# The Value of Non-Working Time Incorporated in Quality of Life Comparisons:
## The Case of the U.S. vs. the Netherlands

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**Abstract**

Comparisons of well-being across societies depend both on the amount of inequality at the national level and also on the national average level of well-being. Comparisons between the U.S. and western Europe show that inequality is greater in the U.S. but that average GDP per capita is also greater in the U.S., and most Americans have higher standards of living than do western Europeans at comparable locations in their national income distributions. What is less well-known is that (depending on the country) much of or even the entire gap arises from differences in the level of working hours in the U.S. and in Western Europe. Cross-national comparisons of well-being have typically relied on the methodology of generalized Lorenz curves (GLC), but this approach privileges disposable income and cash transfers while ignoring other aspects of welfare state and labor market structure that potentially affect the distribution of well-being in a society. We take an alternative approach that focuses on the value of time and the different distributions of work and family time that are generated by each country's labor market and social welfare institutions. In this empirical exercise involving the U.S. and the Netherlands, we show that reasonable estimates of the contribution to well-being from non-market activities such as the raising of children or longer vacations can overturn claims in the literature that the U.S. offers greater well-being to more of its citizens than do western European countries.

**The Value of Non-Working Time Incorporated in Quality of Life Comparisons:**
**The Case of the U.S. vs. the Netherlands**

What is the impact of European-style welfare states on societal well-being? As scholars have long recognized, this question has no easy answer because it involves value judgments as well as social science theory and research. These difficulties notwithstanding, there tend to be two sides to these debates. Proponents of strong welfare states argue for their advantages partly because they see negative social consequences to "too much" inequality. Proponents argue that welfare state policies have the capacity to reduce rates of poverty and social exclusion, the latter being a broader concept than poverty derived from Sen (1992) and implemented in the European Union in the context of specific indicators that measure access to education, housing, employment and an adequate standard of living. Opponents instead emphasize the benefits to "individual freedom" of small government, but more concretely argue that welfare states reduce economic growth and employment, and therefore result in most people being materially worse off in western Europe relative to their counterparts in the U.S (Okun 1975; Browning and Johnson 1984). The evidence in support of such arguments rests heavily on cross-national comparisons of income (e.g, Forbes 2000; Barro 2000) and ignores other aspects of well-being that are affected by social welfare policies.

This study argues that such limited comparisons can lead to distorted conclusions about comparative well-being. Factors such as the quality of health care and education are crucial to an adequate determination of societal well-being, though efforts at incorporating them into cross-national comparisons have produced results which only reinforce those obtained through conventional comparisons of income. We take an alternative approach that addresses the impact

on well-being comparisons of cross-national differences in working hours. Higher amounts of non-working time can be seen as a benefit of generous welfare states that itself increases well-being, and we show that incorporating this value in societal comparisons has a potentially large influence on the outcome of these comparisons. We demonstrate this result through a comparison of well-being in the United States and the Netherlands.

**Well-being in liberal and social democratic welfare states**

Disagreements about whether generous welfare states offer better living conditions to their inhabitants than liberal welfare states fall roughly into two camps. Welfare state supporters approach the discussion from an egalitarian perspective. Generous welfare states redistribute income, and this involves tradeoffs between welfare of the rich and the poor. From an egalitarian perspective, it is socially desirable that income of the rich is partially redistributed to the poor. Income redistribution protects the poor from social exclusion, opens up opportunities for social participation for everyone, and as a result, safeguards social integration and social stability. The social desirability of these consequences causes all strata of society to benefit from the policies of a redistributive welfare state according to the egalitarian perspective (Goodin et al. 1999).

Welfare state critics, on the other hand, assert that welfare states retard economic growth and employment, resulting in lower levels of national income from which all inhabitants – poor and rich – suffer. Several reasons are put forward for the claimed adverse effect of generous welfare states on economic growth. High taxes allegedly dampen investments, because income redistribution lowers the income of the highest income groups, who account for a disproportionate share of savings and investments. Moreover, welfare states reduce work incentives: generous benefits make it attractive not to work and high earners are discouraged from working hard because they lose much of the incremental gain to taxes. Market liberal regimes, in contrast, adopt growth oriented polices that tolerate high levels of inequality. These

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policies raise the incentive for entrepreneurial activity and hard work by lowering taxes and by limiting welfare benefits to the poor. As a consequence, both economic growth and the employment rate are stimulated. The combination of high rates of employment and high rates of economic growth makes everyone better off, even though most of the returns from economic growth go to the high earners.

The question of whether the egalitarian oriented policies of the western European welfare states inevitably provide well-being to their populations is a contested question both in political debates and in the academic literature (e.g., Blau and Kahn 2002; Kenworthy 2004; Pontusson 2005). The answer partly depends on the perspective and kind of measures used. If a "relative" definition of poverty is used (e.g. 60% of median income), generous welfare states are found to perform better. Welfare state supporters generally prefer this definition because it more closely connects with the concept of social inclusion, which is now an official goal of the European Union (Council of the European Union 2007). If, however, poverty is conceptualized in "absolute" rather then relative terms (e.g., a multiple of the costs of food or more generally the price of a market basket of goods considered to be basic necessities), and if countries are compared in terms of absolute (PPP adjusted) dollars, the U.S. performance even at the lower end of the distribution improves in comparison to western European countries (Kenworthy 2004). The fact that U.S. PPP-adjusted income is comparatively high at most points of the distribution is often held out as evidence that Americans benefit from growth-oriented market-liberal policies.

Conclusions with respect to absolute income comparisons across countries are typically based on the methodology of generalized Lorenz curves, which provide a way to demonstrate the difference in real incomes per percentile between countries.[1] If the generalized Lorenz curve for country A is higher than for B up to a crossover point (if any), then the average income of households for the bottom p percent of the distribution is higher in country A than in country B

up to the point p where crossover occurs, and is lower in cumulative terms to the right of that point. The location of the cross-over point depends both upon the shape of the two distributions (i.e. within-country inequality) and on differences in the average income.

Recent research that uses generalized Lorenz curves to compare income distributions across countries has supported market liberal theory in showing that the majority of Americans are better off than their counterparts in almost all western European countries. Kenworthy (2004), for example, found that only the poorest five percent of the Swedish population have a higher mean income than comparably situated Americans; at any higher cut point, the cumulative mean income in the U.S. is higher than that of Sweden. Gottschalk and Smeeding (2000) found that the poorest 30 to 35 percent of the Dutch population had higher absolute incomes in 1991 than in the U.S; above this point, Americans were better off than their Dutch counterparts.

An important and critical response to the conclusion of American superiority is that social democratic welfare states offer in-kind services that offset their income disadvantages (Kenworthy, 2004).[2] Social democratic welfare states use tax revenues to provide health care and education to all their citizens at low cost and at some assured minimum quality level. A comprehensive comparison across countries therefore calls for efforts that evaluate societal differences in multiple components of well being.

Garfinkel, Rainwater, and Smeeding (2005), for example, recently made an effort to evaluate the impact of education and health benefits on the distribution of well-being across a set of industrialized countries (see also Docteur and Oxley 2003; Wolff and Zacharias 2007; D'Ambrosio and Gigliarano 2007; Flannery et al. 2007). Paradoxically, they found that the inclusion of these benefits substantially narrows differences in inequality between the U.S. and a set of western European countries, because the U.S. spends a large number of absolute dollars on education and especially on health care, including on those lower in the income distribution.

However, the conclusion they reached is sensitive both to assumptions about the distribution of these benefits, and also (and perhaps more critically) on their assumption about whether Americans (and particularly lower-income Americans) get as much health and education per dollar of expenditure as do Europeans. Another attempt to evaluate societal differences between countries has considered the impact of a nation's demographic structure on cross-national differences in inequality (Rainwater and Smeeding, 1997), but the study demonstrated that demographics only weakly explain country differences in inequality, at least in the eight OECD countries under study.

**Country differences in non-working time**

In this paper, we address a different component of welfare states that raises a potential challenge to the apparent support that generalized Lorenz curve comparisons give to market liberal theory. Aside from the structure of taxes and social welfare benefits, perhaps the most obvious difference between market liberal societies and the societies of western Europe concerns working hours. There is a large difference in the average working hours in the United States and in many parts of western Europe. While western Europeans once worked more than Americans, they steadily reduced their hours of work throughout the 1970s and 1980s to the point where they now work substantially fewer hours than do Americans. At a descriptive level, the cross-national difference in work hours between the U.S. and western European countries is readily attributable to differences in retirement age, in unemployment rates, in employment rates, in the distribution of hours worked per job (especially differences in the incidence of part-time work), in the distribution of multiple jobs, in the length of vacations and holidays, and in the distribution of days of work lost to absenteeism. These differences arise from specific features of European social welfare and labor market institutions. Table 1 displays statistics from the OECD Employment Outlook about actual work hours (not counting vacations, holidays, or time absent

from work) per capita and work hours per employed worker. Per capita working hours in the Netherlands, France, and Germany – to take only a few examples - are less than 80% of the American level. The source of this discrepancy is partly the higher employment to population ratio in the U.S. than in most European countries. On top of that, the average worker in the U.S. also works more hours than does his or her European counterpart: the average French job has only 90% of the hours of the average American job (1546 versus 1824 per year), while the average Dutch job has only 80% of the hours of the average American job (1367 versus 1824 per year). Both differences in the proportion of the population that has a job and differences in working hours of the employed contribute to the striking difference in working hours across countries. A major –though not the sole-- reason for these large cross-national differences in average working hours per job stems from the differing prevalence of part-time employment by women (Jacobs and Gerson 2004). In the Netherlands, fully 58 percent of employed women work fewer than 30 hours a week. This rate is much higher than in Germany (34 percent) or France (24 percent), and the Dutch pattern contrasts very strongly with the U.S., where the comparable figure is only 16 percent (OECD 2000). The United States also stands out with high proportions of workers who report very long workweeks (Jacobs and Gerson 2004).

Relative to the differences in work hours, differences in productivity in the U.S. and western Europe are much smaller, as can be seen in the GDP per hour worked data from Table 1. These data show that several European countries including the Netherlands, Belgium, France, Norway, and Ireland all had higher GDP *per hour worked* than did the U.S., which suggests that an extra hour worked in these countries may contribute at least as much to the national income in absolute terms as does an extra hour worked in the U.S. However, the GDP *per capita* was 18% lower in the Netherlands than in the U.S. in purchasing power parity (PPP) adjusted currency, 22% lower in Belgium, and 28% lower in France. In other words, the average income per hour

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worked was higher in these countries than in the U.S., but the higher number of working hours in the U.S. more than offsets this disadvantage and produced a higher average income per capita in the U.S. A similar pattern applies to many other western European countries whose GDP per hour worked did not attain the U.S. level. So, for example, the German GDP per working hour was 91% of the U.S., but the GDP per capita is 29% lower than in the U.S., while in Sweden the 11% gap in GDP per working hour grows to a 22% gap in GDP per capita.

- Table 1 about here -

Table 1 makes clear that it is the greater average amount of hours worked by Americans and not their productivity rates per hour worked that produces the income advantage in the U.S. over western Europe.[3] The impact of this cross-national difference in hours worked on cross-national comparisons of household income distributions can easily be demonstrated via a hypothetical calculation. In the generalized Lorenz curves for the U.S., France, Belgium and the Netherlands published in Gottschalk and Smeeding (2000), [4] the American curve overtakes the Belgian and Dutch curves at the 30th percentile. This implies that the bottom 30% of the population in the Netherlands and Belgium are better off than their counterparts in the U.S., but that most Americans are better off than their counterparts in either of these two European countries. The American curve is actually higher than the French curve at all quantiles. However, if the European distributions of disposable household income were scaled up to the point where average working hours were the same as in the U.S., the actual overtaking point for the U.S. would be at the 60th percentile for France, at the 80th percentile for the Netherlands, and not until the 95th percentile for Belgium.[5] Clearly, almost all the income advantage in the U.S. stems from the greater amount of work done by American workers relative to their European counterparts.

If the loss of national income from the reduced working hours were an unmitigated cost of generous welfare states, it would appear that western Europeans pay a high price for their social

welfare benefits. However, if instead there is a direct benefit to well-being that stems from the reduction in work hours per se, then it becomes important to incorporate this benefit in any systematic comparison between these countries and the United States. We demonstrate the potential importance of this direct benefit through a comparison of the U.S. and the Netherlands.

**Non-working time and well-being**

Scholars do not all agree on the well-being consequences of the lower working hours in western Europe. Welfare critics see the reduced hours of work as a cost of the welfare state. Low employment rates are seen as a response to generous unemployment and early retirement benefits that reduce incentives to work and thereby lower aggregate well-being. Lower work hours are also considered by some scholars as a loss of aggregate well-being attributable to overly-progressive tax structures (Prescott 2004), although Prescott's study implies elasticities (i.e., predicted reductions of work hours that are directly attributable to a progressive tax structure) that are too high to be believable by many economists (Alesina, 2005). Others find that the lower levels of work in Europe are forced on European workers by employers who lower labor demand in response to the high costs of labor regulation (e.g., employment security regulations – Kenworthy 2004; Pontusson 2005) and of high employer taxes that help pay the costs of the European welfare state (Nickell and Layard 1999; Kenworthy 2004).

Even though Dutch welfare state benefits are generous, the specific arguments of welfare critics do not readily account for the large difference in work hours between the U.S. and the Netherlands. On the contrary, the "Dutch miracle" economy has performed very strongly since the early 1990s. The unemployment rate in the Netherlands has been lower than that in the United States in every year since 1997, while the employment-to-population ratio in the two countries is very similar. Dutch labor law provides some of the basis for its relatively low average working hours. The Working Hours Act of 1996 was intended to promote a reconciliation between work,

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family life, and other outside responsibilities by providing standards for working time so as to make it easier for employees and employers to come to an agreement on working time. The Working Hours Adjustment Act of 2000 gave employees the right to request an increase or decrease of their work hours; the request could not be denied unless employers had a good business reason. The Equal Treatment of Working Hours Act of 1996 required that part-time workers not be treated differently than comparable full-time workers with respect to hourly pay, promotion, and other job benefits. The Work and Care Act of 2001 gave workers the right to various types of paid and unpaid leave to care for family members and other relatives. Each of these laws gave Dutch workers greater control of their working hours.

The consequence of these regulations is a rather good match between the preferences and the working hours of Dutch workers. According to Dutch survey data (OSA Labour Supply Panel 2002, see Table A1 for results), only 6% of Dutch employees report that they would like to work more hours than they do at the moment; only one third of this group think that they will not be able to realize their preference for more working hours within one year; and only about half of these 'pessimists' mention demand side factors as a reason for their expected inability to work as many hours as they would like. In other words, only about one percent of employees in the Netherlands actually feel constrained due to demand side factors.

Other authors agree with our perspective that non-working time has value and therefore offsets reductions in well-being from the foregone income. Non-working time offers the opportunity to be with one's children, to spend time on hobbies and to feel less stressed out (Osberg 2002a; Osberg 2002b). Blanchard (2004) argues that the higher work levels of Americans stem from the American preference for higher levels of consumption as opposed to higher levels of leisure. Alesina et al. (2005) show through a series of analyses that union and regulation variables can statistically explain the bulk of the difference in hours worked in the U.S.

and western Europe. They theorize that the coordinated reduction in work and expansion of vacation expands the utility of leisure time and reinforces the desire in Europe for what Alesina et al. called "vacation en masse," as evidenced by the fact that people who work fewer hours report higher levels of happiness in the Eurobarometer surveys. Meanwhile, Bianchi, Robinson, and Milkie (2006) report in their trend analysis of time diaries that American mothers actually spend as much or more time with their children than do Dutch mothers both if they are employed and if they are not employed, while American fathers spend nearly as much time with children as do Dutch fathers. What suffers in the U.S., according to the data analyzed by Bianchi et al., is the amount of time spent with one's spouse, time spent with friends, time for civic pursuits, sleep time, and leisure time, and this shortfall produces a heightened feeling of time strain among American working parents. A considerable body of research has established that high levels of work hours and working separate shifts (which is related to the level of hours of work) are associated with marital problems for both men and women, which obviously has a negative impact on overall quality of life (Presser 2000; Crouter, Bumpass, Head, and McHale 2001; Gager and Sanchez 2003; Poortman 2005). The experience of work-family conflict is particularly great for dual earning couples who report long combined hours of work (Jacobs and Gerson 2004; Hill et al. 2006), and the U.S. has a high proportion of such couples in comparison with western Europe in general, and the Netherlands in particular.[6]

The Dutch OSA data endorse the view that non-working time contributes to well-being. Table 2 shows that two thirds of the part-time workers assert that they do not work full-time because they want to have enough time for household and caring tasks. Another 12 percent mention having enough time for hobbies as the reason. Reported health problems are a third reason given by Dutch adults for not working and not looking for a job. Taken together, these statistics give the impression that the Dutch assign positive value to the hours of non-working

time that they gain by not being full-time workers. Our task is to incorporate this value into comparative studies of well-being.

<div align="center">--Table 2 about here--</div>

Almost by definition, non-working time has at least the value of the earnings that one foregoes when the decision not to work is voluntary. Imagine, for example, a mother who attaches high value to raising her children herself and therefore chooses a part-time job even though it carries the loss of potential income.[7] If we expressed well-being purely in terms of income, we would conclude that her choice of fewer working hours and a corresponding reduction in household income would produce a net reduction in well-being. This interpretation, however, would clearly give an overly narrow and hence unrealistic picture of the situation. If a mother who has the choice to work full time or part time chooses to work part time, she by definition values the added time that she spends with her family, child, and friends at least as much as the income she foregoes by not working. She has accepted a lower income in exchange for a living situation that she values more than what she gives up. Because her time allocation is part of her well-being, the correct interpretation of a strictly voluntary choice is that her well-being is higher than it would be if she worked full time.[8]

One objection to this interpretation might be that mothers make their decision about labor supply in the context of their partner's situation, and feel that a decision to work more hours would require a corresponding drop in their partner's hours because of the high value they place on family care of the children. But this objection does not undermine the above interpretation; it would still be true that women (and men) accept the drop in household income as an acceptable price for the opportunity to combine childcare with time for spouse, friends, and other leisure activities.

A second objection concerns the high within-household earnings inequality that follows from the highly gendered distribution of part-time work in the Netherlands. This within-household gender gap in hours worked might involve costs for Dutch women that offset some of the gains they apparently experience from non-work. The literature on household bargaining (Lundberg and Pollak 2003) argues that inequality of market earnings can lead to power differentials in household bargaining and an unequal distribution of the household "surplus" because the higher earning partner has better alternatives outside marriage and hence a more credible divorce threat. The extent of unequal household distribution would depend upon the ability of partners to enforce commitments to each other. Divorce rates in the Netherlands have risen in recent decades as they have elsewhere in western Europe, though the risk (25% of all marriages are estimated to end in divorce) remains significantly lower than in the U.S. (de Graaf and Kalmijn 2003). After divorce, Dutch women are less likely to repartner than are Dutch men (de Graaf and Kalmijn 2003), which suggests that male alternatives outside marriage are better both in the marriage and in the labor market. Whether Dutch women have other means to enforce an egalitarian distribution within households (e.g., social norms enforced through closer extended family ties), or whether they accept a decline in bargaining power as an acceptable price for more non-work time is unknown.

A third objection concerns the costs and availability of child care. If child care of a given quality was simply much more expensive in one country than in the other, then a greater net reduction of work hours in the first country might be a response to child care prices rather than a true difference in preferences. In this case, the higher cost of child care would produce a true reduction in well-being.

With respect to the U.S. and the Netherlands, this objection appears to be overstated. Available evidence (Immervoll and Barber 2005) suggests that the net price structure for child

care is not materially different in the two countries. The fees charged by child care centers in the Netherlands are higher - 29% of an average production worker's wages (APW) – than the 18% in the U.S., but this difference in fees does not take into account rebates, childcare benefits and tax reductions, all of which affect the net cost of child care. The net out-of-pocket costs as a percent of the average production worker's wage (APW) are lower for couples with two full-time earnings in the Netherlands than in the U.S. at household incomes equaling 200% of the APW, and the country-gap in favor of the Netherlands is even larger when family income is lower. Child care subsidies imply a higher implicit marginal tax on income and this must be taken into account to get an accurate comparison of well-being. However, as we show later in the paper, these implicit tax rates are not large enough to offset the argument that Dutch women gain net positive value from a voluntary reduction in work hours. Difficulties with child care in the Netherlands may go beyond cost to include the availability of child care, and the OECD reports a capacity rate for child (0-3 year) care of 13.3% in 1997 (OECD, 2002). This report apparently led Kenworthy (2004, p. 164) to argue that it is prohibitively expensive for some families, and thus that non-working time of some Dutch mothers is at least partly an involuntary response to a shortage of child care. A survey-based Dutch simulation study in 2004, however, showed that child care supply hardly constrains the labor demand of Dutch mothers at all: if formal child care were available for everyone, the labor participation of mothers of children aged zero to three would only rise from 67.2% to 68.7%, and the average number of working hours of mothers (employed and non-employed together) would increase by only one half hour per week (Ooms, Eggink & Van Gameren, 2007). It should be noted that child care supply in the Netherlands has increased substantially: between 2001 and 2004 the number of places for children in the age of 0-3 has increased by one third and for 4-12 year old children by two thirds. It is telling that 8 to

13% of the available child-care slots are unused at any single point in time even as the rate of part-time work by Dutch mothers remains very high (Statistics Netherlands, www.cbs.nl/statline).

In assessing well-being, income is assumed to be a good measure because it can be exchanged for consumption items and services, just as potential income can be foregone in exchange for non-work time. The failure to include the value of non-working time in cross-national comparisons of well-being amounts to treating the consumption of goods and the choice of non-work activities asymmetrically; the income which will be used to purchase consumption is counted, but the income that was foregone to increase non-work time is not counted. This asymmetry does not make good theoretical sense especially when comparing societies that may value non-work time differently. In this paper, therefore, we treat time in the same way that cross-national comparisons with generalized Lorenz curves implicitly treat consumption in order to explore the potential importance of differences in working time for cross-national comparisons of living standards.

The issues raised by cross-national differences in paid vacation time are in many respects similar to the issues raised by non-working time. However, there is relatively little variation in vacation time in the Netherlands, and so workers cannot as easily express an individual preference for longer vacations and less pay relative to shorter vacations and higher pay. The growth in the length of paid vacations in the Netherlands was the product of a series of agreements between Dutch labor unions and Dutch employers, and the content of these agreements then diffused to cover most of the Dutch work force (Alesina et al. 2005). The country differences therefore are not the direct consequence of individual preferences in the U.S. and the Netherlands. Another reason why the typical difference in paid vacation time does not imply differing individual tradeoffs between income and leisure is that the Dutch are typically paid for their longer vacations and holidays. Clearly, however, there must be a tradeoff; it is a

standard result in labor economics that workers indirectly pay for a large share of non-wage benefits through lower hourly wages. In this paper we consider the impact of adjustments for cross-national differences in both hours of work and paid vacations and holidays on cross-national differences in the quality of life as implied by income statistics.

**Analytic Strategy**

Our approach consists of three steps. First, we make a baseline comparison of the income distributions of the U.S. and the Netherlands for households where the head was between 25 and 55 years of age; we choose this age range to exclude most of the retirement-related behavior from our comparison. Second, we construct an adjustment measure for both countries that raises the income of *satisfied* part-timers – meaning those who work part-time instead of full-time on a voluntary basis- to a full-time income, and we then measure the impact of this adjustment on cross-national comparisons of well-being. Finally, we construct a second adjustment measure that also takes the value of vacation time into account, and again we compare the distribution of well-being in the two countries after accounting for the value of both types of non-working time.[9]

We derive the income distribution of the United States from the 2000 March Current Population Survey, which happens to be the survey that is incorporated in the Luxembourg Income Study. For the Netherlands, we make use of two datasets. The 1999 data come from the Dutch Socio-Economic Panel (SEP), which is the Dutch contribution to the Luxembourg Income Study. We supplement these data with 2000 data from the Family Survey Dutch Population (de Graaf, de Graaf, Kraaykamp & Ultee, 2000). The LIS/SEP consists of 2,717 households with positive incomes where the head was between 25 and 55 years old, while the Family Survey Dutch Population contains information on 554 households with these characteristics. Disposable household income is operationalized in the usual way as the sum of earned and unearned income plus government transfers and credits and minus taxes.[10] In line with LIS recommendations and

general practice, we apply top and bottom coding, since people tend to underestimate very low incomes and overestimate very high incomes (Kenworthy 2004). Incomes lower than 1 percent of the mean are set to 1% of the mean income, and incomes over 10 times the median are set to 10 times the median income.

In order to make comparisons of income across countries, it is important to establish whether the micro-level measures of income are equally complete in the two countries. A standard approach for doing this is to compare the estimate of national income obtained by aggregating the income reported in sample surveys with estimates obtained from national accounts data. We implement this approach for the American data and for the two surveys for the Netherlands. In the Dutch case, we compare the estimate of the population household disposable income from the two surveys with household net disposable income for 1999 and 2000 obtained from the annual national accounts by institutional sector, which are reported by Statistics Netherlands. We find that the Family Survey Dutch Population account for 87.8% of the income reported in the national accounts, and that the Dutch LIS/SEP data account for 88.8% of the income reported by national accounts. For the American case, we rely on the recent report from Ruser, Pilot and Nelson (2004), which compared personal income reported in the national accounts data and in the 2002 March CPS. The population estimate of money income in the CPS was $6.446 trillion, which compares with $8.678 trillion reported in the state personal income figures reported to the U.S. Bureau of Economic Analysis. Most of this discrepancy consists of income received on behalf of individuals by pension plans, nonprofit institutions serving households, and fiduciaries. After adjusting for all differences in the types of income collected by these two methods, the authors identified an $804 billion shortfall in the CPS, which implies that the CPS accounted for 88.9% of the comparable income reported in the U.S. national accounts data, which is very similar to the figures obtained for the Netherlands. These calculations do not

prove that the datasets are comparable, both because they do not measure the same thing (the Dutch calculation is after taxes, while the U.S. calculation is before taxes), and because the social welfare and tax systems are quite different in the two countries. Nonetheless, they suggest at least rough comparability of the three sets of data, which supports the utility of the analyses reported in this paper.

We convert household income to household equivalent income by dividing household incomes by the square root of household size. Finally, we make incomes comparable between the two countries by re-expressing them in purchasing power parities in 2000 US dollars (Firebaugh 1999). Conversion factors are derived from the OECD (2000-euro = 0.925 2000-US dollar, http://www.oecd.org). For the Dutch LIS/SEP data, a conversion first into euros (1 euro = 2.20371 guilders) and then into year 2000 consumer prices (1999-euro = 0.974 2000-euro, Statistics Netherlands, www.cbs.nl/statline) is required. For the Family Survey Dutch Population 2000 only a conversion from guilders into euros is needed before applying the PPP conversion. The resulting income distributions form the basis of our U.S.-the Netherlands comparison.

A central issue for the construction of our adjustment measure for part-timers is whether individuals who work less than full time do so *voluntarily*. For the United States, this information is available in the 1998 General Social Survey. For the Netherlands, we use the OSA Labour Supply Panel data of 2002 collected by the Institute for Labour Studies. Both sources contain the question whether one prefers to work more, fewer, or the same number of hours a week, given that the wage rate remains the same. The distribution of preferences for work hours differs strongly between the United States and the Netherlands. According to Table 3, three quarters of Dutch employees are satisfied with their present working hours and related income situation, whereas the proportion of Americans who would not want to change their work hours is only 57 percent. The proportion that prefers fewer hours is higher among the Dutch than among the

Americans, and more Americans than Dutch prefer to increase their hours and income (panel A). American and Dutch part-time working women are more satisfied with their work schedules than their full-time working counterparts. In contrast, many part-time American men are not satisfied and want to work more (panel B). Because the proportion of part-time workers is larger in the Netherlands than in the United States and because more Dutch than Americans are satisfied, the size of the group of *satisfied part-timers* is much larger in the Netherlands. One third of the Dutch work force consists of part-time workers who do not want to change their work hours, while only 9% of American workers fall into this category (panel C).[11]

- Table 3 about here -

The adjustment measure for Dutch satisfied part-timers is based on the OSA panel data. We first assigned net (after-tax) full-time earnings to *part-time workers who express a preference for their actual number of working hours* (33% of the sample). Full-time incomes are calculated as the observed wage rate times 39 hours both for the Netherlands and the U.S., multiplied by the number of weeks worked per year (the average number of working hours for Dutch full-timers in our data is 39, while the U.S. average is 46 hours). The number of weeks worked per year is an average for workers located in each 5% quantile of the personal income distribution, and is obtained from the Dutch 1999 LIS/SEP data. We then add the absolute difference between the original and adjusted earnings to the household income, and finally, compute percentage differences between original and adjusted household income for all twenty quantiles of the Dutch income distribution. Application of the quantile adjustments to the Dutch 1999 LIS/SEP data and also to the 2000 Family Survey Dutch Population produces a Dutch income distribution that is adjusted for satisfied part-timers. We use the 1998 General Social Survey to construct a comparable American adjustment, and we use the result to adjust quantiles of the U.S. income distribution as calculated with the 2000 CPS.[12]

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Our adjustment measure is an over-simplification in that it ignores the possibility that progressive tax systems would make the additional hours not worked less valuable as sources of disposable income. This possibility is in fact a central component of the assertion by market liberals that the lower work hours of Europeans are an involuntary response to constraints imposed upon them by the welfare state. However, we show in Appendix A that the impact of the more progressive tax system of the Netherlands on labor supply decisions is not large enough to bias our conclusions in favor of the Netherlands. Indeed, the logic in Appendix A, when combined with the fact that we omit any adjustment for the value of non-work hours of satisfied full-time workers (who work fewer hours in the Netherlands than in the U.S.) or of satisfied non-workers (of which there are more in the Netherlands than in the U.S.) makes our adjustment conservative (i.e., biased in favor of the United States). We discuss further the implications of this conservative bias in the discussion section of this paper.

We have no data that show the proportion of workers in the Netherlands and the U.S. who would voluntarily give up their vacations for more paid work hours. However, we can illustrate the maximum potential impact of the cross-national difference in well-being in the two countries by assuming that all of the vacation time in both countries is preferred over work at the current rate of pay, and by valuing the vacation and holiday time in both countries as equal to the length of the vacation multiplied by each person's wage and that person's standard working hours per week.[13] According to the OECD (2004) (see also Alesina, Glaeser, and Sacerdote 2005), the average length of holidays and vacation time in the Netherlands for full-year equivalent workers is 7.6 weeks a year, while in the United States the average is 3.9 weeks a year for full-year household heads. We assume that the average length of vacations and holidays in each quantile is the country average multiplied by the ratio of the average weeks worked in that income quantile divided by 52.[14] The percentage difference per 5% quantile between the original unadjusted

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household income and the household income adjusted for voluntary part-time work and vacation time is the adjustment measure we applied to the top and bottom coded, size-adjusted and PPP adjusted equivalent household income for the U.S. and the Netherlands. This valuation makes similar assumptions as those earlier discussed in the adjustment for satisfied part-time workers and has the same offsetting biases; on the one hand, people would get less money for the additional work because of the progressive tax system, but on the other hand, their valuation of vacation time may be higher than the foregone earnings even under a flat tax.

**Results**

Table 4 shows the average incomes per 5% quantile before and after adjustment, while Figure 1 compares the ranked household size-adjusted disposable income distributions of the Netherlands and the U.S. For ease of interpretation, we present these results as graphs of income by quantile rather than as generalized Lorenz curves. The cross-over point for these quantile comparisons (the point at which Americans are better off than their Dutch equivalents on ranked income) is between the $20^{th}$ and $25^{th}$ percentile when the CPS is compared with the Family Survey and is between the $35^{th}$ and $40^{th}$ percentile when the CPS is compared with the Dutch LIS/SEP data. The income advantage in the American distribution remains fairly small through the bottom half of the distribution, but above that point, the American advantage is marked and becomes very large above the $80^{th}$ percentile. Table 4 shows that the mean income in the Family Survey is only 74% of the mean CPS income, while the mean Dutch LIS/SEP income is only 76% of the mean CPS income.

- Table 4 and Figure 1 about here -

Figure 2 then takes account of the value of non-working time of satisfied part-time workers in the two countries. Naturally, the adjusted income lines lie above the original income lines, because we have monetarized the value of non-working time for satisfied part-time workers

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in both countries. However, because a greater portion of Dutch workers are satisfied to work less than full time than is true in the U.S., the adjustment is larger in the Netherlands. As a consequence of this adjustment, the Dutch mean incomes have risen from 74% to 78% of the mean CPS income for the Family Survey and from 76% to 80% of the mean CPS income for the Dutch LIS/SEP. The cross-over point for the CPS and the Family Survey has remained stable between the $20^{th}$ and $25^{th}$ percentile, while the cross-over point using the Dutch LIS/SEP has moved from between the $35^{th}$ and $40^{th}$ percentile to between the $40^{th}$ and $45^{th}$ percentile. This means that nearly half the Dutch households – specifically those in the lower half of the income distribution – are better off than their American counterparts on a point-by-point comparison. The cross-over point for the generalized Lorenz curves is even further to the right, because it is based on the mean cumulative income up to percentile p rather than the exact incomes at the $p^{th}$ percentile in the two countries.[15] Furthermore, the income gap between American and Dutch households in the upper half of the distribution has also noticeably shrank, although the American households are still clearly better off.

- Figure 2 about here -

Figure 3 shows the consequence of combining the adjustment for the monetary value of non-working time for satisfied part-time workers with the monetary value of vacations and holidays. The vacation adjustment obviously increased equivalent household income in both countries, because now each household gained the monetary value of vacation time as well as the monetary value of the difference between part-time and full-time hours per year for satisfied part-time workers. Because Dutch workers take longer vacations, this adjustment is larger in the Netherlands than in the United States. Whereas the cross-over point using the Family Survey data was previously between the $20^{th}$ and $25^{th}$ percentile, the addition of the value of vacations pushes the cross-over point to between the $25^{th}$ and $30^{th}$ percentile. When the satisfied part-time and

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vacation-adjusted CPS is compared with the adjusted Dutch LIS/SEP, the Dutch situation is still more favorable, as the cross-over point rises from between the 35th to 40th percentile in the unadjusted data to between the 50th and the 55th percentile, which implies that the cross-over point for the generalized Lorenz curves would be even further to the right. The income lines of the two countries now track each other quite closely until about the 70th percentile, at which point they diverge. Furthermore, the mean adjusted income in the two Dutch surveys rises to 81% (originally 74%) of the mean American value in the Dutch Family Survey and to 83% (originally 76%) of the mean American value in the Dutch LIS/SEP; in other words, the two adjustments equal roughly 1/3 of the overall difference between the mean household income in the Netherlands and the U.S. Even though average well-being of the entire population remains higher in the U.S., a substantial fraction of the Dutch population or even a majority (depending on the dataset) achieve a higher level of well-being than their American counterparts when country differences in the use of time are brought into the calculation.

- Figure 3 about here -

**Discussion**

The stratification consequences of the welfare state have been a central concern of comparative research for decades. The extent of inequality reduction was one of the three factors considered by Esping-Andersen (1990) in his assignment of countries to categories within his well-known typology. However, his approach addressed only a limited aspect of the broader question of how national institutions shape both the level and distribution of a country's quality of life. It is limited both by an overemphasis on income and by a failure to address cross-national comparisons of well-being, which depend on country averages and within country-inequality as well as realistic measures of well-being that can be applied across countries. To limit attention to within-country inequality makes the problem easier, but it is ultimately unsatisfying.

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Our incorporation of time allocation in cross-national comparisons of well being goes only part of the way towards solving the problem of well-being comparisons across countries. A complete solution is probably beyond the scope of empirical research. Nevertheless, we can certainly go much further in the study of comparative welfare than is currently achieved in the literature. When a national welfare system provides in-kind services and other non-monetary benefits, the task for social science is to assess the quality of the provided service and the inequality in its provision, so that the value of the service can be "added" to income in order to provide a more complete accounting of the mean and distribution of well-being in that society. The difficulty of solving this problem has induced most social scientists to address country-comparisons in limited terms, involving for example social mobility, education, crime, pollution, congestion, access to social services, quality of transportation, health, mortality, or (of course) income, or to use simple methods of aggregating well-being across multiple dimensions (e.g., the simple arithmetic average of life expectancy, literacy and education, and PPP adjusted per capita income that composes the "Human Development Index," which was recently developed by the United Nations—United Nations 2006). Without underestimating the importance of this work, progress on strategies for moving from limited to more comprehensive comparisons and for evaluating tradeoffs across different components of well-being has been slow. This slow pace has limited our ability to provide comprehensive evaluations of different societal arrangements for structuring markets and social welfare institutions. Our focus in this study on the social welfare derived from time spent in both market and in nonmarket activities can be seen as an effort to accelerate the pace of progress towards more comprehensive comparisons of societal well-being.

In 1943, the psychologist Abraham Maslow asserted that humans possessed a "hierarchy of needs," that higher needs were not activated until lower order needs were satisfied, and that what he termed the highest need, the need for "self-actualization" was often not accomplished

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through work. Its satisfaction, in fact, often required the foregoing of income for "leisure" which would allow cultural and artistic pursuits. This presumption that "self-actualization" was often best obtained outside of work led to the prediction that average hours of work would diminish as societies became wealthier. This prediction was borne out in western Europe, though not in the U.S. During the "prime" working years, which coincide with the normal time in the life course when adults raise children, the complaint in the U.S. has been less about inadequate time for "self-actualization" than about work-family conflict, which is felt most keenly by women who have children in the home (OECD 2004; see also Bianchi et al. 2006) and by couples who work extreme hours (Jacobs and Gerson 2004). Maslow may have underestimated the extent to which workers at least in professional and managerial jobs obtain their "self-actualization" through work, but the Dutch experience suggests that self-actualization plus adequate income from work are compatible with lower work-family conflict and greater enjoyment from non-work activities. Whether this compatibility can be achieved in the American institutional context is a question that is not easily answered, but it should nonetheless be asked.

Our comparison focused only on part of the difference in working hours between the U.S. and the Netherlands, namely that portion which involves the different distribution of part-time workers among workers aged 25-55. Our adjustment measure could have been extended further to consider the category of satisfied non-workers (including early-retirees), which, like part-time work, is a product of a country's market and welfare-state characteristics. Involuntary non-employment is likely to be higher in more generous welfare states because of the higher tax wedge (which varies with the particular method by which social welfare benefits are financed), but at the same time voluntary non-work is likely to be higher in welfare states because higher social benefits give people the choice of not working without suffering severe financial hardship. By limiting our adjustments for satisfied non-work only to those who were in the labor force, we

provided a conservative assessment of the impact of different distributions of working time on the comparison of Dutch and American quality of life.

The fact remains, however, that the different pattern of working time in the two countries is highly gendered, which raises the question whether Dutch women are not trading off one form of well-being for another. Dutch households gain the value of additional non-work time at the expense of high within-household gender inequality in earnings. Theory would predict that the consequences of within-household earnings inequality would reduce the well-being of Dutch women. Judging by their answers to survey questions, Dutch women may find this tradeoff to be an acceptable price for the non-work time that they gain. Nonetheless, the impact of this heavily gendered allocation of time on total well-being requires further investigation.

Another theoretical question begged by our results is why Americans work so much, if they, like the Dutch, also value non-work time. One possible answer is that the American pattern of work is a consequence as well as a cause of American inequality. At the bottom of the income distribution, Americans are relatively poor, and this fact forces them to work longer hours. The bigger puzzle is at the higher end of the distribution, where upper-middle class Americans generally have higher incomes than their Western European colleagues. Why do these well-off Americans work so much? One possibility is that the work demands for professionals and managers are higher in American than European organizations. A young associate at a big American law firm does not lose salary if she logs fewer billable hours than her hardest-working peers, but she may lose her chance to be promoted to partner. The same may be true for managers who take longer vacations, professors who ease up on publishing, and other professionals in highly competitive fields. A second and related possibility is that the high incomes and correspondingly higher consumption of peers stimulate a stronger demand for consumption through the well-known mechanisms of status competition and relative deprivation. A third

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possibility is that the highly competitive American culture creates a demand for expensive housing in more desirable school districts and for expensive private education to keep one's children competitive with their peers. In short, higher inequality can raise the perceived value of income relative to non-work time. Whether this dynamic is more prevalent in the U.S. than in Western Europe is another question for further research.

Our study compared the U.S. with only one European country: the Netherlands. We believe this is a highly informative comparison because of its ability to demonstrate the potentially large additional well-being from non-working time. Apparently, a country with a generous welfare regime can sustain a strong economy, low unemployment, high productivity, a short average work-week, and moreover provide additional well-being from the non-work time that is gained by this arrangement. However, the qualitative result of our study would probably be similar had we used France, Germany, the United Kingdom, or Norway, all of which have considerably higher levels of female part-time work than does the United States (OECD 2005). Welfare states seem better capable of offering their population the number of working hours they wish because they protect their populations against economic privation. People who would not be happy in a full-time job because their health is not good or because they do not like to make heavy use of child care have the opportunity to choose to work fewer hours without encountering severe financial hardship. If we take this characteristic of welfare states into account when comparing living standards across countries, our tentative conclusion is that the aggregate gains in quality of life from working reduced hours offset at least a portion of the income gap between European welfare states and the United States.

**Appendix A: Assigning Value to Non-Work Time under Conditions of Progressive Tax Systems**

As noted in the text, we use the ratio of full-time hours to observed hours for satisfied part-time workers to adjust the observed earnings of Dutch and American workers in each of twenty quantiles of the income distributions of these two countries. These adjustments can only be an approximation of the true value of the non-worked hours of satisfied part-time workers. This value, which in economics is commonly referred to as the reservation wage, is heterogeneous in the population. Figure 4 shows the result for a hypothetical portion of the income distribution, which we define as those with identical household incomes, identical part-time wages, and an identical number of work hours. For simplicity, we show the distribution as a normal distribution which is truncated at €12, which in this figure represents the per hour average net increment in disposable income that would be obtained by working full-time instead of part-time for satisfied part-timers. Because these part-timers are satisfied, the value distribution is truncated on the left; if any of the voluntary part-timers assigned a lower value to non-work time, they would by definition be working instead.

Because the tax systems of both countries are progressive, our approximation is above the lower-bound of its value for this population. However, we still conclude that our estimate is conservative, in the sense that it is below the *mean* value for this subpopulation. Note that even if the distribution is symmetrical, the left truncation creates a right skew and pushes the mean above the median. For our measure to be too high, it would have to be true that a flattening of the tax system (such that the hourly take home pay on the non-worked hours by satisfied part-time workers would equal the hourly take home pay on the worked hours) would all by itself draw more than 50% of the satisfied part-timers into the full-time labor market. The Netherlands has a large fraction of women working part-time throughout the income distribution, and notably also

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in the bottom third of the income distribution, where the Dutch income tax was relatively flat in the period covered by our data. This fact suggests that the labor supply response to a flat tax would not be as large as 50%, and therefore our adjustment for part-time work is conservative.

--Figure 4 about here--

Further evidence that our assigned value is conservative comes from considerations of the wage elasticity of supply. Goldin (1990) reported a range of estimated wage elasticities of supply for American women from various studies as between 0.4 and 0.8 for the 1950-1980 period. Van Soest et al. (1990) estimated a wage elasticity of supply for Dutch women of 0.66. Our data show that the average Dutch female part-time worker works about 20 hours per week. If 50% of these workers became full-time workers, this would raise their average work hours to 30. The wage elasticity of supply is defined as

$$\Delta L / L = \eta \Delta w / w$$

where L is labor supply and w is the net (after tax) wage. If $\Delta L / L$ is 0.5 (a 50% increase), then $\Delta w / w$ must equal 0.5/0.66, which equals .76, a 76% increase. So let W be the gross wage, let $r_1$ be the existing "high" tax rate and $r_2$ be a new "low" tax rate that would cause the average net wage for the additional hours worked to equal the average net wage on the actual hours worked. Since the net wage from the flat tax must be 1.76 of the net wage from the existing tax rate, it follows that

$$(1 - r_2)W = 1.76(1 - r_1)W$$

And so

$$r_2 = 1.76r_1 - .76$$

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This implies a reduction in the marginal tax rate from 40% to 0%, or from 50% to 12.5%, or from 60% to 30%. These steps are considerably larger than the typical step-ups in the Dutch tax across the quantiles of the Dutch income distribution. It follows, therefore, that our estimates of the average monetary value of non-work time for Dutch satisfied part-time workers across the income quantiles are conservative estimates of their actual value. Our estimates are even more conservative in that we omit any adjustment for the smaller number of hours worked by satisfied full-time workers in the Netherlands, who typically work fewer hours than do American full-time workers. We also omit any adjustment for satisfied non-workers, which makes our results even more conservative.

Notes

[1] A Lorenz curve for disposable household income gives the proportion of total income held by the bottom p proportion of households for each value of p from zero to one. As used here and in many sources (e.g., Gottschalk and Smeeding 2000), a generalized Lorenz curve plots the sum of the incomes of the bottom p proportion of households as a proportion of total household income in a reference country For more information, see, e.g., Duclos and Araar (2006).

[2] Goodin et al. (1999) include the Netherlands with the social democratic countries and Pontusson (2005) includes the Netherlands along with the Nordic countries in a group that he refers to as "social Europe." In this paper, we will describe the welfare state of the Netherlands as social-democratic.

[3] There actually is almost no relationship between hours worked and GDP per capita within western Europe; the correlation between hours worked and GDP per capita in the European countries of Table 1 is close to zero when Luxembourg is omitted (in fact, it is slightly negative, though not statistically significant; further details are available from the authors upon request).

[4] The data are adjusted disposable income measured at the household level and divided by the square root of household size, from Gottschalk and Smeeding (2000), appendix table 1, and are taken from the Luxembourg Income Studies for the U.S. in 1991, Belgium in 1992, the Netherlands in 1991, and France in 1984.

[5] The scaling is done under the simplifying assumption that the mean of the country distributions would be shifted up, but that the shape of the distributions would remain the same.

[6] Medalia and Jacobs (2007) note that the U.S. is less exceptional if the comparison is extended to Eastern Europe and other non-western countries.

[7] We could instead frame the example as a joint choice of a woman and her partner, but the result is the same.

[8] It would be possible for someone to incorrectly anticipate the full consequences of her choice of time over income; in other words, that the value of non-working time at a particular moment has lost value compared to the moment the working hours decision was made. In a context like that of the Netherlands, which is the empirical example of this paper, such mistakes can be corrected because labor demand is high, and therefore mobility between work and non-work is relatively easy.

[9] Note that we do not subtract value for those who would prefer to work fewer working hours any more than we subtract value for those who have undesirable working conditions. Our goal is not to be comprehensive – which is well beyond the scope of any single paper – but rather to evaluate how valuing time that is voluntarily taken from the full-time window for the purpose of non-work activities affects the comparison of well-being across countries.

[10] CPS and LIS/SEP household income consists of earnings from wage and salary work, self-employment income, farm income, unemployment compensation, worker's compensation, social security, supplemental security, public assistance, veteran's benefits, survivor's income, disability income, retirement income, income from interest, dividends, and rents, educational assistance, child support, alimony, financial assistance payments, the earned income tax credit, and other income, from which federal and state income tax, FICA, federal retirement, and property taxes were subtracted. See also http://www.lisproject.org/techdoc/sumincvar.htm (downloaded April 5, 2007). The Family Survey Dutch Population consists of the following income components: wage and salary work including bonuses, self-employed income, unemployment compensation, social security, disability income, (early) retirement income, old age pension, income from interest and

dividend, alimony, study grants, and allowance from parents. These components are reported in net (after tax) amounts. Household income is the sum of the net income of both partners.

[11]To fully take the value of non-work hours into account, we should also value the time of dissatisfied part-timers who prefer to work a few hours more (but not to work full-time), because part of their non-working time is still voluntary, and thus has some value. Aside from the technical problem that we do not have a good estimate for the size of the adjustment, we observe that the proportion of the work force that is so affected is the same in both countries (5% of the workforce of both countries consists of part-timers who would like to work more hours), and so the omission of this category should not have a major effect on cross-country comparisons. At the same time, we also omit an adjustment for the fact that Dutch full-time workers typically work fewer hours than do American full-time workers and nonetheless typically report that they do not want to work more hours. An adjustment for non-work time by satisfied full-time Dutch workers would further close the gap between Dutch and American well-being as measured by comparisons of generalized Lorenz curves. Moreover, we do not consider satisfied non-employed, because of the technical problem to assign wage rates to them. Such adjustments would close the gap between Dutch and American well-being even further, since the Netherlands has a larger proportion of satisfied non-employed than the U.S.

[12] Note that the adjustment in the OSA data is necessarily in terms of net earnings, while the adjustment in the GSS data is necessarily in terms of gross personal income, but in both cases, the adjustment is computed as an hours-adjusted ratio, and so the difference in the way income is measured does not have a large effect on the computed ratios. These ratios in both cases are then applied to the LIS data, which measures income in a highly comparable way in the two countries.

[13]These vacations are generally paid vacations, and our valuation of this time at the person's current wage amounts to assuming that an employer would be willing to pay the worker a bonus at his current wage for foregoing a paid vacation in order to work these additional weeks. For our purposes, the important point is not whether the worker could actually strike such a bargain with the employer, but rather that this approach creates a parallel treatment of the value of non-work time for satisfied part-time workers and for all workers who take vacations.

[14] There are no good data in the Netherlands that provide information on vacations and holidays at the individual level. To maintain comparability between the two countries, we therefore compute our adjustment by using the mean vacation and holiday time for both countries, weighted by hours worked at the individual level and weeks worked at the 5% quantile level as described in the text. American vacations are more regressively allocated than in the Netherlands where labor law prescribes minimum vacations for all workers (Altonji and Oldham 2003). As a consequence, our vacation adjustment is conservative for the bottom half of the distribution (the Dutch advantage is actually bigger than our adjustment suggests) and smaller in the top half of the distribution.

[15] The crossover point in Figure 3 is the quantile at which well-being is equal in the two countries. For generalized Lorenz curves, the cross point is the point at which the mean income *of all people below that quantile* is equal in the two countries. Because the Dutch incomes are higher at every point to the left of the cross-over point in Figure 3 than are American incomes, it follows that *mean* incomes of Dutch households up to this quantile are higher than are mean incomes of corresponding American households. The *cumulative* mean incomes of Dutch households remain higher than mean American incomes as one moves to the right of this point until the relatively higher American incomes to the right of the cross-over point offset the

relatively lower American incomes to the left of this point such that the cumulative mean incomes of the two countries are equal.

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**Table 1: Hours worked per capita, hours worked per worker, GDP per capita, and GDP per hour worked for the United States and selected Western European countries (2005)**

| | Hours worked per capita | | | Hours worked per worker | | | GDP per capita (USD) | | | GDP per hour worked (USD) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | as % of US | gap in % points | total | as % of US | gap in % points | total | as % of US | gap in % points | total | as % of US | gap in % points |
| Austria | 836 | 97 | -3 | 1656 | 91 | -3 | 33,569 | 80 | -20 | 40.1 | 83 | -17 |
| Belgium | 616 | 71 | -29 | 1534 | 84 | -29 | 32,549 | 78 | -22 | 52.9 | 109 | 9 |
| Denmark | 796 | 92 | -8 | 1551 | 85 | -8 | 34,445 | 82 | -18 | 43.3 | 90 | -10 |
| Finland | 783 | 91 | -9 | 1714 | 94 | -9 | 31,389 | 75 | -25 | 40.1 | 83 | -17 |
| France [1] | 617 | 71 | -29 | 1546 | 85 | -29 | 30,245 | 72 | -28 | 49 | 101 | 1 |
| Germany | 677 | 78 | -22 | 1437 | 79 | -22 | 29,758 | 71 | -29 | 44 | 91 | -9 |
| Ireland | 773 | 89 | -11 | 1638 | 90 | -11 | 39,034 | 93 | -7 | 50.5 | 104 | 4 |
| Italy | 747 | 86 | -14 | 1801 | 99 | -14 | 28,471 | 68 | -32 | 38.1 | 79 | -21 |
| Luxembourg | 1,051 | 121 | 21 | 1557 | 85 | 21 | 67,976 | 163 | 63 | 64.7 | 134 | 34 |
| Netherlands | 688 | 80 | -20 | 1367 | 75 | -20 | 34,457 | 82 | -18 | 50.1 | 104 | 4 |
| Norway | 680 | 79 | -21 | 1360 | 75 | -21 | 43,164 | 103 | 3 | 63.5 | 131 | 31 |
| Portugal | 824 | 95 | -5 | 1685 | 92 | -5 | 19,879 | 48 | -52 | 24.1 | 50 | -50 |
| Spain | 739 | 85 | -15 | 1669 | 92 | -15 | 27,284 | 65 | -35 | 36.9 | 76 | -24 |
| Sweden | 761 | 88 | -12 | 1587 | 87 | -12 | 32,683 | 78 | -22 | 43 | 89 | -11 |
| Switzerland | 925 | 107 | 7 | 1659 | 91 | 7 | 36,058 | 86 | -14 | 39 | 81 | -19 |
| United Kingdom | 801 | 93 | -7 | 1669 | 92 | -7 | 32,151 | 77 | -23 | 40.1 | 83 | -17 |
| United States | 865 | 100 | 0 | 1656 | 91 | -3 | 41,789 | 100 | 0 | 48.3 | 100 | 0 |

[1] Includes overseas departments

Source: OECD Compendium of Labor Productivity, 2006 and OECD Employment Outlook, 2005.

Statistics for Austria are hours worked per job.

Statistics for the UK and the US are 2004 data taken from the OECD Employment Outlook 2005, Statistical Annex, Table F

**Table 2: Main reasons not to work full-time or not at all for Dutch part-time workers and non-employed**

| | total | | I want to work same hours | | I want to work more hours | | I want to work fewer hours | |
|---|---|---|---|---|---|---|---|---|
| Dutch part-time workers (age 25-55) | N | % | N | % | N | % | N | % |
| I want to have enough time for household and caring tasks | 583 | 64.6 | 452 | 66.7 | 50 | 51.5 | 81 | 63.3 |
| I want to have enough time for hobby's etcetera | 109 | 12.1 | 87 | 12.8 | 3 | 3.1 | 19 | 14.8 |
| I cannot work more hours with this employer | 50 | 5.5 | 23 | 3.4 | 22 | 22.7 | 5 | 3.9 |
| Education or courses | 27 | 3 | 20 | 2.9 | 6 | 6.2 | 1 | 0.8 |
| Health problems | 42 | 4.7 | 25 | 3.7 | 8 | 8.2 | 9 | 7 |
| I have a second job | 13 | 1.4 | 10 | 1.5 | 1 | 1 | 2 | 1.6 |
| Other reason | 70 | 7.8 | 55 | 8.1 | 6 | 6.2 | 9 | 7 |
| Don't know | 9 | 1 | 6 | 0.9 | 1 | 1 | 2 | 1.6 |
| Total | 903 | 100 | 678 | 100 | 97 | 100 | 128 | 100 |

| | total | | men | | women | |
|---|---|---|---|---|---|---|
| Dutch adults who are out of the labor force (age 25-55) | N | % | N | % | N | % |
| Insufficient child care facilities | 9 | 1.3 | | | 9 | 1.5 |
| My family situation does not allow me | 99 | 14.6 | | | 99 | 16.5 |
| I have other significant tasks at home | 243 | 35.8 | 6 | 7.4 | 237 | 39.6 |
| I have other significant tasks outside the home | 23 | 3.4 | | | 23 | 3.9 |
| Early retirement | 2 | 0.3 | 2 | 2.4 | | |
| Health problems | 240 | 35.3 | 65 | 83 | 175 | 29.1 |
| There will be no job for me anyway | 14 | 2 | | | 14 | 2.3 |
| Social security benefit is sufficient to live on | 2 | 0.3 | | | 2 | 0.4 |
| Other reason | 46 | 6.9 | 5 | 7.1 | 41 | 6.9 |
| Total | 678 | 100 | 78 | 100 | 600 | 100 |

Source: OSA 2002

**Table 3: Satisfaction with working hours in the Netherlands and the U.S.**
**(percentages)**

| *Panel A: preference for working hours (if wage remains the same)* | | | | | | |
|---|---|---|---|---|---|---|
| | total | | men | | women | |
| | NL | US | NL | US | NL | US |
| More | 7 | 32 | 4 | 38 | 10 | 28 |
| Same | 75 | 57 | 76 | 55 | 74 | 59 |
| less | 19 | 10 | 21 | 8 | 16 | 13 |
| | 100 | 100 | 100 | 100 | 100 | 100 |

| *Panel B: preference for working hours by working hours* | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | total | | | | men | | | | women | | | |
| | NL | | US | | NL | | US | | NL | | US | |
| | part | full | part | full | part | full | part | full | part | full | part | full |
| more | 12 | 2 | 35 | 32 | 13 | 2 | 62 | 36 | 12 | 2 | 26 | 28 |
| same | 77 | 73 | 56 | 57 | 75 | 76 | 29 | 57 | 77 | 64 | 65 | 58 |
| less | 11 | 24 | 9 | 11 | 13 | 22 | 10 | 8 | 11 | 35 | 9 | 14 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| *Panel C: distribution of preferred and current working hours* | | | | | | |
|---|---|---|---|---|---|---|
| | total | | men | | women | |
| | NL | US | NL | US | NL | US |
| part-time - more | 5 | 5 | 1 | 5 | 9 | 6 |
| **part-time - same** | **33** | **9** | **9** | **2** | **60** | **15** |
| part-time - less | 5 | 1 | 1 | 1 | 8 | 2 |
| full-time - more | 1 | 27 | 2 | 33 | 0 | 22 |
| full-time - same | 42 | 48 | 67 | 52 | 14 | 45 |
| full-time - less | 14 | 9 | 19 | 7 | 8 | 11 |
| | 100 | 100 | 100 | 100 | 100 | 100 |

Source: General Social Survey 1998 (U.S.) and OSA 2002 (the Netherlands)

only working population between age 25 and 55; for Netherlands self-employed are excluded

part-time has been defined as less than 35 hours, full-time as 35 hours or more

**Table 4: Household incomes before adjustment, after satisfied part-time adjustment,**
**after satisfied part-time and vacation adjustment**

| | Before adjustment | | | After satisfied part-time adjustment | | | After satisfied part-time and vacation adjustment | | |
|---|---|---|---|---|---|---|---|---|---|
| | US CPS[1] | NL LIS/SEP[2] | NL FSDP[3] | US CPS | NL LIS/SEP | NL FSDP | US CPS | NL LIS/SEP | NL FSDP |
| 5 | 2200 | 6465 | 6886 | 2242 | 6877 | 7325 | 2357 | 8025 | 8548 |
| 10 | 6647 | 10175 | 9028 | 7119 | 10808 | 9590 | 7469 | 12270 | 10887 |
| 15 | 8776 | 12129 | 9790 | 9189 | 12966 | 10466 | 9703 | 14575 | 11764 |
| 20 | 10626 | 13413 | 10641 | 10996 | 14345 | 11380 | 11420 | 15801 | 12535 |
| 25 | 12373 | 14405 | 11596 | 12765 | 15112 | 12165 | 13392 | 16833 | 13551 |
| 30 | 14054 | 15407 | 12685 | 14293 | 16372 | 13479 | 15049 | 18042 | 14854 |
| 35 | 15819 | 16493 | 13908 | 15841 | 17530 | 14783 | 16454 | 19104 | 16110 |
| 40 | 17577 | 17487 | 15013 | 17672 | 18385 | 15783 | 18599 | 20220 | 17359 |
| 45 | 19415 | 18340 | 15820 | 19479 | 19447 | 16775 | 20355 | 21203 | 18290 |
| 50 | 21261 | 19204 | 16804 | 21503 | 20842 | 18237 | 22224 | 22476 | 19668 |
| 55 | 23237 | 20165 | 17334 | 23309 | 22167 | 19055 | 24458 | 23874 | 20522 |
| 60 | 25276 | 21213 | 18163 | 25521 | 23139 | 19812 | 26792 | 24889 | 21310 |
| 65 | 27490 | 22161 | 19849 | 27954 | 24051 | 21542 | 28914 | 25714 | 23031 |
| 70 | 29893 | 23297 | 21564 | 30039 | 25699 | 23787 | 31485 | 27348 | 25313 |
| 75 | 32544 | 24475 | 23117 | 33396 | 26449 | 24981 | 34344 | 28197 | 26632 |
| 80 | 35625 | 25850 | 25367 | 35825 | 28163 | 27636 | 37254 | 29839 | 29281 |
| 85 | 39497 | 27720 | 27402 | 40073 | 30244 | 29897 | 41477 | 32558 | 32184 |
| 90 | 44998 | 29934 | 31027 | 46393 | 31316 | 32460 | 47751 | 33974 | 35215 |
| 95 | 53986 | 33113 | 37152 | 56318 | 35289 | 39593 | 58097 | 37565 | 42147 |
| 100 | 83614 | 45875 | 61084 | 84632 | 49746 | 66239 | 86795 | 52062 | 69322 |
| Average | 27320 | 20865 | 20310 | 27825 | 22311 | 21717 | 28832 | 23922 | 23285 |
| | 1.00 | 0.76 | 0.74 | 1.00 | 0.80 | 0.78 | 1.00 | 0.83 | 0.81 |

[1] U.S. March CPS 2000

[2] Dutch LIS/SEP 1999

[3] Family Survey Dutch Population 2000

top and bottom coded, size-adjusted equivalent disposable household income in 2000 US dollar

**Figure 1: Ranked household size-adjusted income of the U.S. and the Netherlands in PPP adjusted 2000 U.S. Dollars, before adjustment (household head is 25-55)**
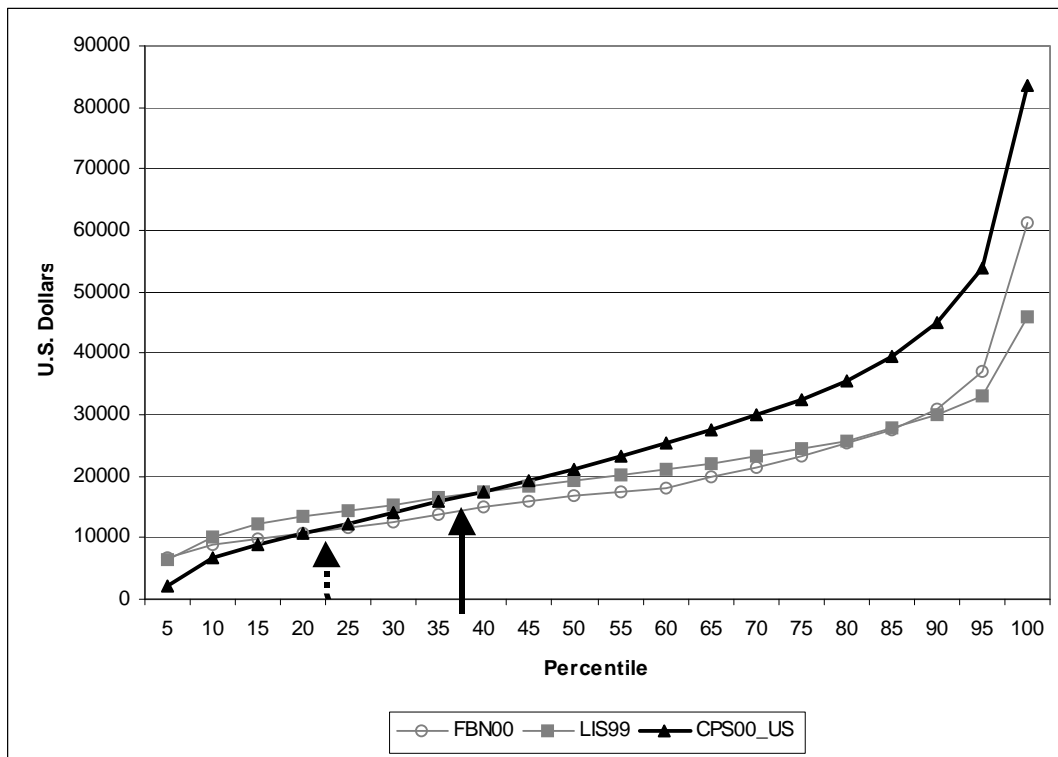
**Figure 2: Ranked household size-adjusted income of the U.S. and the Netherlands in PPP adjusted 2000 U.S. Dollars, after adjusting for differences in satisfied part-time work (household head is 25-55)**
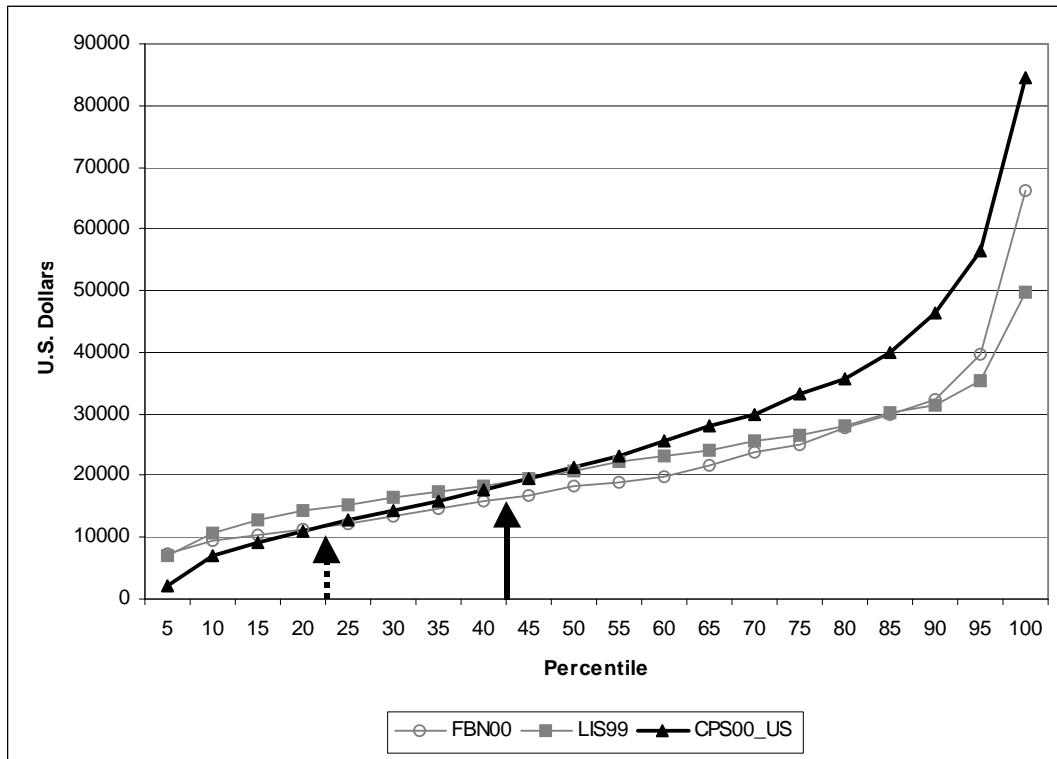
**Figure 3: Ranked household size-adjusted income of the U.S. and the Netherlands in PPP adjusted 2000 U.S. Dollars, after adjusting for differences in satisfied part-time work and vacations (household head is 25-55)**
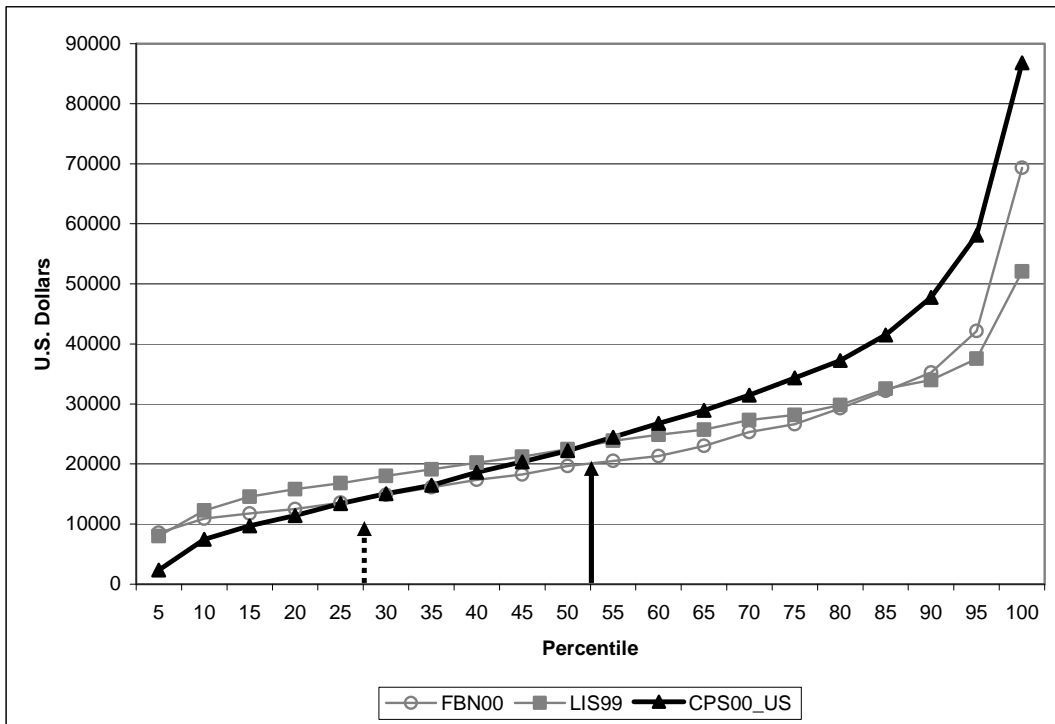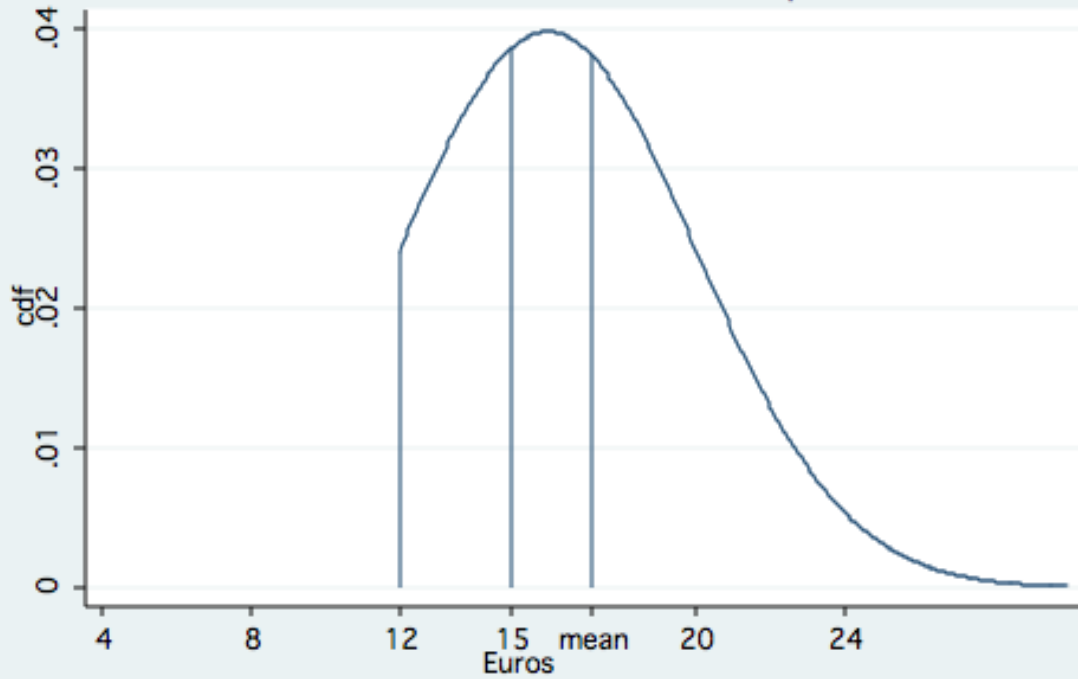
Figure 4. Hypothetical distribution of the monetarized value of the unworked hours for Dutch part-timers

**Appendix A1: Working hours in the Netherlands: choice or constraint?**

| Satisfaction with working hours | N | % |
|---|---|---|
| I want to work the same number of hours as I do now | 1887 | 74.9 |
| I want to work more hours | 148 | *5.9* |
| I want to work fewer hours | 484 | *19.2* |

| | I want to work more hours | | I want to work fewer hours | |
|---|---|---|---|---|
| *Do you think you can realize your preferences within one year?* | N | % | N | % |
| yes | 73 | 50.3 | 131 | 27.3 |
| no | 49 | *33.8* | 300 | *62.5* |
| don't know | 23 | 15.9 | 49 | 10.2 |

| *Why do you think not to be able to realize your preferences?* (more answers possible) | N | % | N | % |
|---|---|---|---|---|
| My employer does not like this change | 19 | *38.9* | 106 | *35* |
| My job does not allow this change | 5 | *10.6* | 141 | *47.1* |
| Because of care for children | 10 | 19.4 | 10 | 3.2 |
| Because of health | 4 | 8.1 | 3 | 0.9 |

Source: OSA 2002, employed population aged 25-55