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# Happiness and Economics

## Enriching economic theory with empirical psychology

Final Thesis to obtain the Master's degree in International Economic Studies from Maastricht University.
Submitted on September 24th 2001.
Supervised by Maarten Vendrik.

An electronic copy of this document as well as a collection of internet links is available on the internet at http://johanneshirata.gmxhome.de/thesis/.

# *Acknowledgements*

*In writing this thesis, I have benefited from the kind helpfulness of many people. In October 2000, it was Thomas de Waen who drew my attention to an article about happiness and globalization (Wright 2000) that inspired me to write about happiness and economics. At the University of Toulouse "Le Mirail", Etienne Mullet kindly introduced me into the psychological literature. I am also grateful for the literature I obtained from Gerhard Scherhorn, who generously sent me a rich collection of his recent articles, and from Richard Easterlin, who provided me with his latest, yet unpublished article on income and happiness. Johannes Demandt merits mention for bringing to my attention the words by Dietrich Bonhoeffer (on page 5) that express what is not accessible to academic inquiry. Finally, I especially want to thank Maarten Vendrik for the cooperative supervision and stimulating discussions.*

# Contents

# Introduction

*Es gibt erfülltes Leben trotz vieler unerfüllter Wünsche.*
*(Life can be fulfilled despite many unfulfilled whishes.)*
Dietrich Bonhoeffer*

"Americans are getting fewer hours of sleep and spending more time at work, resulting in a fatigued society that has less time to devote to family, social activities, and sex, according to a new study." Thus begins a newspaper article that appeared in spring 2001 (Howe 2001). The author continued to report the evidence that came forward from a poll of 1004 adults by the National Sleep Foundation. A majority, 53%, admitted that they "drive drowsy", while 19% said they have actually fallen asleep behind the wheel. 40% report that they get sleepy on the job and that their work suffers at least a few days each month. The amount of sleep a person gets is directly related to the amount of hours he works, according to the foundation's vice president, James Walsh. Of the adults surveyed, 40% said they spend more time at work and less time sleeping than they did five years ago while Americans already work more hours per year than people in any other nation, according to the International Labor Organization (ILO 2000).

More than seventy years earlier, in 1928, John Maynard Keynes wrote the following lines:

> I draw the conclusion that, assuming no important wars and no important increase in population, the *economic problem* may be solved, or be at least within sight of solution, within a hundred years. This means that the economic problem is not—if we look into the future—*the permanent problem of the human race*. (p. 326; emphases in the original)
>
> Thus for the first time since his creation man will be faced with his real, his permanent problem—how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well. (328)
>
> But beyond this, we shall endeavor to spread the bread thin on the butter—to make what work there is still to be done to be as widely shared as possible. Three-hour shifts or a fifteen-hour week may put off the problem for a great while. (328-9)

Despite decades of economic growth and unparalleled technological progress, it seems that people in the wealthy countries have done badly in transforming material affluence into freedom from economic cares and into agreeable lives. While there can be little doubt that in many respects life in the industrialized countries is better today than in 1928, it appears surprising that the economic problem is far from being solved. Material affluence—American per capita income rose by 277%, *i.e.*, almost four-fold, between 1913 and 1989 (Maddison 1991)—it seems, has done little to bring real improvements in well-being. More than half of Americans (since 1973, when the series starts) agree with the statement that "the lot of the average man is getting worse", and the share of people agreeing has been rising after 1981 (until 1994 where the series stops) to reach almost two thirds (Lane 2000b: 27-8). Indeed, as will be shown later, self-reported life satisfaction in the U.S. has, if anything, shown a downward trend after World War II while it did not show any clear trend for the industrialized world as a whole.

This study is about happiness and economics. Even though the link between the two has become less evident over time, happiness continues to play a central role in economic science. The historic origins of the economic science and the economic discourse of today reveal that ultimately economics is concerned with the quest for the good life and the good society[1], and happiness has been widely accepted as the ultimate measuring rod of quality of life.

The concern with happiness is rather obvious for normative (or prescriptive) economics. The overriding economic measure for a person's welfare is her utility, which is commonly taken to be a monotonously rising function of her consumption. Only recently broader approaches to measure utility have gained acceptance, such as the UN's Human Development Index (HDI), which is an aggregate index of income and life-expectancy, literacy and child mortality rates. Conspicuously, the acceptance of these broader approaches is largely restricted to empirical development economics, while they have had little repercussions in

* From "Letter to a friend, 19/3/1944" in: D. Bonhoeffer (1959). *Widerstand und Ergebung: Briefe und Aufzeichnungen aus der Haft*. Edited by E. Bethge, 9th ed., Chr. Kaiser, Munich: 162.

general economic theory.

Apart from normative economics, the concern with happiness also transpires from the so-called positive (or descriptive) branch of economics. The criteria to describe economic processes or outcomes most of the time include efficiency as the principal attribute, which in turn cannot be separated from the idea of utility. More fundamentally, the very notions of cost and benefit, of goods and bads—the most basic building blocks of economics—are defined in terms of utility: a good is defined as conferring utility, a bad as reducing utility (or producing disutility); "cost" simply means the reduction of utility[2] and "benefit" is merely a synonym for utility. While it would be exaggerating to say that economics is always and exclusively about happiness, it is beyond doubt that simply as a matter of fact, and not without reason, the tools and methods of economics (terminology, basic theories, general criteria etc.) are of such design as to give a pivotal role to happiness.

The prominence of happiness in economics should not be a surprise in view of the science's historical roots. The pre-modern economic teachings, from Aristotle to Adam Smith, have all been ethical in nature (Ulrich 1998: 132), and the unquestioned founding father of modern economics, Adam Smith (who published his path-breaking *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776), was a Professor of Moral Philosophy. The new discipline was thus essentially an offshoot of moral philosophy and concerned with the good life and the good society (Oser and Blanchfield 1975; Ulrich 1993/1986, 1998), but soon the influence on economic thought of one particular ethical school, utilitarianism, came to dominate that of alternative ethical concepts. While Smith himself was not a proponent of utilitarianism[3], the utilitarian doctrine found its way into economics via the subsequent economic contributions of influential utilitarians like Jeremy Bentham, John Stuart Mill, and Francis Edgeworth. Utilitarianism, in turn, based its entire philosophy on the concept of happiness.

The prominent role of happiness in economics might lead one to think that economics would naturally take advantage of decades of empirical research on happiness by psychologists. Yet, this whole body of research is largely ignored by economics. Instead, most economists continue to rely on *a priori* common sense beliefs, to deny the possibility, or the relevance, of measuring happiness, and to take delight in the internal consistency and analytical versatility of the psychological assumptions that ultimately underlie their models. "In contrast to theoretical considerations, there is a significant lack of empirical evidence in economics" (Frey and Stutzer 2001a).

This study undertakes to investigate if and in how far the psychological research on happiness can enrich economic theory. It is subdivided into three chapters. In order to carve out the role of happiness in economic theory, the first chapter starts with an examination of the relationship between behavior and happiness. To this end, a somewhat deeper analysis of the philosophical and methodological underpinnings of economics will be indispensable. The second part of the first chapter introduces the theoretical prerequisites of the psychological concept of subjective well-being (SWB).

Chapter two reviews the empirical evidence and attempts a theoretical synthesis. The chapter has two distinct aims. First, to develop a theory of the relationship between income and happiness that is consistent with the evidence over time, across individuals within a given country, and across countries. Second, the question will be discussed what the empirical evidence implies for our understanding of the nature of SWB.

Chapter three brings together the themes discussed in chapter one and two. It ascertains the relevance of empirical SWB research to economics and investigates how, in particular, it can enrich economic theory. In order to embed the present study in its context, its theme will be put into perspective. The conclusion proposes directions for further research and points out the major implications of the results obtained on the following pages.

# Chapter I – Choice, happiness, and the good life

*Smart is the one who knows to fulfill his desires;*

*wise is the one who knows to master them.*

Immanuel Kant

This chapter analyzes the role of happiness in economics. An elaborate analysis of the psychological basis of economics demonstrates how in economics choice and happiness form an identity. This discussion is linked up with a brief outline of utilitarianism to touch upon the ethical connotations of happiness in economics. Next the notion of SWB is introduced and discussed with respect to the preceding argument. A definition of SWB will be given and methodological issues will be clarified in order to prepare the ground for the following discussion of empirical evidence.

## The psychological basis of economics

Economics considers itself primarily a behavioral science. Its basic axioms and assumptions are about human behavior, and virtually all mainstream economic theories are deduced from the same small set of core behavioral assumptions. While these behavioral foundations may be somewhat less explicit in macroeconomics, they are the starting point of microeconomics which in turn underlies much of the discipline's specialized branches.

The behavioral theory that has been developed within economics has not been inspired by psychological research or any other sort of empirically qualified concepts. Rather, it relies primarily on *a priori* axioms that derive their appeal from their theoretical properties. In particular, economics has adopted a conception of behavior that is largely identical with the Hobbesian doctrine of *psychological hedonism* that states that nature endowed the human mind with but a single motivation which is the attainment of pleasure. Even ostensibly altruistic acts are deemed to be motivated by the ensuing pleasure one experiences. Thus Thomas Hobbes (1588-1679) is said to have explained, after giving alms to a beggar outside St. Paul's Cathedral, that he gave the money because it pleased him to see the poor man pleased.

There has certainly not been a lack of criticism of the Hobbesian view, but as long as the scientific community does not agree on ways to observe human motivation (and even introspection seems to be a questionable standard), every complete account of human motivation must remain beyond falsification. Consequently, that also means that psychological hedonism cannot be a scientific theory by the well-known criteria established by Karl Popper (1959/1934). That is not to say, as Popper himself was anxious to emphasize, that it cannot serve as a legitimate and useful heuristic device as long as its limitations are acknowledged.

Psychological hedonism has become one of the most fundamental work horses of economics, albeit in a somewhat modified form. Economists have used what I will call the *rational utility maximization hypothesis* to refer to essentially the same idea. Since this concept plays a crucial role in understanding the link between happiness and economics, a rather general discussion of the precise meaning of it must follow.

### *The economic conception of behavior*

On the following pages an attempt is made to disentangle a set of axioms and concepts that make up the psychological basis of economics. Due to the lack of a clear and sufficiently differentiated terminology in economic literature, considerable effort will have to be dedicated to the elaboration of a meaningful nomenclature. While no claim is made that the proposed classification and conceptualization be the only meaningful ones, they will be useful to verbalize significant distinctions that are often glossed over in standard economic terminology.

**Determinism**

One of the most basic and most widely held premises of modern science is probably the notion of causal determination, or determinism. Simply put, it says that whatever happens cannot happen differently because a given event is just the necessary consequence of preceding events. Eternal and context-independent natural laws govern the sequence of events. This idea has not only dominated science for centuries, if not millennia[4], but also became a more or less self-evident popular idea even though people most of the time subscribe to it only implicitly. Only recently, in the beginning of the 20th century, its appropriateness in the "hard" sciences has come to be seriously challenged, notably by the *indeterminacy principle* formulated by the physicist Werner Heisenberg.

Scientific discovery has been greatly helped by the presupposition of causal determination. The purpose of science is indeed often described as the discovery of the laws that underlie the apparently chaotic behavior of nature. It seems that in most instances of scientific research there is no need to make explicit the hidden assumption of causal determination by the researcher. In other cases, however, the presupposition of determinism will make a critical difference.

This is the case in the context of human behavior. Whether human behavior is or is not causally completely determined by external influences is a metaphysical question, *i.e.*, it is beyond theoretical proof and beyond empirical falsification. However, the assumption that human behavior is deterministic is at variance with the predominant popular belief that the human mind is endowed with a free will[5] . While there is no basis for the claim that assuming behavior to be determined is wrong in any strict sense, results based on such an hypothesis may conflict with widely held beliefs about human nature and may therefore be irrelevant to the majority believing that people are not completely determined in their behavior. More precisely, the assumption of determinism will be problematic in contexts where the free will is considered relevant, while for a considerable range of applications the assumption of determinism will not pose any problems but rather provide valuable insights. However, a deterministic conception of behavior will run the risk of making use of words that imply, in common language, the existence of a free will—like guilt, merit, choice, courage, etc.—and this will necessarily lead to confusion.

The economic conception of behavior is a largely deterministic one, though a closer look reveals that the picture is somewhat more complex. In what follows, the analysis will proceed by distinguishing three basic elements of any account of intentional human behavior. These elements are a theory of an individual's values, *i.e.*, what an individual ultimately wants; an account of what motivates an individual's behavior, *i.e.*, in which way conscious or unconscious motives make an individual select a particular option; and a theory of people's ability to anticipate the consequences of their behavior.

**Value**

Values in this context are meant to describe an individual's intrinsic ends and the principles that mediate between them where they conflict. Put simply, an individual's values are what an individual judges he wants to see realized after due consideration. The term is not to be understood in this context as having any ethical connotations as being valuable as such.

Before elaborating on the economic conception of value, its antithesis will briefly be presented which I will call *indeterminate conception of value*. This conception posits that an individual's values involve a plurality of autonomously chosen ultimate ends that are of intrinsic value to the individual and thus incommensurate among themselves. By definition this means that no deterministic rule exists that contains *the* rational tradeoff between ends where they conflict. Put differently, decision problems can arise for which no optimal solution exists precisely because ends cannot be compared on a single scale of whatever nature, and not because an individual is unaware of his 'true' values. A decision problem can therefore not be reduced to a deduction from given ends. Rather, it asks for a truly open-ended deliberation. Where ends conflict, an individual will therefore decide by virtue of his free will. The free individual's values can therefore be conceived of as his answer to the question, prior to any given values, "What do I want to value?" Rawls is a philosopher whose conception of rationality can be called an indeterminate one. He insists that

> we have to allow for the possibility, indeed for the probability, that sooner or later we will reach incomparable aims between which we must choose with deliberative rationality. ... Using the principles of rational choice as guidelines ... we may narrow the scope of purely preferential choice, but we cannot eliminate it altogether. (Rawls 1999/1971: 483)

By contrast, economic theory, and the social sciences at large (Zafirovski 1999), has adopted a *determinate conception of value*. This conception makes the axiomatic presupposition that an individual can, in principle, unambiguously rank all possible decision alternatives on a scale of goodness. As a consequence there will always be a solution that is optimal to the individual, *i.e.* a solution known to be superior to all other alternatives[6] . This necessarily implies, as will be demonstrated in what follows, that the individual's values can be summarized by one single ultimate end of intrinsic value to that individual. This *dominant end*[7] does not need to take the form of an explicit and well-understood concept (like wealth, pleasure, longevity). Rather, it is implicitly encoded in the set of consistent decision rules that provide the solution for every possible conflict of subordinate ends. Such a set of rules can be conceived of as a "goodness function"[8] , and the common denominator or dependent variable that must underlie such a determinate decision rule is the corresponding dominant end. Borrowing from Aristotle I will call this unspecified dominant end the *summum bonum*. The claim that a reduction of an individual's set of values to one single *summum bonum* is possible will be called the *dominant end hypothesis*.

If a *summum bonum* exists for a given individual, it must follow that the decision rule is one of maximization, or, more generally, that it can be reformulated as a maximization rule. To see this, consider the Aristotelian principle of the Golden Rule. This principle states that virtue is always the balance between two extremes. For example, on the scale of courage, both cowardice and foolhardiness are despicable, while the optimum is balanced courage between the two. As such, this principle is formulated as a rule requiring balancing rather than maximizing. It should be noted, however, that this rule has been formulated with respect to the particular space of courage. But where an optimum exists, the *optimal* balance will correspond to the *maximum* in the space of the *summum bonum* (fig. 1). The crux is that the determinate conception of value implies that to every decision problem there is a solution which is to be interpreted as optimal, and optimality can always be reinterpreted as maximization along the goodness function, *i.e.*, in the space of the *summum bonum* (fig. 1, bottom). As a corollary, the value of a subordinate end can be *completely reduced* to its contribution to the dominant end and therefore does not exist in any independent sense.

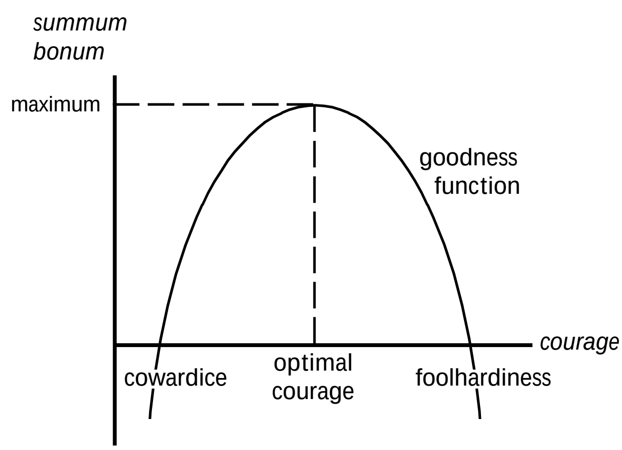
Several attempts have been made to give a substantive content to the dominant end. The term '*summum bonum*' does not imply anything about *what* it is that an individual ultimately values, whether it is longevity, self-destruction, moral commitment, or anything else. As such, it will be called a *thin* determinate conception of value. Those conceptions that specify the nature of the *summum bonum* will be called *thick* conceptions. Examples are Hobbes' equation of the *summum bonum* with pleasure which has also been adopted by most utilitarians, called here *hedonistic reduction*, and Aristotle's concept of *eudaimonia*, literally meaning "the state of having a good indwelling spirit, a good genius", which Aristotle himself held to flow from, or be itself, activities in accordance with virtue (EB 1997: "eudaemonism"). Thick conceptions necessarily imply that those who do not agree with the postulated dominant end are not fully aware that they actually want to achieve pleasure or *eudaimonia*, or whatever other dominant end.

It is important to get right the fundamental difference between the indeterminate and the determinate conception of value. It is not the ease of arriving at a judgment in case of a decision dilemma or the implied degree of temporal fixity of values. These attributes do not necessarily differ in the two cases. Rather, it is the view if values are given or freely chosen. Under the determinate conception, an individual simply *has* a supreme decision principle that ranks all alternatives. The precise characteristics of this goodness function may be determined by genetic inheritance, by socialization and/or other influences, but the exact origin is irrelevant. The crux is that it is ultimately determined by *external* influences since all apparently *internal* factors are merely the deterministic result of previous events. In fact the distinction between external and internal is obsolete under a deterministic conception of value. By contrast, the indeterminate conception of value holds that it is the free individual herself who chooses her values without the aid of a given standard. This is not to say that external influences do not have an impact on an individual's choice of values, but merely that these choices are not a *necessary* consequence of external influences, or, in other words, that an individual can always *want*, *i.e.*, choose her values, differently.

**Motivation**

The term motivation is used in this context as meaning all those internal factors that influence an individual's choice, including conscious and unconscious purposes, prospective considerations and momentary impulses. Again, as with values, one can conceive of motives, and therefore of behavior, as deterministic or as non-deterministic with respect to values. An indeterminate conception of behavior would hold that for a given set of motives an individual is free to behave in more than one way. It will be said that the individual is free in weighing his motives, but this weighing is not meant to be a value judgment. Rather, value judgments have already been made at that point in time when motives are given, and weighing is understood as the individual's freedom to be

*Figure 1 – Summum bonum implies maximization.*




*summum bonum* ⇔ solvability ⇔ optimality ⇔ maximization more or less attentive to the various motives, to follow more or less blindly his habits etc. In other words, for a given set of motives a person may choose one or another option and behave more or less in accordance with his values. A determinate conception of behavior, however, again rules out any freedom on the side of the individual to weigh his motives. Instead, it is held that choice is determined once the motives are given. The deterministic translation of given motives into a particular choice can be represented by a decision function *f*(motives). I will call this conception *behavioral determinism*.

It should be noted that the term 'preferences' originally has a different meaning in the context of values than in that of choice, but that this distinction gets lost under the determinate conception. In the context of values, preferences represent what an individual wants and values, independent of behavior. At the same time, however, 'person *A* preferred *x* to *y*' can also mean 'person *A* opted for *x* when *y* was also available' (*cf.* Sen 1983a). In this sense, preferences are understood as the choice that is observed, no matter whether the person was in fact indifferent between *x* and *y* or whether even she actually valued *y* higher than *x* (and just took *x* because she did not pay attention). Under the determinate conception these two meanings converge and render obsolete the original distinction.

**Choice and utility**

In economics, the dominant end hypothesis is merged with behavioral determinism. More precisely, it is held that the decision function contains as the only argument, or motive, utility, to be understood here as the exact equivalent of the *summum bonum*. As a determinate, purposive conception of behavior, the decision rule must be one of maximization, as has been demonstrated above. Put simply, behavior is regarded to be completely determined by the maximization of utility along a given (as opposed to chosen) goodness function. This view will be called the *utility maximization axiom* (fig. 2). The term 'axiom' is used instead of 'assumption' or 'hypothesis' because it is derived from *a priori* concepts only without any possibility to corroborate, or reject, it by observation, neither by objective measurement nor by introspection. The choice of the term 'axiom' intends to emphasize the indemonstrability of the utility maximization axiom in order to distinguish it from a more substantive 'hypothesis' to be introduced presently, but it does not imply self-evidence or intuitive validity.

Economic discourse commits a serious terminological fraud in the way the utility maximization axiom is usually discussed. This fraud consists in the use of the words 'choice', 'motive', 'constraint', and other terms that imply freedom of choice despite the rejection of this very freedom in the conception of value. An individual is said to make choices, under constraints, based on his values, but since these values are given exogenously, there is nothing to choose in the common sense of the term. Choice is simply an act determined by the given *summum bonum* which in turn consists of a coherent set of values "that happen to coexist inside a single skin" (Schwartz 2000: 81). In common use of language, the term 'choice' implies that an individual is *free* to choose from more than one option[9]. This only makes sense, however, if an individual is really free either to choose against his values or to choose his values. Both of these possibilities are excluded by the utility maximization axiom: the first possibility is excluded by behavioral determinism, the second by the dominant end hypothesis. The use of the term 'motive' is deceiving because motives are commonly understood as internal factors, *i.e.*, influences that are the object of an act of will. A tree or a computer, *e.g.*, do not have motives precisely because they lack a will. When a will is excluded there is thus no point in talking of motives. Consequently, the term 'constraint' is misleading because it suggests that there is freedom to choose. After all, it only makes sense to talk of 'constraint' where there is something to be constrained. In fact, the semantic dichotomy between motives and constraints under behavioral determinism makes a hollow distinction: not that between internal and external factors, but between those external determinants that influence behavior via values and those that do not make the detour via values.

To illustrate this point, consider an individual who is given the 'choice' between an ice cream and a candy bar. In economics, this situation will be represented as in figure 3. The indifference curves $I_1$ and $I_2$ represent the preferences that constitute the individual's *summum bonum* or utility, and the budget constraint, or better, feasible set, is given by the reinforced line segments of the two axes. Utility maximization then means that the individual 'chooses' that point of the feasible set that is situated on the highest indifference curve, which in this case is one ice cream on $I_2$. The terminological fraud consists in using two different languages. On the one hand, the notion of a 'feasible set' is borrowed from common language and suggests that the individual is free to choose anything of the feasible set, *i.e.*, it is really the individual that determines her preferences and ultimately chooses. On the other hand, the axiom of utility maximization says that the individual's choice is already determined before she is even offered the choice. Since her preference map is determined, she is known to take, rather than to

*Figure 2 – The economic conception of behavior.*

**I – Determinate conception of value.**

*preferences = value*

*thin conception*

dominant end hypothesis: values ⇒ *summum bonum*

*thick conception*

hedonistic reduction: *summum bonum* = happiness

**II – Determinate conception of behavior.**

*preferences = choice*

behavioral determinism: choice = $f$(motives)

**III – Utility maximization axiom.**

choice = $sup\{E(\text{utility})\}$

**IV – Rational behavior hypothesis.**

$E$(utility) = $max\{\text{utility}\}$
*s. t.* informational & cognitive constraints

⟷ empirical testing

**V – Rational utility maximization hypothesis (*RUMH*).**

determinate conception of value
\+ behavioral determinism
\+ rational behavior hypothesis

---

*thin conception:* choice = $max\{\text{utility}\}$
*s. t.* informational & cognitive constraints

\+ hedonistic reduction

---

*thick conception:* choice = $max\{\text{happiness}\}$
*s. t.* informational & cognitive constraints

choose, the ice cream. If it is insisted that a choice is made, it is made by the impersonal and predetermined preferences that happen to coexist inside her skin.

In order to emphasize the absence of a real choice under the utility maximization axiom, choice is represented, in panels II and III of figure 2, by the operator *sup* instead of *max*. This is meant to reflect the fact that an individual simply *takes* an option that is a maximum in terms of utility, while the term ‘maximize’ implies that the individual increases something that could also be non-optimal.

The utility maximization axiom in effect posits that there is identity of choice and utility. More precisely, the identity holds between choice and the utility information that constitutes the individual’s motives, *i.e.*, some kind of anticipated, or expected, utility. This is represented, in panel III of figure 2, by the expression *E*(utility). So far nothing is implied about the actually experienced utility that results from behavior motivated by utility maximization. This is an important point since, without further specification, an individual may simply have a wrong idea of what consequences his behavior will have on his utility, and the utility maximization axiom would then be a completely irrelevant playing with words. On the basis of the utility maximization axiom alone no claim can be made about how behavior relates to other observable concepts in general and to experienced utility in particular.

**Rationality**

A further hypothesis is intended to avoid such complete empirical emptiness, which is what I will call the *rational behavior hypothesis* (panel IV in fig. 2). Since it seems that the notion of rational behavior is often understood more broadly than it is intended here, a clear demarcation will be necessary first.

In general, rational behavior can be described as purposive behavior characterized by choice that is adequate with respect to given ends (*cf.* Zafirovski 1999). For choice to be adequate to a purpose, however, a correspondence between the anticipation of a decision’s consequences and the consequences themselves needs to be warranted. This is what the rational behavior hypothesis is meant to capture: the reasonably precise anticipation of the consequences of one’s actions within the limits of one’s cognitive capacity and of the information available. More concretely and in the context of utility maximization, this means that an individual exploits reasonably well his cognitive capacities to learn from experiences, to remember, to calculate, to extrapolate, to draw inferences etc. In other words, it means that the individual derives reasonably precise predictions of the consequences of his decisions from the information available.

The use of the somewhat elusive term ‘reasonable’ may appear insufficiently precise, yet the very notion of rationality seems to rest on such an imprecise notion. To illustrate this by an example, consider an individual who needs to fix a part of her car. However, the manual she has is in a language she has never learned. If she does not manage to fix her car, she cannot necessarily be said to be irrational for her failure even though disposes of all the information available. Given her cognitive capacity she does not necessarily behave unreasonably poorly. It might be, however, that most of her compatriots who equally did not learn that particular language do manage to decipher the manual, perhaps with the help of drawings and by recognizing words that are similar to familiar terms. If this was the case, there would now be a basis to consider the failure to fix the car evidence for an unreasonably limited use of cognitive capacities. The naturally understood criterion for rationality indeed seems to be whether an individual *should* be able, with respect to her cognitive capacity, to predict the consequences of her behavior[10].

As a corollary of the imprecise nature of the term, the rational behavior hypothesis will have empirical relevance only to the extent that it is rigorously defined what an individual should be able to do. Where this is not done, all behavior can in hindsight be declared rational. Apparent failures to make reasonable predictions can then always be excused by the argument that a more precise prediction was beyond the individual’s cognitive capacity, which would again allow to declare the behavior rational. Where the standard of rationality is defined in a sufficiently rigorous way, however, substantive and falsifiable predictions of behavior can be made.

**Choice and experienced utility**

When now the rational behavior hypothesis is merged with the utility maximization axiom, the economic conception of human behavior is complete. Consistent with the terminology used thus far, this conception of behavior will be called the *rational utility maximization hypothesis* (RUMH for brevity; panel V in fig. 2). To summarize briefly, the RUMH contains the axioms and hypotheses that

I Ultimately, an individual’s values boil down to one *summum bonum* which is called, by convention, utility.

II Motives completely determine behavior.

III Utility maximization is the only motive.

IV People make reasonably precise predictions of the consequences of their choices.

As a consequence, and this is the most important result of this analysis, the RUMH states that *people reasonably well maximize their experienced utility*.

To clarify terms, it should be noted that in much of the economic literature 'rational behavior' is taken to stand for what is called here the RUMH. That is, rational behavior is interpreted as containing the hypotheses II, III, and IV at the same time. More precisely, hypothesis I is usually regarded as an independent axiom that is prior to 'rational behavior'. Hypothesis II is usually taken for granted, and this appears to follow rather naturally from the supposition of given preferences. Since an individual characterized by a given *summum bonum* has no free will, it would seem inconsistent to suppose that she nevertheless freely weighs her motives. The idea of freely weighing motives makes sense only if a free will is admitted. It should again be emphasized that weighing motives does not mean making a value judgment. Given our definition of values and motives, values are prior to motives so that weighing motives means considering how to use *given* (*i.e.*, given in this context) values, impulses etc. in making a decision. An example of choice against one's values could be behavior dominated by impulses. A smoker who affirms that she wants to quit smoking may *want and be able* to endure a period of craving in order to become a non-smoker (her values). If at one point in time she mindlessly lights a cigarette nevertheless *even though she is able to resist*, she at that moment allows her impulses to dominate her values[11]. Under a determinate conception of behavior, this failure to abide by her affirmed values is interpreted as another, dominating value to suppress feelings of craving, *i.e.*, as a reflection of her 'actual' *summum bonum* (of which she may not herself be aware). Under an indeterminate conception, however, this *may* reflect a dominant value to suppress craving, but it may also reflect a failure to do what one actually wants to do. In other words, it may lead to a truly inferior choice, *i.e.*, the choice of a sub-optimal element of the feasible set. The freedom to weigh motives is reflected in expressions such as 'mindlessness', 'imprudence', 'foolhardiness', 'recklessness' that imply that a person is responsible for being mindless, reckless etc., and that therefore she could also be mindful, prudent etc. instead. It should be emphasized, though, that following one's impulses is not *per se* behavior against one's values but that this depends on the particular nature of these values. After all, an individual may *want* to act impulsively.

The exclusion of a free will therefore leads to a loss of distinction between values and motives and necessarily implies hypothesis III. This is a striking result worth to appreciate for a moment. As soon as behavior is assumed to be determined, the utility maximization axiom follows necessarily, unless gross inconsistencies are committed. The single assumption of given values, or, in economic terminology, of a connected preference map leads to the result that all behavior can be interpreted as motivated by utility maximization. Put differently, the entire idea of utility maximization follows rather automatically once a free will is excluded. It should not be overlooked, however, that this formulation of the utility maximization axiom makes use of words that do not have their original meaning within the deterministic paradigm. As a technical remark it shall be added that this conclusion also requires that purposiveness of behavior is assumed *a priori* since otherwise one can postulate any meaningless decision algorithm that makes behavior determined but not consistent (in the sense of transitivity of preferences). Such an individual would have no connected preferences and no *summum bonum*, but in general the possibility of determined but purposeless behavior seems quite irrelevant and absurd.

Thus it has also been demonstrated, it is hoped, that the utility maximization *axiom* does not require rationality, if it is consistent with it in the first place. There seems to be nothing rational about not being capable of choosing one's preferences. Rather, rationality only enters when the step is made from the correspondence between values, motives, and decisions (the utility maximization axiom) to the correspondence between values, decisions, and the decisions' consequences (the RUMH). Rationality only seems to add something to the assumption of given values if it is understood as a cognitive requirement in the sense described above.

Concretely, rationality is usually taken to mean the absence of systematic decision errors. This already indicates that it is about the consequences of behavior since the notion of 'decision error' would have no meaning otherwise, at least not under a determinate conception of behavior. More particularly, the absence of systematic decision errors means that obviously irrelevant aspects do not influence choices and that people learn from their mistakes. When it is stated that rational behavior implies utility maximization, this therefore means that people do not let themselves be fooled by irrelevant influences and that they do not fool themselves by making the same mistake twice. Their choices are supposed to be consistent in this sense. It is therefore not utility maximization in an absolute *ex post* sense but in a relative sense, *i.e.*, maximization subject to informational and cognitive constraints. To give one example: whether an investor is rational or not is not a question of whether his stocks turn out to be winners or losers, but on how well he uses the meager information that is available to him.

The requirement of consistency of choice can equally be interpreted, within the present conceptual framework, as making a statement about the ability to predict outcomes. When values are assumed to be purposive and given, the preference map in the space of values must be consistent. If now predictions are accurate, *i.e.*, if people are omniscient, outcomes will exhibit the same consistency as preferences. In this case, there would be perfect identity between experienced utility and choice, *i.e.*, choice would maximize utility in an absolute *ex post* sense. Most models, with the notable exception of macroeconomic models of the rational expectations type, do not assume omniscience, however. Rather, they formulate choices not in terms of *ex post* outcomes but in terms of what is judged to be the best guess agents should be capable of. For example, the set of available options in an insurance model is formulated in terms of knowable risks. That is, the theorist first judges what knowledge can reasonably be expected from agents and will ultimately formulate choices in terms of best guesses (*i.e.*, expressed in terms of probabilities) and observable characteristics, like the probability to get a particular disease depending on age, gender, and other observable health criteria. Rationality of choice will then lead to internal consistency in terms of best guesses and knowable characteristics if the agents' cognitive capacity conforms to that imputed by the theorist.

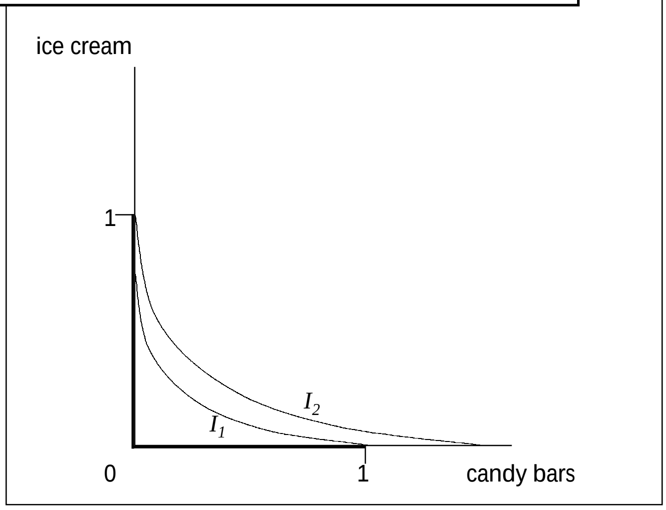
**The revealed preference approach**

The RUMH thus makes the following statement: people's choices are consistent in maximizing *ex post* utility within the limits of their cognitive capacity. This conclusion is the key idea behind the *revealed preference approach* (Samuelson 1938, 1948). Its purpose is basically to derive the unobservable preference map from observable behavior. When available options are formulated in terms of best guesses or, where certainty is assumed, in terms of outcomes, the RUMH implies that the options chosen are a reflection of values. The choice of an ice cream where a candy bar is available is therefore a revelation of a preference for ice cream over candy bars. If the individual could be confronted under perfect experimental conditions with different bundles of ice cream and candy bars, consistency of choice will allow to draw a preference map as in figure 3.

The revealed preference approach has been criticized as tautological. The explanation of behavior with reference to preferences that are themselves derived from behavior, critics argue, is circular reasoning and therefore without any substantive content. Proponents of the revealed preference approach have always rejected this strand of critique. They argue that the consistency requirement of the revealed preference approach does impose a "hard" requirement on behavior that renders the revealed preference approach "not in a technical sense meaningless" (Samuelson 1948: 91). In their view, therefore, the RUMH is a falsifiable hypothesis. The technical criteria for observed consistency are discussed at length elsewhere (Samuelson 1938, 1948; Sen 1983a, 1983b, 1983f, 1987a; Zafirovski 1999) and shall only briefly be summarized here. First, consistency requires that when a person reveals a preference of *A* over *B*, then he must not also reveal a preference of *B* over *A* (the so-called *Weak Axiom of Revealed Preference*; Sen 1983a: 55). From this, *transitivity* must follow, meaning that when *A* is preferred over *B* and *B* over *C*, then *C* must not be preferred over *A* (*ibid.*: 58-60). Here it should be noted that the Weak Axiom does not add anything of significance as long as it is not specified when two choice situations are to be considered identical. For example, if an individual chose an ice cream yesterday and chooses a candy bar today, this will only be a violation of the Weak Axiom if the situations are judged identical. If it is assumed, however, that past choices—or even simply the passage of time—may alter an individual's mundane preferences, sequential choice situations are no longer identical (*i.e.*, comparable). As a consequence, the Weak Axiom could not claim to have any practical relevance in this case.

Leaving aside the practical relevance for the moment, consistency also requires stability over time of meta-preferences, *i.e.*, of the fundamental preferences underlying the more mundane preferences (Becker

*Figure 3 – 'Choice' under the utility maximization axiom.*



1976: 5). For example, the preference for warmer clothes in winter is a change of tastes in the space of clothing, but this mundane preference is just derived from an underlying invariant meta-preference in the space of physical well-being. Basically, then, this requirement rules out that tastes change arbitrarily (or, more precisely, in a non-determined fashion); it rather demands that changes in mundane preferences be interpreted as just another kind of decisions geared at maximizing utility and determined by invariant meta-preferences.

The revealed preference approach also requires *connectedness* (also termed *completeness*) of preferences. This requirement is precisely what has been described above as the basic axiom of the determinate conception of value (p. 8). In more technical terms, it requires that for any pair of choice alternatives *A* and *B*, an individual with a connected preference map always has a preference (i) of *A* over *B* or (ii) of *B over A* or (iii) he considers *A* precisely equally desirable as *B*. He might in practice not always immediately be decided, but then only because he (rationally!) prefers to hesitate in order to acquire more information, to avoid feelings of regret for a decision that turns out to be sub-optimal (Loomis and Sugden 1982), or for other utility-relevant considerations.

To finally answer the question whether the revealed preference approach is in a position to falsify the RUMH, *i.e.*, whether it adds anything to the tautology of the utility maximization axiom, two things are critical: first, what assumptions are made about an individual's cognitive capacity, and, second, in how far unobservable influences are specified. If no demands at all are made on an individual's cognitive capacity, each and every choice can be declared rational in the sense explicated above, *i.e.*, by simply saying "she didn't know better". On the other hand, when unobservable influences and their effect on choice are not specified, the consistency of choice can always be defended by making appropriate suppositions about unobservable influences on preferences, *i.e.*, by saying that two choice situations are not really identical. For example, an individual's choosing an ice cream yesterday and a candy bar today can be declared consistent by assuming a preference for diversity that makes today's choice situation different from yesterday's. Only to the degree the theorist specifies the individual's cognitive capacity and unobservable influences will the revealed preference approach render the RUMH falsifiable.

**Criticism at the utility maximization axiom**

As a thin conception, the RUMH understands utility to encompass any *summum bonum* an individual might possibly, consciously or unconsciously, hold. Thus, by withholding statements about what it is that people want, it preempts almost all critique that subscribes (with or without being aware of it) to one or another determinate conception of behavior. It is often criticized, for example, that economics expresses all kinds of values in money terms, even the value of a human life. As has been argued above, however, every determinate conception must have one dominant end into which the value of everything can be translated, and if this end is called money or "utils" or anything else is of little importance[12]. Therefore, every determinate conception of behavior can be cast in terms of the utility maximization axiom. Gary Becker, the pioneer of the extension of the economic rational choice theory beyond the traditional economic domain, can therefore not be criticized from within the determinate conception when he states in his *Economic Analysis of Fertility*:

> For most parents, children are a source of psychic income or satisfaction, and, in the economist's terminology, children would be considered a consumption good. ... It may seem strained, artificial, and perhaps even immoral to classify children with cars, houses, and machinery. This classification does not imply, however, that the satisfaction or costs associated with children are morally the same as those associated with other durables. ... Abstracting from the kind of satisfaction provided by children makes it possible to relate the "demand" for children to a well-developed body of economic theory. ... A family must determine not only how many children it has but also the amount spent on them. ... If more is voluntarily spent on one child than on another, it is because the parents obtain additional utility from the additional expenditure ... . (Becker 1976/1960: 172-3)

One of the most influential skeptics of the economic conception of rational utility maximization has been the psychologist and computer scientist Herbert Simon, known in economics for his work on what became known as *bounded rationality,* a concept of utility maximization that "incorporates constraints on the information-processing capacities of the actor" (Simon 1982/1972: 409). His proposal to distinguish between *substantive* and *procedural rationality* (Simon 1982/1976), for example, merits credit for differentiating between different levels of abstraction involved in economic theory, however, it did not challenge the fundamental idea of rationality as maximizing over a utility function (which it was supposed to do). Obviously Simon's critique had been provoked by the careless use of the term "rational behavior" in economics, but in his writings he unfortunately perpetuated the terminological confusion. In economics, besides the (consistent) interpretation of "rational behavior" as behavior based on reasonable use of one's cognitive capacity (referred to by Simon as "procedural rationality"[13]), the same term has been (mis)used to describe the hypothetical behavior of omniscient actors (to which Simon's "substantive rationality"[14] is supposed to correspond). It is true that the omniscient consumer would most likely end up renting a flat that would give him more utility than that of the ill-informed consumer, but for the latter it will be rational to balance the costs of searching with the benefits of housing quality. 'Substantive rationality' is inappropriate as a description of *behavior* because it arbitrarily excludes an entire class of behavior (to wit, the process of decision making) from its domain. The omniscience assumption serves primarily to simplify economic theories involving aggregations of decisions and is legitimate in cases where informational and cognitive limitations influence individual decisions in a random fashion but do not significantly influence the aggregate result. The justification is therefore one of an *as-if analogy* as in macroeconomics models of rational expectations. These models do not assume that each individual perfectly anticipates, say, the rate of inflation for the rest of his life, but that on average people have a correct idea of the evolution of the inflation rate. The analogy does not consist, therefore, in people behaving as if they were rational (which they are assumed to be anyway), but as if they were rational and omniscient. Therefore I propose to rebaptize this assumption "omniscience assumption" to avoid its confusion with the interpretation of rational behavior as individual rationality.

Similarly, Simon's concept of "satisficing" (from the Scottish word for "satisfy"; Simon 1982/1972: 415) is still a child of the utility maximization axiom. Satisficing is meant to describe non-optimizing behavior, *i.e.* decisions where individuals settle with a choice that meets some sufficiency criteria (dubbed "aspiration level" by Simon, *ibid.*). However, the ghost of maximization haunted also this proposal. As Simon himself realized,

> a satisficing procedure can often be turned into a procedure for optimizing by introducing a rule for optimal amount of search, or, what amounts to the same thing, a rule for fixing the aspiration level optimally. ... it is difficult to draw a formal distinction between optimizing and satisficing procedures that is so iron-clad as to prevent either from being reinterpreted in the frame of the other. (Simon 1982/1972: 417-8)

As has been argued, it is not only difficult to draw such a 'formal distinction', but strictly impossible as long as one confines oneself to a determinate conception of behavior.

A different kind of critique has been directed at the reluctance of the thin conception of the utility maximization axiom to substantiate the motivation of man. Without imposing any restrictions on the utility function except for the formal consistency criteria, the meaning of rationality, these critics say, is stripped of its essence. Sen, for example, insists that

> rational choice must demand something at least about the correspondence between what one tries to achieve and how one goes about it. ... consistency itself can hardly be *adequate* for rational behavior. ... even the very idea of *purely internal* consistency is not cogent, since what we regard as consistent in a set of observed choices must depend on the *interpretation* of these choices and on some features *external* to choice as such (*e.g.* the nature of our preferences, aims, values, motivations). (Sen 1987a: 13-4, emphases in the original)

Sen's claim can be illustrated with the case of snob goods, *i.e.* goods that rise in demand when their price increases (over some range at least). Under normal circumstances the negative relationship between price and demand is a fundamental axiom at the basis of consumer theory. Therefore one might be lead to impose on behavior the consistency requirement that as the price rises, demand must fall. This would simply be another way of saying that a good's price is assumed to be irrelevant to the utility an individual derives from this good. Yet, the observation of positive price elasticities of snob goods seems to be quite rational when the signaling function of those goods (*e.g.*, expensive watches) is taken into account. When this is done, however, it is concrete psychological assumptions that substantiate the interpretation of choice and justify the adequacy of a particular consistency requirement. It could be objected that assuming independence of price and utility is simply not an adequate consistency requirement in the first place. However, the point is not which consistency requirement exactly is chosen, but that some independence of this sort has to be required because otherwise consistency cannot be falsified. Assuming independence of utility of some factors, and dependence on others, however, does have substantive psychological implications. What Sen seems to be saying is simply that talking about consistency only makes sense when one makes statements about the human mind, *i.e.*, about the purposes behind observed behavior. Reducing the RUMH to consistency does not do away with the need to substantiate a person's ends.

A related strand of critique aims at the revealed preference approach's tautological definition of preferences. Behavior is rational when it is consistent with preferences, but preferences in turn are defined *via* observed behavior, thus resulting in circular reasoning. Since it is

> virtually impossible to demonstrate its empirical (in)adequacy, the conception of rationality as universal utility-optimizing behavior is but an 'unfalsifiable tautology' (Jeffrey Friedman 1995: 7), an 'almost empty principle' (Popper 1967: 145-6), which it might be futile even to criticize. (Zafirovski 1999: 64)

A concept of rationality based on mere consistency is a "*deus ex machina* explaining everything but nothing specifically" (*ibid.*: 71). It seems unfit to help *understand* (in the sense of Weber) human behavior, it merely casts it in a formal all-purpose model.

Sen rightly identifies the particular *a priori* concepts of the RUMH as the reason for this all-purpose applicability. He eloquently argues that one has to be concerned

> not with the relation of postulated models to the real economic world, but with the accuracy of answers to well-defined questions posed with preselected assumptions which severely constrain the nature of the models that can be admitted into the analysis. A specific concept of man is ingrained in the question itself, and there is no freedom to depart from this conception so long as one is engaged in answering this question. … But if you are consistent, then no matter whether you are a single-minded egoist or a raving altruist or a class-conscious militant, you will appear to be maximizing your own utility in this enchanted world of definitions. ... This approach of definitional egoism sometimes goes under the name of rational choice, and it involves nothing other than internal consistency. (Sen 1983f: 88-89)

Only few authors, however, arrive at the crux that seems to itch most critics of the idea of utility maximization. What makes most of these critics suspicious of the utility maximization axiom, I suggest, is its implied determinism and the concomitant denial of a free will.

One object of critique in this context has been the obscure origin of preferences. The psychologist Barry Schwartz emphasizes the implications of the determinate conception for the notion of personal identity. In the economic model of utility maximization, he states,

> a self is just the bundle of preferences that happen to coexist inside a single skin, and self-determination is just the unfettered pursuit of those preferences. Rational choice theory is largely silent about where preferences come from. (Schwartz 2000: p. 81)

However, Walras was already well aware of this limitation and modestly recognized,

> we have never attempted to predict decisions made under conditions of perfect freedom; we have only tried to express the effects of such decisions in terms of mathematics. In our theory each trader may be assumed to determine his utility or want curves as he pleases. ( Walras 1954/1877: 256, quoted in Rawls 1999/1971: 489, fn. 27)

Amos Tversky, after having conducted psychological experiments into human decision processes, came to the conclusion that

> people often do not have well-defined values, and their choices are commonly constructed, not merely revealed, in the elicitation process. (Tversky in Rabin 1997: 2045)

He came to wonder,

> if different elicitation procedures produce different orderings of options, how can preferences and values be defined? And in what sense do they exist?" (Tversky, Sattath, and Slovic 1988: 383, quoted in Zafirovski 1999: 72)

The pioneers of game theory, a discipline making extensive use of the assumption of utility maximization, stated:

> This procedure for a numerical measurement of the utilities of the individual depends, of course, upon the hypothesis of completeness in the system of individual preferences. It is conceivable—and may even in a way be more realistic—to allow for cases where the individual is neither able to state which of two alternatives he prefers nor that they are equally desirable. (von Neumann and Morgenstern 1967/1944: p. 19)

The probably most cogent demonstration of the incompatibility of a determinate conception of rationality and a free will comes from Rawls.

> The weakness of [psychological] hedonism reflects the impossibility of defining an appropriate definite end to be maximized. And this suggests that the structure of teleological doctrines is radically misconceived. ... For the self is prior to the ends which are affirmed by it; even a dominant end must be chosen from among numerous possibilities. (Rawls 1999/1971: 490-491)

He postulates the existence of

> a capacity to assume responsibility for our ends … [that] is part of the moral power to form, to revise, and rationally to pursue a conception of the good. (Rawls 1982: 168-9)

In the language of the revealed preference approach, a free will implies that preferences are unconnected (or incomplete). Unconnectedness, in turn, can (but does not have to) be a consequence of the existence of various ends of intrinsic value that are incommensurable.

The criticism against the utility maximization axiom, *i.e.*, against the exclusion of a free will, has to be put into perspective. It will be valid only if it is believed that a free will exists. Those who believe it does not exist can simply not be impressed by such criticism. If a free will is assumed, however, criticism can be directed against the reading of the utility maximization axiom as a hypothesis about the real world, but not against a reading of it as a heuristic 'as if' assumption. The statement of Walras above makes this clear. The utility maximization axiom must be limited to conditions where values can be assumed to be given and will be invalid where decisions are assumed to be free. What can be criticized, therefore, is the imputation of utility maximization when decisions are considered to be free.

**From choice to happiness**

So far, utility has been understood in the thin sense of the *summum bonum*. Yet, because of its muteness with respect to what it is that motivates people, this thin conception has not been adopted universally. Generally speaking, the thin conception is restricted to theoretical debates on economic methodology, while in much, if not most, of economic theory the notion of utility has retained a substantive meaning more or less synonym with pleasure or happiness. It has been recognized that without a substantiation one has no basis to make concrete predictions, nor even to give interpretations that can be related to real questions. As soon as economic models are interpreted and set into relation to real world phenomena, the dominant end must have a substantive interpretation. As von Neumann and Morgenstern cogently put it:

> Wile [the notions of utility and preference] are in their immediate form merely definitions, they become subject to empirical control through the theories which are built upon them—and in no other way. Thus the notion of utility is raised above the status of a tautology by such economic theories as make us of it and the results of which can be compared with experience or at least with common sense. (von Neumann and Morgenstern 1967/1944: 8-9)

One can distinguish two broad classes of economic interpretations of the dominant end. The first is the class of mundane, generic analyses one finds in introductory textbooks and research on general phenomena. There the dominant end is explicitly assumed to be based on consumption of marketable goods and services only, where more consumption always means higher utility. In these cases, the reduction to consumption has to be interpreted as a way of abstraction and in no case implies the exclusion of other sources of utility. Since these models generally do not claim any direct correspondence to reality, we will not be concerned with them here. The second is the class of more specific studies extending to non-market goods of the kind of Becker's fertility analysis (see the quotation above, p. 15), models of labor economics, studies of charity, and so on, *i.e.*, studies that generally do claim to correspond to reality. In these cases the dominant end is based, in addition to consumption, on 'psychic returns' like the satisfaction from having children, agreeableness of working conditions, or the self-respect resulting from donating to charity. In general, then, one can safely state that in applied economics the dominant end is largely understood as satisfaction emanating from physical and spiritual sources. This is of course very close in meaning to happiness[15].

Now we have come full circle and can link up happiness with behavior. The economic conception of behavior in fact leads to the identity of choice and maximum happiness. The determinedness of values (panel I in figure 2) together with the determinate conception of behavior (II) naturally lead to the utility maximization axiom (III), the concept of rationality (IV) states that predictions are reasonably accurate, and the hedonistic reduction (I) says that the *summum bonum* that underlies people's behavior is happiness (V).

This identity of choice and happiness may not seem very spectacular, in any case not to a trained economist, but it is by no means *a priori* necessary that this identity holds. After all, people sometimes think of themselves as giving priority to moral considerations at the expense of happiness (for example donating blood, incurring costs for environmental ideals) or as occasionally taking mindless decisions. Also, as will be discussed later on, the conclusion that everyone is the best judge of what will make him happy is by no means unchallenged. Ultimately, it is only because motives like 'living up to one's sense of duty' are interpreted as 'psychic income', and because errors in making best guesses are deemed to be negligible that this identity holds. The significance of this identity for normative economic theory can hardly be overstated. As Sen remarks, "all the important results in this field [*i.e.*, general equilibrium theory] depend on this relationship between behavior and welfare through the intermediary of preference." (Sen 1983a: 67)

It is striking that both the thin and the thick conception of the RUMH one finds in economics are rather limited in their empirical significance. The thin conception can hardly be related to reality at all since it merely provides a formal framework. The thin conception of the RUMH can only be tested under controlled conditions when concrete specifications of the cognitive capacity and unobservable influences are made, but this is hardly ever done. The thick conception on the other hand does make statements that have empirical relevance, but the underlying theories about human motives have little empirical backing. Indeed, it seems that the most fundamental economic assumptions rest on the intuitive appeal of common sense "truths" whose validity has uncritically been generalized far beyond the context in which they are usually experienced[16]. Yet the history of science has repeatedly demonstrated that extrapolations from common sense truths cannot be relied upon. Such naïve reliance proved to be plainly wrong with respect to the shape of the earth, the celestial movements, the origin of species, and many other phenomena. Casual observation is too weak a basis to build a general theory upon[17]. And despite the possibility to test hypotheses based on the thick conception of the RUMH, empirical tests are rejected because it is held that happiness cannot be measured.

The identity between choice and happiness is of particular significance in the context of welfare economics. By its very nature, this branch of the economics science is concerned with normative questions, especially with the evaluation of economic arrangements in terms of social desirability. In other words, welfare economics attempts to give answers to ethical questions, and therefore it must itself adopt an ethical perspective. Among the various ethical schools Western philosophy has produced, Utilitarianism has had a particularly pronounced influence on economics.

### *Utilitarianism*

Utilitarianism posits that only one good of intrinsic value exists, and that this good is pleasure or happiness[18]. Therefore, happiness is the criterion by which all other moral principles are to be judged. From this it follows rather naturally that the overarching moral principle is the realization of happiness. Since Utilitarianism assumes that happiness is a cardinal quantity and that this cardinal quantity is interpersonally comparable, the social moral principle can therefore be interpreted as the maximization of the sum of (or average) happiness in society.

The parallels with the economic concept of rationality are striking. Both concepts are determinate conceptions with the dominant end being happiness. But since the economic concept of rationality is only about the relation between means and the ends of a particular individual, its concept of value is a relative one, *i.e.*, it has the meaning of *being valued by this individual.* In other words, the RUMH as such has no normative significance. It is merely a hypothesis about how individuals *do* actually behave with respect to their ends, but it refrains from any judgment how they *ought to* behave or what constitutes a good life, let alone a good society. Utilitarianism, by contrast, *qua* ethical concept, raises happiness to an absolute status of moral authority. It is not only said to be good for a given individual to pursue happiness, but happiness becomes the universal and unique moral imperative. Justice, for example, has no normative significance in itself in utilitarianism (Rawls 1982, 1999/1971). 'Just' is what maximizes happiness, and as such the idea of justice becomes redundant. It is hardly surprising that Jeremy Bentham, generally considered the founding father of utilitarianism, also subscribed to psychological hedonism:

> Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do ... They govern us in all we do, in all we say, in all we think. (Bentham 1970/1789, quoted in Ulrich 1998: 179)

Psychological hedonism and utilitarianism therefore complement each other in such a way that Little considered them "hand in glove" (Little 1957: 10). Another feature that makes utilitarianism so attractive to economics is its nice analytical properties. Having one dominant *social* end allows to reduce all relevant ethical information to one dimension, just as the assumption of one dominant *personal* end allows the economic conception of behavior to reduce all relevant decisional information to one variable. The assumption of cardinality allows to apply specific mathematical operations to this dimension. And interpersonal comparison finally allowed to answer the question of the good society by a single number representing social welfare, *i.e.,* the sum total of (or average) happiness of all the members of society[19].

The assumption of cardinality and interpersonal comparison have met lots of skepticism among economists. It is widely held that utility does not have a natural zero point and that any scaling would be arbitrary because it is held to be meaningless to state that the satisfaction one gets from one's favorite food is twice or ten times as large as that from a slice of bread. Therefore only ordinal comparisons are admitted, *i.e.*, comparisons of rank order. This is also the stance adopted by virtually all textbooks (*cf.* Ng 1997: 1851). A key argument of proponents of ordinal utility has been that cardinality is not required by consumer theory to demonstrate the equilibrium results and Pareto optimality. However, as soon as the analysis becomes somewhat more concrete, cardinality more often than not creeps back into the analysis through the backdoor. As van Praag and Frijters observed, "most … studies conducted by economists start with very general 'ordinal formulations' but after a while present a structural specification that nine times out of ten turns out to be of the cardinal type" (van Praag and Frijters 1999: 414-5).

Interpersonal comparison has been criticized even more vigorously than cardinality. Robbins, one of the first to vigorously challenge the assumption of cardinality, argued that "introspection does not enable *A* to measure what is going on in *B*'s mind, nor *B* to measure what is going on in *A*'s" (1935: 140, quoted in Sen 1983d). With reference to Robbins many economists argue that it is entirely impossible both on methodological and practical grounds to make comparisons between individuals, either cardinal or ordinal.

A few scholars, however, defend cardinality and interpersonal comparability. Cardinality has received renewed impetus by the work of von Neumann and Morgenstern (von Neumann and Morgenstern 1967/1944). They show that if perfect connectedness of preferences is assumed, cardinality is a corollary of the connected ordering of preferences over probabilistic events. Maintaining the claim of non-cardinality would thus require the exclusion of probabilistic events, which would be arbitrary and lead to indeterminacy. A passionate proponent of cardinality is Ng who argues—mainly based on introspection and questionnaire surveys—that there is a natural zero point of 'neither happy nor unhappy' and that people can naturally make statements about how much more or less happy they are in one state rather than another (Ng 1980, 1996, 1997). He admits that it is not possible to make precise comparisons, but he asserts that this imprecision is due to imperfect memory and "no different from the fact that I cannot say that the amount of water I drank this morning was exactly 1.2143 times the amount of water I drank yesterday" (Ng 1996: 4). Consequently, with such a cardinal measure of happiness fixed at the natural zero point he does not see any obstacles to interpersonal comparability either.

Other authors do not necessarily insist on cardinal measurement but advocate interpersonal comparability by arguing that the difficulty is only the practical matter of where exactly to draw the line, but that it does not follow from this that one cannot in most cases make meaningful 'partial' comparisons (Kahneman 1999; Little 1957; Sen 1983d; van Praag 1993; van Praag, Frijters, and Ferrer-i-Carbonell 2000). If interpersonal comparability is entirely rejected, one is not able to say if a starving man is more or less happy than Lance Armstrong in the moment of crossing the finish line to win the *Tour de France*. In any case, the objection against interpersonal comparison on the grounds that such a comparison would entail a moral judgment is misdirected. The ethical judgment enters only when an ethical principle is invoked stating how such a comparison is to be evaluated (Ng 1997: 1853; Sen 1983d: 269), just as a comparison of two individuals' height only receives normative significance when height is considered to be ethically relevant.

The crux of the debate seems to lie in the subjective nature of every experience. As every other personal sensation, happiness cannot be demonstrated objectively. In that sense, Robbins was certainly right that "*A* can never measure what is going on in *B*." He should even have said that *A* can never know that anything is going on in *B* at all. When *A* says "*B* feels pain" because he sees her scream after being stung by a bee, then he cannot know with certainty that *B* experiences the same sensation that he himself refers to by the word "pain". What makes his statement plausible, though, is a general assumption of subjective symmetry, *i.e.*, the belief that every other human being is capable of the same sensations as I, that the same stimulus will provoke a similar sensation in others, and that their behavior and their use of language are linked with their experiences in a similar way. It is only by this belief that we are able to communicate about sensations in the first place since we can never experience each other's sensations. Now, if it is agreed that *A* and *B* use the word "happy" to refer to a sensation that is *qualitatively* identical, it seems to follow naturally that their happiness must also in principle be comparable in terms of *intensity*. If furthermore the intensity of happiness is taken to be reducible to one dimension, interpersonal comparison of happiness becomes an inescapable conclusion. If such comparisons can be made in practice is yet another question that will be taken up below.

In welfare economics cardinal utility has survived throughout. In the Marshallian analysis of social welfare it is assumed that an additional euro delivers the same amount of happiness to everybody so that all individuals can be treated the same with respect to utility. This implies the assumptions (i) that utility is interpersonally comparable and (ii) that the marginal utility of consumption is the same for everybody. And since welfare is expressed as the sum of all individuals' utilities, cardinality is required.

In some fields of economics, however, the Marshallian concept of measurable social welfare has been abandoned in favor of the weaker efficiency criterion of Pareto optimality. This criterion states that social welfare is improved only when at least one individual is made better off while at the same time nobody's utility is reduced. Thus, social welfare is maximized in the sense of a local maximum when nobody can be made better off without reducing the utility of another individual. It is not claimed that this optimum, which is also called Pareto-efficient, is superior to any other outcome in the sense of an *absolute* maximum. It is merely a local optimum in the sense that it is the optimum within the limited class of outcomes that can be ranked unambiguously. The rationale behind Pareto optimality is of course to make welfare judgments without the need for interpersonal comparisons. As a consequence, however, also the normative status of choice changed. While under utilitarianism it was possible to judge "if a gallon of fuel was better used to drive the yacht of a millionaire still a few yards further or to warm the family of a destitute man" (Hausman and McPherson 1996), the Pareto criterion completely renounces from such judgments. Effectively, then, the abandonment of cardinal interpersonal comparability conferred to choice an ethical authority beyond question. In a market without negative externalities one can be sure that every transaction will satisfy the criterion of Pareto optimality[20]. But since my increment of utility from a given transaction cannot be set in comparison with that of anybody else, there is no basis for the utilitarian to demand that I justify my choice. The market cannot be unfair because all it does is being a catalyst for the "mutual exchange of advantages" (original: "wechselseitiger Vorteilstausch"; Ulrich 1998: 128). The conditions of this exchange and the positions of the individuals are solely dependent on their preferences and their assets, but these are excluded from efficiency considerations. Thus, because preferences and assets are held to be given and are not challenged, there is nothing to be questioned in a Pareto-optimal market[21].

Even though much more could be said about the utilitarian heritage of economics, this discussion should suffice to elucidate the historical and methodological background against which happiness rose to such a central role in economics.

## The concept of subjective well-being

### *Subjectivity*

Francis Edgeworth dreamt in 1881 that future economists would dispose of a "hedonimeter", an instrument that would measure a person's happiness just like a thermometer measures the body temperature. His idea obviously was to obtain hard and objective data that could be used to "empiricize" economic theory and to "objectivize" policy recommendations. He was so convinced that happiness was a concrete attribute of a person that Paul Samuelson once commented that "to a man like Edgeworth, steeped as he was in the utilitarian tradition, individual utility—nay social utility—was as real as his morning jam" (Samuelson 1948: 206).

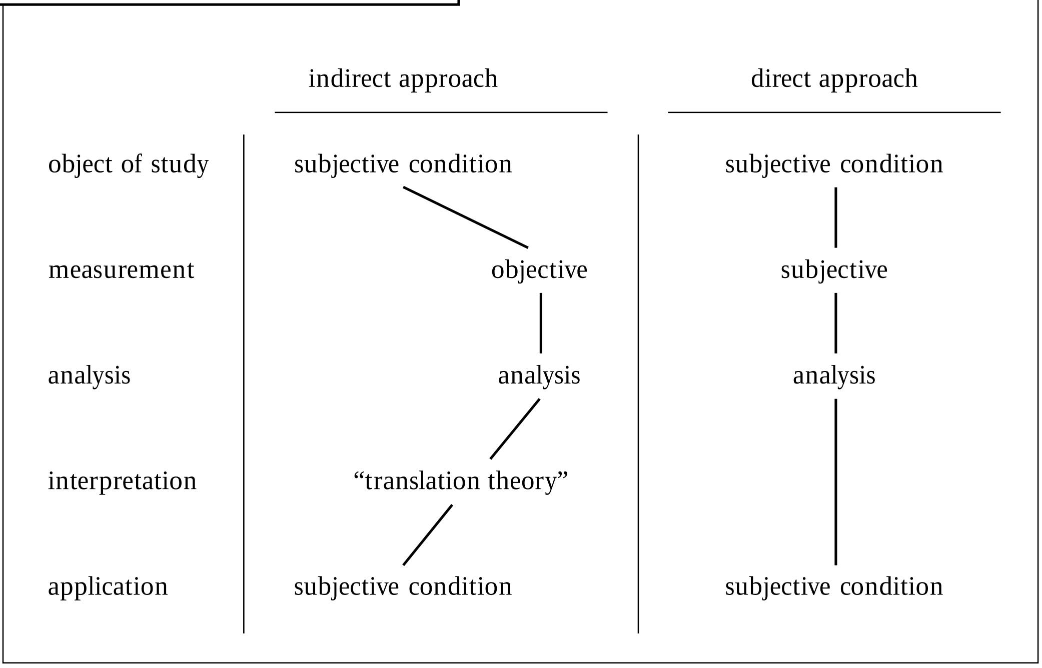
Since Edgeworth, economists by and large abandoned the idea of measuring happiness and tried to develop an economic theory "freed from any vestigial traces of the utility concept" (Samuelson 1938: 71). Yet, the idea of measuring happiness was not dead. Psychologists in the 1960s started to discover happiness and satisfaction as a field of research to balance their discipline's bias towards research into pathological conditions[22]. Consequently, this new field of research was called "positive psychology", and "subjective well-being" (SWB) became the umbrella term covering happiness, hedonic affect, and satisfaction. As the adjective indicates, SWB is meant to capture the perception of the subject in question, rather than the judgment of an outsider by means of observable conditions. It seems to be exactly the kind of subjectivity economists are always keen to respect when they insist that tastes vary among individuals and that "a taste for poetry is no better than a taste for pushpins" (*cf.* Frank 1997a: 1844): everybody is held to be the best judge of his own well-being. In the light of this obvious compatibility it appears awkward that so few economists have seized the opportunity to exploit the progress of SWB research to enrich economic theory[23].

Economists' reluctance to use SWB data seems to have a lot to do with a high degree of suspicion against the results of questionnaire responses[24]. The obvious failure of the almost obsessive efforts to purify the theory of rational choice from any glimpse into the human mind suggests that economics has idealized a peculiar concept of objectivity as precise measurability[25]. However, there is no merit in objectivity *per se*, it all depends on the object and purpose of one's inquiry. If the object of study is of an objective nature like the principles of gravity, one is of course well-advised to rely on objective measurement. However, if one wants to study a subjective condition like *e.g.* physical pain, one ultimately has to rely on subjective indicators. One might find objectively measurable proxies (like pulse frequency) that correlate with pain, and it may be useful to measure them in order to perform particular analyses, but the ultimate criterion must be the subjective experience. For example, it is well known that serious injuries often do not cause pain for hours or even days to the victim (Eich, Brodkin, *et al.* 1999: 156). Based on common sense and objective circumstances it would not be far-fetched to assume that a person who has been cut off a limb experiences pain, but it would be absurd to insist on it if she affirms she does not. An indicator cannot be more valid than the concept of which it is supposed to be indicative, or, in other words, "by definition, the final judge of someone's subjective well-being is whomever lives inside that person's skin." (Myers 2000: 57). Consequently, it would also be a mistake to equate "objective" with "real", and "subjective" with "arbitrary". A headache can be very real indeed, even though strictly speaking it is not even possible to establish its very existence in an objective way, let alone to objectively measure its intensity. Rather, it would be better described as intersubjectively real, *i.e.*, perceptible subjectively by each individual in a similar way. It seems to lie in the nature of subjective conditions that they cannot be recorded with precision, but imprecision is far from being the same as arbitrariness. It must also not be overlooked that objectivity does not warrant precision. The gross domestic product (GDP), *e.g.*, might be a fairly objective measure of a country's economic activity, but it is far from being precise. Even on the individual level precision is almost always limited, *e.g.*, in the determination of wealth or education. The reliance on objective measures in the study of subjective conditions often appears to serve chiefly to maintain the illusion of accuracy, while in fact the imprecision is just shifted from the collection of the data to their interpretation.

Thus, subjectivity is not a weakness *per se*. On the contrary, when we are concerned with theories concerning the human mind, we cannot do without subjectivity. And when economics wants to give substantive explanations of behavior, it must be concerned with the human mind, not only in normative economics but also in its positive branch as far as it is concerned with choice. Objectivity might often be of instrumental value in order to elucidate partial relationships and mechanisms, but it is no compelling criterion. Rather, the ultimate criterion has to be the relevance to the problem at hand and the scientific rigor. Scientific rigor, in turn, is not dependent on objectivity and precision, but primarily requires *concreteness* to warrant falsifiability.

To sum up, one can distinguish in the study of subjective phenomena (like a headache) between two basic stylized approaches, indirect and direct, between which one can imagine a continuum of intermediate procedures. The *indirect approach* would be to gather exclusively objective data (physiological variables), analyze them and then to "translate" the objective results so as to relate them back to the subjective object of interest (physiological indicators → headache). For the selection of the data and the final translation one will need a "translation theory" of how the objective observations relate to the subjective condition. Without such a translation theory there would be no correspondence between the objective data and the object of interest. Under the *direct approach*, one starts out by collecting subjective data (subject rating of headache intensity), analyzes these and uses the results directly (though taking care of proper scaling and aggregation) to make statements about the subjective condition (fig. 4). Since the data are of the same nature as the object of study, there is no need for a translation theory. In the realm of the economy, an example of the first approach would be to estimate people's well-being on the basis of GDP figures or observable behavior. An example of the second approach would be to assess well-being by self-reports. It should have become clear that no indicator or method is good or poor in itself, but that the choice of one's approach will have to depend on its adequacy with respect to the purpose of one's inquiry.

*Figure 4 – Approaches to subjective conditions.*




Having settled the question of subjectivity, what is subjective *well-being* actually meant to capture? Clearly, SWB is a more complex and subtle sensation than a headache. Indeed, it can be questioned whether it *exists* in the first place. Is every mind at every moment characterized by a precise value of SWB of which the subject is perhaps not fully aware, but which can in principle be retrieved in some part of his brain? Or is a mind's SWB in fact undetermined, and are answers to questionnaires really constructed on the fly, perhaps not wholly arbitrary, but neither deterministic? (*Cf.* the quotation of Tversky on p. 17.) Again the answer seems to be crucially dependent on whether one subscribes to a determinate or to an indeterminate view of man. This issue will not be discussed further, but it will be taken up again in the conclusion to this chapter. For the time being we will proceed by assuming that a determinate value of "actual SWB" does exist for every human mind in order to keep the argument tractable.

### *Definition*

For a definition of SWB to be meaningful and intelligible, it should not contradict the signification of the corresponding terms, happiness and life satisfaction, in the common use of language. It should also be relevant to the real world phenomena one intends to understand or predict. Therefore, SWB can not be defined simply as the answer a subject gives to a particular question on his well-being (which would, as we will see below, avoid many complications). This is because answers to survey questions have been found to be influenced by factors that are not considered to be relevant to SWB, *e.g.* the order of questionnaire items. Thus, SWB has to be defined as an unobservable theoretical construct in line with its common use of language, but in addition a few questions have to be settled that remain ambiguous in colloquial language. Two such issues in particular are debated in the psychological literature on SWB.

The first issue is the distinction between hedonic affect and cognitive satisfaction. It has been found that answers to questions mentioning "happy" are more correlated with affective measures, while more cognitive evaluations were involved when the question included the word "satisfied" (Ed Diener 1984, 1994; Veenhoven 1991b, 1997). The difference was not substantial though, as evidenced by a correlation between the two answers of between .50 (Campbell, Converse, and Rodgers 1976: 34) and .63 (Andrews and Withey 1976: 85), which compares to a test-retest correlation (*i.e.*, the correlation of two answers to the same question, once posed at the beginning and once at the end of the interview) of around .70 (Andrews and Withey 1976: 78)[26]. These values mean that answers to happiness and to satisfaction share a lot of common variation and reflect only a subtle difference of emphasis.

Conceptually, however, there is a more general distinction between the concepts of hedonic affect and cognitive satisfaction with respect to time. Affect is a concrete condition at a given point in time so that it is in principle impossible to tap a person's hedonic affect about life as a whole in a single question. Of course the respondent can try to summarize his hedonic affect over time based on memory, but this would again be a largely cognitive judgment, and the memory for emotions is known to be systematically inaccurate (Eich, Brodkin, *et al.* 1999; Kahneman 1999). To circumvent this drawback, Kahneman (*ibid.*) has proposed to measure "objective happiness" by keeping a more or less continuous record and to integrate the hedonic values over time, a method that Edgeworth himself had in mind when dreaming about a hedonimeter (*ibid.*: 5). Experiments using momentary sampling methods have indeed produced valuable results (Csikszentmihalyi and Wong 1991; Kahneman 1999; Stone, Shiffman, and DeVries 1999), but to the analysis and evaluation of most problems, conscious judgments seem to be more relevant than the precise temporal integration of momentary moods. This seems to be true in particular for decision theories that recognize that in making choices, people care about more than affective reward. Therefore, the concept of interest for this study is life satisfaction, as opposed to hedonic affect. In contexts where the distinction between satisfaction and affect is irrelevant, the umbrella term SWB will be used.

In any event, the debate of "happiness against satisfaction" should not be overemphasized for the reason that, in addition to their empirical correlation, also conceptually hedonic affect and cognitive judgment seem to be closely interrelated. It is obvious that my past record of affective balance will influence my cognitive satisfaction with life and, conversely, my cognitive evaluation of my life will influence my hedonic affect. One should therefore live under no illusion that one can, in practice or in principle, separate one from the other. Lazarus (1991) provides an integrated theory stating that people make continual cognitive appraisals of their lives, leading to emotional reactions which in turn form the basis for a judgment of life satisfaction (quoted in Ed Diener 1994: 107). However, this theory raises the question of the hen and the egg: is affect prior to judgment or judgment prior to affect? Considering the large range of overlap and interaction, it appears questionable whether a distinction between affect and evaluation is relevant to the study of SWB in the first place, or whether, alternatively, SWB should be understood in a more integrative manner. Chapter two will pick up this question again.

The second issue giving rise to differing conceptualizations of SWB is the degree of normative significance. SWB as a concept is sometimes criticized for being insensitive to aspects it ought to capture from a moral point of view. Tversky and Griffin, for example, state that "it is clear that an adequate measure of well-being must distinguish between rich and poor, and between paraplegic and quadriplegic" (Tversky and Griffin 1991: 116-7). Such criticism seems to be misplaced, however, because it presupposes the claim that SWB is supposed to measure quality of life from an ethical point of view. Yet, it will certainly be agreed by everybody—except perhaps orthodox utilitarians—that SWB cannot be the sole basis for a judgment of people's quality of life in a comprehensive sense, let alone of the welfare of society. In view of this limitation and of the impossibility to reach agreement of what constitutes the good life, it is advisable to keep the definition of SWB free from normative connotations. The less the concept of SWB is charged with normative meaning, the more valuable it will be as an independent and distinct piece of information on which an ethical assessment can eventually draw. This also warrants that value controversies do not obstruct terminological agreement at an early stage[27] . This does not mean, however, that it would be undesirable to obtain self-report measures that correspond closely to widely agreed upon ethical criteria for the quality of life. This will naturally be the case to the extent that terms like "happiness" and "satisfaction" carry normative meaning in the common use of language. It would merely be unwise to impose on the concept of SWB normative content *in addition* to that provided by respondents when they answer questions about happiness or satisfaction[28] .

Having concluded this preparatory discussion, I will now follow Veenhoven in defining life satisfaction as *the degree to which an individual judges the overall quality of her life as a whole in a favorable way* (Veenhoven 1991b: 10). This definition thus gives primacy to judgment (as opposed to affect), and it avoids the imputation of any external normative significance to SWB. It also accords with the three hallmarks of SWB singled out by Ed Diener (1994: 106): (1) it captures only *subjective* experience, (2) it requires *positive* experiences, and not only the absence of negative ones, and (3) it includes a *global assessment* and is not limited to a particular life domain or time period.

### *Measurement*

Since SWB cannot be measured directly, the best we can do is find an estimator with a maximum of efficiency, *i.e.* a measure that combines little bias with high accuracy (*i.e.*, a small variance; *cf.* Wonnacott and Wonnacott 1990: 239). Since it is not obvious how to assess an estimator's efficiency when the actual variable of interest cannot be observed, psychologists have developed ingenious criteria to evaluate an estimator indirectly. The psychometric concept corresponding to unbiasedness is *construct validity*. Construct validity makes use of the embeddedness of any theoretical construct in a network of assertions that convey it its meaning ( *cf.* Ed Diener and Lucas 1999: 214; R. J. Larsen and Fredrickson 1999: 44). Just as one can verbally define a theoretical construct only by specifying how it relates to other commonly intelligible terms, the validity of an estimator can be assessed by verifying if it satisfies these relationships. For example, our definition of SWB (and common use of language) implies that happiness will correlate negatively with undernutrition, loneliness, and future anxiety, and positively with smiling frequency, goal attainment, and self-esteem. An indicator that does not yield substantial correlations with these variables will not have much validity.

The psychometric concept corresponding to accuracy is *reliability*. Reliability refers to the degree to which observed scores reflect the 'true' amount of the construct being measured (R. J. Larsen and Fredrickson 1999: 43). Since, again, reliability cannot be measured directly, it is commonly estimated by the test-retest correlation. The idea behind this method is that if for a given theoretical construct one can make two measurements over a period of time during which the value of the construct is assumed to be invariant, a high correlation will indicate a small deviation and thus a high reliability. In the case of life satisfaction, for example, it is reasonable to require that, in the absence of exceptional events, the construct does not change over the period of one hour. Thus, the shortfall off the value of 1.00[29] of an estimator's 15-minute test-retest correlation will reflect measurement error and not actual variance of life satisfaction. An estimator's test-retest correlation sets an upper bound for its validity since it cannot correlate stronger with other variables than with itself (*ibid.*). It should be noted that neither validity nor reliability alone is sufficient to assess the adequacy of an estimator. A good indicator must score high on both criteria, and the selection of the best one may require a weighing of the two qualities.

Psychologists have evaluated a number of indicators of SWB, which can be grouped into the three categories of self-report , peer-report, and objective measures. Self-report measures include subject ratings of quality of life, of life aspects, concerns, hedonic affect etc. Peer-reports rely on the assessment of an individual's subjective well-being by his friends and family members. Finally, objective measures tap physical variables, from brain activity to facial expression.

Instead of discussing in depth the voluminous research on measurement methods[30], a brief summary will be given and the principal measure will be discussed in more detail. Ed Diener and Veenhoven, *e.g.*, conclude their reviews of the literature by singling out self-reports as the most adequate measure of SWB. Diener finds that "the evidence indicates that self-report measures of SWB are psychometrically adequate. … If one could choose only one type of SWB measure, in most cases it would be a self-report instrument because such measures have shown acceptable levels of validity and reliability" (1994: 140, 146). Veenhoven concludes that "great doubts have been expressed about the validity of such self-reports of happiness. However, empirical checks of these suspicions have not revealed great distortions" (Veenhoven 1991b: 11). He also affirms that "among specialists it is now generally agreed that happiness is fairly well measurable" (quoted in Szepesi 2001)[31].

Typical survey questions about life satisfaction are

> How satisfied are you with your life as a whole these days? (answer on a 7-point scale "completely satisfied ... completely dissatisfied"; Andrews and Withey 1976: 67)

> Taking all things together, would you say you are—very happy, quite happy, not very happy, not at all happy? (World Value Survey, quoted in Inglehart 1997: 351)

Finally, the Eurobarometer survey asks

> On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?

One of the most consistent findings has been that people around the world seem to have no difficulties answering these questions. It is only a tiny fraction of usually less than one or at most two percent of respondents that choose to answer "I don't know" or "never thought about it" (Andrews and Withey 1976: 64; Inglehart 1990: 272). In addition, in a survey conducted in the US, eight out of ten respondents said to think of their enjoyment of life at least once a week (Freedman 1975, quoted in Shirabe 1999: 63). This suggests that to most people, satisfaction with life is a rather familiar concept.

Validity assessments have shown that answers to life-satisfaction questions correlate well with measures one would expect to be related. For example, Andrews and Withey (1976: 85) found that the answers to their life-satisfaction question (as quoted above) correlated around -.25 with worrying frequency, -.31 with negative affect, .30 with positive affect, and -.44 with life changes desired[32]. Peer reports have shown considerable correlations with self-report measures, ranging between .50 and .64 (Pavot 1991, quoted in Ed Diener 1994). Objective measures found to correlate with self-reports are smiling frequency and objective health. Yet peer ratings and objective measures remain weaker estimators of SWB than self-reports. Veenhoven, *e.g.*, states that "steady physiological correlates have not been discovered, and probably never will be[33]" (1997).

Some authors advocate the use of multiple-item measures of SWB and point to their high validity and reliability (Ed Diener 1994). They suggest that the "measurement of SWB can be improved considerably by the addition of other methods of measurement" (*ibid.*: 146). Yet, even if such a broadening of the measure of SWB would increase reliability and validity[34], this would come at the cost of a loss of transparency. The more measures an indicator contains and the more diverse these are, the more difficult will it be to finally interpret its significance. For example, if physical measures of emotions (like hormone concentrations) or behavioral indicators (like lack of appetite) are included (*ibid.*: 142), the resulting measure will no longer be interpretable in a straightforward way because by looking at a number one cannot know the underlying mix of indicators. In addition, the inclusion of such measures would in passing give answers to fundamental and debatable questions, *e.g.* whether an unperceived emotion is an emotion at all (R. J. Larsen and Fredrickson 1999: 48). The study of multiple measures is certainly valuable to improve the understanding of SWB, but, at this stage at least, as an indicator a lean concept will better serve scientific discovery.

Test-retest correlations of life satisfaction answers have been found to be as high as .70 between two answers given during the same interview (Andrews and Withey 1976: 78, 85)[35]. If the second answer is collected one week after the first, reliability drops to around .60 (Veenhoven 1996: 6). This drop is of course to be expected and should, at least to some degree, reflect actual variation of SWB. Besides pure random error, the change of the answer choice during an interview has also been found to reflect contextual influences like the content and order of survey items, current mood, or the framing of the question (*e.g.*, clustered with other questions or logically separated). To illustrate how information is summarized by the test-retest correlation statistics, consider a study of 1,433 subjects by Andrews and Withey (1976: 79) that yielded a reliability estimate of their 7-point "delighted-terrible" measure of .68. In this survey, of 471 respondents who checked the second-highest value for the first question, 62% gave the same answer when the question was repeated later in the interview, 17% increased their assessment by one category, and another 17% decreased it by one. 3% lowered their rating by more than one category. Among the 550 respondents who first chose the third highest category, 49% gave two identical answers, 35% increased their rating by one step, 6% by two, and 10% reduced it by one. Less than one percent reduced their rating by more than one category. For the whole sample (excluding 4% who gave at least one answer that could not be processed), 54% gave two identical answers and another 39% gave answers that were immediately adjacent, so that the proportion of respondents who gave answers that were not immediately adjacent was 7%.

These values suggest that people construct their judgments in a rather rough, but fairly stable way. The fact that 39% of the respondents give a slightly different answer the second time should largely reflect the inaccurate nature of SWB and the indecidedness of subjects on the boundary of two categories. The data clearly demonstrate, however, that the large majority do not guess or respond in an arbitrary fashion. Nevertheless, a test-retest correlation of .70 limits the accuracy of the results obtained from such data and the significance of statements on the individual level. Importantly, however, the inaccuracies of individual responses can be expected to cancel out when averages are considered since little systematic bias is involved (Veenhoven 1996: 8). This is of particular relevance for the present study since our object is not to make precise predictions on the individual level, but rather to assess the significance of general patterns of SWB for economic theory.

### *Interpretation*

In order to interpret systematic patterns found in SWB data, certain conditions have to be met that allow to aggregate data. In particular, the questions of cardinality and interpersonal comparability loom large again, but this time not only in a theoretical sense, but also in a more practical way. Not only do we need some confidence that, in principle, "actual SWB" satisfies these conditions, but also that people use answer scales in such a way. If responses cannot be interpreted either cardinally or as comparable among individuals, it will be meaningless to take averages or to calculate regression coefficients. If only cardinality but not interpersonal comparability is warranted, correlations between SWB and other measures based on aggregates of individuals will in principle be meaningless.

Conspicuously, it is economists who have given most thought to these questions, while psychologists tend to take cardinality and interpersonal comparability for granted (Mullet 2001)[36]. While the theoretical questions have already been discussed above (pp. 19-20), it is still another step to ascribe cardinality and interpersonal comparability to survey responses. Van Praag (1991, quoted in van Praag and Frijters 1999: 418) gathered some evidence supporting the possibility of cardinal interpretation[37]. He presented 364 subjects with five verbal labels ("very bad" – "bad" – "not bad, not good" – "good" – "very good") free of any context and asked them to assign a numerical value on a scale from one to one hundred to each verbal label. He also asked them in a separate task to link the labels with line segments. The results did not reject the "equal quantile assumption" which states that respondents regard the distances between any two adjacent labels as representing equal intervals. This assumption corresponds to a theory of Parducci (1995, quoted in Kahneman 1999) stating that respondents adapt their use of verbal labels in a way that tends to optimize the informativeness of judgments. For the numerical translation, all mean values fell within a one standard deviation interval of the predicted values. In addition, the line segment method yielded results that were very similar to the numerical translation[38]. These findings do (and can) of course not contribute to the discussion if SWB is a cardinal concept (which is a theoretical question anyway), but they strongly suggest that *if* respondents interpret well-being cardinally, then they will use verbal labels in a way that they may be interpreted as cardinal values in the sense of the equal quantile assumption.

At the same time, this result lends plausibility to interpersonal comparison of questionnaire responses. Not only does a natural zero point seem to exist (as argued above, see pp. 19), but also do distances from this zero point appear to represent approximately equal differences. Therefore, there are good reasons to justify the assumption that equal responses by two individuals will roughly reflect the same level of SWB all along the scale. It is often argued that such a comparison is illegitimate because people might relabel the same degree of happiness after a revision of their aspirations. For example, since people tend to adapt to miserable (and affluent) conditions, when an impoverished person checks the "quite happy" answer this would merely result from a relabelling of the same level of happiness that a well-thriving man would describe as "not at all happy". Yet, such a criticism has been rejected above as overloading the concept of SWB with normative content. It is precisely the subjective evaluations that we are interested in, *i.e.*, personal perceptions in the space of subjective well-being, and not a comprehensive assessment of a person's quality of life. It is of course obvious that a relabelling takes place *in the space of living conditions* (Sen's [1987a] 'standard of living'), but since we are interested precisely in the relation between SWB and living conditions, then we cannot *a priori* impose upon the notion of SWB a functional relationship with living conditions. If SWB is defined with respect to living conditions, all one will find out about their relationship will be contaminated by tautological meaninglessness. We can take assurance in the nature of language that a person living in miserable conditions will say she is unhappy when she feels that way.

## *Conclusion*

The concept of SWB is not self-evident. Its meaning in the common use of language is reasonably well delineated, but to use it in a scientific context it has to be pinned down by a rigorous definition and explication and should be linked to quantitative measures. This has been attempted in this section. By keeping the definition and the measurement of SWB free from normative content, one can hope to obtain a concept that will be all the more informative with respect to the subjective perception by individuals of their lives. The question of the relevance of SWB-information to overall quality of life ("objective well-being") is an entirely separate one and should not intervene at this stage. Self-report measures of SWB have been found to be of reasonable though limited validity and reliability, but since measurement errors appear to be random, these limitations will apply to a much lesser degree to aggregate data which will be the focus of this study. The properties of language and empirical evidence suggest that, if SWB is conceived of as a cardinal and interpersonally comparable concept, also questionnaire responses can be roughly interpreted as having these properties. By relying on a single-item measure of SWB, the results will be more transparent so that they can be interpreted in a more straightforward way. All these considerations suggest that questionnaire responses to SWB questions should be taken at face value. The limitations to the measurement of SWB have to be assessed in the light of similar imprecision of competing measures. In particular, the reliance on objective measures for subjective conditions often creates an illusion of precision that covers up the imprecision of questionable common sense theories by which these measures are linked to the subjective state under study. The ultimate criterion of a theory or measurement of a subjective condition will itself have to be subjective. Edgeworth's hedonimeter will not become reality, not because it is too difficult to construct, but because it would be a category mistake to take a physical manifestation of a subjective condition for that condition itself.

# *Chapter II – Subjective well-being: from empirics to theory*

*The light dove*
*cleaving in free flight the thin air, whose resistance she feels,*
*could be tempted to believe that her movements would be*
*even more free and rapid in airless space.*
Immanuel Kant

This chapter attempts to synthesize the empirical evidence on SWB into a few regularities and principles, in particular with respect to income. It will start by reporting empirical evidence on correlates of SWB that will be put into a systematic classification. In the second section, it will be investigated which theoretical conclusions can, and which cannot, be drawn from these empirical data. Three stylized facts of the relationship between income and SWB will be inferred from the evidence gathered. In particular the question of the relativity of SWB with respect to income will be discussed, first in the context of within-country variation, and then for the variation across nations. Furthermore, a distinction will be made between statistical tendencies across a large number of observations and the underlying processes that actually link SWB with other variables. The chapter concludes with a proposition for a particular conceptualization of SWB as a judgment.

## Correlates of SWB

Since the birth of SWB research in the 1960s, the interest in the subject has rapidly multiplied. In 1996, Ruut Veenhoven's comprehensive database on SWB studies comprised some 3000 references (Veenhoven 1996: 17). Psychologists, sociologists, political scientists, and economists have analyzed the relationship between SWB and a huge number of diverse variables. To bring some order into this plethora of data, the empirical results will be classified by two criteria. The first criterion will be the level of aggregation, where a distinction will be made between an individual focus and a national focus. The second criterion will be the comparison perspective, which can be either a cross-section or a time-series perspective. This classification gives rise to a two by two matrix as in figure 5.

*Figure 5 – A classification of SWB research.*

| | | *comparison perspective* | |
|---|---|---|---|
| | | cross-section | time series |
| *level of aggregation* | individual | *1a* | *1b* |
| | national | *2a* | *2b* |

1a. Studies with an individual focus in a cross-section perspective investigate differences between people. They analyze a representative sample of a usually geographically defined population (a nation, a municipality …) and investigate the relationship between the individual scores on SWB and individual characteristics, like age, income, or psychological attributes (neuroticism etc.).

1b. Studies with an individual focus in a temporal perspective are perhaps the least frequently encountered. They require panel data, *i.e.*, follow-up surveys of the same set of subjects over some period of time, which makes them rather costly and difficult to implement. A somewhat more practical but less informative kind of analysis that will be classified with this kind of studies are *synthetic cohort analyses* (*cf.* Easterlin 2001 [forthcoming]; Easterlin and Schaeffer 1999). These require several random sample surveys of a given population over an extended period of time which are then grouped by birth dates in brackets of a few years. Thus one can follow *e.g.* the development of the cohort born during 1950-59.

2a. Cross-section comparisons with a national focus investigate differences between nations. In this case it is not the micro-data that is analyzed, but national averages of SWB that are set into relation with other aggregate variables (GDP, political institutions). These levels and relationships are then compared to other national averages.

2b. Studies with a national focus in a temporal perspective try to identify those factors that correlate with a nation's average SWB over time. These studies are rather easily done because many data are readily available, but the significance of such studies is limited because a large number of potentially relevant independent variables is up against a quite limited number of SWB-data points (SWB data for years before 1970 are available only for a small group of rather homogenous countries). Nevertheless one finds a few significant[39] correlations.

It is of course possible to combine the two foci or perspectives, in which case a study will fall in more than one category at a time.

It should be clear that correlations can never prove causation. The most a correlational analysis can do is lend indirect support to a cause-and-effect hypothesis by a failure to contradict it. Even if a time series analysis shows that the presumed cause is systematically followed by the presumed effect, one cannot in all cases be certain that the pattern is not in fact caused by an omitted variable. One therefore has to be vigilant not to interpret a correlation as support, let alone proof, for a cause-and-effect hypothesis just because a result corresponds to common sense expectations[40].

On the following pages, I intend to give a brief overview of correlational results between SWB and selected variables as a "factual background"[41]. The empirical findings have been synthesized from a large pool of sources, and every effort has been made to select examples in an unbiased way and to balance competing presentations. The interpretation of the results and the discussion of causality has been deferred to later parts of this chapter.

### *Demographic correlates*

**Gender**: Very few studies have found a significant difference of life satisfaction between men and women, and this is true across cultures (Ed Diener and Diener 1995). Nevertheless, women more often report negative affect than men when negative and positive affect are assessed separately (*ibid.*). One study on US data also finds evidence that during the period from 1972 to 1998, women, but not men, experienced a significant fall of their SWB levels (Blanchflower and Oswald 2000). There also seem to be differences between the underlying pattern of factors influencing the SWB of women and men (Ed Diener and Fujita 1995: 932). Thus, even if women and men do not seem to be influenced by the same factors in identical ways, the observed levels of reported life satisfaction are practically the same.

**Age**: In order to single out the effect of age on SWB, it is important to make a difference between cross-section and time series analyses. A cross-section analysis can answer the question whether at a given point in time SWB varies with the age of respondents, but the results do not allow to differentiate between the life cycle and the cohort effect. In other words, if in 1990 the age group of 50-65 years comes out as the most satisfied, one does not know if those born between 1925 and 1940 are particularly happy (cohort effect) or if in general life satisfaction peaks during that stage of the life cycle (life cycle effect). The life cycle effect can only be singled out in time series studies. The evidence is not uniform, but it is supportive of a non-relationship between age and SWB. Cross-section studies have produced varying results, including a negative correlation (Gurin 1960, quoted in Diener 1994), a positive, concave one, a U-shaped relationship if other factors are controlled for (both reported in Blanchflower and Oswald 2000), and a zero-correlation (Myers 1993, reported in Easterlin 2001 [forthcoming]). Time series data provide a conclusive explanation for these inconclusive results. Even though there do not seem to exist panel data for larger samples and sufficient time periods, a synthetic cohort analysis (Easterlin and Schaeffer 1999, reported in Easterlin 2001 [forthcoming]) suggests that SWB is stable over the life cycle for any given cohort. Therefore, the age-SWB correlations sometimes found in cross-section analyses might reflect cohort characteristics or the changing fortunes of different age groups, but they are unlikely to reflect an influence of age *per se*. Beyond *levels* of SWB, however, there seems to be a significant age effect on the *composition* of SWB. It has been found that young people experience stronger levels of both positive and negative affect and that they are also more likely to report being "very happy", whereas older people tend to be more satisfied with all life domains except health (Ed Diener, Larsen, *et al.* 1985; Ed Diener and Suh 1999).

**Race**: Earlier studies conducted in the US, South Africa, and the Netherlands have found that being black is associated with a substantially lower sense of well-being, but that this effect is reduced to close to zero if other variables (income, education, and job status) are controlled for (Argyle 1999: 362). A more recent study, however, finds that being black remains a substantial and highly significant predictor of lower SWB even after income, marital and work status, and education are controlled for (Blanchflower and Oswald 2000). In any event, age and gender significantly interact with race. While Campbell *et al.* (1976) found that older blacks are slightly more satisfied than whites, black women are much less satisfied than men of either race. Another finding has been that between 1957 and 1972, the discrepancy (without controlling for other effects) between whites and blacks did not diminish while the reported happiness of the better educated blacks with higher socio-economic status fell sharply between 1946 and 1966 (Gibbs 1973, quoted in Argyle 1999). More recently, however, the US color gap seems to narrow (Blanchflower and Oswald 2000).

**Marital status**: A person's marital status has almost universally been found to be a highly significant predictor of SWB, with or without controlling for other variables[42]. Married people are considerably more likely to report being "satisfied" or "very satisfied" than people of any other marital status, including those "living as married", and this effect is stronger for women than for men (Andrews and Withey 1976; Blanchflower and Oswald 2000; Inglehart 1990, quoted in Argyle 1999). Even more than being widowed, being divorced or separated correlates negatively not only with SWB, but also with objective health (Lynch 1977, reported in Argyle 1999). An even stronger predictor of SWB is a subject's satisfaction with her marriage, even though marital satisfaction is U-shaped over the family life cycle (Argyle 1999). Having children has been found to be either unrelated to SWB or to have a small negative effect (Andrews and Withey 1976; Ed Diener 1984). One can therefore safely generalize that marital status is consistently and positively linked to SWB.

### *Socio-economic correlates*

**Income**: In cross-section studies with an individual focus (category 1a), income persistently comes out as a highly significant correlate of SWB. In particular, several studies find that in the industrialized countries the relationship is substantial for the lowest quintile, but that it is much smaller or nonexistent over the 75% upper percent of a given country's income distribution (*e.g.* Glatzer 1991) giving rise to what will be called a *singularity of poverty*. Yet the magnitude of this correlation across all income groups is rather modest in comparison with non-monetary factors. In an OLS regression using US data of 1973 through 1998, Blanchflower and Oswald (2000) estimate a linear income coefficient that implies that the happiness differential associated with a $10,000 annual income differential is about one seventh of that associated with divorce, one sixth of that related to unemployment, and about equal to the "student bonus"[43]. In absolute terms, a half-point increase on the three-point happiness scale corresponds to a $122,000 increase of annual income. If the regression had taken account of the concave shape of the relationship, however, income could be expected to predict larger happiness differences for the lower income categories. Satisfaction with one's income seems to play a much more substantial role than income *per se* (Argyle 1999). The effect of income on SWB seems to be stronger in less developed nations (Ed Diener and Suh 1999: 445).

Time series studies with an individual focus (category 1b) are rare and so far have produced inconclusive results. Easterlin's (2001 [forthcoming]) synthetic cohort analysis has found that life satisfaction is practically constant over the life cycle. Since on average an individual's income increases up to retirement and then falls, one can conclude that for the average earner there is no relation between income and happiness over time. This result is not necessary applicable to large fluctuations of course. However, a study of lottery winners (Brickman, Coates, and Janoff-Bulman 1978) found that those 22 subjects who had won between $50,000 and $1,000,000 within the previous year rated their happiness not even 5% higher than a control group (4.0 and 3.82, respectively, on a 5-point scale), and this difference was not statistically significant[44]. On the other hand, the apparently only longitudinal study of the SWB effect of windfall gains based on a random sample found that over a variety of statistical settings, lottery gains (including other gambling gains) were a significant predictor of lower mental stress and higher SWB[45] for the subsequent year (Gardner and Oswald 2001). More specifically, a £100,000 gain was associated with a significant increase of SWB by .32 on a four-point scale, or .6 of the standard deviation of the SWB score distribution (n=9493, among which 2607 lottery winners). However, the data do not yet allow to assess the long term effects of lottery gains. An earlier study (S. Smith and Razzell 1975) found that lottery gains encourage major life changes that often turn out negative, so that after initial joy there may remain only little effect on happiness (reported in Argyle 1999).

Another way to assess the influence of income on SWB was pioneered by van Praag (van Praag 1993; van Praag and Frijters 1999). He asked people how much income they would deem "very good", "good", "sufficient" etc. and set their responses into relation with their current income. He found that the answers could be summarized quite well by a lognormal function, which allowed him to deduce an own-income elasticity of welfare of about .6 [46]. This implies that the income amounts a particular individual ascribes to the labels "very good", "good", "sufficient" etc. will each be .6% higher than the corresponding amounts given by a respondent with a 1% lower income. As a corollary, only 40% of the richer individuals' additional income is effectively contributing to higher welfare, 60% evaporate through the adjustment effect.

Cross-section studies with a national focus (2a) consistently produce a positive relationship between per capita GDP and average SWB that in most cases turns out to level off among the affluent countries (Ed

Diener and Suh 1999, Veenhoven 1991a). The strength of the correlation between per capita purchasing power and average SWB has been found to be a highly significant $r = .58$ (Ed Diener, Diener, and Diener 1995: 859) or even $r = .64$ (Schyns 1998: 15), implying that 34% or 41%, respectively, of the cross-country variance in SWB can be accounted for by income alone. The magnitude of the relationship can be illustrated by the range of the data: in the beginning of the 1990s, the Netherlands scored 3.39 on a four-point happiness scale with a per capita income of $15,695, while Hungary scored 2.72 with $6116 (Schyns 1998). Assuming that happiness is linear in $log_2$(income), this suggests that a doubling of income is associated with an increase of happiness by .50 on the four-point scale[47]. A closer inspection of cross-country data reveals considerable singular differences between economically similar countries. For example, life satisfaction averages on a ten-point scale collected by the same study were 8.16 for Denmark and 6.76 for France (India scores 6.21 on this measure; Ed Diener and Suh 1999). Because of linguistic factors (discussed below), however, singular comparisons need to be treated with caution. Another consistent finding is that many formerly communist countries score substantially lower on SWB than their income would predict. The lowest SWB score reported by most studies after 1990 is that of one or another Eastern European country.

Time series studies with a national focus (2b) spanning several decades are only available for a small set of countries. Yet, a general income-SWB correlation has not been found. While income has risen substantially between WW II and the 1990s in all countries studied, SWB tends to remain constant in most cases, rose for a few and fell for others during particular decades. A striking case is Japan. During the period from 1958 to 1987 real per capita GDP rose by 400%, increasing car ownership from 1% to 60% of households, yet mean satisfaction did not show a significant trend over time (see fig. 6). Data for the US indicate that SWB slightly fell after 1970. Even though Veenhoven as a passionate defender of a positive income-SWB effect hypothesis[48] initially rejected this interpretation, Lane (2000b: 352) reports that upon inspection of more recent (1994) data "Veenhoven concluded that net happiness figures do show a modest decline."[49] Kenny (1999) analyzed ten countries for which he could obtain longer consistent time series (at least ten observations) and found two negative and one positive significant correlations between income and happiness.

The relationship between SWB and the *growth rate* of income has received less attention in the literature. Veenhoven (1989) reports that for the group of EC countries during 1976 through 1986 he found no substantial simultaneous correlation between GDP growth and SWB, but that a positive correlation ($r$=.56) emerged between SWB and GDP growth of the preceding year. Diener, Diener, and Diener (1995) conducted a cross-section analysis with data of 55 diverse nations obtaining largely insignificant correlations between income growth and happiness, but their results are almost impossible to interpret because the economic data and the SWB scores do not seem to correspond to the same years. Kenny (1999) found in his already mentioned analysis of ten countries two negative and two positive significant correlations between SWB and the lagged growth rate of income. A few studies with an individual focus produced contradictory results. While Bradburn (1969) found a tendency for higher SWB scores for families whose chief wage earner had received a pay rise in the past year compared with those who received a pay cut, Diener, Sandvik, *et al.* (1993) found non-significant differences between the SWB of individuals whose salaries had increased and those whose salaries had decreased over a ten-year period. Inglehart (1990), finally, found that among those who said that their financial situation was "a lot better" 85% were satisfied, while this percentage was 57% among those who said that it was "a lot worse" (the last three studies mentioned are reported in Argyle 1999).

**Work status**: Work status is generally strongly related to SWB. A meta-analysis found an overall correlation between SWB and work status of .18 (Haring, Okun, and Stock 1984, quoted in Argyle 1999). Being unemployed has a negative effect on SWB even after the loss of income is controlled for (Blanchflower and Oswald 1998, 2000; Campbell, Converse, and Rodgers 1976; Oswald 1997). In the happiness regression of Blanchflower and Oswald (2000: 27, 29) referred to above, the inclusion of income as a predictor has hardly any effect on the unemployment coefficient and its significance[50]. Oswald (1997: 1821) concludes that "research suggests that the worst thing about losing one's job is not the drop in take-home income. It is the non-pecuniary distress." Similarly, Campbell, Converse, and Rodgers (1976: 315) find that unemployed men (but not women) have "substantially lower" SWB scores than the employed even after controlling for income. The negative effect of unemployment seems to be more pronounced in an environment of generally low unemployment (Argyle 1999). In a recent panel study, the magnitude of the non-pecuniary unemployment effect is estimated to be about seven times as large as a 90% reduction of one's income (Winkelmann and Winkelmann 1998)[51]. Assuming, as the authors of the study do, that life satisfaction is linear in log(income), the compensating variation of unemployment is an income increase by the factor 10,000,000. Since the assumption of log-linearity seems to be questionable for very low and very high income ranges, this figure should not be taken at face value but rather as an indication of the relative significance to SWB of work status *vis-à-vis* income.

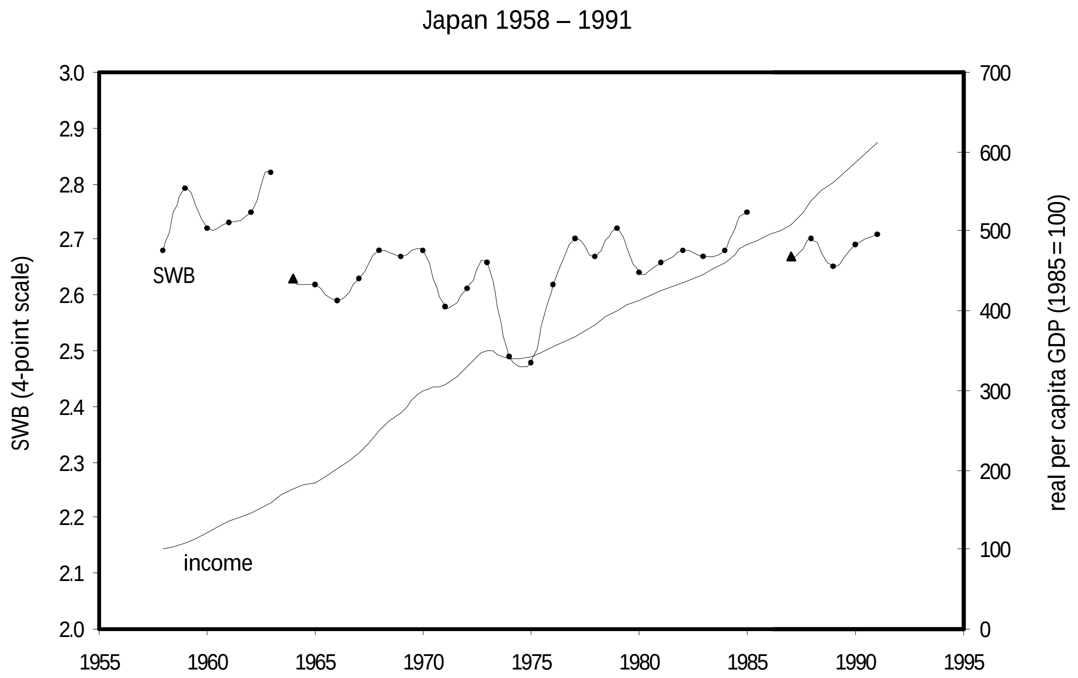
**Education**: The level of education usually correlates slightly positively with SWB, in the range of $r$=.10 (Argyle 1999: 355). The relationship seems to be weaker in countries with higher per capita income (*ibid.*). If income and occupational status are controlled for, however, the effect of education is reduced (Ed Diener, Sandvik, *et al.* 1993), disappears altogether (Argyle 1999), or even becomes negative (Clark and Oswald 1996a), indicating that the zero-order correlation with SWB works at least in part via the income effect.

**Friendship**: Studies investigating the impact of personal ties on SWB found a clear positive relationship that was comparably large in comparison to other predictors. In an earlier US study, the number of a subject's friends[52] was found to correlate stronger with SWB, no matter if other effects were (.23) or were not (.27) controlled for, than family income (.14/.17) , intelligence (.13/.18), health (.13/.17), or education (.10/.10) (Campbell, Converse, and Rodgers 1976: 368). A later study found that among those reporting fewer than 5 friends, 26% said they were "very happy" compared to 38% of those reporting five or more friends (Myers 2000: 62).

### *"Soft" correlates*

**Personality traits**: Extraversion and neuroticism[53] have been found to be those well-defined personality traits that are most strongly linked to the pattern of

*Figure 6 – SWB and income over time.*




Note: The question wording was modified in 1964 and in 1987. The response options were as follows:

| *score* | *4* | *3* | *2* | *1* |
|---|---|---|---|---|
| *until 1963* | satisfied | rather satisfied | as yet unsatisfied | unbearably dissatisfied |
| *1964-1985* | fully satisfied | not fully but to an extent | as yet unsatisfied | very unsatisfied |
| *after 1986* | fully satisfied | not fully but generally | still dissatisfied | extremely dissatisfied |

SWB scores are arithmetic averages. Per capita income is corrected for inflation.
Regressions over the period from 1964 to 1985 of SWB on income, on the growth rate of income, and on the lagged growth rate of income yielded no significant correlations. A linear regression of SWB on time resulted in $R^2$-*adj* = .091 ($p$ < .10) for 1964-1985, and in $R^2$-*adj* = .167 ($p$ < .05) for 1964-1991, with a predicted rise of SWB of .37 and .33 over one hundred years, respectively.

Sources: SWB data from Veenhoven 2000; GDP data from Summers, Heston, *et al.* 2001.

SWB. Extraversion is related to the frequency of positive affect, while neuroticism correlates with the frequency of negative effect. Some authors also found a tendency for extraversion to be related to higher, and for neuroticism to be related to lower levels of SWB (Ed Diener 1984: 559; Ed Diener and Lucas 1999: 219).

Self-esteem has been found to be a strong predictor of SWB (Ed Diener 1984: 558). Andrews and Withey (1976: 112), *e.g.*, computed a zero-order correlation between their measure of self-efficacy[54] and their SWB index between .54 and .68, ranking among the highest they found among all variables. In another study covering 31 diverse countries, a correlation of .47 was found (reported in Ed Diener 1994: 115).

Intelligence has not unambiguously been found to be related to SWB. While in one study a positive correlation ($r$=.18) between interviewer ratings of intelligence and SWB emerged (Campbell, Converse, and Rodgers 1976: 368), other studies found a negative effect (Ed Diener 1984: 559). A number of other studies found no significant relationship (*ibid.*).

**Culture**: One of the most frequently investigated cultural attribute is the degree of individualism. Individualism and collectivism are two poles of one cultural dimension developed by Hofstede [1991][55]. Measures of individualism have been found to correlate strongly ($r$ = .77 for a component measure of individualism, and .61 if the figures by Hofstede were used only) with nations' average SWB scores (Ed Diener, Diener, and Diener 1995: 859). Interestingly, the same study found that individualism correlated even stronger with per capita income ($r$ = .80 for the component measure) than it did with SWB. Individualism remained a highly significant predictor of SWB when income was controlled for, but income became insignificant when individualism was held constant. Other studies found slightly different patterns though (Ed Diener and Suh 1999: 442).

## The psychology of subjective well-being

The large number of significant correlations between SWB and various measures, of which only a fraction has been reported here, demonstrate that self-report measures of SWB are linked in systematic ways to various aspects of a subject's life and that they are not simply random answers or personality traits completely irrelevant to political and economic questions. This justifies attempts to construct a psychological theory of subjective well-being. While a general, coherent theory still seems to be out of reach for some time to come, the evidence so far is rich enough to identify a number of consistent and, perhaps even more important, inconsistent patterns that an eventual theory of SWB will have to account for.

The preceding discussion of single correlates of SWB did not allow to identify a particularly striking characteristic of SWB on the individual level. If we step back from single correlates, it appears that "hard" (*i.e.*, readily measurable) objective life circumstances as a whole account only for a small proportion of the observed variance in SWB, and that the large untraceable proportion of variance among individuals must be attributed to other than these factors. Taking all their demographic factors together, Campbell, Converse, and Rodgers (1976) could explain not even 20% of the variance in SWB (reported by Ed Diener and Lucas 1999). Andrews and Withey (1976: 141) could not explain more than 11% in any of their data sets when they included six demographic variables simultaneously (family life cycle stage, family income, age, education, race, sex), and none of these predictors alone could explain more than 6% of the variance. These low values suggest that "there is no reason to expect strong relationships between the objective conditions of life and subjective assessments of well-being under most circumstances" (Schwarz and Strack 1999: 79). On the other hand, the same authors could explain 50% to 60% of the variance in SWB with measures of life concerns, *i.e.*, the subject's degree of satisfaction with particular aspects of his life. For example, the combination of just 6 domain-satisfaction measures (self-efficacy, family, money, amount of fun, housing, national government) could explain 50% (*ibid.*: 127). It is noteworthy that, in turn, only 14% of the variance of the life concern measure "satisfaction with money" could be explained by the six demographic variables mentioned above, *i.e.*, including family income (*ibid.*: 142).

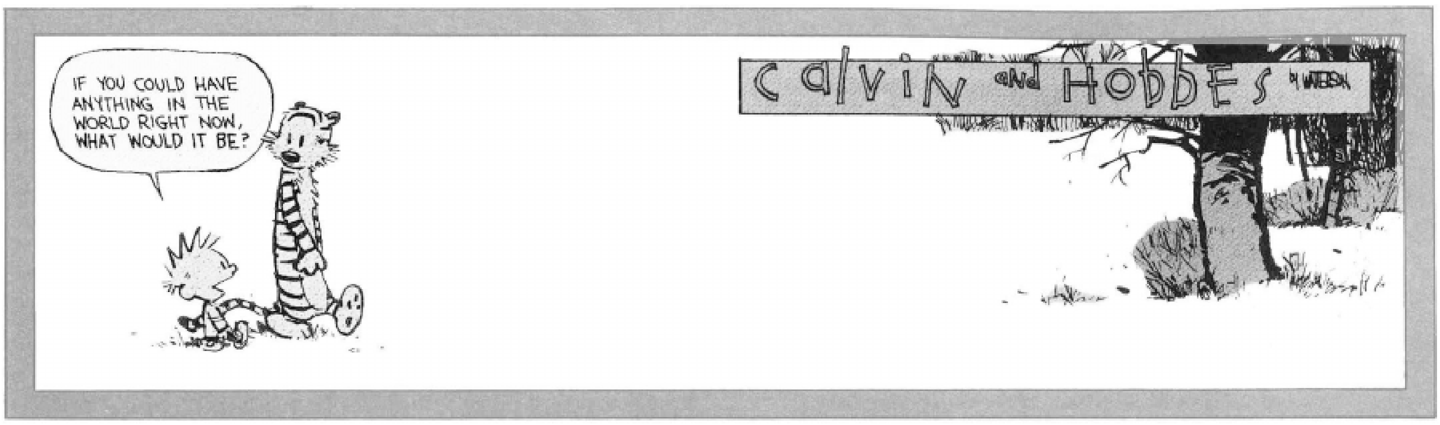
When knowledge about a person's income, age, education, and other objective variables does not allow to make any reasonable guess about that person's SWB, what in fact makes individuals with identical objective characteristics have so different levels of life satisfaction? There are basically two factors that must account for the unexplained variance. For one part a number of "soft" (*i.e.*, not readily measurable) objective circumstances[56] have not been systematically included in estimates of predictability. For example, the objective quality of one's family life is hard to measure and therefore not included in most studies, but since *satisfaction* with family life is a strong predictor of overall SWB (with a zero-order correlation between .38 and .60; Andrews and Withey 1976: 112), it would not be surprising if SWB correlated also with the *objective quality* of family life. If the omission of such soft life circumstances is taken into account, one can conclude that life circumstances as a whole will predict more than the 10% - 20% of SWB variance explained by demographic (“hard”) variables. In fact, longitudinal studies (of type 1b) have investigated the effect of changes in hard *and* soft life circumstances, finding that 25% of differences in life satisfaction could be explained by life events (Headey and Wearing 1992, reported in Veenhoven 1996: 27). This figure can be regarded as a lower bound of the variance explained by life circumstances since some circumstances may still have been omitted and because the influence of life circumstances is likely to be understated in longitudinal studies investigating life *events* because many life circumstances are stable over time. If one person lives in a permanently strained marriage and another in a constantly harmonious one, a measure of life events (*i.e.*, changes) will not capture this factor and will thus not be able to appreciate the influence of family life on SWB. Yet, it is unlikely that the inclusion of all life circumstances would even come close to explaining 100% of the variance in SWB.

The remaining part of the variance has been attributed to the second factor, personality. This can be considered, in the context of SWB prediction, a catch-all concept to account for the remaining difference in SWB between individuals. Support for an important contribution of personality-fixed factors to SWB is abundant. For example, after some time has passed after a major life event, people tend to turn back to their original level of SWB. This tendency has been found in broad panel studies (Headey and Wearing 1992; Suh, Diener, and Fujita 1996) as well as in studies of accident victims who became paraplegic or quadriplegic (Brickman, Coates, and Janoff-Bulman 1978; Ed Diener and Lucas 1999; Silver 1980), leading Suh and his colleagues (1996) to conclude that “only recent events matter.”

Considerable evidence even suggests not only that personality has a strong stabilizing influence on SWB, but also that the effect of personality is to a large extent heritable and fixed. A study on monocygotic twins concluded that 48% of the variability in SWB is heritable, while shared family environment accounted only for 13% (Tellegen, Lykken, *et al.* 1988, reported by Diener and Lucas 1999; also *cf.* Lykken and Tellegen 1996). Do these results imply that “trying to be happier is as futile as trying to be taller”? (Lykken and Tellegen 1996: 189, quoted in Lyubomirsky 2001: 246.) Here one has to be careful not to take a statistical relationship for determinacy. It is one thing to observe that genes and SWB tend to go together over a large sample, and a completely different thing to make a statement on the genetical determinedness of a given individual. In principle, the largest difference in SWB observed in a pair of monocygotic twins will set a lower bound on the potential variation that is left undetermined by heredity. Nonetheless the estimate of 48% is rather impressive and impinges on the idea of the improvability of SWB, but it seems more adequate to talk of a *genetic disposition* to be happy rather than of a *genetically determined range* (let alone *level*) of happiness.

On the level of cross-country analyses (2a) a similar remark can be made. Even though in general SWB correlates strongly with income, countries with a given level of income can score very differently on SWB and vice versa. For example, in a study of 55 nations, Colombia immediately succeeds the U.S. in terms of SWB (succeeded in its turn by Luxembourg, New Zealand, and further on by Norway and the Netherlands), while its per capita purchasing power is only 24% of that of the United States. Similarly, Japan ranks 42nd on that list of countries (followed by Greece, Poland, Kenya) and New Zealand 10th, even though Japan’s per capita income (in terms of purchasing power) is 11% higher than New Zealand’s (Ed Diener, Diener, and Diener 1995)[57]. A strong correlation is therefore merely an indicator of a statistical tendency over a large number of observations, but it cannot be interpreted as a determinant of an individual country’s SWB.

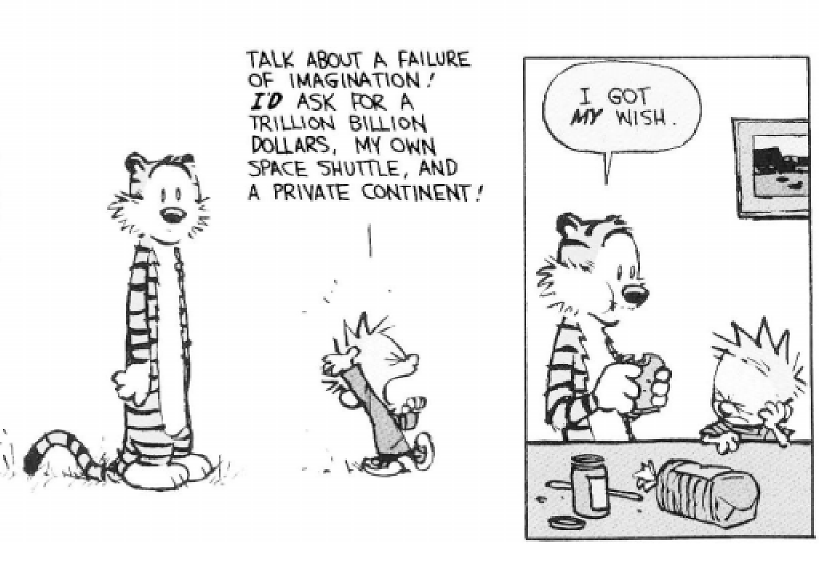
A further issue in the context of cross-country analyses deserves to be mentioned. Since the compa-



rability of SWB measures depends on the consistency of people's use of language, cross-country comparisons are liable to be distorted to the extent that the meaning of a given question (or its answer options) is altered by translation. It is conceivable, for example, that for a given state of "actual SWB", US Americans are, on average, slightly more or less inclined to use the answer option "very satisfied" than Germans are to use "*sehr zufrieden*". Even though there are no direct checks of a linguistic distortion, evidence from societies speaking more than one language suggests that the bulk of the observed cross-country variation is not a linguistic artifact but true variance. Studies have found only few differences between the answers of Dutch and French speaking Belgians, Swiss of different languages, and French and English speaking Canadians (Ed Diener 1994: 112). The low ranking of Japan has repeatedly been brought in connection with linguistic distortions. Lane, *e.g.*, argues that "Japanese are rarely very happy or very anything, for it is bad form to stand out." (Lane 2000b: 31), and a similar argument has been brought forward by Kenji Iijima (1982: 5-6, reported in Veenhoven 1987). However, even if such a tendency shows up in the data, it is not evident that this argument can account for the low score. It is true that the percentage of respondents choosing the highest of four answer options dropped substantially (from 18.3% to 4.4%) when the questionnaire was changed in 1964, but the mean score was already low and did not decrease dramatically (from 2.82 to 2.63, from where it did not deviate much until 1987)[58]. In addition, the Japanese do not tend to make less use of the extremely *negative* answer option ("very unsatisfied") than Western European citizens ("not at all satisfied") do on average (Veenhoven 1993: 177-90), a fact that undermines Lane's and Iijima's argument.

The argument that cultural peculiarities distort cross-country comparisons has to be treated with caution, though, because such arguments tend to lump together differences in perception and differences in communication. To the extent that cultural differences are reflected in the use of different words to describe the same degree of "actual SWB", one should talk of a bias. For the case of "social desirability" (*i.e.*, the effect of a culture's approval of the claim to be happy on survey responses), for example, this means that a distortion is created to the extent that social norms make people in different cultures use the same answer option differently, but this effect should be separated from the "real effect" of social norms on SWB, *i.e.*, the extent to which social norms influence a respondent's perception and judgment itself (*cf.* Ed Diener 1994: 113-4). If one culture tends to stress optimism and encourages to see the positive side of things, people might indeed be happier than those characterized by a more sober mentality. If one "corrects" the data for these cultural differences, the results will no longer reflect *subjective* well-being. This links back to the discussion in chapter one of subjectivity (pp. 21) and shall therefore not be pursued further here.

As far as cross-country comparisons are concerned we seem to be confronted with comparability problems that are theoretically somewhat more serious than those of within-country analyses. However, since the noise contained in individual data cancels out in large samples, the theoretical comparability problems of national averages are perhaps less serious in practice than those of individual scores. In any event, it appears highly unlikely that all of the income-controlled variance of SWB between countries is due to linguistic differences. The conclusion must therefore be that country-specific factors matter.

## *Income and SWB*

Since the question of the relation between income and SWB is of particular relevance to economics, it will be investigated in more depth on the following pages. This discussion will also illustrate some general psychological processes that appear to mediate between life circumstances and life satisfaction.

The above presentation of income correlates with SWB can be summarized by three stylized facts.

1. At one point in time, within a given country, the poor report lower SWB than the non-poor.
2. Over time, within a given country whose per capita income exceeds some threshold income, SWB does not rise as per capita income rises.
3. Across countries, happiness correlates positively with per capita income, but the relationship is weak to nonexistent among the richer countries.

These three stylized facts will invalidate every simple hypothesis of the kind "more money brings more / not more / less happiness". Black-and-white discussions of whether happiness is influenced by relative or absolute income (in particular Veenhoven 1989, 1991a) will necessarily be in vain.

The first and second stylized facts suggest that there is a considerable relative aspect to the SWB-income relationship: people derive satisfaction of earning an income that is high with respect to the country's current average income, but apart from this relative effect the level of income has no bearing on happiness as long as it exceeds some threshold income. This observation has become generalized as the *relative income hypothesis*. Why, then, is the effect of income on SWB different in the case of a general increase of the incomes of all, compared to its effect when all other incomes remain the same? Two distinct effects seem to account for this disparity.

**Accounting for the relative income hypothesis**

The first effect I will call "secondary inflation". Analogous to the inflation of the monetary mass that reduces the value of money with respect to commodities, the inflation, or expansion, of the average income in "real terms" or in terms of "commodity purchasing power" (*i.e.*, corrected for what I will call "primary inflation") leads to a reduction of the value of income with respect to what Sen (1980/1983) calls *functionings*[59] . This effect is at work in its purest form where positional goods are involved. A positional good (Hirsch 1976: 27) is characterized by some absolute limitation on its availability to society, either because it is a rival good in fixed supply (*e.g.* van Gogh's masterpieces) or because an increase in consumption will lead to congestion (*e.g.* a lonely beach). Positional goods are therefore valued for their *relative* superiority that does not erode as society becomes richer because of their *absolute* scarcity, just as the Nobel prize derives its fame basically from the fact that only one for each of the six categories is awarded each year, no matter how many outstanding candidates were nominated.

Positionality seems to play an even greater role for immaterial goods and achievements than for commodities. The value of one's education, *e.g.*, is highly dependent on the education of others (Hirsch 1976); one's prospects to be promoted at the job depend to a large extent on how hard one's colleagues work (Frank 1999);standing up at a soccer match improves one's view only as long as nobody else stands up, etc. In all these cases the payoff of one's effort or expenditure depends to a large extent on the effort and expenditure of others because one's payoff is a function of one's position in some kind of competition. A given functioning, *e.g.*, making holidays in a lonely cottage, will then become ever more expensive because it requires finding ever more remote places as the newly rich settle on the formerly quiet spots.

Apart from positional goods, the cost of a given functioning in terms of commodities also depends on the life styles of others as far as social interactions link individuals together. For example, as people become richer and own more cars, and society richer to build additional roads, public transport may in many cases deteriorate. As a consequence, some people will be forced to buy a car in order to get to places where they formerly could go by bus. In the same vein, the availability of cell phones makes it indispensable for particular professions to own one in order to get a job or to compete. Similarly, as the destinations of school trips become more distant every year, parents have to pay more to afford their children the same functioning, to wit the participation in a school trip. These additional expenditures do not, however, enter into the calculation of primary inflation because in terms of goods and services, consumption does indeed increase. Yet, in order to express the "functioning purchasing power" of money, prices have to be corrected also for secondary inflation.

It is of course not suggested here that such corrections be done in practice because it is much harder to agree on a representative basket of functionings and how a particular functioning should be defined than is the case for marketable goods and services. The reason to use a basket of commodities to standardize purchasing power over time is indeed its objectivity, and such an objective standardization has great merit. However, the convention to call thus standardized figures “real” and to identify a constant “real income” with a constant level of utility is again an illegitimate overinterpretation of objectivity as reality and accuracy.

The second effect that leads to the relative relation between SWB and income could be called the “frame-of-reference effect” (*cf.* Frank 1997a). This effect is at work to the extent that the increase of one’s reference group’s consumption reduces the SWB one derives from a given activity, increasing one’s aspirations and evaluation standards. For example, when all families in one’s neighborhood increase their holidays spending, one’s own desire to go on similarly adventurous holidays is likely to increase, and one’s capacity to enjoy any given holiday trip to decrease. Or, to put it differently, someone in Western Europe who nowadays has not traveled abroad by the age of 18 is likely to feel dissatisfied about his holiday destinations, whereas a person of the same age would probably not have felt so just a few decades ago. The frame of reference can in some instances also have the reverse effect when an individual desires to distinguish herself from, rather than emulate, pervasive consumption patterns. These non-conformistic preferences (Vendrik 1993: 113) can then also mean a downward revision of one’s aspirations in terms of commodities, but in order to keep the discussion simple we will exclude this possibility. The frame-of-reference effect is closely linked to what in the psychological literature is called *relative deprivation* (Stouffer, Suchman, *et al.* 1949) and *social comparison* (Festinger 1954; *cf.* Olson, Herman, and Zanna 1986).

The distinction between the secondary inflation and the frame-of-reference effect can best be formulated in terms of functionings. Secondary inflation is the rate of income growth required to maintain one’s level of functionings, whereas the frame-of-reference effect alters the set of functionings that will maintain an individual’s level of SWB (fig. 7). The former is a primarily external allocative effect, while the latter is rather internal or psychological (also called practical and social-psychological effects, respectively; Vendrik 1993: 112). Obviously, the distinction does not manifest itself in the nature of the good in question. One person might replace her car by a larger and more expensive one because she has revised her aspirations, while another who is doing the same simply wants to maintain a particular level of safety in the presence of ever more solid cars on the roads. In many cases the two effects will be hard to separate at all. In particular, the desire for increased consumption can to some extent also be attributed to the functioning of social participation or to self-esteem, if that can be called a functioning. In any event, the distinction between the secondary inflation and the frame-of-reference effect is meant as a conceptual distinction and does not claim that every single purchasing decision can be classified as being motivated by either the one or the other effect.

*Figure 7 – The utility chain linking money and SWB.*

money
↘ primary inflation
↙
goods
↘ secondary inflation
↙
functionings
↘ frame-of-reference effect
↙
SWB

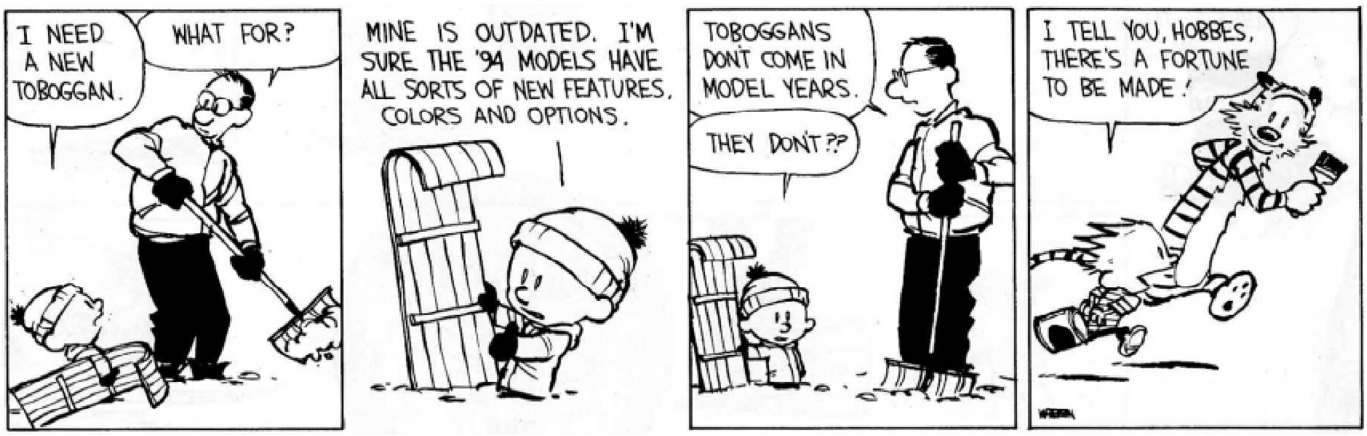
Both these effects can be formulated in terms of the well-known economic concept of externalities. The effect of *A*’s consumption on *B*’s subjective well-being is similar to the negative impact of uncontrolled industrial pollution, with the difference that the effect of pollution is a direct reduction of welfare whereas the frame-of-reference externality is an indirect effect on *B*’s capacity to derive SWB from a given amount of income. This interpretation, perhaps first formulated by Duesenberry (1949)[60], has indeed inspired some economists to propose the same remedy as for industrial pollution, namely the penalization of the negative externality by means of a progressive taxation of income or, more appropriately, of consumption (Boskin and Sheshinski 1978; Duesenberry 1949; Frank 1997a, 1999; Layard 1980; Ljungqvist and Uhlig 2000). The economic implications of the relative income hypothesis will be dealt with in chapter three and will therefore not be discussed further here.

It should be noted that the negative impact on SWB brought about by the secondary inflation and the frame-of-reference effects does not involve envy, at least not necessarily so. The secondary inflation effect is beyond suspicion anyway because it merely raises the material requirements for the maintenance of a given set of functionings. In this case the individual concerned does not care directly about what others consume, he just cares about not becoming absolutely worse off over time in terms of functionings. The case is different for the frame-of-reference effect. Here the impact on SWB is a direct consequence of people’s awareness of how their consumption compares to that of others. However, an individual seeing his constant living standard fall behind that of the group constituting his frame of reference does not need to be moved by feelings of envy in order to feel dissatisfied. A family living in 2001 with an average income of the year 1970, even compensated for primary and secondary inflation, will likely feel dissatisfied simply because of the frequent "contact with superior goods" (Duesenberry 1949) and because of their failure to "keep up with the Joneses" (Ljungqvist and Uhlig 2000).

A way to measure the degree to which these two effects (secondary inflation and frame-of-reference) taken together raise the level of income necessary to maintain a given level of SWB (the SWB evaluation standard) is to ask people which income they consider necessary to get along. When the time trend of these answers is set into relation with the growth of income over time, one obtains the "average-income elasticity of the SWB evaluation standard". To be sure, the Gallup question "What is the smallest amount of money a family of four needs to get along in this community?" (Frank 1999: 73-4) does not explicitly tap information on SWB, and even if it did, most respondents would have to engage in a hypothetical judgment of how they would feel if they had a different income. Yet, it seems reasonable to assume that measurement errors will not show a trend over time and that there is a strong proportional relationship between the SWB evaluation standard and "get-along income" so that over a longer period of time the trend of the responses will be a good proxy for the trend of the SWB evaluation standard. Rainwater (1990, reported in Rainwater 1994: 26) finds an elasticity for the United States of unity over the period from 1950 to 1986, implying that the SWB evaluation standard moves in proportional lockstep with the average income, with the get-along amount being more or less constant at three-quarters of mean income. In other words, provided that the postulated inference from get-along income to SWB is valid, the combined effect of primary and secondary inflation and the frame-of-reference effect add up to the per capita nominal income growth rate. This would mean that the whole increase in average income is neutralized so that no net increase in SWB is achieved. This is of course consistent with the finding reported above (p. 31) that average SWB does not show a trend in most countries for which data are available.

I hasten to emphasize the limitations of this result. Again, the described pattern of income and SWB is merely a historical regularity, a statistical relationship of highly aggregated variables and as such it can certainly not be interpreted as a general principle. First, the observation that economic growth *does* not lead to higher SWB does not permit the conclusion that it *cannot* do so. Second, it cannot be concluded from aggregate data that a particular individual is doomed to passively watch his aspirations rise with his reference group's average income. And third, we are dealing not with laboratory experiments but with data collected over an extremely long period of time during which many other relevant factors changed. We cannot know what would have happened to SWB if income had stagnated, if unemployment had been different, or if other major trends had not evolved the way they did. These issues will be taken up in chapter three at some length, but for the time being it should be kept in mind that there is much more to the relationship between SWB and income than correlations of national averages can reveal.

Little has been said so far about how exactly the frame of reference influences SWB. To dig a little deeper into this question, a further distinction between two ways in which the frame of reference influences aspirations shall be made explicit. The first is via *status considerations, i.e.*, the concern for one's ranking within one's reference group. In this case it is evident that one's evaluation standard is a direct function of one's frame of reference because to maintain one's status, the consumption of the individual ranking just below oneself will set the minimum for one's own consumption[61] . Thus, the status effect influences as-



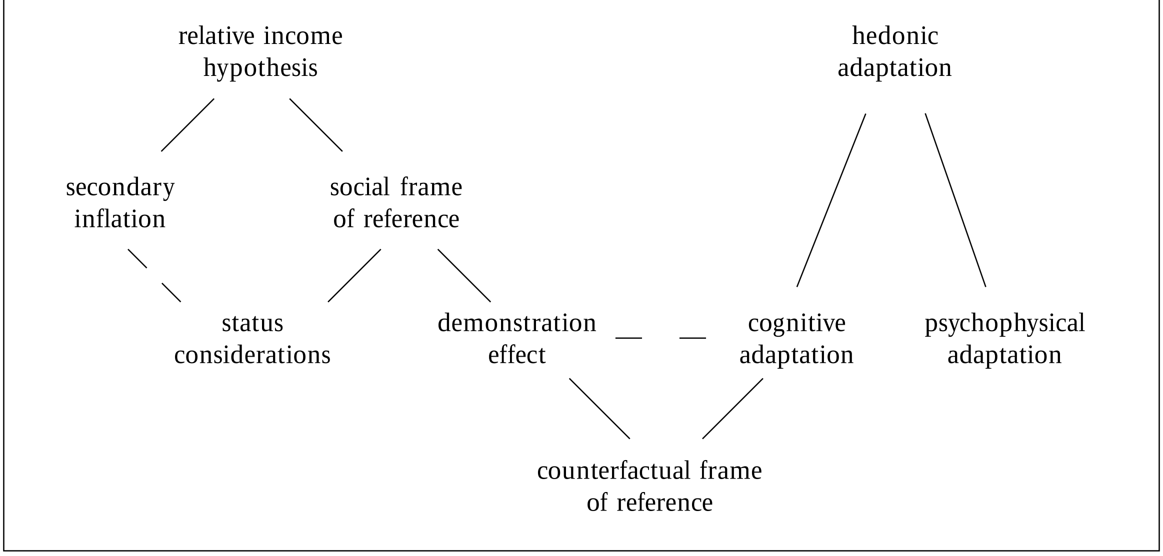
pirations to the extent that satisfaction depends directly on the consumption others enjoy.

That status is a significant consideration has been firmly established by empirical evidence. For example, the wage dispersion within firms, or within divisions of one firm, is typically much more compressed than would be consistent with economic theory, so that high-ranking workers could in most cases earn considerably more by switching to an otherwise equivalent job where they would belong to the lower ranks (Frank 1985a). Yet, the discrepancy can be explained with a concern for status. If people derive satisfaction from the status they hold at their work place, those with low rank will want to switch to a job that provides them with higher status unless they are compensated by their high-status colleagues. These, in turn, will be willing to forgo the extra income of a low-status job at a better paying firm in order to induce their colleagues of lower positions to stay—which is the only way to maintain their status (*ibid.*). Additional evidence comes from psychological experiments in which half of the subjects who had performed best in an evidently meaningless quiz were awarded a star. Subsequently, the subjects with a star received better terms than those without a star when they traded objects of known value with others (Ball and Eckel 1994, reported in Frank 1999: 119). A number of studies even found strong evidence that low relative income had a substantial causal influence on health (reported in Frank 1999: 142-4).

The second influence of the frame of reference on aspirations is via the *demonstration effect* of others' consumption. As a society becomes richer and new goods enter the market, the mere awareness of, and the concrete exposure to, qualitatively and quantitatively increasing consumption patterns may instill more intense or genuinely new desires while at the same time reducing the satisfaction derived from existing consumption patterns. For example, the owner of a brand new Mercedes Benz in 1980 might have felt delighted at its stylish design and its driving characteristics, yet the same individual would certainly not experience the same enthusiasm if offered an identical vehicle in 2001 because it would look quite mediocre in comparison with the driving, design, safety, and convenience attributes of the latest models. The reason for her lower ability to derive satisfaction from the outdated car need not involve any status considerations. Someone who considers a car without an airbag unsatisfactory simply cares about his own safety and not about how favorably he compares with his peers. Rather, the demonstration effect leads to an upward revision of aspirations because the standard of what constitutes a satisfactory car appears to be inherently relative with respect to the state of the art of car manufacturing. Before the invention of the airbag, not having one did of course not constitute a deficit. Laboratory experiments with animals and humans have produced firm evidence that over a wide range of domains and stimuli, exposure, in and of itself, tends to promote liking (Rozin 1999: 124). The demonstration effect therefore rests primarily on individual, rather than social, considerations. It is a social effect nevertheless because it is initially social influences that set off a revision of one's aspirations.

The failure of income growth to bring more happiness seems to involve yet another effect without any social dimension, to wit *hedonic adaptation* (see fig. 8 for an overview). In general terms, hedonic adaptation is the reduction of the hedonic, *i.e.*, SWB-relevant,

*Figure 8 – A classification of effects mediating between money income and SWB.*



response to a constant or repeated stimulus (Frederick and Loewenstein 1999: 302). It can take the form of a shift of the baseline stimulus level, *i.e.*, the stimulus experienced as neutral (*baseline shift*), or that of a reduction of the subjective experience in general without a shift of the zero point (*desensitization*; *ibid.*). Figure 9 illustrates the two alternatives where the response functions (*A*, *B*, *C*) are drawn to reflect a diminishing marginal response to deviations from the baseline stimulus as suggested by prospect theory (Kahneman and Tversky 1979, 1984).

A consequence, and a vital biological function, of baseline-shift adaptation is that the sensitivity to small departures from the background stimulus, *i.e.*, from the "typical", most frequent stimulus, remains high even as the background stimulus evolves over time, *e.g.* from $s_0$ to $s_1$. Without adaptation, the experienced difference between $s_1$ and $s_2$ will be $R^A_2$ minus $R^A_1$ along curve *A*. With adaptation, by contrast, the response function will shift from *A* to *B*—or somewhat less if adaptation does not go all the way—and the experienced difference will be the much larger $R^B_2$ minus $R^B_1$. This effect works like a magnifying glass that allows a better perception of small differences in the vicinity of one's current background stimulus, but it makes remote states hard to distinguish. A classic example of baseline-shift adaptation is luminosity perception.

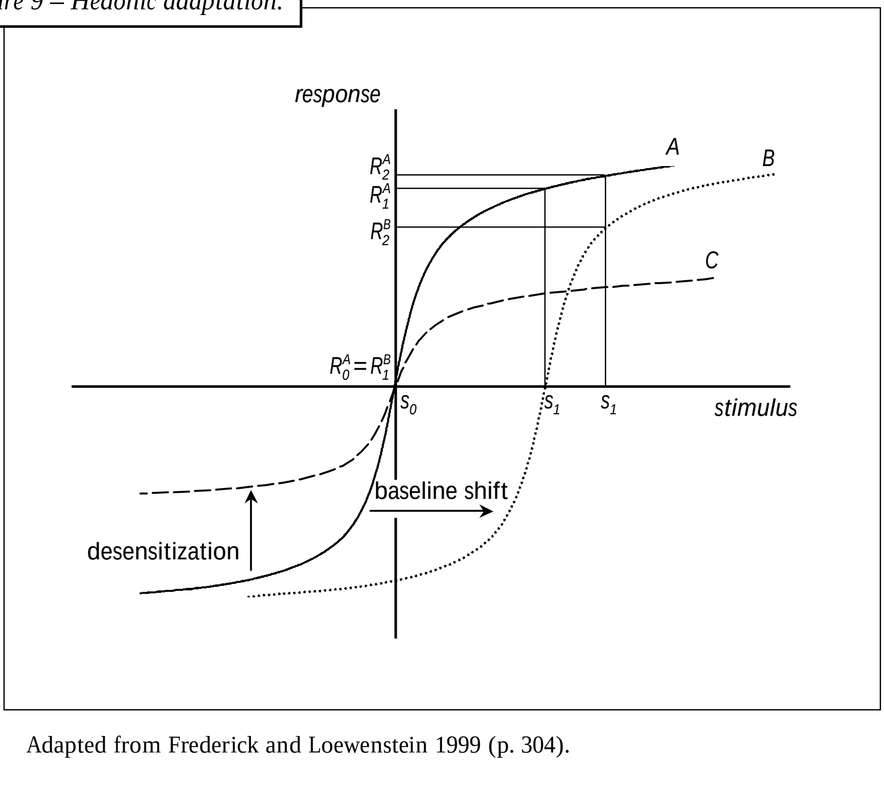
Desensitization, on the other hand, leads to quite the opposite result. Repeated exposure to loud noise, for example, leads to a general loss of the ability to distinguish acoustic stimuli at any volume intensity (Frederick and Loewenstein 1999: 321). However, the response to a heightened background stimulus like $s_1$ will remain positive in the case of desensitization, while it becomes neutral in the case of a baseline shift. Other examples of desensitization include exposure to airborne irritants like cigarette smoke (Cometto-Muniz and Cain 1992) and exposure to graphic sexual violence (Linz, Donnerstein, *et al.* 1988, reported in Frederick and Loewenstein 1999).

A further distinction should be made between two adaptation processes: psychophysical adaptation and cognitive adaptation. This distinction corresponds closely to that between hedonic affect and cognitive satisfaction introduced in chapter one (pp. 23).

Psychophysical adaptation, the primary biological property differentiating physics and psychophysics (Frederick and Loewenstein 1999: 320), is the adaptation of the sensory experience and is well known in various contexts. For example, as one steps from a building into bright sunshine, a number of purely physiological adaptation processes take place (pupil contraction, photochemical changes in the retina, and neural changes in particular areas of the brain), allowing man to see normally over luminance intensities that vary by a factor of over one million (Frederick and Loewenstein 1999: 302). The distinguishing feature of psychophysical adaptation is that the sensory response itself is altered, so that different stimuli are really perceived as exactly identical without intervention of any cognitive evaluation. Cognitive adaptation, on the other hand, involves a reassessment of an invariant perception. For example, after a twelve-hour trip by car, a one-hour trip will appear much shorter than it did before. In this case the adaptation does not consist in a change of the sensory perception but in a different evaluation of the same perception.

It becomes clear that cognitive adaptation is closely related to the impact of the social frame of reference on SWB via the demonstration effect. In fact, the demonstration effect is just the particular case where cognitive adaptation is induced by one's social environment. How-

*Figure 9 – Hedonic adaptation.*




Adapted from Frederick and Loewenstein 1999 (p. 304).

ever, where adaptation takes place without any social influence, the failure of income to increase SWB can be accounted for by purely intrapersonal processes. In particular, the stagnating well-being of those becoming richer in both absolute and relative terms, which can hardly be accounted for by the relative income hypothesis, can be explained by hedonic adaptation. For example, the owner of a multi-million dollar yacht will probably adapt to a large extent to the hedonic thrill, and it seems safe to predict that the more frequently he uses it, the less excitement he will experience. This adaptation would seem to be largely unrelated to any increase in others' consumption or to any other social influence. That such an adaptation takes place appears quite plausible in view of a study of the Forbes 100 wealthiest Americans that found that the 49 super-rich responding to the survey were only slightly happier than the average American (E. Diener, Horowitz, and Emmons 1985, reported in Myers 2000: 59).

Strictly speaking, adaptation of the intrapersonal kind does not account for the relative income hypothesis, but since it seems to interact to a large extent with social considerations, it is included at this point. Before concluding the discussion of the relative income hypothesis, it should once again be emphasized that it is meant only to apply above a certain threshold income. For very low levels of income, increases will raise SWB irrespective of relative standing. It is evident that people will not adapt to any level of income because, in the extreme, one cannot fully adapt to being malnourished or to suffering from illness. The income of one's reference group has no role to play in this. It also seems that relative income matters less, *i.e.*, that the SWB gap between the highest and the lowest income group becomes smaller, the richer a society grows (Veenhoven 1991a). This could suggest that as a society grows richer, intrapersonal adaptation processes become relatively more, and frame-of-reference effects less important. Nevertheless, whatever the respective effects of adaptation and comparison, an income threshold seems to exist for the country as a whole. This threshold income can be thought of as the per capita income of a perfectly income-egalitarian society beyond which economic growth does not raise average SWB. A clue of where this threshold could lie comes from comparisons of nations.

**Income and SWB across nations**

The third stylized fact is harder to interpret than the first and the second. To begin with, it is less well established than the first and the second because of the limited availability of comparable data. Until quite recently, SWB data had only been collected in a limited set of rich countries (Inglehart 1997: 63), and very seldom do two independent studies use identical question wordings, making results hard to compare.

Nevertheless, the decreasing marginal contribution of income to happiness across countries can be considered a typical result of cross-country regressions, but it would be premature to interpret it as an established relationship. While perhaps most studies find a curvilinear relationship (Ed Diener and Suh 1999; Inglehart 1997; Veenhoven 1991a), one study including 55 diverse countries found a linear relationship (Ed Diener, Diener, and Diener 1995)[62], while another found a positive, more or less linear correlation up to the third income quartile, but a slightly lower degree of life satisfaction for the highest than for the third quartile (Ed Diener and Suh 1999: 439). The study that is perhaps best known among economists, Easterlin's 1974 study based, among others, on comparable data by Cantril (1965), concluded, after he had removed outliers, that the correlation was weak and the magnitude of the income effect small in comparison with within country variations. Later, Veenhoven (1991a) showed that the same data including the outliers did support a positive relationship with a correlation of $r$=.51, though he did not comment on the magnitude of the relationship[63].

There are three reasons why a curvilinear relationship between income and SWB across countries appears to be the most plausible working assumption as long as more definite data are not available. First, it is the result that seems to be *most frequently* obtained in cross-country studies. Second, it is also an *average* result of those studies, since both linear and partially negative relationships have been found. And third, the *most reliable* studies, *i.e.* those using the same method and survey format across a broad range of countries, clearly show a curvilinear pattern. This is true in particular for the World Values Survey (WVS) of 1990 (Inglehart 1997)[64]. Curvilinearity means that there are diminishing returns in terms of SWB to income, that is the curve initially rises rather steeply but levels off toward higher incomes. The steeply rising part of the curve suggests that life in a very poor country is indeed less enjoyable than that in a moderately poor country. However, the flattening of the curve for the richer countries means that life in a very rich country does not bring substantially more happiness than that in a modestly rich one, if there is any difference at all. The threshold income beyond which per capita income is insignificantly related to SWB is estimated by Kenny (1999) and Myers (2000) as $8000 per year (presumably 1990 dollars).

If it is now tentatively accepted that across countries there are diminishing SWB-returns to income, and that the "marginal happiness" approaches zero, how could such a relationship be reconciled with the observation that the SWB of the wealthy countries does not appear to increase over time? Unfortunately no time series data are available for a country escaping extreme poverty. However, when Japan started its surveying of SWB in 1958, the country was not very far above subsistence income. In fact, in 1958 it still ranged behind Mexico, and corrected for (primary) inflation its income was about one seventh of the United States' 1990 income, thus falling between Congo-Brazaville's and Jamaica's 1990 values (Summers, Heston, *et al.* 2001). Of course the data for one single country cannot be generalized to a comprehensive theory, but on the other hand a theory that is inconsistent with the Japanese data will carry the burden of proof.

There are basically two ways to deal with the time series evidence. Either one considers it separately from the cross-country relationship by arguing that comparison is not possible over time because decisive global conditions change that are fixed in cross section data. Such an approach abstains from formulating any general theory and claims that the two relationships— over time and across countries— are independent. In this case one does not need to bother about time series evidence when formulating a cross-section theory. Alternatively, if it is believed that there is one general relationship between a country's per capita income and average SWB that holds both over time *and* across countries, one's theory will have to integrate the time series evidence with the cross-section data. Since the first approach would not have much explanatory significance, it will be attempted to account for the evidence of both dimensions at a time.

One way to reconcile the cross-country with the time series evidence is to extend the relative income hypothesis, and in particular the frame-of-reference effect[65] , beyond the borders of a country. If people care not only about their status within their country, but also about their personal or collective status *vis-à-vis* the "global village", and/or if the demonstration effect transgresses state borders, this would explain why at any point in time poorer nations are less satisfied than richer ones even though each nation's happiness would not increase over time as long as its relative position remains the same. How realistic is such a claim? As to the status effect, it seems not very credible that one's relative standing with respects to a global frame of reference is a major explicit concern of most people. However, the demonstration effect is a much more likely candidate for cross-border influences. In even the poorest countries the consumption patterns of the world's wealthiest societies are represented, in particular in the cities, via television, tourism, advertising, and through the emulation of Western life styles by the local upper classes. Lauterbach (1972), for example, observed that in Latin America the exposure to the consumption patterns of the affluent countries gives rise to "'premature' consumer aspirations" and to "an ever-growing pressure on the Latin American consumer, even the one with little discretionary purchasing power, in the direction of emulating the consumption preferences and habits of consumers in industrialized countries" (*ibid.*: 276).

However, one general problem with the global relative income hypothesis is precisely the case of Japan. During its spectacular economic rise beginning in the early 1950s, Japan not only became richer in absolute terms but also in comparison with other economies. While in 1958 it ranked 32nd (if not lower, because data lack for a number of countries) with per capita income amounting to 26% of the U.S.A.'s income of that time, in 1992 it ranked 7th with 84% of US per capita purchasing power. The increase of SWB that would be predicted by the international relative income hypothesis did not take place, though.

Thus, it seems that the data cannot be accounted for by a general theory that relies only on SWB and income information. However, it is still possible to defend a universal relationship if additional factors are assumed to impact on SWB. For example, it could be argued that increased consumption per se does lead to higher collective happiness, but that negative side-effects of economic growth neutralize that upward tendency. Such side-effects could include environmental degradation, social disruptions (crime, family breakup), or loss of cultural identity. Some authors indeed argue that periods of high economic growth might decrease life satisfaction because it brings with it too high a rate of cultural and social change (Lane 2000b: 61; Wright 2000). Once growth returns to moderate levels, however, the economic gain should lead to higher satisfaction than before. Unfortunately, no sufficient data are available to check such a prediction, except the little representative time series of Japan which again is inconsistent with this hypothesis. SWB in Japan did not show a clear upward trend over time, and periods of high growth do not seem to be related to lower SWB than periods of moderate growth.

So far the correlation between income and happiness has implicitly been interpreted as causal, running from income to SWB. However, even though such a causal direction might be intuitively most plausible, intuition is a poor guide as far as aggregate mechanisms on a historical time scale are concerned (see above p. 19). Indeed, a reverse causal direction —from happiness to income—appears to better fit the cross-country data (though not the within country data). If happiness is exogenous to economic performance, and if a country's economic power depends on its happiness, this would be perfectly consistent with a positive correlation across countries and stability of happiness over time. To be sure, the question would remain why Japan "did it" and Mexico, having roughly the same SWB score in 1990 (Inglehart 1997), remained relatively poor. However, as has been emphasized repeatedly, the purpose of the current investigation is to account for statistical tendencies and not to provide explanations for singular cases.

The hypothesis that happiness causes economic prosperity is therefore not contradicted by the data, and it also does not appear to be completely implausible (Kenny 1999). Yet, little is gained in terms of understanding the relationship between SWB and income if SWB is simply assumed to be exogenous. Therefore, in order to explore other possible explanations, a routine check of the statistical correlation between income and SWB will be discussed, to wit, omitted variable bias.

It has already been reported that SWB has been found to correlate strongly with individualism ($r$=.77), which in turn correlated even stronger with per capita income (.80). Indeed, individualism also showed a higher zero-order correlation with SWB (.77) than did per capita income (.59), and it also was a more robust predictor in the sense that individualism remained highly significant and strongly correlated with SWB (partial $r$=.62, $p$<.001) after controlling for income, but income became insignificant and negative (partial $r$=-.08) when individualism was controlled for (Ed Diener, Diener, and Diener 1995). However, when other data sets were used, the pattern was in some instances reversed, rendering income a more significant predictor of SWB than individualism. Thus, while it would be premature to claim that the correlation between SWB and income is purely spurious, the statistical evidence from this study strongly suggests that individualism has a role to play.

A cogent theory of how individualism might relate to SWB has been proposed by Ahuvia (1999). Referring to a solid body of research by Kasser and Ryan (Kasser and Ryan 1994, 1996), he argues that "the secret to SWB is meeting one's intrinsic needs", which in turn is "dependent on 'being true to one's inner self' rather than conforming to social pressure". The independent self, in turn, is the "psychological hallmark of an individualist culture (Markus and Kitayama 1991; Wong and Ahuvia 1997)". This is not to say that the intrinsic needs of the independent self are themselves individualistic in nature. They may very well be deeply social (Lane 2000a, 2000b; Myers 2000, 2001), but they emerge from an individualistic consciousness, rather than from a collectivist identity that defines itself to a much larger degree as an integral part of a group. Thus, the individualist's liberation from "networks of social obligation", Ahuvia argues, increases one's ability to make choices that cater to one's intrinsic needs, or, in economic terminology, the individualist's preferences are directed to more intrinsic desires which are more rewarding in terms of utility than the fulfillment of preferences derived from desires external to the independent individual. It should be well noted, however, that "increasing one's ability" does not mean that an individualist will always succeed in identifying the most intrinsically gratifying activities (Kasser and Ryan 1994). In addition, happiness itself may simply not be such an overriding goal for non-Western cultures as it is in the occidental world, where it has always occupied a special place, from Aristotle's philosophy to the Declaration of Independence that affirms as a "truth to be self-evident" the "unalienable right" to the "pursuit of happiness". Indeed, the percentage of those respondents who indicated, in the World Value Survey, that they had never thought about whether they were happy or satisfied, was larger in collectivist than in individualist cultures. When asked about the importance attached to happiness, students in individualist cultures gave significantly more affirmative answers than collectivists (Ed Diener and Suh 1999: 442), even though the difference cannot statistically account for very much of the difference in actually reported happiness (Ed Diener 1994). The higher levels of SWB in individualist cultures are not, in this interpretation, a result of the direct pleasures of consumption but of the nature of people's goals.

The reason for the striking correlation between individualism and per capita GDP, which Ahuvia does not attempt to explain, seems to lie in a particular compatibility between individualism and competition. As I have argued elsewhere (Hirata 1999), collectivist attitudes, *e.g.*, seeking consensus before a decision is taken, can come in the way of profit orientation, while individualist traits, *e.g.*, self-attribution of success and failure together with the ideal of self-determination (Deci and Ryan 1985; Iyengar and Lepper 1999), are conducive to a competitive disposition[66]. Competition, in turn, has been the primary engine of economic growth in the Western world. This does not mean that the only path to economic prosperity is via individualism and competition, as the example of Japan and the Asian "Tiger States", all ranking low on individualism (Hoecklin 1995: 36), show. However, it seems that the Confucian success stories were not so much driven by competition, but rather by a particular match between an economic high-growth environment and a growth-oriented, but strikingly little competition-oriented, business culture (Iwata 1982). The particularly severe difficulties of many Asian countries during periods of global economic slowdown or recession (oil crises, financial crises) seem to be related to this cultural dimension.

While the cultural dimension appears to play a crucial role in the relationship between economic growth and SWB, a thorough discussion of the cultural ramifications would go far beyond both the scope of this study and the competence of its author. However, taking into account all the evidence considered so far, a preliminary conclusion on the relationship between income and SWB shall be drawn.

*A priori*, there can be no doubt that for very low levels of income there will be a positive and causal influence of income on SWB that does not depend on the income of any other individual[67]. Once a certain threshold income is reached, however, a nation's average SWB does not respond to increases in income while the SWB of any individual tends to increase with *relative* income. Despite the positive cross-national correlation between income and SWB, there seems to be no substantial causal relationship among these two variables. Rather, the correlation seems to be primarily, if not exclusively, due to a third influence, that of individualism (and perhaps additional cultural attributes). One effect of individualism is to fuel competition which results in economic efficiency and, therefore, in material prosperity. A second effect is that individualism places priority on intrinsic desires which are characterized by a high "happiness payoff". At the same time, it assigns a more important role to happiness as a constituent of the good life.

The relationship between income and SWB thus seems to work in completely different ways between countries and within a given country. Whereas between countries culture causes the positive correlation, variations between citizens of one state depend on the relative size of one's income. A further difference should be noted: the cross-country correlation between SWB and objective variables is substantial while "life circumstances have a negligible role to play" (Kamman 1983, quoted in Myers 2000: 60) in the case of individual comparisons. While income alone can explain up to 37 percent of cross-country variation (Ed Diener, Diener, and Diener 1995: 860), individualism up to 64 percent, and four variables taken together (income, individualism, equality and human rights) 73 percent, no study has as yet succeeded to account for even 20 percent of the variation across individuals with any combination of objective variables (see p. 33). We shall therefore turn back to the question how the weak relationship between life circumstances and SWB on the individual level has to be interpreted.

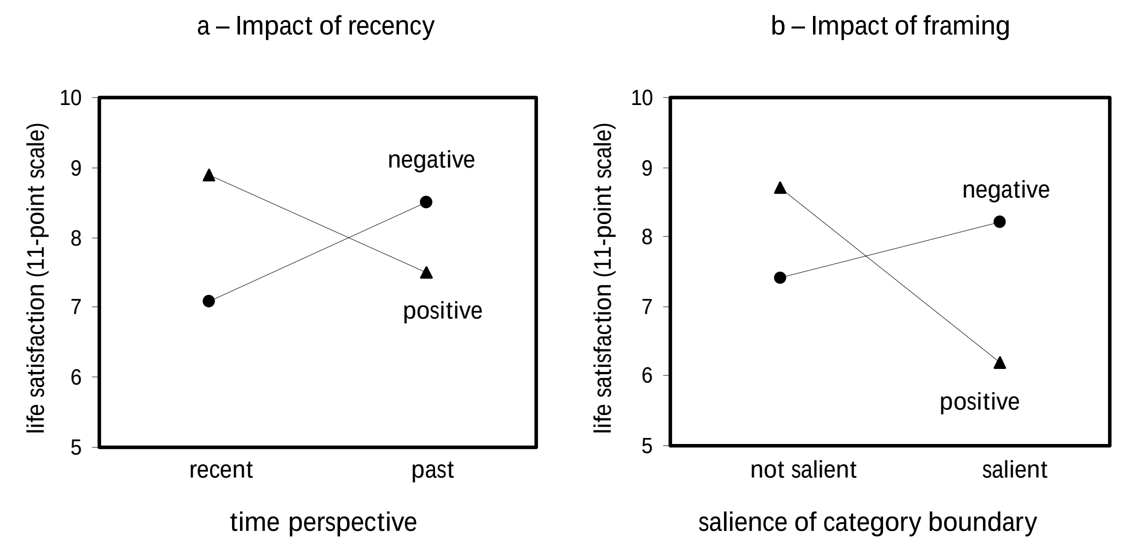
## *SWB as judgment*

The idea that it is theoretically possible to predict, in a statistical sense, an individual's SWB with information on his life circumstances presupposes that an individual is at every moment characterized by a specific level of "actual SWB" (see chapter one, p. 22). The failure to account for even one fifth of the variation can mean one of two things. Either the relationship between life circumstances and SWB is simply more complicated than statistical models have so far assumed, or there really is no deterministic relationship between circumstances and SWB because the heuristic notion of "actual SWB" has no correspondent in reality. Whether the former or the latter is true seems to be once again a question beyond falsification. It is always possible that one has simply overlooked factors or mechanisms that would explain the remaining variance. Also the difficulty to measure soft objective variables can be held responsible for the limited predictability. However, while there can be little doubt that the predictability of SWB could in principle be improved, for an understanding of SWB it seems more appropriate to conceive of SWB not as a determinate state, but as a free and therefore ultimately non-deterministic judgment.

A host of empirical evidence suggests that the latter view might be more appropriate[68]. One consistent finding is that one event typically has two effects of opposite direction on SWB, and that it is highly context-dependent which effect will dominate. Tversky and Griffin (1991) call these effects *endowment effect*, the direct contribution of an event to one's happiness or satisfaction, and *contrast effect*, the indirect comparison-standard effect of an event on the evaluation of subsequent events. For example, the experience of a brilliant theater performance will have a positive endowment effect, but the contrast effect will render subsequent theater visits less enjoyable because ordinary performances will fade in comparison, and even excellent ensembles will lose the touch of distinctiveness. Experimental studies demonstrated the presence of this dual effect and also showed that manipulations can reverse the direction of domination. In one experiment (reported in Schwarz and Strack 1999; Strack, Schwarz, and Gschneidinger 1985), one group of subjects were asked to recall and write down a very positive event in their lives, and the other group to do the same for a very negative event. Within each group, half of the subjects were instructed to recall a recent event and the other half to recall a past event (at least five years back). Subsequently, subjects of all four groups rated their satisfaction with life on a ten-point scale (ranging from one to eleven). Little surprisingly, those who had been asked to think of a recent positive event reported higher satisfaction than those who had recalled a recent negative event. However, among those who had recalled a past event, the pattern was reversed. Those who had recalled a negative past event actually reported being *more* satisfied than those who had been asked to think of a positive past event (fig. 10a). In another experiment (*ibid.*), first-year students were asked to report a positive or negative event that "happened two years ago." Their subsequent reports of SWB showed that the endowment effect dominated. Some students, however, were asked to report an event that "happened two years ago, that is, before you came to the university." For these students, the contrast effect was dominant (fig. 10b; the authors do not report significance levels). This pattern strongly suggests that how a given event affects SWB cannot be deduced from the nature of the event, its recency and other objective attributes, but rather that the impact depends crucially on the way an individual thinks about it.

The observation that SWB reports are influenced by questionnaire design is usually interpreted as a measurement artifact, *i.e.*, as introducing an error term into reported SWB. However, it appears more plausible to interpret such seemingly spurious influences as a reflection of the indeterminacy of human judgment. For example, when a respondent was asked about his marital satisfaction after being asked about his satisfaction with life as a whole, the two scores correlated .32. Yet, when the order was reversed, the correlation was .67 (Schwarz, Strack, and Mai 1991). In other words, when the question on life satisfaction followed that on marital satisfaction, the two responses were much more likely to be similar. In yet another questionnaire design, the two questions were preceded by a joint lead-in that informed respondents that they would now be asked two questions pertaining to their well-being. Again the marital satisfaction item preceded the question on life satisfaction, but now the correlation dropped to .18 (reported in Schwarz and Strack 1999). This phenomenon can be ascribed to the conversational norm of non-redundancy (*ibid.*). In daily conversation, speakers naturally understand that their messages are expected to provide information that is new to the recipient. When the question on life satisfaction is presented as belonging to the same conversational context as the preceding question on marital satisfaction, the respondent will therefore implicitly assume that the second question pertains to new aspects of her life, much as if it was asked, "Aside of your marriage, how's the rest of your life?" (*ibid.*). A similar observation has been made with respect to current mood. Generally, SWB reports are found to be influenced by the weather at the time of the interview. However, when in one experiment (Schwarz and Clore 1983) the interviewer subtly drew the respondent's attention to the weather (by asking

*Figure 10 – Contrast and endowment effect.*




Source: Data from Strack, Schwarz *et al.* 1985 (7a) and from Schwarz and Strack 1999 (7b).

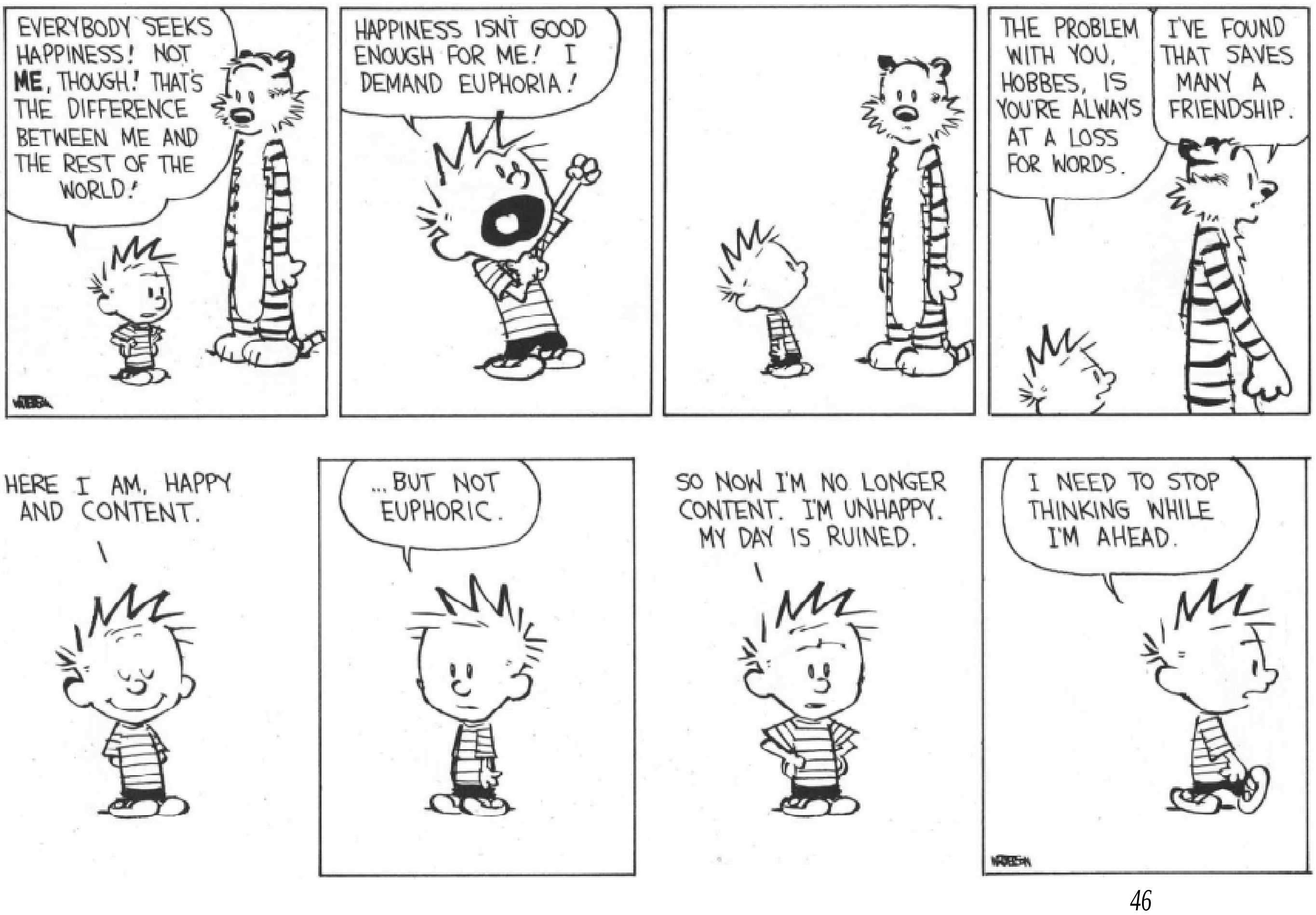
as a private aside "By the way, how's the weather down there?"), the correlation between weather and SWB disappeared, but a measure of current mood was not affected and remained correlated to weather. This suggests that if a respondent is aware of the weather as a real influence on her mood, she will "correct" for the weather-related influence of mood on her SWB response.

These results show that SWB reports are influenced by the accessibility, the salience, and the contextual significance of information. However, whoever claims that these influences represent distortions must implicitly have in mind a catalogue of conditions that are admissible and those that are inadmissible influences. After all, a subjective condition will always be embedded in a context. Since at any moment some considerations will be more salient than others, however, there seems to be no basis to evaluate what a distortion would be. To further underscore this point, consider the finding that the mere presence of a person in a wheelchair under self-administered questionnaire conditions increased reported SWB, presumably because that person served as a salient standard of comparison (Strack, Schwarz, *et al.* 1990). Are these responses biased, or are they in fact better reflected?

In view of these results it appears difficult to maintain the concept of "actual SWB". Rather, SWB seems to be better understood as a judgment. As such, SWB would be as complex, (un)predictable, and subjected to normative considerations as judgments in general. The judgment would not just be a mediator between life circumstances and SWB, it would assume *the* central role..

Very generally, a judgment can be understood as an evaluation of a state against a counterfactual standard of what ought to be. This standard, which I will call the *counterfactual frame of reference*, will be influenced basically by two hypothetical considerations: by the perceived likelihood of alternative states (*likelihood counterfactuals*) and by normative considerations of what ought to be the case (*normative counterfactuals*; Kahneman and Miller's [1986] *norm theory* takes the same perspective).

To illustrate the case of likelihood counterfactuals, consider the finding that winners of Olympic silver medals report to be less satisfied than bronze medal winners (reported in Schwarz and Strack 1999). Obviously, silver medal winners evaluate their place against the possibility that they *could have* won gold, and they feel disappointed because it was "so close". On the other hand, bronze medal winners are likely to compare their bronze medal with not having won any medal at all, resulting in a favorable comparison. Even more striking evidence comes from a study in which subjects were asked to imagine arriving half an hour late for an airplane due to a traffic jam on the way.



Most subjects said that they would be more upset about missing the airplane if they learned afterwards that the departure had been delayed by 25 minutes (so that effectively they arrived only five minutes late; Kahneman and Tversky 1982, reported in Folger 1986).

Normative counterfactuals include considerations of legitimacy but also of social norms, *i.e.*, of what is "normal" as a matter of fact, rather than out of ethical considerations. For example, Easterlin's (2001 [forthcoming]) finding that the SWB of a given cohort remains stable over the life cycle despite rising income in early years and falling income at retirement might reflect an evaluation of one's income against the social norm that students and retirees have always had relatively little income to dispose of. Legitimacy considerations are also consistently found to be relevant for SWB. One study in the U.S., *e.g.*, found that the most powerful predictor of satisfaction with pay was equity considerations (Berkowitz, Fraser, *et al.* 1987, reported in Argyle and Martin 1991). Or as Layard put it, "I dislike an identical banging at night much less if it is due to the wind than to my neighbors" (Layard 1980: 747).

The point I am trying to make is not that the counterfactual-frame-of-reference approach can better account for judgments of SWB than other theories, with which it is complementary, and not rival, anyway. Rather, my point is that conceptualizing SWB as a judgment allows to appreciate the decisive role of the mind and of normative considerations. The dual effects of endowment and contrast, *e.g.*—even though they affect judgment with considerable statistical regularity—leave it up to the individual how she evaluates her life. While it is conceivable that rare experiences of intense happiness may have a negative overall effect on life satisfaction of nostalgic dreamers (Parducci 1995), "a few glorious moments could sustain a lifetime of happy memories for those who can cherish the past without discounting the present" (Tversky and Griffin 1991: 117). The entire question of SWB, and consequently the very idea of the good society, appears in a paradigmatically different light if it is not understood as maximizing the availability of resources that meet given needs, but as the satisfaction of legitimate expectations in which the active and sensible examination of the expectations themselves has at least as large a role to play as the means to satisfy them. Csikszentmihalyi, renowned for his seminal research on truly gratifying experiences he called "flow", expressed in one sentence all the difference such a perspective makes: "Happiness is not something that happens to people but something that they make happen" (Csikszentmihalyi 1999).

This last chapter will recollect the themes discussed so far and explicitly relate them to economic theory. First, the relationship between choice and happiness, discussed in chapter one, will be taken up again and investigated separately for the individual and the social perspective. Next, the question will be addressed if the evidence reviewed allows for the increase of happiness in the wealthy countries and which role the economy could play in particular. Subsequently, the central question will be examined of how the empirical psychological research can enrich economics. A few concrete applications will illustrate these potential contributions of psychology. Finally, the paradigmatic underpinnings, exposed in the first chapter, will be evaluated, and the results of this study will be put into a larger perspective.

## Subjective well-being and choice

### *The rational behavior hypothesis revisited*

Happiness research finally allows to submit the rational behavior hypothesis to empirical scrutiny. While tests of the utility maximization axiom will be easily contested as long as no independent way to identify an individual's motives is agreed upon, it is possible to test the hypothesis that people do not make systematic decision errors. If it is shown, however, that they do, the rational behavior hypothesis of economics will be severely weakened. While it would still be possible technically to uphold the assumption that people are motivated by utility maximization, it would have to be admitted that the sources of utility cannot be deduced from observed behavior. As a corollary, preferences as revealed by behavior would no longer be equatable with "most conducive to happiness", and welfare economics, including the concept of efficiency, would be shaken in its foundations (*cf.* the citation of Sen, p. 18).

It is crucial to well define when exactly decision errors become systematic. The rational behavior hypothesis does not claim that people do not frequently fail to further their *summum bonum*, it just posits that people do not fool themselves. This shall be interpreted here as the two conditions that (1) people learn from their *ex post* mistakes (*i.e.*, from those decisions that the individual rightly realizes afterwards were erroneous at the time they were made), and that (2) irrelevant circumstances do not influence decisions. It can often be argued that decision errors that exhibit a particular systematic pattern will cancel for a given individual if they bias decisions both ways, favorably and unfavorably, with equal frequency. While in any particular case this is indeed an empirical question, the criterion is if a decision error works in a systematic way so that in principle it can lead to systematic decision errors.

A first empirical challenge to the rational behavior hypothesis is the finding that people tend to prefer a more painful experience to a less painful one if the former is identical to the latter except for being prolonged by a period of milder pain. For example, patients undergoing a colonoscopy, a rather painful diagnostic procedure, rated their experience of pain significantly more favorably when the treatment was extended by one minute during which the colonoscope was left stationary, thus causing only mild discomfort (reported in Kahneman 1999). The same paradoxical preferences have been observed in experiments exposing subjects to unpleasant noise and cold water, where most subjects preferred as a second trial the experience prolonged by a mildly painful period even though they had rated it as more painful by a real-time rating method (Kahneman, Wakker, and Sarin 1997). This phenomenon has been found to conform to a simple rule of *peak-end evaluation*. The average of the peak and the end affective intensity accounted for a substantial amount of variation of the retrospective evaluation (up to 45% in the colonoscopy study and up to 93% in other experiments; *ibid.*). This implies that the retrospective evaluation is not based on a temporal integration of the painful experience, *i.e.*, retrospective evaluations suffer from *duration neglect*. In other words, not only is the retrospective evaluation of pain inaccurate, but also monotonicity is violated. As a consequence, the welfare criterion of the temporal integration of instant (dis)utility, as proposed explicitly by Edgeworth (1881) and accepted implicitly in most welfare economic texts[69], will yield a different ordering than observed choice. Or, as Kahneman put it in an allusion to Bentham, "the sovereign masters that determine what people will do are not pleasure and pain, but fallible memories of pleasure and pain" (Kahneman 1999: 20).

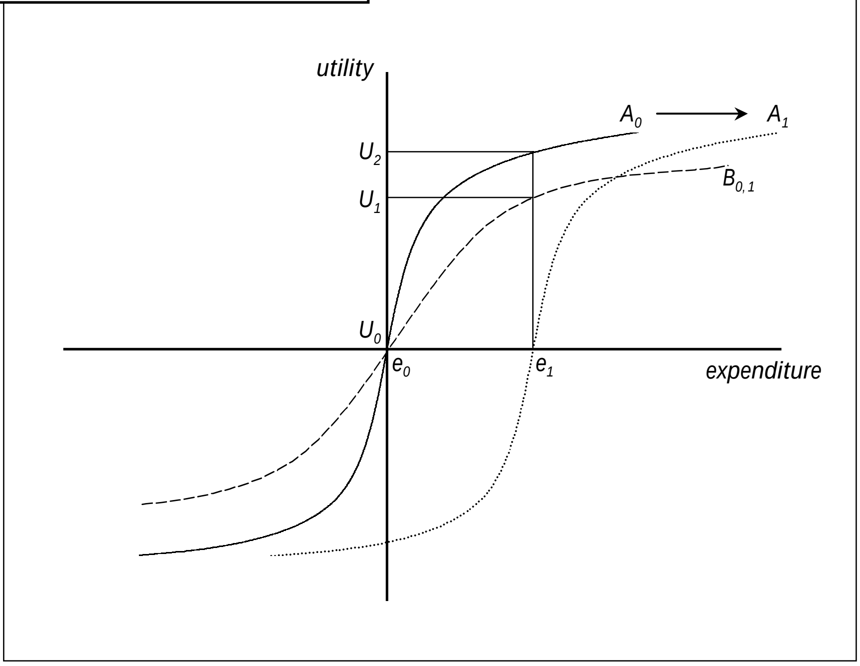
Neither of the two criteria seems to be unambiguously more appropriate as a measure of welfare. The temporal integral, or *total utility* (Kahneman, Wakker, and Sarin 1997), criterion appeals by its independence of the moment of evaluation. It does not matter at which point in time an experience is evaluated and how well an individual remembers its momentary hedonic quality. Total utility is in this sense an objective measure of subjective well-being (which is why Kahneman [1999] calls it "objective happiness"). On the other hand, the retrospective evaluation, or *remembered utility* (Kahneman, Wakker, and Sarin 1997), criterion cannot be discarded for two reasons. First, the memory of an experience may itself have a bearing on momentary happiness, either through an endowment or through a contrast effect (see chapter two, p. 44). This effect of remembered utility would not ultimately matter to the measurement of overall SWB since—at any point in time—a measure of "objective happiness" would capture the influence of memories on momentary happiness. This effect would, however, play a role for the assessment of the hedonic significance of a particular experience. Second, it is also conceivable that an individual does not at all care about what she has gone through, but only how she evaluates her well-being in retrospect. For example, after an individual has succeeded to quit smoking, she may completely discount painful periods of craving she went through and evaluate her well-being solely on the basis of her present satisfaction with her achievement of becoming a non-smoker. In this case, the evaluation would not have any retrospective dimension, and therefore the total utility criterion would be inappropriate.

A further discrepancy between choice and SWB can be attributed to *biased foresight*, an umbrella term for unanticipated hedonic adaptation and focusing illusion. Hedonic adaptation (see chapter two) is not in itself inconsistent with the rational behavior hypothesis. However, when adaptation is not anticipated, actually experienced utility will be systematically different from anticipated utility, and once again choice may lead to a different ordering than measures of SWB. This will be problematic in particular where an individual has the choice between two activities, of which activity *A* is characterized by baseline-shift adaptation and activity *B* is not. If the initial utility functions are as $A_0$ and $B_0$ in figure 11, and if the individual can spend a fixed amount of resources $e_1$ on either activity *A* or *B*, the failure to anticipate the shift of function $A_0$ to $A_1$ will make the individual choose activity *A* even if activity *B* yields higher utility in the long run.

The *focusing illusion* (Schkade and Kahneman 1998) consists in overstating the relevance of a particular aspect of life to one's SWB just because attention is drawn to it. For example, when students of a Midwestern and of a Californian university were asked about life satisfaction in the two regions, both groups predicted that Californians would be more satisfied, even though in fact no difference emerged, though Californians reported greater satisfaction with climate (*ibid.*). Presumably this is because when comparing one's current state with an alternative, the characterizing differences of the state in question are brought to awareness without at the same time being set in proper relation to common features or less salient differences. The students in the experiment may have focused on the more agreeable Californian climate without being aware that climate as an influence on SWB is negligible in comparison with other factors that will essentially be the same in the Midwest and in California. Similarly, able-bodied individuals who affirm that they would prefer not living at all rather than being confined to a wheelchair may focus on the distinctive, negative aspects of being handicapped, thus failing to realize that some of the most essential sources of SWB, like friendship and self-esteem, are still available to para- and quadriplegics.

A more specific case of the focusing illusion consists in the overemphasis of changes *vis-à-vis* enduring states (Kahneman 1999). *Ex ante*, the transition to a new state and the new state's initial affective quality are much more salient than the experience of being in that state for a longer period of time. For example, when predicting one's life satisfaction as a paraplegic,

*Figure 11 – Choice and adaptation.*



judgments may not so much be based on the state of *being* paraplegic, but rather on the painful experience of *becoming* paraplegic (*e.g.*, by an accident) and on the initial frustration at one's misfortune. Similarly, the anticipated happiness from owning a new car may be exaggerated to the degree that the initial excitement and the thrill of novelty are overstated, while one's habituation is understated and the increased anxiety for petty damages and the equal immobility in traffic jams are ignored. This tendency to overemphasize changes in *ex ante* judgments stands in stark contrast to the peak-end rule of *ex post* evaluations, adding to the potential distortion between decision-relevant *ex ante* judgments and actually experienced SWB. While the boundary between the two concepts of unanticipated adaptation and focusing illusion may be fluent, unanticipated adaptation refers to the unforeseen reduction of the hedonic response to a particular stimulus, while the focusing illusion means the overstatement of a particular hedonic experience with respect to overall life satisfaction which need not involve a reduction of the hedonic response in that particular domain over time (just as Californian students do report higher satisfaction with weather).

As a further limitation to the anticipation of satisfaction it has been found that tastes themselves are often predicted incorrectly. Kahneman and Snell (1990, 1992), *e.g.*, found that subjects systematically underpredicted their liking of eating plain yogurt on eight consecutive days. In fact, no significant correlation emerged between their predicted liking and the actually reported pleasantness of the daily experience (reported in Loewenstein and Schkade 1999). While these experiments merely proved predictions to be inaccurate, Simonson (1990) demonstrated that under certain circumstances predictions are systematically biased. When in an experiment students were asked to choose one out of six snack types for each of three consecutive days to be consumed in class sessions, those who chose all three snacks in advance (*i.e.*, on the first day of the experiment) chose substantially more variety than those who chose each snack the day it was to be consumed. This "diversification bias" has been confirmed later (Read and Loewenstein 1995) by the finding that those in the simultaneous choice condition later regretted having opted for variety. As a further example, people have been found to systematically underpredict curiosity. When given the choice between receiving the answers to ten geography questions and getting a candy bar, those subjects who had already been given the questions were much more likely to forgo the candy bar for the answers than those who had been asked to make their choice *before* knowing the questions (Loewenstein, Prelec, and Shatto 1996, quoted in Loewenstein and Schkade 1999).

Rather well known in the economic literature is the observation that consumers do not behave in accordance with the fungibility of cash money. For example, when planning to attend a theater performance costing $10, a majority of respondents in an experiment said they would not replace a ticket they lost on the way to the theater, while 88% of another group said the loss of a $10-bill on the way would not induce them to change their plans (Tversky and Kahneman 1981, reported in Frank 1997b). In view of the fungibility of monetary wealth, both situations are perfectly equivalent in terms of wealth and the price of the performance, and the particular way a person's wealth has been reduced by $10 should be irrelevant to the decision of attending the theater performance[70]. The fact that this is not the case can be interpreted in terms of a model of "mental accounting" (Thaler 1985; Tversky and Kahneman 1981) in which consumers do not evaluate a particular benefit, *e.g.*, the enjoyment of a theater play, against the change in their wealth as a whole, but against the change of a specific mental account, *e.g.*, against the total amount laid out for theater visits, thus including sunk costs in the decision-making process. A closely related observation is the consistent finding of *loss aversion* (Kahneman and Tversky 1979). The disutility people derive from the loss of a given amount is generally greater than the utility they derive from gaining the same amount. As a result, a pay rise of €100 may not suffice to compensate, in terms of utility, for a tax increase of the same amount[71]. This class of behavioral inconsistencies is a classic example of what is widely agreed to be irrational behavior (e.g., Frank 1997b).

Related evidence comes from studies of people's valuation of time. For example, a number of studies consistently found that people value their commuting time at a mere 20% and 50% of their wage rate, even though rational-behavior models would predict that it is valued at the marginal disutility of work which should be at almost 100% of the wage rate (Scitovsky 1974). Similarly, in a two-year field experiment, less than one percent of TV viewers were ready to pay an hourly rate of $0.59 (in the 1970s) for the suppression of commercials, meaning that saving one hour of watching commercials and the nuisance of program interruptions would have cost about $3.50, below the average subscriber's rate of earnings (*ibid.*). Unless people really liked having their programs interrupted by commercials, their aim obviously was not to utilize time in a more efficient way.

A much more fundamental insight into decision making processes comes from the research of Amos Tversky and Dale Griffin (1991). In a number of different experiments, they presented subjects with two alternatives, one of which combined a high material payoff with an unfavorable standard of comparison and the other a lower payoff with a favorable comparison standard. A consistent finding was that their subjects found the low-payoff option more satisfying while they tended to actually choose the high-payoff option (even though the results can be expected to be different if the payoff difference is large enough). For example, when presented with a scenario of either working for a salary of $35,000 where one's equally qualified colleagues receive $38,000, or receiving $33,000 when one's colleagues earn $30,000, 84% of the subjects (27 out of 32) said they would *choose* the $35,000 job, while 62% of another group (21 out of 34) said they would be *more satisfied* in the $33,000 job ($p$<.01) (Tversky and Griffin 1991: 114-15)[72]. Notably, the difference cannot be attributed to a difference in the time perspective or other circumstances that would influence the counterfactual frame of reference. Rather, the authors interpret their findings as reflecting a fundamental difference between the rationale underlying evaluations of SWB on the one hand, and that underlying choice on the other. While SWB judgments seem to be based on a counterfactual frame of reference, people appear to call on more objective and "hard" criteria, like material payoff, when making a choice. At least two, mutually not exclusive, interpretations of this dichotomy are possible. In a functional, evolutionary perspective, behavior aiming at the maximization of pleasure might simply not be the most successful strategy[73]. Choices based on observable criteria that proved to be the basis for successful decisions in the past (*e.g.*, the size of a potential enemy for the decision to flee or to dare a fight), rather than based on predictions of pleasantness, may be more conducive to the transmission of an individual's genes. In a cognitive perspective, this dichotomy might reflect the influence of conventional wisdom of what is rational to want, and the overstatement of hard criteria in conventional wisdom. The amount on one's paycheck may simply and without giving it deeper thought be considered more relevant to the job decision than how one will feel that amount compares to one's colleagues' salaries.

If this interpretation is correct, the significance of these findings to economic theory cannot be overstated. Decisions do not deviate from utility maximization because people make errors, systematic or not, in the anticipation of happiness. Rather, happiness does not even seem to be the overriding choice criterion, neither explicitly nor implicitly. Choice seems to be guided to a large extent by internalized rules, *i.e.*, convictions and innate or acquired stimulus-response patterns, determining which aspects are relevant to one's decision. Perhaps the presence of these rules can to some degree be attributed to their contribution to happiness (in a similar way as in rule utilitarianism; *cf.* Sen and Williams 1982), but reducing them completely to that single function would not do justice to the complexity of behavioral norms. Even if it was upheld that, ultimately, happiness was the only motivational criterion, the limited ability to identify the external causes of one's (un)happiness would lead people to look for decisional heuristics that are justified on the basis of accepted standards of reasonableness. However, being generalized across different contexts, these heuristics come to lead a life of their own more or less disconnected from their original link to SWB. The accepted standards of reasonableness themselves may have the status of unquestioned beliefs of the kind "better pay = better job = better choice", or of norms that 'one ought to economize on money expenditure', *e.g.*, pay-TV subscriptions, when the sacrifice consists "only" of intangible benefits, like leisure time. Even physiological evidence supports such a dichotomy between decision criteria and the assessment of a decisions happiness payoff. Berridge (1996), *e.g.*, found that wanting and liking arise from two different neural systems (reported in Ed Diener and Suh 1997). The upshot is that internalized decisional norms seem to overwhelm, or to silence altogether, direct and deeper considerations of the impact of a given decision on SWB. Lane, *e.g.*, posits that "the market culture teaches us that money is the source of well-being," and that people, "lacking privileged knowledge of the causes of their feelings, … accept conventional answers" (Lane 2000b: 72).

Thus, the criteria guiding choice and those underlying judgments of satisfaction seem to be of a different nature and irreducible to one another, even though anticipated satisfaction will continue—under most circumstances—to have some direct bearing on choice[74]. Nevertheless, in order to conform, to some extent, to economic terminology, I will follow Kahneman and Tversky in using the terms "decision utility" and "experienced utility" to refer to the two maximands underlying choice and SWB, respectively (Kahneman and Tversky 1984). Using these terms, the preceding discussion can be summarized as follows:

1. Decision utility tends to rely on remembered utility as opposed to total utility, and under certain circumstances the two measures will systematically lead to different orderings.

2. Experienced utility may deviate from decision utility due to biased foresight.
3. Since people's mental representations of the world are not fully consistent, both experienced and decision utility are liable to be influenced by factors that should be irrelevant (as in the case of mental accounts).
4. The maximization of experienced utility is not the sole motivation governing choice. Rather, hard objective facts seem to command decisional weight independent of the anticipated happiness payoff.

It would be an exaggeration to the other extreme to state that experienced utility is only a minor consideration in human decision making or that a majority of decisions is based on erroneous predictions. Nevertheless, there is ample evidence that people do, in a systematic way, fail to learn from past experiences and to process information consistently. Hence, if the utility maximization axiom is accepted, *i.e.*, assuming that people intend to maximize happiness, it can be stated that people do not behave fully rationally but instead make systematic decision errors. Some observations even suggest that utility maximization axiom itself is an inappropriate conceptualization of human behavior.

### *The social dimension to life circumstances and happiness*

Irrespective of the validity of the rational behavior hypothesis, the empirical insights into the link between life circumstances and happiness will make a difference to the evaluation of the aggregate consequences of individual choices. The solid result of the second chapter that no one-to-one correspondence exists between life circumstances and SWB necessitates a reinterpretation of all major concepts of welfare economics. The more or less explicit claim in economics that the analysis in the space of goods will be equally valid in the space of SWB, after taking account of the diminishing marginal utility of wealth, depends crucially on the assumed one-to-one correspondence between objective conditions and SWB. In this section, two distinct causes of a distortion between life circumstances and SWB shall be discussed, to wit, positionality and demonstration effects.

To the individual, the desire for positional goods, or of status itself, is an aspiration not categorically different from the desire for a nice house or good health. From the viewpoint of society, however, the satisfaction of positional aspirations is a zero-sum game without a net benefit: the gain of one is, by definition, the loss of another. Only to the degree that those with above-average aspirations "purchase" high positions from those with below-average aspirations (*e.g.*, as in the case of within-firm status-salary bargains; see chapter two, p. 39) a net social gain is possible. Once the distribution of positions has exhausted such potential gains, however, and in the majority of settings where prohibitive transaction costs prevent such gains altogether, the individually rational pursuit of status will lead to a waste of resources from a social perspective.

While many economists interpret the social effect of an individual's pursuit of status as a negative externality (e.g. Frank 1985b) much like the negative effect from uncontrolled industrial pollution, this interpretation does not capture the distinct aspects of positional competition which is a very special case of negative externalities. While the social cost of pollution typically is just a fraction of the social benefit of production, thus still allowing for an economically justified reduced continuation of the productive activity, the social cost of the pursuit of status completely nullifies any social benefits, and there is no way to reduce the degree of "pollution" for a given "production", unless the possibility to reduce status-awareness is included. Theoretically speaking, the externality exactly offsets the benefit, *i.e.*, the social benefit equals social costs, so that the efficient tax on status seeking behavior would have to be prohibitively high. The competitive aspect is another characteristic that distinguishes positional competition from other forms of negative externalities. The more one agent engages in the "pollutive" activity of status-seeking, the more other agents will fall back and therefore will have an incentive to increase their spending on the same activity, thus increasing the total "pollution" from status-seeking. In the case of industrial pollution, no such incentive is present: the increase of the pollutive activity of one factory does not incite others to increase their activity, and their pollution, in turn. The crucial difference is that in positional competition the external effect completely offsets any benefit (after potential gains from trading positions are exhausted) and is inextricably linked to the good that is sought for.

This special case of negative externalities is equivalent to the concept of *rent seeking*. Rent seeking means the competing of at least two parties for a single, fixed benefit. Since only the ranking of the competitors, but not their absolute performance, is relevant to the outcome of the competition, the resources spent by the parties on outperforming their competitors are wasted from a social perspective. Typical examples for rent seeking include lobbying for public licenses and advertising in markets with a given demand (*i.e.*, a mar-

*Figure 12 – The prisoners' dilemma of status seeking.*

| | | A: $e_1$ | A: $e_2$ |
|---|---|---|---|
| B | $e_1$ | A: 10 - 1 = 9 | A: 13 - 3 = 10 |
| | | B: 10 - 1 = 9 | B: 7 - 1 = 6 |
| | $e_2$ | A: 7 - 1 = 6 | A: 10 - 3 = 7 |
| | | B: 13 - 3 = 10 | B: 10 - 3 = 7 |

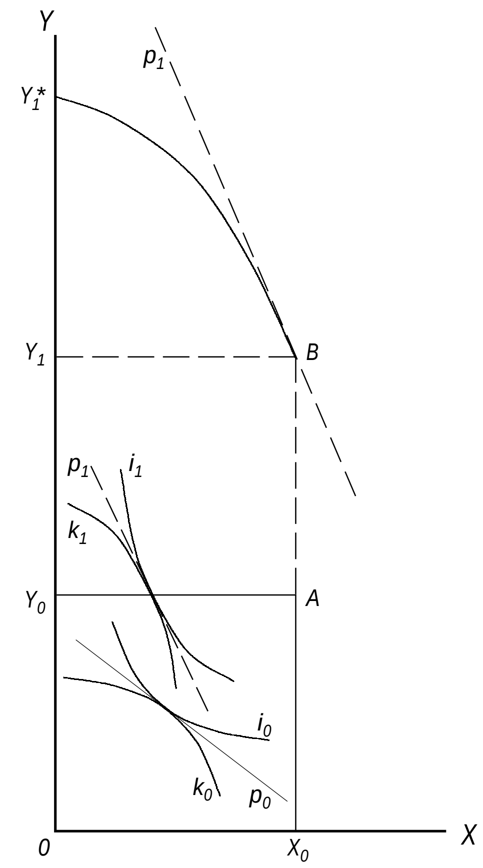
ket demand that is irresponsive to the industry's advertising expenditure). Exactly the same seems to happen in the rat race for positional goods. For example, in countries with an elitist university system, to be admitted to one of those schools that take the top 10 percent of each year's candidates, to succeed one has to outperform 90 percent of one's fellow candidates. Efforts of which the only benefit consists in improving one's odds of admission without having additional benefit, *e.g.*, the attendance of preparatory cram courses, are wasted from a social perspective, and since it can be expected that the candidates' participation in the courses will improve everybody's performance to about the same degree, nobody will actually benefit. An agreement among all candidates to abstain from such positional expenditures is practically impossible though.

An equivalent game theoretical representation of positional competition is the *prisoners' dilemma*. In a symmetric positional competition of two individuals, each of them has the choice between putting in little effort $e_1$ or much effort $e_2$. The payoff matrix (fig. 12) then gives the respective payoffs for the different reactions of the other, where a payoff is the difference between the benefit from the achieved position and the cost of the effort expended. The dominant strategy for each of them is to put in much effort (lower right cell), but the result will be that the positional benefit is the same as when both choose little effort (upper left cell) and that the cost for both is higher. Instead of a net payoff of nine, each ends up with only seven with the difference constituting a deadweight loss[75, 76].

As another example imagine ten equally able lawyers who compete for the next job promotion within their firm (*cf.* Frank 1999). Each of them knows that any one's promotion prospects depend on how heavily she works, so that, to increase their chances, each of them will put in extra hours. The more overtime everybody works, however, the more a given candidate will feel she has to work in turn (unless she prefers giving up the race). Since no matter how hard they work only one of them will be rewarded for her extra efforts, nine of them will have incurred costs without receiving any benefit. This example should not obscure the fact, however, that, even though in a narrow analysis competition for positions is wasteful, positional competition may often be a practical way to select the most motivated individuals (but may also have the drawback of discouraging those who dislike competition as such).

The wastefulness of positional competition, or *status seeking*, manifests itself in the rising opportunity cost of positional goods in terms of non-positional goods as a society's average income increases. Representing positional and non-positional goods as compound goods *X* and *Y*, respectively, figure 13 illustrates what happens as the economy grows. Initially, the economy produces a quantity $Y_0$ of non-positional goods while the quantity of positional goods is, by definition, fixed at $X_0$. The relative price $p_0$ is determined by the preferences of two representative consumers *i* and *k* as graphically illustrated in the Edge-

*Figure 13 – The deadweight loss from status seking.*



worth box $(0, Y_0, A, X_0)$. Economic growth then translates into a vertical extension of the Edgeworth box to $(0, Y_1, B, X_0)$. Assuming fixed and homothetic preferences, the relative price of the positional compound good will rise as a consequence. This means that real resources will be spent on status seeking that are not available for the production of the non-positional good. How much resources are spent on status seeking can be illustrated by superimposing the production possibilities frontier on the graph. To do this, note that in equilibrium the relative price will equal the marginal rate of transformation (*MRT*). However, since resources spent on *X* are not spent on the positional good itself—which is simply available and not produced—but rather on the production of intermediary goods $M^X$ that serve to gain a competitive edge on others (*e.g.*, preparatory courses), the *MRT* has to be interpreted as the quantity of *Y* that is sacrificed, at the margin, for the production of $M^X_1/X_0$, *i.e.*, for the production of that quantity of intermediary goods that corresponds, at $t = 1$, to one unit of the positional good. Assuming a diminishing *MRT*, the production possibilities frontier will be concave like $BY_1^*$[77]. Thus, the resources spent on positional goods could theoretically be used to produce an additional $Y_1^* - Y_1$ without sacrificing anything else in terms of utility, and therefore $Y_1^* - Y_1$ constitutes a deadweight loss to the economy. This loss will grow larger as the economy grows richer.

The notion of positional goods is an ideal concept that is not observed in its pure form. Observed goods or activities typically embody aspects of positional goods only to the extent that their benefits consist in positional, *i.e.*, absolutely scarce, benefits (Hirsch 1976). For example, positional achievement will typically only be one among several benefits to Ivy League school applicants, ambitious lawyers, or Ferrari drivers. This implies that the private (plus, possibly, external) benefit from obtaining such goods is not completely offset by the negative external effect, or that engaging in competition has positive side-effects even if an individual does not win the competition. Therefore, a representation analogous to industrial pollution may be appropriate in the space of concrete goods. In this perspective, the external effect of conspicuous consumption can be interpreted as the degradation of the "frame of reference as a public good" (Frank 1997a), just as industrial pollution degrades the air. The degradation of the frame of reference consists in its expansion, implying that the lower is the frame of reference, the higher is its value as a public good.

The representation in terms of externalities goes beyond positional competition to include the relative income hypothesis as a whole, *i.e.*, including the secondary inflation and the demonstration effect (fig. 8). Simplifying for the various effects, as a general rule it can be stated that one consumer's above-average consumption has a negative external effect on the utility of others in the sense that the SWB they derive from a given consumption level will decrease. In these general terms this is no different from the case of industrial pollution, and therefore the remedy lies in internalizing the external effect, *i.e.*, in making the cost to the individual equal to the social cost of his behavior. As standard economic theory shows, this can be achieved by taxation where the marginal tax equals the marginal external cost. The economic policy implications of treating the relative income effect as an externality will be discussed below. At this point the question arises how the distinction between the irrecoverable deadweight loss (no marginal social benefit) in the case of purely positional goods and the generally recoverable loss (positive marginal social benefit) in the case of non-positional goods can be justified. After all, it can be argued, the irresponsiveness of SWB to economic growth strongly suggests that also the increased consumption of non-positional goods is a zero-sum game in the space of SWB without any net social benefit. Therefore, the entire relative income hypothesis would have to be interpreted as a case of rent seeking with a tremendous deadweight loss. Paradoxically, however, in this perspective the deadweight loss would no longer be a loss, since then there would be no opportunity to employ the "wasted" resources in a more efficient way, *i.e.*, in a way that would enhance SWB. Once again, the crucial distinction is between an empirical, statistical relationship and the concrete cause-and-effect relationships on the individual level. In particular, the question arises whether the observation that increased income *did* not improve SWB means that it *cannot* do so.

## *The improvability of subjective well-being*

To answer this question, more than aggregate data on per capita income and average SWB is necessary. To approach this question from a theoretical perspective, the concept of hedonic adaptation (chapter two) will be useful. To capture the relative income effect, let us assume that the response curves in figure 14 depict the average SWB for a given society as a whole, and that the horizontal axis represents expenditures made to the same extent by all members of this society. Thus, figure 14a shows the case where the relative income hypothesis applies to its full degree: every increase in expenditure is followed by an offsetting baseline shift, so that the long-run response curve $R^f_{LR}$

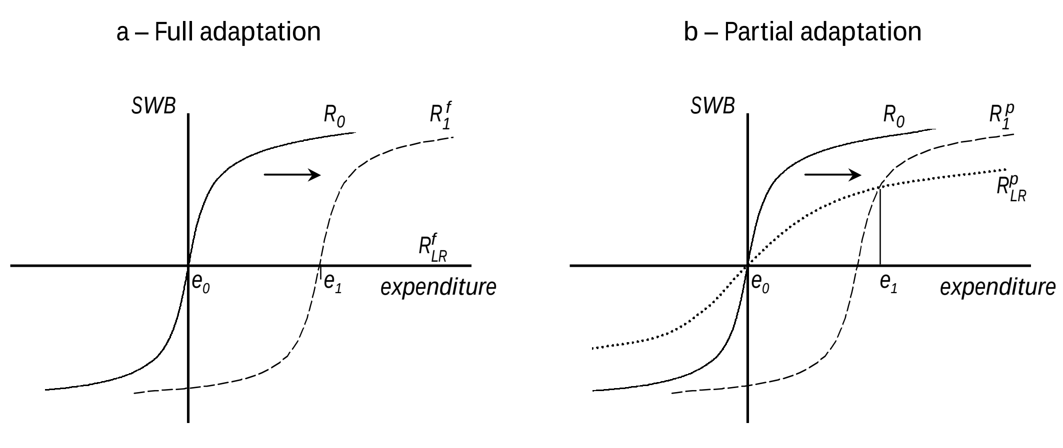
is congruent with the horizontal axis (what Frank [1999] calls *conspicuous consumption*). Figure 14b, on the other hand, shows a case where baseline shift adaptation is not perfect but partial (*inconspicuous consumption*; *ibid.*). An increase of expenditure to $e_1$ will in the long run lead to a baseline shift that falls short of the entire distance $e_0e_1$, thus leaving a net benefit in terms of SWB. The resulting long-run response curve $R^p_{LR}$ is therefore steadily rising, reflecting the fact that an increase in expenditure does lead to a lasting improvement of SWB.

So far these two cases are mere theoretical possibilities, and the empirical question of the improvability of SWB still remains to be answered. The question will have to be answered in the affirmative if it can be shown for single cases that adaptation is only partial. So what is the evidence?

Clearly, cases of partial adaptation, or even non-adaptation, have been observed. A distinction can be made between two basic cases, that of negative experiences and that of positive. Examples of imperfect adaptation to negative experiences include exposure to noise and commuting stress. Evidence that people do not adapt to exposure to noise is overwhelming (Frederick and Loewenstein 1999). In some cases even sensitization, the opposite of desensitization (see p. 40), has been observed. In addition, people seem to overestimate their ability to adapt to noise. In studies on highway noise, for example, residents reported the same degree of irritation four and sixteen months after the opening of a highway and became increasingly pessimistic about their ability to adjust to the nuisance, with 22 more percent of respondents in the second survey saying they would not be able to adjust. Of two control groups interviewed only once, less than one third of those interviewed four months after the opening of the highway spontaneously mentioned highway noise as a nuisance in their neighborhood, against more than fifty percent of those interviewed another year later (Weinstein 1982). Other studies found that aircraft noise had a significantly negative influence on school children's performance in cognitive tests, attentiveness, and blood pressure (Cohen, Evans, *et al.* 1981, reported in Frederick and Loewenstein 1999). Evidence on the non-adaptation to dense traffic is equally forceful. Even after long periods of habituation, most people report being stressed by commuting through heavy traffic (Koslowsky, Kluger, and Reich 1995). Increased blood pressure was related to commuting distance, time, speed, and months of commuting (Stokols, Novaco, *et al.* 1978, reported in Frank 1999). Studies on urban bus drivers found a disproportionate affliction with physical and mental health impacts (reported in Frank 1999).

On the positive side, vacation, companionship, and physical exercise are examples of imperfect adaptation. Vacations have been found to have a number of physiological and psychological benefits (Argyle 1996). Even after people return to work, restorative effects of sufficiently long vacations have been observed (Frank 1999). Companionship, a term proposed by Lane (2000b) to refer to friends and social bonds in general, equally has been found to have significant, lasting benefits. As has already been reported, the number of friends is a particularly strong correlate of happiness. Even though this correlation may to some degree be due to a causal influence of happiness on the number of friends, some evidence shows that causal flow also works in the other direction. For example, soldiers assigned to small, stable, cohesive units re-

*Figure 14 – Full and partial hedonic adaptation.*



ported significantly higher levels of SWB than their comrades assigned to larger units with high turnover (Manning and Fullerton 1988). Additional evidence shows that companionship is causally linked to better health (House, Robbins, and Metzner 1982, reported in Frank 1999). Physical exercise is another case of imperfect adaptation, and even sensitization, for which evidence abounds. A number of controlled experiments found that exercisers experience significant improvements in mood and positive effects on their health (Lichtman and Poser 1983, reported in Frank 1999). Strikingly, subjects frequently report that initially they experience exercising as unpleasant, but that they quickly learn to like it (Frank 1999: 86). In other words, the long-run response is of a different valence than the short-run response, a discrepancy that will drive a wedge between decision utility and experienced utility if the preference reversal is not anticipated.

These examples of imperfect hedonic adaptation show that resources can be spent in ways that durably increase SWB. Concretely, noise abatement; improvements of public transport; vacations; more leisure time and work in cohesive, rather than loose, teams at the work place; or freeing up time for exercising promise to have a better social SWB balance than expenditures on positional benefits or on consumption goods without a lasting effect on SWB, *i.e.*, activities that do not do much else than raising the social frame of reference. The existence of imperfect adaptation also proves wrong the extreme interpretation of the hedonic treadmill, namely that a movement up the short-run response function will inescapably trigger an offsetting baseline shift. Clearly, the observed tendency for aspirations to rise with the standard of living is not a law of nature. Whether more income leads to increased well-being cannot be predicted in general terms because, after basic needs are fulfilled, it is not so much the quantity of one's consumption that counts, but its quality.

The distinction between full adaptation and partial adaptation should not be misinterpreted, however, as implying that a temporary increase in SWB is futile. The fact that one's enjoyment of a new car does not last as long as that of an additional day of vacation does not *a priori* mean that the latter leads to a better overall balance of SWB than the former. The duration and intensity of SWB in the respective cases will play a role in this. Yet, it should also be noted that theoretically it is conceivable that people adapt to getting a new car each year so that their enjoyment of a new car itself is subject to hedonic adaptation. Applied to income this means that at a first stage an individual may adapt to a higher level of income but still derive temporary satisfaction from an increase. When he gets an equal pay rise each year, he may adapt to the annual increase itself and only derive additional enjoyment if the growth rate rises, etc. As Layard put it, "people can have expectations of a constant level of income or a constant first derivative, second derivative or any higher derivative." (Layard 1980: 748). While it would be interesting to investigate this line of reasoning empirically, the adaptation to an *n*-th order derivative appears to be a real possibility[78]. It should also be noted that hedonic adaptation may also erode the satisfaction an individual derives from status. Lane, for example, reports that one study (Homans 1961) found that "the effect of a recent promotion on a worker was to make her less satisfied: the experience of one promotion simply led to the expectation of further promotions—and therefore to dissatisfaction with her relative status" (Lane 2000b: 67). If this finding can be generalized and if people do not anticipate their adaptation to status, this would not only make positional competition wasteful from a social perspective but also excessive from the perspective of the individual. In other words, positional competition would combine the loss from rent seeking with that from unanticipated adaptation.

Another avenue by which SWB can, theoretically, be improved, is not captured by the concept of adaptation, but is implied in the concept of status seeking. There are two distinct ways in which the negative effect of positional competition on SWB can be reduced. On the one hand, the resources wasted in the competition for status could be employed to enhance SWB. However, simply freeing up those resources would not guarantee that they will eventually be spent in ways that have a lasting effect on well-being. Yet, on the other hand, positional competition may not only be costly in terms of resources, but also directly in terms of SWB. Consider the above-mentioned example of the lawyers competing for a single post. Their engaging in competition would most likely make them feel stressed and therefore reduce their SWB even if they could agree on, and enforce, a contract that would limit the hours they work. To the extent that the candidates are negatively affected by the competitive pressure as such, they would instantly benefit in terms of SWB if the competition for promotion could be organized in a less stressful way. Layard (1980) gives an equivalent argument pertaining to the design of university examinations that are liable to generating avoidable anxieties when students are graded on a few big examinations instead of on many small tests.

## Lessons for economic theory

Having reviewed and examined some evidence on the link between income, happiness, and choice, we shall now turn to the central question of this study: how can the empirical evidence on SWB enrich economic theory? Basically there are three lessons, the first pertaining to the relative income effect, the second to the conception of SWB as a judgment, and the third related to the rational behavior hypothesis.

The first is, indeed, a paradigmatic challenge to standard economic theory. In light of the evidence on the relativity of the income-SWB relationship, the conjecture that it is absolute income that determines a consumer's utility is untenable. Rather, the secondary inflation and the frame-of-reference effect may lead to the erosion of a society's ability to derive SWB from a given level of consumption. This erosion can be reduced, or entirely avoided, if additional income, or time and effort, is spent on types of consumption that are not liable to full hedonic adaptation, but the absence of a positive correlation between per capita income and SWB in national time-series data suggests that this is not typically the case.

It would be theoretically possible that, even though the degree of utility derived from a given consumption level depends on relative income, choice does not. If this was the case, the relative income hypothesis would not make much of a difference as long as one is concerned with choice (*i.e.*, optimization) only and not with welfare. However, the evidence does not support such an interpretation. The perhaps most forceful evidence comes from research on savings. Already Duesenberry's (1949) results were based on the finding that the observed savings patterns could not be explained by theories treating preferences for savings as a function of absolute income. Later research also invalidated new and initially promising attempts to account for savings, like the permanent income (Milton Friedman 1957) and the life cycle hypothesis (Modigliani and Brumberg 1955). After having reviewed evidence on these theories, one author concluded that "of all the many tests which have been undertaken by friends of the [proportional savings rate] hypothesis, *not a single one* supports it .... I therefore conclude that the proportionality hypothesis is definitely invalidated ... ." (Mayer 1972, quoted in Frank 1985a: 110).

Beyond concrete evidence on particular types of behavior, the present analysis provides additional reasons why choice depends on relative income. For example, a consumer with a given income will have to make different choices in an environment where all his neighbors own a car than in one where nobody does. Similarly, someone who wants to maintain a given status in a society that increasingly values education will have to redirect her priorities. Technically speaking, the mutual influence of one's choices on another's preferences is called *behavioral interdependence of preferences* and has relevance beyond the relative income hypothesis in the broader analysis of social interaction (Vendrik 1993: 108).

The evidence on the relative income-SWB relationship has two principal disturbing results for economics. First, the assumption that utility rises monotonously with income cannot be maintained. Advocates of the absolute income hypothesis might invoke the *ceteris paribus* clause and argue that income still leads to greater utility as long as all other things remain the same. However, the *ceteris paribus* clause is of little help since it is strictly impossible that *all* other things remain the same. If individual *A*'s income rises and that of *B* remains the same, *A*'s respective status and B's frame of reference will change. If, on the other hand, *B*'s income rises in proportion with *A*'s, relative status will remain the same but *B*'s absolute income will change. The second interpretation even seems to be more appropriate since economics is interested in the typical, "representative" consumer. If the representative consumer's income rises, it would be a contradiction in terms to assume that she is the only one to become richer.

The second result is that the concept of Pareto efficiency has to be reconsidered. If utility and choice depend on relative income, there is no one-to-one correspondence between goods and utility, and therefore the Pareto criterion applied to the space of goods will have no ready interpretation in the space of SWB. Commonly, the Pareto criterion is advocated with the argument that the rejection of it would be based on envy, and that envy should not be recognized as a legitimate concern. However, as has been argued in this study, no envy needs to be involved for utility to depend on others' consumption, and it would be daring, to say the least, to consider any concern for one's relative standing illegitimate. As a matter of fact, low-income earners in the United States incur tremendous and increasing debts in order to keep up with rising consumption standards (Frank 1999: 45), and, whether legitimate or not, yesterday's savers apparently feel sufficient pressure to borrow today.

The Pareto criterion could be saved, one might believe, if it was applied to the space of SWB instead. In that case, however, one implicitly recognizes *all* other-regarding concerns, including envy or the imposition on others of one's private moral convictions, as legitimate arguments of an individual's utility. The Pareto criterion applied to the space of SWB would then be irreconcilable with even the most basic principles of personal freedom as has been shown by Sen in his insightful demonstration of the "impossibility of a Paretian liberal" (Sen 1983c). Thus, neither the Pareto criterion in the space of goods nor that in the space of SWB seems to be an acceptable standard. Ultimately, these considerations suggest, the crucial question is which preferences are considered legitimate and which illegitimate.

Legitimacy also plays a central role with respect to the second lesson for economic theory. The concept of the counterfactual frame of reference and the conceptualization of SWB as a judgment underscore the importance of legitimacy considerations and the relatively minor significance of life circumstances. This means that economics will be better able to understand behavior when it is concerned not only with the choices people are offered, but also with those they think they could or should have been offered. What this can mean more concretely shall be discussed in the next section in the context of labor economics.

The third major lesson for economics consists in the evidence against the rational behavior hypothesis. First of all, the inconsistency between *total utility* and *retrospective utility* as two measures of experienced utility should induce economists to be more explicit about what exactly they mean by utility. In addition, the rational behavior hypothesis should not uncritically be taken as valid in every context. The occurrence of systematic inconsistencies and decision errors should caution conclusions based on the assumption that people correctly anticipate the consequences of their choices on their SWB. The point here is not that people lack the computational capacity to anticipate all ramifications of their actions—a misdirected objection voiced in particular by sociologists (*e.g.*, Friedberg 1993; Simon 1982a, 1982b)—but that people base these computations on erroneous anticipations of their own preferences, on biased memories, and on criteria that seem not to be relevant to SWB in the first place.

### *Economic policy applications*

In order to give some flesh and blood to the preceding theoretical suggestions, their relevance to economic policy shall be illustrated by means of a few applications.

If externalities from consumption are really as pervasive as implied by the relative income hypothesis, this will make a substantial difference to economic policy. Given that in most cases of frame-of-reference externalities it is not possible for the agents to strike an efficient bargain as suggested by the Coase theorem (Coase 1960)[79], other ways to reduce the damage done by frame-of-reference externalities and positional competition have to be looked for. One frequently proposed, but nevertheless little noticed, remedy has been the taxation of income or consumption. Of course, the idea of taxing consumption or income is not a particularly original one; on the contrary, it is widely practiced around the world. What is original, however, is the idea that income taxation is not, as in the predominant view, just the lesser evil as compared to efficient but impractical lump-sum (or leisure-time) taxation, creating welfare-reducing distortions, but that the taxation of income or consumption corrects for distortions and thereby enhances welfare (*e.g.* Duesenberry 1949: 102-3).

While most authors argue in favor of income taxation, it appears more sensible to tax consumption instead (Frank 1997a, 1999). The most pertinent reason for this is the specificity rule that demands that a distortion be corrected where it occurs (Lindert and Pugel 1996). Since the negative externality is a consequence of consumption and not of working or of taking home one's salary, a tax should be directed at the purchase of consumption goods as the root of the distortion. More precisely, the tax should be of a progressive nature, *i.e.*, it should apply with a rising marginal tax rate because it is not consumption *per se* that has a negative effect on the frame of reference, but only consumption that exceeds some measure of a social norm[80]. It is evident that a consumer's tripling his purchase of spaghetti would not induce anybody to revise her aspirations, while someone's purchase of a luxury car probably would. Practically, the progressive taxation of consumption would not require any information on which goods someone buys at which prices. Since one's consumption is simply the difference between earnings and the net increase in savings, a progressive consumption tax is equivalent to a progressive income tax with an exemption for net savings (Frank 1999). Ultimately, the corrective effect of the tax would of course not consist in eliminating from people's consciousness the desire for positional benefits of comparatively superior goods, but in discouraging their consumption and in investing the tax revenues in uses that durably raise SWB. The concern for relative income, or, more precisely, relative consumption, will continue to motivate people's choices, but the tax will, ideally, neutralize that motivation. Ultimately what counts is not if choices continue to be based on preferences with negative externalities, but if people behave *as if* they take into account those costs and if, ultimately, the resulting pattern of consumption is socially superior (Layard 1980: 740). It should be noted that to achieve a true improvement from taxation, the common requirement (in the case of the taxation of negative externalities) that the revenues be efficiently redistributed has to be complemented by the condition that the tax revenues be spent in ways that do raise SWB in a sustainable way. There are reasons to believe that tax revenues are more likely to have such lasting benefits if they are spent on public programs than when they are simply handed back to private households. While this point shall not be elaborated further here (*cf.* Frank 1999), the most compelling reason for this is that public expenditures by their very nature are less liable to be wasted in positional races and to raise the social frame of reference.

The relevance of positional externalities extends far beyond taxable market transactions, though, and in this sense the term 'relative income hypothesis' is somewhat too narrow. In the example of the lawyers competing for a promotion, the inefficiency cannot be neutralized by fiscal policy. Instead, the selection arrangement itself can possibly be designed in such a way as to reduce the deadweight loss of status-seeking. In other words, it will be in the interest of the competitors to change the rules of the game in such a way that everyone's ability to compete is reduced equally without reducing non-positional benefits. Practically speaking this provides a case for government intervention (or for other forms of collective contracts) analogous to the argument for government provision of pure public goods, with the difference that the government can in many instances influence, *i.e.*, keep low, the frame of reference almost costlessly. For example, it is evident that a job seeker will dramatically reduce his odds when in the job interview he asks his potential future employer for a few extra holidays per year. Similarly, the employer will be under competitive pressure not to give his employees more holidays than his competitors do. However, if a law or a similar contract fixes the mandatory number of holidays an employee is allowed, or even obliged, to take per year, the government or a labor union can limit competition based on the number of holidays. This way, the number of holidays can be determined along some criteria of social well-being rather than being minimized in wasteful competition. A similar argument can be made for safety regulations and dope test enforcement, and it even suggests that the tobacco industry could be better off being banned from advertising (Frank 1999).

An economic application of the second lesson for economic theory, the recognition of the judgmental dimension of SWB, can be found in labor economics. To begin with, one of the most fundamental premises of labor economics seems to be plainly wrong. A typical statement of this premise is the following passage from the introductory chapter of a labor economics textbook:

> For most people work is undertaken primarily for pecuniary gain. For the vast majority work is essential to secure the income necessary to buy the goods and services that support their standard of living. Work is undertaken because it is a means to this end and, although many individuals find aspects of their work and the social environment in which they work enjoyable, few find it so enjoyable that they would be prepared to pay for the privilege. For most people, work is, in the main, a source of disutility and they therefore require payment to compensate them for the time they devote to it. (Elliott 1991: 3-4)

While the second sentence is certainly true, the rest does by no means follow from it. It should be noted that the author does not bother to refer to any empirical evidence. The reason becomes clear as soon one directly asks people about their attitudes to work. Campbell, Converse, and Rodgers (1976), for example, asked 1114 respondents (who worked at least 20 hours per week) the following question:

> If you were to get enough money to live as comfortably as you'd like, for the rest of your life, would you continue to work?

Those who said they would were then asked:

> Would you continue to work at the same job as you now have? (Campbell, Converse, and Rodgers 1976: 291)

As a result, a total of 69% answered they would continue to work (40% at the same job, 29% at a different one), and not even one third, 31%, said they would want to stop working. In a study of 5000 British workers, Clark and Oswald (1996a) found strong evidence that job satisfaction does not rise with income:

> Contrary to what a microeconomics textbook would predict, employees earning in the lowest quintile of income report mean satisfaction of 5.92, with 70% reporting high job satisfaction, while those with income in the highest quintile report average satisfaction of 5.43, with 57% reporting high job satisfaction.[81] (Clark and Oswald 1996a: 9)

The consistent observation that the unemployed report much lower levels of life satisfaction than would be predicted on the basis of their loss of income, and that at least some of the causal flow runs from unemployment to dissatisfaction, has already been reported above. The false premise that people dislike work seems to be a consequence of an exclusive reliance on observed behavior paired with the generalization of simplistic common sense notions. More specifically, it seems to de deduced from the observation that people refuse to work for a salary below a particular threshold, their reservation wage, but this deduction requires a large set of additional assumption on human psychology. One of these is that an individual's working decision is only influenced by comparing the benefit from work with his opportunity cost, and that these benefits and costs are independent of the context. In view of the fact that a majority of people do prefer working to not working, however, a different interpretation is required.

A seemingly unrelated observation suggests that equity considerations play a major role in the determination of the reservation wage. In scores of experiments known as the "ultimatum bargaining game" conducted in many different countries, people sacrificed a real benefit for what can only be interpreted as a concern for fairness. Of two players, one, "proposer", is given an amount of money and proposes to "responder" how to divide the amount among themselves. If responder accepts, each of them gets the amount proposed by proposer, if responder does not accept, nobody receives any money. When the game was played with $10, the average of the minimum amount at which a responder would still accept the bargain—her "reservation amount"—was $2.59 (Kahneman, Knetsch, and Thaler 1986)[82]. Not surprisingly, games with higher stakes yielded higher reservation amounts (Zizzo 1997). However, if people did not care about context and counterfactuals, they should accept any amount above zero.

The case of accepting or rejecting a job offer seems to be not much different. When a job seeker rejects a job offer on the grounds that she considers the remuneration too low, one can therefore not infer that she must dislike working, just as the rejection of a bargain in the ultimatum bargaining game does not mean that the responder dislikes taking home money. Rather, the job seeker may feel being offered an unfair contract. Even though she might enjoy working for its own sake, she may turn down the offer because she feels that her qualifications and her effort would not be duly appreciated. She may feel sufficiently debased or taken advantage of that she prefers to forgo the pecuniary gain and the pleasure from working. Norm theory suggests that the reservation wage, *i.e.*, the minimum wage she considers justified, would depend on a number of normative considerations. It is conceivable, for example, that her expectations depend on the salary others receive in similar positions[83], on how well the company is faring, on how well she thinks she is qualified for the task, on whether the creation of the job is conditional on not exceeding a moderate wage rate[84], and perhaps even on whether she feels personally respected by the interviewer.

For economic policy this means that an individual's reservation wage is not simply given by an invariant utility function that exists in empty space, but that it depends on a number of seemingly unrelated variables. An unemployed's rejection of a job offer can probably still be ascribed to the shortfall of the offered wage off the reservation wage, but an individual's reservation wage would no longer be fixed in this perspective. It might be possible to induce people to take up work by credibly demonstrating that the company would otherwise be forced to shift the job abroad, by pointing to the adequacy of the job's pay in comparison to similar positions, or, especially in the case of public work programs, by emphasizing the benefits to the community. The common aim of these measures would be to induce a more favorable judgment of a salary's fairness on the part of a job seeker. The point here is not to suggest that such measures would be the remedy to unemployment, but rather that recognizing the importance of normative considerations would broaden the view and help understand the processes underlying the reservation wage.

An application that illustrates the implications of irrational behavior is the collection of taxes and the distribution of benefits. The assumption of rational behavior implies that consumers will not care about the modalities of their paying taxes or receiving benefits as long as their net wealth remains unaffected (and no credit constraints affect their liquidity). However, the existence of mental accounts and of loss aversion will lead to different mental representations and, therefore, to an evaluation that depends on how tax collection is organized. For example, people may evaluate their tax liabilities more favorably when the tax is directly debited to their paycheck each month, rather than having to pay the liabilities out of their cash receipts. This is because in the former case the tax payments will be regarded as forgone revenues because they are paid with money the individual never disposed of, whereas in the latter case the tax payment will be considered a loss because it is an out-of-pocket expense. Furthermore, it is likely that slightly excessive monthly tax payments with a subsequent reimbursement will be evaluated more favorably than if the monthly rates fall short of actual liabilities so that an extra payment becomes necessary at the end of the year. Another example is the design of college fees. The Dutch scheme, for example, pays, for a period sufficient to complete a graduate degree, a monthly stipend to all students living by themselves, the yearly total of which substantially exceeds the college fees (not even taking into account non-cash benefits). Even though students end up receiving more than they pay, they have a sense of paying for their studies[85].

The difference irrational behavior makes does not primarily lie in the macroeconomic consequences but rather in the impact on attitudes and expectations. Even though people may feel they pay more taxes when they have to pay them out of pocket, they will in fact end up with the same disposable income, and it seems unlikely that their saving and consumption decisions will be significantly affected in a direct way. Indirectly, however, behavior will be affected to the extent different evaluations of tax liabilities translate into different preferences. For example, people may be less inclined to evade taxes, less discouraged to work, more willing to support tax increases, and perhaps less critical towards their government's spending policies. Students who believe they pay for university education may be more demanding of their universities and feel more pressed to study time-efficiently.

## Taking a step back

### *The larger context of SWB*

This study has undertaken to show that looking at economics from the perspective of subjective well-being yields a number of valuable insights and reveals many inconsistencies and inappropriate assumptions and concepts. However, as has been emphasized in the beginning, the SWB perspective equally has a number of limitations with respect to the normative interpretation of its insights. A few of these shall be discussed in this section.

**Benefits of economic growth?**

The empirical evidence for the relative income hypothesis seems to suggests that economic growth has no net benefit on SWB in the industrialized countries. However, this conclusion depends on the assumption that SWB would also remain roughly constant if no economic growth took place. Unfortunately, there seems to be little data that would allow to test this assumption. However, there are theoretical reasons to believe that economic growth generates instrumental benefits that translate into SWB, or, put differently, that the absence of economic growth would lead to a reduction of SWB. Perhaps the most important reason is the relationship between economic growth and unemployment. Given that technological progress takes place, the absorption of workers who become redundant in the process necessarily implies a positive growth rate unless the workweek is reduced in proportion with productivity growth. Another reason why economic growth may be instrumentally beneficial is that costly measures with a lasting effect on SWB are easier paid out of foregone gains than out of pocket (Frank 1999: 101). It has also been argued that a society with rising material wealth may be more tolerant of diversity and committed to democracy (B. Friedman 1999). However, such claims seem to depend on a number of premises, in particular on the premise that people do not completely adapt to rising income. If people do, then a society that has adapted to a continuous annual growth of, say, three percent may evaluate an increase of two percent as unfavorably as a society that has not adapted to growth evaluates a reduction of their incomes by one percent. If tolerance is positively influenced by economic growth may therefore depend more on relative growth, *i.e.*, the difference between expected and actual growth, than on absolute growth.

Economic growth may also, for a certain income range, have positive effects on the natural environment. Studies on the link between per capita income and environmental degradation typically find a bell-shaped relationship, suggesting that the environment of moderately poor countries would benefit from economic growth (Frank 1999: 101). These statistical findings should be interpreted with caution, however, since at least a part of the pollution in moderately poor countries seems to be "imported" from the richer countries (and would merely be shifted elsewhere if it could afford cleaner industries) and since different environmental indicators are linked to economic growth in opposite ways (*.e.g.*, greenhouse gas emissions *vs.* noxious fume abatement; Allen and Thomas 1992). A related point is the negative impact of income on population growth rates. Since generally increasing incomes bring about lower fertility rates, problems exacerbated by population growth—including environmental strain—can be expected to be alleviated as incomes rise.

**SWB in perspective**

The main motivation driving the research on happiness is the question of the good life and of the good society, but almost all researchers recognize that happiness is certainly not all that matters. A first qualification does not really touch upon the role of happiness, but rather on the time perspective that is commonly adopted. Usually the effect of any given variable on happiness is evaluated either in terms of momentary happiness or with a time horizon of at most a lifetime. The goodness of a society, however, also involves an intergenerational dimension. It is not only a question of how satisfied a society is today, but also how large a potential to be happy it will have tomorrow and bequest to its children. This dimension therefore calls for a concept of *sustainable happiness* that would have to rely more on stocks than on flows. In this context it should be noted that a major argument for the economic practice of discounting future outcomes would not be valid in a SWB perspective. If wealth is understood in terms of goods, discounting over generations can be justified on the grounds that the discount rate reflects the potential increase in real wealth. For example, at a social discount rate of three percent and assuming no inflation, environmental damage one hundred years hence of €1 million will have a net present value of €52,033. If avoiding the damage requires an investment today of more than this amount, such an investment will be inefficient because investing it elsewhere will lead to a benefit that will in one hundred years exceed the cost of the environmental degradation, leaving a net benefit to society. However, the analysis will be invalid in terms of SWB. The failure of SWB, in the wealthy countries, to rise over time despite economic growth undermines the very rationale for intergenerational discounting. No purely quantitative method will provide an appropriate criterion for long-term tradeoffs between different forms of investment. The distinction between full and partial adaptation makes a qualitative analysis indispensable.

Furthermore, SWB can hardly be considered the only criterion for the good life. More than for happiness, an individual may look for meaning in her life that transcends satisfaction. Some experiences may be valued even though they do not seem to provide much satisfaction. Consider the experience of "sweet melancholy" or "ardent longing", recurrent themes of poems and songs whose antagonistic union of pleasure and pain make it impossible to express them in terms of a one-dimensional happiness scale. People may also frequently be guided by considerations of duty or commitment rather than by happiness considerations (which may or may not lead to higher SWB), and this will be more true for some cultures than for others.

On the social level, a number of characteristics of a good society cannot be reduced to SWB. Justice, for example, would be stripped of its essence if it was reduced, as in utilitarianism, to SWB (*cf.* Rawls 1982). The dignity of unborn life, the status of non-human life, and the legitimacy of the death penalty are just a few examples of questions in which SWB has only a limited role to play. In fact, any evaluation in terms of SWB has to be preceded by at least one implicit or explicit judgment that cannot itself be based on SWB, to wit, the decision for a standard of evaluation, *i.e.*, total utility, remembered utility, or yet another measure. As one makes the step from the individual to the aggregate level, another choice of this kind has to be made, namely that of the aggregation procedure. Even though most studies, including the present one, use averages of individual SWB scores as a matter of course, it is by no means implied that this particular aggregation method is superior to others or that it allows any normative inferences.

It should be clear therefore that the goal of happiness research cannot be to provide the ultimate criterion for the good life and the good society. Rather, its goal has to be understood as contributing to a better understanding of one, perhaps the most important, aspect of individual and social welfare. Given that happiness is one among several values people hold, measuring SWB can help identify those factors that add to happiness—and those that do not. Perhaps its greatest value lies in testing and correcting intuitive theories of what affects SWB.

**Developing countries**

It has repeatedly been emphasized that many conclusions, in particular the relative income hypothesis, are only valid above a certain income threshold. The significance of the present study to poorer societies is therefore somewhat limited. Nevertheless, happiness research came up with at least one notable suggestion with respect to the link between a country's average income and SWB. Kenny (1999) speculates that happiness may cause economic growth, rather than the other way around because happiness may bring about more trust and "love of virtue". Trust, in turn, is conducive to economic growth because it lowers transaction costs, and "love of virtue" may lead to higher productivity. Even though the evidence the author presents in favor of the "happiness causes income"-hypothesis is not particularly strong, that for the "income causes happiness"-hypothesis is not any stronger. Therefore, and because in any event "actions that improve happiness and the strength of social interaction are good in their own right", Kenny argues that "there is no logic to putting off these policy changes until the nation can 'afford' them" (p. 22).

**Judgments, values, and culture**

It has repeatedly been emphasized that the weak link between life circumstances and SWB in and among the richer countries is best understood by conceptualizing SWB as a judgment. Does this mean that economic policy is irrelevant to SWB? Certainly not. Rather, the way of thinking about economic policy should receive a different emphasis, away from the traditionally dominant concern for outcomes towards a concern for procedures. Solid evidence from laboratory and field experiments shows that procedural utility, *i.e.*, considerations of procedural characteristics independent of the actual outcome, has a considerable and independent influence on individuals' satisfaction (Folger 1986; Frey and Stutzer 1999b, 2001a; Tyler 1990). Just as Richard Layard is more annoyed by an identical noise at night if it is due to his neighbors than to the wind (see p. 47), people in general have been found to evaluate identical outcomes very differently on the basis of the circumstances and procedures that brought them about. For economic policy this means that the SWB of consumers, who are always also voters, workers, tax payers, and citizens, may depend more on the design of institutions and possibilities of participation than on consumption. These themes are rightly emphasized by Constitutional Political Economy. Swiss authors in particular—before the background of a long tradition of federal, participatory democracy, but also of Europe's highest incomes—point to the benefits of federalism and direct democracy and provide econometric evidence that these are related to sound fiscal policies and, indeed, happiness (Frey and Stutzer 1999a, 1999b, 2001b). In turn, greater satisfaction with political institutions, and with life in general, may feed back to economic prosperity. A citizen who feels that she co-determines how much taxes she pays may be less likely to feel discouraged by a given marginal tax rate than one who feels taxes are imposed by an independent, anonymous authority.

Similarly, the values and moral concepts a person holds are likely to influence SWB. If people report being satisfied or not depends to a large degree on whether they consider a state of affairs legitimate. For example, an individual holding that a fair remuneration for work means equal pay will feel less satisfied with a below-average income than someone believing that everybody has equal opportunities and ultimately is alone responsible for what salary he can command. This could be one reason why Easterlin (1974) found that the gap in SWB responses between high- and low-income groups was much larger in France than in the U.S.[86]. Perhaps more importantly, values influence the goals a person sets for herself and by which she assesses her well-being, or even more, by which she defines her value as a person. Lane, for example, argues that "when money takes on symbolic value and is an intimate part of a person's identity, its acquisition does much more than increase goods and services, it validates the person" (Lane 2000b: 66). Little surprisingly, studies have shown that those who place high value on material achievement derive most satisfaction from money (Ed Diener and Fujita 1995). The significance of this crucial role of values is, first, that conceptions of social welfare cannot be constructed in empty space but must refer to a particular society characterized by particular values, and, second, that those factors affecting the values and ideas people hold, like education, the media, and the public discourse, are likely to have a considerable influence on SWB.

The importance of values implies that culture matters in the context of SWB. Indeed, there are three ways in which much of the present analysis has to be qualified with respect to culture. First, happiness is more important as a goal in some cultures than in others (Ahuvia 1999). People of collectivist cultures, for example, may simply not care so much about happiness when deciding which job to take or whom to marry. The difficulty of individualistically socialized people to summon up sympathy for the idea of arranged marriages, and to empathize with the contentment expressed by thus married couples, attests to the cultural contingency of the priority of happiness.

Second, methodological individualism as the dominant paradigm in Western social sciences is not equally appropriate in different cultural contexts. The sharp boundary drawn between the self and others, so self-evident to people of individualist cultures, is much less evident to others. For example, the imputation implied by methodological individualism that people conceive of themselves as autonomous and independent does not apply to all cultures equally. Suggestive evidence comes from a comparative study of Asian-American and Anglo-American school children. Among the former, intrinsic motivation at a cognitive task was highest when the choice was (allegedly) determined by the child's mother, whereas among the latter personal choice lead to the highest motivation (Iyengar and Lepper 1999). Similarly, American college students in Japan were much more seeking choice than their Japanese fellow student (*ibid.*). It is doubtful if the way of thinking and behaving of "interdependent selves" who "might sometimes actually prefer to submit to choices expressed by others" (*ibid.*: 350) can be adequately described and understood under the paradigm of methodological individualism. Methodological individualism may yield valuable insights in all cultures, but it certainly is less valid in some cultural contexts than in others.

Third, the dominant-end conception of value seems to be culturally contingent. What is good for an individual or for society is generally, in the Western tradition, taken to be a matter of maximization, of ranking on a one-dimensional scale of better and worse. The idea that goodness is reducible to one *summum bonum* is deeply ingrained in Western philosophy, from Aristotle to Utilitarianism, and is also a tenet of Christian thought[87], even though a few influential Western philosophers (Kant, Rawls) did and do not subscribe to ethical reductionism. The idea of a *summum bonum* stands in stark opposition to the Eastern concept of the irreducible complementary antagonism of *yin* and *yang*. Theorists of such a pluralist, as opposed to reductionist, tradition may not agree that all motivation can be traced back to one single concept.

Once again it should be emphasized, however, that cultural contingency does not affect the validity of SWB research as such. It is the inferences one draws from such research that should be affected by culture. The fact that some cultures assign more priority to meeting social obligations than to happiness does not justify any normative conclusions. Westerncentrism would only be committed if happiness was identified with quality of life or if happiness was considered the universal top priority on people's minds. As long as SWB is taken for what it is, to wit, the degree to which an individual judges the overall quality of her life as a whole in a favorable way, SWB research can considerably improve the understanding of different cultures' priorities and thereby contribute to a more balanced perspective on quality of life.

## *Domain and limitations of economic theory*

### The domain of economics

Much has been said about the inappropriateness of economic analysis in various contexts. Yet, a scientific method, model, or analysis is never inappropriate in itself. It is its use to answer a particular question that is or is not appropriate. Therefore, the valid domain of economic analysis shall briefly be delineated.

Economics is typically defined as the study of the allocation of scarce means with alternative uses to satisfy given ends (*cf.* Robbins 1935). A crucial specification, though put within brackets by Robbins himself, is the adjective "given". In well-circumscribed contexts in which ends, or equivalently, preferences, can reasonably be considered as given, economics is indeed well-equipped to analyze agents' choices and the resulting allocation. It is for this reason that economics can make valuable contributions to the understanding of particular markets. In the case of analyzing the oil market, *e.g.*, the assumption of rational utility maximization is a useful heuristic device. It will be legitimate since people's behavior will look *as if* these assumptions were met, and introducing more realistic assumptions would violate the principle of Occam's razor that demands that redundant assumptions and concepts be eliminated.

### Limitations to economics

The emphasis in the above definition of economics on "given ends" already indicates where economics trespasses on grounds beyond its competence. Where ends are not given but rather themselves subject to a decision that cannot again be reduced to given ends, economics lacks the methodology, and even the vocabulary, to contribute sensible insights. Economics will fail when it is assumed that people have a free will and that this freedom of will is relevant in the particular context under consideration. For if a decision is truly free, it cannot be evaluated as rational or irrational, efficient or inefficient because these concepts have little meaning when ends are not given. As a corollary, the utility maximization axiom is not a legitimate heuristic device in the context of free decisions. Indeed, applying it to each and every type of decision will, on balance, conceal more than it can reveal. By declaring every single act the result of maximizing satisfaction along given preferences under constraints, it is unable to tell the difference between categories that play an existential role in people's lives. There is no question that it is technically possible to represent moral considerations and inner conflicts as utility maximization, but the value added by such exercises is close to zero because they completely miss the categories people care about. Psychological hedonism does not, and cannot, know the difference between an individual's ethical ideals, personal interest, egoistic desires, inner drives, and her happiness. An addict who wants to stop smoking experiences a conflict between her willpower and psycho-physical urges; a blood donor makes a moral decision against his egoistic desires; a wife each day has to balance her legitimate personal interests with those of her husband; a soldier who goes to war out of a sense of duty may do so even though he knows it will not make him happy; voters lining up for hours to cast their votes are moved by a commitment to democracy that overrides their desire for convenience. All these categories have no correspondence in the terminology of the rational utility maximization hypothesis. Sen cogently summarized this point:

> A person is given *one* preference ordering, and as and when the need arises this is supposed to reflect his interests, represent his welfare, summarize his idea of what should be done, and describe his actual choices and behavior. Can one preference ordering do all these things? A person thus described may be 'rational' in the limited sense of revealing no inconsistencies in his choice behavior, but if he has no use for these distinctions between quite different concepts he must be a bit of a fool. The *purely* economic man is indeed close to

being a social moron. Economic theory has been much preoccupied with this rational fool decked in the glory of his one all-purpose preference ordering. To make room for the different concepts related to this behavior we need a more elaborate structure. (Sen 1983f: 99, emphases in the original)

Furthermore, with a purely ordinal concept of utility and the exclusive reliance on observed behavior as a source of utility information it is impossible to falsify the claim that a particular choice was, in whatever precise sense, optimal. The revealed preference theorist can make no statement about whether an individual would be better off addicted to heroin or to cigarettes or to nothing at all. The very notion of addiction, implying an urge to do something against, or at least independent of, one's reflected will, is not intelligible under the revealed preference approach. Preferences cannot themselves be rational or irrational, they are simply given and legitimized by their mere existence. With a determinate conception of rationality it cannot make any statements of what free individuals *should prefer* to want in their own interest.

Also in a temporal perspective economics is limited by its scorn of cardinality. For choices to maximize utility, it has to be assumed that preferences are invariant[88] . However, if preferences, including meta-preferences, are not fixed but influenced by the outcomes of one's choices, *i.e.*, if (meta-)preferences and choices exert a mutual influence on each other, an ordinal optimization of current behavior and therefore of future outcomes becomes impossible because there is no common basis by which to judge alternative states (*cf.* Kenny 1999: 5). The crucial question in this context, how to evaluate a change of preferences, is altogether inaccessible to economics. Kenneth Boulding put it provocatively:

> Once we admit that utility or betterment functions are learned, however, neoclassical economics, especially welfare economics, falls apart at an alarming rate. (Boulding 1972: 461)

On the aggregate level this is particularly problematic since the revealed preference approach cannot even identify frame-of-reference externalities unless they are reflected in behavior, *e.g.*, when people are observed sacrificing resources to induce others to reduce their consumption. Since frame-of-reference externalities will be reflected in behavior only to a very limited extent, however, efficiency as defined by observed behavior will be inconsistent with efficiency defined in terms of SWB. Efficiency in the sense of the Pareto criterion reflects to which degree potential gains from the mutual exchange of advantages are exhausted. Whether exhausting these gains is conducive to any substantive concept of utility, however, is beyond the economic perspective. The interpretation of the Pareto criterion in terms of choices simply is at odds with the science's own concern for utility.

Again, this is not to say that economics, and in particular welfare economics, is inappropriate as such. The economic concept of efficiency provides a useful piece of information—but it does not do more than that. It must not be taken to represent the optimization of utility in any substantive sense. Happiness is beyond economics.

# Conclusion

*Your entire erudition,*
*your study of Shakespeare and Wordsworth is wasted,*
*if you do not at the same time educate your character*
*and obtain the mastery of your thinking and doing.*
Mahatma Gandhi

Economics should take advantage of more than forty years of empirical SWB research. The recognition that self-report measures are valid and reliable and that they correspond precisely to the subjective spirit of the psychological premises of economics would enrich the economic science in two ways: by substantiating the economic concept of utility and clarifying the limits of economics.

A substantiation of the economic utility concept would be a great progress for the economic science at large. It would render economic theory falsifiable and thereby add value to economics analyses because only falsifiability ultimately warrants a growth of knowledge (Popper 1959/1934). Theories based on unfalsifiable premises of what motivations underlie human behavior belong, in the sense of Popper, to the realm of metaphysics. Since their propositions cannot be refuted, they can also not be corroborated.

Making use of empirical methods to measure utility would enable economics to develop more substantive theories of how the behavior of individuals adds up to aggregate outcomes. The objection that the substantiation of the utility concept would overcharge economics with redundant details will be invalid. On the one hand, as has been indicated, taking SWB seriously will in many contexts lead to a substantial improvement of the explanatory potential of economics. It will therefore not be redundant but, on the contrary, indispensable. On the other hand, the current thin concept of utility will continue to be a powerful heuristic device that can inspire economists in their endeavor to explain economic phenomena. It will also be a useful empirical approximation of behavior in many more narrowly circumscribed contexts.

In order to bring to light the unity between happiness, choice, and social welfare that characterizes economic theory, the present study started out on an investigation of the philosophical underpinnings of economics. That analysis established the points of contact between economic theory and empirical psychology. The subsequent discussion of the methodology of SWB research elucidated the subjective character of SWB and established the validity and reliability of empirical measures of happiness. The review of the empirical evidence on SWB then showed that the hedonistic reduction (*i.e.*, the equation of the *summum bonum* with happiness) that is typically made when economic theory is interpreted and applied to real-world phenomena does not stand up to empirical scrutiny. In addition, the evidence on the relationship between income and happiness conclusively suggests that preferences are interdependent and that the influence of income on happiness is different than economic theory posits. These results lead to the conclusion that the unity of choice, happiness, and social welfare is invalid.

The complex relationship between life circumstances and life satisfaction suggests that SWB is ultimately best understood as a free judgment rather than as the fulfillment of given desires. Cultural characteristics and idiosyncratic values play a crucial role, and seemingly irrelevant pieces of information can have a decisive influence on the evaluation of a given event, depending on how a person uses them in a judgment.

Here seems to lie the greatest need, but also the greatest promise, for further research. The theme most deserving of deeper thought and examination is probably the link between culture, economic performance, and happiness. So far the scattered empirical evidence is most supportive of a conclusion that, if valid, would mean a Copernican revolution to the economic, materialist way to think about economic growth and happiness: the cross-country correlation between SWB and per capita income appears to be primarily due to cultural characteristics. In other words, economic growth and happiness may both be strongly dependent on cultural characteristics but not on one another. If it is true that some cultures are more competition-minded than others, and that this characteristic is what drove, and still drives, economic growth in the Western world, this could mean that particular economic arrangements and institutions are not conducive to growth as such, but are so only in a particular cultural context. Duesenberry already emphasized this point fifty years ago:

> In a fundamental sense the basic source of the drive toward higher consumption is to be found in the character of our culture. A rising standard of living is one of the major goals of our society. Much of our public policy is directed toward this end. Societies are compared with one another on the basis of the size of their incomes. […]
>
> There is no question then of proving our hypothesis on logical grounds. What we have tried to do is to show that it does follow from the characteristics of our culture. We should not expect it to apply to other cultures. (Duesenberry 1949: 26, 112)

Similarly, the concept of the quality of life may have to be specified differently for various cultures. While happiness may be an important indicator of individual quality of life and social welfare for Western cultures, it may be of much lesser importance to more collectivist societies. Research in every single discipline—economics, psychology, and comparative cultural sciences—seems to be well advanced, but so far each discipline seems to be largely unaware of the potential synergies that wait to be exploited.

Another promising field of research would be the development of the concept of functionings. So far the idea of functionings is just an ideal concept to verbalize the notion of an objective standard of living (Sen 1983e), *i.e.*, the intangible instrumental goods that intervene between marketable goods and SWB (see fig. 7). As such it has already greatly contributed to the understanding of poverty and SWB. Yet, if this ideal concept could be operationalized with sufficient rigor to allow quantitative analyses, its significance to economics would be considerably enhanced. It can be expected that many branches of economics would greatly benefit from such a progress and that the understanding of the link between economic conditions, the objective standard of living and subjective well-being would be substantially deepened.

Nevertheless, even though an operationalization of the concept of functionings would perhaps push the frontier of our understanding a little bit further, the research on SWB suggests that there is an absolute limit to formalization and quantification in the context of subjective conditions. If it is true that an individual's SWB is a judgment that is ultimately free, then SWB and therefore also behavior would defy any attempt of a complete deterministic explanation, not for a lack of precision in the data, but for reasons of principle. Even more than that, what appears to be beyond formalization will often be more important to SWB, in a marginal sense, than that what can be formalized. A dramatic change of life circumstances may have only a moderate effect on SWB, but a change of attitudes may make a formerly grumbling person express satisfaction with her life. This is by no means to say that attempts to formalize judgments are illegitimate, but it does imply that those attempts should be modest in their claims to explain the human mind. Recognizing these limitations would probably also bring to awareness that objectivity is merely of instrumental value in the investigation of subjective conditions.

The single most significant lesson of SWB research for economics is perhaps the recognition that negative externalities of individual choices are not the exception but the rule. As a consequence, the almost unconditional trust of many economists in the invisible hand is no longer justified, even though the concept itself will not become less valid. Putting the invisible hand in due perspective will reveal that there is a long way to go from individual choice to social welfare. Furthermore, it will necessitate a shift of emphasis from quantitative to qualitative wealth. Without institutional arrangements that restrict positional competition, a society is likely to spend too many resources on jewelry and advertising, to work too many hours, and to teach their children to take positional competition too seriously. An economy may produce quantitatively much in terms of goods, but in how far these goods translate into high well-being depends on how wisely a society sets the rules of the game and how it educates its children.

The pervasiveness of externalities also qualifies the Pareto criterion. Above all, it becomes apparent that the Pareto criterion derives its intuitive appeal from its supposed legitimacy. Its wide acceptance rests on the conviction that it tolerates the tolerable, namely personal tastes that do not unduly interfere with the liberty of others, and does not tolerate the intolerable, namely envy and other tastes that do interfere unduly with the liberty of others. Once it is recognized, however, that externalities are pervasive; that these externalities persist even in the absence of transaction costs[89]; and that externalities from positional competition are not as easily labeled 'legitimate' or 'illegitimate' as conventional externalities (like industrial pollution), it becomes clear that the criterion of efficiency depends ultimately on which preferences and which degree of interference with the liberty of others are considered legitimate. In other words, it is ultimately absolute values, and not relative preferences, that define what is efficiency, individual well-being, and social welfare.

I have in this study brought forward far-reaching criticism of the economic science. However, I do by no means intend to discount the invaluable contribution this very science has made and is still making to our, and to my personal, understanding of the economy. I hope that this is reflected in the constructive spirit in which I have undertaken to investigate the relationship between happiness and economics. Yet, the particular, historically grown methodology of economics has led, I believe, to an alarming irrelevance to many real world questions and, even more worrying, to an inadequate and counterproductive conception of individual well-being and social welfare. I therefore could not agree more with Mishan that what economics needs is “a strong infusion of empiricism to end its unchecked wanderings in the empyrean and to bring it down to earth feet first” (Mishan 1960, quoted by Morawetz, Atia, *et al.* 1977). As I have attempted to demonstrate, the psychological research on happiness can provide this infusion of empiricism. If economics took happiness seriously, it would be able to give more meaningful answers to the questions that matter to people’s lives.

# *Endnotes*

1 Paul Samuelson (1948) for example notes that "economics has always been concerned with problems of public policy and welfare." (p. 203)

2 More precisely, cost is defined as the reduction of utility with respect to the most highly valued forgone opportunity.

3 Smith can rather be regarded as anticipating important aspects of Kantian ethics with his *Theory of Moral Sentiments* (1976/1759); *cf.* Ulrich (1998) and Tugendhat (1995) for a discussion of Smith's moral philosophy.

4 The notion of determinism can be traced back to the sixth century BC. At that time the philosopher Thales of Miletus suggested that the universe was not governed by anthropomorphic Gods but by causes that are to be found in nature itself (EB 1997: "Thales of Miletus.").

5 A 'free will' is of course a pleonasm (there is no such thing as a 'determined will'), but I will continue to use the adjective to emphasize the freedom implied by the term 'will'.

6 Precisely speaking, it is not required that there be only one solution. A decision problem can have any number of optimal solutions that are all equally optimal. The characteristic of determinate conceptions of rationality is not the uniqueness of the solution but that all alternatives are perfectly commensurate and therefore known to be either optimal or suboptimal. To avoid unnecessary complexity it will be assumed in what follows that deterministic decision problems always have exactly one solution.

7 I take this term from Rawls (1999/1971: 484), who borrows it from W. F. R. Hardie, "The Final Good in Aristotle's Ethics." *Philosophy*, 40 (1965).

8 Where "goodness" is to be understood not as an ethical quality but rather as the criterion of what one considers to be the better choice in the sense of Harsanyi's "subjective preferences" (Harsanyi 1955, quoted in Sen 1983f: 99).

9 *Cf.* Merriam-Webster's Collegiate Dictionary (1997): "choose … 1 a: to select freely and after consideration <~ a career> …"

10 The formulation in terms of 'predicting the consequences of one's behavior' may be somewhat difficult to interpret in particular contexts. In the example given, the ability to predict applies to the knowledge of the consequences of particular technical manipulations.

11 The objection that the person is apparently (*sic*!) not able or not willing to resist is invalid here because that would presume precisely what is being questioned, to wit, that choice is determined and can be derived from observed behavior.

12 I am assuming here that the dominant end is of a cardinal nature. I indeed believe that a determinate conception of rationality must imply that the dominant end is of a cardinal nature. I give reasons for this conclusion below on p. 20.

13 "Behavior is procedurally rational when it is the outcome of appropriate deliberation." (Simon 1982/1976: 425)

14 In Simon's own words, "behavior is substantively rational when it is appropriate to the achievement of given goals within the limits imposed by given conditions and constraints." (Simon 1982/1976: 425)

15 Frey and Stutzer (2001b: 2), *e.g.*, state, "in the end, economics is about individual happiness." Nicholson (1998: 69) defines preferences as follows: "When an individual reports that 'A is preferred to B,' it is taken to mean that all things considered, he or she feels better off under situation A than under situation B." Finally, the *Penguin Dictionary of Economics* defines utility as "the pleasure or satisfaction derived by an individual from being in a particular situation or from consuming goods or services." (Bannock, Baxter, and Davis 1987: 414)

16 "The idea that income buys happiness is one of the assumptions—made without evidence but rather for deductive reasons—in microeconomics textbooks." (Blanchflower and Oswald 2000: 11)

17 "Hence common sense may not be a good guide to what happens when a whole society gets richer." (Oswald 1997: 1828)

18 In utilitarianism pleasure and happiness refer to the same concept, where happiness is the "surplus of pleasure over pain" (Sidgwick 1981: 120-1, quoted by Ng 1996: 6). Happiness thus could also be called "net pleasure".

19 *Cf.* also Rawls: "Co-ordinal utilitarianism (and utilitarianism generally) starts by regarding persons in terms of their capacities for satisfaction. It then interprets the problem of justice as how to allocate the means of satisfaction so as to produce the greatest sum of well-being. This notion fits nicely with the deep-rooted view of economic theory which sees it as the study of how to allocate scarce resources for the most efficient advancement of given ends." (Rawls 1982: 181)

20 More precisely, the Pareto criterion will be satisfied in the sense that the transaction leaves all market participants at least as well off as they would have been *in the absence of* the transaction. It is not to be interpreted over time (*i.e.*, not in the sense of "as least as well off as *before* the transaction").

21 For an in-depth treatment of the normative implications of the Pareto criterion see Ulrich (1998).

22 Pioneering works are Bradburn (1969), Campbell (1976), Campbell and Converse (1972), Cantril (1965), Gurin, Veroff, and Feld (1960).

23 Notable exceptions include Blanchflower and Oswald (2000), Clark (1996), Clark and Oswald (1996a, 1996b), Di Tella, MacCulloch, and Oswald (1996), Easterlin (1974, 1995, 2001 [forthcoming]), Frank (1985b, 1997a, 1999), Frey and Stutzer (1999a, 1999b, 1999c, 2001a, 2001b), Morawetz, Atia, *et al.* (1977), Ng (1978, 1980, 1996, 1997), Ng and Wang (1993), Oswald (1997), Scherhorn (2000), van Praag (1993), van Praag and Frijters (1999).

24 "These responses [to SWB questionnaires] have been studied intensively by psychologists, examined a little by sociologists and political scientists, and largely ignored by economists. Some economists may defend this ne-

glect. They will emphasize the unreliability of subjective data—perhaps because they are unaware of the large literature by research psychologists that uses such numbers, or perhaps because they believe economists are better judges of human motivation than those researchers. Most economists, however, are probably unaware that data of this sort are available, and have not thought of whether empirical measures approximating the theoretical construct 'utility' might be useful in their discipline." (Blanchflower and Oswald 2000)

25 Remarkably, this tendency to objectivization has been paralleled in psychology by behaviorism.

26 The question asked twice was "How do you feel about your life as a whole?" with the seven answer options "delighted" – "pleased" – "mostly satisfied" – "mixed (about equally satisfied and dissatisfied)" – "mostly dissatisfied" – "unhappy" – "terrible".

27 Veenhoven recognizes this point: "An additional problem is that the seemingly technical discussion about the proper use of words in fact covers up an ideological debate about value priorities. In many arguments the term 'happiness' is used as a synonym for 'the good'." (Veenhoven 1991b: 8)

28 Sen (1987b: 28) makes a distinction between 'personal well-being' and the 'standard of living' which comes close to the distinction intended here between SWB and life circumstances.

29 The theoretical maximum of 1.00 would indicate perfect correlation between the two measures, which, as a practical matter, would imply identity.

30 Measurement issues are discussed by Frank M. Andrews (1986), F. M. Andrews and Withey (1976), M. Argyle (1989), Bradburn (1969), Campbell (1976), Campbell, Converse, and Rodgers (1976), Cantril (1965), Ed Diener (1984), Ed Diener and Biswas-Diener (2000), Ed Diener and Suh (1997), R. J. Larsen, Diener, and Emmons (1984), Randy J. Larsen and Fredrickson (1999), Michalos (1997), Schwarz and Strack (1991, 1999), Strack, Argyle, and Schwarz (1991), Veenhoven (1991b, 1994b, 1996, 1997). For a comprehensive review of the literature see Diener (1994).

31 A more skeptical view is expressed by Schwarz and Strack (1999: 62), who report "low test-retest reliabilities, usually hovering around.40, and not exceeding.60 when the same question is asked twice during the same one-hour interview (Andrews and Withey, 1976; Glatzer 1984)." This statement stands against the fact that Andrews and Withey (1976: 85) document a test-retest correlation of.71 (n=1072).

32 Negative affect and positive affect are umbrella terms covering the hedonic and emotional, as opposed to judgmental, sensations experienced by an individual. The question corresponding to the item "life changes desired" was "Considering how your life is going, would you like to (1) continue much the same way, (2) change some parts of it, or (3) change many parts of it?"

33 Though Kahneman (1999: 10) is much more optimistic as far as measures of hedonic affect are concerned.

34 *E.g.*, Campbell, Converse, and Rodgers (1976: 47)), estimate the reliability of their eight-item measure "general affect" to be a respectable.89 and its validity.94.

35 In two surveys, the authors find correlations of.68 and.71 for their question quoted above (see footnote 26).

36 Diener (1994: 120) and Kahneman (1999) are psychologists who discuss these issues. Veenhoven (1984: 61) rejects cardinality on theoretical grounds (quoted in Ng 1996: 4), but that does not prevent him from interpreting regression results as if cardinality was warranted (*cf.* Veenhoven 1991a: "… wealth is subject to a law of diminishing happiness returns").

37 The following discussion presupposes that (weak) cardinality and (partial) interpersonal comparability of "actual SWB" are already accepted on theoretical grounds. The reader who rejects these will naturally find the following paragraphs meaningless.

38 A regression of the numerical values on the lengths of the line segments yielded a highly significant coefficient of.974 and an *R2* of.85 (*ibid.*).

39 The term "significant" will be used in its statistical interpretation throughout this paper. When it is used with reference to quantitative results, "significant" will correspond to p-values lower than .05, and "highly significant" to those smaller than .01. The term will not be used to evaluate the magnitude of an effect.

40 My use of the word "effect" in the following discussion of statistical results does not imply causality but merely a statistical relationship.

41 For comprehensive reviews of the literature the reader is referred to Ed Diener (1984, 1994), Kahneman, Diener, and Schwarz (1999), Strack, Argyle, and Schwarz (1991), Veenhoven (1994a, 1997).

42 Diener (1984: 556) reports that a few studies found insignificant (but nevertheless positive) correlations, but the literature he refers to is limited to gerontology.

43 The interpretation is made difficult by the use of nominal income data. Average income of their sample increased from $4,261 to $20,457. However, the authors capture a part of the inflation effect with the time variable that has a negative estimated coefficient.

44 As Gardner and Oswald (2001: 13-4) show, a selection bias does not seem to be involved.

45 The question assessing SWB reads: "Have you recently been feeling reasonably happy all things considered?", and is measured on a 4-point scale.

46 Welfare is understood by van Praag as the "welfare derived from income" (van Praag and Frijters 1999: 417). The elasticities for various European countries ranged from.36 to.63 (*ibid.*: 421).

47 The happiness averages are taken from the World Value Survey conducted between 1990 and 1993, the income data of 1990 are adjusted for purchasing power and taken from the Human Development Report 1993. The two countries selected rather overestimate the income effect, but the result is in any way merely meant to illustrate the order of magnitude of the relation. If India had been taken instead of Hungary, the predicted effect of a doubling of income on SWB would have been.15.

48 In two papers in which Veenhoven argues that higher income causes higher SWB, he does not discuss the evidence from the Japanese data (*cf.* Veenhoven 1989, 1991a).

49 Oswald (1997) reports that Blanchflower, Oswald, and

Warr (1993) found a positive time trend for the U.S. data. However, in a 2000 paper with an identical title, Blanchflower and Oswald (2000) claim the opposite based on the same (but extended) data set.

50 The coefficient drops from -.8321 to -.8029, the t-statistic from 12.94 to 11.83.

51 The figures are own deductions based on ordered logit coefficients of -.958 for unemployment and.130 for the log of household income.

52 A subject's number of friends was estimated by asking: "How about your friendships: would you say that you have a good many friends that you could count on if you had any sort of trouble, an average number, or not too many very good friends?" (Campbell, Converse, and Rodgers 1976: 358).

53 Extraverted people tend to be "sociable, assertive, lively, and sensation-seeking," while neurotic individuals are characterized as "anxious, depressed, emotional, and having low self-esteem" (Ed Diener and Lucas 1999: 218). Extraversion and neuroticism represent two independent dimensions, *i.e.*, an individual high on extraversion can be anything from high to low on neuroticism.

54 They measured self-efficacy by the question "How do you feel about yourself," or, in another survey, "How do you feel about yourself—what you are accomplishing and how you handle problems?"

55 Hofstede defines this dimension as: "individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty." (Hofstede 1991: 51).

56 "Objective circumstances" is a pleonasm. In the following the adjective will be omitted since circumstances are by definition objective (*cf. Merriam-Websters Collegiate Dictionary*: "*circumstance*: [...] 2 a: the sum of essential and environmental factors.").

57 The authors rescaled the SWB scores by standardizing them with the standard deviation. A score of -.7 therefore means that the country's average SWB lies.7 of a standard deviation below the mean of the 55 countries. The standardized values ranged from –3.92 (Dominican Republic) to +1.11 (Iceland). The U.S. scored.91, Colombia.82, Japan -.86, and New Zealand.82. The data are of limited comparability though because the results from heterogeneous surveys had to be calibrated manually, *i.e.*, the results of surveys using 3-point, 4-point, 7-point, etc. scales using different answer keys had to be transformed into a comparable scale. For details see Veenhoven (1993).

58 Until 1963 the Japanese question read: "On the whole, are you satisfied, rather satisfied, as yet unsatisfied or unbearably dissatisfied with the life you lead?" From 1964 on the answer options were "fully satisfied, not fully but to an extent satisfied, as yet unsatisfied or very unsatisfied." Source: Prime Minister's Office (1987). *Public Opinion Survey on the Life of the Nation*. Foreign Press Center, Tokyo. Reported in Veenhoven (1993: 176-7).

59 Duesenberry anticipated Sen's idea of functionings already in 1949 when he wrote that "people do not, for the most part, desire specific goods but desire goods which will serve certain purposes." (Duesenberry 1949: 20)

60 "In this field it is not only true that "what you don't know won't hurt you," but that what you do know does hurt you." (Duesenberry 1949: 27)

61 The frame-of-reference effect via status considerations works in a similar manner as the secondary inflation effect. It would indeed be a special case thereof if maintaining one's status was considered a functioning, which would, however, unduly stretch the notion of functioning.

62 Based on the data of this study, adding a quadratic term slightly increases the explained variance (from $R2$=.372 to.375), but the fitted curve is convex rather than concave, indicating that the marginal utility of income increases with GDP (own calculations). The results should not be taken too seriously, however, because the SWB data originated from independent surveys and were then calibrated in order to simulate identical question wordings. On the calibration method see Veenhoven (1993).

63 In the same article, Veenhoven claims that the data show a curvilinear pattern, but he does not present any evidence except for the visual impression of a suggestive graph. A check of the data showed that there is an insignificant positive relationship that becomes much less significant when the quadratic term is added (see appendix).

64 For information on the WVS and in particular a graph of the income–SWB relationship, *cf.* http://wvs.isr.umich.edu/index.html. Since Inglehart computes the SWB index as the *difference* between the percentage above and below the neutral category rather than the more common (but not necessarily the only appropriate) arithmetic average, there is a theoretical possibility that the nature of the relationship would be different if the arithmetic mean was taken as the SWB index. A check of the data showed, however, that the result of curvilinearity does not depend on the indexation method (see appendix).

65 The secondary inflation effect seems to be of little relevance to international processes since it relates to concrete social interactions that are largely confined to within country processes.

66 These psychological considerations and their relationship with economic prosperity are of course highly reminiscent of, and add little to, Weber's "Protestant Ethic" (Weber 1975/1920).

67 Empirically, though, such a relationship will perhaps be found to be surprisingly weak since monetary income may be a poor measure of consumption where subsistence production and other non-monetary sources of income contribute a large share to a living. This illustrates the limited validity of objective indicators as discussed above.

68 For an extensive review, see Schwarz and Strack (1991, 1999).

69 Examples of studies implicitly employing the temporal integral criterion of welfare include Becker and Murphy (1988), Ljungqvist and Uhlig (2000), and Ng (1996). It

indeed seems that any quantitative conception of welfare will have to rely on the temporal integral criterion.

70 Whether something *should* be irrelevant is of course a judgment to be made by the theorist. In fact it is the same judgment he makes by specifying how well an individual should be able to predict the consequences of her behavior, given her cognitive capacity (see the discussion on rationality in chapter one, pp. 12).

71 If the net effect is negative or zero will depend on the individual's mental representation. If the changes appear to be unrelated, *e.g.*, because they occur with some temporal distance, the individual is more likely to ascribe them to different mental accounts and, therefore, to evaluate them separately, *i.e.*, with a net evaluation that is negative.

72 The authors conducted more experiments that yielded similar findings, but due to their experimental design their results cannot be interpreted as unambiguously as the salary experiment.

73 In fact, the evolutionary perspective on happiness (*cf.* Buss 2000) regards happiness itself as purely functional with respect to the perpetuation of a genetic line. Functionally valuable types of behavior (*e.g.*, taking in sugar) are pleasant in order to induce these behaviors. Thus, pursuing pleasure is generally conducive to evolutionary success, but other motivations besides seeking pleasure—instincts or learned stimulus-response patterns—forbid to reduce evolutionary success to the bare maximization of pleasure.

74 The domain of ethically motivated behavior, in particular commitment, can be added to the list of circumstances under which satisfaction and choice will diverge. Since it represents a class of its own of utmost complexity, however, it will not be discussed here. For further treatment of the relationship between the economic conception of rationality and ethical motivation see Becker (1976), Harsanyi (1982), Rawls (1999/1971), Sen (1983b, 1983f, 1987a), Sen and Williams (1982), Tugendhat (1995), and Ulrich (1998).

75 The social deadweight loss may be smaller, or even zero, if the extra effort will bring benefits to society, e.g., increased production.

76 It is noteworthy that Frank (1985b) analyzes positional competition in terms of the prisoners' dilemma but at the same time affirms that "the presence of [status] in the utility function acts as an implicit subsidy to positional goods consumption" (p. 104) without realizing that the consequences of subsidies differ in important respects from those of rent seeking as mentioned above. The parallel with subsidies only holds for subsidies that encourage an activity for which there would otherwise be no demand at all.

77 In fact there is no compelling reason why the production frontier should not be linear, in which case the deadweight loss would be even larger.
It should be emphasized that the production possibilities frontier cannot be interpreted here as usually because good $X$ is not actually produced. The tradeoff between the production possibilities of goods $X$ and $Y$ operates via the intermediary good $M^X$. To illustrate the idea of the price increase, it can be imagined that $M^X_0/X_0$ corresponds to one preparatory course, and $M^X_1/X_0$ to one preparatory course plus private lessons.

78 *Cf.* Scherhorn (2000: 16): "Compared to the 1920s, the habituation to the perpetual growth of material wellbeing has considerably consolidated." Note also that in collective wage agreements in Western Europe, wage increases that merely compensate for inflation are usually deemed insufficient.

79 Layard makes an important point when he says that "it is not clear just how a person observing the social contract [to avoid negative externalities] would know when to stop work." (Layard 1980: 744).

80 Some authors argue that the average would be the most appropriate measure of the social norm (Boskin and Sheshinski 1978), others propose to take the percentile rank (Frank 1985b, Layard 1980), while again others use a weighted average of comparison others (Duesenberry 1949). What the most appropriate standard will be is certainly an interesting question in its own right but not of particular importance in this context.

81 They add that "these are averages across a heterogeneous group, of course, and the presence of part-timers is particularly likely to confound the difficulty of drawing inferences." (*ibid.*)

82 In more than eighty percent of the cases, proposer offered exactly \$5.

83 The relevance of comparison wages to life satisfaction and to satisfaction with income has been firmly established (*cf.* Clark and Oswald 1996a).

84 Recently (August 2001), the German *IG Metall* labor union agreed, after weeks of negotiation with the intervention of the German chancellor, to the creation of 5000 additional jobs at a German production site of Volkswagen AG at wages significantly below the company's standard wages (though still above the union wage). The union's agreement depended crucially on the management's arguing that the jobs would otherwise have to be created abroad.

85 Foreign EU-students who usually do not receive the monthly stipend were often envied by their Dutch fellow students because, until recently, they were exempted from paying college fees. One could frequently hear Dutch students complain that it was unfair that foreign students could study for free in the Netherlands while they themselves had to pay.

86 In France, 27% of the low-income group and 6% of the high-income group reported being "not very happy", whereas the percentages were 6% and 2% for the U.S. (Easterlin 1974: 100-01).

87 Saint Ignatius of Loyola, for example, taught that serving God was the ultimate purpose behind all that can be considered good (health, honor, even lesser amusements) and the sole criterion for balancing subordinate aims.

88 Alternatively, one could require that changes of preferences are perfectly anticipated. Both formulations are merely two ways of saying that preferences are connected

89 Saying that externalities persist in the absence of transaction costs is merely another way of saying that people are not aware of the negative effect, *i.e.*, they do not realize that they have an interest in compensating the "polluter" to reduce his "emissions".

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# Appendix

## *Veenhoven's claim of curvilinearity*

In his 1991a article, Veenhoven claims that Easterlin's (1974) interpretation of the cross-country evidence based on Cantril's data is wrong. According to Veenhoven, Easterlin's graph was misleading in that the horizontal axis was longer than the vertical one and by the use of a logarithmic income scale. Veenhoven himself claims that a different presentation shows a curvilinear relationship (see figure A-1).

However, adding squared income in an OLS fit merely improves the $R^2$ from .2372 to .2383, and the fitted curve is visually almost indistinguishable from the linear estimate, and in any case has little in common with the arc Veenhoven added to his graph (see figure A-2). In addition, the curve becomes convex if the Dominican Republic is excluded from the sample, which could be defended on the grounds that the country experienced prolonged and violent political turmoil when the data were collected.

Above all, however, the sample is too limited to allow a statistically supported conclusion. A regression on Cantril's produces no significant coefficient unless the Dominican Republic is excluded, as the results below indicate (see table A-1).

*Figure A-2 – OLS fit of Cantril's data.*

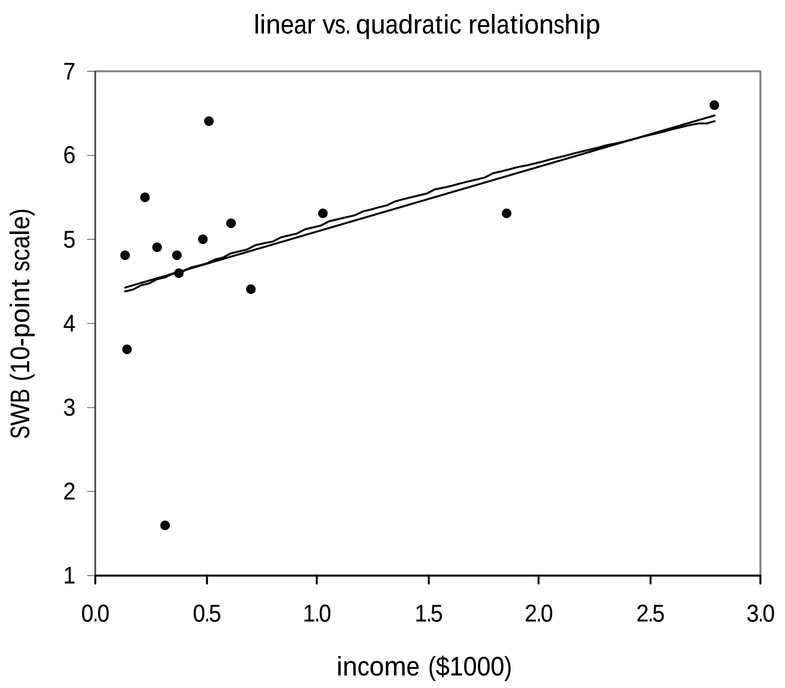


*Figure A-1 – Competing interpretations of Cantril's data..*

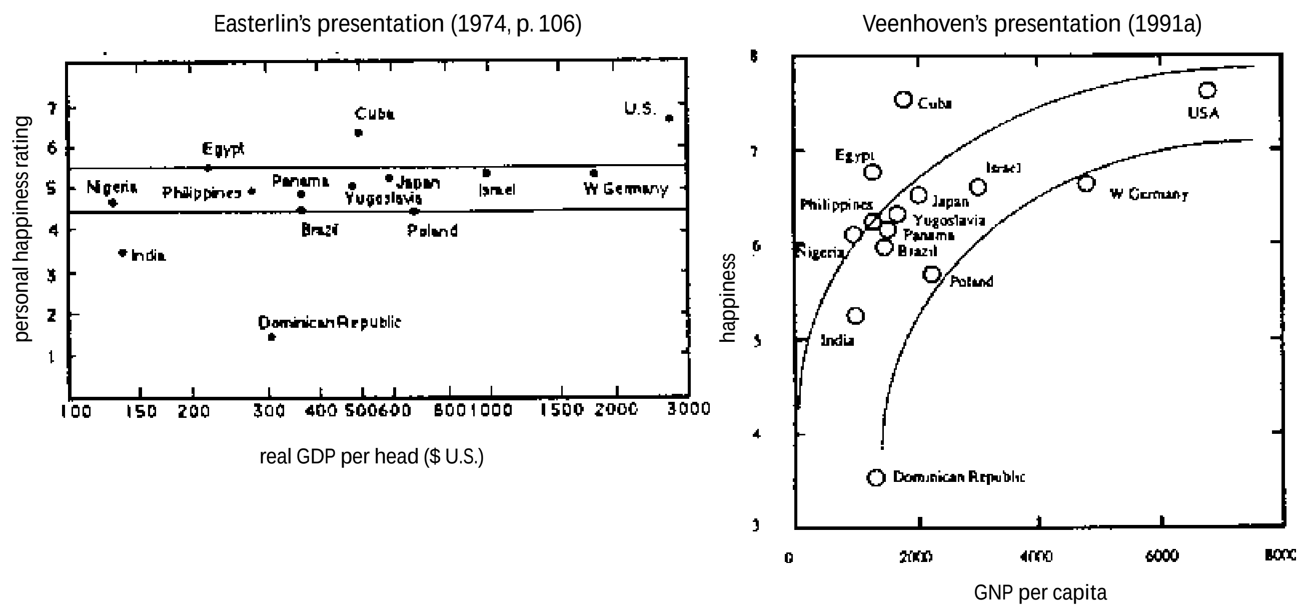

Table A-1 – Regression results.

| | with Dominican Republic | | without Dominican Rep. | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| income | 0.7771 | 0.9846 | 0.603 | 0.4066 |
| | (0.0773) | (0.5733) | (0.0288) | (0.6959) |
| square-inc. | | -0.0749 | | 0.0706 |
| | | (0.9018) | | (0.845) |
| constant | 4.3183 | 4.2485 | 4.6736 | 0.3674 |
| $R^2$ | 0.2372 | 0.2383 | 0.3649 | 4.7408 |

OLS-regression coefficients based on Cantril's data. p-values in parentheses.
Income is annual income measured in thousands of 1961 dollars.

## *Inglehart's result of diminishing SWB-returns to income.*

While most authors use the arithmetic average as an aggregate SWB index, Inglehart computes his index as a difference. More precisely, he computes the difference between the percentage of people "happy" or "very happy" and those "not very happy" or "unhappy", and the difference between the percentage of respondents reporting a satisfaction in the range 7 – 10 and the percentage placing themselves in the 1 – 4 range on a 10-point scale, and uses as the SWB index the arithmetic mean of these two differences (*cf.* Inglehart 1997: 62). Since there is no general, deterministic relationship between the two measures, I computed the two measures from Inglehart's data of 20 diverse national sets of the WVS (the 1990 results of 18 countries plus the 1981 data for 2 of this set; data were obtained from Veenhoven, 1993). The relationship is indeed such that the Inglehart measure is concave with respect to the arithmetic average, but the curvature is very modest in comparison with the concavity between GDP and income, so that taking the arithmetic mean instead of Inglehart's measure would not substantially alter the shape of the relationship. While the coefficient of the squared term is highly significant, the $R^2$-adjusted of a regression merely improves from .964 to .981 when the squared term is added. See figure A-3 for a visual impression of the relationship.

Figure A-3 – Inglehart's SWB index.