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The decline of relational goods in the production of well-being?

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by

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Abstract

In this paper, we attempt to show why the importance of relational goods compared to conventional goods and status goods threatens to decline in contemporary societies. In our point of view, the development of the relative significance of these three types of goods is not a consequence of preference changes but of significant alterations in the opportunity costs of time. Increases of labor productivity in the industrial sector lead to higher time opportunity costs that reduce the demand for highly time-consuming activities as relational goods. Furthermore, the demand for status goods may increase in societies that grow rich as these goods can be bought to a large extent on the market and serve physical as well as psycho-social well-being. As shown empirically, there exist influences of the availability of free time on meeting friends and on life satisfaction. However, for the European countries represented in the dataset, we cannot find evidence yet for a crowding out of relational goods by status goods.

Keywords: conventional, relational and status goods; time opportunity costs; production of well-being; life satisfaction

JEL-classification: D11, D60, I 31

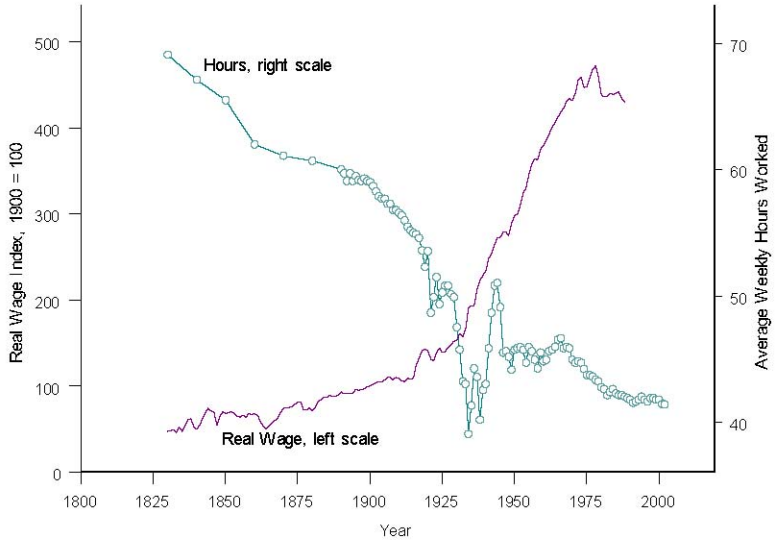
1 Introduction

Rich societies possess tremendous amounts of material wealth. As historians tell us, this abundance of material wealth for almost all members of a rich society is a quite new phenomenon which started in the nineteenth century as a consequence of the Industrial Revolution (Fogel, 2004; Clark, 2007; Koepke and Baten, no year). For the first time in human history, women and men seem relieved from the burdens of daily physical survival and the threat of starvation. One should expect that such a comfortable life makes a big difference for subjective well-being. However, although there is empirical evidence that increasing material wealth implies a higher level of well-being for the society as a whole, the improvements in well-being do not seem as great as expected (Easterlin, 1974; Diener and Oishi, 2000; Stevenson and Wolfers, 2008).

Figure 1 shows that the weekly workload decreased from 70 hours a week in 1825 to about 40 hours in 2000 (data for the USA). At the same time, real wages in the year 2000 are about five times as high as in 1900. Meanwhile the time spent on household work dropped. Moreover, the labor market participation of American married women increased from about five percent in 1900 to 60 percent in 2000 (Greenwood and Vandenbroucke, 2005: 2).

Obviously, industrial production increased real wages to such an extent that the opportunity costs for women grew and made it more and more expensive to stay at home and to provide housework. This development was supported by the the accessibility of modern household appliances due to the increase of wages. The economic liberation of women was due to better opportunities in the labor market and to the invention and industrial mass production of housework appliances (see Greenwood, Seshadri and Yorukoglu, 2005). Furthermore, surplus household income increased also the demand for recreational goods which were invented and produced by the industry (Greenwood and Vandenbroucke, 2005). A further consequence of industrial development was the invention of household technologies and machines that reduced to a large extent the time required for housework (see Greenwood and Vandenbroucke, 2005). These developments should have made everybody better off, endowed with more spare time and quite happy.

Figure 1: Real wage rates and average work week, USA 1825-2000



Source: Greenwood and Vandenbroucke (2005): 2.

Figure 2: Time pressure in Australia, Canada, Germany and Korea

COUNTRY	MEN ALMOST ALWAYS OR OFTEN UNDER TIME PRESSURE	WOMEN ALMOST ALWAYS OR OFTEN UNDER TIME PRESSURE
Australia	43,4 %	50,5 %
Canada	77,0 %	80,5 %
Germany	34,3 %	36,4 %
Korea	70,8 %	68,5 %

Data for married/partnered individuals in couples with one or two working partners; Australia 2001, Canada 1998, Germany 2002, Korea 1999.
Source: Hamermesh and Lee (2007), Table 1 and Table 5, on the basis of national data. (Possible answers were: almost always (always), often, sometimes, rarely (almost never), never).

However, as conventional wisdom has it, nowadays nobody seems to have time. Apart from anecdotal evidence, Hamermesh and Lee (2007) provide empirical evidence for Australia, Canada, Germany, Korea and the United States (among the richest societies) for time stress (i.e. a measure of how tightly the time budget constraint is binding). According to data from these countries, Figure 2 shows the percent of persons under time pressure. For the countries listed in the table, Germans are the least

under time pressure and Canadians the most. As it seems, time constraints tend to become tighter in richer countries. Moreover, Hamermesh and Lee (2007) showed empirically that persons in households with higher incomes perceive more time stress than persons in poorer households with the same time consumption for market work and household work; furthermore, women perceive more time stress than men. However, as argued by Goodin et al. (2005) on the basis of an empirical investigation with Australian data, there seems to be a "time-pressure illusion" which is greatest with couples of two earners and childless couples.

An even more disturbing empirical result is that at least in the United States the tremendous increase of leisure over the last fifty years is more than 100 percent used to increase the time of watching TV (Aguiar and Hurst, 2007: 987). The increased time use for watching TV was offset by a sharp decrease of time spent on socializing and reading (Aguiar and Hurst, 2007: 987; Bruni and Stanca, 2008, found also empirical support for a crowding-out effect of watching TV on relational activities) with the largest reductions in the most educated group of people (16 and more years of schooling; Aguiar and Hurst, 2007: 995). This confirms earlier observations by Putnam (2000).

At first glance, these results are rather strange. One should expect that people generally gain more time sovereignty the richer they become and the richer the society is in which they are living. However, this does not seem to be true. To understand why and to check the consequences for well-being, a household production model of well-being is formalized here in which the allocation of time plays a crucial role. In this model, the household allocates time as an input factor to produce three types of goods: conventional consumption goods, relational goods and status goods. Conventional (consumption) goods are defined as goods that can and will be consumed alone (privately). In contrast to this, relational goods are consumption goods that mainly und usually are consumed in groups (within the family, with friends etc.). Status goods are a special variant of goods that combine both characteristics of conventional and relational goods. They are defined as that kind of goods which consumption opens the door to a socially higher peer group by sharing its consumption habits. To achieve this positional function their consumption is always strongly connected to spending time for showing the consumption to the relevant peers. An example for a typical status good is the

membership in a yachting club where not only equipment is quite expensive but also membership (and sailing) are time consuming.

It is assumed that conventional goods are best suited to meet needs of physical well-being whereas relational goods are best at raising psycho-social well-being. Status goods are placed in-between conventional and relational goods. To produce (physical and psycho-social) well-being, households are endowed with time that can be used either for earning money or for non-working activities.

The rest of the paper is structured as follows: The second section contains the theoretical analysis of the dynamics of household demand for these types of goods. The empirical analysis of the dynamics of demand for relational goods is presented in section three. Section four concludes the paper by a discussion and outlook.

2 The dynamics of demand for relational goods: theory

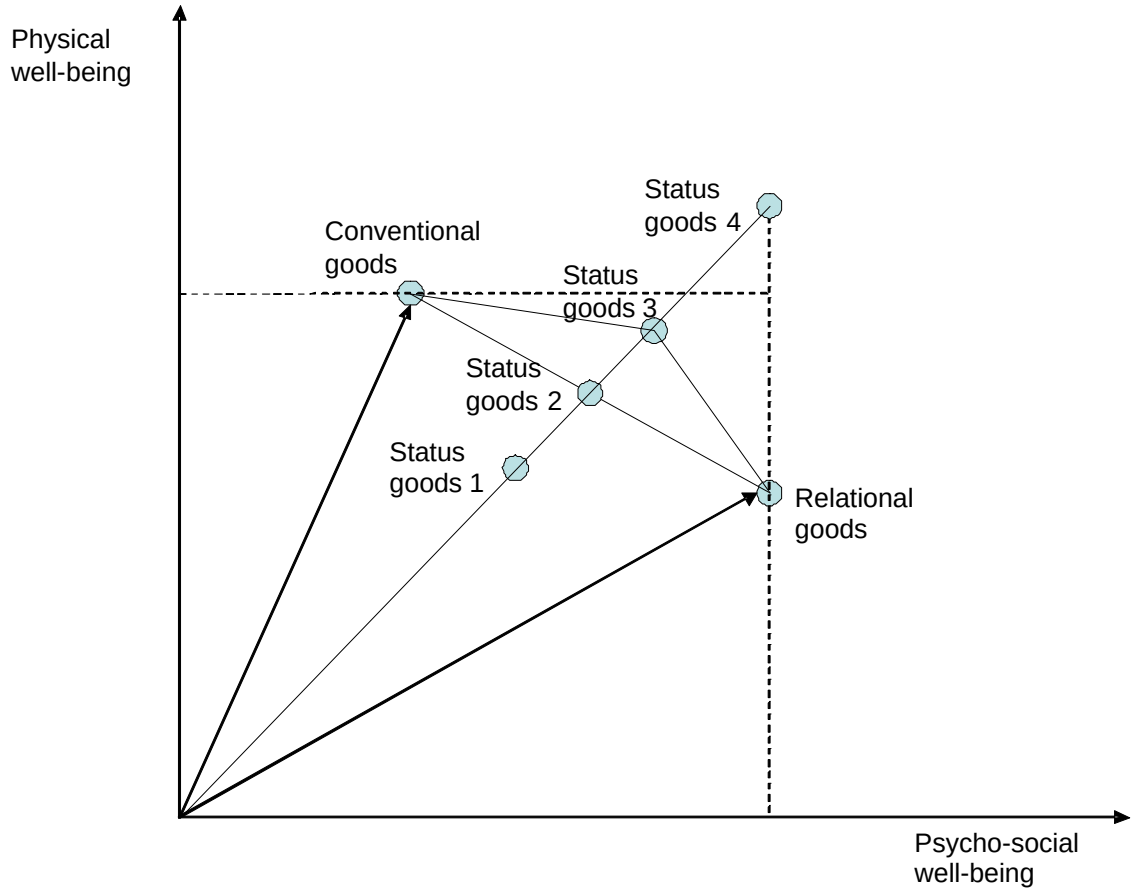
2.1 A Lancaster approach to the 'production' of well-being

To present the theory of the demand for relational goods, a two-steps approach is taken. First, in a diagrammatical exposition the 'production' of physical and psycho-social well-being via diverse goods is analyzed. Second, the formalized model is analyzed. The focus of the first step is on the so-called efficiency substitution (Lancaster, 1966, 1971). This means, that the crucial aspect is the *efficiency* of conventional, relational and status goods to produce household well-being. In the second step, a general utility maximization approach is presented in which the 'production' of well-being is also incorporated.

Figure 3 presents a Lancaster diagram for the three groups of goods (conventional, relational and status goods) considered here. The characteristics of the goods (i.e. the ultimate aim of production) are depicted on abscissa (psycho-social well-being) and ordinate (physical well-being). As starting point, conventional goods are placed into the diagram as extreme point near the ordinate axis, relational

goods as an extreme point near the abscissa axis. Both points are connected by a line, indicating that in the beginning they lie on the household's efficiency frontier. In contrast to that, in the original position status goods (Status goods 1) are located beneath this line, i.e. they are inferior in comparison to conventional goods and relational goods. The reason is that it is supposed that at this point of economic and social development, time is relatively cheap whereas status goods of all kinds are rather expensive. As a consequence, both goods (conventional as well as relational goods) are extreme points on the efficiency frontier.

Figure 3: Dynamics of status goods via efficiency substitution



Source: Application of Lancaster (1971): 65.

Suppose now that the production of goods by firms becomes cheaper due to higher capital input. This also may reduce the price of status goods which may move onto the efficiency frontier (Status goods 2). In this situation, conventional consumption goods, relational goods and status goods coexist side by side. A further increase of labor productivity may make status goods even cheaper as in point

Status goods 3. In this situation, there exists an efficient combination of conventional and status goods on one hand and of status goods and relational goods on the other hand. A further increase of labor productivity in the industrial sector may increase the opportunity costs of time to such an extent that relational goods are no longer part of the households' efficiency frontier. The reason is that the time input into the household's production of relational goods is too expensive to remain efficient. But also conventional goods are no longer efficient: Due to the increased social approval by status goods, conventional goods become negligible. In the situation, as depicted in Figure3, status goods (Status goods 4) are dominant with respect to conventional as well as relational goods. This implies that both characteristics are best met with status goods only.

2.2 A general approach to the 'production' of well-being

Generally, it suffices to include only such things into a utility function that meet two final needs: physical well-being φ and psycho-social well-being ψ. Furthermore, it is assumed that both ends may be exchanged at a certain rate for each other and that each of them exhibits diminishing degrees of satisfaction:

$$U(\varphi,\psi);\ \frac{\partial U}{\partial \varphi}=U_{\varphi}>0,\ \frac{\partial U}{\partial \psi}=U_{\psi}>0;\ \frac{\partial^2 U}{\partial \varphi^2}=U_{\varphi\varphi}<0,\ \frac{\partial^2 U}{\partial \psi^2}=U_{\psi\psi}<0 \quad . \tag{1}$$

To meet the ends of physical and psycho-social well-being, three groups of goods are available: conventional goods c, relational goods r and status goods s. The production of physical well-being is governed by the household's concave production function (see for an earlier approach to such a formalization of the household's decision problem with emphasis on the diverse possibilities for producing social approval Lindenberg, 1986: 300 ff.):

$$\varphi=f(c,r,s);\ \frac{\partial f}{\partial c}=f_c>0,\ \frac{\partial f}{\partial r}=f_r>0,\ \frac{\partial f}{\partial s}=f_s>0;$$
$$\frac{\partial^2 f}{\partial c^2}=f_{cc}<0,\ \frac{\partial^2 f}{\partial r^2}=f_{rr}<0,\ \frac{\partial^2 f}{\partial s^2}=f_{ss}<0. \tag{2}$$

Similarly, the production function of psycho-social well-being is given by:

$$\psi=g(c,r,s);\ \frac{\partial g}{\partial c}=g_c>0,\ \frac{\partial g}{\partial r}=g_r>0,\ \frac{\partial g}{\partial s}=g_s>0;$$
$$\frac{\partial^2 g}{\partial c^2}=g_{cc}<0,\ \frac{\partial^2 g}{\partial r^2}=g_{rr}<0,\ \frac{\partial^2 g}{\partial s^2}=g_{ss}<0. \tag{3}$$

Next, the production functions of c, r and s are to be specified. Total time T is considered the most essential input on the level of the household for producing these goods. The household production functions for the goods are assumed as follows:

$$\begin{aligned} c &= t_w, \\ r &= t_r, \\ s &= a \cdot t_w + b \cdot t_r, \end{aligned} \tag{4}$$

with t_w as working time and t_r as non-working time. Working time means the time used for earning money on the labor market whereas non-working time means time which is not used for working on the labor market. The household's time constraint as implied by the equations in (4) is:

$$t_w(1+a) + t_r(1+b) = T \,. \tag{5}$$

Let the product prices be p_c, p_r and p_s for c, r and s, respectively. While c and s may be produced within the household or bought on the market, relationship goods r are assumed to be produced only by the household. Hence, the money budget constraint is given by (w: wage rate):

$$p_c \cdot c + p_s \cdot s_m = p_c \cdot c + a \cdot p_s \cdot c = w \cdot t_w \tag{6}$$

with s_m as that part of the status good s which is assumed to be bought with money on the market:

$$s_m = a \cdot t_w;\; c = t_w \;\Rightarrow\; s_m = a \cdot c \,. \tag{7}$$

Rearranging equation (6) yields:

$$c(p_c + a \cdot p_s) = w \cdot t_w \,. \tag{8}$$

Since by (4) $c = t_w$, (8) can be written as:

$$p_c + a \cdot p_s = w \,. \tag{9}$$

Combining the time budget constraint and the money budget constraint by using the household's production functions for c, r and s gives:

$$\begin{aligned} & p_c c + p_r r + p_s s = wT, \\ & p_c t_w + p_r r + a p_s t_w + b p_s t_r = wT, \\ \Rightarrow\; & t_w(p_c + a p_s) + t_r(p_r + b p_s) = wT \end{aligned} \tag{10}$$

The household's problem is, then, to solve the following maximization program:

$$\begin{aligned} & \max U(\varphi, \psi) \\ & s.t.: \\ & \varphi = f(c, r, s) \\ & \psi = g(c, r, s) \\ & t_w(p_c + a p_s) + t_r(p_r + b p_s) = wT \end{aligned} \tag{11}$$

It is worth noting that this description of the household's problem encompasses both, Becker's (1965) as well as Lancaster's (1966, 1971) approach to the allocation of time in household production. This approach is described and analyzed in its general mathematical form by Roberts and Holden (1972). Since this mathematical approach is a general way of analysing such problems, it is applied here.

To solve the mathematical program in (11), the combined time and money constraint is rewritten as:

$$t_w = \frac{wT - t_r(p_r + bp_s)}{p_c + ap_s} \quad . \tag{12}$$

Employing (12), c, r and s can be rewritten as follows:

$$\begin{aligned} c &= \frac{wT - t_r(p_r + bp_s)}{p_c + ap_s}, \\ r &= t_r, \\ s &= \frac{awT - t_r(ap_r - bp_c)}{p_c + ap_s} \end{aligned} \tag{13}$$

Inserting (13) into the production functions of φ and ψ, the utility function can be written as:

$$U[f(\frac{wT - t_r(p_r + bp_s)}{p_c + ap_s}, t_r, \frac{awT - t_r(ap_r - bp_c)}{p_c + ap_s}), g(\frac{wT - t_r(p_r + bp_s)}{p_c + ap_s}, t_r, \frac{awT - t_r(ap_r - bp_c)}{p_c + ap_s})] \tag{14}$$

To find the optimal household allocation of time and goods, the utility function in (14) is maximized with respect to the time input for the relational good, t_r.

Differentiating (14) with respect to t_r (remember $r = t_r$ from (13)) and setting the resulting expression equal to zero, the first-order condition for maximum utility is given by:

$$(p_c + ap_s)(U_\varphi f_r + U_\psi g_r) - (p_r + bp_s)(U_\varphi f_c + U_\psi g_c) - (ap_r - bp_c)(U_\varphi f_s + U_\psi g_s) = 0 \tag{15}$$

On the level of the goods, the first-order condition in (15) can be solved to present the marginal conditions for the optimal combination of conventional, relational and status goods (note that according to (9): $p_c + ap_s = w$):

(a) Relational and conventional goods:

$$\frac{U_\varphi f_r + U_\psi g_r}{U_\varphi f_c + U_\psi g_c} = \frac{p_r + bp_s}{w} + \frac{(ap_r - bp_c)(U_\varphi f_s + U_\psi g_s)}{w(U_\varphi f_c + U_\psi g_c)} \tag{16}$$

(b) Relational and status goods:

$$\frac{U_\varphi f_r + U_\psi g_r}{U_\varphi f_s + U_\psi g_s} = \frac{ap_r - bp_c}{w} + \frac{(p_r - bp_s)(U_\varphi f_c + U_\psi g_c)}{w(U_\varphi f_s + U_\psi g_s)} \tag{17}$$

(c) Status and conventional goods:

$$\frac{U_\varphi f_s + U_\psi g_s}{U_\varphi f_c + U_\psi g_c} = \frac{p_r + bp_s}{ap_r + bp_c} - \frac{w(U_\varphi f_r + U_\psi g_r)}{(ap_r + bp_c)(U_\varphi f_c + U_\psi g_c)} \tag{18}$$

However, for the dynamics of the demand for relational goods the first-order condition is the equation to start with. The crucial question is *how the demand for relational goods, i.e. the allocation of the time component t_r, changes when the opportunity costs of time measured by the wage rate w increases*. To answer this question, a comparative static analysis of equation (15) is required.

For the comparative static analysis, it is assumed that all cross-derivatives of the utility function U and of the production functions f and g are equal to zero:

$$\begin{aligned}
&\frac{\partial^2 U}{\partial\varphi\partial\psi} = U_{\varphi\psi} = \frac{\partial^2 U}{\partial\psi\partial\varphi} = U_{\psi\varphi} = 0, \\
&\frac{\partial^2 f}{\partial c\partial r} = f_{cr} = \frac{\partial^2 f}{\partial r\partial c} = f_{rc} = \frac{\partial^2 f}{\partial c\partial s} = f_{cs} = \frac{\partial^2 f}{\partial s\partial c} = f_{sc} = \frac{\partial^2 f}{\partial r\partial s} = f_{rs} = \frac{\partial^2 f}{\partial s\partial r} = f_{sr} = 0, \\
&\frac{\partial^2 g}{\partial c\partial r} = g_{cr} = \frac{\partial^2 g}{\partial r\partial c} = g_{rc} = \frac{\partial^2 g}{\partial c\partial s} = g_{cs} = \frac{\partial^2 g}{\partial s\partial c} = g_{sc} = \frac{\partial^2 g}{\partial r\partial s} = g_{rs} = \frac{\partial^2 g}{\partial s\partial r} = g_{sr} = 0.
\end{aligned} \tag{19}$$

These assumptions about the utility function imply that the marginal utility of physical and psycho-social well-being does not systematically change if the respective other variable of well-being is marginally changed. In more technical terms, they imply that both well-being components are normal goods, i.e. they exhibit a positive income elasticity. The assumptions about the production functions imply that the marginal productivities of a good in the household's production of well-being do not change when another good's input is marginally changed. While constraining generality, these assumptions increase mathematical tractability substantially.

Performing the comparative statics of (15) yields after several simple arithmetic operations:

$$\frac{\partial t_r}{\partial w} = \frac{1}{\Delta}\{-(U_\varphi f_r + U_\psi g_r) + \frac{t_r}{w^2}[(p_r + bp_s)^2(U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}) + (ap_r - bp_c)^2(U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss})]\} \tag{20}$$

whereby Δ is the determinant of the matrix of second derivatives of the utility function and f_{cc}, f_{ss}, g_{cc} and g_{ss} are the second derivatives of the respective production functions f and g:

$$\Delta = w(U_{\varphi\varphi} f_{rr} + U_{\psi\psi} g_{rr}) + \frac{(p_r + bp_s)^2}{w}(U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}) + \frac{(ap_r - bp_c)^2}{w}(U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss})$$

Since the utility function is assumed as concave, $\Delta > 0$ is required here.

From the first-order condition in (15) (using $p_c + ap_s = w$), it follows:

$$U_\varphi f_r + U_\psi g_r = \frac{1}{w}[(p_r + bp_s)(U_\varphi f_c + U_\psi g_c) + (ap_r - bp_c)(U_\varphi f_s + U_\psi g_s)] \tag{21}$$

Inserting (21) in (20) yields:

$$\begin{aligned}\frac{\partial t_r}{\partial w} = \frac{1}{w \cdot \Delta}\{&(p_r + bp_s)[\frac{t_r(p_r + bp_s)}{w}(U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}) - (U_\varphi f_c + U_\psi g_c)] \\ &+ (ap_r - bp_c)[\frac{t_r(ap_r - bp_c)}{w}(U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss}) - (U_\varphi f_s + U_\psi g_s)]\}\end{aligned} \tag{22}$$

Obviously, a wage increase decreases the demand for relational goods if the sum of the marginal utilities of physical and psycho-social well-being, weighted by the marginal productivities of consumption and status goods with respect to the production of both ends, is larger than the respectively weighted sums of second derivatives. To shed some light into (22), a measure of the curvature of the utility function is employed, namely the measure of relative risk aversion, RRA (see e.g. Gollier, 2001, chapter 2). Next to the interpretation as measure of risk aversion, this measure can also be interpreted as the elasticity of marginal utility, η, of the respective good. Define the elasticity of marginal utility of the conventional goods c in terms of the relational good as follows:

$$\eta(c; t_r) = -\frac{t_r U_{cc}}{U_c} = \frac{t_r(p_r + bp_s)}{w} \cdot \frac{U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}}{U_\varphi f_c + U_\psi g_c} \tag{23}$$

It can be shown that $\eta(c; t_r) \leq 1$ implies:

$$\begin{aligned}&\frac{t_r(p_r + bp_s)}{w} \cdot \frac{U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}}{U_\varphi f_c + U_\psi g_c} \leq 1 \\ \Leftrightarrow\ &\frac{t_r(p_r + bp_s)}{w}(U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}) \leq U_\varphi f_c + U_\psi g_c \\ \Leftrightarrow\ &\frac{t_r(p_r + bp_s)}{w}(U_{\varphi\varphi} f_{cc} + U_{\psi\psi} g_{cc}) - (U_\varphi f_c + U_\psi g_c) \leq 0.\end{aligned} \tag{24}$$

In a similar way, the curvature of the utility function with respect to status goods s in terms of the relational good can be defined as:

$$\eta(s;t_r) = -\frac{t_r U_{ss}}{U_s} = \frac{t_r(ap_r - bp_c)}{w} \cdot \frac{U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss}}{U_\varphi f_s + U_\psi g_s} \tag{25}$$

Again, $\eta(s; t_r) \leq 1$ implies:

$$\begin{aligned} &\frac{t_r(ap_r - bp_c)}{w} \cdot \frac{U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss}}{U_\varphi f_s + U_\psi g_s} \leq 1 \\ \Leftrightarrow\ &\frac{t_r(ap_r - bp_c)}{w}(U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss}) \leq U_\varphi f_s + U_\psi g_s \\ \Leftrightarrow\ &\frac{t_r(ap_r - bp_c)}{w}(U_{\varphi\varphi} f_{ss} + U_{\psi\psi} g_{ss}) - (U_\varphi f_s + U_\psi g_s) \leq 0. \end{aligned} \tag{26}$$

Hence, if in both cases the elasticity of the marginal utility of conventional goods is smaller than unity, an increase in the wage rate reduces unambiguously the demand for the relational good, r.[1]

To sum up the theoretical results, the approach taken here is a general one that encompasses household production of physical as well as psycho-social well-being. The emphasis is on the interaction of time and money budget constraint which implies that time rather than money is the crucial factor in short supply. As a consequence, households attempt their best to attain a utility level as high as possible given the time resources they have. Since time can be spent within the household and on the labor market (for earning money), the allocation of scarce time seems to be one of the most important questions for the production of well-being. Households are assumed to have three groups of goods to meet the physical and psycho-social needs: conventional goods, to be bought with money on the market, relational goods that can only produced within the household and status goods that can partly be bought on the market and may partly be produced at home. It is shown that under quite reasonable conditions it is to be expected that relational goods are replaced to a certain extent if the (exogenous) wage rate increases. Focussing on the efficiency substitution, it is argued in a Lancaster framework that relational goods may be the losers of economic development with increasing wage rates.

Next, an empirical investigation is carried out to check the theory just presented.

[1] Layard, Mayraz and Nickell (2008) estimated the marginal utility of income in different datasets of subjective happiness and found it to be in the range between 1.19 and 1.34.

3 The dynamics of the demand for relational goods: Empirical evidence

3.1 Hypotheses for the empirical investigation

From the foregoing theoretical analysis several hypotheses can be derived for the empirical study. The main point of the paper is that opportunity costs of time are crucial for the demand of relational goods because these goods are to be provided by the household alone and cannot be bought on the market.

H 1: *Happiness is positively related to the frequency of socializing with friends.*

As defined above, relational goods are goods that are consumed when meeting socially with family, friends and work colleagues. Hence, meeting friends should enhance happiness. The dataset used for the empirical analysis contains information about the frequency of meeting friends. This allows testing the hypothesis. It could be argued that the variable SCLMEET measures the frequency of meeting friends but not the time actually spent on socializing. However, the usage of frequency of meeting friends as proxy variable for time consumed in social activities seems legitimate.

H 2: *Time opportunity costs, as measured by the hourly wage rate, is negatively related to the frequency to socialize with friends although it might be positively related to happiness.*

Since meeting friends is time consuming, there will be a substitution effect between working and meeting friends for higher wage rates. However, there might also be an income effect which might counteract the substitution effect. If the substitution effect dominates, higher wage rates will be associated with a lower frequency of meeting friends. This effect will not necessarily exclude that a higher wage rate increases happiness. The reason is that a higher wage rates boosts consumption opportunities and may be associated with higher demand for status goods. These effects may increase happiness even if there is a negative impact on the time spent on meeting friends.

H 3: *Household income is neutral to the frequency of socializing with friends.*

A higher household income does not necessarily mean higher time opportunity costs if the income is based on higher skill or education levels. As a consequence, there is a pure income effect which might have a positive, negative or neutral impact on meeting friends. For sake of simplicity, neutrality is hypothesized.

H 4: *The number of working hours per week is negatively related to the frequency of meeting friends as well as to happiness.*

In contrast to income, the number of workings hours indicates to what an extent time is consumed by working in the labor market. This might be an indicator of a preference for conventional consumption goods. The time available for other activities is reduced; as a consequence, the frequency of meeting friends may decrease.

H 5: *TV consumption is negatively related to the frequency of meeting friends.*

Watching TV is considered here as a proxy variable for individualization of consumption activities (in contrast to social activities). Because it is time consuming, the intensity of watching TV should be negatively related to meeting friends.

H 6: *Status as measured by the prestige of occupation is positively related to happiness, but negatively related to the frequency of socializing with friends.*

This hypothesis is intended to render testable the importance of status goods introduced in the theoretical analysis. On the one hand, higher status should increase happiness, but on the other hand, it should be associated with a lower frequency of meeting friends. The reason is that status goods require time for earning the economic means to compete with peers. In the theoretical analysis above, this led to a lower demand for relational goods if the elasticity of the marginal utility of consumption was sufficiently low. Therefore, if the condition is fulfilled, the hypothesis should be correct.

H 7: *Status is more important for happiness in richer countries than in poorer countries.*

As discussed theoretically, status goods may become more important or even dominant in comparison to relational (and conventional consumption) goods. The reason (indicated above) is that richer countries seem to experience higher time opportunity costs than poorer ones. As a consequence, status should contribute more to happiness in richer than in poorer countries.

H 8: *People in poorer countries meet more often with friends than people in richer countries.*

The validity of this hypothesis requires that the substitution effect of higher time opportunity costs in richer countries is sufficiently large to dominate a possible reverse effect of higher incomes in these countries. If higher incomes were associated with a higher frequency of meeting friends, this effect might be larger than the substitution effect that would reduce the frequency of meeting friends in richer countries.

3.2 Procedure of estimation

The empirical analysis has been conducted with QMS EVIEWS 6. Thereby we used the aggregated data from the first (2002), second (2004) and third (2006) wave of the European Social Survey (ESS (2009)). Excluded from the analysis were data sets with implausible data: (a) These were data sets with values for the working time per week of more than 100 hours for respondents (or their partners), (b) data sets that yielded a negative value for the available time after subtracting working time per week, weekly consumption of television and an amount of eight hours daily for sleep and (c) data sets where at least one member of the household had a date of birth beyond the year in which the respective wave's data were collected.

Excluded were also data sets without answers in the admissible range for the variables for subjective happiness (HAPPY), global satisfaction with life (STFLIFE) and frequency of meeting socially with

friends, relatives etc. (SCLMEET) (i.e. included were only data sets with HAPPY < 77, STFLIFE < 77 and SCLMEET <= 7).

Only households where the respondent and/or the partner are working persons (being employed, self-employed or working in a family business) have been considered. We analysed only the answers from households which earned their incomes mainly by working. Furthermore, individuals who did not answer the question about their weekly working time and individuals where the total working time for both partners would not exceed 20 hours were also excluded from the analysis.

For testing the hypotheses mentioned above, we employed a regression approach by taking into account socio-economic control variables which are also considered of relevance with respect to happiness and life satisfaction: the age of the respondent measured in life-years (AGE), the gender of the respondent via a dummy-variable where 0 means male and 1 means female (FEMALE), the marital or cohabitation status of the respondent via a dummy variable with value 1 if the respondent lives with a partner (PARTNERDUM) and the respondent's subjective health status (HEALTHR). Subjective health status is an ordinally scaled variable, "How is your health in general? Would you say it is…" [Annotation in the questionnaire: "Physical and mental health."] (1) "very good"; (2) "good", (3) "fair", (4) "bad", (5) "very bad". The order of the variable is reversed for the analysis in this paper so that "very good" corresponds to the highest numerical value.

The wave effects of the three survey waves are controlled for by the dummy variables WAVE2DUM and WAVE3DUM, the variable for the first wave being omitted. These control variables have been included in each regression though the values of these variables are not reported in the following.

The influence of country specific circumstances in the 24 countries included in the study is controlled for by introducing 23 country dummy variables, each having either value of 0 or 1. The dummy for Germany has been left out, so Germany is the reference country. This procedure is followed in all estimations except for the regressions concerning hypothesis 7 and 8 where the countries have been grouped into three classes according to their Gross National Income per capita. This classification avoids the problems of pooled data and renders the use of country dummies unnecessary. Because the estimations including the hourly wage rates and (weighted or unweighted) weekly income collapsed when controlling for country dummies, these were left out in those estimations. If not remarked

otherwise, all regressions reported in the following are run with country dummy variables. As we do not interpret the underlying national characteristics, the estimated values of the country dummies are not included in the tables. In Table 1, all variables used in the empirical investigation are quantitatively described.

[Table 1 about here]

As techniques of estimation, we employed both ordered logit and ordinary least squares (OLS) estimations. The OLS estimates have been applied though the data is ordinally scaled. As explained by Carbonell/Frijters (2004) and van Praag/Carbonell (2008), the differences of the two methods tend to be small due to the respondents' interpretation of happiness-related questions as cardinally scaled. In this paper, we report the results of the ordered logit estimation while giving account of the OLS results only if these results differ from the former in magnitude, sign or statistical significance. The same procedure is followed when applying the ordered logit method to the subjective happiness variable (HAPPY). Moreover, we employ the White test of homoscedasticity. If indicated, we correct for heteroscedasticity via the White-correction (OLS) or the Huber/White correction (ordered logit estimations).

3.3 Testing the hypotheses

The first hypothesis to be tested is Hypothesis 1: *Happiness is positively related to the frequency of socializing with friends.*

In the European Social Survey, happiness (variable "HAPPY") is measured via self-reports on an 11-Likert scale from 0 to 10 where 0 means "extremely unhappy" and 10 "extremely happy".[2] Satisfaction with life-as-a-whole[3] (variable "STFLIFE") is measured on an 11-Likert scale from 0 to 10 where 0 means "extremely dissatisfied" and 10 "extremely satisfied". While these two notions are clearly related to each other, they are by no means identical: Using the Spearman rank coefficient, the rank correlation between the two variables is rho (60929) = 0.705, $p < 0.01$, indicating a statistically significant strong relationship, but not a perfect one. To cut a long discussion short, we assume that

[2] "Taking all things together, how happy would you say you are?"
[3] "All things considered, how satisfied are you with your life as a whole nowadays?"

happiness (or *hedonic* well-being) has a stronger inclination to transient positive feelings, whereas life satisfaction (or *eudaimonic* well-being) is the result of a reflected happiness-related evaluation of life (see, for instance, Ryan and Deci, 2001).

As a proxy variable for the frequency of socializing with friends the variable "SCLMEET"[4] is used which encompasses social meetings with friends as well as with relatives or work colleagues. It is measured on a 7 step Likert scale from 1 to 7.[5]

Hypothesis 1 is analyzed via a regression approach by applying the following regression equation:

STFLIFE(i) = beta1*SCLMEET(i) + beta2*AGE(i) + beta3*FEMALE(i) + beta4*PARTNERDUM(i) + beta5*HEALTHR(i) + beta6*WAVE2DUM(i) + beta7*WAVE3DUM(i) + beta[8 to 30] "country dummy variables"(i) + e(i)

Beta1 to beta30 are the coefficients of the independent variables, WAVE2DUM and WAVE3DUM are dummy variables for the respective survey waves, "country dummy variables" are 23 dummy variables for the countries in the study (leaving out Germany as the 24th country), e denotes the error term and (i) indicates the respective value for the i-th observation.[6]

[Table 2 about here]

As can be seen in Table 2, all coefficients are statistically significant ($p < 0.01$). To allow an easier interpretation of the results of the ordered logistic regression, the odds ratios of the independent variables are calculated.[7] They show how the marginal probability to belong to a category higher than a contemplated category changes when the respective independent variable raises one unit. Thus, when the frequency of meeting socially with friends is rising one unit (say, from "less than once a month" to "once a month"), the probability for an individual to have a higher Satisfaction With Life score rises

[4] "Using this card, how often do you meet *socially* with friends, relatives or work colleagues?" [original emphasis. Explanation in the ESS - questionnaire: "'Meet socially' implies meet by choice rather than for reasons or either work or pure duty."]

[5] The categories are 1 = "never", 2 = "less than once a month", 3 = "once a month", 4 = "several times a month", 5 = "once a week", 6 = "several times a week", 7 = "every day".

[6] In the rest of the paper, we do not show the estimation equations because their structures are very similar concerning control and dummy variables. Hence, the estimation equation is self-evident.

[7] Odds ratios are calculated by taking the natural exponent of the coefficient. Another possibility to interpret the result from our ordered logit approach is to interpret the quasi-elasticities of the dependent variables; see Franses/Paap (2001), 117-118.

by 17.3 percent (see Table2:). In contrast, the result of the OLS estimation units (not shown here) implies that a rise of one unit in SCLMEET increases global life satisfaction by 0.163.

To conclude, the analysis shows a statistically significant positive relationship between global life satisfaction (or happiness) and the frequency of socially meeting friends. Hence, Hypothesis 1 cannot be rejected.

We turn now to test Hypothesis 2: *Time opportunity costs, as measured by the hourly wage rate, is negatively related to the frequency to socialize with friends although it might be positively related to happiness.*

The hourly wage rate is calculated by dividing the household net income by the total amount of working hours per week (summed up from respondent and – if applicable - partner).[8] The working hours per week are captured by the survey question "Regardless of your basic or contracted hours, how many hours do/did you normally work a week (in your main job), including any paid or unpaid overtime" (original emphasis). The answer is measured in hours. A similar question was asked for the partner's working hours. . In our analysis only datasets where the added working hours per week of respondent and partner reach at least 20 hours are considered (WKHCUTHOUSEH >= 20).

The income question in the European Social Survey is threefold coded. The interviewees can alternatively choose their span of household net income measured weekly, monthly or annually. The answers are coded in one variable where each value corresponds to a weekly or transformed monthly or annually amount of earned money. To specify a value for the *weekly* household income, the coded answers are interpreted as weekly data. Within the income brackets, the arithmetic mean is taken as a representative value for the respective bracket for all ranges with exception of the last, open-ended bracket. Here the value of the lower limit is taken.

[8] Excluded from the study have been observations which gave a work time of over 100 hours a week. These seem either to be coding errors or raise at least the suspicion that the answers are incorrect.

Weekly household income is calculated by equalising the households' net incomes via the modified OECD equivalence scale.[9] An average weighted wage rate (WAGERATEWEIGHTED) is then computed by taking into account the total sum of working hours.

[Table 3 about here]

The ordered logit estimation (Table 3) shows a positive and statistically significant relationship between the wage rate and the frequency of meeting friends. This contradicts the first part of Hypothesis 2.

To test the second part of Hypothesis 2, the relation between the hourly wage rate and life satisfaction is estimated (Table 4). The wage rate has a statistically significant positive, but relatively weak influence on life satisfaction. Hence, the second part of Hypothesis 2 cannot be rejected; however, it cannot be excluded that there is reverse causality, i.e. happier people may earn higher wages.

[Table 4 about here]

Next we test Hypothesis 3: *Household income is neutral to the frequency of socializing with friends.*

To facilitate the comparisons of different effects, income is defined in units of 100 €. In effect, two somewhat different specifications of household income are used in the regression, the unweighted weekly household income (INCABSWEEK100) and the weighted weekly household income which is adjusted for the number of household members via the modified OECD equivalence scale (INCWEIGHTWEEK100).

[Table 5 about here]

In both definitions, household income has a statistically significant positive, but weak influence on the frequency of meeting friends. Therefore, Hypothesis 3 is to be rejected.

We turn now to the influence of working hours on meeting friends as postulated in Hypothesis 4: *The number of working hours per week is negatively related to the frequency of meeting with friends as well as to happiness.*

[9] The weights of household members are as follows: 1.0 for the first adult in a household, 0.5 for every other adult household member (14 years of age or older) and 0.3 for every household member under age of 14 years.

[Table 6 about here]

According to Table 6, the average time spent on paid work has a small negative impact on the frequency of meeting friends.

To test the association between working hours and life satisfaction, three models are estimated: Model 1 contains as independent variables working hours and the controls, whereas in model 2 and 3 the unweighted and weighted income are also incorporated, respectively.

[Table 7 about here]

The effect of working time on happiness is statistically significant ($p < 0.01$) and negative, but small. Controlling for the weekly income (absolute or weighted), the effect of working time on life satisfaction remains almost the same.[10] Hence, Hypothesis 4 cannot be rejected.

Next, we check Hypothesis 5: *TV consumption is negatively related to the frequency of meeting friends.*

The average total TV consumption on a weekday is measured on an 8-step Likert scale (0 - 7). TV consumption is asked for by: "On an average weekday, how much time, in total, do you spend watching television?" The card to facilitate answers gave the following options: "No time at all", "Less than ½ hour", "½ hour to 1 hour", More than 1 hour, up to 1 ½ hours", "More than 2 hours, up to 2 ½ hours", "More than 2 ½ hours, up to 3 hours", "More than 3 hours", "(Don't know)". Only data sets with valid answers other than "Don't know" are included in the analysis.

For the regression analysis, the TVTOT variable was transformed into an hourly measure, using the arithmetic mean of the respective classes (with exception of the lowest class where zero hours were taken and the highest, open-ended class where the lower class limit was taken). The new variable is called TVTOTHOUR. Two models are estimated: In the first, TVTOTHOUR is used as an independent variable. In the second, the potential time for meeting friends (TIMEPOTWEEKR10H) is used instead of TV consumption. This variable was calculated by substracting from the week's 168

[10] The estimations using HAPPY as dependent variable derive insofar as WKHTOTCUT is not statistically significant at 10% level in model 1.

hours (24 times 7) 8 hours of sleep per day and the average time per day spent on TV consumption multiplied by seven; this result was then divided by 10 to get a reasonable range for the variable.

[Table 8 about here]

Table 8 shows a weakly positive, but statistically insignificant impact of TV consumption on the frequency of meeting friends.[11] However, if freely available time is taken as a variable (which excludes time for TV consumption), there is a statistically significant effect which shows that the more time is available per week, the more often persons meet friends.

Next, we turn to the effects of status via Hypothesis 6: *Status as measured by the prestige of occupation is positively related to happiness, but negatively related to the frequency of socializing with friends.*

In this study, status is measured as the prestige of occupation. Of course, status can also be measured with other variables like education or state of health. However, it seems that occupation is relatively closely related to status (see, e.g., Or, 2000).

The occupations of the interviewees have been captured in the European Social Survey with an assortment of questions: "What is/was the name or title of your main job?"; "In your main job, what kind of work do/did you do most of the time?" "What training or qualifications are/were needed for the job?" and "What does/did the firm /organisation you work/worked for mainly make or do?". These answers were coded into ISCO 88 COM occupation code.

For our analysis, we classified occupations in three status categories, "low", "middle" and "high" and incorporated these as two dummy variables into the estimation as STATUSLOW (0;1) and STATUSHIGH (0;1). For the group of high occupational prestige, we took the ISCO88 COM main group 2 "professionals" (which comprises e. g. professionals as chemists, accountants and composers). The ISCO88 COM main group 9 "elementary occupations" (street vendors, garbage collectors, forestry labourers and such) were classified as having low status. The main groups 0 ("armed forces"),

[11] Bruni and Stanca (2008) found empirical support for a negative empirical association between TV consumption and relational goods in the World Values Survey. For the (negative) relationship between TV consumption and life satisfaction see Bruni and Stanca (2006) as well as Frey, Benesch and Stutzer (2007).

1 (“Legislators, senior officials and managers”), 3 (“Technicians and associate professionals”), 4 (“Clerks”), 5 (“Service workers and shop and market sales workers”), 6 (“Skilled agricultural and fishery workers”), 7 (“Craft and related trade workers”) and 8 (“Plant and machine operators and assemblers”) were considered as having middle status.

Table 9: Spearman rank-order correlations of the variables STATUSLOW, STATUSHIGH, HEALTHR and INCWEEKWEIGHT100

Covariance Analysis: Spearman rank-order

Included Observations: 44893 (after adjustments)

Correlation	STATUSLOW	STATUSHIGH	HEALTHR	INCWEIGHTWEEK100
STATUSLOW	1.000			
STATUSHIGH	-0.126	1.000		
HEALTHR	-0.070	0.076	1.000	
INCWEEKWEIGHT100	-0.148	0.199	0.158	1.000

Table 9 shows the rank correlations of the status variables and some relevant control variables. All correlations are statistically significant on the 1% level. There are weak rank correlations between subjective health and income with status with the expected sign. However, none of these correlations are particularly strong.

Three models are estimated: Model 1 contains – beside the control variables and dummies – the dummy variables for low and high status; in model 2, the (absolute) weekly household income is added as a variable; in model 3, the weighted weekly household income is incorporated as a control instead of the absolute income.

[Table 10 about here]

As Table 10 shows, without controlling for income, high status has a quite remarkable positive and statistically significant influence on life satisfaction whereas the impact of a low status is negative and also significant. However, controlling for income renders high status via occupational prestige

statistically insignificant, but not low status. Hence, low status has a relevant negative influence on life satisfaction in addition to income.[12]

To find out how status influences the frequency of meeting friends, we estimated again the three models indicated above, but employing SCLMEET as dependent variable. The results are shown in Table 11.

[Table 11 about here]

In model 1 (without controlling for income), a positive and statistically significant coefficient ($p < 0.05$) for STATUSHIGH and a negative one for STATUSLOW are found, but the latter is statistically not significant at the 10% level. When controlling for income (model 2 and 3), both status variables are statistically insignificant. As it seems, it is not (professional) status which has an influence on meeting friends, but income connected with status.

Comparing the respective OLS estimations, in model 1 STATUSHIGH and STATUSLOW are statistically significant ($p < 0.01$). In model 2 and 3 STATUSHIGH has a reversed sign.

Therefore, the hypothesis that status is connected with happiness cannot be rejected by the analysis though it is not high status that makes people happier but low status that makes people feel less happy. When controlling for weekly income, there is no statistically significant relationship of status on the frequency of meeting friends.

Next, we check Hypothesis 7: *Status is more important for happiness in richer countries than in poorer countries.*

[12] Remarks: Model 1: In an ordered logit estimation using HAPPY as dependent variable STATUSLOW is statistically significant at 5% level. Model 2: In contrast to the ordered logit estimation, in the OLS estimation with the same set of variables STATUSHIGH and STATUSLOW are significant on the 1% level. In an ordered logit estimation with HAPPY as dependent variable, STATUSLOW is not statistically significant at the 10% level. Model 3: STATUSHIGH is statistically not significant at the 10% level in an ordered logit estimation, but STATUSHIGH and STATUSLOW both are statistically significant on the 1% level in an OLS estimation. When estimating an ordered logit model with HAPPY as dependent variable, STATUSLOW is not statistically significant at the 10% level.

As a proxy for the wealth of a country, the Gross National Income (GNI) per capita from 2007 is taken. The values for these measures (in Purchasing Power Parities) are supplied by the World Bank (2008). We classified the countries represented in the European Social Survey according to their GNI per capita into three groups: rich countries, average well-off countries and poor countries. The four countries with the highest GNI per capita were defined as rich (dummy variable COUNTRYRICH) and the four countries with the lowest GNI per capita as poor (dummy variable COUNTRYPOOR); the remaining countries are the reference group.

[Table 12 about here]

As can be seen in Table 12, status only in poor countries has a statistically significant effect on life satisfaction. Thereby the effect of high status is positive and stronger than the impact of low status.[13]

To check the robustness of the status variables in the estimation, the weighted household income is added as an additional independent variable (Table 13).

[Table 13 about here]

Table 13 shows that for poor countries, a relatively strong positive effect of high status on life satisfaction remains statistically significant. The impact of low status is small and only weakly statistically significant. The results for rich countries are somehow difficult to interpret because the effect of high status has now a negative sign with statistical significance at the 5% level.[14]

The results indicate that Hypothesis 7 is to be rejected. While the effect of status is replaced by income in rich countries, high status increases life satisfaction in poor countries.

[13] When estimating the ordinary least squares in model one STATUSLOW is statistically significant at 5% level and STATUSHIGH has reversed signs. In model two STATUSHIGH is statistically significant at 1% level.There are some minor differences when OLS is chosen as method of estimation.. In the estimation with poor countries and HAPPY as dependent variable, STATUSLOW has a negative effect and is statistically significant at the 10% level.

[14] In ordinary least square estimation the results differ as follows: For rich countries the sign of STATUSLOW is reversed and STATUSHIGH is statistically not significant at 10% level. For poor countries the sign of STATUSLOW is reversed and STATUSHIGH is statistically significant at 1% level. Using HAPPY as dependent variable for the estimation of rich countries STATUSLOW is statistically not significant at the 10% level.

Next we test Hypothesis 8: *People in poorer countries meet more often with friends than people in richer countries.* Two models are estimated: the first one does not include income as a control variable whereas the second does.

[Table 14 about here]

Table 14 shows that all coefficients of estimation are statistically significant ($p < 0.01$). Residing in a rich (poor) country increases (decreases) the frequency of meeting friends. This is surprising because it was reasoned that people from rich countries experience higher time opportunity costs than people form poor countries. Note also that the results are very stable since the estimated coefficients do hardly change when income is added as a control variable. Hence, Hypothesis 8 is to be rejected.

4 Conclusion

In the empirical analysis, hypotheses 1 and 4 could not be rejected. This means the following:

- Meeting friends increases life satisfaction in Europe. Put differently, relational goods contribute to happiness.
- Freely available time plays a role in the demand for relational goods. Moreover, long working hours are negatively related to the frequency of meeting friends as well as to happiness.

Hypotheses 2 and 6 are partially rejected. This implies:

- We could not find empirical support for a negative effect of the hourly wage rate on the frequency of meeting friends although higher wage rates are related to higher levels of life satisfaction. Undoubtedly, higher wage rates mean higher opportunity costs of time. However, higher wage rates do not require longer working times. If income effects dominate the substitution effect, higher wage rates may even lead to shorter working times. If this is the case, there is no need to reduce the frequency of meeting friends. The result of the test of this hypothesis may be taken as an indication that the condition derived theoretically for a negative

effect of time opportunity costs on the demand for relational goods is still not fulfilled in Europe.

- As was theoretically discussed, status (represented by the prestige of occupation) is positively associated with happiness, but only when income is not controlled for. When controlling for income, the effect of a high status on happiness vanishes; however, there remains a negative effect of low status on life satisfaction. As a consequence, high status seems to be represented by high income in such a way that high status itself is no longer of importance. With low status, this is not true. Low status reduces life satisfaction even when controlling for income. However, there is no association between status and meeting friends when controlling for income.

The hypotheses 3, 5, 7 and 8 are rejected:

- Household income is positively related to meeting friends which indicates that the demand for relational goods is not independent from income.

- The impact of watching TV on meeting friends is statistically insignificant. There is a statistically significant positive correlation between spare time and meeting friends, though.

- In poor European countries, high and particularly low status has an increasing or decreasing effect on life satisfaction, respectively. In rich European countries, status has no effect. Controlling for income, high status becomes an even more important factor for higher life satisfaction in poor European countries. This seems to imply that in poor European countries income did not replace status with respect to happiness.

- With respect to meeting friends, this takes place more often in rich than in poor European countries. One interpretation might be that the time opportunity costs are not (yet) decisive for this activity. As said already, higher wage rates also did not reduce the frequency of meeting friends, perhaps because higher wage rates led to shorter working times. Insofar the rejection of hypothesis 8 is not surprising. To check this result, the analysis should be repeated with data from the U.S. and Canada. A second explanation could be that we were unable to

distinguish between relational goods and status goods with the proxies employed. To check this, another dataset would be required.

To sum up, the most important result of the empirical analysis is that up to now the demand for relational goods seems not to be replaced by the demand for status goods in European countries. Moreover, higher time opportunity costs did not have a negative impact on meeting with friends. A comparison with North American countries could shed additional light on the questions of this paper. This question is to be answered in another paper.

Tables

Table1: Variables employed

Variable	Scale	No. of obs.	Min	Max	Median	Mean	SD
STFLIFE	Ordinal (0-10)	60929	0	10	8	7.162	2.091
HAPPY	Ordinal (0-10)	60929	0	10	8	7.476	1.792
HEALTHR	Ordinal (1-5)	60929	1	5	4	3.981	0.806
AGE	Cardinal (0-∞)	60886	13	102	41	41050	12.532
SCLMEET	Ordinal (1–7)	60929	1,0	7.0	5	5.020	1.469
FEMALE	Dummy (0, 1)	63891	0	1	1	0.500	0.500
PARTNERDUM	Dummy (0, 1)	60759	0	1	1	0.698	0.459
COUNTRYPOOR	Dummy (0, 1)	60929	0	1	0	0.148	0.355
COUNTRYRICH	Dummy (0, 1)	60929	0	1	0	0.202	0.401
STATUS	Ordinal (1-3)	60929	1	3	2	2.067	0.479
STATUSLOW	Dummy (0, 1)	60929	0	1	0	0.150	0.357
STATUSHIGH	Dummy (0, 1)	60929	0	1	0	0.084	0.277
TVTOTHOUR	Cardinal (0-3)	60839	0	3	1.750	1.672	0.898
WAGERATEWEIGHTED	Cardinal (0-∞) [in €]	44940	0.046	115.500	6.053	7.638	6.471
INCWEEKABS100	Cardinal (0-∞) [in €]	44940	0.200	23.100	5.200	6.944	4.998
INCWEEKWEIGHT100	Cardinal (0-∞) [in €]	44940	0.048	23.100	3.528	4.345	3.198

WKTOTCUT	Cardinal (0-100)	60929	0.000	100.000	40.000	41.010	12.381
TIMEPOTWEEKR10H	Cardinal (0-11.2) [in units of 10 hours]	60839	0.000	11.2000	5.975	5.929	1.356

Variables: STFLIFE life satisfaction; HAPPY happiness; HEALTHR subjective health; AGE age; SCLMEET socially meeting with friends; FEMALE gender dummy; PARTNERDUM living with a partner; COUNTRYPOOR respondent lives in a poor country; COUNTRYRICH respondent lives in a rich country; STATUS status; STATUSLOW low status; STATUSHIGH high status; TVTOTALHOUR hours spent watching TV; WAGERATEWEIGHTED net wage rate per household member in purchasing power parities; INCWEEKABS100 net income per week divided by 100 in purchasing power parities; INCOMEWEEKWEIGHTED100 net income per week per household member; WKTOTCUT respondent's average weekly work time; TIMEPOTWEEKR10H freely usable time in hours per week divided by 10.

Source: Own Analysis of ESS (2009) data.

Table2: Ordered logit regression results for the impact of meeting socially friends on life satisfaction

Ordered Logit; Huber/White standard errors and covariance		
Dependent variable: STFLIFE		
	Model 1	
Independent variable	Coefficients (z-Statistics)	Odds Ratio
SCLMEET	0.160*** (27.237)	1.173
AGE	0.003*** (4.348)	1.003
FEMALE	0.155*** (10.828)	1.168
HEALTHR	0.622*** (56.515)	1.863
PARTNERDUM	0.517*** (31.197)	1.677
Included observations		60659
Pseudo R-squared		0.067
LR statistic		16329.41
Prob(LR statistic)		0.000
Log likelihood		-113930.8
Schwarz criterion		3.764
Akaike info criterion		3.758
Statistical significance *** < 0.01; ** < 0.05;* < 0.1; ns >= 0.1		

Table 3: Ordered logit regression results for the impact of the wage rate on meeting socially friends [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance		
Dependent variable: SCLMEET		
	Model 1	
Independent variable	Coefficients (z-Statistics)	Odds ratio
WAGERATEWEIGHTED	0.034*** (23.146)	1.035
AGE	-0.029*** (-37.391)	0.971
FEMALE	-0.025 (ns) (-1.477)	0.975
HEALTHR	0.141*** (11.974)	1.151
PARTNERDUM	-0.366*** (-17.689)	0.693
Included observations		44757
Pseudo R-squared		0.024
LR statistic		3665.636
Prob(LR statistic)		0.000
Log likelihood		-73724.05
Schwarz criterion		3.298
Akaike info criterion		3.295
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10		

Table 4: Ordered logit regression results for the impact of the wage rate on life satisfaction [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance		
Dependent variable: STFLIFE		
	Model 1	
Independent variable	Coefficients (z-Statistics)	Odds Ratio
WAGERATEWEIGHTED	0.042*** (27.576)	1.043
AGE	0.001 (ns) (0.782)	1.001
FEMALE	0.162*** (0.162)	1.175
HEALTHR	0.674*** (55.038)	1.962
PARTNERDUM	0.699*** (34.086)	2.012
Included observations		44757
Pseudo R-squared		0.032
LR statistic		5615.949
Prob(LR statistic)		0.000
Log likelihood		-84511.61
Schwarz criterion		3.781
Akaike info criterion		3.777
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10		

Table 5: Ordered logit regression results for the impact of household income on meeting friends

[country variables excluded]

Ordered Logit; Huber/White standard errors and covariance				
Dependent variable: SCLMEET				
	Model 1		Model 2	
Independent variable	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
INCWEEKABS100	0.045*** (25.067)	1.046		
INCWEEKWEIGHT100			0.067*** (24.402)	1.069
AGE	-0.027*** (-35.820)	0.973	-0.028*** (-36.935)	0.972
FEMALE	-0.026 (ns) -1.5395	0.974	-0.025 (ns) (-1.480)	0.975
PARTNERDUM	-0.610*** (-0.610)	0.543	-0.518*** (-26.463)	0.596
HEALTHR	0.127*** (10.756)	1.135	0.134*** (11.331)	1.143
Included observations	44757		44757	
Pseudo R-squared	0.025		0.024325	
LR statistic	3715.220		3675.892	
Prob(LR statistic)	0.000		0.000	
Log likelihood	-73699.26		-73718.92	
Schwarz criterion	3.296		3.297296	
Akaike info criterion	3.294		3.294766	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10				

Table 6: Ordered logit regression results for the impact of the working hours on meeting friends

Ordered Logit; Huber/White standard errors and covariance		
Dependent variable: SCLMEET		
	Model 1	
Independent variable	Coefficients (z-Statistics)	Odds Ratio
WKHTOTCUT	-0.004*** (-6.650)	0.996
AGE	-0.029*** (-44.467)	0.971
FEMALE	-0.119*** (7.709)	0.888
PARTNERDUM	-0.585*** (-34.556)	0.557
HEALTHR	0.178*** (16.892)	1.195
Included observations		60659
Pseudo R-squared		0.059
LR statistic		12364.34
Prob(LR statistic)		0.000
Log likelihood		-97869.30
Schwarz criterion		3.233
Akaike info criterion		3.228
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10		

Table 7: Ordered logit regression results for the impact of working hours on life satisfaction [country variables excluded in model 2 and model 3]

Ordered Logit; Huber/White standard errors and covariance						
Dependent variable: STFLIFE						
	Model 1		Model 2		Model 3	
	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
INCWEEKWEIGHT100					0.094*** (33.282)	1.098
INCWEEKABS100			0.069*** (38.236)	1.071		
WKHTOTCUT	-0.001* (-1.697)	0.999	-0.006*** (-8.274)	0.994	-0.007*** (-9.433)	0.993
AGE	-0.001 (ns) (-0.863)	0.999	0.002*** (3.106)	1.002	0.001 (ns) (1.259)	1.001
FEMALE	0.139*** (9.112)	1.149	0.116*** (6.457)	1.123	0.106*** (5.93)	1.112
PARTNERDUM	0.452*** (27.397)	1.571	0.368*** (18.684)	1.445	0.503*** (25.947)	1.654
HEALTHR	0.640*** (58.166)	1.897	0.646*** (52.472)	1.909	0.659*** (53.589)	1.933
Included observations	60659		44757		44757	
Pseudo R-squared	0.063		0.036		0.034	
LR statistic	15493.79		6309.009		5981.363	
Prob(LR statistic)	0.000		0.000		0.000	
Log likelihood	-114348.6		-84165.08		-84328.90	
Schwarz criterion	3.777		3.765		3.773	
Akaike info criterion	3.772		3.762		3.769	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10						

Table 8: Ordered logit regression results for the impact of TV consumption and potentially available time on meeting friends

Ordered Logit; Huber/White standard errors and covariance				
Dependent variable: SCLMEET				
	Model 1		Model 2	
Independent variable	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
TIMEPOTWEEKR10H			0.033*** (5.391)	1.033
TVTOTHOUR	0.013 (ns) (1.487)	1.013		
AGE	-0.029*** (-44.674)	0.971	-0.029*** (-44.416)	0.971
FEMALE	-0.085*** (-5.857)	0.918	-0.110*** (-7.208)	0.895
PARTNERDUM	-0.577*** (-34.131)	0.562	-0.581*** (-34.358)	0.559
HEALTHR	0.179*** (16.849)	1.196	0.175*** (16.621)	1.192
Included observations	60569		60569	
Pseudo R-squared	0.059		0.059	
LR statistic	12290.62		12319.58	
Prob(LR statistic)	0.000		0.000	
Log likelihood	-97741.21		-97726.73	
Schwarz criterion	3.234		3.234	
Akaike info criterion	3.229		3.228	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10				

Table 10: Ordered logit regression results for the impact of status on life satisfaction [country variables excluded in model 2 and 3]

Ordered Logit; Huber/White standard errors and covariance						
Dependent variable: STFLIFE						
	Model 1		Model 2		Model 3	
	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
INCWEEKWEIGHT100					0.091*** (31.918)	1.096
INCWEEKABS100			0.068*** (37.311)	1.070		
STATUSHIGH	0.096*** (5.198)	1.101	0.029 (ns) (1.386)	1.030	0.033 (ns) (1.557)	1.033
STATUSLOW	-0.116*** (-3.919)	0.890	-0.080** (-2.204)	0.923	-0.089** (-2.442)	0.914
AGE	-0.001 (ns) (-1.129)	0.999	0.002*** (2.820)	1.002	0.001 (ns) (1.017)	1.001
FEMALE	0.147*** (10.260)	1.159	0.167*** (9.926)	1.182	0.165*** (9.797)	1.179
PARTNERDUM	0.452*** (27.489)	1.572	0.380*** (19.332)	1.462	0.515*** (26.638)	1.673
HEALTHR	0.633*** (57.371)	1.884	0.644*** (52.170)	1.904	0.657*** (53.308)	1.929
Included observations	60659		44757		44757	
Pseudo R-squared	0.064		0.036		0.034	
LR statistic	15537.65		6243.150		5894.415	
Prob(LR statistic)	0.000		0.000		0.000	
Log likelihood	-114326.7		-84198.01		-84372.37	
Schwarz criterion	3.777		3.767		3.775	
Akaike info criterion	3.771		3.763		3.771	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10						

Table 11: Ordered logit regression results for the impact of status on meeting friends [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance						
Dependent variable: SCLMEET						
	Model 1		Model 2		Model 3	
	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
INCWEEKWEIGHT100					0.067*** (23.954)	1.069
INCWEEKABS100			0.045*** (24.675)	1.046		
STATUSHIGH	0.041** (2.145)	1.042	-0.003 (ns) (-0.129)	0.997	-0.010 (ns) (-0.471)	0.990
STATUSLOW	-0.027 (ns) (-0.893)	0.973	-0.006 (ns) (-0.177)	0.994	-0.004 (ns) (-0.116)	0.996
AGE	-0.030*** (-44.781)	0.971	-0.027*** (-35.789)	0.973	-0.028*** (-36.915)	0.972
FEMALE	-0.086*** (-5.879)	0.918	-0.026 (ns) (-1.529)	0.975	-0.025 (ns) (-1.460)	0.976
PARTNERDUM	-0.578*** (-34.203)	0.561	-0.610*** (-30.523)	0.543	-0.518*** (-26.460)	0.596
HEALTHR	0.175*** (16.526)	1.191	0.127*** (10.734)	1.135	0.134*** (11.329)	1.143
Included observations	60659		44757		44757	
Pseudo R-squared	0.059		0.025		0.024	
LR statistic	12321.75		3715.268		3676.097	
Prob(LR statistic)	0.000		0.000		0.000	
Log likelihood	-97890.60		-73699.23		-73718.82	
Schwarz criterion	3.234		3.297		3.298	
Akaike info criterion	3.229		3.294		3.295	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10						

Table 12: Ordered logit regression results for the impact of status on life satisfaction in rich and poor countries [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance				
Dependent variable: STFLIFE				
	Model 1 COUNTRYRICH = 1		Model 1 COUNTRYPOOR = 1	
Independent variable	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
FEMALE	0.196*** (6.022)	1.217	0.092** (2.450)	1.096
HEALTHR	0.723*** (27.792)	2.061	0.742*** (26.104)	2.101
AGE	0.002* (1.701)	1.002	-0.005*** (-3.121)	0.995
PARTNERDUM	0.551*** (14.668)	1.736	0.225*** (5.461)	1.252
STATUSLOW	-0.059 (ns) (-0.674)	0.942	-0.132** (-2.050)	0.876
STATUSHIGH	-0.031 (ns) (-0.790)	0.970	0.181** (3.288)	1.198
Included observations	12262		8917	
Pseudo R-squared	0.028		0.028	
LR statistic	1223.150		1095.755	
Prob(LR statistic)	0.000		0.000	
Log likelihood	-21046.12		-19223.31	
Schwarz criterion	3.447		4.330	
Akaike info criterion	3.436		4.316	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10				

Table 13: Ordered logit regression results for the impact of status on life satisfaction in rich and poor countries by controlling for weighted household income [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance				
Dependent variable: STFLIFE				
	Model 2 COUNTRYRICH = 1		Model 2 COUNTRYPOOR = 1	
Independent variable	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
FEMALE	0.195*** (5.602)	1.215	0.106* (1.668)	1.112
HEALTHR	0.692*** (24.820)	1.998	0.625*** (12.716)	1.868
AGE	0.001 (ns) (0.464)	1.001	-0.005 (ns) (-1.639)	0.995
PARTNERDUM	0.623*** (15.373)	1.865	0.146* (1.880)	1.157
STATUSLOW	0.001 (ns) (0.007)	1.001	-0.002 (ns) (-0.014)	0.998
STATUSHIGH	-0.084** (-2.020)	0.920	0.299** (3.022)	1.349
INCWEEKWEIGHT100	0.052*** (9.898)	1.054	0.087*** (4.934)	1.091
Included observations	10843		3082	
Pseudo R-squared	0.031		0.024	
LR statistic	1192.111		324.3719	
Prob(LR statistic)	0.000		0.000	
Log likelihood	-18507.01		-6567.972	
Schwarz criterion	3.430		4.312	
Akaike info criterion	3.417		4.274	
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10				

Table 14: Ordered logit regression results for the impact of country wealth on meeting friends [country variables excluded]

Ordered Logit; Huber/White standard errors and covariance				
Dependent variable: SCLMEET				
	Model 1		Model 2	
Independent variable	Coefficients (z-Statistics)	Odds Ratio	Coefficients (z-Statistics)	Odds Ratio
COUNTRYRICH	0.572*** (31.811)	1.772	0.541*** (26.706)	1.718
COUNTRYPOOR	-0.777*** (-33.809)	0.460	-0.732*** (-20.447)	0.481
AGE	-0.029*** (-44.300)	0.972	-0.030*** (-38.436)	0.971
FEMALE	-0.081*** (-5.628)	0.922	-0.040** (-2.352)	0.961
PARTNERDUM	-0.534*** (-31.899)	0.586	-0.516*** (-26.273)	0.597
HEALTHR	0.127*** (12.583)	1.136	0.115*** (9.693)	1.121
INCWEEKWEIGHT100			0.036*** (12.755)	1.036
Included observations		60659		44757
Pseudo R-squared		0.036		0.033
LR statistic		7542.650		4914.351
Prob(LR statistic)		0.000		0.000
Log likelihood		-100280.1		-73099.69
Schwarz criterion		3.309		3.270
Akaike info criterion		3.307		3.267
Statistical significance *** < 0.01; ** < 0.05;* < 0.10; ns >= 0.10				

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