
Rational consumer choice

Orlando Gomes



Electronic version

URL: <http://journals.openedition.org/cp/9182>

DOI: 10.4000/cp.9182

ISSN: 2183-2269

Publisher

Escola Superior de Comunicação Social

Printed version

Date of publication: 31 December 2005

Number of pages: 161-182

ISBN: 1646-1479

ISSN: 16461479

Electronic reference

Orlando Gomes, « Rational consumer choice », *Comunicação Pública* [Online], Vol.1 nº2 | 2005, Online since 16 November 2020, connection on 05 December 2020. URL : <http://journals.openedition.org/cp/9182> ; DOI : <https://doi.org/10.4000/cp.9182>

This text was automatically generated on 5 December 2020.



Comunicação Pública Este trabalho está licenciado com uma Licença Creative Commons - Atribuição-NãoComercial 4.0 Internacional.

Rational consumer choice

Orlando Gomes

AUTHOR'S NOTE

This paper was re-written, from an earlier version, for The Digital and Knowledge Economy project, of the Lisbon Politechnique Institute, to which I am grateful for the financial support. I would like to thank Fernanda Bonacho and an anonymous referee for helpful comments

1. Introduction

- 1 Economics emerge for the communication sciences as a means to supply an institutional framework over which it makes sense to analyse some well specified agent actions. In particular, consumer oriented disciplines, like marketing and advertising, and firm oriented subjects, like organisational communication, make use of the economic context to place activities and individuals in their right positions, and this seems all that the economic science can give to the referred research fields. After that, the way agents behave becomes, under a communication perspective, something that is apparently much closer to phenomena that only sociological and psychological paradigms can explain. Hence, it is not strange that the above group of scientific fields gets help from Economics only when it is necessary:
- 2 Firstly, to know the meaning and the measurement procedure of some economic indicators that allow us to understand the global context under which marketing activities, for instance, take place;
- 3 Secondly, to give some glimpses of how the world economy evolves and how the several economies (countries) interact; this is also a central issue, for example, to perceive how the different kinds of goods and services will be able to impose themselves in the progressively global world we live in today. It seems clear, we think, that marketing and advertising activities must have an exact perception of how the

markets behave and evolve in order to find business opportunities. It is an illusion to think that a business is local, that is, what happens elsewhere does not have important effects over all the economic activities in some restricted geographical area. We can say that there are no more local businesses: there can only be well succeeded enterprises when a broad view is adopted. This is because even if we plan to sell a good only to a small market, the truth is that one must be conscious that individual actions here are conditioned by the economic events in the rest of the world. This is true more than ever in the present day, but it is not a recent evidence. The 1929 North-American great depression or the 1973 oil price shock are two good examples that global impacts are a reality that crossed all the 20th century.

- 4 A third point has to do with the economic analysis of firms and market structures. Communication research resorts to Economics also to gather information on how the firms or other organisations will place themselves on the economic environment (the market); to know how a monopolistic firm plans its productive and selling actions; to understand how a small firm deals with the decisions of its larger opponents; to evaluate how the market conditions are changed by joint decisions of some of the market participants; or to explore the mechanics under which individual prices (prices of individual goods and services) are formed by the auctioning behavior of firms and households, are several of the microeconomic or firm economic problems that will be related to activities, which have the creation of selling devices or the idea of the necessity for motivating people on their jobs through the development of a communication / information system within the individual firm as central goals.
- 5 My point, after this short description about the fields where communication sciences and Economics interact, is to re-emphasise the need to explore these common grounds further and to call the attention to other economic fields that are undoubtedly relevant for the group of sciences that is being considered. Namely, some economic ideas may be fruitful in areas where only psychosociological factors are taken seriously, which is the case of consumption choices. It is also the case of issues linked to the information society we live in; according to this last subject, we will make some comments in section II. This is not, however, the main concern of the paper, which focus on consumer choice.
- 6 The way individuals plan their consumption options is one of the most important areas of research in Economics, however there are some difficulties in transposing the mathematical frameworks that explain consumption in Economics to the marketing and advertising research areas. This is because these theoretical bodies rely essentially on the idea that individual tastes can be controlled or manipulated and therefore psychological rules apply much more than the rational behavior proposed by Economics. The present point of view is that the economic science furnishes the basic structure, that is, it stylises human behavior in order to illustrate how a completely rational agent would act in the presence of a choice problem, e.g., the choice between purchasing two goods or the choice of acquiring a good now or in a more or less distant future.
- 7 Understanding these choices constitutes the base for the marketing professionals to direct their selling strategies. Nevertheless, it seems that it is mostly explored, in this grounds, the deviations from the rule of rational behavior than the rule itself. The exceptional behavior of individuals is regarded with more attention than the predictable conduct actions. This does not mean that the consumer behavior is always

rational and has always economic foundations, but it is certainly not feasible to understand other features without understanding effectively the strictly economic rationality aspects.

- 8 This intends to be a text written by an economist to a non economist audience, and we will focus the analysis on the foundations of economic consumer behavior. The true goal is to provide an interdisciplinary link between Economics and the communication sciences, namely the ones that are consumer oriented. Moreover, it will be a generalist approach, that will present the economic consumer problem under the widest possible scenario, that is, the proposed problem is sufficiently wide to be interpreted as the individual agent problem or the problem the whole economy faces. We will just present an optimising framework (the rational agent always optimises something; specifically, here he / she will optimise the consumption path through time). The model to be built also simplifies extremely real life conditions, by imposing the existence of only one consumption good, which reduces strongly the role of marketing / advertising actions, but, as the reader will see, even in this scenario, it is possible to influence consumer choices without breaking up with the rationality or optimality underlying assumption. Other important assumptions will be set forth along the next section.
- 9 The remainder of this paper is organised as follows. Section II reviews some economic thought literature that helps to frame the subject under analysis; section III presents the set of assumptions needed to build our formal framework of consumption rational choices; section IV discusses the importance of such a setup and the impact of changing some of the basic assumptions; section V is directed to describe possible changes in the results that emerge from eventual actions in the marketing / advertising areas; finally, section VI makes some brief final comments.

2. Economic thought on rationality and communication

- 10 The setup that will be developed along the next sections has its origins in early economic thought. Concerns of classical economists, namely Smith (1776) and Ricardo (1817), included of course production and consumption choices. The first attempt to express on a formal basis (under a mathematical problem) the intertemporal consumption choices is attributed to Ramsey (1928). The intertemporal framework that was firstly adopted by that author ended up being used by many other economists since then, on many studies around the subjects of consumption, capital accumulation, rational choices, and so on.
- 11 The consumer problem that will be introduced is similar to the models that are generally used in the study of a particular field in Economics: economic growth. The use of a capital accumulation difference equation arises with the work of the 1987 Nobel laureate, Solow (1956), and the setup he proposed is adapted to the intertemporal optimising framework by Cass (1965) and another Nobel laureate (in 1975) Koopmans (1965). The refinement of this kind of growth models arises with Romer (1986) and Lucas (1988) (this last one also a Nobel winner [1995]) who improved the Solow model through the inclusion of the possibility of an economy to grow endogenously (by economic mechanisms) at a constant rate in the long run, which the

Solow setup did not considered feasible. The long run positive growth is allowed by the absence of diminishing returns to capital accumulation on the production function.

- 12 Besides this kind of approach to consumer choices, other analysis procedures are possible. The most significant include Modigliani and Brumberg (1954), Ando and Modigliani (1957) and Friedman (1957), who conceived life cycle theories for consumption decisions. Modigliani and Friedman also won Nobel prizes: in 1985 and 1976 respectively; and also Debreu (1959) (Nobel laureate in 1983), who has established the foundations of microeconomic consumer theory through an axiomatic characterization of consumer preferences.
- 13 A major concern in our analysis is rationality. From its beginning, the economic science as evolved as a theoretical body able to explain human actions and decisions under fully rational behavior. Economics puts together the focus on human behavior, that social sciences characterize, and the determinism, that physical sciences consider. We might say that under an economic perspective, human behavior can be analyzed as if the same human action produced always the same reaction in the minds and in the acts of others.
- 14 The previous statement finds support in the work of the economists throughout the 20th century. Economics gained the status of a mathematical science, and mathematical analysis implies strong assumptions and imposes significant constraints over the way we consider human behavior. Rationality has invaded not only microeconomic analysis (through the already cited work of Debreu), but also macroeconomics, mainly when the rational expectations revolution took place [Lucas (1972) and Sargent (1973)].
- 15 Expectations play a fundamental role in economic thinking. As Evans and Honkapohja (2001) state, '*Modern economic theory recognizes that the central difference between economics and natural sciences lies in the forward-looking decisions made by economic agents.*' (page 5). Assuming that individuals act rationally is an important step to understand macro behavior, because aggregation of consumption, investment and output variables becomes possible, and expectations are undoubtedly easier to analyze.
- 16 As the economic science evolved, techniques of analysis have progressed as well. This allowed a change in the way rationality could be perceived. It is with the work of Simon (1957) [Nobel in 1978], that human behavior began to be looked out in a not so straightforward way; with this author, the term 'bounded rationality' gains relevance. Individuals are in fact rational, but there are deviations relatively to the benchmark fully rational behavior. The bounded rationality notion gradually replaces the mechanistic view regarding human decision making process. Other eminent work in the study of deviations from rationality include Kahneman (2003), and the references therein, and McFadden (1973, 1998) [both Nobel winners; the first in 2002 and the second in 2000].
- 17 Another important issue in our analysis is the role of advertising. We are mainly interested in human rational behavior concerning human consumption, and thus other communication relevant points concerning advertising and marketing activities are not the centre of discussion. Nevertheless, it is worthwhile to present some ideas about the economic role of advertising and how this is linked with the important productive sector of mass media. These ideas are presented shortly; for a thorough

discussion of the economic implications of advertising see Bagwell (2003) and Gomes (2005).

18 Our main concern relates to the question of why individuals (that is, consumers) respond to advertising. We can consider three effects of advertising over consumers:

i. informative effect: advertising furnishes information to consumers. In this sense, advertising is an endogenous mechanism through which the markets become more transparent in their functioning. Obviously, there is no such thing as perfect information in any market. This incomplete markets problem works in favour of the supply side (the seller), who can gain with the informational advantage. However, when its product has significant good qualities, firms have advantage in signalling those qualities, and, in doing so, productive units help the invisible hand in doing its job. Advertising can be, in this sense, a form of solving, in the market, a market inefficiency [the signalling in markets with incomplete information is a major theme in economic analysis; the 2001 Nobel award has acknowledged this fact by recognizing the efforts in this field made by Akerlof (1970), Spence (1973, 1976) and Stiglitz (whose benchmark work in signalling research is Rothschild and Stiglitz (1976))].

ii. persuasive effect: advertising changes preferences, creating product differentiation and promoting brand loyalty. In this sense, advertising pushes the market away from competition, stimulating monopoly power. In this view, advertising can have important anti-competitive consequences because it rises prices and imposes additional barriers to the entry of competitors (who have to fight brand loyalty). Artificial product differentiation, concentrated markets, high profits for a few number of firms and higher prices for consumers are some of the not so favourable consequences of advertising.

Nevertheless, advertising and marketing have not, in this perspective, only a negative impact for the consumer. In particular, brands have a fundamental role in the functioning of markets. Without brands, every time an individual wants to buy a product, he / she will have to test it, that is, brands work as accumulated information that consumers may store in order to make decisions. If the individual has tried a given brand, and if there is no reason to suspect that quality changes have occurred, then past consumption can be used to make present choices. Furthermore, without brands there would be no incentive for firms to produce high quality goods, because consumers could not trace back the origin of the good

iii. complementarity effect: advertising can help in creating higher utility from the consumption of a good. This is linked to the idea that consumption is in part a social activity and that individuals gain or lose social prestige or status as a function of the goods they consume. Hence, even if advertising conveys no information and has no persuasive effect, it helps in building the social prestige of consumption – a good that is successfully advertised tends to generate higher utility from the same amount of consumption, because the act of consumption is understood as a social act. Conspicuous consumption is fed by marketing and advertising.

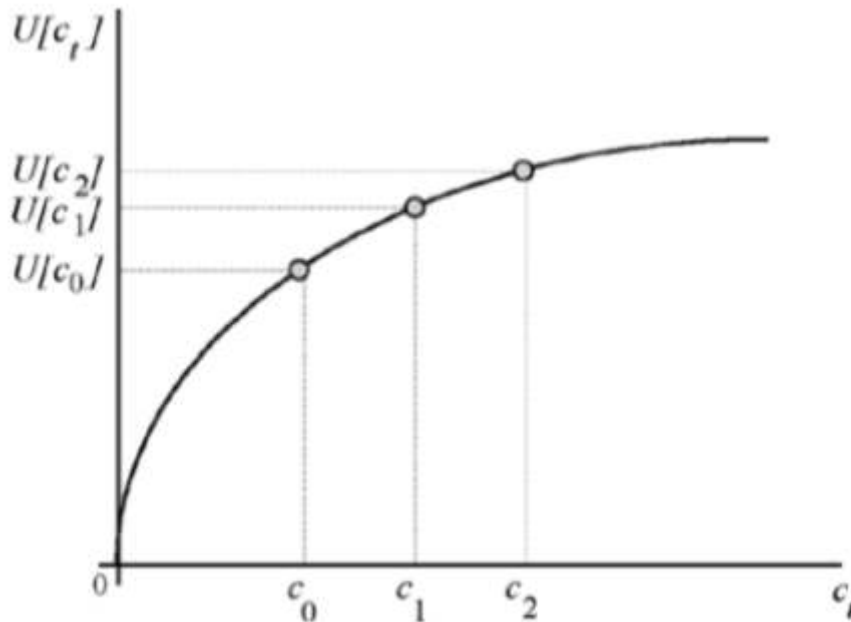
19 The previous ideas suggest that advertising and marketing are means through which both sides of the market withdraw benefits from their relation. They are spontaneous side effects of any economic transaction. In this discussion we have neglected until now the middle man, that is, the channels through which advertising occurs. Much of the advertising effort is concretized through mass media, and these are fundamental in a discussion of the relation between Economics and communication studies. As we have stated in the introduction, we are not concerned here with communication as a whole, but essentially with consumer oriented communication and with consumer choices; thus, the discussion at this level will be brief.

- 20 We can make reference to the economic role of advertising for the media industry itself. This captures a double effect: the firms in the media sector withdraw income from direct consumption of the product they sell, but also from their role as a vehicle to transmit advertising messages. In most cases, this last one is indeed the main, if not the only, source of income generation. The specific role in the communication field makes the media business a peculiar economic activity, which gains essentially from the special status firms possess as receivers of other firms messages directed to consumers.
- 21 The previous comments make us think also about the economic role of information, since this is the main product of the media business and is part of the contents firms want to pass to consumers. Information is an economic good with very peculiar properties and it is of fundamental relevance as well to perceive how individuals act within an organisation and how organisations interact.
- 22 From the economic point of view, the main characteristic of information is that it has traces of a public good, that is, it is sometimes hard to exclude third parties from its use (non excludability principle) and, more important, it is in part a non rival good, that is, the use of the information by one agent does not imply that another agent cannot use that piece of knowledge (non rivalry principle). A public good can be defined as a good (i.e., something that people need or want) but a good that does not obey to a market logic, that is, that does not obey to a conventional buyer-seller relation, and so it must be supplied by an agent above the market (that can manipulate some of the market rules), which in the modern society is many times the government.
- 23 Public goods are well understood by the economic science but the problem is that information is not a pure public good, i.e., it has traces of a public good but the non excludability and the non rivalry are not absolute. For example, in some cases information is only relevant when only one or few agents possess it; the generalised knowledge of some fact can invalidate the individual action that would be taken according to such piece of information (for instance, a firm in the market can control prices if it has access to privileged information; if this is common knowledge, the advantage is certainly offset by the other market participants).
- 24 Information issues are, in this way, intrinsically present in all market relations. Advertising can be thought as a partially public good (it is impossible to exclude third parties from the benefits that one firm generates when advertising some type of good; advertising is also nonrival from the point of view of consumption). Additionally, one can understand information and public goods returning to the communication sector: media firms work with public goods and sell public goods, in the sense that their product is eminently non rival (excludability is, however, present for many media contents). The public good nature of the communication sector output reinforces the relevance and weight of advertising receipts in this specific economic sector.
- 25 As it became clear from the previous discussion, the link between Economics and the communication sciences may be established in multiple ways. Our choice here is, as stated in the introduction, to furnish some guidelines about the framework that directs the consumer behavior. The following sections discuss the representative consumer setup and make a few general comments about the role of advertising in this stylized scenario.

3. Assumptions

- 26 The structure to be built takes an individual or representative consumer. This does not mean that the problem is directed to explain only single consumption decisions. Rather, the representative consumer translates the tastes and choices of the whole society. Individuals do not act all in the same way, but we can think about an abstract entity that represents the average or the typical household in the economy. How does the representative household behave? What does he / she want? The idea behind all the economic reasoning (and other sciences reasoning too) is that individuals want to maximise their welfare. This condition is translated into economic language through the idea of maximising the utility that is withdrawn from consumption. This takes us to formalise our first assumption:
- 27 *Assumption 1:* The economy is represented by a rational stylised individual, who has a well defined goal: to maximise consumption utility.
- 28 Every and each one of us undergoes this reasoning: we want to take the highest satisfaction possible from the act of consuming; this does not imply that under rationality conditions the household wants to consume more and more. This is why we say consumption utility is maximised and not just consumption. Which is the difference? The difference is that we do not improve our welfare just by consuming more. Quality, variety and satiation are important factors. With respect to quality, we do not worry too much, because the consumption variable to define, c_i , is an implicit measure of consumption goods quality rather than quantity. The variety issue will be ignored as a means to simplify the model; only one consumption good is assumed and so the straightforward idea that we all prefer a small quantity of each good composing a basket of goods than a large amount of only one good, is not an issue here. The issue of satiation becomes, then, the centrepiece of the utility notion: everybody prefers to have a large amount than a small amount of a good and, thus, our utility function must be an increasing function (utility rises with consumption, of course); however, as people consume progressively more, the same additional or marginal quantity of the good will imply a lower degree of satisfaction, and so there are diminishing marginal returns to consumption. The utility function is a concave function, what implies, according to the previous reasoning, that the derivatives of the utility function, $U[c_i]$, have the following signs: $U' > 0$ and $U'' < 0$. Furthermore, if the level of consumption is zero, the utility withdrawn from consumption is also zero: $U[0]=0$. Graphically, the utility function may be displayed as in figure 1.

Figura 1 - The utility consumption function.



- 29 From figure 1, one concludes that for equal changes on the consumption level ($c_2 - c_1 = c_1 - c_0$), the utility that is obtained diminishes with increasing consumption levels ($U[c_2] - U[c_1] < U[c_1] - U[c_0]$). The index t attached to the consumption variable means that we are talking about consumption in some moment of time t : consumption, as any other economic variable, is a function of time. A new assumption will be:
- 30 *Assumption 2:* The utility function to be maximised is increasingly concave relatively to its single variable: the level of consumption in a certain t moment.
- 31 The conceptual framework that is being constructed relies basically on the notion of time. The model is indeed a structure conceived to make an intertemporal choice possible. The consumer or household has the possibility and the ability to pursue a choice in each moment of time about the level of consumption that maximises utility. One might say that this is not a difficult choice: in all moments of time the individual will want to gather as many consumption goods he / she can get because this will mean a higher level of utility. This is true, but this maximisation problem, like any economic problem, is constrained.
- 32 The representative household cannot produce or purchase more and more consumption goods. He / she has to make an option; this option is basically a compromise between consuming now or consuming in future moments. We will formalise below the constraint underlying the intertemporal choice. For now, the notion of the utility optimisation problem as an intertemporal problem is developed. The consumer has an horizon in which he / she wants to make consumption decisions. This is generally from the present moment till the end of the life is reached. No one knows with total accuracy the exact moment of death, and this is a first difficulty we bump into in our model: this makes the problem to have a probabilistic nature, since we can only predict the time of our death on a non deterministic way.
- 33 An alternative way of facing this point, that is realistic and avoids the complication of adding uncertain features is to eliminate the upper time bound, that is, assuming that

we want to maximise utility in an infinite time interval. It is generally argued that this is a reasonable assumption because we are worried not only with our life cycle but also with the level of utility that our children can get; our children, in turn, are concerned with their descendants well-being and so our perception of consumption utility spans till infinity.

- 34 *Assumption 3:* The maximisation problem has an infinite horizon, meaning this a concern about future generations utility and not only with the utility of the present generation.
- 35 Assumption 3 is very useful in the sense that it allows to transpose the idea of individual utility to a macroeconomic view related to economic growth. Economic growth models try to explain what and how economies must produce in each moment of time in order to improve the society's welfare. Thinking about future generations brings us to one of the most important economic themes of discussion: how to create the necessary conditions to promote sustainable growth [economic growth (i.e. increasing production) that can be perpetuated in time for future generations. A precise definition of sustainable growth has to do with the idea that the effort we make today to promote our welfare must not threaten the ability of future generations to have also high living standards. Of course, there are here, above all, environmental and improving resource use efficiency considerations at stake].
- 36 Although people have an infinite horizon for their consumption choices, the truth is that no one gives the same value to present consumption and to far in time consumption. We all prefer to consume now because the future is uncertain. We never know exactly what our life period will be, neither we care too much for some far descendant as we do for our children or grandchildren. Thus, one has to consider a discount rate that is precisely the rate at which we evaluate consumption in a future moment of time in the present moment, $t=0$. Being this rate designated by the greek letter ρ , the relation between the value we give now and the value we give in moment $t=1$ to consumption utility in moment $t=1$ is given by:

$$U[c_1]_{t=0} = \frac{1}{1 + \rho} \cdot U[c_1]_{t=1} \quad (1)$$

- 37 Assuming in (1) that $\rho \geq 0$, then $1/(1+\rho) < 1$, which implies $U[c_1]_{t=0} < U[c_1]_{t=1}$, that is, consumption in $t=1$ is less valued today than it will be in that moment, what is in agreement with the previous argument; this is summarized in assumption 4.
- 38 *Assumption 4:* Distant in time consumption has less value in the present moment than near in time consumption. Consumption is then discounted at a rate ρ in each period.
- 39 Imposing a same rate ρ for each moment of time, one may present relation (1) in a generic form, where we have an unknown number of periods of distance between today and the future moment we are assuming:

$$U[c_n]_{t=0} = \frac{1}{(1+\rho)^n} \cdot U[c_n]_{t=n}, \quad \forall n \in \quad [2]$$

- 40 For a given n , equation (2) is obtained by replacing recursively a set of one period relations like (1).
- 41 The several assumptions made until now allow us to formalise the problem that the representative household faces. We already know that he / she wants to maximise his / her consumption utility in all moments of time from now till an unbounded limit and that the decisions that are taken are made today for the continuous of all future moments. The following expression reflects the previous points:

$$\text{Max}_{c_t} \sum_{t=0}^{+\infty} \frac{1}{(1+\rho)^t} \cdot U[c_t] \quad [3]$$

- 42 The variable c_t appears under the maximisation abbreviation to denote that this is the variable that the agent controls in order to improve utility in each moment of time. The representative agent has always the freedom to choose the level of consumption that allows for an optimal solution of the problem (3). We will find out below against what the consumption choice is made, that is, if we make an option for producing or purchasing more consumption goods this certainly implies an opportunity cost: the time or money or effort we spend acquiring consumption goods is time / money / effort that could be used in another way. We shall see how.
- 43 Yet, in relation to (3), note that the utility is evaluated for every moment of time, bearing in mind that the decisions are made in the present moment, what is translated by the inclusion of the term relating to the discount rate.
- 44 As stated earlier, the optimising framework provided by (3) is not an unconstrained optimal control problem. In fact, it is important to re-emphasise that all economic problems are constrained. This is why it is many times said in Economics that there are no *free lunches*. This expression simply means that all options and every decision has a cost. The cost of doing something is always related to what we lose by not doing something else. There are many ways of presenting the constraint attached to problem (3). We can take a microeconomic approach where the household is constrained by his / her wealth, wage and / or other possible revenues. Alternatively, we may adopt a broader view, where we take the decisions of the whole economy about investment and consumption. We will consider the macroeconomic approach.
- 45 Assume that the economy produces a certain quantity of output / income, y_t , which is a function of the quantity of capital available on the economy, k_t , i.e., $y_t = f(k_t)$. We will show later that the properties that this function may have determine how the economy will behave and how the representative consumer fulfils his / her necessities.
- 46 What is produced, which is the same as the income generated in the economy, has two possible destinations and it is here that the choice of the representative agent arises. Two possible destinations are available to the goods produced by the economy: people

may consume or rather they may invest (under a microeconomic point of view, individuals consume or save, and the savings are gathered by the firms, directly or through financial institutions, to make the investments). Analytically,

$$y_t = f(k_t) = i_t + c_t \quad (4)$$

- 47 What is investment? Investment is the flow of capital, that is, the change in the capital variable that occurs from a period to the next one. Assuming that capital depreciates (loses value) in time at a constant rate δ , then we will have the following definition of net investment:

$$i_t = k_{t+1} - (1 - \delta) \cdot k_t \quad (5)$$

- 48 Assumption 5: The optimisation problem has a constraint, which is derived from the fact that consumption is not the only possible use for the produced goods (or generated income). Taking results (4) and (5), we can present such a restriction under the following form:

$$k_{t+1} - k_t = f(k_t) - c_t - \delta \cdot k_t \quad (6)$$

- 49 Equation (6) is a difference equation, and it is this equation that gives a sense of motion to our model. As for any difference equation, to be possible to find an explicit solution is necessary to know the initial value of the economy's state variable (i.e., the variable that is determined by the way the economy evolves) which is k_0 ; k_0 is any given positive value.

4. Some additional notes about the representative consumer model

- 50 The most basic problem of the economic science is precisely the one proposed: the maximisation of consumption utility subject to a budget or expenditure allocation constraint. Knowing how to optimise economic (scarce) resources in order to reach the highest possible welfare is in fact the core of economics. We must note, and this is fundamental to fully understand the explanatory power of this framework, and that there are many simplifying assumptions that allowed to construct the presented toy economy.
- 51 A first point concerns the use that an economy can give to its output / income. We referred that two uses are possible: consumption and investment. This restricts automatically the proposed setup to a very simple economic scenario: basically there are only consumers and producers. Other economic agents are ignored, namely, the government, who acts as a consumer and as an investor but under a different logic relatively to private agents, and the external sector, that is, international relations are excluded, not only the commercial ones but also of other types (financial, information or technology transfers,

- 52 ...). The non government autarchic setup intends to set aside factors that are undoubtedly important but, if included, could partially hide the main issue that is being discussed, i.e., the intertemporal choice that the representative consumer faces.
- 53 Other important shortcoming relates to the inclusion of only two variables in the model: capital and consumption. This implies that many other relevant economic variables are set aside, namely the monetary variables (there is no money in this economy, but this is not necessary any way, because there are no trade relations either), and that one considers only vague notions of those aggregates. As far as consumption is concerned, it was implicitly stated that this aggregate represents a basket containing the goods / services individuals need and want, and from which they can withdraw some level of utility. Capital has here a harder interpretation: since it is the only input used to produce, this aggregate can be identified with the set of machines, equipment and several types of infrastructures (physical capital) and also with human skills, which are
- 54 likewise indispensable on the production process (human capital). Only with this broad view of capital may we present the previous oversimplified scenario.
- 55 The exaggerated aggregation we make does not allow, for example, in the case of consumption, to perceive other important choices, e.g., the choice we make between acquiring / producing a good A or a good B. However, as we have remarked, the presented basic structure is designed in such a fashion that it can easily be extrapolated to more complex scenarios.
- 56 Let us concentrate now on the production conditions as translated by the production function. Capital is the only input. How does it contribute to production? three possibilities can be verified: diminishing, constant or increasing marginal returns. In the first case, one more unit of capital added to production allows for less than one additional unit of output; constant returns imply that the additional unit of capital leads exactly to one more unit of output; in the third case, increasing the capital amount leads to a more than proportional increase in the outcome of the productive activity.
- 57 It is precisely the kind of technical production conditions that allow for different results in the representative consumer model. We just assume hereafter that the capital is subject to constant marginal returns, that is, the employment of one unit of capital implies exactly the generation of one unit of output. Defining constant $A \geq 0$ as the technological production conditions (the state of technology), we take the following production function:

$$f(k_t) = A \cdot k_t \quad (7)$$

- 58 The main goal of the analysis that is being undertaken is fulfilled, that is, the model has been presented and explained. The problem can be solved using some mathematical tools that go beyond the scope of this text. Solving the model means finding optimal trajectory paths for capital and consumption over time. With the given production function, we would find for consumption a trajectory path that begins at a point c_0 that can be obtained from the knowledge about k_0 and that it is extended in time through infinity and that culminates asymptotically on a long run constant and

positive growth rate. The long run consumption value will be given by an expression like the following:

$$\bar{c}_t = c_0 \cdot (1 + g)^t \quad [8]$$

- 59 In (8), \bar{c}_t is the long run value for consumption, which as we see is not constant but grows at a constant rate, which we designate by $g \geq 0$. Result (8) means that consumption growth can be perpetuated in time, and so consumption utility will rise, in the long run, in all moments. One must emphasise that this is a result that arises directly from the fact that we are considering production function (7). When diminishing returns to capital accumulation prevail, a hypothesis commonly advanced, consumption does not grow in the long run, what implies that we would inevitably reach a scenario where the achieved utility in all periods would be the same.
- 60 Let us look a little deeper to what choice is implied by the designed formal structure. It is, as the reader must have realised before, an intertemporal choice between producing goods to consume or to generate / improve capital goods / human skills. If the agent's goal is to maximise his / her well-being through consumption utility, why create anything else in the economy? Why spend resources on activities that do not contribute directly to the main economic objective? The answer becomes clear with what was said until this moment: if one maximises consumption regardless the capital constraint in a period of time, he / she is jeopardising all the future path of consumption, because goods are produced with capital, so it is only possible to produce in the future if we accumulate capital today.
- 61 The consumer's choice is not just a choice between consumption and investment (savings). It is a choice between consumption today and consumption in future time moments. In every moment, the individual has to split his / her resources in such a way that he / she guarantees a smooth consumption path. Using the proposed mathematical setup, the representative agent is capable of making the best possible choice at this level. Once more, the central idea is that investment / savings has only one final objective: to guarantee the existence of consumption goods throughout the whole household time horizon.

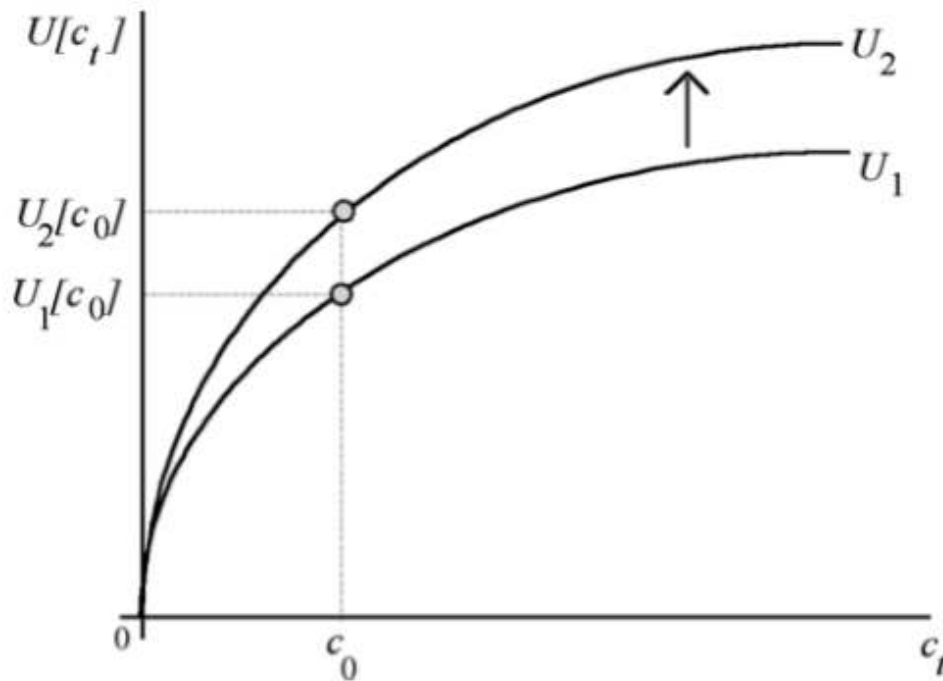
5. Marketing / advertising and the optimal consumer choice

- 62 Having described how economists deal with the intertemporal consumption dilemma, we can go back to the introduction where we stated our worries about how the communication sciences, namely marketing / advertising, may make use of the previous kind of reasoning.
- 63 In the first place, we would like to emphasise that there is no need of a conflict between social sciences at this level. They all look at consumer choices, in several different ways and these can be used to help other scientific fields.
- 64 The importance we have given to economic logic serves essentially to show that, above all, individuals are moved by rationality: when one chooses between consumption and savings he / she is certainly aware that in a precise moment the choice will determine

all the possible consumption paths, and it is in this sense that one might say that we all make economic choices, because we all take the best options (the options that we think to be the best in that precise moment) in terms of designing a temporal horizon to plan consumption, in terms of the shape of the utility function, in terms of the discount rate that we apply to future consumption and also in terms of the savings / consumption choice.

- 65 The notion of rationality, that is attached to economic thought, is in itself an ambiguous notion. We can take a determined decision that is different from the decision other individuals take in the same situation and they can be both rational. We just define rationality in a wide sense as the ability to choose the best possible alternative, making use of all the available information that is given us to decide.
- 66 Our point of view is, then, that before searching for exceptional factors that can abstract individuals from their rational behavior, which is their rule of behavior, communication study fields, that are consumer oriented, must have a perfect notion of what is the general and predictable line of conduct of the consumer agent.
- 67 Can the referred disciplines have any capacity to change our representative agent behavior? And if they have, does this mean that marketing / advertising imply a deviation from the structured rationality scenario, that is, individuals may abandon their rational behavior when confronted with appeals to change their consumption decisions?
- 68 The chosen framework does not allow, as stated, for any kind of manipulation of consumer preferences at the level of the possibility to make an option between two or more goods; nevertheless, preferences can change in what respects the utility function, i.e., a same amount of consumption can give different utility levels according to the perception the agent has of the good's value. In this sense we can say that, under the advanced framework, marketing / advertising actions may influence the utility perception what leads to a different final outcome in terms of the long run optimal trajectory path.
- 69 If the individual changes his / her consuming behavior due to a reparameterizing of the utility function, this is not a departure from rational behavior, i.e., the rationality assumption is compatible with the possible existence of many solutions. If the perception of the utility is modified, the agent still solves an economic problem, despite a particular point in the problem has been subjected to a change. Marketing / advertising activities have, then, an important power in provoking changes on consumer behavior. Our argument is that such power can be explained solely through economic reasoning. It is not necessary to search for complex behavioral phenomena to justify tastes or preferences changes and to justify how these lead to different long run consumption paths.
- 70 Let us recover figure 1 in order to understand the effects of a consumption utility change. Imagine that the representative agent, due to an advertising campaign, begins to give more utility to each unit of consumption goods. This is illustrated in figure 2, where U_1 is the level of utility for the several consumption levels before the cited campaign and U_2 are the levels of utility that agents accomplish from the same consumption levels after the campaign.

Figure 2 - A change on the utility consumption function.



- 71 The impact of the advertising action, as it is clear in figure 2, is to change individuals perception of what is the utility one withdraws from consumption of c_0 good's units. As argued before, this does not mean that the agent is no longer a *homoeconomicus* in the rationality sense; rather, it implies that the advertising action allowed for adding value to the consumption goods.
- 72 This valorisation of the produced goods can be attributed for example to the information benefit that is attained, that is, advertising can be a way of allowing people to have a clearer idea of the true value of goods, what can raise the utility that is withdrawn when those goods are consumed.
- 73 What are the effects that the previous reasoning have over the consumption time path? As we have stated earlier, solving mathematically the model is beyond the scope of this paper, so we just describe roughly which is the qualitative result. If nothing else changes besides the shape of the utility function, and if this change is the one described through figure 2, rate g that appears in equation (8) will be higher, that is, the growth rate of consumption will be located at a higher value¹. The faster long run growth is probably compensated in the short run by a more intense allocation of resources to capital accumulation than to the generation of commodities. It is important to note, then, that actions promoting higher utility from the act of consumption improve the long run consumption growth path and, as a consequence, improve long term welfare.

6. Final remarks

74 To conclude, we present in a systematised way the main ideas that are important to remember:

- i. Individuals act rationally: the main basis for all human action is the one that relates to rational behavior. Confronted with a choice between good A and good B he / she will choose the one that gives a higher utility level.
- ii. Preferences are subjective: a same good can produce different utility levels for different individuals (or even to a same individual in distinct moments of time); this does not imply a lack of rationality of one of the agents. They just have unequal tastes what is an assumption that Economics handle without difficulty, implying that this science can do much more than what is commonly supposed to assist marketing / advertising study areas.
- iii. The intertemporal choice in an economy is always a choice of resource allocation between the present and the future: under a simplified setup, a household applies his / her earnings on acquiring consumption goods and on savings. When he / she saves, he / she is keeping his / her purchasing power in order to use it in a more or less distant temporal horizon. The rational action principle is build over the idea that individuals take present decisions aware of the future impact of such decisions: individuals are responsible social actors.
- iv. Marketing / advertising may rise long run welfare: if these activities allow for a higher degree of information that results on a higher satisfaction degree for the consumer, than consumption grows faster in the long term, at least under the supposed assumptions. Note that the proposed framework can be easily changed and turned on a more complex structure, what might change some of the reached conclusions. The goal has been to reach a simple setup where important conclusions could be taken on a straightforward manner, but one should not forget that the results withdrawn from any mathematical model are true only for the assumptions that are taken. Since life is not mathematics, it is always dangerous to excessively generalise the achieved outcome.
- v. Interdisciplinarity is an exceptional way to promote the growth of young sciences. Along the xxth century the economic science has progressed extraordinarily and it owes much to other scientific fields, in particular to mathematics, physics and biology. Without the remarkable contributes from those sciences we would perhaps continue to analyse economic phenomena as the first political economists did, that is, describing facts without any modelling background, what would make it harder to understand many economic and social evidence. Economics is today one of the most important scientific fields with a well defined object of study and it was capable of constructing also its own methodological tools (e.g. econometrics). It is time, then, for Economics to begin to help other, younger, sciences, namely the ones that must rely on an economic and social background. In this group of scientific fields, communication sciences are certainly included.

BIBLIOGRAPHY

Akerlof, George A. (1970). "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *quarterly Journal of Economics*, 84, 3, 488-500.

- Ando, Arnaldo and Franco Modigliani (1957). "Tests of the Life Cycle Hypothesis of Savings: Comments and Suggestions." *Bulletin of the Oxford University Institute of Statistics*.
- Bagwell, Kyle (2003). *The Economic Analysis of Advertising*. Columbia University.
- Cass, David (1965). "Optimum Growth in an Aggregative Model of Capital Accumulation." *Review of Economic Studies*, 32, 233-240.
- Debreu, Gerard (1959). *Theory of Value*. New York: John Wiley.
- Evans, George W. and Seppo Honkapohja (2001). *Learning and Expectations in Macroeconomics*. Princeton, New Jersey: Princeton University Press.
- Friedman, Milton (1957). *A Theory of the Consumption function*. Princeton: Princeton University Press.
- Gomes, Orlando (2005). "Concorrência Monopolística e a Análise Económica da Publicidade." *Revista Portuguesa de Economia e gestão*, 2, 7-27.
- Kahneman, Daniel (2003), "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review*, 93, 1449-1475.
- Koopmans, Tjalling C. (1965). "On the Concept of Optimal Economic Growth." in *The Economic Approach to Development Planning*. Amsterdam: North Holland.
- Lucas, Robert E. (1972). "Expectations and the Neutrality of Money." *Journal of Economic Theory*, 4, 103-124.
- Lucas, Robert E. (1988). "On the Mechanics of Economic Development." *Journal of Monetary Economics*, 22, 3-42.
- McFadden, Daniel (1973), "Conditional Logit Analysis of Qualitative Choice Behavior." In P. Zarembka (ed.), *frontiers in Econometrics*. New York: Academic Press, 105-142.
- McFadden, Daniel (1998), "Rationality for Economists?" Santa Fé Institute *working paper*.
- Modigliani, Franco and Richard Brumberg (1954). "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data." In K. K. Kurihara, ed., *Post-Keynesian Economics*, 388-436. New-Brunswick, N.J.: Rutgers University Press.
- Ramsey, Frank (1928). "A Mathematical Theory of Saving." *Economic Journal*, 38, 543-559.
- Ricardo, David (1817). *On the Principles of Political Economy and Taxation*. Cambridge: Cambridge University Press, 1951.
- Romer, Paul M. (1986). "Increasing Returns and Long-Run Growth." *Journal of Political Economy*, 94, 1002-1037.
- Rothschild, Michael and Joseph E. Stiglitz (1976). "Equilibrium in Competitive Insurance Markets: an Essay in the Economics of Imperfect Information." *quarterly Journal of Economics*, 80, 629-649.
- Sargent, Thomas J. (1973). "Rational Expectations, the Real Rate of Interest and the Natural Rate of Unemployment." *Brookings Papers on Economic Activity*, 2, 429-472.
- Simon, Herbert A. (1957). *Models of Man: Social and Rational; Mathematical Essays on Rational human Behavior in Society Setting*. New York: JohnWiley.
- Smith, Adam (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*, Everyman Edn.. London: David Campbell Publishers, 1991.
- Solow, Robert M. (1956). "A Contribution to the Theory of Economic Growth." *quarterly Journal of Economics*, 70, 65-94.

Spence, Michael (1973). "Job Market Signalling." *quarterly Journal of Economics*, 87, 3, 355-374.

Spence, Michael (1976). "Product Selection, Fixed Costs, and Monopolistic Competition." *Review of Economic Studies*, 43, 2, 217-235.

NOTES

1. It is commonly assumed that the utility function may present a functional form such as $U = c \cdot g$, with c a constant value. Under this hypothesis, the consumption long run growth rate is equal to $g = (1/\beta) \cdot (A - \beta)$. The utility function evolves as in figure 2 if β diminishes. Thus, such an evolution implies that the long term growth rate g rises.

ABSTRACTS

Consumer oriented communication sciences (marketing and advertising) base their work on a pattern of individual behavior that relies essentially on psychological and sociological motivations. In this paper, we discuss how the economic science deals with the consumer choice problem and we argue that the rational behavior, that Economics characterise, must be the underlying structure to be used when it is necessary to predict how tastes and preferences change or can be changed. The framework that Economics provide, namely when analysing intertemporal choices, gives the rule for human consumption behavior. Without this rule it is impossible to understand the exceptions, that is, the behavior that is abnormal to economic reasoning and that other sciences explore and try to explain. Hence, this is an economic paper directed to a non economic audience and it intends to emphasise the importance of scientific interdisciplinarity, namely in this case between Economics and the younger marketing and advertising research fields.

INDEX

Keywords: consumer choice, rationality, intertemporal optimization, marketing and advertising

AUTHOR

ORLANDO GOMES

Escola Superior de Comunicação Social

Instituto Politécnico de Lisboa ;

Unidade de Investigação em Desenvolvimento Empresarial [UNIDE/ISCTE]

ogomes@escs.ipl.pt