Measuring Uses and Perceptions of Time: A Case for Well-Being

Susana Garcia Diez (Federal Statistical Office of Germany)

Matxalen Legarreta Iza (University of the Basque Country, Spain)

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Susana Garcia Diez, Matxalen Legarreta

For additional information please contact:

Name: Susana Garcia Diez[1]
Affiliation: Federal Statistical Office of Germany

Email address: *susana.garcia-diez@destatis.de*

[1] This Paper expresses the author's own opinions and not necessarily that of Destatis

1. Introduction

"Wealth is not wealth because of its substantial properties. It is wealth because it is scarce" (Robbins, 1935:47). Scarcity, as it was asserted eighty years ago by the British economist Lionel Robbins, is the main subject of economic science. Although "wealth" has traditionally been the subject and wording used by most economists, scarcity is the other side of the medal. Scarcity gives full meaning to the concept of wealth and is intrinsically linked to it.

The concept of wealth as it is traditionally used in economics focuses on material conditions such as income, capital, properties or assets both of individuals (personal wealth) and of societies (wealth of nations). Currently, however an international debate aims to broaden this narrow conception of wealth. The main argument points that improved material conditions alone, as policy objective, are not enough to ensure genuine societal progress. The term well-being that has been introduced in this discussion is evocative of a pleasurable state caused not necessarily only by material conditions but also by other aspects that influence the flourishing of human life. It is the personal and subjective experience of one's own condition and situation in life that lies behind the concept of well-being. It is therefore much more human-centered than the term wealth has ever been. Ever since 2009 the Commission on the Measurement of Economic Performance and Social Progress[2] so called "Stiglitz-Commission" recommended to also take into account the subjective perceptions of individuals, serious efforts to measure subjective well-being have been taken institutionally, beyond others most recently by the OECD (2013). Academic forerunner in this field can be found in the fields of hedonic psychology and behavioral economics (Diener et Al. 1999; Kahneman et Al. 1999).

If we take the concept of human well-being as our main target, we must focus on the scarce means for human beings to reach this goal - as Lionel Robbins would have suggested -. Doing so, one of the things that comes up intuitively is the issue of time. Time is without doubt one of the most, if not the most important economic resource. Due to its scarcity, it should be an essential subject in our discussions on well-being and progress.

In Year 2013 a special module on subjective well-being was included within the European Survey Living in Europe (EU-SiLC). If we take a look at the module, we realize that many questions are directly related with aspects of time, for example questions regarding **life satisfaction within the different domains** as: how satisfied are you with… **the time** it takes you to get to work?, the **available time** you have to do things you like?, your **free time**?, questions regarding personal affects as **how often** did you feel in the **last 4 weeks**….nervous, depressed, quiet, sad, happy, etc? So time is an issue in welfare measurement. But is our approach to time enough?

In this article we propose some conceptual alternatives to generate information, which may be more adequate to feed the current demands around well-being and progress. Concretely, we will discuss an already existent statistical survey, the Time Use Survey (TUS) and the possibilities to get from it information that may broaden not only our understanding of economic means, focusing on time as the principal scarce resource for all of us, but also that may open a door to more subjective and qualitative aspects of the resources in this case of time. With help from some international experiences on this field, specially the cases of Spain, France and Germany

[2] 2009 year of publication of the "Report by the Commission on the Measurement of Economic Performance and Social Progress".

we will discuss the possibility to incorporate questions regarding more subjective and qualitative aspects within TUS. We propose that time is a key concept for the debate on well-being and progress, both in individual and societal terms. But, differently as it has been done until now, the concept of time should be address from a multidimensional, non-hierarchical and embodied way. We are not striving for a better and even more precise quantification and aggregation of time units, but we look for a concept of time that may enable us to reflect on how we spend our time, where and when time pressures and constraints arise, which time provide us with the greatest joy, or when do we suffer most. The discussion on personal well-being is to a great extent a discussion on personal disposition and use of time. A better understanding and reflection over these concepts may help to go further in this debate on well-being. The extension and renewal of TUS may be a good first step.

This paper is divided into three sections; the first one presents the terms of the debate on well-being and social progress. Important concepts such as progress, economic growth, well-being and specially time will be discussed here. The second section focuses on Time Use Surveys (TUS) as a statistical tool for analysis of human well-being and progress. In this section, previous experiences within these surveys to include issues on subjective perceptions of life satisfaction as well as three current experiences: the ones of the Basque Country (Spain), France and Germany will be presented and discussed. The third and final section contains the authors' own very tentative first proposal for the introduction of subjective time aspects within Time Use Surveys in order to better approach the plurality and diversity of perceptions of time required within the frame of well-being and societal progress.

2. Human Well-Being and the Progress of Societies. A statistical Challenge

More and more initiatives are joining into the international discussion in search of better measures to guide good policies oriented to enhance human well-being and societal progress. This discussion is an old one but the actual situation marks an important peak in the political agenda. Since the instauration of the System of National Accounts in the 1940s and the international competition in order to obtain the greatest economic performance, measured by the gross domestic product (GDP), many voices have been remembering with more or less success, that the true objective to be achieved by societies is not to produce the biggest amount of material appliances and amenities (increase GDP), but to strive for the well-being of its citizens and the progress of the society as a whole. Some of those critical voices that keep blinking in our heads are surely the well-known speech given by Robert Kennedy in year 1968[3], the Club of Rome "Limits of Growth" contribution from Dennis Meadows in 1971, as well as the article by Tobin and Nordhaus "Is growth obsolete" from 1972 (Nordhaus and Tobin, 1972) and both the United Nations Brundtland-Report of 1987 (United Nation, 1987) and the Human Development Report from 1990 (United Nation, 1990), to just mention some.

The actual debate accentuated by the financial crises in year 2008 was brought up again to the political agenda mainly by the OECD World Forum "Statistics, knowledge and Policy"[4]:

[3] Speech on what GNP means, addressed, Universtiy of Kansas, Lawrence, Kansas, March 18, 1968.
[4] Istanbul Declaration of Year 2007 of their commitment to measuring and fostering the progress of societies and the initiative "Measuring and Fostering the Progress of Societies" which followed.

"We affirm our commitment to measuring and fostering the progress of societies in all their dimensions and to supporting initiatives at the country level. We urge statistical offices, public and private organizations and academic experts to work alongside representatives of their communities to produce high-quality, fact-based information that can be used by all of society to form a shared view of societal well-being and its evolution over time"

Followed immediately by the Commission on the Measurement of Economic Performance and Social Progress[5]and in Europe by the European Commission's initiative "GDP and Beyond"[6]. It is very much a discussion about the right measures to observe the values we really believe in. At this point of the debate by one thing consensus seems to have been reached on. It is well recognized that GDP alone is not an all-around well-being indicator nor it is by itself sufficient to inform on the material welfare of societies. On the one side, distributional indicators as well as other indicators focused on consumption or incomes, more than on production (output), are now demanded to complement the information provided by GDP. On the other side, there is a broad claim to go even beyond the material side of well-being taking into account also the non-monetary subjective aspects of quality of life, for both the individuals and the society as a whole. Immersed within this political-normative discussion, official statistics and data producers are trying to develop as soon as possible the new demanded information taking into account their quality requirements. This is not at all an easy task. In the words of Nussbaum and Sen "Economists, policy-makers, social scientist, and philosophers are still faced with this problem of measurement and assessment. They need to know how people are doing in many different parts of the world, and they need to know what is really involved in asking that question. When they face the problem well, they face it, so to speak, with wonder; with a sense, that is, of the profound complexity of assessing a human life, and with a desire to admit, at least initially, the wildest possible range of accounts of how one might go about this, of what indicators one might trust" (Nussbaum and Sen, 2009).

It is indeed a difficult problem of measurement and assessment. How could be best visualize, operationalize and take into account all these plural facets of well-being and progress? But above all it is also a discussion about participation and involvement of the civil society within the process of selection and creation of indicators for well-being and the progress of societies. Quoting John Hall: stimulating and fostering this societal involvement would led beyond its intrinsic positive effects to many other benefits; it would, first of all and most important, strengthen with new impulses the idea of democracy and also it would do more practicable, transparent and accountable the business of government (Hall and Rickard, 2013).

2.1. The progress of societies and well-being versus wealth and economic growth

This debate is a conceptual one. We are actually discussing the shortcomings of economic thinking and language developed especially over the last half a century, which, with some reserves, we could regard as "neoclassical economics school". This branch of economic thinking we are talking about has become mainstream within academia and scientific economic Journals and it is mainly defined by the adherence to rationality, selfishness and equilibrium as well as

[5] 2009 year of publication of the "Report by the Commission on the Measurement of Economic Performance and Social Progress".

[6] European Commission Communication to the European Council and Parliament COM, 2009: 433final "GDP and Beyond. Measuring Progress in a Changing World". Adopted by the European Parliament in 2011.

the recurrent use of methods of mathematical modeling (Lawson, 2013). This development, of course, went in parallel with the production of the necessary data, long time series providing evidence for mostly market activities and factors that had been recognized as relevant for the political class and the success of the capitalist market economy. In this context the creation and international instauration of the System of National Accounts has played a crucial role (Lepenies, 2013; Coyle, 2014). This, and the obvious advantages of "the measuring rod of money", has broadly dictated what we measure and thus what we strive for. This frantic data production activity of and for the market economy, (i.e. to succeed economically as a nation measured by annual growing rates of GDP), and its use for administrative purposes to accomplish and evaluate political actions have prevented to focus clearly on other objectives closer to the human being: as to pursue better lives for all.

To change well established structures and action patterns is not an easy task. It takes a long time to propose new paths and effective alternatives once the objective is defined. We hear nowadays more and more single voices as well as institutions, even traditionally economic oriented ones as the OECD, UN and IWF, striving for a broader societal progress and human well-being and claiming that traditional economic growth based politics are not enough. At the moment we are in the process of recognizing which are the most important barriers that hinder advancement in this direction and how to better overcome them. Doubtless one of these barriers is the importance that GDP data plays in everyday politics and all kind of administrative and budgetary discussions[7].

The logic of economic growth and its statistical rationale based on the System of National Accounts and specifically on the use and interpretation of GDP as a target in itself is very much challenged nowadays. Now, the proposed logics behind the concepts such as societal progress or even human well-being propose a different statistical perspective and approach to reality that may offer a practicable alternative for political decision makers and therefore for societies as a whole. Concretely, the subjective well-being literature provides a positive shift away from the purely materialistic approach of traditional welfarism (focused on the commodities consumed by each person) to direct measures of people's feelings and evaluations of life, as worthy per se (UNECE, 2014:26).

In this tradition of alternative statistical approaches different to the quantification of reality based exclusively on monetary terms we can count also Time Use Surveys (TUS). First of all, they provide an attempt to offer an alternative measurement unit different to money (in this case time expressed in hours and minutes). Contemplating human activity through the lenses of time (budgets and activity sequences) offers a much broader view of social behaviour than if we take alone into account those activities which have been remunerated and arise in the markets. This step has been very important to illuminate the real meaning of concepts such as "Work" and "Production", which through the use of the System of National Accounts had been restricted to those of "paid work" and "market production" to put some examples. Time Use Surveys and

[7] It is worth to mention that, at least in Europe, official GDP calculations are compulsory responding to a European legal act (EU Regulation Nr. 549/2013 on the European System of National Accounts). This regulation also foresees the monetary sanctions countries have to pay if they do not deliver GDP information on the defined time and quality. Many political objectives and targets (but also sanctions) are defined in Europe as a ratio to GDP: i.e. the budgetary System of the European Union (EU Regulation Nr. 436/2007 on the Own Resources System) that regulates the financial contributions of each country to EU budget are based in terms of GDP, the European Stability and Growth Pact, the Macroeconomic Imbalance Procedure Scoreboard and in the overarching Europa 2020 Strategy.

Diaries allow obtaining very broad and heterogeneous information about human activity, which may be useful to analyze the all-around material (paid and not paid) as well as the emotional requirements of the society and its fulfillment or scarcity, following therefore more the logic behind progress and well-being.

Statistical information focused on time use -basically measured in hours and minutes- has, so our main point, though some restrictions. The most important one is the conceptualization of time as "clock time" (Adam, 1999, 1995, 2004): an abstract, de-contextualized and disembodied measurement construct. This concept of time made possible early attempts (70´s –UK and 80´s USA) to create measures of "objective Happiness" derived from time diary materials and enjoyment ratings on a 0-10 positive scale. These attempts however were enshrined within a strong utilitarian (benthamite) framework, creating some constructs as the "National Time Accounts" or even the "National Time Value Accounts", which we will critically analyze later (See 3.2.1. and 4.).

Our aim in this paper is to propose a new concept of time more in line with the general demands presented above (in terms of progress and on well-being). This would mean to address the concept of time from a multidimensional, non-hierarchical and embodied way. The incorporation of subjective temporal aspects when analyzing uses of time lived or even the quality aspects experienced when time pass by, without falling in the benthamite logic of giving an instantaneous, quantifiable and additive utility to any specific moment spent in a particular activity, would be the first step now to follow.

2.2. The concept of time in all its facets

It is not an easy task to talk about time. Its familiarity and closeness often involve that it is used in the analysis of social life "as if all of us knew what time is and if we shared a common, universal, understanding about it" (Davies, 1994: 278). Time is often "taken for granted" (Adam, 1995); even when used as a methodological tool for analysis, is not always clearly specified or if specified often just one-sided.

As noted above, the notion of time over which TUS are built is one that is defined as a quantitative: "clock time" (Adam, 1995, 1999, 2004). As pointed out by Barbara Adam, hours and minutes are a just a one-dimensional track. This quantification is furthermore characterized by its quest for precision, with "time as a resource being expressed by numerical specification of both the duration and the frequency with which activities were carried out" (Adam, 1999: 95). But at the same that we focus on one single aspect of time, we exclude all other aspects as: aspects of mind, body, nature and social life, which may have significance on people's lives.

However, for the subject we are discussing now, it is important to remember that the notion of time is a social construction. Especially in our contemporary western societies the quantification of time is not an a-historical or a universal process, but it responds to a specific and contextualized historical development. It spread throughout the nineteenth century along with the processes of industrialization and urbanization, and responds to a mercantile and utilitarian conception of economy. Work (employment) and market production are presented as the only means to enable the consumption of the population and as the principal causes for happiness and progress (Naredo, 2002). Indeed, this notion of time, which responds to the logic of capital accumulation, shows difficulties in addressing a conception of human well-being in line with the logic of the "sustainability of life" (Carrasco, 2001, 2003, 2006, Pérez Orozco, 2006, 2010), which focuses on human beings and their needs, both material and subjective (affection, care, psychological safety and human ties and relationships, etc.) (Carrasco, 2001:14-15). As noted by Ramos, "only if we know what it means and, consequently, if we clarify it explicitly, we could be able to speak about the multiple temporal aspects of social life" (Ramos, 1997:12).

So, we understand that in order to propose a broader multi-faceted notion of time we need to face a double challenge: first, to review the notion of clock time as a social construction and, second, to offer an alternative notion of time that may allow deepening into the study of progress and well-being in the terms argued before.

Regarding the first challenge, the review of time as a social construction, there are many interesting contributions on this issue, among which it is worth noting the reflections developed by the historians Jacques Le Goff (1987) and Edward P. Thompson (1965). Both authors show that the creation and consolidation of the current conception of time converged with the emergence and evolution of industrial capitalism, a process that was not always harmoniously developed or linear. The time notion of the industrial society is not anymore a "task oriented" time, but its value is reduced to its identification with money: time does not “pass by”, but it is “spent” (Thompson, 1979). Since money is a quantitative magnitude, the time that is exchanged for money has to be inexorably quantitative: "the invariable and abstract time of the chronometer, where every hour is the same regardless of the context and emotion"; it is a time that is constituted by "uniform, unchanging units, infinitely divisible, to which a numeric value can be given" (Adam, 1999:9-10).

Regarding the second challenge, to propose a notion of time that could be used as an analytical tool for the study of well-being and progress, it is worthy to look at the reflection developed by Ramon Ramos about “metaphors of time” (Ramos, 2007, 2011). The author presents four metaphors that make reference to respective dimensions of time: time as resource, time as environment, time as horizon and time as body. Each metaphor also implies a relationship between subjects and time.

The first one is the metaphor of **time as a resource**. Time is taken as something that is available (or not). This statement implies three ideas: action needs time; time is thus needed, and therefore time has previously to be available. This view presupposes an actor-agent having something, which through his/her deliberation and decision is made available. Time as a resource for action is conceived in three ways: is identified with money, it adopts the connotation of duty, guilt or satisfaction and is related with autonomy and with individuals’ decision-making capacity.

The second metaphor is that of **time as environment or context** in which the action takes place. It refers to the relationship between the action and the external environment in which it is situated In this case; time is the environment itself, as a container in which the action is located. Therefore, those who are embedded within time are not “agents”, but “patients”. However, time as environment is provided with a double meaning: on the one hand it limits, determines and influences the action but on the other hand it provides the conditions which make the action probable and even possible.

The third metaphor refers to **time as horizon or prospect**. It shares the three properties of spatial horizon: it is unreachable (because it keeps moving), its definition depends on the observer's point of view and, therefore, becomes unstable, moody. This time is also the image that underlies the distinction between past, present and future. In this case, action will be replaced by contemplation, although individuals give meaning to their present experience in relation with stories/narratives about the past and expectations for the future. The lack of prospects, and the uncertainty about the future are included in this dimension of time.

The fourth and final metaphor refers to **time as body**. It is something intrinsic to the person, something that defines him/her. This dimension of time refers to biological rhythms, to life cycle, to the ages; it is “body time” (Adam, 1995, 2004). As Adam points out, "the rhythms of the environment and the body are inseparable from the human being, from well-being and form everyday social life" (Adam, 1995:45), thus, health problems, aging or vulnerability are associated to this dimension of time.

To define time through its metaphors supposes to make available a plural, multidimensional, non-hierarchical and embodied notion of time which offers the possibility of studying the human being and progress of societies in a comprehensive way.

3. Time Use Surveys

3.1. Briefly: What are they and what do they measure?

Time Use Surveys have been created with the purpose to produce exhaustive data about the use and distribution of time in a specific population on an average day. They provide detailed and comprehensive information about the patterns of social and individual behavior in relation to different activities: physiological needs, paid and unpaid work, leisure, social participation and mobility, among other. And as we discuss here they may have also a high potential for the study of well-being and progress.

TUS have been developed primarily with a double orientation: social and economic. From a social perspective, they offer the possibility to address the differences in the behavior of diverse social groups and, in this way, among others, they help identifying social inequalities, taking account for its scale and defining areas of interest that require further intervention. From an economic view, TUS allow to make estimations of the volume of unpaid work, done mainly in the domestic-family sphere, as well as to calculate its relative weight in relation to national wealth; furthermore, they could also be used to determine the relevance of the underground economy, because they recognize that time spent in paid work is not restricted to the formal relationship with the labor market.

These surveys are generally very complex and therefore have a high monetary cost, so that mainly official statistical institutes and large organizations are able to carry them out successfully. Thereby, first TUS were developed in the first half of the twentieth century in order to determine the behavior of societies undergoing change, with particular attention to the patterns of leisure time (Raldúa, 1997). From the development in the mid-1960s of the Szalai Study (1972), conducted in a harmonized way through different European countries, the TUS began to benefit from some popularity. Later, in the nineties, TUS developed an orientation directed towards the analysis of unpaid work. At this time, they had a strong institutional support thanks to the Women’s United Nations Conference held in Beijing in 1995, when all member states were urged to make monetary estimations of the value of domestic work and care in relation to Gross Domestic Product. Recently, important efforts have been made at the international level in relation to the development of TUS, mainly in the field of methodological standardization. These efforts materialized in year 2000 with the publication by Eurostat of the Guidelines on Harmonised European Time Use Surveys (Eurostat, 2000). Nowadays, the design of most surveys, at least in Europe, builds on those guidelines. Therefore, it has been argued that TUS "today constitutes a rapidly expanding and politically influential area of research" (Bryson, 2007:152).

In general, TUS have two characteristic features: the diary of activities and the list of activities. The appropriateness of these tools for the analysis of the use and distribution of time rests on several premises. The diary of activities is used to collect information on all activities carried out on an average day and their specific duration. It is based on two basic assumptions: 1) all activities take a time to be performed and 2) time is an universal but limited resource: the day has 24 hours to all people, no more, nor less. Based on these ideas, the diary divides the 24 hours of the day at identical time intervals. Each informant has to write down the main activity carried out at each time interval, together with other additional information as: company, location, or other activities that took place simultaneously. The dairy is built based on a quantitative, linear and sequential conception of time: the duration of the different occupations is measured in hours and minutes (chronometrical time) and the activities are arranged sequentially one after another, beginning from a particular point of reference (at TUS of Basque Statistics Institute-Eustat, for example, the diary of activities is divided into 5-minutes intervals and it takes as its starting point 6 a.m., in Germany the diary starts at 4.a.m and has 10-minutes intervals).

The list of activities is used to classify the information collected by the diary. It relies on the principle that what is made on an average day can be reduced to a limited and operative number of activities that may be added in concrete categories. The list of activities is used, in this sense, to sort and group the variety of occupations in which people may spend their time. As a result, by the list, information collected in the diary is homogenized and it becomes operational, enabling the standardization and comparability of data. As a counterpoint, however, the specific character of each activity and the nuance of each entry of the diary are omitted, so that activities whose sources and features have different meanings and are developed in different contexts may be recorded under the same category: care work, for example, do not always involve love, nor should produce inevitably well-being and satisfaction; likewise, not all paid work is performed in the same working conditions (working schedule, wages, rights, ...), nor produces the same fulfillment in people who carry it out.

TUS are built upon the notion of "clock time" (Adam, 1995, 1999, 2004), which in contemporary Western societies is easily recognizable and identifiable. There resides precisely one of the strengths of this type of survey: it is not difficult for informants to take account of their day to day through the diary because they have internalized this way of understanding and structuring time. Furthermore, using a quantitative magnitude of time for the analysis of social and individual well-being could be an effective way to overcome the social and economic hierarchy of different occupations, to equalize some activities with others (unpaid work with paid work, for example), to give all of them the same analytical value and to move towards the social recognition of less valuated occupations (domestic work and care, for example). However, it also presents some problems because neither it address subjective and qualitative time and its significance, nor it offers the opportunity to study temporal aspects that are relevant when producing more comprehensive knowledge of well-being and progress: time experience, availability/scarcity, the capacity to decide about one own time, structure, allocation, simultaneity (multitasking), etc. In order to fill this gap, we will discuss in the remaining pages of this paper about the possibilities to include at the TUS of a plural, multidimensional, non-hierarchical and embodied notion of time.

3.2. The incorporation of subjective temporal aspects within TUS

3.2.1. Some previous experiences

The incorporation of subjective measures such as satisfaction, enjoyment, affects information (positive and negative) as well as time scarcity and other time constrains information has been an important part of time diaries almost since the beginning. Gershuny notes the inclusion and development of such measures as early as in 1975 in the US national time diary survey by the Institute for Social Research at the University of Michigan in 1981 (Juster and Stafford, 1985) as well as in the large scale time-use study in the UK in 1987 (collected by Unilever Research) (Gershuny, 2011).

This information on personal assessments of time has been used by some analysts and researchers equating the obtained measures of satisfaction and/or enjoyment with “instant utility” (Kahneman, 1999). This step was necessary to incorporate the new obtained information within the theoretical framework of utilitarianism as conceived almost two hundred years before by Jeremy Bentham, who reduced the significance of satisfaction to mere and immediate pleasure or pain feelings. This approach follows the assumption that as time use is a determinant factor affecting individual well-being, as relevant as other “economic/material” resources; it has to be put on a par with those in order to maximize general satisfaction (utility function) taking all these resources (goods and time) into account. In microeconomic theory, utility is maximized by equating the marginal gain from consumption goods (obtained with the money gained with a market job) to the gain from increased “leisure” (enjoyment from non-market time use). As Juster and Stafford note: “The ultimate constraints determining the level of individual well-being are the availability of human time and the set of factors that determine the effectiveness with which time is used” (Juster and Stafford, 1985:1).

In order to assess people’s general satisfaction or enjoyment a further not at all unproblematic assumption had to be taken, which is that individual utilities are directly measurable, at least ordinally (non-interval scales) if not cardinally and even comparable among persons (Andrews and Withey, 1976; Campbell et al. 1976; Cantrill and Roll, 1971). This is a very sensible question that has been already criticized since the very first attempts from Bentham to measure utils from pleasure and pain assessments. Individual utilities or “utils”, so the allegation of the critics, cannot be compared among people, not because a technicality but because of a matter of human dignity. It is not only that “pleasure” is not a single thing which varies in intensity or duration but a multiple experience containing qualitative differences. Any attempt to aggregate and therefore to equate different individual experiences is like placing a value on people’s lives (Nussbaum, 2008) or as McCloskey notes: “What makes people happy is well worth knowing, and it can be ascertained without descending into Benthamism and can be done with due attention to the evidence of 4,000 years of recorded human reflection” (McCloskey, 2012).

In Practice, once the data on people’s individual satisfaction or enjoyment was obtained (usually using the ten point scale cantril lader) marginal utilities were calculated as if the results of individual satisfaction (0,…, 6, 7, 8, …, 10) were indeed as cardinal as the income information researchers regularly used to establish the material wealth of individuals. According to Gershuny, he attempted to statistically prove that in this case no significant differences can be found between this dataset (individual satisfaction) and other of cardinal nature and therefore data regarding individual assessments of enjoyment might be used as cardinal (as interval scales): “These ratings are ordinal. And they average-out interpersonal variation in the means and ranges of scores that result from the respondents own interpretations of the enjoyments scales. But, interpreted as if they were cardinal measures […], they make good plausible sense (out of home leisure being highest-rated, housework rated lowest and so on). And formal statistical tests suggest that the numbers emerging from the enjoyment fields of the diaries work as *if* they had attributes similar to cardinal scales (i.e. regular and approximately equal distances between successive integer measures)” (Gershuny, 2011: 33). He concludes some pages later “On this basis we may decide to treat the instantaneous utility measures as cardinal despite the ordinal nature of the scales. The data may then be used to estimate the marginal utility of time in each activity category (Gershuny, 2011: 35). Some research in this direction was carried out by the French National Statistical Office (INSEE) with data from the last TUS in year 2010 (see upcoming section 3.2.2.2).

From this stage on it is just a matter of mathematics to generate some kind of individual average or even national aggregate enjoyment level, as for example, the one provided by the “National Time Accounts” (NTA) of Krueger based on information from affecting experiences included to ongoing time use surveys (Krueger et al. 2009). In his article with the title “The Currency of Life” he uses this NTA to compare groups of individuals, countries and even eras. This kind of research is not free from strong criticism as the one provided by Deirdre McCloskey (McCloskey, 2012). Her main critical point is that these studies reduce the concept of happiness/enjoyment to the mere idea of pleasure/pain (positive and negative “utils”) in a positivistic á la Bentham attempt, as she says, “to count the golden sand corns of life”. On the contrary, so her argument, the good and virtuous life (happy life) is multiple and involves the principal seven virtues: prudence, temperance, courage, justice, faith, hope and love. Her point is that “Happinesses” are multiple and not fungible. Additionally to these substantial arguments she also criticizes the “empirical” process as well, pointing out that most analysts take “statistical significance” as synonymous to “economic significance” or even “scientific significance” in a general way and also that all these studies take the scales as supposed to be intervals and therefore cardinal (Ziliak and McCloskey, 2007). Concerning the concept of satisfaction/enjoyment alone, there are some questions to clarify. People may have preferences over all uses of time, and all activities generate not only observable and measurable *outcomes* in the form of market and non-market goods (close to the benthamite concept of “utils”), but also outputs (to call it somehow) which consist of satisfactions from the activities themselves and from the context in which the activities were carried out.

Summarizing, we could say that generally there is common agreement on the fact that information on subjective appreciations might be a prosperous area for research and definitely an important topic to take into account in further research. If we consider that many factors determining subjective well-being do not necessarily emerge from market activities/transactions, it is therefore recommendable not only to focus on market (monetary) data but also to integrate data regarding time use in all its facets.

3.2.2. Some national and regional experiences regarding the inclusion of subjective temporal aspects: Basque Country (Spain), France and Germany

In the next pages we will present three different experiences from regional and national statistical offices confronting the issue of subjective well-being especially in the context of TUS. Beginning with the case of the Basque Country in Spain, where TUS have a long tradition and are supported politically with strong commitment. In this case, no questions regarding subjective perception of time and life satisfaction are yet integrated within TUS, but they have been tested in the context of other survey (Health survey), which also entails some questions about time in relation with paid and unpaid work. In the case of France (INSEE) we already can see modifications in the TUS 2010 to include questions regarding life satisfaction. The questions included here as well as the analysis of the obtained data follow the utilitarian tradition of behavioral economists, stressing the quantitative aspects of time perception and satisfaction and the use of cardinal scales. In Germany the actual TUS conducted in years 2012/2013 also includes some new questions to identify time perception and satisfaction with time. In this last case the approach followed is based in more qualitative and open questions.

3.2.2.1 Basque Country (Spain)

The Spanish Parliament encouraged in year 1994 to consider the contribution of unpaid work in National Accounts, this was very important to push the development and conduction of Time Use surveys in Spain through statistical offices. The Basque Institute of Statistics Eustat was one of the first to produce this information; indeed through an institutional commitment already in year 1992[8] it assumed the periodic realization of TUS. Time Budget Surveys have in the Basque country a periodicity of five years.

The first TUS edition was conducted in 1993 and until the present date there have been four more surveys: on the years, 1998, 2003, 2008 and 2013. Eustat has shown thus a strong commitment to continuity. The survey followed the same methodology throughout all editions. There is therefore data available for the last twenty years, which allows a longitudinal analysis of the transformations that have taken place in the structure and habits of the Basque society over the past two decades. Without losing its longstanding tradition the basque TUS has joined the harmonization efforts proposed by Eurostat, so that the data produced is comparable to these of other European countries.

The survey has two tools for data production: a family questionnaire and an individual one. The family questionnaire collects basic demographic information for each household member (sex, age, marital status, participation in the labor market...), as well as health status (in relation only to the condition of disability). The individual questionnaire is a diary of activities in which questions about activities (main and simultaneous), the place where the activity has been

[8] It should be noted that in Spain, the National Statistics Institute has developed a Time Use Survey statewide integrated in the National Statistical Plan 2001-2004 approved by Royal Decree 1126/2000 of 16 June (BOE 5 -07 to 2000). It is the first statewide survey that is carried out in a harmonized way with other European countries following the recommendations of Eurostat. Today, the survey has two editions, that of 2002-2003 and that of 2009-2010 respectively, however, the National Statistics Institute has not shown a commitment of periodicity in relation to its development, "it is considered that this survey has not any fixed periodicity for now, except that the next National Statistical Plan will assigned a specific frequency "(INE, 2011:14).

performed and the presence of any person are registered. The diary of activities also includes questions about specific characteristics of the reference day, different working schemes (normal working day, part-time), even about the weather and the existence of exceptional features in the day in which the survey was answered. Until now no subjective temporal aspect was included in the survey.

However, some questions on subjective perceptions have been used in other surveys, for example some are included in recent editions of the Health Survey, which is conducted every five years and whose responsible agency is the Department of Health of the Basque Government. The Health Survey has also two questionnaires, one for the family and an individual one. Questions regarding subjective temporal aspects are related to two areas: paid work and domestic-family work.

The questions related to paid work are included in the individual questionnaire. There, we find questions about the level of satisfaction as well as the level of stress generated by the occupation. The level of satisfaction may be classified using a nominal 3-point scale: very satisfied, satisfied, dissatisfied, and very dissatisfied. For the level of stress a numerical 7-point scale is used: 0 (not stressful) to 7 (very stressful). This variable was introduced in the 2007 edition and has been used since then.

The questions related to domestic, care and family work are included in the family questionnaire. In relation to care, as recommended in other works (Legarreta, 2012), an extended notion is used which exceeds the spatial boundaries of the household. Thus, questions about the presence at home of someone who needs help with his/her daily activities and care provided to children under age 15 are included, but also the attention provided to family members, friends, neighbors and other not residing at home. In these cases, information on time (hours and minutes) dedicated to care is recorded. These issues were included in the 2007 edition for the first time, and have being improved in the subsequent 2013edition. In this questionnaire it is also recorded who is responsible for organizing and planning household tasks. This variable was included in the 2013 edition of the Health Survey. This kind of questions related to management and organization of household work are interesting since it is a subjective dimension that would hardly be collected through a magnitude of clock time (hours and minutes) and may offer a more comprehensive and accurate approach to the burden of work that is assumed by each household member. Unfortunately, no questions about stress and satisfaction related with domestic chores and care were asked.

3.2.2.2. France

The very first time use survey by the INSEE was conducted in year 1966. It was part of a large international study of time budgets and was conducted exclusively in six medium-sized cities in the north and east of the country. Afterwards it was completed the following year by an investigation of two samples, one in Paris and one in Nîmes. In 1974-1975, the INSEE conducted a single survey of a sample of 10,000 homes representative of urban France, studying time use and certain recreational activities or housework. In 1985-1986 the first representative survey of the whole of France was conducted. There followed other surveys in 1998-99 and 2009-2010, both were carried out following a European harmonization program.

Following the recommendation from the “Stiglitz-Report” in 2009 regarding the development of instruments for the statistical measurement of the subjective well-being of the population and the integration of this information within the statistical program, the French Statistical Office (INSEE) modified in year 2010 its Time Use Survey in order to include some questions related to the individual assessment of people's use of time. In the survey people were asked to give a score (between -3 and +3) indicating whether the time spent was enjoyable or not taking into account the activity itself but also the context (Ricroch, 2011). At the same time they also included one question about life satisfaction in general, which was: "On a scale from 0 (not at all satisfied) to 10 (very satisfied) how satisfied are you with the life you lead at present?"

Data based on the enjoyment assessments from the survey were analyzed from INSEE mainly in order to compare the different enjoyment provided from different activities (free time, physiological needs, domestic chores, transport, work and studies) and sub-activities (i.e. for domestic chores: gardening, animal care, childcare, do-it-yourself, food shopping, cooking, washing, cleaning and miscellaneous tasks). For this purpose average scores for the different activities were calculated, following the procedure described some pages before when describing previous experiences with individual enjoyment assessments data. Further, in the INSEE paper analyzed a daily enjoyment average (assessed by giving the same weight to each of the 10 minute periods irrespective of activity and context) was calculated and was compared with the general response to life satisfaction. Even if a positive link between both was observed in general terms, this could not be proved when differentiating across groups (age and employment status) (Ricroch, 2011).

Although the analysis focuses mainly on the comparison of the outputs calculated from the individual enjoyment assessments, there are also some interpretations from the information on the context of the activities. In general it was found that in situations with time constrictions and pressures (shortage of time, double burden) the assessments of enjoyment gained from the different activities tend to be more unpleasant. Also the "nice-weather effect" could be in this case confirmed.

3.2.2.3 Germany

Time Use Surveys have in Germany some tradition within the national statistical office. The first survey was carried out in 1991/92. It followed a second one in 2001/2002 and the last one was run in 2012/2013. Although they are conducted regularly approximately every ten years, this surveys are not included within the official statistical program of the national statistical office, but their legal framework has to be defined again each time (§7 of BStatG surveys for special purposes). The main purpose of time use surveys is to analyze times budgets and time sequences of private households and persons. The focus lays therefore in questions about the distribution of time between different activities as remunerated activity, household activities, family, personal care, children etc.

The survey includes one set of three questionnaires. First of all one questionnaire for the household as a whole, as well as one personal questionnaire for each person of the household over 10 years and a personal diary to fill in during 2 weekdays and one weekend day. Although the main interest is getting information regarding time budgets, also some few questions referred to subjective perceptions of the time lived were included. In year 2012/2013 these questions were even expanded including aspects of stress, conflicts with time management and desires/expectations.

Questions regarding the **individual perception of time** were included from the beginning. In the surveys of year 1991/91 and 2001/2002 these questions were included within the personal questionnaire and they were restricted to the following areas:

1. **Time management:** People were asked if they preferred to regulate their daily routine with help of time tables and fix time appointments or on the other hand if they rather prefer to leave the daily routine as flexible as possible and not to fix so many things.
2. **Time constrictions/scarcity**: People were asked if they felt time constrictions in the following areas/domains: remunerated work/education, household activities, personal free time, partner, children, friends and volunteering. Possible answers were they felt they had too little time for the above mentioned areas, they felt they had the right amount of time or they felt they have/spent too much time in the mentioned areas.
3. **Satisfaction with time** spent in the areas mentioned above in point 2. For this question a seven point scale was defined (scaled from 1, not satisfied at all, up to 7, very satisfied).

Together with these questions and taking into account information regarding the composition of the household, age, gender, social and professional situation, size of the community, etc. some interesting additional analysis were carried out (Holz, 2000; Gille and Marbach, 2004).

The actual survey 2012/2013 offers some more insight into subjective experiences and perceptions of individual time. In this case there are some questions included in the personal questionnaire, but also at the end of the personal diary there are some questions illuminating the subjective sphere. This is the result of the explicit wish of the Family Ministry (BMFSFJ) to include, as suggested by the "Stiglitz-Report", together with the objective also subjective aspects of time use. The current approach used by the German Statistical Office also offers open questions that may allow some qualitative insights on the issue of time perceptions and satisfaction.

In the personal questionnaire we find following questions:

1. The **actual** and the **desired working time** (Merz, 2002)
2. **Time constrictions** (5 point scale from "perfectly adequate" (völlig ausreiched) up to "not at all adequate" (gar nicht ausreichend). These constrictions are asked for following domains: children, partner, other family members, friends, household activity, work/profession, education, formation, volunteering, personal time, hobbies and sport, medical consultation and errands.
3. **Time Pressure**. Regarding this complex five assertions were displayed: I feel frequently under time pressure, I have regularly a good night's rest, I wish I had more time for me (to sleep, for hobbies etc.), I wish I had more time for my family, I wish I had more time for friends and acquaintances. It was possible to answer to these assertions using a 5 Point scale; from I fully agree with the statement up to I fully disagree with it.
4. A free field was offered to fill up with activities for which **more time** was **desired**.

After filling up the diary the respondent was able also to give some general information about its own **time perceptions** answering the following three open questions:

1. Of all records of the diary you filled up today, which one provided you with the **greatest joy/satisfaction**?
2. For which activity did you had wished to have **more time** for?

3. Of all records of the diary you filled up today, which one provided you with **no satisfaction/joy at all**?

The results of the last survey will be published not earlier than December 2014. It will be interesting to see what kind of analysis these new questions enable.

4. New conceptual possibilities for TUS. A case for well-being

Economists, policy makers, social scientist, philosophers and not least statistical officers and accountants are nowadays very much committed to measuring and fostering the progress of societies and human well-being. It is well accepted to put the focus on a more humanitarian and less productive way of taking account of progress, centered on the well-being of people. The difficult question now is HOW to do this? How to visualize, operationalize and combine all these multidimensional aspects of well-being and progress together?

One way was to integrate the "new" areas, mostly subjective assessments of well-being, within the traditional economic method. As we have seen before there are some difficulties. One of them is to overcome the prevalent utilitarian logic, which is based on quantifiable and aggregable individual outputs. As we said, not only the measurable and comparable *output* gained from alternative uses of resources (time and goods) but also questions about the access (or scarcity), the generation process, as well as the management and distribution are important subjects to think about on their own. And not the least more inscrutable aspects of time, as experience, emotion, prospect, etc. should be present within this debate. Another way that we mentioned before is as McCloskey notes to "put attention to the evidence of 4,000 years of recorded human reflection" (McCloskey, D. 2012). But how could we operationalize all this evidence in order to guide our personal lives and our society most wisely and responsible?

In this paper we propose, that TUS may be a good instrument to get some more information in the context of social progress and well-being because, as we noted, the issue of personal well-being is to a great extent a question on disposition/availability but also of use/experience of time. As subjective or personal experience with time and satisfaction with life have been recognized as indispensable for this debate, they have also to be appropriately recorded and taken in to account. More research and efforts should be put in this area, though we encourage starting with a broader a more flexible understanding of the notion of time. We suggest therefore revising the notion of time which underlines Time Use Studies (clock time). An alternative, much broader and multi-faceted notion of time could be one based on the four metaphors of time: time as resource, time as environment or context, time as horizon or prospect and time as body. We argue that instead of using a quantitative cantril-scale approach (how satisfied are you from 0 to 10), alternative more open questions should be developed with help of the metaphors, which would let the respondent to reflect openly/broadly on her/his own understanding of time lived and experienced.

Some examples for such questions could go in following direction:

Regarding time as resource, we could focus on issues of availability and scarcity. Some questions in this field have been already mentioned: for which activity/situation you had wished to have more time? How much time do you feel you have at your free disposal?

Understanding time as environment would let questions centered on our experiences with management and synchronization of time in different activities, questions with the reconciliation of different life-spheres among others. Some of these questions could be the following: do you feel you have difficulties to match your schedule with the schedules of other people (your family, your friends...)? What are the main aspects/criteria for you when planning your daily schedule (work appointments, hours of study/retreat, the schedules of others (members of the family, boss, etc ...)? Where do you feel the strongest constraints when organizing your daily time? Which aspects would you say influence strongest your time experience?

In the case of time as body, we could think on questions regarding affects, emotions and all kind of time “marks and prints” engraved in/on our bodies. Some examples: do you consider the difficulty of reconciling employment-time, family-time and your own-time has affected your emotional state (feeling sad, listless, apathetic,...)? And your health (feeling tired, having headache...)? Do you have difficulties to falling asleep caused by the intensity of your daily routines? Which one are the hardest times/experiences you have gone through?

And the last one, time as horizon or prospect: do you have clear expectations/prospects for the near future? Do you think that you are able to steer to them? Where do you see the constraints and limitations?

5. Conclusion

To move in the direction of a comprehensive notion of human well-being and societal progress not based on utilitarian standards is a deep challenge for the social sciences in general, and for economists and statisticians in particular. We refer to the challenge that involves putting people and the sustainability of life in the center of the analysis and not least the challenge to work methodically and systematically without missing again our goal trying to calculate in its complexity and until its last detail the algorithm of human life.

With help of a specific statistical tool, in this case time use surveys, we have discussed possible alternatives to provide information more in line with the current approach centered on human well-being and societal progress. A broader understanding and use of the concept of time as well as the possibility to enable people a plural and more qualitative contribution when talking about their experiences with time are issues that may be worth to keep analyzing.

6. Bibliography

Adam, B. (1995): *Timewatch. The social analysis of time*. Cambridge: Polity Press.

_ (1999): "Cuando el tiempo es dinero. Racionalidades de tiempo conflictivas y desafíos a la teoría y la práctica del trabajo". *Sociología del trabajo*, Nueva Época, 37: 5-39.

_ (2004): *Time*. Cambridge: Polity Press.

Andrews, F. Withey, S.(1976): *Social indicators of well-being in America*. New York: Plenum

Bryson, V. (2007): *Gender and the politics of time. Feminist theory and contemporary debates*. Bristol: Policy Press.

Campbell et al. (1976): *The Quality of American Life*. New York: Russell Sage

Cantrill, A. Roll, C. (1971): *Hopes and Fears of American Peoples*. New York: Universe.

Carrasco, C. (ed.) (2001) *Tiempo, trabajos y género*. Barcelona: Publicaciones de la Universitat de Barcelona.

_ (2003) "¿Conciliación? No, gracias. Hacia una nueva organización social", in Grup Dones i Treballs, *Malabaristas de la vida. Mujeres, tiempos y trabajos*. Barcelona: Icaria (27-51).

_ (2006) *La economía feminista: una apuesta por otra economía*. http://egeneros.org.mx/admin/archivos/economia_feminista.pdf. (04/06/2011).

Coyle, D. (2014): GDP. *A Brief But Affectionate History*. Princeton: Princeton University Press.

Davies, K. (1994): "The tensions between process time and clock time in care-work. The example of day nurseries". *Time and Society*, 3 (3): 277-303.

Diener, E. et Al. (1999): "Subjective Well-Being: three Decades of Progress". *Psychological Bulletin* 125(2): 276-303.

Eurostat (2004) *Guidelines on harmonised European Time Use surveys*. Luxemburg: European Commision.

Gershuny, J. (2011): *Time-Use Surveys and the Measurement of National Well-Being*. Centre for Time-Use-Research, Department of Sociology, University of Oxford

Hall, J. and Rickard, L. (2013): "People, Progress and Participation. How Initiatives Measuring Social Progress Yield Benefits Beyond Better Metrics". *Global Choices 1*. Bertelsmann Stiftung. Gütersloh.

Holz, Erlend (2000): Zeitverwendung in Deutschland. Beruf, Familie, Freizeit. Band 13 der Schriftenreihe Spektrum Bundesstatistik. Statistisches Bundesamt, Wiesbaden.

INE (2011) *Encuesta de empleo del tiempo 2009-2010. Metodología*. Madrid: INE.

Juster, F.T. and Stafford, F. P (1985): *Time, Goods and well-being*. Survey Research Center, Institute for Social Research. Michigan: The University of Michigan.

Kahneman, D. et Al. (1999): *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation.

Krueger, A.B. et al. (2008): “National Time Accounting: The Currency of Life” Working Paper Nr. 523, Industrial Relations Section. Princeton University.

Lawson, T. (2013): “What is this “school” called neoclassical economics?”. *Cambridge Journal of Economics* 37:947-983.

Legarreta, M. (2012) *El tiempo donado en el ámbito doméstico-familiar. Un estudio sobre el trabajo doméstico y los cuidados*. Unpublished PhD. Leioa: Universidad del País Vasco-Euskal Herriko Unibertsitatea.

Le Goff, J. (1987) “Tiempo de la iglesia y tiempo del mercader en la edad media” and “El tiempo del trabajo en la “crisis” del siglo XIV: Del tiempo medieval al tiempo moderno”, in *Tiempo, trabajo y cultura en el Occidente medieval*. Madrid: Taurus.

Lepenies, P. (2013): *Die Macht der einen Zahl. Eine politische Geschichte des Bruttoinlandsprodukts*. Berlin: Suhrkamp.

McCloskey, D. (2012): “Happyism: The creepy new economics of pleasure“. Article appeared in the *New Republic* of 8th June.

Merz, J (2002): “Time and Economic Well-being – A Panel Analysis of Desired Versus Actual Working Hours”. *Review of Income and Wealth*, 48(3).

Naredo, J. M. (2002) “Configuración y crisis del mito del trabajo”. *Scripta Nova, Revista Electrónica de Geografía y Ciencias Sociales*, VI, 119(2). http://www.ub.es/geocrit/sn/sn119-2.htm (20/07/2014).

Nussbaum, M and Sen, A. (2009): *The Quality of Life*. Oxford: Clarendon Press.

Nussbaum, M (2008): “Who is The Happy Warrior? Philosophy Poses Questions to Psychology”. *The Journal of Legal Studies*, Vol. 37, Nr. S2.

Nordhaus, W., & Tobin, J. (1972): “Is growth obsolete?” in: *Economic Research: Retrospect and Prospect, Vol. 5: Economic Growth*. Cambridge: NBER (1-8).

OECD (2013): *Guidelines on Measuring Subjective Well-being*. OECD Publishing.

Pérez Orozco, A. (2006) *Perspectivas feministas en torno a la economía: el caso de los cuidados*. Madrid: Consejo Social y Económico.

_ (2010) “Diagnóstico de la crisis y respuestas desde la economía feminista”. *Revista de Economía Crítica*, 9: 131-144.

Raldúa, E. (1997) *Presupuestos temporales y cambios en el uso del tiempo*. Unpublished PhD. Madrid: Universidad Complutense de Madrid.

Ramos, R. (1997) “La ciencia social en busca del tiempo”. *Revista Internacional de Sociología*, 18: 11-37.

_ (2007) “Time's Social Metaphors: An empirical research”. *Time & Society*. September, 16: 157-187

_ (2011) “Más allá de las cifras: la dimensión teórica y cualitativa del tiempo” in María Ángeles Durán (dir.) *El trabajo de cuidado en América y España*. Madrid: Fundación Carolina-CeALCI (75-87).

Ricroch, L. (2011): “The enjoyable moments of day-to-day life. A Question of Activities – And Their Context”. NO.: 1378, November. INSEE (INSEE PREMIÈRE figure dès sa parution sur www.insee.fr).

Robbins, L. (1935): *An Essay on the Nature and Significance of Economic Science*. London: Macmillan

Statistisches Bundesamt (2004): “Alltag in Deutschland. Analysen zur Zeitverwendung”. Forum der Bundesstatistik, Band 43.

Szalai, A. (ed) (1972): *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries*. Den Haag: Mouton

Thompson, E.P. (1967): “Time, work-discipline and industrial capitalism”. *Past & Present* 38(1), 56–97

UNECE (2014): *Conference of European Statisticians Recommendations on Measuring Sustainable Development*. UNECE.

United Nations (1987): *Report of the World Commission on Environment and Development “Our Common Future”*. United Nations.

_ (1990) *Human Development Report 1990. Concept and Measurement of Human Development.* United Nations Development Programme (UNDP). New York.

Ziliak, S. and McCloskey, D. (2007): *The Cult of Statistical Significance: How the Standard Error Cost us Jobs, Justice and Lives*. Michigan: University of Michigan Press.