiple points of view. As shown in the introduction, the labour markets in many countries have displayed marked increases in temporary-work arrangements. This study discusses the extent to which such jobs improve or reduce welfare. Chapter 2 sets up a framework that can be used to evaluate the impact of temporary employment, taking all stakeholders into account. This concluding chapter uses the same framework to discuss my results. Section 7.1 first discusses the effects of temporary employment for unemployed individuals. Next, section 7.2 considers the impact on workers who are actually employed in temporary-work arrangements. Section 7.3 summarises the employers' point of view. Finally, section 7.4 concludes and synthesises.

7.1 Effects for unemployed individuals

It is often argued that the existence of temporary work is beneficial to currently unemployed workers because it provides them with opportunities. They are able to gain work experience and to acquire human capital, which makes them more attractive for potential employers. By working in temporary positions, these individuals enlarge their social network, which might help them to search more effectively for more desirable jobs. Furthermore, employers might find the temporary job experience of an individual informative about his or her ability and motivation (screening or signalling). These arguments imply that temporary work might act as a stepping-stone towards regular employment, as it increases the opportunities for unemployed workers to find stable employment and earn higher wages in the future.

Chapter 3 explained that, in the current labour market situation, individual job seekers cannot afford to ignore the indirect channel via temporary work towards regular employment. After six years, 43 percent has found a regular job via this indirect route (see figure 3.3). This does not automatically imply that individuals would haven been worse off in terms of probabilities of finding regular work in a labour market in which no temporary employment exists. In that situation, substitution takes place between the direct- and indirect route (eventually leading to the same durations until regular employment), and temporary work does not function as a stepping-stone. In both labour markets, one with only regular work and one in which temporary- and regular employment coexist, unemployed job seekers search equally long for a regular job. Their unemployment duration, however, is shorter in a labour market with both types of employment. While in the first labour market the job seekers

remain unemployed until they find regular work, they are employed on a temporary basis during part of the search process in the second labour market. These effects are more or less the same for all types of individuals. Ethnic minorities (particularly males), however, seem to take a special position. Their potential gain from the indirect route via temporary employment is higher than average, but it takes them so long to find temporary employment that this potential gain is not effectuated in practise. This suggests that policy measures should be taken to stimulate the use of temporary work by ethnic minorities— for example, by helping them to register at temporary-work agencies.

All of these results were obtained while correcting for selection effects associated with moving into temporary work. Had we not taken into account the fact that selection into temporary employment is indeed selective, then the positive effect might not have been causal. This would be the case, for example, if more motivated individuals have less trouble finding permanent jobs, but are also over-represented among those in temporary jobs.

7.2 Effects for temporary workers

In the discussion on the welfare effects of temporary employment, many concerns focus on the working conditions and terms of employment of those that work in these arrangements. *Equal treatment* is high on the policy and research agenda (see e.g. Stichting van de Arbeid, 2005). Stylised facts show that temporary workers are employed under worse working conditions and worse terms of employment. Temporary contracts are, however, mostly used in special segments of the labour market (such as low-educated work and in certain sectors), for workers with little work experience. This should be taken into account when comparing temporary workers with regular workers.

Chapter 4 showed that the average wage for a worker on a *fixed-term* contract is lower than that of a regular worker. However, I found evidence that *on-call* workers received a wage premium compared to regular workers in the year 1997 – that is, before the introduction of the Flexibility and Security Act in 1999. This implies that the wage effect is not uniform, and differs between types of work arrangements. As I have argued, this is associated with the reason why these work arrangements are used. Fixed-term contracts can be used for two reasons. Either they are used to ease quantitative fluctuations in demand, or they are used as extended probationary periods when employers are uncertain about a worker's quality. On-call work, on the other hand, is used only for the former reason. Economic theory predicts a wage premium for providing quantitative flexibility to an employer. Workers generally dislike uncertainty and therefore want to be compensated for providing this flexibility. As I have shown, on-call workers indeed receive such a wage premium (although it seemed to dissipate after the introduction of the Flexibility and Security Act in 1999). Fixed-term workers do not. I argue that this is due to the fact that fixed-term contracts are mainly used in situations of quality uncertainty. If I relate this to the outcomes of chapter 4, these contracts help people to get out of unemployment sooner. During the screening period, however, they have to put up with a lower wage than they would have in a regular job.

Chapter 5 investigated the relation between job satisfaction and the work arrangement of individuals. Job satisfaction is a weighted average of satisfaction with several aspects of a job, such as job content, wage and job security. I analysed it as such, and determined the

weights of the job aspects. I found that *satisfaction with job content* is the main determinant of job satisfaction. All other aspects have comparatively little importance in overall job satisfaction. On average, a worker weighs the remaining aspect satisfactions in the following order of importance: working conditions, working hours, wage, working times, commuting distance and job security. Individuals weigh job aspects differently, however, when working on on-call or agency contracts than when regularly employed. Commuting distance, for instance, is much more important if someone is working as a temporary-agency or on-call worker. Wage satisfaction has practically no weight at all in these jobs. And for on-call workers, their satisfaction with job security carries a much larger weight than in other jobs.

The type of work arrangement influences not only the *weight of the job aspects* in the overall job satisfaction; it also influences these *aspect satisfactions themselves*. Most importantly, since job content is the main determinant of overall job satisfaction, *agency work* results in less satisfaction with job content. Agency work also differs from the other arrangements in that it is associated with higher satisfaction with working conditions, higher satisfaction with working times and lower satisfaction with job security. In sum, temporary-agency work results in a lower overall job satisfaction than regular work. Agency work is the only arrangement for which this holds. Overall job satisfaction with fixed-term and on-call work arrangements does not differ significantly from overall satisfaction regarding regular employment (although there is some evidence that after 1999 the satisfaction of on-call workers decreased to a level significantly below that of regular workers). Nevertheless, fixed-term and on-call work arrangements do differ on some aspects. *On-call work* differs mainly with respect to working hours, which are typically fluctuating and uncertain under this type of contract. As a result satisfaction with working hours decreases. This also results in diminished satisfaction with job security. *Fixed-term contracts* involve different valuations of working conditions, wage and job security. When employed in a fixed-term work arrangement, an individual is more satisfied with working conditions and wage, and less satisfied with job security, than regular workers. This means, for instance, that a worker in a fixed-term arrangement is more satisfied with his wage than he would be if he were to receive the same wage in a regular job. Linking this with the outcome of chapters 3 and 4, this finding might indicate that the temporary worker who during the screening period has to put up with a lower wage than he would have received in a regular job is aware of the fact that this is meant to compensate for the uncertainty about his productivity.

7.3 Effect for employers

It often argued that the main reason for the existence of temporary-work arrangements is the lower employment protection offered by these arrangements compared to regular work. Due to employment protection, firms cannot adjust their regular workforce easily if product-market shocks occur, and can dismiss low-performing workers only against high costs. As a result, temporary contracts (which allow for a longer period of screening (low-performing) workers and reduce the underutilisation of the workforce because the number of workers can be adjusted to the amount of work more easily) represent an option value and might lead to increased productivity of firms. Temporary work arrangements, however, might lead to reduced motivation and investment in human capital, and therefore to lower productivity.

Chapter 6 examined the attractiveness of several work arrangements for employers by determining *employer willingness to pay* for the characteristics of the work arrangements. These characteristics all consist of a number of constituent characteristics that influence adjustment costs, either by reducing the amount of turnover or by minimising the turnover costs – hiring-, firing- or quit costs – per worker. I estimated willingness to pay for each of these characteristics. The results of my empirical analysis suggest that strategies that reduce turnover and (potentially) increase productivity are much more important than strategies to reduce hiring-, firing- and quit costs per worker. The *expected duration a new worker will stay at the firm* was found to be the main determinant for attractiveness to employers. They are willing to pay an extra 47 percent on top of the base wage for someone who is likely to remain for some time instead of leave soon— equivalent to waiting more than a year longer until an applicant is available. A longer duration of stay is the main turnover-reduction strategy available. Another turnover-reduction strategy, flexibility of working hours, was also found to be highly influential in employer choices. The most obvious explanation for the attractiveness of these turnover-reduction strategies is that irretrievable hiring costs are substantial. Although these costs include search-, advertisement- and screening costs, perhaps the most important are training costs. If these costs per worker are substantial, a firm has two options: Either reduce hiring costs per worker or reduce the number of times these costs need to be made. The empirical results indicate that the latter strategy is preferred to hiring-cost reduction strategies such as the contracting out of advertisements and screening.

Temporary contracts do not reduce turnover, but exacerbate it. Rather, the attractive feature of temporary-work arrangements is that they reduce firing costs (some arrangements (e.g. agency work) also reduce hiring- and quit costs) per worker. Reducing firing costs is the main raison d'être for many temporary-employment contracts. The entire range of temporary contracts shares the characteristic of allowing employers to avoid dismissal procedures and severance payments. Compared to the turnover-reduction strategies, firing costs were found to be of minor importance in the hiring decisions. Employer willingness to pay for avoiding severance payments was estimated as 6 percent, which is nearly actuarially neutral and implies that firms let workers pay for the privilege of receiving severance payments. My results have shown that the less attractive features of the alternative contracts, such as the shorter duration of stay and the contracting out of the selection process, in most cases overshadow the positive aspects of reduced firing- and/or hiring costs. This is in line with the finding that indefinite contracts are still the rule on the Dutch labour market.

7.4 Synthesis

This final part of the thesis attempts to synthesise and evaluate the results from the analyses I have made. In the Dutch context, temporary employment was found to improve employment opportunities for the unemployed. Instead of being unemployed for the entire period until they find a regular job, some individuals opt for employment in a temporary job during part of the period. During this period of temporary employment, employers screen workers in order to assess whether or not their performance meets the standards of the organisation. In principle, employers are willing to pay a wage premium for workers who can be dismissed without severance payments, to the extent that workers are compensated for this absence of severance payments. This is not what we observe in practise. Instead a fixed-term contract

results in a wage for the contract worker that is lower than the wage received by his colleagues in a regular job. This lower payment, however, can be attributed to other reasons. It occurs because the employer is uncertain whether the worker can meet his standards. The worker seems to understand this, since he is more satisfied with his wage in a fixed-term job than he would be if he were to receive the same wage in a regular job.

It bears mentioning here that all of the research in this thesis has focussed on the Dutch situation and cannot simply be duplicated for other countries. As shown in chapter 2, results for different countries are not always the same. Particularly the US and Spain (the countries with, respectively, the highest and lowest employment protection for regular workers) seem to experience different consequences of temporary employment than most other countries. This might be related to the way in which employers use temporary-work arrangements. As shown in chapter 6, Dutch employers still prefer longer-term arrangements with their employees. Strategies that reduce turnover of the workforce are thus more important than strategies that reduce firing- and hiring costs per workers. Since temporary contracts increase turnover and reduce hiring- and firing costs per worker, they are not perceived as the most attractive alternatives for the average vacancy, but only for specific kinds of jobs. This might be different in Spain. Further research should enlarge on between-country differences with respect to the social and economic consequences of temporary employment and the way these are related to the level of employment protection in regular jobs.

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Nederlandstalige samenvatting en conclusie

Het doel van dit proefschrift was de sociaal-economische aspecten van tijdelijke arbeid, bezien vanuit meerdere invalshoeken, in beeld te brengen. In de inleiding heb ik laten zien dat tijdelijke arbeid een belangrijke plaats heeft verworven op de arbeidsmarkt in vele landen. Wat betekent dit voor de inwoners van een land? In deze samenvatting presenteer ik mijn resultaten voor de Nederlandse situatie, vanuit de invalshoek van de werkloze, de tijdelijke arbeidskracht en de werkgever.

7.5 Effecten voor werklozen

Vaak wordt beweerd dat tijdelijke arbeid voordelen biedt voor werklozen, omdat het hen kansen biedt. De kans om werkervaring op te doen en hun *human capital* te versterken, wat hen aantrekkelijker maakt voor potentiële werkgevers. Ook vergroten ze hun sociale netwerk door te werken in tijdelijke banen, wat kan helpen om effectiever te zoeken naar een meer aantrekkelijke baan. Hier komt nog bij dat werkgevers het feit dat iemand een tijdelijke baan heeft, kunnen zien als een signaal van motivatie en capaciteiten. Deze argumenten impliceren dat tijdelijk werk kan dienen als opstapje naar regulier werk, doordat het kansen verschaft aan werklozen die anders wellicht geen (of pas veel later een) baan zouden hebben gevonden.

In hoofdstuk 3 heb ik deze hypothese onderzocht voor Nederland. De uitkomsten tonen aan dat het voor werklozen in Nederland verstandig is deze indirecte route via tijdelijk naar vast werk te bewandelen. Na 6 jaar heeft 42 procent van de werklozen een reguliere baan gevonden via zo'n indirecte route. Dit betekent niet automatisch dat werkloze personen in een arbeidsmarkt waar geen tijdelijke arbeid beschikbaar is als tussenstap, minder snel een vaste baan zouden vinden. Integendeel: in beide situaties – een arbeidsmarkt met alleen reguliere arbeid en een arbeidsmarkt met zowel tijdelijke als reguliere banen – duurt het ongeveer even lang tot ze een reguliere baan hebben gevonden. In die zin is tijdelijk werk dus geen *stepping-stone*, die het zoekproces naar een reguliere baan versnelt. Wel wordt door de beschikbaarheid van tijdelijke arbeid de werkloosheidsduur bekort. Terwijl de baanzoekers in een arbeidsmarkt zonder tijdelijke arbeid werkloos blijven totdat ze een vaste baan hebben gevonden, hebben zij in een gecombineerde arbeidsmarkt tijdens een deel van het zoekproces tijdelijk werk. Deze effecten zijn min of meer hetzelfde voor verschillende typen werklozen (mannen en vrouwen, hoog en laag opgeleid, jong en oud). Een bijzondere positie is er voor de etnische minderheden, vooral de mannelijke. Voor hen is het voordeel dat ze kunnen

behalen via een tijdelijke baan groter dan gemiddeld. Maar het duurt dusdanig lang voordat ze een tijdelijke baan hebben, dat ze dit voordeel in de praktijk niet consumeren.

7.6 Effecten voor tijdelijke arbeidskrachten

In de maatschappelijke discussie worden zorgen geuit over de werkomstandigheden van tijdelijke arbeidskrachten. Gelijke behandeling staat hoog op de beleids- en onderzoeksagenda (zie bijvoorbeeld Stichting van de Arbeid, 2005). Recht-toe-recht-aan vergelijking van tijdelijke en reguliere arbeidskrachten laat inderdaad zien dat tijdelijke arbeidskrachten vaak onder slechtere arbeidsomstandigheden werken. Daarbij moeten we echter wel beseffen dat tijdelijke arbeid veelal wordt gebruikt in speciale segmenten van de arbeidsmarkt, zoals laagopgeleide arbeid in bepaalde sectoren waarvoor weinig werkervaring is vereist. Hiermee moeten we rekening houden om een goede vergelijking te kunnen maken tussen tijdelijke en reguliere arbeidskrachten.

In hoofdstuk 4 heb ik laten zien dat het loon van tijdelijke arbeidskrachten lager is dan dat van reguliere werknemers. Oproepkrachten daarentegen ontvingen in 1997, dat wil zeggen voor de introductie van de Wet Flexibiliteit en Zekerheid, vergeleken met reguliere werknemers een opslag op hun loon. Het looneffect is dus niet hetzelfde voor alle soorten flexibele arbeidscontracten. Zoals ik heb laten zien, hangt dit samen met de reden achter het gebruik van de verschillende contracten. Tijdelijke contracten kunnen om twee redenen door werkgevers worden gebruikt. Enerzijds kunnen ze er kwantitatieve fluctuaties in de vraag naar hun diensten mee opvangen. Anderzijds dienen ze als verlengde proeftijd voor werknemers van wie een werkgever onzeker is of zij kunnen voldoen aan het vereiste niveau. Oproepwerk daarentegen dient slechts één doel: het verschaffen van kwantitatieve flexibiliteit. Economische theorie voorspelt een loonopslag voor werknemers die kwantitatieve flexibiliteit aan de werkgever verschaffen. In het algemeen hebben werknemers namelijk behoefte aan zekerheid en willen ze daarom gecompenseerd worden voor onzekerheden. Zoals ik heb laten zien, werden oproepkrachten inderdaad op die manier gecompenseerd (hoewel dit alleen geldt voor 1997 en niet voor 2002, na de introductie van de Wet Flexibiliteit en Zekerheid). Werknemers met een tijdelijk contract ontvangen deze compensatie niet. Voor hen meet ik een negatief loonverschil. Dit kan worden verklaard uit het feit dat tijdelijke contracten vooral worden gebruikt als verlengde proeftijd en in mindere mate voor het opvangen van vraagschokken.

In hoofdstuk 5 heb ik de relatie tussen het type arbeidscontract en baantevredenheid onderzocht. Arbeidssatisfactie is een gewogen gemiddelde van tevredenheid met verschillende aspecten van een baan. Ik heb deze gewichten gemeten en daaruit blijkt dat de tevredenheid met het soort werk het belangrijkste is voor de totale baantevredenheid. Alle andere aspecten zijn van ondergeschikt belang. Gemiddeld weegt een werknemer de overige aspecten in de volgende volgorde van belang: arbeidsomstandigheden, werkuren, loon, werktijden, reisafstand en baanzekerheid. Het belang van deze aspecten verschilt echter per soort arbeidscontract. Als iemand werkt als uitzend- of oproepkracht vindt hij reisafstand

veel belangrijker dan wanneer hij een vast contract heeft. Loontevredenheid daarentegen is nauwelijks belangrijk voor de totale tevredenheid van uitzend- en oproepkrachten.

Het type arbeidscontract beïnvloedt niet alleen het gewicht van de afzonderlijke aspecten, maar ook de tevredenheid met de deelsatisfacties. Omdat de tevredenheid met het soort werk overheersend is voor de totale tevredenheid, springt de lagere tevredenheid met het soort werk onder uitzendkrachten het meest in het oog.
Uitzendwerk verschilt verder van regulier werk in een hogere tevredenheid met arbeidsomstandigheden en arbeidstijden en lagere tevredenheid met baanzekerheid. In totaal leidt uitzendwerk tot een lagere baantevredenheid dan regulier werk. Uitzendwerk is het enige flexibele arbeidscontract waarvoor dit geldt. De totale arbeidstevredenheid van tijdelijke en oproepkrachten verschilt niet significant van regulier werk (hoewel er aanwijzingen zijn dat oproepkrachten sinds 1999 significant minder tevreden zijn dan reguliere werknemers). Wel zijn er verschillen op deeltevredenheden. Oproepwerk is vooral anders in termen van werktijden. Die variëren veel sterker dan bij andere arbeidscontracten en leiden tot een lagere tevredenheid met dit aspect van de baan. Ook leidt dit tot minder tevredenheid met de baanzekerheid. Tijdelijke arbeidscontracten leiden tot meer tevredenheid met arbeidsomstandigheden en het loon en minder tevredenheid met baanzekerheid. Dit betekent bijvoorbeeld dat iemand tevredener is met zijn loon in een tijdelijke baan dan wanneer hij hetzelfde loon zou ontvangen in een vaste baan. Dit heeft een sterke link met de uitkomsten van hoofdstuk 4. Klaarblijkelijk zien werknemers het lagere loon in een tijdelijke baan als een investering in de toekomst. En Ze nemen daarom eerder genoegen met een lager loon, omdat ze weten dat dit het gevolg is van de screening door de werkgever.

7.7 Effecten voor werkgevers

De reden achter het bestaan van tijdelijke arbeidscontracten ligt in de ontslagbescherming die geldt voor vaste arbeidscontracten. Als gevolg van deze ontslagbescherming kunnen werkgevers reguliere arbeidscontracten moeilijk ontslaan wanneer het economisch tij tegenzit of wanneer de arbeidskracht slecht blijkt te presteren. Tijdelijke arbeidscontracten maken het mogelijk om arbeidskrachten langer te testen op hun capaciteiten en om onderbenutting van het personeelsbestand tegen te gaan. Aan de andere kant kunnen tijdelijke contracten leiden tot verminderde investering in *human capital* of tot verminderde motivatie, en daarmee tot een lagere productiviteit.

In hoofdstuk 6 heb ik gemeten wat werkgevers bereid zijn te betalen voor verschillende onderdelen van een flexibel arbeidscontract. Alle (flexibele en reguliere) arbeidscontracten bestaan uit componenten die invloed hebben op de aanpassingskosten voor een werkgever. Aanpassingskosten worden bepaald door aanname-, ontslag- en opzegkosten per werknemer en de omloopsnelheid van het personeel. Uit mijn analyse blijkt dat werkgevers meer willen betalen voor het terugbrengen van de omloopsnelheid van hun personeel dan voor elementen die de aanname-, ontslag- en opzegkosten per werknemer verminderen. De omloopsnelheid van het personeel wordt beïnvloed door de tijd dat een werkgever verwacht dat een nieuwe

werknemer bij hem zal blijven werken. Gemiddeld is een werkgever bereid om 47 procent bovenop het loon te betalen als iemand lang bij hem blijft werken, in plaats snel weer weg te gaan. Ook flexibele werktijden zijn een manier om de omloopsnelheid te verlagen. Als het personeel bereid is overuren te maken, dan is er minder noodzaak voor *hire and fire*. Voor iemand die bereid is tot onregelmatige werktijden wil een werkgever 20 procent extra loon betalen. De bereidheid om te betalen voor bijvoorbeeld kortere opzegtermijnen, lagere ontslagkosten, vervanging bij ziekte of ontslag zijn veel lager. De populariteit van de strategie om de omloopsnelheid te verlagen - in plaats van de kosten per ontslagen, aangenomen of vertrokken werknemer te beperken - kan worden verklaard uit het belang van onomkeerbare aannamekosten. Deze kosten bestaan uit kosten van het zoeken van een geschikte werknemer, het screenen, maar vooral ook het inwerken., en die kosten kunnen slechts in beperkte mate worden teruggebracht door externe partijen in te schakelen. Als deze kosten aanzienlijk zijn, dan zal een werkgever ervoor willen zorgen dat ze zo min mogelijk gemaakt hoeven te worden.

Voor alle *flexibele* arbeidscontracten geldt dat ze de omloopsnelheid van het werknemersbestand niet verminderen, maar verhogen. De aantrekkelijkheid van deze contracten ligt vooral in de reductie van ontslagkosten en in sommige gevallen (bijvoorbeeld uitzendwerk of detachering) ook de aannamekosten per werknemer. De negatieve aspecten van de flexibele contracten, zoals de kortere duur dat een werknemer blijft, maar ook de negatieve associatie bij het uitbesteden van de selectie van werknemers, overschaduwen in het gros van de gevallen de voordelen van lagere ontslag- en aannamekosten. Het zijn vooral de tijdelijke contracten met uitzicht op vast die aantrekkelijk zijn. In dat geval blijft de werknemer, indien hij aan de eisen voldoet, langere tijd bij de werknemer en zijn er in de beginfase geen ontslagkosten, wat de werkgever de nodige flexibiliteit biedt.

7.8 Synthese

De verschillende hoofdstukken in dit proefschrift vormen samen een totaalbeeld. In Nederland blijken tijdelijke arbeidscontracten te leiden tot een grotere kans voor werklozen om een baan te vinden. In plaats van de gehele periode tot het vinden van een reguliere baan werkloos te zijn, kunnen ze een deel van de periode in een tijdelijke baan doorbrengen. Tijdens deze periode ontvangen ze weliswaar een lager loon dan hun collega's met een vast arbeidscontract, maar ze zijn niet minder tevreden. In principe zouden werkgevers een opslag op het loon willen betalen voor het feit dat tijdelijke arbeidskrachten hen in staat stellen vraagschokken op te vangen, en wel zoveel dat ze precies worden gecompenseerd voor de afwezigheid van ontslagvergoedingen. Dat we in de praktijk geen loonopslag voor tijdelijke arbeidskrachten waarnemen, suggereert dat hier andere redenen voor zijn, namelijk de onzekerheid over de capaciteiten van de werknemer om te voldoen aan het vereiste niveau. De werknemer lijkt dit te begrijpen: hij is tevredener met het salaris dat hij in een tijdelijke baan ontvangt, dan wanneer hij hetzelfde salaris zou krijgen in een vaste baan.

Ik moet benadrukken dat de conclusies uit dit hoofdstuk gelden voor de Nederlandse situatie. In hoofdstuk 2 heb ik laten zien dat de resultaten voor verschillende landen niet altijd tot dezelfde conclusie leiden. Vooral in de Verenigde Staten en Spanje, de twee landen met respectievelijk de laagste en hoogste ontslagbescherming voor reguliere arbeidscontracten, lijken de gevolgen van tijdelijke arbeid anders te zijn dan in de andere landen. Dit is waarschijnlijk gerelateerd aan de functie die tijdelijke arbeid in die landen heeft. Zoals ik heb laten zien, hebben Nederlandse werkgevers nog altijd een voorkeur voor reguliere arbeidscontracten, doordat de voordelen van de tijdelijke arbeidscontracten vaak niet opwegen tegen de nadelen. Het is zeer wel mogelijk dat dit in een land als Spanje, met haar strikte ontslagbescherming, niet opgaat. Er ligt een taak voor toekomstig onderzoek om te focussen op de economische en sociale gevolgen van tijdelijk werk in verschillende landen en hoe dit samenhangt met de mate van ontslagbescherming in vaste banen.

The Tinbergen Institute is the Institute for Economic Research, which was founded in 1987 by the Faculties of Economics and Econometrics of the Erasmus Universiteit Rotterdam, Universiteit van Amsterdam and Vrije Universiteit Amsterdam. The Institute is named after the late Professor Jan Tinbergen, Dutch Nobel Prize laureate in economics in 1969. The Tinbergen Institute is located in Amsterdam and Rotterdam. The following books recently appeared in the Tinbergen Institute Research Series:

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The use of temporary employment contracts has increased dramatically in Western societies over the last few decades. A wide variety of contracts such as fixed-term contracts, temporary agency work or on-call contracts serve the purpose of providing flexibility to employers in a world where employment protection impedes smooth adjustment of the workforce. This study provides insights in the economic and social consequences for society. It contains a detailed overview of the literature and empirical analyses on the consequences for unemployed individuals, temporary workers and employers in the Netherlands. For the unemployed the effect of temporary jobs as stepping-stones towards regular employment is estimated using a multi-state duration model, showing that temporary jobs shorten the duration of unemployment, but do not increase the fraction of unemployed workers who have regular work within a few years after entry into unemployment. For temporary workers wages are compared to those of regular workers using propensity score matching techniques, revealing that the lower wage paid to temporary workers can be explained from uncertainty about their ability. The effect of temporary work on job satisfaction is determined, using panel data techniques. Job satisfaction is mainly determined by satisfaction with job content, which is reduced by temporary agency work and not by other types of temporary work. The attractiveness of temporary contracts for employers is estimated using conjoint analysis, showing that in general fixed-term contracts that are converted into regular contracts after the screening period are most attractive for employers, because they allow for investment in (firm specific) human capital while at the same time reducing firing costs. Other non-standard work arrangements are valued only in some situations, e.g. in highly volatile environments.

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