



Munich Personal RePEc Archive

## **The paradox of Happiness: towards an alternative explanation**

Drakopoulos, Stavros A.

University of Athens

November 2005

Online at <https://mpra.ub.uni-muenchen.de/8941/>  
MPRA Paper No. 8941, posted 04 Jun 2008 04:33 UTC

THE PARADOX OF HAPPINESS: TOWARDS AN ALTERNATIVE  
EXPLANATION

NOVEMBER 2005

By

Stavros A. Drakopoulos

University of Athens

ABSTRACT

There is a common empirical finding in many countries that substantial increases in real per capita income do not correspond to equivalent increases of individual happiness. These findings have puzzled many economists that some have called the “paradox of happiness”. There have been a number of explanations regarding this paradox. This paper attempts to tackle the paradox of happiness by employing the idea of hierarchical choice. The hierarchical approach implies that there are some basic human needs which must be satisfied before non-basic needs come into the picture. The paper argues that the hierarchical structure of needs implies that the satisfaction of basic needs provides substantial increases to individual happiness compared to the subsequent satisfaction of secondary needs. This might also be an alternative explanation of empirical findings showing a positive relationship between income and happiness up to certain level of income.

JEL classification: I31

An earlier version of this paper has been presented to the 30<sup>th</sup> IAREP Conference in Prague, September 2005. The author wishes to acknowledge the participants of the Happiness Symposium of the Conference for helpful suggestions. Special thanks for comments are also due to A. Ferrer-i-Carbonell. The usual disclaimer applies.

## **I. Introduction**

In the last decade, an increasing number of economists have started to study the concept of happiness at both the microeconomic and at the macroeconomic level. Although one can find a number of older works dealing with the subject (see for instance Easterlin (1974) and Scitovsky (1976), the recent increase of articles and books on happiness and economics is an indication of this current interest (see for instance: Oswald 1997; Kenny 1999; Frey and Stutzer 2000; Alesina et al 2004 and for a general review of the literature Frey and Stutzer 2002a, 2002b).

One of the most discussed aspect of happiness research is the study of the relationship between income and happiness. There have been many empirical studies which examine this relationship in many countries using a variety of micro and macro data. One relatively common empirical result is that substantial increases in real per capita income do not correspond to equivalent increases of individual happiness. More strangely, there are examples where a negative correlation between real income and happiness were observed (see for instance, Easterlin, 1974, 1995; Oswald, 1997; Wright 2000; Lane, 2000; Blanchflower and Oswald, 2004). As one would expect, these empirical findings have puzzled many economists and some have called it the “paradox of happiness” (e.g. Phelps, 2001; Bruni, 2002, 2004a).

As we shall see, there have been a number of explanations for this paradox. However, one might get an additional insight from the hierarchical system of choice. This system is based on the concept of hierarchical needs in which there are primary and secondary needs. The secondary needs become important once the primary ones have been satisfied. It can be

argued that income increases for lower income levels satisfy mostly basic needs. Thus hierarchy might explain why additional increases in income do not have significant effects on happiness level. With these in mind, the second section of the paper discusses the empirical aspects of the paradox of happiness as well as its main theoretical explanations. The next section describes the hierarchical formulation and the way that it can be linked to an alternative explanation of the paradox of happiness. A concluding section will close the paper.

## **II. The Paradox of Happiness**

The relationship between income and happiness is basic in understanding the paradox of happiness. First of all, many economic texts assume that life satisfaction ( $U$ ) is a function of income ( $Y$ ) and that life satisfaction is raised by income:

$$U = U(Y) \text{ with } U' > 0$$

The texts do not provide a theoretical reason for the above relation. It also has to be noted that some economists have argued that there is no straightforward relationship between the two (see for instance Scitovsky, 1976 and Frank, 1999).

Given the above, there have been a large number of empirical studies examining the relationship across time and countries. Most studies start from the post war period and concentrate on the US and European countries. One of the first studies which identified the paradox was Easterlin (1974). It is

based on post WWII US data and shows that although real per capita income has risen dramatically, there is no definite trend on self-reported happiness level. This finding also holds for more recent studies. More specifically, many studies indicate that there has been no improvement in happiness in the US for over almost half a century although real income per capita more than doubled (Easterlin, 1995, p. 37-38 Maddison, 1991). Similar results hold for many European countries. There is no trend in a period where real income per capita rises in all these countries from 25 to 50% (Easterlin, 1995, p.38; Kenny, 1999, p.14; Blanchflower and Oswald, 2004, p.1368;). The findings for Japan are even more strange given the tremendous rise in real income. Although Japanese income increased by almost five times, there was no improvement in mean subjective well-being (Inglehart and Rabier, 1986, and Easterlin, 1995, p.40). It should also be noted that many of the above empirical results concerning the paradox have also been tested for reliability by various econometric methods (Blanchflower and Oswald, 2004; Ferrer-i- Carbonell and Frijters, 2004; Myers and Diener, 1995)

With these empirical results in mind, some authors such as Easterlin (1995) and have suggested that the relationship between income and happiness might be curvilinear. As Frey and Stutzer state:

*“Income provides happiness at low levels of development, but once a certain threshold has been passed, income has little or no effect on happiness. “*

(Frey and Stutzer, 2002b, p.75)

This is also supported by the fact that for US data there is a positive correlation between income and happiness up to the average income level of US \$10000 (see Frey and Stutzer, 2002b, p.75). Relative to this, the U.S

population who felt "very happy" peaked in 1957 and has decreased since then, although real income has increased continuously (Schor, 1991). Furthermore, many cross-sectional empirical studies indicate that more developed countries do not report higher happiness levels once GDP per capita exceeds half that in the US in mid-1990s (see for instance, Helliwell 2003; Kenny 1999). The authors do not provide a theoretical explanation of the curvilinear relationship, but as we shall see the hierarchical approach might serve as a basis.

There have been a number of explanations regarding the paradoxical relationship between income and happiness. One line of tackling the paradox is based on the "subjectivist" approach to utility which means that variables which are considered by many economists to be non-economic, play an important role in individual utility functions and thus to the level of happiness (Frey and Stutzer, 2002a, 2002b). Such variables can be social aspiration, emotions, social stimuli, goal completion and meaning, freedom and social capital, loss of altruism (see Easterlin, 2001; Elster, 1998; Scitovsky, 1976; Loewestein, 1999; Veenhoven, 2000; Putnam, 2000; Bjornskov, 2003; Phelps, 2001).

Another line of approach has to do with traditional economic concepts which, if incorporated, might be able to explain the paradox. Two of these are: the idea of relative income or relative consumption hypothesis (Duesenberry 1949; Frank, 1985, 1997, 1999; Andrews, 1991; Kenny, 1999; Veenhoven, 1991, 2003; Easterlin, 2001; Ferrer-i-Carbonell, 2005), and the level of inequality (Alesina et al. 2004). One can also observe here that the above ideas are not new in economic literature but they have been around for a long

time (Mason, 1998). For instance, the idea of “conspicuous consumption” which is related to the relative income, can be found in Rae (1834), Veblen (1899) and Keynes (1973). In addition, the view that inequality has a negative impact on social well-being is equally old in economic thought (see Bruni, 2004b).

Similar to the above is the explanation based on the idea of aspirations and realizations. According to this outlook, happiness level has a positive relationship with current income but a negative one with aspirations about future income. Moreover, aspirations are based on past income. Given that material aspirations change over life cycle in proportion to income, it is likely that happiness level remain constant while income rises. The main example of this approach is the work of Easterlin but it also draws from work in psychology (Easterlin, 2001; Inglehart, 1990; Kahneman et al, 1997).

Finally, another line of explanation of the paradox has to do with relational goods (for a discussion of this concept, see Sugden, 2002). The main idea here is that the lack of relational goods such as close personal relationships, might be common in advanced countries and this may reduce overall well-being. This approach also draws from current work in psychology (see for instance Gui, 2000; Ash, 2000; Pugno, 2005).

As we shall see in the next section, the hierarchical formulation can be an additional explanation for the paradox.

### **III. The Hierarchical Approach**

One of the standard assumptions of the axiomatic choice implies that economic agents engage in full substitutability. In the terminology of

axiomatic theories, this means that all preferences can be substituted fully. Some authors have termed this type of preferences, Archimedean preferences (see Borch, 1968). To take an example, food can in theory be substituted completely for perfume. In formal terms Archimedean preferences can be stated as follows: Suppose that we have two bundles of goods  $x$  and  $y$ , and that the symbol  $\mathbf{P}$  means "preferred to". If we assume that

$$(x_1, y_1) \mathbf{P} (x_2, y_2)$$

this can be reversed by increasing  $x_2$ . This implies that there exists an  $x > x_2$  such that:

$$(x, y_2) \mathbf{P} (x_1, y_1)$$

The conceptual basis of hierarchical choice is that human needs are of varying importance and that they are hierarchical. Agents have non-Archimedean preferences when they are characterized by primary and secondary needs. Primary needs must reach a given level of satisfaction first before the secondary ones are considered. In other words, preferences are hierarchical in the sense that higher priority choice variables must reach certain levels before lower priority choice variables are considered (for a discussion of the definition of primary and secondary needs, see Max-Neef, 1995).

The idea of hierarchy can be found in other social sciences such as psychology, politics and sociology (see for instance Maslow, 1954; Tversky,



1969; Ardrey, 1970; Doyal and Gough, 1984; Levi, 1986; Deci and Ryan, 2000). Furthermore, although it has not made a substantial impact to the established contemporary theory of choice, a number of economists like Little, (1957), Encarnacion (1964), Georgescu-Roegen (1966), Chipman (1971), Day (1971), Gorman (1971), Earl (1986), Falkinger (1990), Pfouts (2002), Lavoie (2004) and others have discussed hierarchical-type preferences (for a review see Drakopoulos, 1994; Drakopoulos and Karayiannis, 2004).

Some authors have also found empirical indications of this type behaviour at the household demand level, consumption and savings pattern (see Luch et al 1977, Canterbury, 1979; Xiao and Noring, 1994; Jackson and Marks, 1999; Canova et al 2005). Furthermore, it has to be noted that hierarchical choice has recently been applied to issues in health economics, marketing and even medicine (see for instance Scott, 2002; Baltas, 2001; Ratcliffe et al, 2004)

In order to express the above in terms of goods, we assume that we have two vectors

$$x = (x_1, x_2, \dots, x_n)$$

$$x' = (x_1', x_2', \dots, x_n')$$

then  $x \mathbf{P} x'$  iff

either            1)     $x^* > x_1 > x_1'$

or                    2)     $x_1 = x_1' < x_1^*; x_2 > x_2'$

or                    3)     $x_1' < x_1^* < x_1$

or

$$4) \quad x_1^* < x_1, x_1'; x_2^* > x_2 > x_2'$$

$$\quad \quad \quad : \quad : \quad : \quad : \quad :$$

$$x_{n-1}^* < x_{n-2}; x_{n-1}'; x_n' < x_n$$

The above basic system (which is in general form) implies that when the first need is satisfied (the starred variables), then the second most important need comes to the picture. At first glance the above formulation might look similar to a lexicographic system of choice. However, there is a basic difference here in the sense that the hierarchical model allows for a considerable degree of substitution once the target or threshold has been met. On the contrary, lexicography implies virtually no substitution (see Encarnacion, 1964; Drakopoulos,1992).

#### **IV Application to Life Satisfaction Framework**

Apart from income, one can include a number of other variables to a life satisfaction function. The standard approach to an individual's life satisfaction is given as:

$$U = U(Y,z)$$

where U is life satisfaction, Y is the level of income and z is a vector of characteristics comprising variables that affect life satisfaction. There is no accepted list of these variables but as we saw it can include social aspiration, emotions, social stimuli, goal completion and meaning, freedom and social capital. These variables may or may not affect income.

The translation of the hierarchical system into life satisfaction framework, implies that the individual has a priority approach to life satisfaction. This means that the most important variables must be satisfied first before the second priority variable comes into the picture. This idea is also supported by empirical findings by a number of job satisfaction specialists (see for instance Locke, 1976; Clark and Oswald, 1996; Drakopoulos and Theodossiou, 1997).

In order to make a connection with the previous preference system, we can take a simple life satisfaction vector:

$$U = (y, y^*, z)$$

where  $y$  is the most important variable which can be income,  $y^*$  is the aspiration level of income which can be determined by a number of factors and  $z$  is the secondary variable which can represent a vector of other variables affecting life satisfaction (for a discussion concerning the determination of  $y^*$  see Ferrer-i-Carbonell, 2005). Let us compare two situations.

$$u_1 = (y_1, z_1) \text{ and } u_2 = (y_2, z_2)$$

$$u_1 > u_2 \text{ iff}$$

$$\text{either } 1) y_2 < y_1 < y^*$$

$$\text{or } 2) y_2 = y_1 < y^*; z_2 < z_1$$

$$\text{or } 3) y_2 < y^* < y_1$$

or  $4) y^* < y_1, y_2; z_2 < z_1$

This implies that  $z$  is considered only when  $y$  reaches a satisfactory level or target. We can incorporate all the above by taking a two part function:

$$U(y,z) = \{U_1(y,z), U_2(y,z)\}$$

where  $U(y,z) = U_1$  for  $y \leq y^*$

and  $U(y,z) = U_2$  for  $y > y^*$

with the following conditions.

$$\partial U_1 / \partial y > 0, \quad \partial U_2 / \partial y > 0 \quad \text{and}$$

$$\partial U_1 / \partial y > \partial U_2 / \partial y$$

The conditions provide the essence of the hierarchical approach to life satisfaction. Income does not provide the same rate of satisfaction once a given level has been reached (although it continues to have a positive effect); As figure 1 demonstrates:

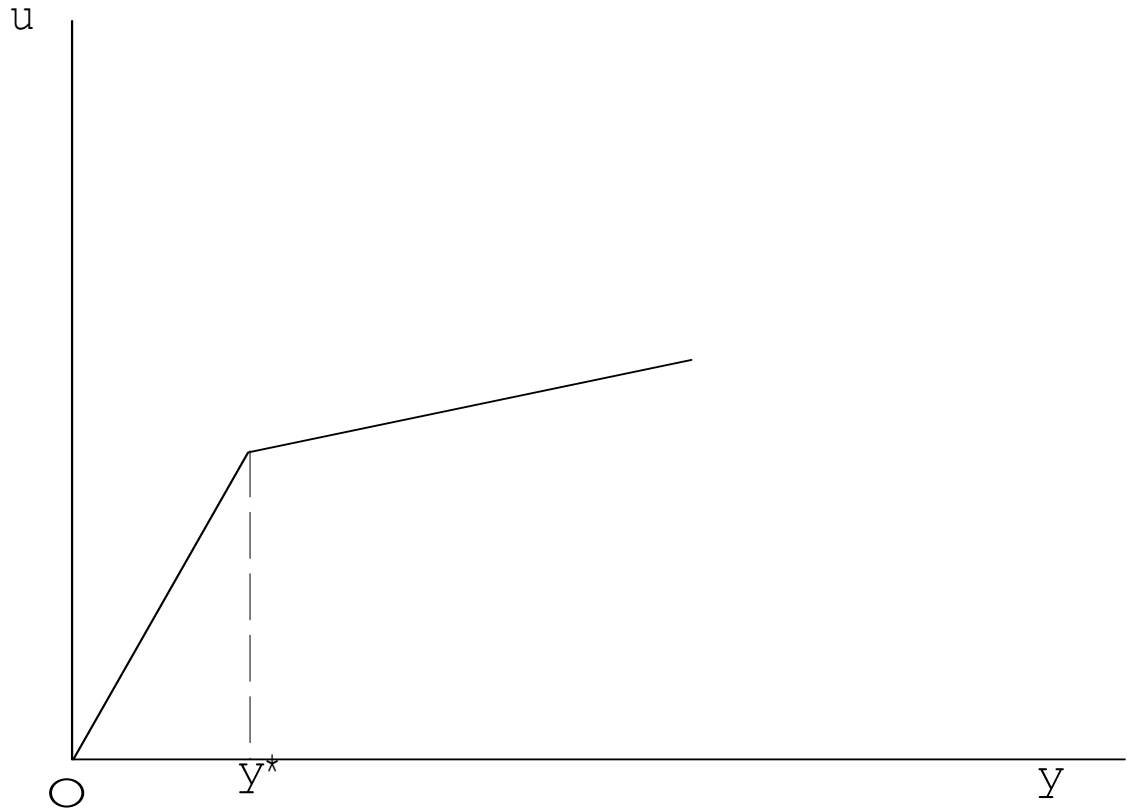


Figure 1

Life satisfaction will be an upward sloped function with respect to income. However, its slope will be steep up to the target level  $y^*$ , but thereafter the slope will become relatively flat. The change in slope at  $y^*$  implies that  $y$  ceases to be the most important variable.

One potential difficulty with the empirical dimension of the hierarchical system might be the definition of basic needs. However, it has been maintained that needs lower in the hierarchy are likely to be common among individuals of different cultures and that needs higher in the hierarchy are likely to be common among individuals of the same culture (see Little, 1957 and Georgescu-Roegen, 1966). Furthermore, a number of widely accepted economic formulations have explicitly or implicitly assumed the feasibility of basic needs distinction. For

instance, Keynes (1936, p.97) uses it in connection to his savings analysis, Duesenberry (1949, pp.19-22) in his discussion of consumption function, Canterbury (1979) with the welfare effects of inflation and Pasinetti (1981) with technical progress. In addition, a whole body of theoretical and empirical literature on linear expenditure systems employs concepts such as “basic needs”, “necessary goods” and “subsistence expenditure” (see for instance, Stone 1954; Sato 1972 and Lluch, 1973).

## **V. Concluding Comments**

The central idea of the paradox of happiness is that substantial increases in per capita income do not correspond to equivalent increases in happiness levels. The paradox has a strong empirical basis in a substantial number of studies. There have been a number of explanations which include economic and non-economic considerations.

The basic aim of this paper was to offer an alternative explanation for this paradox. More specifically, it suggested the hierarchical framework as the basis of this alternative explanation. Hierarchical choice has been studied by many social scientists and has been applied in a wide variety of social and economic issues. The paper argued that the hierarchical system implies that income might be very important variable in providing happiness up to a certain level. After that level has been reached, it ceases to do so and other variables become important. This might be consistent with many

empirical findings that exhibit weak relation between income growth and happiness. In addition, the hierarchical approach might provide a theoretical basis for empirical studies which point towards a curvilinear relationship between the two variables: income has a positive relationship with happiness up to a certain level of income but the relationship weakens after that level. It also has to be pointed that further empirical work might be necessary to establish the relevance of hierarchical explanation. For instance, the hierarchical explanation would gain strength from empirical work which indicates that income has a more robust effect on happiness in poor countries than in richer ones.

## REFERENCES

- Alesina, A.; Di Tella, R. and Mac Culloch, R. (2004) "Inequality and happiness", Journal of Public Economics, 88, pp.2009-42.
- Andrews, F. (1991) "Stability and change in levels and structure of subjective well-being: USA 1972 and 1988", Social Indicators Research, 25, pp.1-30.
- Ardrey, R. (1970) The Social Contract, New York: Dell
- Ash, C. (2000) "Social self-interest", Annals of Public and Cooperative Economics, 72, pp. 261-84.
- Baltas, G. (2001) "Utility-consistent brand demand systems with endogenous category consumption: principles and marketing applications", Decision Sciences, 32, pp. 399-421.
- Bjornskov, C. (2003) 'The Happy few: Cross-Country evidence on social capital and life satisfaction', Kyklos, 56, pp.3-16.
- Blanchflower, D. and Oswald, A. (2004) "Well-being over time in Britain and the US", Journal of Public Economics, 88, pp.1359-86.
- Borch, K. (1968) The Economics of Uncertainty, Princeton: Princeton University Pres .
- Bruni, L. (2002) "A history of happiness in economics", Paper presented to the European Society for the History of Economic Thought Conference, Crete.
- Bruni, L. (2004a) "The "technology of happiness" and the tradition of economic science", Journal of the History of Economic Thought, 26, pp.19-44.
- Bruni, L. (2004b) "The 'happiness transformation problem' in the Cambridge tradition", European Journal of the History of Economic Thought, 11, pp.431-51.
- Canova, L., Rattazzi, A. and Webley, P. (2005) "The hierarchical structure of saving motives", Journal of Economic Psychology, 26, pp.21-37.
- Canterbery, R. (1979) "Inflation, necessities and distributive efficiency", in J. Gapinski and C. Rockwoodn (eds) Essays in Post-Keynesian Inflation, Cambridge, Mass: Ballinger.



- Chipman, J. (1971) "On the Lexicographic Presentation of Preference Orderings", in Chipman et al Preferences, Utility and Demand, New York : Harcourt and Brace Jovanovich.
- Clark, A. and Oswald, A. (1996). "Satisfaction and Comparison Income", Journal of Public Economics, 61, pp.359-381.
- Day, R. (1971) "Rational choice and economic behaviour", Theory and Decision, 1, pp.229-251.
- Doyal, L and Gough, I. (1984) "A theory of human needs", Critical Social Policy, 10, pp.6-38.
- Deci, E. and Ryan, R. (2000) 'The 'what ' and 'why' of goal pursuits: Human needs and the self-determination of behavior", Psychological Inquiry, 11, pp.227-268.
- Drakopoulos, S. (1992) "Psychological Thresholds, Demand and Price Rigidity", Manchester School, LX, 152-68.
- Drakopoulos, S. (1994) "Hierarchical choice in economics", Journal of Economic Surveys, 8, pp. 133-153.
- Drakopoulos, S. and Theodossiou, I. (1997). Job Satisfaction and Target Earnings, Journal of Economic Psychology, 18, pp.694-704.
- Drakopoulos, S. and Karayiannis, A. (2004) "The historical development of hierarchical behaviour in economic thought", Journal of the History of Economic Thought, 26, pp.363-378
- Duesenbery, J. (1949) Income, Saving, and the Theory of Consumer Behavior, Cambridge, Mass: Harvard University Press.
- Earl, P. (1986) Lifestyle Economics, Brighton: Wheatsheaf Books.
- Easterlin, R. (1974) "Does economic growth improve the human lot? Some empirical evidence" in Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz (ed. P. David and M. Reder). New York: Academic Press.
- Easterlin, R. (1995) "Will raising the incomes of all increase the happiness of all?", Journal of Economic Behaviour and Organization, 27, pp.35-47.
- Easterlin, R. (2001) "Income and Happiness: towards a unified theory", Economic Journal, 111, pp.465-484.
- Elster, J. (1998). "Emotions and Economic Theory", Journal of Economic

- Literature, 36, pp.47-74.
- Encarnacion, J. (1964) "A Note on Lexicographical Preferences", Econometrica, vol.32. No.1-2, 215-217.
- Falkinger, J. (1990) "On Growth Along a Hierarchy of Wants", Metroeconomica, 3, pp.209-33.
- Ferrer-i-Carbonell, A. (2005) "Income and well-being: an empirical analysis of the comparison income effect", Journal of Public Economics, 89, pp.997-1019.
- Ferrer-i-Carbonell, A. and Frijets, P. (2004) "How important is methodology for the estimates of the determinants of happiness?" Economic Journal, 114, pp.641-59.
- Frank, R. (1985). Choosing the Right Pond. New York: Oxford University Press.
- Frank, R. (1997) "The frame of reference as a public good, Economic Journal, 107, pp.1832-47.
- Frank, R. (1999). Luxury Fever, New York: The Free Press.
- Frey, B.and Stutzer, A. (2000). "Happiness, economy and institutions, Economic Journal 110, pp. 918-938
- Frey, B. and Stutzer, A. (2002a) "What economists can learn from happiness research?", Journal of Economic Literature, XL, pp.402-435.
- Frey, B. and Stutzer, A. (2002b) Happiness and Economics, Princeton: Princeton University Press.
- Georgescu-Roegen, N (1966) Analytical Economics, Cambridge: Cambridge University Press.
- Gorman, W. (1971) Preference, Revealed Preference and Indifference, in Chipman, 1971.
- Gui, B. (2000) "Beyond transaction: on the interpersonal dimension of economic reality", Annals of Public and Cooperative Economics, 71, pp.139-68.
- Helliwell, J. (2003). "How's life? Combining individual and national variables to explain subjective well-being", Economic Modelling, 20, pp.331-360.
- Inglehart, R. (1990) Cultural Shift in Advanced Industrial Society, Princeton: Princeton University Press.
- Inglehart, R and Rabier, J. (1986) Aspirations adapt to situations in Frank

- Andrews (ed), Research on the quality of life, Ann Arbor, MI, University of Michigan, 1-56
- Jackson, T. and Marks, N. (1999) "Consumption, sustainable welfare and human needs—with reference to UK expenditure patterns between 1954 and 1994", Ecological Economics, 28, 1999, pp. 421-441.
- Kahneman, D., Wakker, P. and Sarin, R. (1997) "Back to Bentham? Explorations of experienced utility", Quarterly Journal of Economics, 112pp.375-405.
- Kenny, C. (1999) "Does growth cause happiness or does happiness cause growth?" Kyklos, 52, pp.3-26.
- Keynes, J. (1973) The General Theory of Employment Interest and Money, London: Macmillan.
- Lane, R. (2000) The Loss of Happiness in the Market Democracies, Yale: Yale University Press.
- Lavoie, M. (2004) "Post-Keynesian consumer theory: Potential synergies in consumer research and economic psychology", Journal of Economic Psychology, 25, pp.639-49.
- Levi, I. (1986) Hard Choices, Cambridge: Cambridge University Press.
- Little, I.M.D. (1957) A Critique of Welfare Economics, Oxford: Clarendon Press.
- Locke, E.A. (1976) "The Nature and Causes of Job Satisfaction", in Dunnette, M (ed.) Handbook of Industrial and Organizational Psychology, Chicago: Rand McNally
- Loewenstein, G. (1999) "Because it is there: the challenge of mountaineering...for utility theory", Kyklos, 52, pp.315-43.
- Lluch, C. (1973) "The extended linear expenditure system", European Economic Review, 4, pp.21-32.
- Lluch, C., Powell, A. and Ross, A. (1977). Patterns in Household Demand and Saving, Oxford: Oxford University Press.
- Maddison, A. (1991) Dynamic Forces in Capitalist Development. Oxford: Oxford University Press.
- Maslow, A. (1954) Motivation and Personality, New York: Harper and Row.
- Mason, R. (1998) The Economics of Conspicuous Consumption: Theory and

- Thought since 1700, Cheltenham: Edward Elgar.
- Max-Neef, M. (1995) "Economic growth and quality of life—a threshold hypothesis". Ecological Economics, 15 pp. 115–118.
- Myers, D. and Diener, E. (1995) "Who is happy?", Psychological Science, 6 pp.10-19.
- Oswald, A. (1997) "Happiness and economic performance", Economic Journal, 107, pp.1815-31.
- Pasinetti, L. (1981) Structural Change and Economic Growth, Cambridge: Cambridge University Press.
- Phelps, C. (2001) "A clue to the paradox of happiness", Journal of Economic Behaviour and Organization, 45, pp.293-300.
- Pfouts,R. (2002) "On the need for a more complete ontology of the consumer", in Fullbrook, E. (ed) Intersubjectivity in Economics: Agents and Structures, London and New York: Routledge, pp. 71-84.
- Pugno, M. (2005) "The Happiness paradox: A formal Explanation from Psycho-economics", paper presented in the 30<sup>th</sup> IAREP conference, Prague.
- Putnam, R. (2000) Bowling Alone, New York: Simon and Schuster.
- Rae, J. (1834) Statement of Some New Principles on the Subject of Political Economy, New York: A.M.Kelley, 1964.
- Ratcliffe, J., Buxman, M., McGarry, T., Sheldon, R., Chancellor, J. (2004) "Patients preferences for characteristics associated with treatment for osteoarthritis", Rheumatology, 23, pp.337-345.
- Sato, K. (1972) "Additive utility functions and double-log consumer demand functions", Journal of Political Economy, 80, pp.102-124.
- Schor, J. (1991) The Overworked American, NY: BasicBooks.
- Scitovsky, T. (1976) The Joyless Economy: An Inquiry into Human Satisfaction and Consumer Dissatisfaction, Oxford: Oxford University Press.
- Scott, A. (2002) " Identifying and analysing dominant preferences in discrete choice experiments: an application in health care", Journal of Economic Psychology, 23, pp.383-398.
- Stone, R. (1957) "Linear expenditure systems and demand analysis", Economic Journal, 64, pp.511-527.

- Sugden, R. (2002) "Beyond sympathy and empathy: Adam Smith's concept of fellow-feeling", Economics and Philosophy , 18, pp.63-87.
- Tversky, A. (1969) Intransitivity of Preferences, Psychological Review, 76, pp.31-48.
- Veblen, T. (1899) The Theory of the Leisure Class, New York: Prometheus Books.
- Veenhoven, R. (1991) "Is happiness relative?" Social Indicators Research, 24, pp.1-34.
- Veenhoven, R. (2000) "Freedom and happiness: a comparative study in forty-four nations in the early 1990s" in Culture and Subjective Well-Being, Diener, E. and Suh, E. (eds), Cambridge MA: MIT Press.
- Veenhoven, R. (2003) "Wealth and happiness revisited: growing national income does go with greater happiness", Social Indicators Research, 64, pp.1-27.
- Wright, R. (2000) Nonzero: The Logic of Human Destiny, New York: Pantheon Books.
- Xiao, J. and Noring, F (1994) "Perceived saving motives and hierarchical financial needs", Financial Counseling and Planning, 5, pp.25-44.