

## **Loosening Hours Constraints on the Supply of Labor**

### **What if Germans Had a Dutch Labor Market?\***

By Elke Wolf

#### **Abstract**

Total employment in Germany is supposed to increase if people are able to realize their desired working hours. However, this back-of-the-envelope calculation overestimates the effect of loosening hours constraints, because even in a very flexible labor market there will exist hours restrictions for certain jobs and occupations. Therefore, I simulate Germans' working hours in a more flexible but real world, namely the Dutch labor market. The results indicate that the average weekly working hours of German employees would indeed decrease if they were employed on conditions similar to those of the Dutch Labor market. Thus, there exists some potential for additional work-sharing in Germany. Furthermore, the match between actual and desired hours of Germans would improve if Germans had the same hours flexibility as Dutch employees. This holds both for men and for women. Another piece of good news is that hours restrictions shrank over time, which means Germany seems to be moving towards a more flexible labor market.

#### **Zusammenfassung**

Der Mangel an adäquaten Teilzeitarbeitsplätzen und die geringe Flexibilität der Arbeitszeiten gelten als Hemmschuh des Beschäftigungswachstums und der Wohlfahrt in Deutschland. Ziel dieser Studie ist es daher, die Effekte einer flexibleren Gestaltung der Arbeitszeiten zu bestimmen. Das "mögliche" Maß an Teilzeitbeschäftigung und Arbeitszeitflexibilität wird anhand der Arbeitszeitverteilung in den Niederlanden beschrieben, einer Marktwirtschaft, in der die Arbeitsteilung bereits weit vorangeschritten ist. Somit wird die Verteilung der Arbeitsstunden von deutschen Beschäftigten unter der Annahme, dass sie die gleichen Chancen auf eine Teilzeitstelle hätten wie ihre holländischen Kollegen in vergleichbaren Berufen, simuliert und die Veränderung im Vergleich zu den tatsächlich beobachteten Arbeitszeiten analy-

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siert. Die Ergebnisse zeigen, dass sowohl die durchschnittliche Arbeitszeit als auch das Ausmaß der Arbeitszeitrestriktionen der Deutschen sinken würden, wenn sie unter holländischen Arbeitszeitmodellen arbeiten könnten. Im Übrigen ist festzustellen, dass die durchschnittliche Abweichung zwischen gewünschter und tatsächlicher Arbeitszeit in Deutschland zwischen 1995 und 1998 gesunken ist. Auch ohne Teilzeitgesetz scheinen sich die Einschränkungen bei der Wahl der individuellen Arbeitszeit langsam zu lockern.

*JEL classification: J22, J23, J24*

## 1. Introduction

The merits of increasing the flexibility of working hours have recently been contentiously debated in Germany. First of all, increasing the flexibility of working hours is regarded as a means of reducing unemployment. Secondly, the opportunity to adjust working hours according to individual preferences may enhance welfare, because it moderates the conflict between family and work and facilitates participation in continuous or recurring training courses. Surveys show that employees often work more hours than they actually want to, thus loosening hours restrictions on the part of the institutional conditions and employers' reservations may enable more work-sharing and improve the match between employees' working hours preferences and offered working hours arrangements. In this paper I investigate the effects of enhancing part-time opportunities and hours flexibility on the German labor market.

There are already some empirical studies on hours restrictions and employment in Germany. Holst and Schupp (1994, 1998) compare the contractual and desired working hours of German employees in 1993 and 1997. The results for 1993 indicate that the majority of employees are overemployed whereas the share of people who want to expand their labor supply increased in 1997. This trend is, however, primarily driven by full-time employees wishing to work more than their contractual hours. Taking into account that many employees work overtime, the question arises whether contractual hours are the appropriate measure in this context. Looking at actual working hours instead, the share of people who want to expand their labor supply is much smaller. Furthermore, the increasing preference for part-time work, especially among West German men, suggests that there still is some potential for additional work-sharing. Schilling et al. (1996) go one step further. Based on the deviation between contractual and desired hours, they estimate that full-time employment could increase by 2.6 million people in 1995 if all employees would work their desired hours and the surplus hours were shared among unemployed. For women, the employment effect of loosening hours restrictions is supposed to be tiny (Beckmann,

1997). However, these estimations are based on the fallacy that the amount of labor input required to produce a fixed volume of output can be shared between employees and non-workers. The latest studies mainly refer to the employment effects of cutting back overtime hours (Bauer and Zimmermann, 1999; Groß et al. 1999).

Microeconomic analysis for various countries come to the conclusion that hours restrictions prevent people from working part-time (Ilmakunnas and Pudney, 1990; Dickens and Lundberg, 1993; van Soest, 1995; Aaberge et al., 1997; Euwals and van Soest, 1999). Several studies show that allowing for hours restrictions in a discrete family labor supply model substantially reduces the estimated wage elasticities (van Soest, 1995; Wolf, 1998).

Given these indications on hours restrictions, I address the following questions: First, how would Germans adjust their labor supply if the labor market were more flexible? Is it likely that more work-sharing would take place? And second, how did the willingness to do so change from 1995 to 1998? Did the so-called "overemployment" of German employees during the mid 90s really fade away? Finally, did the mismatch between working hours preferences and actual working hours shrink during that period, or is it possible that the employers' view of flexible working time arrangement does not reconcile with individual time sovereignty?

A simple but naive way to answer these questions would be to approximate the outcome in the flexible world using the desired labor supply (see for example Schilling et al., 1996). Presumably this result is not realistic, because even in a very flexible labor market there will be hours restrictions for certain occupations and individuals. The probability of actually reducing the weekly working hours depends strongly upon occupation and other individual characteristics. A manager will find it difficult to reduce his effort to 20 hours per week, whereas a factory worker will probably not find a job with a contract allowing more than 40 hours. Additionally, specific skills or a certain amount of firm-specific human capital might increase the probability that an employee can arrange an individual schedule. Simply using the desired working hours as a proxy for the labor supply in a world with no or at least fewer hours restrictions would completely ignore these occupation-specific restrictions. There might be a potential to reduce weekly working hours in some occupations if desired, however very little is known about the feasible level of hours flexibility in Germany. There is also no empirical analysis of the expected adjustment of working hours if labor market flexibility increased.

Therefore, based on the Germans' working hours preferences in 1995 and 1998, I simulate their labor supply in a world that actually exists, namely the labor market in the Netherlands. The results of this exercise are very re-

vealing because the Netherlands are often used as a good example of a country with a high degree of working hours flexibility. On the one hand, work-sharing policy seems to be successful. In the 1970s and early 1980s, the Dutch economy performed significantly worse than other European countries as a result of various shocks and failed policies. In 1982, a more supply-oriented economic policy approach was enacted. An important element of the new strategy was an agreement between employers and trade unions, the so-called “Wassenaar agreement” on wage moderation combined with a reduction in working time. Since then, the share of part-time work has increased substantially and the unemployment problem is moderate. In contrast, the German unemployment rate increased in the mid 80s and especially after the German Unification. On the other hand, the Netherlands are far ahead of Germany with respect to the implementation of the employees’ right to reduce contractual working hours. Whereas the German Government – after long and animated discussions – approved a corresponding law in January 2001, the Dutch Labour Foundation had already agreed upon the precept that employers should reward individual requests for changes in working hours in 1993. Five years later – but still two years before the implementation of the Dutch law that seeks to guarantee the right to reduce working time – about 56 percent of all workers covered by a collective agreement can refer to a clause enabling part-time employment in the concerned collective agreement (Peters et al., 2000). As will be shown later on, these regulations enhance indeed the chance to realize one’s working hours preferences in the Netherlands.

The format of the paper is as follows: First, I show that the German and Dutch welfare states and labor market institutions have a number of features in common, an important condition for a meaningful simulation. Section 3 is dedicated to the description of the German and the Dutch data and Section 4 outlines some figures on the actual and desired working hours. The reduced-form labor supply model with hours restrictions is described in Section 5. Section 6 gives simulations of loosening the hours constraints on the distribution of weekly working hours in Germany and the gap between actual and desired working hours. Regional differences between East and West Germany are thereby taken into account. Conclusions and policy implications are derived in Section 7.

## **2. German and Dutch employment systems and economic structure in comparative perspectives**

The Dutch political economy is institutionally similar to the German one in several key aspects (Meerendonk, 1998). But, these similarities hide an

important set of differences (Soskice et al., 1998). Before looking at the data, I will therefore give a brief overview of the different aspects of the employment systems affecting the distribution of working hours and working hours flexibility.

## 2.1 Unions and wages

Wage level, structure and flexibility are the major determinants for balancing the labor market. In both countries, pay negotiations take place on the industry level and agreements are universally binding. A distinguishing feature of the Dutch bargaining procedure is the tradition of consensual decision making between unions, employers and the government. In contrast, the German government was never able to directly interfere in the process of collective bargaining between employers and employees. Another point is that unions density in the Netherlands has fallen dramatically since the early 80s. German unions also experienced shrinking membership,<sup>1</sup> however this trend was more pronounced in the Netherlands and started about a decade earlier there. It should be noted though that in both countries pay agreements are to a considerable extent applied to non-union members as well (Schettkat, 2000).

The Dutch wage setting institutions generated very moderate growth throughout the 1980s and 90s. The two most important reasons are firstly, the fading power of the unions and secondly, the Wassenaar agreement, which launched the end of wage adjustment to the price level and the agreement – to a certain extent brought about by the government – on moderate wage policy.

Empirical research points to a comparable level of wage flexibility in Germany and the Netherlands (Blanchflower and Oswald, 1995). In contrast to the trend in the United States and the United Kingdom, earnings dispersion in Germany and the Netherlands has been rather stable since the beginning of the 80s (OECD, 1996). Only a closer inspection reveals small changes in the wage distribution (see Fitzenberger (1999) for Germany and Salverda (1998) for the Netherlands).

## 2.2 Recent trends in working-time policy

The decline in average working hours started about a century ago and seems to have slowed down in most of the OECD countries (OECD, 1998b).

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<sup>1</sup> German Unification caused a strong increase in the number of members, but since 1992 unions have experienced a dramatic slump in membership (Fitzenberger et al., 1999).

In the Netherlands, working-time reductions were mainly implemented by giving additional unscheduled holiday, so-called ADV-days, to the workers. In the Wassenaar agreement unions gave up their resistance to part-time jobs.<sup>2</sup> Since 1985, working time reductions have been gradually abandoned by the labor unions and the political parties. In contrast, unions' claims for further reductions of standard working hours flare up every now and then in Germany. However, even in Germany, the support for further reductions of standard working hours is shrinking and in fact the latest collective agreement for employees in the metal industry agreed to remain with the 35-hours week in West Germany (WSI-Tarifarchiv). Neubourg (1991) provides three major reasons for turning away from collective working hours reductions in the Netherlands, which also apply to the German case. Firstly, the actual employment effects remained far behind the expectations.<sup>3</sup> Secondly, inflation during the 80s was very moderate in both countries. Since working time reductions were to be financed by real wage rigidity, further reductions would result either in nominal wage cuts or increasing labor cuts. Last but not least, worker's support for further reductions and related wage cuts declined, in particular because of the disappointing employment effects.

Meanwhile, employers increasingly emphasize the aspect of working hours flexibility. In Germany, firms in the steel industry are allowed to use more flexible working hours arrangements in exchange for the latest working hours reduction in 1995. Also in other industries, the use of non-standard working hours and flexible employment arrangements, such as fixed-term contracts and temporary workers, increased steadily (Keller, 1997).

### 2.3 Social security systems

Social security systems may affect the distribution of working hours in two different ways. Firstly, the method of financing determines the non-wage labor costs if contributions depend upon hours worked or earnings. This may affect the labor demand for jobs with certain working hours. Secondly, the conditions of entitlement and the amount of benefits involve incentives that impact labor supply. For example, eligibility or the amount of

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<sup>2</sup> Soskice et al. (1998) argue that the increasing flexibility of individual labor contracts is partly attributed to the relative weakness of Dutch unions.

<sup>3</sup> See Neubourg (1991), König and Pohlmeier (1988), Franz (1997) and Hunt (1999). Kapteyn et al. (2000) considered both the theoretical and the international empirical literature on work-sharing as a policy to promote employment. They conclude that if one wants to increase employment, other measures than work-sharing are probably much more effective. Even though, they argue that allowing for shorter hours at an individual level, that is flexible working hours arrangements, may be welfare enhancing.

benefits may shrink, once earnings are below a lower earnings limit or the past employment periods are too short.

In Germany, generally speaking, without former contributions people have no right to receive benefits in case of illness, unemployment, maternity leave, work injuries, disability or retirement. People who are not entitled to these social security benefits are supported by social welfare, which is supposed to guarantee the recipients' subsistence level income. All employees in the private or public sector whose earnings exceed the lower earning limit are subject to the social security contributions, which are a fixed percentage of gross earnings. That is, apart from the so-called "marginal jobs", contributions and benefits of the German social security system are fully proportional to income. The scheme provides little incentive for employees to deviate from the standard full-time hours, because the resultant reduction in benefits, i.e. old-age pension, might not guarantee adequate income later on.

In contrast, there exists a general social security system for all individuals in the Netherlands and on top of that, a separate insurance for employees. The general system is financed by taxes, to be precise, contributions to retirement insurance are incorporated into the first income tax bracket, which applies to the first earned guilder. Only the illness, disability and unemployment insurance are financed by contributions from employees and employers for the most part. Since social security benefits do not strictly depend upon the previous employment status, Ginn and Arber (1998) consider the Dutch scheme to be very favorable for part-time employees. The German pension system is more orientated towards continuous full-time employment, resulting in significant smaller benefits for part-time employees. Employment breaks in order to raise children are taken into account to some extent. But generally, the German model does not assure sufficient social security of long-term part-time employees. In sum, the German social security scheme is likely to induce working longer hours.

Concerning entitlement and the benefit amounts, the Netherlands experienced a major restructuring of the disability benefit system in 1987 and another reform of the sickness and disability scheme in the 1990s. The main objective was to cut benefits from a maximum of 80 percent of the previous wage to 70 percent and to reduce the inflow into disability. The reform of the disability scheme increased the incentive to supply labor, even for short hours, and clearly contributed to the Dutch employment miracle (Nickell and Ours, 2000).

## 2.4 Active labor market policy

During the 1990s, active labor market policy was seen as playing a leading role in combating unemployment (OECD, 1995). These measures aim to increase the match between labor demand and labor supply by means of training programs, information about vacancies or wage subsidies, in some cases as part of a job-creation program. In the Netherlands, expenditures for such programs as a percentage of GDP increased from 1.1 % in 1995 to 1.8 % in 1999 (OECD, 2000). During the first half of the 1990s, Germany constantly spent more of the GDP on employment promotion measures (OECD, 1996). However, this activity was mainly caused by the German Unification and the corresponding training requirements. Since 1996, the Netherlands have spent a higher percentage of GDP on active labor market policies. Both countries reorganized the structure in favor of job-creation programs in the second half of the 1990s.

But higher expenditures do not necessarily mean higher employment. There exist good arguments to support the view that raising expenditures on active labor market policy may lead to higher unemployment.<sup>4</sup> Whether these measures have actually contributed decisively to employment growth in the Netherlands is rather doubtful. In both countries, the empirical evidence concerning the employment effects of training and job-creation programs is sobering (see the survey in Hagen and Steiner (2000) for Germany and de Koning (1995) for the Netherlands).

The total unemployment rate in 1994 was 7.2 percent in the Netherlands and 8.4 percent in Germany – hiding strong differences between East and West Germany. Taking into account the hidden unemployment rate, that is people in active employment programs, further increases the gap between Germany and the Netherlands. In 1994, 2.5 percent of the Dutch labor force entered a labor market program, the corresponding figure for Germany was 4 percent, though it should be noted that this figure is strongly driven by specific programs for East Germany (OECD, 1996). Since 1995, the Dutch Minister of Social Affairs and Employment *Melkert* created various programs to create new subsidized jobs for long-term unemployed. The majority of these “Melkert Jobs” are in the public sector. Until 1997, the inflow in active labor market programs exceeded 14 percent of the Dutch labor force.

Since 1996, the *SPAK*-program<sup>5</sup> has been subsidising employers' contribution to social security for low-wage workers (OECD, 1998a). As a result, labor costs of employees earning minimum wages fell by about 11 percent.

<sup>4</sup> If displacement or substitution effects are at work, the full impact of active labor market programs may be negative, even if positive treatment effects are proven (Calmfors, 1994).

<sup>5</sup> Specifieke Afdrachtskorting.



Textbook economics predicts that a lower relative price for low skilled labor will stimulate demand. However, Salverda (1999) concludes that the effects of wage subsidies on employment growth seem to be small if there are any at all. Comparable programs have been in force before, but they performed also very poorly. Recently, also in Germany a discussion about social security subsidies for low income employees started. In view of the pessimistic assessment of the potential employment effects, the effectiveness of such a scheme is much disputed in both countries (see Buslei and Steiner, 1999; Bender et al., 1999 and Schupp et al., 1999).

Particular emphasis is put on the integration of young employees in the Netherlands. The Youth Work Guarantee Law of 1992 offered youngsters a combination of training and work experience. In 1994, the law was replenished by a program to train those young people who are not adequately skilled to move directly to a permanent job. Like other training programs, the success of this scheme was very limited. In Germany, youth unemployment is comparatively moderate, because the unique vocational training system facilitates a smooth transition into employment (Franz and Zimmermann, 1998).

## 2.5 Temporary work

The use of temporary work agencies in the Netherlands is the most extensive in the OECD area. A valuable advantage for enterprisers is the flexibility to adjust working hours, employment levels and compensation standards during a temporary decline in demand. Survey data show that the share of temporary workers in the Netherlands (2.7 % in 1995) is about five times higher than in Germany (0.5 %) (Europäische Kommission, 1997). Also other regulations bring about that the management of Dutch firms is more flexible than the Germans<sup>6</sup> and Di Tella and MacCulloch (1999) find evidence that higher labor market flexibility increases both the employment rate and the rate of participation in the labor force. However, given that the share of temporary workers was still very low in the mid 1990s in the Netherlands, I do not feel that this is the driving force for the overall hours flexibility. Since that time though, the importance of temporary work raised steadily and amounts to about 12 percent in both countries in the late 1990s (OECD, 2001).

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<sup>6</sup> According to the OECD (1998b), employment protection in Germany is classified as “high strictness”, the Dutch protection law is denoted as “medium strict”.

## 2.6 Sectoral structure

An important difference between the Dutch and German economy is the sectoral structure. The Dutch manufacturing sector is very small compared to the German one. According to the Labor Force Survey, less than a quarter of Dutch employees worked in the manufacturing industry in the mid 90s. In contrast, still 40 percent of the German labor force were employed in this sector (Federal Statistical Office, 1996). Given that the Netherlands used to be a very traditional industrial society, these figures illustrate that the structural change is carried out at great speed. Critics bring up the argument that employment growth in the Netherlands is mainly driven by the increase in fixed-term contracts and female part-time employees in the service sector, which are often regarded as precarious jobs. In 1995, almost three quarters of women in the service sector worked part-time. Breaking down net employment growth by sector sheds more light on this reproach. The fact that regular full-time employment increased only slightly is mainly related to the decline of the Dutch industry sector, which falls heaviest on full-time jobs and not to the missing creation of regular jobs in the service sector (Schettkat, 2000).

## 3. Descriptions of the data

The empirical analysis is based on data from the German Socio Economic Panel (GSOEP) in 1995 and 1998 and from the Dutch OSA<sup>7</sup> Labour Supply Panel of 1994<sup>8</sup>. The GSOEP is a representative household survey for the German population conducted every year since 1984 in West Germany and, since 1990, in East Germany as well. The Organization for Strategic Labour Market Research (OSA) collects individual data about the labor market situation of the respondents every two years. In principle, the OSA-data have been collected as a panel since 1985. However, the attrition from one survey to the other is rather high.<sup>9</sup>

In both sets of data, I select members of the labor force between 20 and 60 years of age. Presumably, the determination of working hours for non-Europeans and those working in the fishing and farming sector is subject to some peculiarities. For this reason I exclude them from the analysis.

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<sup>7</sup> Organisatie voor Strategisch Arbeidsmarktonderzoek.

<sup>8</sup> In principle, it would be desirable to extend the analysis by using data from subsequent years of the Dutch panel. Since this exercise is rather exemplary, the choice of the year is not crucial. Using data from 1994 allows me, however, to interpret my results as lower bounds of the effects, because working hours flexibility in the Netherlands has further developed during the last years.

<sup>9</sup> See "Trendrapport Aanbod van arbeid 1995", OSA, Den Haag.

Furthermore, I exclude all individuals in apprenticeship or in any other full-time education or training because they were not asked about their desired working hours in the OSA-data. Finally, I exclude self-employed and unpaid family workers since they are least likely to be affected by hours restrictions. Since I am interested in the deviation between actual and desired working hours, I restrict the sample to people who either already work or intend to start working part-time or full-time. After these exclusions 7400 observations remain in the 1995 GSOEP sample, 7100 observations in 1998 and about 2830 observations in the Dutch OSA-data.

For Germany, the information about the *actual* working hours refers to the question: "How many hours per week, including the overtime hours, do you usually work?" Provided that the employee can use up the excess hours of work by taking time off in the near future, I use the reported contractual working hours. If overtime hours are either rewarded or not compensated at all, indicating that employees exceed their contractual working hours, I use the information about usual working hours (including overtime hours), because this seems to be a better measure for the average work-load. The exact wording of the question regarding the *desired* working hours is: "If you could choose your working time, taking into account that your income changes accordingly, how many hours would you like to work per week?" The Dutch data provide exact information on contractual working hours<sup>10</sup> and average paid and unpaid overtime hours. *Actual* working hours are defined as the sum of contractual and all overtime hours. Presumably, this measure overrates the average working hours, because part of the reported unpaid overtime hours may be compensated by time off. Unfortunately, the OSA Labour Supply survey does not contain any question about the use of flexible working hours in 1994. The information about *desired* working hours is based on the question: "Imagine that you could determine your weekly working hours, how many hours would you schedule with your employer? Assume that your hourly wage rate would be the same and other household members would not change their weekly working hours." The individual differences in the number of days of holiday and absenteeism are not taken into account.<sup>11</sup> The distribution of actual and desired hours in the two subsamples are considered in the

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<sup>10</sup> I adjust the contractual weekly working hours in case people are eligible to take ADV-days, which are additional free days apart from vacation (see Section 2.2).

<sup>11</sup> The use of subjective data is rather controversial in economics. Particularly the experimental literature casts doubt on the quality of answers to subjective questions (see the reviews in Tanur, 1992 and Sudman et al., 1996). Bertrand and Mullainathan (2001) analyze the usefulness of this information in econometric models and advise against using them as dependent variable. In contrast, its use as an explanatory variable seems to cause less problems. In line with this conclusion, Euwals et al. (1998) ascribe predictive power to subjective labor supply data. Thus, noise does not seem to dominate the valuable information in the answers to subjective questions.

next section. Table 5 in the Appendix presents descriptive statistics of the other variables used in this study.

#### 4. Comparing the match of desired and actual hours in the Netherlands and in Germany

In order to provide an idea of the existing hours restrictions in the Dutch and German labor markets, I outline the mismatch between actual and desired hours in the Netherlands and Germany in 1995 and 1998.

First, I generate discrete variables of desired and actual weekly working hours. NW denotes people who do not work. Employees working up to 20 hours are grouped in the category “small part-timer” (SPT) and employees who work up to 34 hours are defined as “extended part-timer” (EPT). Standard full-time jobs (FT) cover the range from 35 to 40 hours per week and all jobs beyond this threshold are called “overtime jobs” (OT). Table 1 compares the grouped variables of desired and actual weekly working hours separately for men and women. I skip the category of desired overtime hours for women due to too few observations. The figures present the percentages of individuals who fall into the respective category of actual hours. The first row, for example, shows the labor supply distribution for German men and women in 1995 who do not want to work more than 20 hours per week (the sum of the first five columns adds up to 100 percent). The last row of each block exhibits the distribution of actual working hours of men and women and the last column contains the shares of the desired working hours for the corresponding sample.

The italicized numbers on the diagonal of each block show the percentages of people whose desired working hours roughly match their actual labor supply; that is, they can more or less realize their preferences.<sup>12</sup> Even in the Netherlands, a country with very flexible working hours, the coordination between desired and actual working hours is not perfect. The individuals in the lower triangle are underemployed, and those in the upper triangle would prefer to work fewer hours than they actually do. Comparing these figures reveals the difference in the hours restrictions between Germany and the Netherlands.

Are the Dutch indeed more likely to meet their working hours preferences? Based on these descriptive figures, this question can easily be answered. People who state that they would like to work part-time are clearly

<sup>12</sup> If the difference between desired and actual working hours is not more than 1 hour per week, but the categorized variables of desired and actual hours differ, actual working hours are replaced by desired hours. In the OSA-data, 45 observations were replaced in this way, in the GSOEP-data it was only 5 observations.

*Table 1*  
**Desired versus actual working hours of men in Germany and the Netherlands**  
**(percentages of employees)**

	Men						Women					
	<i>NW<sub>a</sub></i>	<i>SPT<sub>a</sub></i>	<i>EPT<sub>a</sub></i>	<i>FT<sub>a</sub></i>	<i>OT<sub>a</sub></i>	$\Sigma^1$	<i>NW<sub>a</sub></i>	<i>SPT<sub>a</sub></i>	<i>EPT<sub>a</sub></i>	<i>FT<sub>a</sub></i>	<i>OT<sub>a</sub></i>	$\Sigma^1$
<i>Germany 1995</i>												
<i>SPT<sub>d</sub></i>	7.7	17.0	2.6	40.0	32.8	6.1	16.2	48.8	15.6	14.8	4.5	23.1
<i>EPT<sub>d</sub></i>	3.3	4.2	12.3	57.5	22.6	5.5	29.0	8.4	29.1	28.0	5.6	26.1
<i>FT<sub>d</sub></i>	14.3	0.7	1.0	55.7	28.3	71.2	26.4	2.6	5.2	51.2	14.6	50.8
<i>OT<sub>d</sub></i>	1.5	0.8	0.5	34.7	62.6	17.2	–	–	–	–	–	–
$\Sigma^2$	11.1	1.9	1.6	51.2	34.1	100	24.7	14.8	13.8	36.8	9.9	100
<i>Germany 1998</i>												
<i>SPT<sub>d</sub></i>	4.9	24.6	4.9	48.6	16.9	3.9	20.7	53.9	12.7	10.6	2.1	20.5
<i>EPT<sub>d</sub></i>	5.2	2.4	11.5	65.1	15.9	6.9	26.6	8.7	29.4	31.1	4.3	28.3
<i>FT<sub>d</sub></i>	15.3	0.9	1.1	61.2	21.5	76.3	26.9	2.7	6.5	53.7	10.1	51.2
<i>OT<sub>d</sub></i>	3.0	0.9	0.6	42.6	52.9	12.9	–	–	–	–	–	–
$\Sigma^2$	12.6	1.9	1.9	58.6	25.0	100	25.6	14.9	14.2	38.5	6.8	100
<i>Netherlands 1994</i>												
<i>SPT<sub>d</sub></i>	7.5	39.6	9.4	30.2	13.2	3.1	24.0	59.4	13.1	2.4	1.1	40.8
<i>EPT<sub>d</sub></i>	8.9	0.7	20.1	43.6	26.7	17.9	8.1	7.6	51.7	20.7	11.8	33.4
<i>FT<sub>d</sub></i>	6.8	0.6	1.5	52.8	38.3	71.2	14.2	4.1	8.1	58.3	15.3	25.8
<i>OT<sub>d</sub></i>	9.2	0.8	0.8	22.3	66.9	7.7	–	–	–	–	–	–
$\Sigma^2$	7.4	1.8	5.0	48.1	37.7	100	16.2	27.8	24.7	22.9	8.3	100

Note: NW: not working; SPT: short part-time; EPT: extended part-time; FT: full-time; OT: overtime; the subscript *d* indicates categories of *desired* working hours (rows) and subscript *a* denotes the corresponding category of *actual* working hours (columns); <sup>1</sup> distribution of desired weekly working hours (in percent); <sup>2</sup> distribution of actual weekly working hours.

Source: Own calculations based on the GSOEP 1995 and 1998 for Germany and the OSA-data for the Netherlands.

better off in the Netherlands. Even if the likelihood of German men meeting their preference for small part-time jobs increased from 17 % in 1995 to 24.6 % in 1998 (see Table 1), the opportunity to fulfill this desire is still much lower than in the Netherlands. For men who prefer an extended part-time job, the situation is rather stable in Germany. The corresponding shares of “unconstrained” people are 12.3 percent in 1995 and 11.5 percent in 1998; that is half the figure for the Netherlands. In principle, these results are very similar for women, albeit the match between part-time preferences and actual working hours is much better. Taking the Dutch hours flexibility as a starting-point, there seems to be a considerable potential for additional work-sharing in Germany.

Another striking result of this comparison is that the structure of over- and underemployment differs across countries (see Table 1). Even though

extended part-time jobs are more common in the Netherlands (5 % of all employed men work between 20 and 34 hours), about 70 percent of all Dutch men interested in these working hours work actually more hours. Dutch women in this category of desired hours are also more likely to be overemployed. In Germany, the share of overemployment of men who want to work between 20 and 34 hours is actually close to 80 percent. It is interesting to note that German women with the same hours preferences face other kinds of restrictions; that is, they do not work at all. In contrast to men, I can conclude from this that these women are more likely to be underemployed.

These results also hold if I restrict the sample to employees (see Table 6 in the Appendix). The last column of each block in Table 6 provides another measure of hours restrictions; that is, the mean absolute deviation (MAD) between actual and desired working hours of German and Dutch employees. Based on these figures, people searching for a small part time job are more restricted, because their actual working hours are on average remoter from their preferences than those who want to work between 20 and 34 hours.

Individuals wanting to work full-time do not necessarily have the best chance of getting their preferences met. For men, this is only true in Germany in 1998 (see Table 1). In the year 1995 and in both years in the Netherlands, overtime hours were widespread, forcing many employees to work more than they actually wanted to. Employees searching for a full-time job were better off in Germany and the use of overtime work seemed to be declining here as well. In contrast, Dutch men who wanted to work more than 40 hours per week had a higher chance of achieving their preferences than Germans. This peculiarity can be partly attributed to the business cycle. 1994 was the first boom year after a couple of years with poor growth rates. Additionally, employment growth has been lagging behind GDP-growth rates by about one year (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, 1999). Presumably, the increasing labor demand is mainly satisfied by overtime hours. This seems to affect women's working hours as well. At least 18 percent of female employees in the Netherlands work more than 40 hours, although they prefer a standard full-time job. In short, overtime work is much more common in the Netherlands. A closer look into the data shows that this is mainly due to unpaid overtime hours of highly skilled employees.<sup>13</sup> This illustrates that, especially in the

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<sup>13</sup> The magnitude of unpaid overtime in the Netherlands is slightly greater than that for paid overtime. In 1994, 30.5 percent of Dutch males and 23.2 percent of the females reported working unpaid overtime. These men work on average 7.5 unpaid hours per week and women work 4.2 hours. Bell and Hart (1999) stated very similar figures for the United Kingdom. In Germany, unpaid overtime work is restricted to fewer employees. 11.8 (8.5) percent of the men (women) work on average 10.5 (7.6)

Netherlands, the mismatch between actual and desired hours was to some extent caused by overtime work.

The Dutch differ from the Germans not only with respect to the probability of matching desired and actual working hours but also with respect to the desired labor supply. 21 percent of Dutch men want to work less than 35 hours per week. In Germany, about 11 percent of the corresponding sample is searching for any type of part-time job. Extended part-time jobs in particular are sought more by Dutch men. This difference is even more pronounced for women. Three out of four Dutch women prefer to work reduced hours. In Germany, only every second woman is willing to work part-time. Reasons for the distinctive preference for part-time jobs in the Netherlands are diverse and complex, including the specific features of the social security and tax systems, as well as incentives set by family policies. These factors are elaborated for example by Hansen (1997), den Dulk et al. (1999), and Gornick et al. (1996). Noticeable is the fact that both German women and men show an increasing preference for extended part-time jobs. The fact that the desired part-time share in Germany is only slightly higher than the actual part-time rate in the Netherlands suggests that loosening the constraints on the supply of labor in Germany could have substantial employment effects.

So far, the results can be summarized as follows:

- Men and women who state that they would like to work part-time are clearly better off in the Netherlands.
- German men wanting to work part-time have a very low probability of meeting their preferences.
- German men and women searching for a small part-time job have experienced only slight improvements in their ability to match actual and desired working hours since 1995.
- There is a large excess-demand for extended part-time jobs among men and women, both in Germany and the Netherlands.
- Germans searching for a job with standard full-time hours are better off than the Dutch were in 1994 and the use of overtime work continues to decline in Germany. Note that the extensive use of overtime hours in the Netherlands can partly be attributed to the business cycle.

These results provide some evidence that work-sharing is more sought after and also takes place more frequently in the Netherlands. On the other

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unpaid overtime hours per week. Note that the high share of overtime work in the Netherlands may be also due to missing information about flexible working hours in the Dutch OSA-data (see Section 3).

hand, more employees are confronted with undesired overtime work. But do these findings still hold if we take into account individual heterogeneity? To answer this, I proceed with a multivariate analysis of working hours in the next section.

## 5. Labor supply model with hours restrictions

The results in the previous section suggest that individual preferences for working hours are not perfect predictors of actual labor supply. Although the mean absolute deviation between actual and desired hours decreased slightly from 1995 to 1998, the mismatch of working hours is much larger in Germany compared to the Netherlands (see Table 6 in the Appendix). Due to the higher unemployment rate in Germany, the difference is especially pronounced if people out of work are also taken into account. It is clear that restricting the sample to employees decreases the distance between desired and actual working hours in both countries (see Table 5 in the Appendix). Still, the gap between preferences and reality is higher in Germany.

### 5.1 Specification of the model

In general, working hours are derived from a utility function which depends upon leisure ( $l$ ) and income ( $y$ ).

$$U = U(l, y)$$

In the standard labor supply model, the individual wage rate is assumed to be the same across jobs. Thus, jobs are defined only by their working hours. This implies that all jobs with a given amount of working hours provide the same income and therefore the same utility to an individual. Within this framework, any deviation between desired and actual working hours indicates that an employee cannot find a job with the desired working hours, even if he or she were willing to change his or her occupation or to move to another region. Obviously, this interpretation of the difference between desired and actual working hours is too strict.

Firstly, the individual wage rate is not the same across jobs with different numbers of working hours. Previous studies show that switching to a job with very few hours causes a reduction in the hourly wage rate and might have negative implications on the future returns to experience (Wolf, 2000; Tummers and Woittiez, 1991). Secondly, people choose their jobs not only according to contractual working hours, but also to the type of activity performed, as well as to other characteristics of the firm, such as location or



size. If, for example, a woman is not mobile because her husband does not want to quit his job, the location of the firm may be more important than the offered working hours or wage. And thirdly, hours constraints on the supply of labor may cause the gap between desired and actual working hours. For instance, a highly-skilled manager would have difficulties finding an appropriate part-time job, because dividing this type of job among numerous part-time employees is considered difficult and costly. Apart from the occupation and the skill level, the flexibility of working hours may differ among sectors and firm sizes. As a result, characteristics of the labor demand are important to understand the distribution of actual working hours.

In this setting, it is less likely that employees find a perfect match between actual and desired working hours. Given that there are a limited number of jobs in existence with a fixed set of characteristics, the probability that an individual can realize his or her preferences decreases with the number of relevant job characteristics. If the optimal job is not available, the job-seeker must accept second or third-best choices. Depending on his or her preferences and the availability of other job characteristics, a person might either switch to another occupation or accept a wage cut. Finally, the individual may decide to work additional or reduced hours in order to meet his or her preferences for one of the other relevant job characteristics. This framework offers a variety of explanations for the deviation between actual and desired working hours.

To capture the supply and demand-side effects, I use a reduced form model of labor supply with hours restrictions. As explanatory variables, I select individual characteristics that determine either the ordering of the preferences or the availability of jobs with certain sets of characteristics. I use desired working hours as a measure of the first-choice labor supply. If this variable successfully predicts actual labor supply, one can conclude that either the hours restrictions do not matter or that individuals choose their job mainly based upon working hours. Given the results in Table 1, this is not very likely. Thus, I use additional variables which determine the preference order, such as the skill level, general and specific human capital and information about the household context.

On the one hand, previous investment in human capital as a proxy for the wage rate might determine whether the constrained people reduce or expand their labor supply compared to their reported first choice. If desired hours cannot be realized, highly educated people at the upper tail of the wage distribution are more likely to work more hours than desired and therefore buy domestic services to increase their leisure time<sup>14</sup>. Outsourcing

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<sup>14</sup> In most empirical studies, leisure is defined by the difference between a total amount of available hours per week minus the weekly working hours. However, this

domestic services is utility maximizing if the hourly wage rate exceeds the price of the purchased services. On the other hand, innovative and flexible working hours arrangements for highly skilled workers with management functions are not very common in German firms yet. Thus, the distribution of available working hours is much tighter for highly skilled staff compared to low skilled workers. The use of part-time work, that is jobs at the left tail of the hours distribution, is expected to be less popular. If, however, the firm has to cope with a labor shortage for specific high-skilled occupations, such as IT-experts, the employer might fear that the applicant will quit the job if part-time hours are not arranged. The same should be true for employees who are broadly trained by the firm or have accumulated comprehensive firm-specific human capital. Depending on firm size, organizational structure and other factors, the management may decide to reorganize labor and implement flexible working hours.

The marital status and the presence of children primarily affect the adjustment of the labor supply of women. Mothers of small children presumably choose a job with fewer hours if they cannot match their preferences. This is because an expansion of their labor supply may cause substantial costs, such as private child care. Nevertheless, demand-side effects may enhance the likelihood that mothers are able to get a part-time job, because employers know that part-time employment often is the only possibility to reconcile paid work and family. Many managers still think that people's desire to work part-time signals less motivation and thus lower productivity. Apart from the desire of mothers to care for their children, traditional managers hardly support other motives to reduce standard working hours.

Firms might support part-time work for older employees, whose productivity is below their wage rate. In Germany, a labor market policy called "Altersteilzeitgesetz" provides additional incentives to create part-time jobs for employees older than 55 years. However, such a law did not exist in the Netherlands in 1994. As a result, age effects turned out to be minor in the Netherlands and are therefore omitted in the empirical approach.

Since the flexibility of working hours differs tremendously among different occupations, I use several dummy variables and interactions between occupation dummies and desired working hours to capture the availability of jobs with certain working hours.<sup>15</sup> Presumably, the working hours distribution of salespersons or employees in the service sector are substantially more dispersed than the actual working hours of professionals or managerial employees. Irrespective of the occupation, one should expect a higher

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measure includes activities, which are not necessarily leisure, for instance, commuting time or cleaning.

<sup>15</sup> To create comparable occupational groups, I use the International Standard Classification of Occupations (ISCO-88).

working hours flexibility for temporary workers, which is a fairly large group in the Netherlands. However, due to the limited number of observations, I do not find robust evidence for this hypothesis.

As starting-point of the empirical model on actual weekly working hours ( $AH$ ), I choose the following specification of an OLS regression:<sup>16</sup>

$$AH = \sum_{i=1}^I \beta_{0i} \cdot DH^i + \beta_1 \cdot schooling + \beta_2 \cdot exp + \beta_3 \cdot tenure + \beta_4 \cdot MS + \beta_5 \cdot kids + \sum_{j=1}^{J-1} \beta_{occup_j} \cdot occup_j + \sum_{j=1}^{J-1} \sum_{i=1}^I \beta_{j,i} \cdot occup_j \cdot DH^i,$$

where  $\sum_{i=1}^I \beta_{0i} \cdot DH^i$  describes a polynomial of degree  $I$  of desired working hours and *schooling*, *experience* and *tenure* capture the human capital endowment of the individual. The household context is described by a dummy variable for married people (*MS*) and households with children under the age of 16 (*kids*).  $occup_j$  denotes occupational dummy variables, where  $J$  is the number of categories. The current occupation involves some risk of endogeneity, because it might be selected based upon the occupation-specific distribution of working hours. Since I also include the information about the desired working hours, the effect of the occupational dummies can be interpreted as the availability of certain working hours for different jobs.

I also checked for firm size and regional effects. The corresponding coefficients were not significant and therefore not used in the later simulations. For the dependent variable I use actual weekly working hours including all overtime hours, irrespective of whether they are paid or not. I estimate this model separately for men and women based on the Dutch OSA-data. Because information about previous jobs of non-active people is incomplete, I restrict the samples to people who are actually employed at the time of the interview.

## 5.2 Some remarks about the endogeneity of working hours preferences

Using reported preferences on working hours as explanatory variable in the hours model is unorthodox for economists and involves some risk of endogeneity. Firstly, because desired hours may be contemporaneously correlated with the disturbance. In order to receive consistent results, an instru-

<sup>16</sup> In order to avoid the potential endogeneity of desired working hours, one may suggest using the gap between actual and desired hours ( $AH - DH$ ) as an endogenous variable. Supposing that restrictions depend decisively upon the desired labor supply, I give preferences to the specification described above.

mental variable estimator may be required. That is, an alternative (set of) independent variable(s) must be found which is (are) correlated with the original explanatory variable and contemporaneously uncorrelated with the disturbance. However, in this case, it is extraordinarily difficult to find good instrumental variables. On the one hand, standard variables in labor supply models do not capture short-term or transitory changes in desired working hours, for example triggered by participation in further education or caring for a parent. Thus, the resulting model of working hours with hours restrictions would not be able to capture the actual adaptability of working hours in the Dutch economy. On the other hand, potential instrumental variables, such as education level or the number of children in the household are not appropriate, because they are not independent of the disturbance either. If, however, the instrument is only weakly correlated with actual working hours, the IV-approach can produce biased estimates as well (Staiger and Stock, 1997). Therefore, I refrain from using instrumental variables.

Secondly, working hours preferences may be influenced by the actual degree of working hours flexibility. There is some evidence in existence indicating that the demand for a certain good is also determined by the aggregate consumption of this good. Accordingly, desired working hours might be influenced by the national distribution of the working hours (Alessie and Kapteyn, 1991). Holst and Schupp (1998) argue that the striking increase in desired part-time work after 1994 may be attributed to the reduced working hours of 28.8 hours per week at the VW group. As a result, one should assume that the distribution of desired working hours becomes more dispersed if flexibility increases. Even more people would like to work fewer hours. In order to allow for interdependent preferences, additional information about habit formation is necessary. However, there is no reliable information about the potential shift of hours preferences due to an increasing flexibility of working hours. Thus, in this paper I assume that the preferences are independent of the aggregate labor supply in the short run.

### 5.3 A brief discussion of the estimation results

Table 2 presents the estimation results of the reduced-form labor supply model for men and women in the Netherlands. Due to the correlation between reported hours preferences and individual characteristics, which also determine the labor supply decision, coefficients should not be interpreted separately. Apart from that, the effects of all explanatory variables cannot be clearly attributed to either the supply or the demand side. Therefore, the interpretation of the coefficients is not straightforward and I will not go into a detailed analysis of their effects.

*Table 2*  
**OLS regression of actual weekly working hours, Netherlands**

	Men		Women	
	coef.	t-value	coef.	t-value
constant	-2,886	-0.37	5.980	1.96
DH	1.876	4.12	-0.073	-0.18
DH <sup>2</sup> /100	-2.245	-3.30	5.587	3.17
DH <sup>3</sup> /1000	-	-	-0.924	-3.85
schooling	0.120	2.16	0.335	4.29
tenure	0.246	4.49	-	-
tenure <sup>2</sup> /100	-0.549	-4.32	-	-
experience	-	-	0.021	2.60
experience <sup>2</sup> /100	-	-	0.005	-1.88
kids in the household	-	-	-1.642	-3.36
married	-	-	-1.054	-1.97
civil servant	-1.146	-2.74	-	-
manager	53.184	4.47	-33.167	-2.21
manager · DH	-2.479	-3.83	5.747	2.65
manager · DH <sup>2</sup> /100	3.168	3.53	-24.132	-2.54
manager · DH <sup>3</sup> /1000	-	-	2.980	2.32
professional	37.571	3.77	96.863	2.69
professional · DH	-2.049	-3.64	-11.241	-2.62
professional · DH <sup>2</sup> /100	2.969	3.64	39.541	2.42
professional · DH <sup>3</sup> /1000	-	-	-4.307	-2.17
teacher/nurse	-1.070	-0.11	-2.469	-3.89
teacher/nurse · DH	-0.149	-0.26	-	-
teacher/nurse · DH <sup>2</sup> /100	0.636	0.73	-	-
technician	19.005	1.93	1.193	1.59
technician · DH	-1.331	-2.42	-	-
technician · DH <sup>2</sup> /100	2.287	2.90	-	-
service worker	13.857	1.37	-2.609	-4.50
service worker · DH	-1.131	-2.05	-	-
service worker · DH <sup>2</sup> /100	2.069	2.68	-	-
production worker	22.447	2.59	-0.026	-0.02
production worker · DH	-1.486	-3.02	-	-
production worker · DH <sup>2</sup> /100	2.414	3.39	-	-
R <sup>2</sup>	0.277		0.683	
# of observations	1557		952	

Note: DH: desired weekly working hours.

Source: Own calculations based on the OSA-data for the Netherlands.

For men, a quadratic function of desired hours (DH) is used to capture the impact of desired hours on actual working hours whereas for women, a cubic specification is more appropriate. The effect of desired working hours on actual hours differs among the occupational groups. For example, working hours preferences of male managers do not seem to be reflected in their actual working hours. Their predicted working hours vary between 40 and 45 hours per week, irrespective of their preferences. Also for male professionals, the relation between desired and actual working hours is fairly weak. In contrast, the predicted working hours of female managers and professionals<sup>17</sup> do not deviate that much from their reported preferences. Among men, clerks and service workers exhibit the best fit between desired and actual working hours. This result is consistent with the observation that these activities are generally easy to share among different employees.

All sorts of human capital increase the number of working hours, whereas tenure within the same firm is not significant for women, and labor market experience has no effect on the actual working hours of men. This result supports the hypothesis mentioned above that highly skilled people are more likely to work more hours, either because they can afford to buy domestic services or because of distinctive hours restrictions for part-time jobs.

Both married women and mothers of children under the age of 17 work significantly less hours per week, even if desired hours are controlled for.<sup>18</sup> For men, marital status and children turn out to be insignificant. The result that male civil servants work fewer hours than employees in the private sector, everything else being equal, may be driven by the “Melkert-jobs”, which are generally financed for a 32-hour job in the public sector (see Section 2.4).

## 6. Inference from the estimation results

Based on these estimation results, I simulate Germans' labor supply in 1995 and 1998 under the assumption that they face the same conditional hours distribution as Dutch employees in 1994. The postponement of one year need not prevent us from using this situation as a reference point. Even though one should keep in mind that the economic upturn in the Netherlands started exactly in that year. Technically speaking, I apply the “Dutch

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<sup>17</sup> Given that desired hours are at least 15 hours per week.

<sup>18</sup> This effect does not depend upon the age of the children, indicating that the particular loose labor market attachment of Dutch women with small children – partly caused by the shortage of child care facilities (Veil, 1997) – is already captured by differences in desired working hours.

model” to the German data. Consequently, the predicted labor supply is based on Germans’ individual characteristics and hours preferences as well as on the Dutch working hours distribution, which again depends upon labor demand and the opportunities of adjusting working time schedules to the hours preferences of Dutch employees.<sup>19</sup>

By simulating the labor supply of Germans in an environment with fewer hours restrictions, namely those prevailing in the Netherlands, I can address three questions. Firstly, how does the higher flexibility of working hours change the level of work-sharing in Germany in 1995 and 1998? Taking into account that desired working hours have risen since 1995, the effects of loosening hours constraints in later years may be a little smaller. Secondly, to what extent does the match between desired and actual working hours improve? And thirdly, who are the chief beneficiaries of changing the conditional distribution of working hours? Furthermore, the regional differences due to the limited interest in part-time employment in East Germany are brought out in this section.

### 6.1 Changing distribution of working hours

The labor supply model with hours restrictions for the Netherlands describes how working hours preferences translate into actual labor supply. Applying the “Dutch model” to the German data allows for the simulation of the hypothetical labor supply of Germans, if they were in the Dutch labor market. To check whether Dutch labor market flexibility would allow more work-sharing in Germany, I compare the actual with the simulated hours distribution. Figure 1 presents kernel estimations of actual and simulated working hours of German men and women in 1995 and 1998. Note that ignoring the feedback mechanism of increasing hours flexibility on reported working hours preferences (see Section 5.2) provides a rather conservative estimate of the impact on actual working hours in Germany.

Applying the conditional working hours distribution of Dutch men to German men seems to cause unwanted effects. The peak of the distribution is shifted to the right, indicating that more men would work overtime hours. Furthermore, the increase of part-time jobs is fairly small. However, the accumulation of employees at the right tail of the distribution disappears in

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<sup>19</sup> Note that this simulated outcome also includes the employment effect due to the difference in the tax and social security systems. However, this effect seems to be minor (Vlasblom, 1997). Based on the GSOEP and the OSA-data of previous years, he shows that the difference in female working hours between the two countries would increase only slightly if the systems were equal. Furthermore, the contribution of the tax system to explain the differences in female labor supply decreases over time. In addition to this, incentives set by the welfare state should be reflected by individual preferences, which I control for.

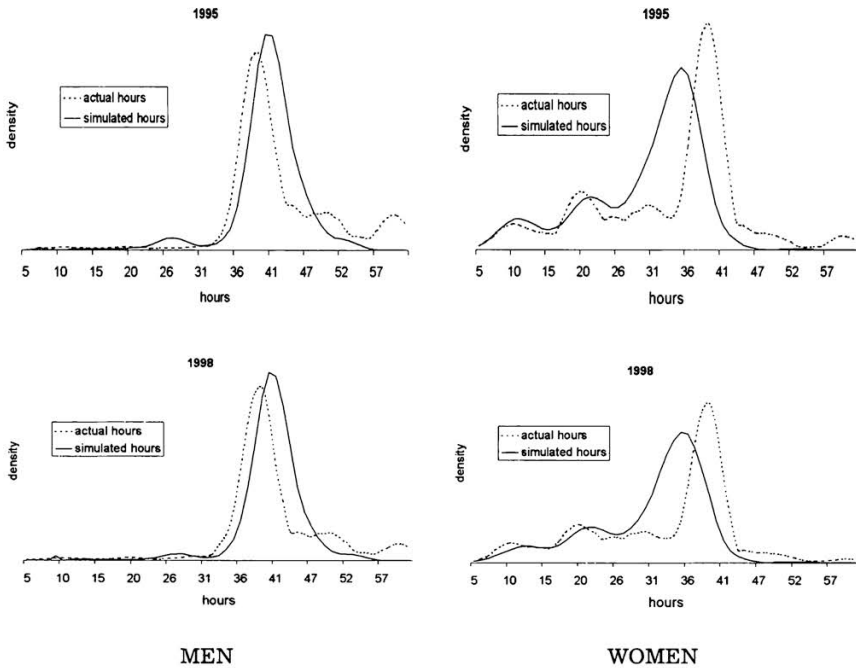


Figure 1: Actual and simulated working hours of German men and women

the simulated situation. Consequently, it is not straightforward whether the “Dutch model” would enable additional work-sharing for German men. The results are less ambiguous for women. While the distribution of part-time jobs up to 20 hours is affected only slightly, jobs between 21 and 36 hours are much more frequent in the simulated distribution. The peak of the simulated hours is at 35 hours per week, that is three hours less than the peak of the actual hours distribution of female employees in 1995 and 1998. This is presumably due to the fact that in Germany, part-time work is especially sought after by women. Taking into account that actual working hours tend to be overrated in the Dutch data, these results suppose that there is some potential for additional work-sharing among women.

Another way to illustrate the effect of loosening hours constraints on the supply of labor in Germany is to calculate the change in the expected value of weekly working hours. The average weekly working hours of West German men dropped by 1.3 hours in 1995. East German men reduced their weekly working hours by 1.8 hours, an effect mainly driven by men who want to work up to 20 hours per week. The “Dutch model” would allow them to reduce their weekly working hours by about 12 hours. The adjust-



ment of men wanting to work more hours is much smaller, albeit the average change in working hours is still negative. In 1998, the average working hours of men would be more or less unaffected by switching to the “Dutch model”. However, men with a strong taste for leisure could again reduce their working hours in the desired way. It follows that, at least in 1995, there was some potential for additional work-sharing among men. For West (East) German women, average working hours would drop 3.3 (5.3) hours per week in 1995. While in 1995, the impact of loosening hours restrictions on average working hours was stronger in East Germany, the reverse holds for 1998. Simulated hours of West (East) German women decrease by 2.3 (1.8) hours in 1998. Again, the reduction is mainly driven by women seeking a small part-time job.

### 6.2 Effects on the gap between desired and simulated working hours

The fact that the distribution of simulated working hours of German women has shifted to the left does not necessarily imply that women would be less constrained in the new situation. Given the lower preference for part-time employment in East Germany, especially among women, it is also conceivable that the effects on the gap between desired and simulated working hours are more favorable for West Germans. Also for men, it is not immediately apparent how the “Dutch model” would affect their match between actual and desired hours. To verify these hypotheses, I compare the individual probabilities of a person realizing his or her preferences in the two situations. Therefore, I calculate the change in the mean absolute deviation between desired and actual respectively simulated hours ( $\Delta\text{MAD}$ ).

In order to get more insight into the various effects, I divide the sample by desired working hours, occupations and regions. Table 3 presents the mean absolute deviation and its change for these groups of individuals. A piece of good news is that the overall gap between desired and actual weekly working hours shrinks, both for men and women. However, the gain from switching to the “Dutch model” was much bigger in 1995 compared to 1998. This result may indicate that with regard to working hours flexibility, Germany has indeed been behind the Netherlands for more than four years, however, it seems to be on the right track.

If Germany had the same working hours flexibility as the Netherlands, one can show that people wanting to work part-time would have a much higher probability of realizing their preferences. Even though men and women wanting to work up to 20 hours per week exhibit by far the worst match between actual and desired working hours. In the simulated situation, they

Table 3

## Change in the mean absolute deviation between actual and desired hours

		1995			1998		
		MAD <sub>d</sub> <sup>1</sup>	MAD <sub>s</sub> <sup>2</sup>	Δ MAD	MAD <sub>d</sub>	MAD <sub>s</sub>	Δ MAD
MEN	all	5.0	3.9	-1.1	4.0	3.6	-0.3
	SPT <sub>d</sub>	28.4	17.6	-10.8	21.1	15.5	-5.7
	EPT <sub>d</sub>	9.4	7.7	-1.8	8.5	7.6	-0.9
	FT <sub>d</sub>	3.2	2.5	-0.6	2.5	2.6	+0.1
	OT <sub>d</sub>	2.6	3.3	+0.7	4.2	3.3	-0.9
	manager	8.0	8.0	0.0	7.4	7.6	+0.2
	professional	5.3	5.5	0.2	4.8	5.4	+0.6
	teacher/nurses	4.7	4.7	0.0	5.1	4.9	-0.2
	technician	4.3	3.2	-1.1	3.3	3.3	0.0
	clerks	4.1	3.2	-0.9	3.5	3.2	-0.3
	service worker	4.1	2.8	-1.3	2.7	2.7	0.0
	prod. worker	4.8	3.3	-1.5	3.7	2.9	-0.8
	West Germany	4.7	3.8	-0.9	4.0	3.7	-0.3
	East Germany	5.5	4.1	-1.4	3.9	3.5	-0.4
WOMEN	all	4.4	3.5	-0.9	3.4	3.1	-0.3
	SPT <sub>d</sub>	9.9	2.7	-7.3	6.6	2.6	-4.0
	EPT <sub>d</sub>	3.4	2.2	-1.2	3.1	2.5	-0.7
	FT <sub>d</sub>	2.3	4.6	+2.3	2.2	3.7	+1.6
	manager	8.2	4.2	-4.0	5.8	3.0	-2.8
	professional	4.1	4.2	0.1	4.2	5.2	+1.0
	teacher/nurses	4.8	3.5	-1.3	3.0	2.6	-0.4
	technician	5.1	3.6	-1.5	3.9	3.5	-0.4
	clerks	3.9	3.1	-0.8	3.0	2.6	-0.3
	service worker	4.5	3.5	-1.0	3.2	3.4	+0.1
	prod. worker	3.8	4.1	0.3	3.5	2.8	-0.7
	West Germany	4.6	3.2	-1.4	3.6	2.9	-0.7
	East Germany	4.2	4.1	-0.1	3.0	3.6	+0.6

Note: <sup>1</sup> mean absolute deviation between desired and *actual* working hours in the corresponding year; <sup>2</sup> mean absolute deviation between desired and *simulated* working hours in the corresponding year.

Source: Own calculations based on the estimation results presented in Table 2.

would have the opportunity to adjust their labor supply in the manner they desire. In addition, the availability of extended part-time jobs improves. Since East German women rarely seek part-time employment, and the share of women wanting to work less than 30 hours per week steadily decreased

since 1993 (Holst and Schupp, 1998), they do not directly benefit from the Dutch working hours flexibility, especially in 1998. East German men, however, get closer to attaining their working hours preferences than West German employees.

On the other hand, women who want to work full-time are more likely to be worse off, because full-time work and of course overtime hours for women are the exception in the Dutch economy. In 1995, the MAD of women wanting to work between 35 and 40 hours rose 2.3 hours per week, in 1998 it was still 1.6 hours. This phenomenon can be partly attributed to the strong Christian tradition in the Netherlands: traditional family values are deeply rooted. It was not until the 80s that Dutch women stayed in the labor market after marriage. Nowadays, they typically remain in continuous part-time employment (Fagen et al., 1999). Apart from that, the lack of child care facilities often prevents women from working full-time.

Breaking down the seven occupational groups reveals significant differences. In all sub-samples managers are the most constrained with respect to their working hours. The improved match between actual and desired hours for female managers is very striking. Thus, there is some potential for reorganizing managerial activities. Does this result disturb the myth of indivisible jobs? Unfortunately, men's figures do not really support this supposition. Also, male managers show the biggest gap between actual and desired working hours, however a switch to the "Dutch model" would not improve their situation. One explanation could be that the different effects for men and women are driven by gender-specific peculiarities. That is, female managerial jobs may slightly differ from managerial jobs taken by men.

Given these contrary effects of loosening hours restrictions in Germany, it is not clear how the fraction of people meeting their desired working hours would change. Therefore, I calculate the share of "winners", that is, people who could reduce their gap between actual and desired hours by switching to the "Dutch model". Correspondingly, "losers" are employees whose mismatch would intensify under Dutch labor market conditions.

In 1995, 74 (75.4) percent of all male employees in the West (East) German sample could improve their match (see Table 4). Among women, the percentage of employees who would converge towards their desired working hours is much smaller, especially in East Germany where the majority of women faced a wider gap. The average change in the absolute deviation ( $\Delta$ MAD) of the losers, however, is smaller than the reduction of the gap between actual and desired hours of the winners. Three years later, the corresponding figures decreased to 50 percent for East and West German men. Among West German women, almost 60 percent could at least moderate their hours restrictions. The hours preferences and individual characteristics of East Ger-

man women in 1998 imply that only 40 percent of these women would actually gain from the “Dutch model”. With the exception of East German women, applying the hours flexibility of the Netherlands to Germans improves the probability of fulfilling their hours preferences.<sup>20</sup>

*Table 4*  
Changes in the mismatch of winners and losers

	1995					1998				
	winners		losers		$\alpha^b$	winners		losers		$\alpha$
	%	$\Delta MAD^a$	%	$\Delta MAD$		%	$\Delta MAD$	%	$\Delta MAD$	
<i>West Germany</i>										
Men	74.0	-1.6 h	26.0	1.1 h	4.1	50.0	-1.5 h	50.0	0.9 h	1.7
Women	63.2	-4.1 h	36.8	3.3 h	2.1	59.4	-2.7 h	40.6	2.2 h	1.8
<i>East Germany</i>										
Men	75.4	-2.2 h	24.6	1.1 h	6.1	50.2	-1.7 h	49.8	0.9 h	1.9
Women	44.9	-5.4 h	55.1	4.4 h	1.0	40.3	-2.3 h	59.7	2.6 h	0.6

*Note:* <sup>a</sup> average change in the absolute deviation between actual and desired hours. - <sup>b</sup> weighting parameter in the loss function.

*Source:* Own calculations based on the estimation results presented in Table 2.

Given the finding that the gains from moving to the new situation are distributed very unevenly, it is interesting to know how much we could overweight the losses of men and West German women such that the average hours restrictions, measured by the MAD, are the same in the current situation and the “Dutch model”. Therefore, I will impose the following loss function, although I am aware of the fact that the underlying assumptions are strict and ad-hoc:<sup>21</sup>

$$Loss = \sum_{winner} \Delta AD + \sum_{losers} \alpha \cdot \Delta AD$$

where  $\Delta AD$  is the change in the absolute deviation between simulated and desired hours. For  $\alpha = 1$ , each individual’s contribution to the loss function is equal to his or her change in the absolute deviation between actual and desired working hours. For  $\alpha > 1$ , the increased mismatch of the losers is

<sup>20</sup> This conclusion holds because the average change in the absolute deviation between actual and desired hours is higher for the winners than for the losers for men and for West German women (see Table 4).

<sup>21</sup> This one-dimensional loss function assumes that welfare increases if people approach their desired working hours without taking into account the welfare effects of working more hours and hence consuming more.

over-weighted by the factor  $\alpha$ . Table 4 shows that the resulting  $\alpha$ s are indeed  $> 1$  for men and West German women. In 1995, the change in the absolute deviation between actual and desired hours of female winners and losers in East Germany cancels each other out, that is, the loss is zero for  $\alpha = 1$ . In 1998, however, the Dutch working hours structure was clearly disadvantageous to East German women. Given the former result that the share of part-time jobs and the flexibility of working hours increased in Germany from 1995 to 1998, it is not surprising that the gain from moving to the "Dutch model" decreased over time. Nevertheless, the  $\alpha$  for switching is still larger than the one for men and West German women. For male employees in West (East) Germany, the weighting factor which brings the losses into line with the gains is 4.1 (6.1) in 1995 and shrinks to 1.7 (1.9) in 1998. For West German women, the loss function is zero for  $\alpha = 2.1$  in 1995 and  $\alpha = 1.8$  in 1998. These results back up the proposition of Kapteyn et al. (2000) that allowing for the possibility of individual working hours reductions may enhance welfare.

### 6.3 How about employment effects?

Given the overall drop in weekly working hours, it is tempting to calculate the employment effects caused by the switch to a more flexible labor market. This estimation would be based on the simple notion that the amount of labor input required to produce a fixed volume of output can be shared between employed and currently unemployed persons. But, the relation between working hours and employment is very complex (see e.g. Hammermesh, 1993). Working hours and workers are not perfect substitutes and firms do not necessarily replace the individual reduction of weekly working hours by hiring new employees.

Because of the limited employer information available in the GSOEP, it is impossible to determine if and to what extent the reduced working hours could be shifted to non-workers who are seeking a job. The only thing one could do would be to derive a rough guess of the potential employment effects ignoring all niceties, such as adjustment costs, overtime premiums, productivity and scale effects, or shortage of workers. If we use an extreme example, wherein all employees can freely choose their working hours and surplus hours can be transferred to the unemployed, employment increases by 2.9 million people for 1995 and 1.5 million for 1998.<sup>22</sup> The corresponding figures using the sample weights of the GSOEP are 3 million additional jobs

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<sup>22</sup> In contrast to Schilling et al. (1996), I distribute the surplus hours among non-workers such that the distribution of working hours within each occupational group remains the same.

in 1995 and 1.7 million in 1998. In contrast to these estimates (see also Schilling et al., 1996), I now allow for hours restrictions inherent in certain occupations. In this setting, estimated employment effects based on Dutch labor market flexibility turn out to be substantially smaller. In 1995, 2.2 million (weighted: 2.0 million) additional part-time and full-time employees could enter the labor market. Three years later, the absorbcency shrunk to 890 thousand employees (weighted: 870 thousand). Nevertheless, this estimate is still very rough for the reasons mentioned above. Therefore, in the remainder of the paper, I will elaborate conditions under which the employment effects out of increasing hours flexibility could be maximized.

- **Elasticity of product demand:**  
If the elasticity is high enough, the firm could increase its competitiveness if it uses the productivity growth from the reduction in working hours to lower prices. As a result, product demand and employment would rise.
- **Compensation:**  
Compensation for reductions in weekly working hours diminish the potential employment effects, because the gains from work-sharing are not shared among people out of the labor market. Thus, effective work-sharing must be cost-neutral.
- **Fixed costs:**  
The smaller the share of fixed labor costs, the easier the substitution of hours and workers will be. In general, fixed employment costs, such as recruiting and training costs are lower for low-skilled employees (see for example Hamermesh and Rees, 1988). Therefore, the substitution between hours and workers is easier for low- and unskilled labor.
- **Lifetime working hours pattern:**  
The use of flexible working hours arrangements even enables a substitution of small reductions of working hours into employment. Employers can schedule working hours depending on the volume of work and employees can use additional hours for sabbaticals or early retirement. More extensive reductions in individual working hours could be implemented by job-sharing among two or more employees. Presumably, the implementation of flexible working hours arrangements is easier in bigger firms.

## 7. Conclusions and policy implications

Lack of working hours flexibility is regarded as a serious hindrance for work-sharing in Germany. In this paper I simulate the effects of loosening hours restrictions on Germans' labor supply in 1995 and 1998. A reduced-form labor supply model with hours restrictions is used to describe how the

working hours preferences of Dutch employees translate into their actual labor supply. Applying the estimated coefficients of this “Dutch model” to the German data allows one to calculate the hypothetical labor supply of Germans in the Dutch labor market. The outcome represents the simulated working hours of Germans in a more flexible world, namely the labor market in the Netherlands. Of course, the estimated effects of loosening hours restrictions on the supply of labor depend strongly on the extent of prevailing constraints in Germany. Thus, less hours restrictions, as observed in 1998, would imply smaller effects.

Three primary observations should be made about the results. Firstly, comparing the mismatch between desired and actual weekly working hours of German employees in 1995 and 1998 illustrates that hours flexibility increased within this period. However, the comparison with the Netherlands indicates that the Dutch already had a higher probability of meeting their working hours preferences in 1994. Therefore, I conclude that the Dutch labor market is indeed more flexible than the German one.

Secondly, the overall match between desired and actual working hours of German employees improves if they are faced with the Dutch working hours distribution. But the gains from moving to the new situation are distributed very unevenly. On the one hand, people wanting to work part-time have a much higher probability of realizing their preferences. Jobs with 20 or fewer hours per week seem to be much more feasible in the more flexible labor market. This indicates that implementing a level of working hours flexibility similar to that of Holland would permit more work-sharing in Germany. On the other hand, German women who want to work full-time hours would be more likely to be “underemployed” if they were in the Dutch labor market. Hence, East German women would get on rather badly with the Dutch hours distribution.

Thirdly, given the fall of weekly working hours that would be realized by German employees in Dutch labor market conditions, work could be shared among more individuals. Compared to estimates that ignore the fact that certain working hours preferences are hardly feasible, the potential employment effects based on my approach are much smaller. Even if the derivation of expected employment effects is very tempting, this venture is doomed to failure. Working hours and workers are not perfect substitutes and firms do not necessarily replace individual reductions in weekly working hours with additional employees. Therefore, I describe the conditions under which the employment effects arising from increasing hours flexibility could be maximized.

Based on these reflections, one can derive some policy implications for Germany. It is argued that reductions in working hours for low-skilled

workers are more likely to be transformed into new jobs than reductions in hours for highly skilled employees. Since the willingness to cut hours is rather low among low-paid workers, the government could enact measures to foster voluntary reductions in individual working-time. This objective may be achieved by subsidizing social security contributions of low-income part-timers in order to remove cuts in social benefits caused by part-time employment. Another option is to pay incentives to the firm. In France, for example, a scheme to reduce employers' social security contribution by 30 percent for jobs that are between 16 and 32 percent of normal hours was introduced in 1992. The rate of take-up is pretty high and the proportion of subsidized workers formerly unemployed or out of the labor force is around half of the total. However, as with other employment subsidies, these programs are generally subject to substantial dead-weight and displacement effects and therefore are questionable strategies (OECD, 1998b).

It appears that the detachment of social security from employment history seems to be the most efficient measure to foster individual working hours reductions. In Germany, employees have incentives to work full-time hours in order to get higher benefits, because all benefits depend on individual work history (Ginn and Arber, 1998). Rische (1994) illustrates that the effect of part-time work on pension benefits depends furthermore upon the overall part-time share. If only few people decide to reduce their working hours, the benefit cut due to part-time work is especially pronounced. In this case, the average earnings level, which is the reference point for the corresponding benefit cut, would remain the same. Thus, first movers are particularly punished by individual working hours reductions. In the Netherlands, the general old-age pension (AOW) and, since 1995, the basic benefits of the unemployment insurance provide benefits that are independent of the number of hours worked in the past and therefore involve few disadvantages for part-time employees.

Another important condition for effective part-time initiatives is consensus among unions, government and employees on this matter, exemplary in the Netherlands. Historically, German unions have mistrusted and disapproved of part-time work, because it does not meet the requirements of the traditional breadwinner model and undermines employment prospects of males (Hakim, 1997). As part of the "Bündnis für Arbeit, Ausbildung und Wettbewerbsfähigkeit" and the discussion about the old-age part-time scheme, it seems they are revising their thinking about part-time work, albeit the unions' attitude towards non-standard work arrangements is still reserved. In addition, the strong decline of membership may give unions the push to represent women's interests by supporting flexible working time arrangements. In the Netherlands, for example, more than half of the collective pay agreements include the right of employees to express individual



working hours preferences and the employer's obligation to comply with these wishes, provided that there is no reason that has to do with the state of the company (Fajertag, 1996).

Last but not least, firms should be encouraged to reorganize their working process and introduce flexible working-time arrangements. "Flexitime" makes the substitutions of hours and workers easier and reduces the need for overtime pay. Besides, firms using flexible working hours report that productivity and motivation of employees increases, absenteeism and fluctuation are moderated, and that the prospects for recruiting sought-after highly skilled employees are better. In spite of this, human resource managers often have substantial reservations about "flexitime". Highly skilled employees and managers in particular generally do not have the option to reduce their working hours. Therefore, public programs that promote flexible working hours for skilled workers and managers, such as the subsidized consulting program "MOBILZEIT" or the recently introduced German part-time law, which gives full-time employees – on certain pre-conditions – the right to reduce their contractual working hours, may be desirable because they make reduced working hours on the part of employers and employees more accepted.

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## Appendix

Table 5

Descriptive sample statistics for employees

	Germany				Netherlands	
	1995		1998		mean	s.d.
	mean	s.d.	mean	s.d.		
$\emptyset  AH - DH ^a$	11.3	13.2	10.8	12.9	7.4	10.0
$\emptyset  AH - DH $ for employees	6.8	8.9	5.7	7.2	5.1	5.8
$\emptyset AH^b$	38.5	10.7	37.3	9.9	35.9	10.9
$\emptyset DH^c$	34.7	10.9	34.9	9.4	33.6	9.4
schooling (in years)	11.9	2.5	11.9	2.3	12.7	3.3
experience (in years)	21.7	10.9	21.8	10.4	17.3	10.8
tenure (in months)	65.8	92.5	112.9	109.5	117.8	105.7
	freq.	%	freq.	%	freq.	%
female	2610	43.49	2562	44.81	947	37.88
married	4128	68.78	3741	65.42	1696	67.84
kids in hh	2658	44.29	2037	35.62	1021	40.84
civil servant	405	6.75	451	7.89	528	21.12
legislator/manager	393	6.55	283	4.95	240	9.60
professional	477	7.95	485	8.48	167	6.68
teacher/nurse	468	7.80	544	9.51	382	15.28
technician/associate prof.	707	11.78	843	14.74	337	13.48
clerks	1079	17.98	923	16.14	343	13.72
service/sales worker	971	16.18	969	16.95	461	18.44
production worker	1907	31.77	1671	29.22	570	22.80
# of observations	6002		5718		1553	

Note: <sup>a</sup>: mean absolute deviation between actual and desired working hours; <sup>b</sup>: mean actual working hours of employees; <sup>c</sup>: mean desired working hours of employees.

Table 6

## Desired versus actual working hours of German and Dutch employees

	Men						Women					
	$SPT_a$	$EPT_a$	$FT_a$	$OT_a$	$\sum^1$	MAD	$SPT_a$	$EPT_a$	$FT_a$	$OT_a$	$\sum^1$	MAD
<i>Germany 1995</i>												
$SPT_d$	18.5	2.8	43.5	35.2	6.3	15.0 h	58.0	18.7	17.9	5.5	25.7	11.1 h
$EPT_d$	4.5	12.9	58.9	23.8	5.9	10.5 h	11.9	41.1	39.2	7.9	24.5	6.8 h
$FT_d$	0.9	1.2	64.9	33.1	68.8	4.6 h	3.5	7.1	69.6	19.8	49.8	4.7 h
$OT_d$	0.8	0.5	34.9	63.9	19.0	6.5 h	–	–	–	–	–	–
$\sum^2$	2.2	1.9	57.5	38.5	100	6.8 h	19.6	18.4	48.9	13.2	100	6.8 h
<i>Germany 1998</i>												
$SPT_d$	25.9	5.2	51.1	17.8	4.3	21.8 h	68.0	16.0	13.4	2.7	21.8	8.0 h
$EPT_d$	2.5	12.1	68.6	16.7	7.5	9.6 h	11.8	40.0	42.4	5.8	27.9	6.8 h
$FT_d$	1.0	1.3	72.3	25.4	74.0	4.0 h	3.7	8.9	73.6	13.9	50.3	4.4 h
$OT_d$	0.9	0.7	43.9	54.5	14.3	7.0 h	–	–	–	–	–	–
$\sum^2$	2.2	2.2	67.1	28.6	100	5.6 h	20.0	19.1	51.7	9.2	100	5.9 h
<i>Netherlands</i>												
$SPT_d$	41.7	10.4	33.3	14.6	3.1	11.6 h	78.6	16.8	3.1	1.4	36.9	3.6 h
$EPT_d$	0.7	22.1	47.8	29.4	17.7	8.1 h	8.3	56.2	22.6	12.9	36.7	5.2 h
$FT_d$	0.6	1.6	56.8	41.0	71.6	4.0 h	4.8	9.6	67.7	17.9	26.4	3.9 h
$OT_d$	0.9	0.9	24.6	73.7	7.6	6.0 h	–	–	–	–	–	–
$\sum^2$	1.9	5.5	52.1	40.6	100	5.1 h	33.3	29.3	27.3	10.0	100	4.2 h

Note: Subscripts  $d$  indicate categories of desired working hours (rows) and subscripts  $a$  denote the corresponding category of actual working hours (columns); <sup>1</sup> distribution of desired weekly working hours (in per cent); <sup>2</sup> distribution of actual weekly working hours; <sup>3</sup> mean absolute deviation between actual and desired working hours (in hours).

Source: Own calculations based on the GSOEP 1995 and 1998 for Germany and the OSA-data for the Netherlands.