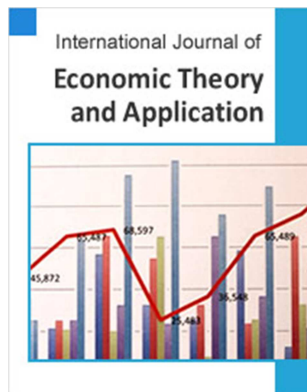




Keywords

Altruism,
Envy,
Selfish,
Consumption

Received: September 29, 2015

Revised: December 10, 2015

Accepted: December 12, 2015

Envy and Altruism in Household Consumption

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Citation

José Israel Briseño Perezyera, Omar Neme Castillo. Envy and Altruism in Household Consumption. *International Journal of Economic Theory and Application*. Vol. 2, No. 6, 2015, pp. 93-99.

Abstract

The paper regards the theoretical models that incorporate envy and altruism in individual consumption functions. Then, since they are characteristics shown by individuals we explicitly model both concepts in an extended utility function. This allows considering the consumption of individuals has direct impact in welfare levels of families and goes beyond the assumption about income or expense as determinants of individual utility. One of the contributions of this utility function is that, for example, public policy should now focus on encouraging relationships between individuals as pro-wellbeing mechanism and stop considering exclusively relationships among individual and objects.

1. Introduction

Neoclassical economics, especially the Walrasian approach, founds in the *Homo economicus*¹ the representative agent ideal for their economic models. One limitation of these models is the lack of consideration of relevant issues, such as empathy and feelings. These theoretical models result from modeling an agent that only seeks, in a wholly selfish way, to maximize his utility function. This implies that individuals just take care about their own consumption and utility levels. This is in contrast with the cooperative or altruistic behavior that exhibit in the real world (Yuji, 2014). In this regard, Luttmer (2005) states that individuals tend to value their neighbors' income as a negative factor, suggesting a behavior characterized for envy rather than altruism.

However, human being is more than a maximizer of utility functions. He shows expressions to other human beings as altruism and envy.² These two terms are understood as a social expression built up from a context where individuals, given their selfish perspective, engage with their environment in different ways. These ties link individuals in market society, in which having more material goods apparently places people in upper social status.³ This produces a subjective assessment for others properties, leading to behaviors such as envy.⁴ Envy is the process of discontent or desire to possess something that one lacks but that others enjoy. Further, is the desire that others lost it or harmed by its use. It means that an envious person always values the material payoff of relevant reference agents negatively (Fehr y Schmidt, 2006).

In line with this argumentation, Häger (2010) summarizes that people compare with

¹ Seen as an individual rational and with selfish decisions with the sole purpose of maximizing a utility function given a budget constraint and their scale of preferences.

² Smith 1759(1997) calls it empathy.

³ Veblen (2005[1899]) refers to them as positioners goods.

⁴ See Bryson (1977), Smith *et al.* (1990), Lazarus (1991).

other individuals from their reference group and that they experience feelings of envy when evaluate their own payoff. Also, the evidence highlights that what does matter instead of absolute level of individual payoff is the own position relative to other members of the near community (Charness and Grosskopf, 2001).

Nevertheless, as Chóliz and Gómez (2002) state, the ability to fulfill their wants and needs leads people to share their surplus with those without these material goods, this is known as altruism.⁵ Chang and Chuang (2011) emphasize that altruism is a human act with the goal of benefiting others; is a form of unconditional kindness; that is, a favor given does not emerge as a response to a favor received (Andreoni and Miller, 2002).⁶ Thus, an altruist person tends to sacrifice their own resources to impact positively the wellbeing of the nearest individuals to him.⁷

The combination of envy, altruism and selfishness drives the actions of each human being. Häger (2010) says that envy might have positive effects since it can be seen as a motor of economic growth and human development. Nonetheless, feelings of envy as well as of altruism may affect economic exchange situations. Its existence might imply inefficient allocations. For instance, when an individual spends their money on status goods or when uses their money buying goods that someone else consumes, they are renouncing to money that could save for the future (Häger, 2010).

Early indications about individuals incorporate feelings and emotions, with acts not cold and methodical as economic theory asserts, arise with Smith (1997[1759]) whose vision encompasses values such as justice, generosity or civic spirit and not the conventional image that behavior is given only by self-interest. Also, emotions were the core of the utility construct of Bentham (1789[2000]), which consider utility as the net sum of positive and negative emotions. More recently, social scientists have recovered the interest about the relation between emotions and economics. For example, Fenton *et al.* (2011) conclude that emotions and their regulation play a central role in traders' decision making.

The relevance of emotions in decisions has been stood out by many psychological scientists which assert that emotions are the dominant driver of most meaningful decisions in social and economic life (Keltner *et al.*, 2014). Kirman *et al.* (2010) stated that emotions govern actions that are urgent and essential to survival, in contrast to the fact about reasoning is dispassionate and calculating. Berezin (2009) says that emotion is crucial for interpreting both the means and ends of action.

5 See Hoffman (1990), Bandura *et al.* (1996) and Chóliz and Gómez (2002).

6 According to Paolilli (2011), altruistic behaviors in the human genre emerge from three different reasons: *kin selection*, in which subject's altruistic behavior is directed toward his relatives; *reciprocal altruism*, in which selection favors altruism even if it is directed at individuals with no degree of consanguinity, and *group selection*, in which altruism is based on the cognition that individuals live in a society where groups operate on a nested hierarchy.

7 Fehr and Schmidt (2006) argue that altruism can be understood, in technical terms, as the strictly positive first derivate of the utility function of an individual with respect to the material resources received by any other agent.

In this regard, Pena and Sanchez (2007) point out that discussion between altruism and selfishness is given taking into account the formation of moral judgments of own actions and the others, under notions of prudence and sympathy.⁸ They add that the driving-force of economic development is self-interest. In consequence, selfishness is common in market transactions while altruism is within families. However, Paolilli (2009) states that intermediate situations are also possible, with the coexistence of altruists and egoists.

Also, individuals are affected by the alien welfare, especially when there is a relationship with others (Pena and Sanchez, 2007). Satisfaction or pleasure does not only derive from oneself, but also from their participation in the experiences of their peers. In economics it is modeled from complex structures in which feelings and reason constantly face the dilemma of decisions.

Regarding the analysis of the utility/welfare of individuals when they act from the perspective of *Homo Economicus*, Rojas (2014) summarizes studies on two approaches: imputation and presumption. On the one hand, a third person must judge the welfare and happiness of the person and it does not matter how he assesses his experience. It is assumed that individuals do not have the ability or the knowledge to make proper judgments about how happy he is and why. Human Development Index (HDI) is in this kind of studies. In this sense, welfare analysis is of attributable character since it considers the levels of consumption via HDI, and neglects human factors that create different behaviors to those traditionally considered by economic science. On the other hand, the presumption approach involves surveys where a state of material benefits is assumed.

Therefore, the aim of this document is to incorporate human action in terms of altruism and envy in a neoclassical consumption function, so that these factors explain the consumer behavior, which allows a better understanding of the individual actions in the market.

The rest of the paper is structured as follows. In the second section, the theoretical framework between altruism and envy is discussed. Next, altruism and selfishness are formally incorporated in the utility function. Discussion as well as the final reflections are summarized in the fourth section.

2. Altruism and Envy in Human Behavior

Each individual chooses from a subjective rating scale. This scale is given by the degree of importance that each one gives to its needs and to the objects wants and acquires. Menger (2012[1871]) and Rothbard (2011[1962]) give a clear explanation of how these subjective rating scales are created from needs and wills with different values for each one. A breakthrough in this regard is the development of

8 Prudence refers to the need to manage prosperity with moderation, that is, prudence advises avoiding envy (Ujaldón, 2005).

Maslow (1943) who proposed a hierarchy of needs and factors for survival and motivational. So that when the individual meets certain needs and desires he moves to higher order of needs.

Other approaches consider that people try to meet the needs which seem most important, where physiological ones have not to be a priority (non-linear or continuous scales), which depends on the value scale. It seems that the highest importance in the scale of needs is the satisfaction of those that promote the conservation and reproduction of life, and the meaning of the remaining depends on the degree (duration and intensity) of welfare achieved through them.⁹

In this situation, one must choose between satisfying a need of which depends the preservation of life, and other of which only depends more or less welfare. Regarding the former needs, individuals choose those that generate greater wellbeing, that is, those that last longer with equally intense, or those with equal length but offer a greater welfare.

Preservation of life depends on the satisfaction of food necessity and, in certain climates, clothing and housing. In contrast, owning a car or a chessboard only leads to greater welfare (Rothbard, 2011[1962]). Moreover, it seems that man is more afraid of the lack of food, clothing and housing than the lack of a car, a chessboard or the like.¹⁰ First, food is consumed in order to preserve life, then additional amounts are added to become healthier, finally more food is consumed for pleasure. So, consumption, for conservation or pleasure, is understood as transversal by the own assessment.¹¹

Bentham (2008[1780]) and Mill (2005) see the utility as a concept associated with happiness experienced by people. In this regard, it is considered that consumption of goods leads to satisfaction. Whereas marginal consumption is characterized by diminishing utility, without reach zero levels, because there is not a saturation level. Generally, goods may be first preferred for satisfaction, then for comfort, and third for achieving a status with respect to the environment. This possibility of differentiate the satisfaction degree is the main cause of the valuation of goods.

Individual choice is given from the combination of preferences and ordering of purposes. The decisions are subjective and cannot be the result of central planner decisions, but are based on assessment of consumers and producers who are able to know, under constraints, needs, amount of assets required to satisfy them and, the availability of goods. Thus, the ultimate motivation of human behavior is more happiness as a welfare experience (Frey *et al.*, 2008).

It is possible to summarize the ideas of selfishness, commonly attributed to Smith (2010[1776]), in which each

individual has an impulse to enforce their rights and strive to meet their own needs in the most complete way as possible, excluding the others. It is worthy to recognize that needs for some society members are not always accomplished.

However, this approach considers individuals as isolated and atomized entities just as the utility maximization problems suppose in economic theory.¹² Given this, Pena and Sanchez (2007) indicate that people is affected by the welfare of others, especially when there is a relationship with them. Satisfaction and pleasure do not derive only from oneself, but also they can surge from participation in the experiences of their congeners. Hence, *Homo Economicus* must be empathetic to some degree which conditions individuals to anticipate each other's actions, and it is based on experiences with other people (Kirman and Teschl, 2010). Furthermore, Binder and Pesaran (2001) consider that current and past consumption decisions can be influenced by a variety of social interactions, such as conformism, altruism, or jealous of others.¹³ Paolilli (2011) has shown that altruism can prevail given certain conditions, mainly a rise in marginal outputs due to the increasingly altruistic aptitudes of agents.

An individual expresses envy when identifying the differences between him and the other, from an act he deems as unjust. Envy could be understood as a resentment toward someone who has some desirable object or quality that one does not have and cannot get (Stets and Tumer, 2007). According to Rawls (1971) there are two types of envy that can dangerously disturb society. The first is the general envy. Here the less favored individuals envy those who are in best position according to the kind of goods they possess. Commonly, those who want the same benefits for themselves are seen as envious persons. The second is the particular envy. It always occurs when someone sees frustrated its attempts to reach the level of those who are in better positions.¹⁴

Other forms of social interaction with relevant implications for consumption include altruism and jealousy.¹⁵ Becker (1981) states that family is a group of people in which altruism is common, since the reference group is small and there is considerable potential for interactions. Therefore, the utility of each individual not only includes self-satisfaction, but take into account the beings around him, especially of his family. Rayo and Becker (2010), in their studies of hedonic utility, show how it motivates the election. This allow establishing that relevance of economic conditions has a decreasing trend over time, for example, when someone gets used to an expensive lifestyle.

9 It should be noted that welfare does not necessarily imply the improvement of living conditions, which certainly could be measured from an objective point of view. Welfare refers to the current conditions of the individual, compared to another point in space and time, are better than the previous state.

10 Some individuals prefer cars or others superfluous objects instead of food or clothing, because the former will provide greater subjective well-being than feeding or dressing.

11 This type of assessment, where foods are of the highest priority, is considering a common life. However, there are situations where it is preferable not to eat because the rating scale is different. For example, cases of bulimia and anorexia.

12 Varian (2010) and Mas-Colell *et al.* (1995) are some examples of this way of treatment of individuals and their economic choices.

13 See Veblen (2005[1899]) and Duesenberry (1949).

14 Rand (1964) regards it as selfishness, and presents it as part of the engine that allows economies developing.

15 Altruism is the concern for the welfare of others that is intrinsically motivated and expressed through acts such as sharing, helping or comforting intended to benefit other people (Shaffer, 2009). Whereas, jealousy can entail specific revenge when its cause is seen as not respecting a promise or something due (Kolm, 2006).

This means that the level of happiness of individuals derived from their own economic success and ultimately affected by the success of their peers. In turn, happiness is influenced by prior own expectations in relation to their future success.

Here, Becker *et al.* (2005) assume that preferences depend heavily on both the state of recognition or status and consumption of other goods and services. It implies that individuals are willing to pay more in terms of time, effort and money to achieve a higher status.¹⁶ At this point, it is possible to observe the existence of envy processes aimed at improving the welfare of the reference individual who, in turn, wants the persons surrounded him assimilate and imitate these sort of processes.

Becker *et al.* (2005) consider this difference between statuses emerges mainly to encourage some kind of struggle behavior among individuals, seeking higher status and could indirectly help others in this battle. The dynamics that occurs in market exchange creates status as an abstract recognition of a higher position. In addition, Rayo and Becker (2007) see happiness as a decision-making device for classifying alternative courses of action. For instance, Kahneman (2000) has argued that moment-to-moment happiness could lead individuals to make different decisions in similar situations.

3. Altruism and Egoism into the Utility Modelation

Becker *et al.* (2005) consider a higher status interacts with the consumption by increasing the marginal utility, because people with higher positions often have access to goods and services like clubs, expensive goods, and even friends (that means relational or positional externalities), which are not available to people with lower status. Friedman and Savage (1948) and Friedman (1953) state that marginal utility varies through income ranges. To Becker *et al.* (2005) this implies that a higher status leads to a marginal utility of income that explains the demand of status purchase given a functional income.

Economic theory frequently contemplates that individuals in each stage of their lives compare consumption options in a valuation ordering.¹⁷ In this regard, individuals search all time to maximize a function like:

$$U = \sum_{t=1}^T u(C_t) \quad (1)$$

Where $u'(\bullet) > 0$ and $u''(\bullet) < 0$ represent utility (happiness, satisfaction) in terms of consumption levels at each moment. When this utility function is expanded, inter-temporary decisions and valuation of financial assets could be incorporated. In this case, the function follows (Venegas, 2008):

¹⁶ Moreover, society can also offer valued rewards like money, prestige and leisure to induce people to make sacrifices (Chambliss and Eglitis, 2014).

¹⁷ Menger (2012[1871]) does a treaty of subjective valuation scales. Rothbard (2011[1962]) and Gertchev (2007) mention how this scales have a problem to perform and mathematic analysis because these are ordinal and not cardinal.

$$V = E_0 \left\{ \int_0^\infty [u(c_t) + v(m_t)] e^{-\delta t} dt \right\} \quad (2)$$

The utility of each individual depends on $u(c_t)$, assumed to be the satisfaction index derived from the own consumption; $v(m_t)$ is the utility for maintaining real balances; δ is the subjective discount rate, that is, the valuation of the individual over time; E_0 represents the conditional expectation to all information available at time $t=0$.

Pesaran (2003) perform an analysis about commodities consumption that directly affects $u(c_t)$. The function proposed shows that individual behaviour is:

$$y_t = f(x_t, u_t, \theta_t), t = 1, 2, \dots, T \quad (3)$$

Where y_t are the results in the period t , x_t are the consumption options known for each period, u_t are unknown consumption options and θ_t are unknown parameters. The results, y_t , are evaluated for each individual in order to account with an evaluation of their gained wellbeing, that implies a different or similar consumption in subsequent periods.

Nevertheless, individuals are not isolated in the world. They share their lives and actions with others. Therefore, these relations have a concordance to altruism, element not contemplated in the utility functions previously presented. Becker (1981) introduces altruism in a consumption function, which we modified as:

$$U_i = U\{x_{i1}, \dots, x_{im}, \sum_{j=1}^{n-1} \psi(U_j)\} \quad (4)$$

Where U_i and U_j are utilities of the i -altruistic and j -beneficiary individuals (for instance, family, friends, work partners); ψ is a positive function that weighs the value of U_j ; x_{im} are commodities consumed by i , output of the evaluation of the equation (1). It is assumed that i is an effective altruistic individual and share some portion of his income to j instead of self-consumption. Equation (4) incorporates a satisfaction factor (U_j) that reflects the own happiness arisen from observed satisfaction of others, weighted by ψ . A value of $\psi=0$ implies total egoism.

The consumption of x_i is conditioned by a budget constrain, defined by:

$$x_i = I_i - \sum_{j=1}^{n-1} I_{ij} + \sum_{j=1}^{n-1} I_{ji} \quad (5)$$

By simplicity the price, x_i , is set equal to one. (5) implies that consumption of each individual make by himself depends on his total income I_i ; however, not all income is for own consumption, one part is spent and/or transferred to family members, $\sum_{j=1}^{n-1} I_{ij}$; another part of consumption is derived from income spent or transferred to the rest of family members $\sum_{j=1}^{n-1} I_{ji}$. For instance, in the rental of a housing, when a member pays the rent, the rest of the family members understands it as a part of their consumption (transference). In the traditional way, each member would pay the share of these rent because no family member cares about the other.

Theoretically, it is true that household income is identical to household consumption. Therefore, equation (6) indicates that the sum of individual income, represents family income, I_h , where m are all family members. (7) points out that the

sum of individual consumption x_i is equal to household consumption, C_h .

$$\sum_{i=1}^n I_i = I_h \quad (6)$$

$$\sum_{i=1}^n x_i = C_h \quad (7)$$

(5), (6) and (7) show elements to think that altruism helps families and communities to ensure their members in terms of consumption and utility. This is possible by the fact that all other members are considered as part of a family or group given their expected contributions to the group (some kind of reciprocity and solidarity). Becker (1981) considers a person in these altruistic circumstances would abstain from moving to another community, changing his job or moving away from his family, even earning a higher individual income, if the welfare or utility of his family decreases. In contrast, a selfish person would be willing to increase his own income at expense of the welfare of the family.

Additionally, Becker *et al.* (2005) suggest that individuals with higher status have access to commodities not available to other strata, therefore, it is expected that population with higher status possess larger houses, higher education, dress fashion, etc. The complementary between consumption and status implies that individual with higher incomes and positions could have higher marginal utility than individuals with lower incomes. So, it is natural or innate the existence of envy in social processes (Ninivaggi, 2010). If the utility in (4) is combined with the expanded utility function proposed by Lü *et al.* (2010), we obtained:

$$U_i = x_0 + (1 - \psi) \left(-\frac{\alpha}{n-1} \sum_{i \neq k} \max\{I_k - I_i, 0\} + \frac{\beta}{n-1} \sum_{i \neq k} \max\{I_i - I_k, 0\} \right) \sum_{i=1}^n u_i(x_i) + \psi \left[\sum_{j=1}^{n-1} u_j(x_j) \right] \quad (8)$$

Considering $\xi = \left(-\frac{\alpha}{n-1} \sum_{i \neq k} \max\{I_k - I_i, 0\} + \frac{\beta}{n-1} \sum_{i \neq k} \max\{I_i - I_k, 0\} \right) \sum_{i=1}^n u_i(x_i)$, it is possible to simplified (8) in (9):

$$U_i = x_0 + (1 - \psi)(\xi) \sum_{i=1}^n u_i(x_i) + \psi \left[\sum_{j=1}^{n-1} u_j(x_j) \right] \quad (9)$$

The first term of the right in (9) embodies the utility of self-consumption affected by the factor $(1-\psi)$, that weights the altruistic level, and ξ the envy level. The above is in the line with economic consensus in which the utility and welfare is given by self-consumption made. However, the factor ξ boosts consumption by the acquisition of 'positioners' commodities. If $\psi=0$, the individual is completely selfish. The second component, represents altruism to his loved ones. It weighs the utility derived from consumption of the family members. x_0 is the autonomous consumption, and n is the number of family members.

The envy component, ξ , represents aversion to inequality, as in Engelmann and Strobel (2004) it measures the marginal disutility of inequality. An element of social preference is incorporated, collected from Fehr and Schmidt (1999), and specified by the parameter β of sympathy when $I_i > I_k$, or a parameter of envy when $I_i < I_k$. This specification of the utility function implies that individuals can feel sympathy to people with similar or less income (or even pity), and at the same

time, can feel envy of those who earn more. Then, the above model accounts a utility function more specific than the commonly treated. I_k stands for the income of an envied individual outside of the family. This income affects consumption of i -th individual seeking to resemble to k -th.

When $\xi=0$ the individual is indifferent between his sympathy and envy; if $\xi>0$ offers greater sympathy; and when $\xi<0$ he tends to be more envy. A value of $\xi>0$ is related to a value of ψ close to 1. It means greater altruistic behaviours reflects more sympathy, resulting that own consumption causes welfare but has a component of sympathy that leads to a greater individual satisfaction. So, the more altruistic an individual behaves, the more sympathy has. As a result, own consumption affords welfare but the sympathy component causes a greater satisfaction. In contrast, $\xi<0$ would be reflected in a value of ψ close to 0, which implies more envy through selfish or less altruistic behaviours in order to maximize individual utility by own consumption.

Therefore, these utility functions are individual expressions and serve to increase the own levels of utility or happiness. In simple terms, the actions of the individual are aimed at increasing his utility but ultimately, these actions increase the utility of the whole family. The previous functions are illustrative to show the formalization process of a maximizing utility at all times, following a heuristic behavioural approach.

4. Discussion and Conclusion

During the development of economic theory, it has been held that consumers perform individual utility maximization processes, which are done in isolation without considering other family or society members except of their participation in exchange processes. However, in recent decades several researchers have begun showing that persons are not perfectly rational, and ultimately, they are not isolated being more than mere consumers. Then, it must to be considered who surround them, either family or friends. The research of Simon (1990) and Kanhemman (2012) are examples of this discussion.

These elements are rarely mentioned when the individual and his consumption are studied. Therefore, we have proposed a utility function that allows to analyse more precisely the elements that affect each individual trough the time and his actions, giving guidelines to a better understanding of the individual in society and the development of this.

Families have been responsible in all societies, included the modern one that is market oriented, of a considerable part of economic activity produced and consumed. They are also responsible for aspects such as education, health and human capital of its members. Altruism dominates the behaviour inside the families, perhaps as much as egoism dominates the market transactions; therefore, this concept is more important in the economic life than has been considered.

The use of the broadened function utility allows performing an analysis that leads to a better understanding of the dynamic shown in happiness statistics. For instance,

Latin-American region, characterized for a medium/low income, reports high happiness/welfare indices contradicting the economic theory where a higher income increased consumption and therefore is more possible to achieve happiness/welfare. These theoretical proposals ignore the social relation between individuals in which behaviours as envy and altruism emerge.

If we reflect this on the basis of the proposed function, it is possible to think about individuals, for example, with values of $\xi > 0$ (sympathy) and ψ close to 1 (altruism), which shows individuals inside communities where own consumption take place with a lower contribution of individual satisfaction levels compare to satisfaction found in the existence of welfare of the members he is related to (mostly family).

This way, the extended model provides a more current approach about the individual's behavior and, thus, a more realistic modeling taking into consideration human elements, which is in line with selected seminal papers like those of OECD (2013). The use of an alternative analysis entails public policy implications. Now it must stop putting emphasis on relations individual-object (consumption) and further consider relations subject-subject as a mechanism to enhance welfare levels.

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