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Evaluating Employment Effects of Wage Subsidies for the Disabled – the Danish *Flexjobs* Scheme

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Abstract

We evaluate the employment effects of the introduction of the *flexjobs* scheme in 1998, targeted towards improving the employment prospects of the disabled. In line with the previous wage subsidy literature, we find only modest employment effect of this scheme, mainly in the age group 35-44 years. For this group, the employment probability is raised by between 10.5-12.5 pct. points (dependent on the choice of dependent variable) compared to the non-disabled after the scheme was introduced. Furthermore, the introduction of *flexjobs* seems to have led to a deadweight loss to society resulting from these jobs being assigned to the disabled with no work reduction who would have been employed otherwise. That is, the employment probability of the disabled with no work reduction is raised by 5-8% compared to the non-disabled after the introduction of the *flexjobs* scheme.

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1. Introduction

Welfare states facing future demographic challenges are seeking ways to replace passive support systems containing large work disincentives with active employment-contingent benefit schemes. Particularly in regimes where labour costs are high, such schemes can encourage under-represented groups to enter the labour market. Disabled individuals represent one such group which is only marginally integrated into the work force at the current time. Yet, many disabled persons can and would be willing to do some work (OECD, 2003).

At the same time, few employment-contingent programs exist which are specially targeted towards the disabled. One such program is the Ticket-to-Work in the U.S. which gives SSDI beneficiaries a ticket which can be exchanged for a job or support services from public and private providers, employers and other organisations jointly referred to as the employment networks (ENs). However, since the congressional authorization of the program in 1999, fewer than 1,400 of the 12.2 million tickets have been successfully converted to workforce participation. In the U.S. context, however, the reluctance of the elderly disabled to come out of disability is intrinsically tied to a loss of health insurance (Medicare) when leaving DI which makes employment unattractive (Autor and Duggan, 2006). In countries with universal health insurance systems this is not at issue, so that targeted schemes should be more successful in raising employment of disabled persons. Yet, few such programs exist, and if they do, no formal evaluation exists of the effectiveness of such schemes in raising the employment of disabled individuals.[1]

The Scandinavian countries, in particular, Denmark and Sweden have introduced wage subsidy schemes for the disabled which have been cited as examples of good practice of supported schemes which are adjustable according to a disabled person's ability to work (OECD, 2003). *Flexjobs* in Denmark, which are subsidized jobs for the long-term disabled, has also been cited as a scheme which both employers and employees seem to reap benefits from (European Commission, 2001) and since its introduction, the number of applications for disability pension has fallen from 22,000 to 15,000 yearly, in particular those on the lowest level of disability pension have gone from 13,000 a year to around 4,000 (Ministry of Finance et al., 2005). Still no formal evaluation has been made until now in assessing the effectiveness of *flexjobs* in enhancing the employability of disabled individuals. The aim of our study is to evaluate the employment effects of this scheme in the 18-59 population[2]. In doing so, we exploit exogenous variation arising from the introduction of the scheme in 1998. Our main finding is that the employment effects of this scheme are only modest. Further, the introduction of *flexjobs* seems to have led to a deadweight loss to society resulting from these jobs being assigned to the disabled with no work reduction who would have been employed otherwise.

The rest of the paper is organised as follows: Section 2 summarizes the wage subsidy literature, Section 3 describes the *Flexjobs* scheme and relevant reforms. Section 4 presents the methodology and related issues and Section 5 the data and descriptive statistics. Section 6 discusses the results of the estimations and Section 7 offers a brief conclusion.

[1] Another is the New Deal for the Disabled (Britain), a voluntary program for the disabled which offers job seeking assistance services through a national organization of Job Brokers. The take-up rate has been low, however, covering only 1.9% of the eligible population (Pires et al. 2006).

[2] As early retirement is possible and widely used starting at age 60, we stop at age 59.

2. The Wage Subsidy Literature

We draw on the insights arising out of a small but well-developed literature that goes back to Kaldor (1936) who writing at the time of the Great Depression, demonstrated the conditions under which wage subsidies were an efficient tool for reducing unemployment. The optimal solution according to Kaldor was if wage subsidies replaced employer contributions to social insurance. Kessleman (1969) also compared wage subsidy schemes to other income-maintenance programs, showing that static disincentives were fewer than in other programs, but that dynamic incentives effects were also important to take into account. A strong advocate of wage subsidies as a means of reducing employment of the least productive workers in high wage regimes is Phelps (1994, 2006). Yet, comprehensive surveys of the available evidence such as in Hamermesh (1978) and Katz (1996) caution that employment effects have been at best modest. Katz formally evaluates the TJTC (Targeted Jobs Tax Credit) program for disadvantaged youth, by exploiting a natural experiment arising out of a change of rules in the program which nullified the scheme for disadvantaged 23-24 year olds. Comparing the outcomes of this group before and after the reform to the outcomes of non-disadvantaged 23-24 year olds as well as to placebos sharing common labour market trends, Katz presents DDD estimates which show that the program appeared to have modestly raised the employment prospects of economically disadvantaged youth. Another conclusion from this study is that programs that combine subsidies with job development, job training and job search assistance appear to be more successful in enhancing employment and earnings of marginal groups.

More recently, Bell, Blundell and Van Reenen (1999) evaluate the New Deal for the Youth using a trend-adjusted DDD estimator and find that the employment effects are far more modest than thought, and conclude that the success of these schemes depend to a great extent on their incentives (payoffs) to acquire experience and training. Sianesi (2003) uses Swedish administrative data to match recipients of various social programs to comparable non-recipients and finds that employment subsidies perform the best among a set of ALMP measures in putting the unemployed back to work. Thus, Sianesi takes into account that in welfare state economies, there exist a multitude of programs which even non-treated individuals have access to. A recent paper by Humer et al. (2007) examines the impact of the Austrian Employment Act for the Disabled which grants extended employment protection, requires a hiring quota for firms, and subsidizes the employment of severely disabled (SD) workers. They show that workers holding a job when acquiring legal SD-status have substantially better subsequent employment prospects after SD-award than before, while the opposite is the case for those who do not hold a job at the date of SD-entry. These findings suggest that employment protection legislation places substantial firing costs on firms and has a major impact on the decisions of firms to hire disabled workers.

The issue of employment subsidies creating dead-end jobs with little incentive for skill-formation is taken up by a series of recent articles spurred by the work of Heckman et al. (2002), Oskamp and Snower (2006) and Connolly and Gottschalk (2004). The latter also find that earnings subsidies affect job choice and job duration. However, slightly different evidence is provided by Lydon and Walker (2004) who evaluate the impacts of the WFTC replacing the older FC on gross wages and find that there was faster wage growth even for low-skilled individuals under the WFTC, which may be due to training being general in nature for this group.

Finally, while the studies above have been mainly concerned with employment or earnings effects in the labour market as a whole as a result of subsidies, Kangasharju and Venetoklis (2003) use firm-level data to look directly at employment within firms. Using a large panel sample of Finnish firms, they find positive but not large employment effects, and a substitution effect such that public subsidies replaced private employer expenditures but no displacement effect in terms of crowding out of non-subsidized firms in the same industry or geographical area.

In sum, the wage subsidy literature has found modest employment effects for disadvantaged groups but also some disincentives for specific skill formation. The consensus seems to be that the proper design of these programs is key to ensuring both employment integration and also the preservation of incentives. In terms of the disabled, the lack of an incentive to invest in learning new skills to replace lost ones may be relevant, as may be windfall gains going to employers who would have retained the disabled worker otherwise. In the next sections, we describe the *Flexjobs* scheme, detailing some of the features of its design with respect to these issues.

3. The *Flexjob* Scheme

On January 1, 1998, the Danish government put into force a law introduced by the Ministry of Social Affairs creating permanent wage-subsidized jobs for the long-term disabled known as *Flexjobs*.[3] The law, which was designed to retain the long-term sick or disabled on the job, grew out of a more active line of social policy embraced by the Danish welfare state since the early 1990's. From this time on, two pillars would be simultaneously emphasized in public policy: *activation* and, starting from 1994, *corporate social responsibility* measures for promoting the inclusion of marginalized groups in the labour market (Rosdahl, 2000).

Flexjobs are associated with special working conditions, e.g. reduced working hours, adapted working conditions, and restricted job demands. In addition, employers who hire workers approved for *flexjobs* are entitled to a partial wage subsidy – graduated according to the reduction of working capacity – corresponding to either ⅓, ½ or ⅔ of the wage up to a cap of the minimum negotiated wage as stipulated in the relevant collective agreement.[4] The wage paid is for full-time work even though a reduction in hours can be negotiated with the employer. Unlike many other wage subsidy programs, the subsidy is also unlimited in duration, existing as long as the worker retains the *flexjob*. To be eligible for a *flexjob*, the individual must have suffered a permanent reduction in working capacity, and must have exhausted all other avenues of obtaining unsubsidized employment as determined by the competent local government authorities.

In terms of the cost of the program, in 2005, government expenditures on the wage subsidies amounted to 5 billion D.Kr. (0.32% of GDP), while expenditures on unemployment benefits to the *flexjob*-entitled was about 1.7 bill. D.Kr. (0.11% of GDP). Gross public social expenditures in Denmark are 29.2% of GDP (OECD, 2005**).** In comparison, the government spent 5.2 bill. D.Kr. in 2003 on ALMPs (Ministry of Finance, 2005).

Previous descriptive studies have found that *flexjob*-eligibles tend to be predominantly women (60%)[5] and older persons who develop health problems later in life, the age distribution being <30 years (5%), 30-39 (20%), 40-49 (33%), 50-59 (40%), >60 (2%). Not surprisingly, the most common stated reason is physical or mental illness, job wear-out and accidents.

Most *flexjob*-holders are at the 2/3 subsidy level. In Copenhagen and Roskilde municipalities, for example, about 60% are on the 2/3 level while 35% on the 50% level, and only a small group on the 1/3 level. About half are unskilled workers, 35% skilled workers and 10% are college educated. About half are employed in service jobs in the public and private sectors or jobs requiring few formal competencies. Thus, there seems to be a certain degree of over-qualification for the jobs (also reported in Hohnen, 2000). Register data from DREAM and FLY show that 70% come from self-employment, of which about 58% originate from sickness benefits receipt, with the typical duration on sickness benefits exceeding 1 year for about half of this group. The rest tend to come from the ranks of welfare recipients or are enrolled in some form for activation before the visitation (Discus 2003, 2005).

[3] §61 and §62, *Lov om aktiv socialpolitik*.

[4] In 2006, the employer was normally entitled to a wage subsidy of up to DKK 115 ($19) per hour.

[5] Although women tend to have a lower rate of actual employment in *flexjobs* than men.

In 2002, about 18% of private sector firms and nearly half of all public sector organizations had one or more employees in some form of subsidized employment, but growth has been largest among private sector firms (Holt et al., 2003). The same study conducts multivariate analyses and finds that the larger the firm, the higher the share of female employees, and the more contact there was with the municipality and job placement bureau, the more likely was the firm to have subsidized employees.[6] A qualitative interview-based study of 15 *flexjob* employees mentions one drawback of the scheme i.e. possible stigmatization effects of having employers and co-workers becoming aware of the individual's assisted-person status, which make such jobs less attractive for disabled individuals who report an ambivalent attitude to the scheme, feeling both integrated on the labour market to some extent, but partially stigmatized as well among their co-workers and employers (Hohnen, 2000). Still, the scheme should be attractive from an income-maximizing point of view, as the wage paid is close to the individual's former wage, and higher than the replacement rate of government welfare programs.

(a)Relevant reforms

Flexjobs were not a new labour market program, and replaced an older wage subsidy program for disabled individuals known as the "50/50" scheme which had been in place since 1995 and in which employers received a 50% wage subsidy for hiring disabled individuals.[7] In 1996, only 2,564 "50/50" jobs were established (Equal Opportunities Centre for Disabled Persons, 1997). *Flexjobs*, in contrast is much larger in volume, and therefore, we focus on this scheme.

The main changes that took place when *flexjobs* were introduced in 1998 were 1) the graduation of the subsidy according to the degree of disability, 2) from 2000 and on, persons found eligible for *flexjobs* but still waiting for an offer were entitled to unemployment benefits during the waiting period and any period in-between *flexjobs*, as well as the creation of an early retirement scheme corresponding to the existing labour market early retirement scheme and 3) that the county's expenditures on subsidies were now reimbursable 100% by the state, as opposed to only 50% on the "50/50" scheme.

Since its introduction in 1998, 40,000 individuals have been found eligible and have undergone formal visitation for *flexjobs*, far exceeding the initially estimated 23,000 visitations in 2004. But, the *flexjob* program is still in its growth phase and will mature around 2015, where, at the present trend, can be expected to cover around 75,000-100,000 disabled persons a year. Job creation, however, has not been able to keep up with this flow with only 30,000 *flexjobs* created in 2004, so that currently wait unemployment for *flexjobs* is around 20%.

According to Ministry of Finance et al. (2005) problems in this regard are a) inconsistencies in the visitation procedure and b) the high unemployment among the *flexjob*-eligible. Both problems hint at a not insignificant deadweight loss to society resulting from *flexjobs* being assigned to individuals who would have been employed otherwise[8]. In fact, half of all *flexjobs* go to individuals already employed within the firm. In another third of the cases, visitation seems to have occurred before all other means of employment were explored and exhausted. In fact, half of all individuals who leave *flexjobs*, go onto unsupported work, suggestive of an overly lenient visitation practice. To add to that, counties have less of an obligation to activate in an unemployment phase prior to or in-between a *flexjob* compared to regular unemployment.

[6] Many of the facts and figures cited in the preceding paragraphs are reported in Ministry of Finance et al., (2005).

[7] The "50/50" scheme replaced an even older scheme existing since the mid-1980s which gave employers a 40% subsidy for hiring a disabled worker.

[8] About half the 2,495 firms in the private sector surveyed by Holt (2003) self-reported that one or more of their employees who were working in subsidized jobs would have been employed even without the subsidy.

Faced with these concerns, the government implemented a reform of the scheme in 2002. The main features were: for all *flexjobs* that started January 1, 2002 and after, the state refunded 65% of the county's expenditures on the wage subsidy instead of the full amount. And from July 1, 2002 and on, there was no longer a subsidy given for the 1/3 level of reduction in working capacity. However, this change does not influence our estimates since it takes place after our data from 2002 is collected.

4. Methodology

We exploit exogenous variation arising from the introduction of *flexjobs* January 1, 1998. Two treatment groups are constructed: The first consists of the group of disabled individuals with reduced working capacity, and the second, disabled individuals with no work reduction. In principle, the second treatment group is not eligible for *fleksjobs* and should therefore not be affected by the introduction of the *flexjobs* scheme. However, the inconsistencies in the visitation procedure reported by Ministry of Finance et al. (2005) might suggest that this scheme does affect employment among disabled without work reduction. The control group is the non-disabled.

(a) Treatment equation

As the control group is not eligible for *flexjobs*, the relevant outcome measure would be employment in regular jobs (which include *flexjobs* for the treated). Following the introduction of *flexjobs*, we would expect that employment increases for the treated relative to the controls between 1994 and 2002. Thus, we estimate the following difference-in-differences equation:

$$E_{it} = \alpha + \beta T_{it} + \gamma t_t + \delta T_{it} * t_t + \theta' X_{it} + \varepsilon_{it} \quad (1)$$

where E is employment of individual i in year t, T is an indicator for belonging to the treatment group, t indicates the time period after the introduction of *flexjobs*, X are a set of characteristics which control for compositional changes in treatment and control groups over time, and where δ is the parameter of interest, i.e. the treatment effect. As employment is a 0/1 variable, we estimate a linear probability model.

Note that we make the parallel-trend assumption here i.e. that there are no group-specific cyclical trends. As it is difficult to think of why labour market trends would affect disabled and non-disabled individuals differently, this assumption seems defensible. The common business cycle appears from Figure 1 which shows an increasing trend. Thus, the unemployment rate is more than halved during our observation window from 12.3% in 1994 to 5.2% in 2002.

(b) Announcement effects

The *flexjobs* scheme was introduced by law in June 10, 1997, and the law came into force January 1, 1998. Compared to the "50/50"-scheme, the *flexjobs* scheme implied that employers received a higher wage subsidy for individuals whose working capacity was reduced by more than 50% and a lower subsidy for individuals with work reduction less than 50%. However, it is unlikely that the announcement of the *flexjobs* scheme affected disabled and employers' behaviour significantly, as determination of the degree of work reduction would require an assessment by the county's medical examiners. More importantly, since our "before" observation is from 1994, there is no reason to believe that the announcement of the scheme affects our estimates.

5. Data

The primary data used in this study are obtained from two independent cross-sections surveys. The first survey (*The Handicap Survey)* consists of two parts: In the third quarter of 1994, a random sample of 10,800 individuals is asked whether they are disabled or have a chronic disease. 9,188 respond to the survey corresponding to a response rate of 85%. If their answer to the question: "Does your health or disability mean that you find it difficult to do things that most people at your age can do?" is 'yes' or if they indicate that they have some kind of disability, then they receive a second questionnaire in March 1995. 1,633 respond to this questionnaire from which we get information about the working capacity of the disabled individuals.

The second survey is part of the Labour Force Survey from Statistics Denmark (AKU) which was collected in the second quarter of 2002. Thus, this survey was collected right before the subsidy was nullified for the group with ⅓ level of reduction in work capacity. 10,900 individuals aged 15-66 years responded to the survey in 2002 corresponding to a response rate of 70%.

The two surveys are merged with register data from 1994 and 2001 respectively from which we obtain information about labour market experience since 1980, education, family status and region of residence.

(a) Determining eligibility

The most important eligibility criterion for *flexjobs* is health (a reduction in work capacity). A second criterion is exhaustion of all other types of unsubsidized employment schemes. In both the Handicap survey and the AKU, we observe individual's self-reported disability status and self-reported loss of working capacity.[9] These two pieces of information will be combined to create eligibility to *flexjobs*.

Although the measures of disability are self-reported, individuals are queried about the precise nature of the disability, which should reduce the extent of misreporting. The precise wording of the questions relating to disability and work reduction are as follows:

Handicap survey (1995):
Do you suffer from any kind of illness, disability, or a functional limitation?
- *Is your working for pay changed in any way because of your illness/disability?*
- *Do you experience difficulty managing transportation to and from work?*

AKU (2002):
Do you suffer from a permanent health problem or handicap? If yes,
- *Do you experience difficulty carrying out specific tasks on the job/difficulty handling a normal work load/difficulty managing transportation to and from work as a result of your health problem or handicap?*

In the analysis, the first treatment group consists of the disabled with work reduction. This group will consist of those who are disabled and report some kind of work reduction which has changed working for pay or affects transportation (1995) or affects either job tasks, work load or transportation (2002). In addition, we construct a second treatment group consisting of the disabled who do not report any reduction in their working capacity. The use of disabled individuals with no work reduction as a treatment group will give us an idea as to whether the introduction of *flexjobs* led to a deadweight loss to society resulting from these jobs being assigned to individuals who would have been employed otherwise. The control group will the non-disabled.

[9] In case of AKU, this information is available in a special supplement only for the disabled.

We omit the small number of disabled individuals who have not been working since 1980 to minimize chances of selecting individuals who have never worked or are unable to work. The resulting sample sizes in 1994/95 (2002) are disabled with work reduction 459 (1,075), disabled with no work reduction 654 (538) and non-disabled 7,105 (7,714). We retain the sampling weights in the AKU and run weighted regressions in all cases.

(b) Descriptive Statistics

The key variable in our analyses is whether or not the individual is employed. For this purpose, we have constructed two different employment measures ("empl1" and "empl2"): In the Handicap survey, disabled individuals are asked twice about their employment situation, namely in both October 1994 and March 1995. For "empl1", we use employment information for all from October 1994. For "empl2", we use information from March 1995 for the disabled, while we use information from October 1994 for the non-disabled. For both "empl1" and "empl2", employment in 2002 is measured in the second quarter of 2002.

We conduct our analyses for the 18-59 age group as a whole and separately for the 18-34-, the 35-44- and the 45-59-year-olds respectively. In these analyses, we control for year, (age,) regional unemployment rate, gender, education and family status.

Table 1 shows summary statistics for the dependent variable and for each of the background variables. Means are shown for both the full sample and for the non-disabled, disabled with no work reduction and disabled with work reduction respectively. Looking at the two measures for employment, we see that the employment rate is the same or nearly the same in all cases. In the sample as a whole, three out of four are employed. Among non-disabled individuals, the employment rate is 80%. The employment rate is almost the same for disabled individuals with no work reduction suggesting that the categorization of individuals in this group as having full working capacity is correct. Not surprisingly, the employment rate is lowest among disabled individuals with work reduction. In this group, less than half of the individuals are employed.

The average age in the full sample is 38.6 years. As expected, disabled individuals are on average older than non-disabled individuals and the oldest age group is found among the disabled with work reduction. Thus, 55% of this group is 45-59 years compared to 32% of non-disabled individuals. The corresponding figures for 18-34-year-olds are 21% for the disabled with work reduction compared to 42% for individuals without disabilities.

In the analyses, we control for regional unemployment rate to take into account variations in the business cycle. For the sample as a whole, the average regional unemployment rate is 8.5%. The average regional unemployment is lowest among the disabled with work reduction, namely 7.3%, which is due to the much lower overall unemployment rate in 2002 compared to 1994, see Figure 1, combined with the fact that the majority of observations in this group is from 2002.

The sample as a whole is equally divided with respect to gender. Among the disabled with work reduction, however, almost 60% are women corresponding to the earlier observation that *flexjob*-eligibles tend to be predominantly women. Individuals with basic and vocational education respectively both make up 40% of the sample as a whole while the remaining 20% are higher educated. The educational level is lowest among the disabled with work reduction: Almost half of this group has a basic education while only 13% are higher educated. Finally, almost 1/3 of the sample as a whole is living as single. This rate is very similar across the three groups.

VI. Results

Table 2 present the difference-in-differences estimates for the 18-59 age group as a whole where the disabled with work reduction is the treatment group and the non-disabled is the control group. Results are shown both without controls (column 1 and 2) and with controls (column 3 and 4) and with "empl1" (column 1 and 3) as well as "empl2" (column 2 and 4) as the dependent variable.

We find as expected that the employment rate is higher in 2002 than in 1994/95 due to the business cycle. The significant impact of "after" disappears when we control for the regional unemployment rate. Further, in accordance with our expectations, disabled individuals with work reduction are less likely to be employed than non-disabled individuals. More specifically, the probability of being employed is reduced by 43 pct. points for the treatment group compared to the control group. However, although the estimates have the expected positive signs, the results show that employment for the disabled with work reduction is not significantly improved after the introduction of the *flexjobs* scheme in 1998 suggesting that this scheme does not work as intended for the age group 18-59 years as a whole. Parameter estimates for the remaining background variables conform to expectations.

Although the introduction of the *flexjobs* scheme does not seem to improve employment for disabled individuals with work reduction in the age group 18-59 years as a whole, the scheme might have an impact for specific age groups. To examine this, we conduct separate analyses for the 18-34-, 35-44- and 45-59-year-olds respectively, see Table 3-5. The positive signs on the estimates of employment for disabled individuals with reduction after the introduction of *flexjobs* are reproduced for all three age groups but only in some of these cases is employment affected significantly. For the 18-34-year-olds, the estimates are significant only when "empl1" is used as the dependent variable. That is, the employment effect of introducing *flexjobs* is highly uncertain for this age group. For 35-44-year-olds, three out of four estimates are significant suggesting that *flexjobs* might have had a positive impact on employment for the disabled with work reduction in this age group. The increase in employment for this group after the introduction of *flexjobs* is 10.5-12.5 pct. points compared to the non-disabled depending on whether "empl1" or "empl2" is used as the dependent variable. None of the estimates for the 45-59-year-olds are significant suggesting that *flexjobs* have not improved employment for disabled individuals with work reduction in this age group.

We also examine whether the introduction of *flexjobs* seem to have led to a deadweight loss to society resulting from these jobs being assigned to disabled individuals without work reduction who would have been employed otherwise. To examine this, we conduct difference-in-differences analyses in which we compare the disabled with no work reduction to the non-disabled before and after the introduction of *flexjobs*. Table 6 shows the results for individuals aged 18-59 years. We find as for disabled individuals with work reduction, that the disabled with no work reduction are less likely to be employed than the non-disabled, although the difference between the two groups is much smaller as expected. Thus, the probability of being employed is only reduced by 3-6.5% for this group of disabled individuals compared to the non-disabled individuals. The results also show that the employment of disabled individuals with no reduction is improved after the introduction of the *flexjobs* scheme. Thus, we find that the probability of being employed for this group of disabled individuals is increased by 5-8% compared to the control group. These findings indicate that the introduction of *flexjobs* has led to some deadweight loss to society.

We also look at whether this apparent deadweight loss seems to take place within specific age groups. Table 7-9 show the results for the age groups 18-34 years, 35-44 years and 45-59 years respectively. Again, the impact for the 18-34-year-olds is uncertain: We find a positive, but insignificant impact, when "empl1" is used as the dependent variable, while the impact is negative and significant, when we use "empl2". However, for both 35-44- and 45-59-year-olds, the estimates are positive and significant in all cases. For the age group 35-44 years, the probability of being employed increases by 8.5-13 pct. points for the disabled with no work reduction compared to the non-disabled. The corresponding figures for the age group 45-59 years are 11.5-17.5 pct. points.

VII. Conclusions

This paper evaluates the employment effects of the introduction of the *flexjobs* scheme in the 18-59 population. In line with the previous wage subsidy literature, we find only modest employment effect of this scheme. Thus, a positive impact is only found for the age group 35-44 years. For this group, the employment probability is raised by 10.5-12.5 pct. points (dependent on the choice of dependent variable) compared to the non-disabled after the scheme was introduced. No significant employment effects are found for 45-59-year-olds, while for the 18-34-year-olds, the impact is uncertain.

Further, the introduction of *flexjobs* seems to have led to a deadweight loss to society resulting from these jobs being assigned to disabled individuals with no work reduction who would have been employed otherwise. That is, the employment probability of the disabled with no work reduction is raised by 5-8% compared to the non-disabled after the introduction of the *flexjobs* scheme. The largest impact is found for the age group 45-59 years for whom the probability of being employed is increased by 11.5-17.5 pct. points compared to the non-disabled.

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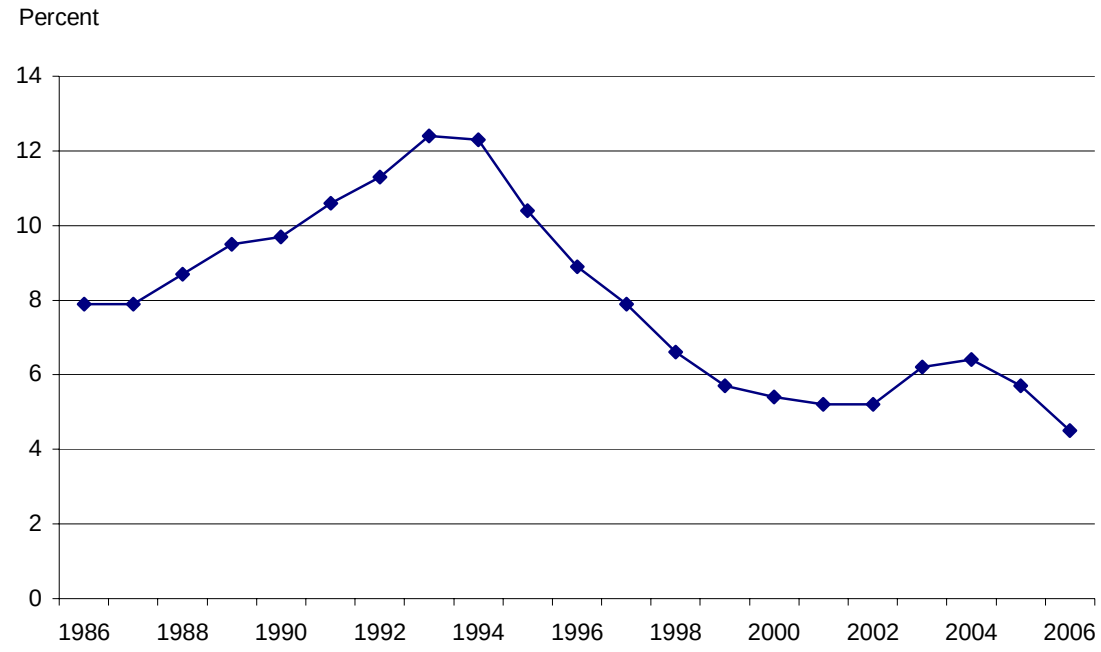
Figure 1.
Unemployment rate, 1986-2006, Denmark. Percent.



Source: Statistics Denmark (2007): Statbank Denmark.

Table 1.
Summary statistics, means. All, non-disabled and disabled with and without work reduction.

	All	Non-disabled	Disabled, with no work reduction	Disabled, with work reduction
Employed 1	0.77	0.80	0.78	0.44
Employed 2	0.77	0.80	0.79	0.44
After (year = 2002)	0.53	0.52	0.45	0.70
Age 18-34	0.40	0.42	0.31	0.21
Age 35-44	0.25	0.25	0.23	0.25
Age 45-59	0.35	0.32	0.45	0.55
Regional unemployment rate	8.50 (3.96)	8.59 (3.97)	9.01 (4.02)	7.28 (3.49)
Female	0.52	0.51	0.51	0.59
Basic education (edu1)	0.40	0.40	0.42	0.47
Vocational education (edu2)	0.40	0.40	0.42	0.40
Higher education (edu3)	0.19	0.20	0.17	0.13
Single	0.31	0.31	0.30	0.34
N (max.)	17,545	14,819	1,192	1,534

Standard deviations in parentheses for continuous variables.

Table 2.
Employment effects of introducing *flexjobs* for 18-59-year-olds. Disabled with reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(1) Empl1	(2) Empl2	(3) Empl1	(4) Empl2
After	0.104	0.104	0.000	0.000
	(0.007)***	(0.007)***	(0.028)	(0.028)
Disabled with reduction	-0.438	-0.432	-0.431	-0.425
	(0.023)***	(0.023)***	(0.022)***	(0.022)***
After*disabled with reduction	**0.035**	**0.029**	**0.047**	**0.040**
	(0.030)	**(0.030)**	**(0.029)**	**(0.029)**
35-44 years			0.051	0.051
			(0.011)***	(0.011)***
45-59 years			0.031	0.031
			(0.010)***	(0.010)***
Regional unemployment rate			-0.013	-0.013
			(0.004)***	(0.004)***
Female			-0.139	-0.139
			(0.018)***	(0.018)***
Edu2			0.047	0.047
			(0.013)***	(0.013)***
Female*edu2			0.091	0.091
			(0.021)***	(0.021)***
Female*edu3			0.113	0.113
			(0.023)***	(0.023)***
Edu3			0.060	0.060
			(0.016)***	(0.016)***
Single			-0.093	-0.093
			(0.014)***	(0.014)***
Female*single			0.044	0.044
			(0.021)**	(0.021)**
Constant	0.769	0.769	0.947	0.947
	(0.005)***	(0.005)***	(0.049)***	(0.049)***
Observations	16353	16353	16304	16304
R-squared	0.12	0.12	0.18	0.18

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3.
Employment effects of introducing *flexjobs* for 18-34-year-olds. Disabled with reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.154	0.154	0.019	0.019
	(0.012)***	(0.012)***	(0.057)	(0.057)
Disabled with reduction	-0.367	-0.232	-0.356	-0.221
	(0.049)***	(0.053)***	(0.048)***	(0.052)***
After*disabled with reduction	**0.149**	**0.014**	**0.167**	**0.032**
	(0.064)**	**(0.067)**	**(0.063)*****	**(0.066)**
Regional unemployment rate			-0.018	-0.018
			(0.008)**	(0.008)**
Female			-0.145	-0.145
			(0.032)***	(0.032)***
Edu2			0.126	0.126
			(0.023)***	(0.023)***
Female*edu2			0.053	0.053
			(0.035)	(0.035)
Female*edu3			0.123	0.123
			(0.046)***	(0.046)***
Edu3			0.082	0.082
			(0.035)**	(0.035)**
Single			-0.068	-0.068
			(0.022)***	(0.022)***
Female*single			0.061	0.061
			(0.033)*	(0.033)*
Constant	0.659	0.659	0.902	0.902
	(0.008)***	(0.008)***	(0.096)***	(0.096)***
Observations	6559	6559	6551	6551
R-squared	0.02	0.02	0.08	0.08

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4.
Employment effects of introducing *flexjobs* for 35-44-year-olds. Disabled with reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.023	0.023	-0.062	-0.062
	(0.010)**	(0.010)**	(0.049)	(0.049)
Disabled with reduction	-0.470	-0.488	-0.449	-0.467
	(0.048)***	(0.048)***	(0.048)***	(0.048)***
After*disabled with reduction	**0.087**	**0.106**	**0.105**	**0.123**
	(0.062)	**(0.062)***	**(0.061)***	**(0.061)****
Regional unemployment rate			-0.011	-0.011
			(0.007)	(0.007)
Female			-0.155	-0.155
			(0.034)***	(0.034)***
Edu2			0.017	0.017
			(0.021)	(0.021)
Female*edu2			0.125	0.126
			(0.039)***	(0.039)***
Female*edu3			0.136	0.136
			(0.044)***	(0.044)***
Edu3			0.033	0.033
			(0.027)	(0.027)
Single			-0.072	-0.072
			(0.024)***	(0.024)***
Female*single			-0.007	-0.007
			(0.042)	(0.042)
Constant	0.892	0.892	1.062	1.062
	(0.008)***	(0.008)***	(0.084)***	(0.084)***
Observations	4144	4144	4144	4144
R-squared	0.14	0.14	0.18	0.18

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5.
Employment effects of introducing *flexjobs* for 45-59-year-olds. Disabled with reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.079	0.079	0.008	0.008
	(0.010)***	(0.010)***	(0.039)	(0.039)
Disabled with reduction	-0.536	-0.563	-0.501	-0.528
	(0.030)***	(0.029)***	(0.029)***	(0.028)***
After*disabled with reduction	**0.015**	**0.042**	**0.019**	**0.046**
	(0.039)	**(0.038)**	**(0.038)**	**(0.037)**
Regional unemployment rate			-0.009	-0.009
			(0.005)*	(0.005)*
Female			-0.116	-0.116
			(0.028)***	(0.028)***
Edu2			0.006	0.006
			(0.020)	(0.020)
Female*edu2			0.080	0.080
			(0.033)**	(0.033)**
Female*edu3			0.093	0.093
			(0.034)***	(0.034)***
Edu3			0.048	0.048
			(0.022)**	(0.022)**
Single			-0.132	-0.132
			(0.025)***	(0.025)***
Female*single			0.069	0.069
			(0.035)**	(0.035)**
Constant	0.842	0.842	0.990	0.990
	(0.008)***	(0.008)***	(0.069)***	(0.069)***
Observations	5611	5611	5609	5609
R-squared	0.29	0.29	0.32	0.32

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6.
Employment effects of introducing *flexjobs* for 18-59-year-olds. Disabled with no reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.104	0.104	0.009	0.009
	(0.007)***	(0.007)***	(0.026)	(0.026)
Disabled with no reduction	-0.058	-0.029	-0.064	-0.035
	(0.018)***	(0.018)	(0.018)***	(0.018)**
After*disabled with no reduction	**0.084**	**0.055**	**0.077**	**0.048**
	(0.024)* **	**(0.024)** **	**(0.023)*** **	**(0.023)** **
35-44 years			0.066	0.066
			(0.010)***	(0.010)***
45-59 years			0.068	0.068
			(0.010)***	(0.010)***
Regional unemployment rate			-0.012	-0.012
			(0.004)***	(0.004)***
Female			-0.124	-0.124
			(0.018)***	(0.018)***
Edu2			0.068	0.068
			(0.012)***	(0.012)***
Female*edu2			0.065	0.065
			(0.020)***	(0.020)***
Female*edu3			0.096	0.096
			(0.000)	(0.022)***
Edu3			0.056	0.056
			(0.015)***	(0.015)***
Single			-0.069	-0.069
			(0.013)***	(0.013)***
Female*single			0.044	0.044
			(0.020)**	(0.020)**
Constant	0.769	0.769	0.899	0.899
	(0.005)***	(0.005)***	(0.045)***	(0.045)***
Observations	16011	16011	15962	15962
R-squared	0.00	0.00	0.07	0.07

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7.
Employment effects of introducing *flexjobs* for 18-34-year-olds. Disabled with no reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.154	0.154	0.001	0.001
	(0.012)***	(0.012)***	(0.055)	(0.055)
Disabled with no reduction	-0.017	0.104	-0.010	0.111
	(0.034)	(0.031)***	(0.033)	(0.030)***
After*disabled with no reduction	**0.029**	**-0.092**	**0.021**	**-0.099**
	(0.048)	**(0.046)****	**(0.046)**	**(0.044)****
Regional unemployment rate			-0.020	-0.020
			(0.007)***	(0.007)***
Female			-0.127	-0.127
			(0.032)***	(0.032)***
Edu2			0.135	0.135
			(0.022)***	(0.022)***
Female*edu2			0.045	0.045
			(0.034)	(0.034)
Female*edu3			.0106	0.106
			(0.045)**	(0.045)**
Edu3			0.087	0.087
			(0.035)**	(0.035)**
Single			-0.063	-0.063
			(0.022)***	(0.022)***
Female*single			0.055	0.055
			(0.033)*	(0.033)*
Constant	0.659	0.659	0.922	0.922
	(0.008)***	(0.008)***	(0.093)***	(0.093)***
Observations	6617	6617	6609	6609
R-squared	0.00	0.00	0.06	0.06

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8.
Employment effects of introducing *flexjobs* for 35-44-year-olds. Disabled with no reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.023	0.023	-0.047	-0.047
	(0.010)**	(0.010)**	(0.044)	(0.044)
Disabled with no reduction	-0.093	-0.053	-0.087	-0.047
	(0.034)***	(0.031)*	(0.033)***	(0.031)
After*disabled with no reduction	**0.130**	**0.090**	**0.126**	**0.085**
	(0.040)* **	**(0.038)** **	**(0.040)*** **	**(0.038)** **
Regional unemployment rate			-0.009	-0.009
			(0.006)	(0.006)
Female			-0.133	-0.133
			(0.032)***	(0.032)***
Edu2			0.028	0.028
			(0.017)*	(0.017)*
Female*edu2			0.081	0.081
			(0.036)**	(0.036)**
Female*edu3			0.085	0.085
			(0.041)**	(0.041)**
Edu3			0.022	0.022
			(0.023)	(0.023)
Single			-0.050	-0.050
			(0.019)***	(0.019)***
Female*single			-0.007	-0.007
			(0.038)	(0.038)
Constant	0.892	0.892	1.036	1.036
	(0.008)***	(0.008)***	(0.075)***	(0.075)***
Observations	4045	4045	4045	4045
R-squared	0.00	0.00	0.04	0.04

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 9.
Employment effects of introducing *flexjobs* for 45-59-year-olds. Disabled with no reduction vs. non-disabled. Difference-in-differences estimates (standard errors in parentheses).

	(2) Empl1	(3) Empl2	(5) Empl1	(6) Empl2
After	0.079	0.079	0.036	0.036
	(0.010)***	(0.010)***	(0.033)	(0.033)
Disabled with no reduction	-0.128	-0.168	-0.115	-0.155
	(0.027)***	(0.028)***	(0.027)***	(0.028)***
After*disabled with no reduction	**0.133**	**0.173**	**0.116**	**0.157**
	(0.034)* **	**(0.035)*** **	**(0.033)*** **	**(0.034)*** **
Regional unemployment rate			-0.005	-0.005
			(0.004)	(0.004)
Female			-0.117	-0.117
			(0.026)***	(0.026)***
Edu2			0.013	0.013
			(0.017)	(0.017)
Female*edu2			0.067	0.067
			(0.030)**	(0.030)**
Female*edu3			0.096	0.096
			(0.030)***	(0.030)***
Edu3			0.029	0.029
			(0.018)*	(0.018)*
Single			-0.085	-0.085
			(0.023)***	(0.023)***
Female*single			0.082	0.082
			(0.031)***	(0.031)***
Constant	0.842	0.842	0.936	0.936
	(0.008)***	(0.008)***	(0.059)***	(0.059)***
Observations	5310	5310	5308	5308
R-squared	0.00	0.00	0.03	0.03

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%