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Working Paper No. 451

Time and Money: Substitutes in Real Terms and Complements in Satisfaction

by

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ABSTRACT

Time and money are basic commodities in the utility function and are substitutes in real terms. To a certain extent, having time and money is a matter of either/or, depending on individual preferences and budget constraints. However, satisfaction with time and satisfaction with money are typically complements, i.e., individuals tend to be equally satisfied with both domains. In this paper, we provide an explanation for this apparent paradox through the analysis of the simultaneous determination of economic satisfaction and leisure satisfaction. We test some hypotheses, including the hypothesis that leisure satisfaction depends on both the quantity and quality of leisure—where quality is proxied by good intensiveness and social intensiveness. Our results show that both the quantity and the quality of leisure are important determinants of leisure satisfaction, and, since having money contributes to the quality of leisure, this explains the empirical findings of the satisfactions being complementary at the same time as the domains are substitutes. Interestingly, gender matters. Intra-household effects and especially individual characteristics are more pronounced for women than for men for both domain satisfactions. Additionally, good intensiveness is more important for men (e.g., housing conditions), whereas social intensiveness is more important for women (e.g., the presence of children and participation in leisure-time activities).

JEL Codes: D1, D31, J22

Keywords: domain satisfaction, income distribution, leisure, gender

1. INTRODUCTION

In the traditional model of economic well-being, income and leisure time are the main sources of utility. Conditional on individual preferences, there is a trade-off between the optimal allocations of time and money, such that time and money act as substitutes in real terms (Bonke, Deding, and Lausten 2004). However, looking at the satisfaction with time and the satisfaction with money, these act as complements, inasmuch as individuals are either satisfied or dissatisfied with both domains. On the surface this finding is contra-intuitive—if a person has a lot of money relative to leisure, we would expect this person to be relatively more satisfied with money compared to leisure and vice versa if the person has more leisure than money. The purpose of this paper is to address this issue by analyzing the determination of satisfaction with time and satisfaction with money in a bi-variate model taking the simultaneity of the two satisfactions into consideration. Unfortunately, the data do not include information on overall well-being or happiness; consequently, we cannot examine the relationship between the domain satisfactions and overall well-being.

We expect different determinants for men's and women's economic satisfaction as well as for their leisure satisfaction, with greater importance of economic conditions for men's satisfactions and non-economic/social conditions impacting more on women's satisfactions. This does not imply, however, that the analyses rely on a feministic approach (Wolley 1993; Bergmann 1995). The basis for the understanding is a traditional household utility approach (Becker 1981).

The analyses are based on survey information from the Danish Time Use Survey 2001 and on data from administrative records. We test the empirical importance of several hypotheses in the determination of economic satisfaction and leisure satisfaction, respectively, for a sample of individuals living in couples. First, we hypothesize that satisfaction with money depends on the amount of money, i.e., the quantity, whereas satisfaction with leisure depends not only on the amount of leisure, i.e., the quantity, but also on the good intensiveness and social intensiveness of leisure time, i.e., the quality. In addition to this hypothesis, we study the possible effect of intra-household allocation of resources, the consequences of aspiration levels, specified through peer groups, and, finally, the intra-individual effects, i.e., changes in income over time, are analyzed.

In the next section, we discuss the background for the issues addressed. Section 3 introduces the empirical model and the raised hypotheses. Data are presented in section 4 and results in section 5. Concluding remarks are found in section 6.

2. BACKGROUND

Individual welfare is an important concept in economic analysis and is usually measured by objective and tangible outcomes, such as income, whereas subjective measures have traditionally been seen as “unscientific” and not observable (Frey and Stutzer 2002). Easterlin (1974), however, challenged this assumption by applying a subjective measure of well-being stemming from psychologists’ self-evaluation of happiness, satisfaction with life and/or specific aspects of life. In most economic analyses, the terms happiness, well-being, and satisfaction are used concurrently as a measure of overall well-being. However, other studies apply domain satisfactions stemming from the question “How satisfied are you with...?”, which as an aggregate of different domains explains the distribution of happiness. In an analysis of life cycle happiness, Easterlin (2005) thus shows that a “bottom-up” theory is supported rather than a “top-down” theory. In this paper, the domains investigated are satisfaction with leisure and satisfaction with the economic situation, both essential dimensions within neoclassical economic theory.

In many welfare studies income is assumed to be of great importance for an individual’s economic well-being, while welfare in general relies on several other aspects of life (e.g., Wolf and Zacharias 2003). Therefore, the greater the income the higher the level of economic well-being, whereas a positive relationship between income and welfare does not necessarily hold. Thus, the correlation between income and happiness is found small and unstable over time in many happiness studies (e.g., Ehrhardt, Saris and Veenhoven 2000). Moreover, the relationship is found curvilinear with decreasing marginal utility (Easterlin 1974, 2001). This implies that the effect of income on happiness is relatively small in the upper end of the distribution, which Cummins (2000) ascribes to a narrower range of rich people’s well-being compared to poor people’s well-being.

In addition, several analyses in accordance with Easterlin’s seminal papers have demonstrated that although per-capita income has risen sharply in recent decades, satisfaction has remained relatively constant in many countries (Frey and Stutzer 2002; Hellevik 2003).

There are several reasons for the weak correlation between income level and happiness or well-being. First, there are other factors connected to income besides the actual income level that are important for happiness: one is that people compare themselves to others inasmuch as income relative to a “peer group” matters more than actual income, cf. the relative income hypothesis (Duesenberry 1949; Becker 1974). Another factor is that

happiness depends upon the gap between aspiration and achievement and that a higher income leads to a higher aspiration level (Frey and Stutzer 2002). Furthermore, satisfaction might be influenced by recent changes in income and, finally, people—especially young people—tend to exaggerate unhappiness in the past and expected happiness in the future (Easterlin 2001).

Another element of life that certainly matters for happiness is leisure. Surprisingly, the relationship between leisure and well-being has been only little analyzed. Burton and Phipps (2004) studied the connection between children's well-being and parents' leisure time among couples with children in Canada, the U.S., Germany, Sweden, and the UK indirectly and argue that children's well-being is likely to be lower if their parents have to work many hours to generate a certain income. Also Rode (2004) and Van Praag and Ferrer-i-Carbonell (2004) introduced leisure indirectly by including work hours in the analyses. In addition, the relationship between leisure satisfaction and happiness has been investigated by Van Praag, Frijters and Ferrer-i-Carbonell (2003), Van Praag and Ferrer-i-Carbonell (2004) and Ateca-Amestoy, Serrano-Del-Rosal and Vera-Toscano (2004), who found strong correlations even when controlling for employment, social class and other domain satisfactions.

In Tsou and Liu (2001), leisure satisfaction is explained by household composition variables along with socio-economics, while Ateca-Amestoy *et al* (2004) also include social capital variables. The interesting finding in Ateca-Amestoy *et al* is that besides individual heterogeneity due to tastes and skills, resource availability and social capital are of importance for reported leisure satisfaction. Economic satisfaction and its determinants, on the other hand, have been studied by Schyns (2001), Tsou and Liu (2001), Bonke and Browning (2003) and Vera-Toscano, Ateca-Amestoy and Serrano-Del-Rosal (2004).

However, although each of the domain satisfactions has been studied separately, to our knowledge there are no studies of the relationship between economic satisfaction and satisfaction with leisure time. But other domains have been investigated and a positive correlation found between their satisfactions (Andrews and Withey 1976; Campbell, Converse and Rodgers 1976; Hart 1999; Rode 2004). As an example, Rode found a positive correlation between job satisfaction and non-work satisfaction, which was interpreted as a simultaneous influence of the same environmental variables.

In this paper, we analyze the determination of economic satisfaction and the determination of leisure satisfaction for men and women. The interesting aspect of these two domain satisfactions is the fact that while the domains—time and money—are substitutes, the

satisfactions are seemingly complementary. The proposed explanation for this apparent paradox is that the utility of the two commodities is related, although they are substitutes (Bonke *et al* 2004). Thus, to enjoy income, leisure time is needed; and to enjoy leisure, money for leisure activities is needed. The hypothesis is that satisfaction with leisure is a matter of both the quality and the quantity of leisure time—quantity obviously given by the amount of leisure and quality given by measures of good intensiveness and social intensiveness—and, that men are supposed to be more affected by quantities and women by qualities of time. In this respect, we go a step further than Ateca-Amestoy *et al* (2004), who assume that the combination of resources—non-basic commodities and leisure expenditure capacity—with other productive factors in the household production function rules out the role of leisure time as valuable in itself for the leisure satisfaction.

3. THEORETICAL AND EMPIRICAL MODEL OF SATISFACTION

3.1. The Theoretical Model

The increased interest among economists in studying subjective well-being has yielded a common representation of the model to be investigated (Clark and Oswald, 1996; Clark, 1997; Blanchflower and Oswald, 2004). The reported domain satisfaction function is usually considered to be of the form

$$(1) \quad ds_i = h(u(d_i, z)) + \varepsilon$$

where ds_i is a self-reported satisfaction level on an ordinal scale; $u(.)$ is a person's true well-being or utility; $h(.)$ is a continuous non-differentiable function relating actual well-being to reported well-being; d_i is the level of the domain in question e.g. time or money; z is a set of demographic and personal characteristics; and ε is an error term. The function $h(.)$ rises in steps as u increases corresponding to the ordinal scale, and the function $u(.)$ is assumed to be observable only to the individual for which reason the error term, ε , among other factors captures the inability of individuals to accurately communicate their satisfaction or well-being.

In the empirical analyses, we introduce different explanatory variables grouped according to different hypotheses. The first group consists of the domains themselves, i.e., income and leisure time. For leisure satisfaction, variables on good and social intensiveness are also included, because we expect not only the quantity but also the quality of leisure time

to matter. The other hypotheses include intra-household allocation effects, inter-group effects, and intra-individual effects.

3.1.1. Domains - Effects of Time and Money

The straightforward assumption is that economic satisfaction is positively related to income, because higher income makes it easier to make ends meet. Additionally, leisure satisfaction is hypothesized to be positively related to leisure time given certain background factors such as employment status (e.g., Ahn, Garcia and Jimeno, 2004, found that unemployment has a very negative effect on satisfaction).

However, men and women are not supposed to have the same preferences for time and money. We hypothesize that income means more for men's economic satisfaction than for women's due to the men's perceived competition and career orientation. Conversely, leisure time including socializing and time spend together with children might mean more for women's/mothers' than for men's/fathers' leisure-time satisfaction. This is an extension of the analysis in Phipps, Burton and Osberg (2001), who apply self-reported satisfaction with time for oneself to focus explicitly on "pure" leisure time, excluding the socializing dimension of non-working time.

3.1.2. Good and Social Intensiveness

Apart from the effect of quantity, we hypothesise that quality of leisure also matters. For leisure satisfaction, we assume that expenditures on leisure goods, i.e., sports equipment, hobby items, housing conditions, etc. express the *good intensiveness* of leisure, while the number of family members and friends, the frequency of visits of/to friends and the participation in regular leisure-time activities are proxies for *social intensiveness* of leisure time, cf. the positive effect of companionship on well-being argued by Lane (2000). Consequently, we expect positive effects of both good intensiveness and social intensiveness, albeit with gender variations. Thus, good intensiveness is supposed to be more important for men's leisure satisfaction, while social-intensiveness impacts more on women's leisure satisfaction.

3.1.3. Effects of Intra-Household Allocation of Time and Money

An interesting hypothesis is that intra-household factors matter for satisfaction levels. For instance, we know from Bonke and Browning (2003) that economic satisfaction increases for women and decreases for men the more the woman contributes to the household income.

Likewise, the income-sharing regime might matter for economic satisfaction; the hypothesis being that equal sharing of incomes makes the spouses more content. Furthermore, we expect bargaining power to be important, both in terms of economic satisfaction and leisure satisfaction. Spouses with relatively more bargaining power may be able to put themselves in more satisfying positions, where proxies for bargaining power are often the relative educational backgrounds and employment status differentials between spouses.

Additionally, we expect that the spouses make comparisons to their partners in terms of leisure time; accordingly, the couple is to be considered as a very small and close peer group. To our knowledge, no other analyses take the spouse's level of leisure into account. We expect that the individual—the husband as well as the wife—will be more satisfied with leisure when having relative more leisure than the spouse, although the effect is expected to wear off for large differences, assuming that most spouses like spending time together. Even though the intra-household interaction of satisfactions would have been very interesting to analyze, we do not have information about spouses' satisfaction levels.

3.1.4. Peer Group/Aspiration Effects

A common hypothesis in the analysis of domain satisfactions is that peer groups matter. That is, individuals are supposed to compare themselves to others with the same characteristics, evaluating their own income or leisure relatively to this potential peer group. The same effect may appear due to aspirations originating from beliefs of one's income earning abilities (Clark and Oswald 1996; Frey and Stutzer 2002; Senik 2004). One of the difficult tasks in including relative income measures, however, is how to define the relevant group and reply to the question: Who are the actual Jones'? Here, we define 'peer groups' as the income or leisure of individuals with the same sex, age, labor-market status and urbanization surroundings, whereas Tsou and Liu (2001) include only sex and age in their peer group income estimations, and Bonke and Browning (2003) include sex, age, education and labor-market status. The deviation from this peer group's income or leisure is assumed to affect the domain satisfactions, so that the effect of positive deviations is expected to be positive, and the effect of negative deviations, negative.

If men are more concerned with income than women, and women are more concerned with leisure than men, we would expect that this is also the case for the peer-group effects. Thus, the peer-group effect is expected to be stronger for men than for women concerning economic satisfaction and vice versa for leisure satisfaction.

3.1.5. Intra-Individual Effects

When evaluating current income or leisure, individuals tend to look back in time and compare with previous situations. This implies that we must consider the effects of changes over time—termed intra-individual effects—on domain satisfactions. Unfortunately, we cannot evaluate the effect of changes in leisure because we have only the time use observations from one point of time. Income information, however, is available from administrative registers, which allows inclusion of income change from year to year in the estimation.

From other analyses, we know that a positive change in income level leads to a positive change in satisfaction level, but that the effect disappears after some time when people become used to another consumption level (Easterlin 2001). Kahneman's (1999) interpretation of this phenomenon is that some "hedonic adaptations" are in play, which stresses that individual happiness is determined primarily by personality and genetics. To study the persistence of this phenomenon, we include the relative change in gross household income from both two years and five years back in time.

3.1.6. Individual Characteristics

The individual characteristics included in most happiness analyses are age, education, marital status, labor-market status and health. Thus, an important issue addressed is if and how happiness varies over the life cycle, where many studies find a u-shaped relationship with the lowest level of satisfaction reported by mid-life people and the highest by young and old people (Blanchflower and Oswald 2004), or at least with rising happiness over life (Easterlin 2005). However, there is no such clear evidence of the relationship between financial satisfaction and age. Thus, where Easterlin (2005) finds a u-shaped relationship, an inverted u-shaped is found by Tsou and Liu (2001). For leisure satisfaction, Tsou and Liu found no significant life-cycle effect.

3.2. The Empirical Model

We expect that levels of satisfaction are determined simultaneously, i.e., the level of economic satisfaction influences the level of leisure satisfaction, and vice versa (see Easterlin (2005) for positive correlations found between other domain satisfactions: financial satisfaction, family life, work and health). Therefore, we estimate the simultaneous probability of having high satisfaction versus low satisfaction in both domains using a bivariate probit with a correlation coefficient, ρ , because this supports our hypothesis that the

two domain satisfactions are interdependent. If ρ is statistically significantly different from zero, then the two probit models should not be estimated independently.

As the leisure satisfaction model includes more variables than the economic satisfaction model, following the hypotheses discussed above, there are two different equations to be estimated simultaneously. These models for an individual i (suppressing the gender notion for convenience), who is part of a couple are then formulated as

$$(2) \quad ES = D'\alpha_{es} + IH'\delta_{es} + P'\varphi_{es} + II'\lambda_{es} + Z'\gamma_{es} + \varepsilon_{es}$$

$$(3) \quad LS = D'\alpha_{ls} + G'\beta_{ls} + S'\eta_{ls} + IH'\delta_{ls} + P'\varphi_{ls} + II'\lambda_{ls} + Z'\gamma_{ls} + \varepsilon_{ls}$$

where ES and LS are the dependent variables of individual well-being (economic satisfaction and leisure satisfaction), D is the domain effect, including aggregated household income and leisure, G indicates good intensiveness and S indicates social intensiveness, IH is the effect from intra-household allocations, P is the peer-group effect, II is the intra-individual effect given by income changes from earlier years, and Z is a vector of individual characteristics. Finally, ε is the error term, expected to be distributed with mean zero and constant variance.

4. DATA

4.1. Data and Variables

The data used in this study are from the Danish Time Use Survey from 2001, supplemented with register information. This survey included approximately 2600 16-74-year-olds who completed time-use diaries and a questionnaire; only the questionnaire information is used in the present study. The design of the survey follows the guidelines developed by an expert group on time-use surveys in Eurostat (2000). The analysis is restricted to 20-65-year-old respondents in couples, which allows the intra-household allocation issue to be addressed. The estimation sample consists of 1494 individuals who live in couples—716 men and 778 women.

The empirical specifications of the hypotheses discussed in the previous section are presented in the following, and the sample means of the variables are found in Table I.

4.1.1. Satisfaction

The dependent variables in the analysis are the domain satisfactions regarding satisfaction with income and satisfaction with leisure. The satisfactions are measured on an ordinal scale, based on the following questions:

How satisfied are you with your present economic situation?

not satisfied at all fully satisfied (6 categories),

and

How satisfied are you with the amount of leisure time you have?

not satisfied at all fully satisfied (6 categories),

Obviously, the value of the satisfaction information relies on being comparable across individuals, which is not necessarily the case as respondents may use the scale differently, see e.g., Clark and Oswald (1994), Easterlin (2001), Frey and Stutzer (2002), Van Praag, Frijters and Ferrer-i-Carbonell (2003) and Rode (2004). Whether to use an ordinal or cardinal approach has also been addressed (Ferrer-i-Carbonell and Frijters 2004, and Van Praag 2004), as has the question of whether people mean what they say (Bertrand and Mullainathan 2001). In the analysis here, where a high satisfaction group (category 5-6) relative to a low satisfaction group (category 1-4) is analyzed, ordinal comparability of the answers is assumed. This means that two persons giving the same level of satisfaction are expected to experience the same degree of satisfaction, although their background and personal characteristics may differ. This assumption is based on previous research that indicates the consistency of individuals' self-evaluations over time (Clark and Oswald 1996). Additionally, psychologists and sociologists, who have long used this type of subjective information, have repeatedly validated the satisfaction questions (Clark 1997).

4.1.2. Explanatory Variables

The different explanatory variables in the analyses follow the hypotheses raised in the previous section.

The two *domains* are measured as log annual household disposable income and the number of leisure hours per day, respectively. The income information is based on register information, and not equalized, as the number and age of children are included as separate explanatory variables. The leisure information stems from the questionnaire and is calculated as 24-hours minus the number of working hours (including overtime and commuting) and

household work. This categorization follows the conventional practice within time-use research (EUROSTAT 2000). No savings from income is included as a measure of economic problems, while working conditions—irregular working hours and the number of holiday weeks per year—are assumed to affect the satisfaction with leisure time.

Good intensiveness is proxied by the level of income/consumption and the ownership of durables. Thus, leisure consumption and savings opportunities are expected to affect the quality of leisure time directly, whereas housing facilities—outside options (e.g., a balcony) and holiday homes—are thought to capture the quality of leisure time indirectly.

The variables concerning *social intensiveness/social capital*—the number and age of children, opportunities to spend evenings together, participation in leisure activities and the frequency of being with friends—are chosen to reflect how leisure can be spent with other people. Here, children are assumed to have the largest effect, but also time with other family members, and the frequency of visits to and the visiting of friends are assumed to have a positive influence on the satisfaction with leisure time.

Concerning the *intra-household* effects, the variables are defined relative to the spouse to compare the spouses' possible levels of goods within the household and/or their power-relations concerning the distribution of time and money. The variables are the spouse's relative income, leisure time, education and employment status, all based on the assumption that the better off the spouse is relative to his/her spouse, the more satisfied he/she becomes in respect to income and leisure time.

The *inter-group effects* are based on the assumption that the relative position concerning income and leisure matters for one's satisfaction with these two domains. Here, the peer groups are defined by sex, employment status (employed or non-/unemployed, age (above or below 45 years), and urbanization (three categories: rural, urban, and metropolitan area), and the dummies are then the deviation from the peer-group income or leisure ± 1 standard deviation.

Changes in own income or household income—*intra-individual effects*—might impact the level of satisfaction, presumably as a “shock” when it happens and/or as an effect later when the change is realized. For this reason, we include a 2-year and a 5-year change in income as a measure of intra-individual effects.

Finally, some *individual characteristics* are included in the analyses. These are age, education, employment status and health, all found to influence the level of satisfaction (Frey and Stutzer 2002).

4.2. Descriptive Statistics

Before turning to the analyses, we present some descriptive statistics concerning our main variables of interest: economic satisfaction and leisure satisfaction, and the explanatory variables. In Table II, the distribution of satisfaction with income and leisure is shown for men and women separately. The averages are very similar across satisfactions and gender, approximately 4.5 on the 1-6-scale. The observations are split into a “low-satisfaction” group and a “high satisfaction” group. The cut-off is 1-4 for the low group and 5-6 for the high group, roughly dividing the sample in two equal-sized parts (see Table II).

Although men and women are equally satisfied on average, there are some differences in the distributions. Looking at the percentage in the high satisfaction groups, more women than men are highly satisfied with their financial situation (about 4 percentage points), while men and women are equally highly satisfied with leisure. That women are more satisfied with their financial situation than men corresponds to the findings of Marks and Fleming (1999), Bonke and Browning (2003) and Schyns (2001), looking at Australia, Denmark, and Russia.

The correlations between the domains and the domain satisfactions are presented in Table III. As found in other studies (e.g., Rode 2004), the domain satisfactions are positively correlated, indicating that some individuals are generally more satisfied than others. As expected, the correlations between income and economic satisfaction and between leisure and leisure satisfaction are positive. Moreover, the correlation between income and economic satisfaction is more pronounced for men than for women, while the correlation between leisure and leisure satisfaction is higher for women than for men. This supports the hypothesis of income being more important for men and leisure being more important for women. Conversely, the cross-correlations—between income and leisure satisfaction and between leisure and economic satisfaction—are negative and equally large for both men and women, possibly reflecting the substitutability of the domains (Bonke *et al* 2004). The substitutability of time and money and the complementarity of the satisfactions with time and money are also depicted graphically in Figure I and II. The negative slope of the relationship between average income and leisure time is very clear (Figure I), as is the positive slope between average economic satisfaction and average leisure satisfaction (Figure II).

5. ANALYSES

In the following, we analyze the different hypotheses raised above for the simultaneous distribution of satisfaction with income and satisfaction with leisure time. The empirical specification of the models is given by (2) for the economic satisfaction and (3) for the leisure satisfaction. To capture the gender differences, we have estimated the models split by sex. The models are thus estimated simultaneously by a probit procedure for men and women separately. However, for the convenience of the reader, the results concerning economic satisfaction are depicted in table IV for both sexes, while the leisure time satisfaction results are shown in table V.

For both men and women, the satisfactions in the two dimensions—economy and leisure—are significantly and positively correlated, as shown by the ρ -values (Table IV). This indicates the importance of estimating the two equations simultaneously. The positive correlation coefficient can be interpreted as indicating that the two domain satisfactions—for men as well as for women – tend to be determined simultaneously, and therefore the one satisfaction influences the level of the other satisfaction, and *visa versa*.

5.1. Economic Satisfaction

As expected, the results show that economic satisfaction increases with household income for men, while there is no such effect found for women (Table IV). We do not take economies of scale into consideration by applying an equivalent income. However, by including the number of children and their age, we find that there might be a scaling effect for men indicated by the negative coefficient for the number of children and men's economic satisfaction. For women, this scaling effect is not present; instead, women's economic satisfaction increases when having a 0-aged child. If this is due to a combination of a generous child allowance given to the mother and smaller expenditures during maternity leave is an open-ended question, but the effect disappears for mothers to 1+ year old children. Tsou and Liu (2001) also find positive relationships between income and economic satisfaction without distinguishing, however, between women and men, and by using the respondent's personal income. The variable indicating financial strain (not being able to save from income) turns out highly significant for both men and women, i.e., difficulties in making ends meet decreases income satisfaction.

For the intra-household variables, we also find differences between men and women. Where men's economic satisfaction increases with their share of the aggregated gross

income, there is no such effect found for women, perhaps indicating that it is important for men to be the main breadwinners of the family. However, women's economic satisfaction increases if the couple has a shared economy, i.e., pool all the money in the household, while this impacts negatively but not significantly on men's economic satisfaction. This suggests that income sharing is less important for men than for women, probably because men typically contribute more than half of the household income. For both men and women having a higher education than their spouse implies less economic satisfaction, although this is only significant for women. The reasoning might be that a more educated husband does not feel that he gains enough in terms of personal consumption, while a more educated wife may find that "equals play a better and more enjoyable game".

Turning to the wider peer groups, we find differences between the impact on men and women's economic satisfaction. If the woman has a higher income than her peer group, her economic satisfaction is higher, and vice versa if her income is lower than her peer group's. For men the same pattern appears, but with no significant coefficients. This result partly confirms the aspiration theory arguing that people compare themselves with equals outside the family and in case there are differentials, they aspire to do better or to keep their position in front (Frey and Stutzer 2002; Tsou and Liu 2001).

For the intra-individual effects, we find a significant effect of change in income over a 5-year period for men, but not for the 2-year period. For women no such effects are found. This suggests that long-term income changes are more important than short-term income changes, and also that aspiration—moving upwards in the income distribution—is more important for men than women.

Finally, among the individual characteristics only education has an impact on economic satisfaction. A qualifying education thus implies higher economic satisfaction than no qualifying education for both men and women, which confirms the findings of Tsou and Liu (2001). However, a long academic education matters only for women's economic satisfaction, which is interesting because as shown above women with a higher education than their husband experience lower economic satisfaction. An explanation might be that highly educated women are satisfied only if their husband is also highly educated, because this implies a more agreeable consumption pattern. That age, health and employment status do not affect economic satisfaction is probably due to correlations with other factors in the relatively small data set, as most studies in this field find effects of age and health (e.g., Easterlin, 2005).

5.2. Leisure Satisfaction

It is expected that the amount of leisure time available impacts positively on men and women's satisfaction with this time (Table V). This is only to a certain level, however, after which satisfaction declines significantly for women indicating a negative marginal utility of leisure time, i.e., a negative coefficient to leisure squared. Irregular working hours have no impact on leisure satisfaction, whereas number of holiday weeks, given that the person is employed, does have a positive and significant impact on men's leisure satisfaction. Thus, men seem to take annual holidays into account when assessing leisure satisfaction, whereas women seem to be more in favour of everyday leisure.

The good intensiveness variables show a negative effect of living in a flat without an outside option (e.g., a balcony) compared to living in a house, however only for men. In this respect, men appear to get more pleasure from the physical surroundings than women. Owning a holiday home is, however, insignificant for both men and women, although this was supposed to increase the quality of leisure time. Moreover, we find no significant effect of actual consumption of leisure goods, nor of the disposable income of the household. Finally, we find a negative effect of not being able to save income for both men and women, supporting the hypothesis that this variable reveals the effect of not having extra money to spend on leisure activities.

Looking at the social intensiveness/social capital, significant effects are found only for women. Thus, women's leisure satisfaction is higher if their youngest child is below the age of 1 year but lower if the youngest child is aged 2-6 years, compared to women having no children. The explanation for this finding is probably that most mothers of infants are on maternity leave, whereas having a pre-school child in the house and at the same time having a job decreases leisure satisfaction, i.e., time allocation is demanding. These results are consistent with the findings of Phipps, Burton and Osberg (2001) who apply the concept of time to oneself rather than general leisure time. However, it is interesting that number of children seems not to matter and likewise that men's leisure satisfaction does not depend on having children. Tsou and Liu (2001) find the same gendered effects of having children in Taiwan. In addition, women's leisure satisfaction increases if they regularly attend a form of leisure-time activity, whereas neither the number of evenings spent together nor visits of/visits to friends has any significant effects. Nonetheless, social intensiveness seems to be more important for women than for men.

The intra-household variables show that women report less satisfaction the more leisure they have relatively to their husbands, while no such effect is found for men. This

suggests that spending leisure time with the spouse is given a higher priority among women than among men. In contrast, if men and women are less educated than their spouse, they report being less satisfied with leisure time than equally or relatively more educated spouses, although the coefficient is only significant for men. An explanation could be that having less education implies lower bargaining power and thus less influence on family leisure issues.

Contrary to the finding for economic satisfaction, leisure peer groups matter for men, but not for women. Thus, men with more leisure time than their peers have a lower satisfaction than men with the same amount of leisure time, and vice versa less leisure time means less satisfaction, although the latter relationship is not significant. The interpretation could be that men's leisure time activities rely more on other men's participation than is the case for women, who are more family oriented in their leisure activities.

Income changes over 2 years and 5 years are also included in the leisure-time estimations based on the hypothesis that a positive change implies better leisure consumption possibilities. However, these intra-individual effects are insignificant for both women and men.

Finally, none of the individual characteristics included in the estimations are significant for men. For women, we find a positive effect of age and a negative effect of being employed and having poor health, although having poor health is not significant.

6. CONCLUDING REMARKS

In this paper, we analyze the simultaneous determination of economic satisfaction and leisure satisfaction. From earlier studies, we know that the domains—time and money—are substitutes for which reason the domain satisfactions were expected to be the same. However, we find that the domain satisfactions are complementary. This apparent paradox is addressed in this paper.

The analytical basis is neoclassical theory stating that individuals—men and women—derive utility from a bundle of commodities that are produced using time and money as inputs, and maximized subject to a budget restriction composed by available time and income. The implication of this utility maximization is that time and money are substitutes. However, if the satisfactions are complimentary, an explanation might be that satisfaction with leisure not only depends on how much leisure is available, but also what kind of leisure. Assuming therefore that leisure satisfaction is a matter of both quantity and quality of leisure, a positive link between the satisfactions is established, due to income affecting

economic satisfaction directly and leisure satisfaction indirectly by improving leisure consumption possibilities.

The data used are from the questionnaire part of the Danish Time Use Survey from 2001 and consist of individuals living in couples, which enables us to study possible intra-household allocation effects. The main variables in the analyses are the domain satisfactions regarding self-reported satisfaction with income and satisfaction with leisure. The individuals are categorized into low and high satisfaction groups concerning both economic and leisure time satisfaction, respectively. The determinations of these categories are then estimated using a bivariate probit model, where the simultaneous determination of leisure satisfaction and economic satisfaction is taken into account.

In the empirical specifications, the explanatory variables are grouped according to different hypotheses. First, we expect both leisure satisfaction and economic satisfaction to depend on own domains, i.e., leisure satisfaction on the quantity of leisure and economic satisfaction on the quantity of income, the first correlation being more pronounced for women and the latter more pronounced for men. In addition, we expect leisure satisfaction to depend on the quality of leisure defined by good and social intensiveness, where economic variables enter the specification of good intensiveness as proxies for leisure consumption possibilities. Again, good-intensiveness is expected to influence men's satisfaction with leisure more than women's, and the opposite is supposed to hold for social-intensiveness. We also expect both leisure satisfaction and economic satisfaction to depend on intra-household allocations, peer group leisure or income, and income changes over time.

The overall conclusion from the analyses confirms the hypotheses put forward. The domains are positively related to the satisfactions for both men and women, whereas the intra-household, inter-group and intra-individual effects are somewhat split by gender. We propose that these gender differences arise because of differences in what matters for men and for women. In particular, good intensiveness is more important for men (e.g., housing conditions), whereas social intensiveness is more important for women (children and spending time on regular leisure activities). In addition, the intra-household allocation of resources appears to be important for both economic and leisure satisfaction, whereas the inter-group and intra-individual effects are less central.

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TABLE I

Sample characteristics of individuals in couples

	Men		Women	
	Mean	Std. Err.	Mean	Std. Err.
<i>Share of observations being highly satisfied with</i>				
Level of leisure	0.522	0.500	0.530	0.499
Economic situation	0.556	0.497	0.598	0.491
<i>Domain</i>				
Household disposable income (log income per year)	302,476	184,053	304,002	133,430
No savings from income (1 if no savings)	0.318	0.466	0.374	0.484
Leisure (average hours/day)	17.255	3.153	17.410	2.896
Irregular working hours (employed: 1 if working regularly outside normal day hours)	0.251	0.434	0.243	0.429
Holiday weeks/year (employed)	3.735	2.231	3.580	2.605
<i>Good intensiveness</i>				
Consumption on leisure activities (log average personal consumption per month)	4.218	2.571	3.671	2.498
House (1 if living in a house)	0.732	0.443	0.771	0.42
Flat with outside option (1 if living in a flat with outside option)	0.215	0.411	0.176	0.381
Flat with no outside option (1 if living in a flat with no outside option)	0.053	0.224	0.053	0.224
Holiday home (1 if ownership of a second house)	0.169	0.375	0.167	0.373
<i>Social intensiveness/social capital</i>				
Number of children	0.851	1.056	0.889	1.049
Youngest child 0-1 years	0.060	0.238	0.053	0.224
Youngest child 2-6 years	0.279	0.449	0.269	0.444
Youngest child 7-17 years	0.195	0.397	0.222	0.416
Family evenings together (# of possible joint evenings per week)	4.856	1.886	4.844	1.963
Leisure-time activity (1 if attending leisure-time activities regularly)	0.517	0.500	0.546	0.498
No visits/visiting friends (1 if rare or never)	0.132	0.339	0.117	0.322
<i>Intra-household effects</i>				
Relative gross income (IP's gross income relative to household gross incomes)	0.590	0.140	0.409	0.138
Shared economy (if belonging to an income pooling regime)	0.704	0.457	0.719	0.450
Relative leisure (IP's daily leisure time relative to his/her spouse')	0.990	0.208	1.029	0.393
More education than spouse (1 if IP has higher education than the spouse, in years)	0.291	0.455	0.271	0.445
Less education than spouse (1 if IP has lower education than the spouse, in years)	0.232	0.422	0.260	0.439
Spouse opposite employment status (1 if IP employed and spouse non- or unemployed or vice versa)	0.255	0.436	0.219	0.414
<i>Inter-group effects (peer group)</i>				
Higher income than peer group (1 if IP higher income than the peer-group income plus 1 st.dv.)	0.266	0.442	0.258	0.438
Lower income than peer group (1 if IP lower income than the peer-group income minus 1 st.dv.)	0.212	0.409	0.221	0.415
More leisure than peer group (1 if IP more leisure than the peer-group leisure plus 1 st.dv.)	0.089	0.285	0.053	0.224
Less leisure than peer group (1 if IP less leisure than the peer-group leisure minus 1 st.dv.)	0.126	0.332	0.082	0.275
<i>Intra-individual effects</i>				
2-year change in income (2001-prices)	0.352	6.203	0.167	0.990
5-year change in income (2001-prices)	1.141	12.257	6.193	135.096
<i>Individual characteristics</i>				
Age	42.985	12.019	42.171	11.598
No qualifying education	0.258	0.438	0.307	0.462
Vocational education	0.459	0.499	0.370	0.483

Short academic education	0.059	0.235	0.042	0.202
Medium academic education	0.127	0.333	0.213	0.410
Long academic education	0.098	0.297	0.067	0.250
Employed (1 if IP is employed)	0.844	0.363	0.746	0.436
Poor health (1 if IP has poor health)	0.028	0.165	0.048	0.213
#	716		778	

TABLE II

Satisfaction with money and time, percent

Satisfaction with		Men		Women	
		Economy	Leisure	Economy	Leisure
	1	2.93	2.09	3.21	2.19
	2	5.02	8.23	4.76	7.07
	3	11.30	15.48	12.08	14.91
Low level	4	25.10	22.04	20.18	22.88
High level	5	32.50	25.24	32.90	22.24
	6	23.15	26.92	26.86	30.72
Average		4.49	4.41	4.55	4.48
N:		716		778	

TABLE III

Correlations between disposable income and economic satisfaction, and leisure and leisure satisfaction

	Men		Women	
	Economic satisfaction	Leisure satisfaction	Economic satisfaction	Leisure satisfaction
Household disposable income	0.213 ***	-0.002	0.124 ***	-0.059
Leisure time	-0.105 ***	0.144 ***	-0.109 ***	0.265 ***
Leisure satisfaction	0.144 ***		0.123 ***	

*** significant at 0.01 percent (* significant at 0.10 percent).

FIGURE I

Average income by leisure deciles

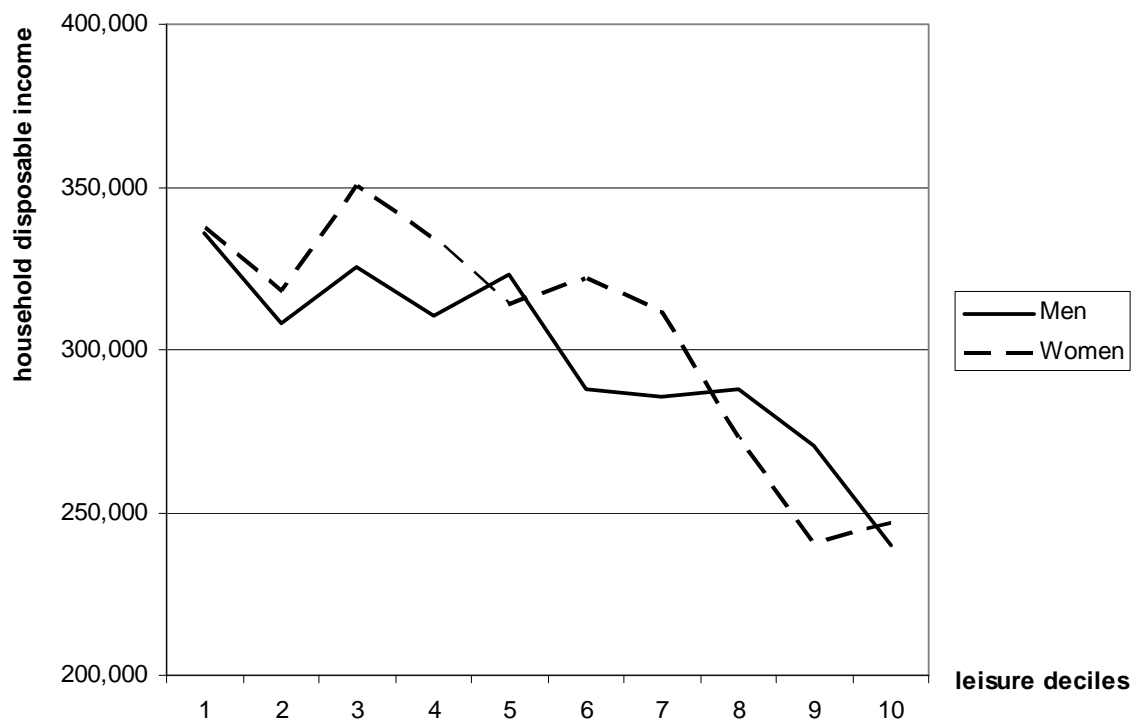


FIGURE II

Average economic satisfaction by leisure satisfaction

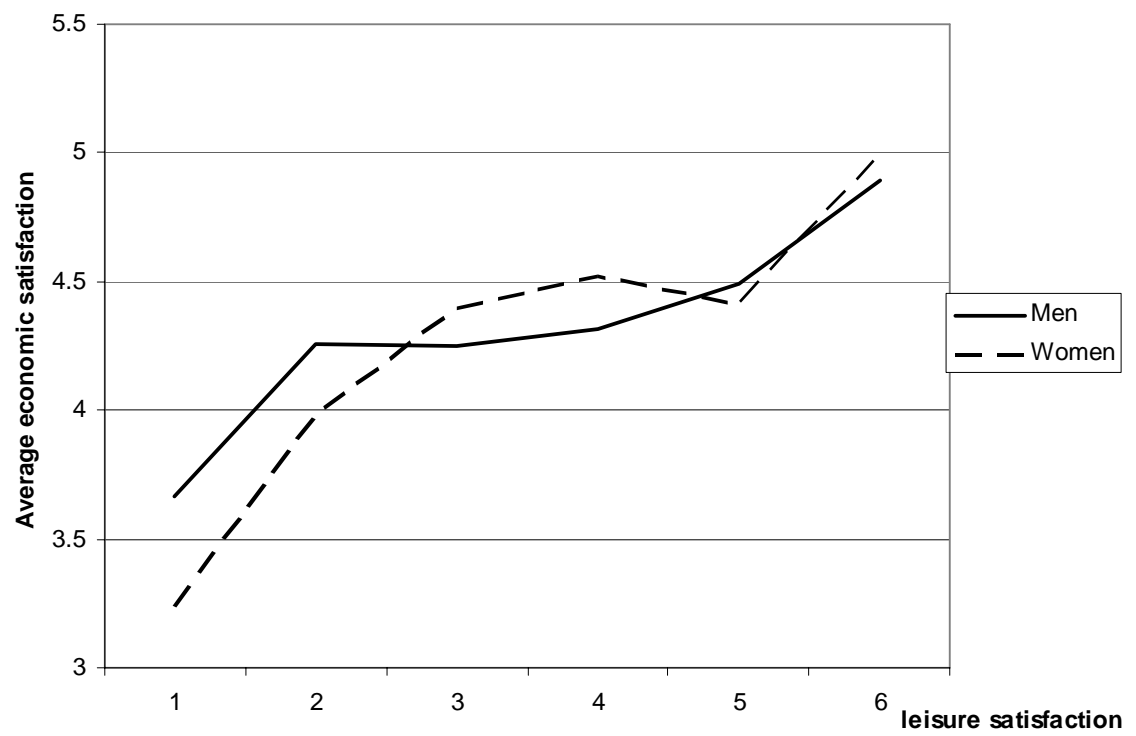


TABLE IV

Bivariate probit on economic satisfaction—men and women.

	Men			Women	
	Coef	Std. Err.		Coef	Std. Err.
<i>Domain</i>					
Household disposable income	0.680	0.306 **		-0.095	0.126
No savings from income	-0.771	0.118 ***		-0.854	0.108 ***
Number of children	-0.166	0.098 *		-0.082	0.097
Youngest child 0-1 years	0.230	0.240		0.390	0.233 *
Youngest child 2-6 years	-0.129	0.233		-0.064	0.236
Youngest child 7-17 years	0.015	0.217		-0.099	0.215
<i>Intra-household effects</i>					
Relative gross income	0.772	0.445 *		-0.146	0.416
Shared economy	-0.116	0.123		0.261	0.113 **
More education than spouse	-0.204	0.130		-0.237	0.128 *
Less education than spouse	-0.135	0.146		0.071	0.140
Spouse opposite employment status	-0.012	0.131		-0.199	0.157
<i>Inter-group effects (peer-group)</i>					
Higher income than peer group	0.241	0.161		0.374	0.136 ***
Lower income than peer group	-0.139	0.174		-0.228	0.139 *
<i>Intra-individual effects</i>					
2-year change in income	0.020	0.015		0.083	0.057
5-year change in income	0.037	0.019 **		0.000	0.000
<i>Individual characteristics</i>					
Age	0.027	0.046		-0.007	0.046
Age squared/100	-0.002	0.053		0.042	0.055
Vocational education	0.230	0.148		0.310	0.147 **
Short academic education	0.153	0.258		0.342	0.268
Medium academic education	0.515	0.212 **		0.322	0.168 *
Long academic education	0.163	0.239		0.732	0.248 ***
Employed	0.144	0.196		0.242	0.180
Poor health	-0.120	0.316		-0.278	0.246
intercept	-9.742	3.785 ***		0.861	1.751
ρ	0.176	0.068 **		0.189	0.067 **
Chi_2 test on $\rho=0$	6.456			7.715	
Log L	-819.345			-884.183	
Wald Statistics	266.140			287.110	
#	716			778	

* 10%, ** 5%, ***1%

TABLE V

Bivariate probit on leisure satisfaction—men and women.

	Men			Women		
	Coef	Std. Err.		Coef	Std. Err.	
<i>Domain</i>						
Leisure (average/day)	0.381	0.216	*	0.834	0.260	***
Leisure squared/100	-0.761	0.626		-2.071	0.723	***
Irregular working hours	-0.137	0.128		0.048	0.119	
Holiday weeks/year	0.076	0.036	**	0.039	0.032	
<i>Good intensiveness</i>						
Household disposable income	0.004	0.090		0.013	0.085	
Consumption on leisure activities	0.013	0.023		0.006	0.023	
Flat with outside option	-0.232	0.136	*	-0.038	0.137	
Flat with no outside option	-0.627	0.253	**	-0.298	0.242	
Holiday home	-0.197	0.142		-0.086	0.137	
No savings from income	-0.204	0.116	*	-0.181	0.106	*
<i>Social intensiveness/social capital</i>						
Number of children	-0.070	0.093		-0.024	0.095	
Youngest child 0-1 years	0.284	0.230		0.886	0.240	***
Youngest child 2-6 years	-0.194	0.226		-0.460	0.236	*
Youngest child 7-17 years	-0.053	0.205		-0.091	0.208	
Family evenings together	0.040	0.029		0.038	0.027	
Leisure-time activity	-0.064	0.115		0.231	0.115	**
No visits/visiting friends	-0.075	0.151		0.105	0.155	
<i>Intra-household effects</i>						
Relative leisure	0.093	0.358		-0.680	0.292	**
More education than spouse	-0.090	0.124		-0.171	0.125	
Less education than spouse	-0.335	0.137	**	-0.205	0.132	
Spouse opposite employment status	0.052	0.131		-0.065	0.156	
<i>Inter-group effects (peer-group)</i>						
More leisure than peer group	-0.640	0.335	*	0.237	0.273	
Less leisure than peer group	0.382	0.243		0.283	0.258	
<i>Intra-individual effects</i>						
2-year change in income	-0.005	0.016		-0.006	0.056	
5-year change in income	0.007	0.011		-0.002	0.003	
<i>Individual characteristics</i>						
Age	-0.004	0.045		0.080	0.046	*
Age squared/100	0.028	0.051		-0.087	0.055	
Vocational education	0.002	0.142		-0.010	0.143	
Short academic education	-0.069	0.246		-0.325	0.258	
Medium academic education	-0.166	0.190		0.055	0.163	
Long academic education	-0.142	0.216		-0.210	0.236	
Employed	-0.099	0.391		-1.090	0.335	***
Poor health	0.152	0.323		-0.367	0.238	
Intercept	-4.664	2.224	**	-8.473	2.700	***

* 10%, ** 5%, ***1%