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The idea that social influences and social interactions play a central role on individual economic decisions has had a long presence in the history of economics. With the emergence of marginalism, this idea went into background and the concept of atomistic individual became established in mainstream economic rationality. Starting in the 1970's, there were some attempts to reintroduce non-atomistic preferences in mainstream microeconomic theory in the form of social interactions, interdependent preferences, keeping up with the Joneses, social identity, social preferences, and status concerns. Social preferences have started to have a growing impact among mainstream microeconomics with the advent of behavioral economics, but still they are not in the hard core of the standard theory of choice. The paper argues that atomistic preferences are still prevalent, especially in the form of the assumption of representative agent. It also focuses on the role of methodological individualism and on the theoretical implications of relaxing the assumption of atomistic individual, as main explanations of the resilience of the mainstream economic rationality.

JEL Codes: B4, B2, D01, D91

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1. Introduction

Since the beginning of its elementary construction in John Stuart Mill, the dominant model of individual economic behavior is the atomistic individual or Homo Economicus. In the terminology of modern choice theory, the concept of atomistic individual is equivalent to exogenous or independent preferences, or taking individual preferences as given (Davis, 2010; 2014). The standard hypothesis of atomistic individuals excludes the idea that social influences and social interactions play a central role on individual economic decisions. However, the notion that individuals are influenced by others and by their social environment can be discerned in the works of many major economists such as Adam Smith, Nassau Senior, Karl Marx, A. C. Pigou and Thorstein Veblen. With the appearance of Marginalism and early neoclassical economics and the establishment of the model of Homo Economicus that is characterized by atomistic preferences, this long tradition went into the background. The idea resurfaced in the works of Pigou and Keynes and also in a few, but notable, non-mainstream economists like James Duesenberry, Harvey Leibenstein, Tibor Scitovsky, John Hirsch and John Kenneth Galbraith (Mason, 1995; Drakopoulos, 2016). However, the consideration that agents can also be influenced by other agents' choices was deemed to be at odds with the standard model of economic rationality, and the notion never really entered mainstream economic theory. Starting in the 1970's and after a period of almost complete neglect, there were some attempts to reintroduce the concept in mainstream microeconomic theory. The example of Gary Becker's theory of social interactions (1974) is a prime example of this trend. Robert Pollak's (1976) attempt to incorporate the notion of social comparisons in the form of

interdependent preferences in the standard theory of the consumer, is another example. Subsequent papers such as the one by Clark and Oswald (1998) with its *keeping up with the Joneses* notion, also fall into the same category. More recent manifestations of the idea can be discerned in the formulations relating to pay level comparisons and social identity models.[1] The important point here is that although these formulations were developed in the standard utility maximizing framework, they did not manage to be accepted into the hard core of the standard theory of choice.

In the last few decades and with the emergence of new behavioral economics, the criticism of the standard approach to economic rationality became much more apparent. Part of this criticism had to do with the core assumption of atomistic individual, and the undermining of its dominance has been supplemented with the increased attention to the role of social preferences (Ross, 2012). Most of the work that can be described as new behavioral economics is situated within mainstream economics. The majority of the prominent figures in the field accept the validity of the neoclassical framework, although they realize the need to improve it by introducing more realistic psychological underpinnings (Kao and Velupillai, 2015). It seems that the literature on social preferences emerging from behavioral economics has some impact on the standard model at least at the microeconomic level.

Still and in spite of all the above, the standard conception is still dominant as the wide use of the notion of the representative agent demonstrates. The model

[1] Positional concerns, Sen's goals and commitment theory, social capital theory and variants of new behavioral economics without utility maximization, are also discarding the assumption of atomistic individual, but there are considered further from the mainstream (see also Drakopoulos, 2016).

of utility maximizing with independent preferences in the form of the representative agent is an explicit assumption of the majority of contemporary macroeconomic formulations (Hoover, 2012; Stiglitz, 2018). In particular, the notion of representative agent is employed as microfoundations in most dynamic stochastic general equilibrium models (DSGE) (Hands, 2017). Further, the representative agent is a basic underlying assumption of current empirical revealed preference theory (ERPT), which is a branch of empirical demand analysis with rising impact among mainstream microeconomics (Hands, 2017).

Generally, the contributions of some very well-known economists had a rather limited impact, and social interactions formulations did not become part of the standard theory. Despite the increasing influence of new behavioral economics, it seems that mainstream economic theory has exhibited a remarkable resistance to abandon the concept of atomistic individual. After the introduction, the paper focuses on the post WWII attempts to re-introduce non-atomistic individual in its various manifestations, by major works of economists. The notion can be found in many specific forms such as: *social interactions*, *interdependent preferences, keeping up with the Joneses, social identity, pay level comparisons* and *behavioral social preferences.* The paper concentrates on approaches which operate in the standard setting of economic rationality with utility maximizing agents, and thus they are closer to the mainstream analytical framework. The discussion is not extensive, but it is limited to certain illustrative and influential contributions. The paper proceeds to show that atomistic preferences are still dominant especially in the form of the assumption of representative agent. Finally, by focusing on the role of methodological individualism and on the theoretical implications of social interactions, it will

attempt to provide some possible explanations regarding this conceptual resilience.

2. Non-Atomistic Individuals: Main Formulations

Social Interactions in Gary Becker's work

Gary Becker was one of the first mainstream theorists who attempted to incorporate "social interactions" in the standard microeconomic framework. In a paper written in 1974, Becker places great attention to the social nature of human beings. In the beginning of the paper he cites relevant passages emphasizing the human instinct for sociality from John Donne and Seneca. In order to provide further support to the need of incorporating social interactions in the typical theory of household behavior, Becker cites relevant passages from Bentham, Senior, Marshall, Veblen and Pigou (among others) (Becker, 1974: 1064-65). He further justifies the need for the inclusion of social interactions in the theory of decision-making, by stating:

> For example, he can avoid social opprobrium and perhaps ostracism by not engaging in criminal activities; achieve distinction by working diligently at his occupation, giving to charities, or having a beautiful house; or relieve his envy and jealously by talking meanly about or even physically harming his neighbors. (Becker, 1974: 1066-67)

Becker's approach is to insert a variable R in the individual utility function which indicates the characteristics of other persons that affect the consumer's output of commodities. Additionally, R is outside the control of the individual and therefore is taken as given. His point of departure from the orthodox approach is that the individual i can change R_j by his/her own efforts.

In order to simplify the discussion, Becker proceeds by assuming a single commodity that is produced with a single good and a single characteristic of others. In this framework, maximizing utility is equivalent to maximizing the output of this commodity. In formal terms:

$U_i = Z(x, R)$ (1)

With $R = D_i + h$

Where h measures the effect of i's efforts, and D_i the level of R when i makes no effort; that is, D_i measures i's 'social environment'. By introducing the relevant budget constraint (with prices of x and h, and the money income I), he arrives at:

$p_x x + p_R R = I_i + p_R D_i = S_i$ (2)

The right-hand side gives the sum of i's money income and the value to him/her of his/her social environment (social income). The left-hand side shows how his/her social income is spent: partly on his/her own goods (x) and partly on the characteristics of others (R) (Becker, 1974: 1067).

After deriving the equilibrium conditions, Becker examines the implications of his formulation, emphasizing that the own-income elasticity of demand for expenditures to alter the relevant characteristics of others (social environment), would tend to be large. He then proceeds to apply this approach to issues such as: interactions among members of the same family, charity, and envy. It is quite interesting that Becker recognizes mainstream theory's lack of attention to this theme. In his opinion the main explanation for the neglect of social interactions by economists is neither analytical intractability nor a

preoccupation with more important concepts: “The main explanation was the excessive attention to formal developments during the last 70 years. As a consequence, even concepts considered to be important by earlier economists, such as social interactions, have been shunted aside.” (Becker, 1974: 1091).

Becker employed the social interactions idea in a subsequent joint paper with George Stigler in which they examine phenomena such as addiction, advertising, habitual behavior and fashion (Stigler and Becker, 1977). The intention is to explain all these phenomena and keep the core assumption of stable well-behaved preference functions. The clear aim here is to incorporate all kinds of human behavior in the standard utility maximizing analysis. The same objective is followed in Becker’s subsequent work with Kevin Murphy (see Becker and Murphy, 2000). Given this, it is not difficult to see why Becker’s work is associated with the belief that the assumption of economic rationality can explain all aspects of human behavior (economics imperialism).[2] Furthermore, for Stigler and Becker tastes cannot be affected by advertising or addiction. The foundation of this view has to do with the assumption of individuality and individualism that is common in Neoclassical economics and in particular in the Chicago school. The normative notion of consumer sovereignty (the agent is the best judge of his/her own interests), is the main manifestation of individualism (see also Claveau, 2009).

Although conducted in the standard analytical framework of a rational maximizing consumer, Becker’s contribution on social interactions had a minimal influence if compared to his other well-known works on discrimination,

[2] Becker’s view is the conceptual basis of what is known as economics imperialism (see also Rothschild, 2008).

human capital, and the economics of family. However, his approach set the basis for an extended utility approach (EUA) which conforms to the neoclassical apparatus (see Claveau, 2009). In addition, Becker himself did not consider his social interactions idea as constituting a challenge for the mainstream theory of consumer demand given that it can be incorporated in the "rigorous framework of utility analysis." (Becker, 1974: 1066).

Interdependent Preferences

A couple of years later after Becker's first paper, Robert Pollak (1976) also attempted to incorporate the notion of social comparisons in the form of interdependent preferences in the standard theory of the consumer. After acknowledging the contribution of James Duesenberry, Pollak defines such preferences as "preferences which depend on other people's consumption". (Pollak, 1976: 309).[3] He admits that although it is a commonplace that preferences are influenced by other people's consumption, this insight has never been incorporated into demand analysis in a satisfactory way. For the sake of simplicity, he assumes that each individual's preferences depend on other people's past consumption. Several versions of his basic specification are also based on Duesenberry's (1949) insights. After an extensive and largely mathematical analysis, Pollak identifies a serious implication of adopting interdependent preferences that runs as follows: In the normal case when an individual is a price taker in markets for *all* of the goods that enter his preference ordering, then we can infer his preferences from his market behavior (Pollak,

[3] See also his previous relevant paper on habit formation (Pollak, 1970). Furthermore, in a subsequent paper, he examines the analytical consequences of price dependent preferences where a higher price enhances the 'snob' appeal of a good (Pollak, 1977).

1976: 320). However, this might not be true if interdependent preferences are present because we observe 'conditional demand functions' of the form:

$$q^r = h^r(P, \mu^r; q^{r*}) \qquad (3)$$

Where q^r denotes the individual's intertemporal consumption vector and q^{r*} denotes everyone else's intertemporal consumption pattern. Contrary to Becker's complacent viewpoint, the presence of conditional demand functions poses serious problems for welfare judgments. As Pollak himself emphasizes:

> This is disturbing because it implies that with interdependent preferences we cannot base judgments about individual welfare on the preference ordering revealed by market behavior; to make judgments about the welfare of an individual we need more information. (Pollak, 1976: 320).

In contrast to Becker, Pollak includes the consumption vectors of all other people as arguments in an individual's utility function. Although cast in the familiar terminology of mainstream theory and expressed in formal terms, Pollak's contribution did not have much impact on the mainstream theory of consumer's behavior (see also Ackerman, 2002). Further and contrary to Becker, Pollak's analysis explicitly challenged some standard results of mainstream theory.

Keeping Up with the Joneses

Andrew Clark and Andrew Oswald (1996, 1998) provide the next explicit attempts to build a general model of social comparisons within the analytical framework of the conventional theory. The first paper introduces the hypothesis

that utility depends on income relative to a "comparison" or reference level. In order to substantiate their approach, the authors refer to the relevant works by Veblen and Duesenberry, and also to the seminal studies in psychology by Festinger (1954), Homans (1961) and Adams (1963) among others. The discussion is conducted in the context of job satisfaction analysis. The individual's utility is given as:

$$u = u(y, y^*, h, i, j) \qquad (4)$$

where y is income, h is hours of work, i and j are sets of individual and job parameters respectively, and y* is a comparison or reference income level against which the individual compares himself or herself (Clark and Oswald, 1996). The specification of relation (4) is employed in order to justify the empirical finding that reported satisfaction levels are shown to be negatively related to their comparison earnings levels.

The authors expand the idea in a more general framework a couple of years later in Clark and Oswald (1998). By operating in the standard utility maximizing model, they introduce *following behaviour* or *keeping up with the Joneses* as is also know in the literature. As in the previous paper, they cite a number of works from psychology and sociology and also previous works in economics which have utilized similar approaches (e.g. Becker, 1974; Akerlof, 1980). After stressing the dichotomy between Homo Economicus and Homo Sociologicus, they assume that individuals are motivated by two kinds of rewards: one direct, the other from social comparisons. Consequently, they define two specifications of an individual's utility function which captures social

comparisons. The first specification is termed an *additive comparisons* model, and has the following form:

$$U = sv(a-a^*) + (1-s)u(a)-c(a) \qquad (5)$$

Where *a* is an action of some economic or social kind which gives utility both directly and, through status or relative position, indirectly. Also, a^* is the mean (or some other measure) of other people's actions. The function *u* is increasing and concave in *a*. The cost function *c*(*a*) is increasing and convex in *a*. The variable *s* is a parameter in the unit interval (Clark and Oswald, 1998: 137-138). Furthermore, as $s \rightarrow 0$, the traditional economist's model holds in the sense that preferences are private and self-interested. As $s \rightarrow 1$, only relative position matters, and an extreme 'sociological' model applies (Clark and Oswald, 1998: 138). The above specification can explain a range of phenomena such as a taste for conformity, cycles in fashion and also of social and economic norms. One of the important theoretical implications of the analysis is that private rates-of-return may have little effect upon decisions (Clark and Oswald, 1998: 152).[4]

Social Status and Pay Level Comparisons

During the same period, other works employing specific dimensions of the notion of social comparisons were also published.[5] One of these papers by

[4] There is also a similar ratio comparisons model in which the utility function is given as:
$U = sv(a/a^*) + (1-s)u(a)-c(a)$
In this case the determinant of status is the ratio (rather than the difference) of action a to others' actions a^*. As before, an increase in a raises utility both through a direct effect upon u(a) and an indirect effect, acting through the relative value of the action, upon $v(a/a^*)$ (Clark and Oswald, 1998).

[5] For instance, Yew-Kwang Ng and Jianguo Wang (1993) focused on the impact of relative income effects. One of their most interesting implications is that economic growth, which although appears very important at the individual or even national levels, may reduce social welfare unless it is accompanied by increased environmental protection and/or other welfare-improving measures.

Laurie Bagwell and Douglas Bernheim (1996) incorporate Veblen effects in order to examine a model in which each individual's status depends upon perceptions of his/her wealth among social contacts. Their analysis indicates non-standard results concerning the demand of luxury goods and the effect of taxation (Bagwell and Bernheim, 1996). One of the most interesting results is the emergence of positive economic profits. As the authors point out:

> The manufacturers of these brands earn *strictly positive economic profits*, even under conditions that would, with the standard formulations of preferences, yield marginal-cost pricing, and despite the ability of firms to vary both price and quality. (Bagwell and Bernheim, 1996: 351, italics in original)

The notion of social status has also been employed in the literature relating to utility from work or job satisfaction. The theoretical specifications are similar to keeping up with the Joneses that was examined above. In one of the earliest papers, Dan Hamermesh assumes that individual utility is affected by the difference of actual from expected income. The notion of expected income is linked to pay level comparisons among peers (Hamermesh, 1975). Furthermore, pay level comparisons can be viewed as a quest for social status (see also Truyts, 2010). In terms of economic theory, this is an example of a negative externality that requires corrective taxation. Having as a basis his earlier work, Richard Layard provides an analytical framework in a standard utility maximizing framework (see Layard, 1980). In a simple model suggested by Layard (2006), the standard utility from work function is given as:

$$u = u(y - \alpha y^*, h) \qquad (6)$$

Where y is real income, y* is comparison or the reference group income and h is hours of work. The reference group income can be proportional to average income. Assuming there are n people who are identical, with the same utility from work function and the same hourly wage of unity, the socially optimal level of individual work effort (h) is now given by:

$$u_1 - n\alpha\frac{1}{n} + u_2 = 0 \qquad (7)$$

The second term reflects the negative utility which comes from the rise in average income and which adversely affects the utility of all n people. The existence of the negative externality is obvious here (Layard, 2006). The theoretical implication is that that social comparisons drive people to work longer hours than it is socially desirable, and this calls for an income tax which will reduce work effort to a level where the incentive for an individual to raise his/her relative income has been fully cancelled.[6]

Social identity models

The notion of individuals characterized by non-atomistic preferences seems to have drawn a renewed interest in the recent literature of social identity models (for a general review, see Davis, 2010). Although the works of George Akerlof and Rachel Kranton (2000, 2010) are probably the best well-known in the field, other contributions on social identity include Amartya Sen's (2005) idea of commitment to social groups, and Alan Kirman's and Miriam Teschl's (2006) notion of social networks. Although there are some significant differences

[6] Similar results emerge from happiness research. For a discussion and empirical findings which point to the role of relative income, see Blanchflower and Oswald, 2004; Bartolini, Bilancini, and Sarracino, 2013.

among them, the common starting point of these approaches is the rejection of the mainstream assumption that individuals are separate and independent of social interactions and of their social environment.

Akerlof and Kranton's analysis is conducted in the standard utility maximizing framework. In their models, identity, or a person's sense of 'self', depends on a multiple of factors including one's assigned social category. The existence of social categories also implies prescriptions concerning the behavior appropriate for people in different social categories in different situations.[7] In their seminal paper in 2000, Akerlof and Kranton (2000) extend the standard utility function to include arguments relating to the concept of identity. The individual utility function becomes:

$$U_j = U_j(a_j, a_{-j}, \mathbf{I}_j) \qquad (8)$$

In this formulation, the utility of individual j depends on *j*'s identity or self-image **Ij**, as well as on the usual vectors of j's actions, aj, and others' actions, a-*j*. The authors suggest the following representation of identity (**I**j) or self-image:

$$\mathbf{I}_j = I_j(\mathbf{a}_j, \mathbf{a}_{-j}; \mathbf{c}_j, \varepsilon_j, \mathbf{P}) \qquad (9)$$

A person *j*'s identity **Ij** depends, first of all, on *j*'s assigned social categories **c***j*. The social status of a category is given by the function Ij(·), and a person assigned a category with higher social status may enjoy an enhanced self-image. Identity further depends on the extent to which j's own given characteristics ε*j* match the ideal of j's assigned category, indicated by the

[7] This approach is close to the life style hypothesis according to which people adopt a life style because they think that this is the "place" where they will find their peers (Hayakawa and Venieris, 1977).

prescriptions **P.** Also, identity depends on the extent to which j's own and others' actions correspond to prescribed behavior indicated by **P.** (Akerlof and Kranton, 2000: 719). The inclusion of social status and of dependence on other's actions shows the presence of the notion of social comparisons in equations 8 and 9.

With the above utility function as a basis, Akerlof and Kranton construct a simple game-theoretic model showing how identity can affect individual interactions. The authors demonstrate that the inclusion of identity substantively changes conclusions of previous economic analysis and therefore, established policy prescriptions towards social exclusion, gender discrimination, and labor supply. The fundamental idea is that if agents' actions are influenced by their identities, changing economic incentives (i.e. the price ratio of different actions) might have diminished impact on choices (Akerlof and Kranton, 2000). In a subsequent review paper, Akerlof and Kranton (2005) extend this approach to the economics of organizations. Their findings also challenge some widely accepted conclusions emerging from the standard theory. For example, they show that a worker who identifies with his/her firm requires less incentive pay: the firm need not give as much reward nor as much punishment in order for a worker to do his/her job well (Akerlof and Kranton, 2005; see also Akerlof and Kranton, 2010). More recently, the notion of social identity has been elaborated further also highlighting the inadequacies of the standard independent preferences utility maximizing model (e.g. Dasgupta and Goyal, 2019; Davis, 2021). In essence, most of the social identity formulations are based on the notion of social preferences (see also Sobel, 2005).

3. Social Preferences in New Behavioral Economics

One of the main characteristics of the works of Herbert Simon (e.g.1955), was the criticism of the standard approach of economic rationality by employing psychological insights. Simon's bounded rationality is considered to be one of the foundations of the old behavioral economics (Sent, 2004; Kao and Velupillai, 2015; Frantz, 2020). The rise of new behavioral economics started with Kahneman and Tversky's (1979, 1986) pioneering research that questioned the empirical validity of neoclassical economic rationality as expressed in the expected utility theory (Heukelom, 2014). In particular, the core assumption of mainstream economic rationality that preferences are independent, has been challenged by many behavioral economists. The rejection of the dominance of independent preferences has been supplemented with the increased attention to the role of social preferences. In the words of Don Ross:

> …people don't act so as to optimize their personal expected utility, but are heavily influenced by their beliefs about the prospective utility of other people, and by relations between other peoples' utility and their own. (Ross, 2012: 704).

Altruistic behavior is an obvious example of social preferences, but fairness and inequity aversion are also good examples of such preferences (Rabin, 1998). The literature originating from behavioral economics on the above issues is vast and growing. In an early influential paper, Kahneman, Knetsch, and Thaler (1986) argued that the standard economic model should be enriched with more realistic behavioral assumptions such as fairness. They connected the notion of fairness with community standards and social conscience. Similarly, studies

concerning the presence of altruistic behavior in experimental settings employ the notion of *other-regarding preferences* which relates to a *warm-glow* feeling, or the positive emotional feeling people get from helping others (Andreoni, 1990; Konow, 2010). In many experiments such as in the Ultimatum game and the Dictator games, many responders do not behave in a self-interested manner, but exhibit fairness and reciprocity concerns (see Charness and Rabin, 2002; Camerer, 2003). Similarly, Fehr, Fischbacher, and Kosfeld (2005) among others, have provided evidence from Neuroeconomics for the existence of other-regarding behavior and social preferences. They conclude that social preferences have a rational basis. As the authors state:

> Thus, mutual cooperation that takes place despite strong free-riding incentives, and the punishment of free riders in social dilemma games is not irrational, but better understood as rational behavior of people with corresponding social preferences. (Fehr, Fischbacher, and Kosfeld 2005: 346)

Other studies have combined fairness, altruism and inequity aversion in order to explain puzzles emerging from topics such as free-riding opportunities, employee behavior, and price setting (e.g. Fehr and Schmidt, 1999; for a review, see Camerer, Loewenstein, and Rabin, 2004).[8]

Most of the work that can be described as new behavioral economics is situated within mainstream economics. The majority of the prominent figures in the field accept the validity of the neoclassical framework, although they realize the need

[8] The presence of social preferences in new behavioral economics is strongly related to evidence from experimental economics (for a review, see Guala, 2008).

to improve it by introducing more realistic psychological underpinnings. In the words of Kao and Velupillai:

> "Though behavioral models do consider more realistic psychological or social effects, economic agents are still assumed to be optimizing agents whatever the objective functions may be". (Kao and Velupillai, 2015: 246).

By providing more realistic psychological foundations, behavioral economics aims to increase the explanatory power of economics (Camerer and Loewenstein, 2004: 3). It is also interesting that although they acknowledge Simon's original contributions, they want to distance themselves from a "radical departure" from orthodoxy (Sent, 2004: 743). As Kahneman himself states: "The rational-agent model was our starting point and the main source of our null hypotheses." (Kahneman, 2003: 1449). They are also eager to emphasize that their work "does not imply a wholesale rejection of the neoclassical approach to economics." (Camerer and Loewenstein, 2004: 3). The same view is held by other major figures in new behavioral economics such as Richard Thaler and Matthew Rabin (Sent, 2004; Kao and Velupillai, 2015). Hence, this is the main reason of the wider acceptance of new behavioral economics among mainstream theorists (see for instance, Chetty, 2015).

4. Current dominance and the notion of representative agent

The criticism by Simon and by new behavioral economics among others, has given rise to discussions concerning the theoretical and empirical validity of the standard model of economic rationality. In spite of these developments, the standard model remains dominant. Naturally, these criticisms are not confined to behavioral economics. For more than a century, neoclassical economics has been attacked for its "atomized, undersocialized conception of human action"

(Granovetter 1985: 483). Further, contemporary prominent economists have pointed to the serious weaknesses of the self-interest as a basic, or at least baseline, behavioral assumption (e.g. Bowles and Gintis, 2002; Sen, 2005; Kirman, 2006; Heffetz and Frank, 2011). Yet, in most contemporary mainstream formulations, the benchmark model of rational choice posits stable, non-satiated, and time-consistent preferences and utility only depends on one's own consumption only (Tipoe, Adams and Crawford, 2021: 320; see also Jackson, 2013: 809).

An indicative case of its contemporary dominance can be observed in the assumption of the representative agent which is used in most current mainstream macroeconomic modelling. The constrained utility maximizer model of individual behavior was, and still is, perceived as a solid theoretical basis for its extension to macroeconomics. It should be stressed that this is a relatively recent development given that the assumption of representative agent has not traditionally been a part of Walrasian general equilibrium theory. This was vitally connected to the methodological need of providing microfoundations to macroeconomic theory. In the words of Alan Kirman:

> Without any precise results on the relation between the properties of individual and aggregate demand behavior, the easiest way to proceed was simply to assume that the whole economy behaved as one individual (Kirman, 1992: 119).

The rise of the representative agent is almost parallel to the gradual emergence of the new neoclassical synthesis (Goodfriend and King, 1997; Hoover, 2012). Nowadays, it is better known as dynamic stochastic general equilibrium (DSGE) theory. In spite of the vast DSGE literature, these models share the common

features of a commitment to microfoundations and that all behavior is based on expected utility-maximization (Hands, 2017: 1687). Joseph Stiglitz identifies the place and role of the representative agent as follows:

> DSGE models seem to take it as a religious tenet that consumption should be explained by a model of a representative agent maximizing his utility over an infinite lifetime without borrowing constraints (Stiglitz, 2018: 74).

Apart from the methodological issues pertaining to the need for microfoundations, the very concept of representative agent has been questioned in many respects.[9] One dimension is exemplified by Hands when he writes:

> It seems ironic that at a time when utility-maximization is being questioned in its original domain of individual choice, it would be extended to predict and/or explain the behavior of entire markets and/or entire economies. (Hands, 2017: 1687).

The DSGE modelling has been criticized for its unrealistic micro-foundations for the behavior of households or as expressed by Oliver Blanchard "assumptions profoundly at odds with what we know about consumers and firms." (Blanchard, 2016: 1; see also Muellbauer, 2016; Stiglitz, 2018). From our perspective, the important point is that in most current mainstream macroeconomic formulations, the assumption of the representative agent is explicit, and a common feature of the core theoretical framework (see also Hands, 2017:1685; Denis, 2016).

[9] For a discussion of the methodological issues relating to microfoundations, see for instance Duarte and Lima, 2012; Denis, 2016.

The assumption of representative agent is also present in the empirical-revealed preference theory (ERPT), but its presence is not as explicit as in DSGE. Its foundation is grounded on Samuelson's revealed preference theory (1948), but it has gained momentum in the last two decades, especially with reference to applied demand analysis (Crawford and De Rock, 2014). In this framework any price-quantity data consistent with the revealed preference axioms can be "rationalised". This means that it can be treated as if it were generated by a budget-constrained utility maximising consumer. The rationalisation is market rationalisation and the utility function is that of a representative agent. (Hands, 2016: 437). Therefore, and as Hands points out: "...the representative agent is an implication of ERPT-based empirical research." (Hands, 2017: 1689). However, Samuelson himself was clearly against treating competitive markets like individual maximizing agents (for a review, see Hands 2016). In both DSGE and ERPT, the standard approach to economic rationality enters contemporary theoretical developments in the macro and the micro level respectively. This is a clear indication of the resilience of the mainstream approach to economic rationality.

5. Methodological Dimensions of Conceptual Resilience

It must be acknowledged that in the last couple of decades, the mainstream position towards the standard conception of economic rationality has been weakened. This is mainly due to the rising influence of behavioral economics, including experimental findings that reveal the effects of social interactions and social preferences in economic decisions. However, the principal notion of atomistic preferences still remains prevalent. Apart from its widespread use in economic modelling, a clear indication of its stronghold is to be found in its

methodological defense by many influential mainstream theorists. Richard McKenzie provides a customary methodological justification: the assumption of economists' perfect rationality is a means for economists to derive testable hypotheses and to gain insights about complex human interactions (MacKenzie, 2010). Further, this rationality is reinforced by the operation of free markets which can make people more rational than they may be inclined to be (MacKenzie, 2010).

Other theorists such as Wolfgang Pesendorfer, David Levine and Don Ross strongly reject the criticism of the standard theory by behavioral economists by focusing on the "problematic" methodology of economics drawing from psychology.[10] Pesendorfer argues that "such theories are difficult to connect to economic data because their main insights are about psychological variables, that is, how the person thinks (i.e., deals with biases) and feels." (Pesendorfer, 2006: 714; see also Gul and Pesendorfer, 2008). Similarly, Levine argues that the connection of behavioral economics to psychology and neuroscience is doomed to fail "because the goals of psychologists and economists are different, and that this has implications for importing ideas from psychology into economics" (Levine, 2012:125). In the same vein, Don Ross argues that economics and psychology are fundamentally distinct disciplines with different methodologies, and therefore he "rejects the call voiced by some behavioral economists for a revolution in the main methodology of economic modelling and data analysis." (Ross, 2014: 19-20). In his more detailed analysis of economic agents, Ross adheres to what amounts as a "fictional" interpretation of agents,

[10] The relationship between economics and psychology is a subject of ongoing methodological debate, see for instance Goodwin, 2016 and references therein.

and this implies no need to enrich them with psychological characteristics (Ross, 2012). Consequently, the exclusion of social preferences has not methodological significance.

A more recent approach which can be allied to the above viewpoints, is the renunciation of behavioral economics as a distinct research field and its assimilation to the neoclassical framework. Taking Raj Chetty's Ely lecture as a prime example, the incorporation of behavioral features in neoclassical economics is thought to be more productive than behavioral economics as a separate field that challenges the assumptions of neoclassical models (Chetty, 2015).[11] However, this suggestion is unacceptable to many behavioral economists given the different approach of behavioral economics to rationality, and also the vital methodological link between behavioral economics and psychology, something that neoclassical theorists are not willing to tolerate (for a detailed discussion, see Angner, 2019).

Another line of defense is to cast doubt to the findings of behavioral economics which challenge standard rationality. For instance, Ken Binmore thinks that behavioral findings which undermine the standard model are of little interest, since they correspond to deviations from the rational behavior, and therefore only describe the mistakes the individual can make during this process of "rationalisation" (Binmore, 1999; see also Lecouteux, 2013). A more modern version of this argument is adhered by the influential mainstream economists Steven Levitt and John List who reject the criticisms of the rational choice theory

[11] There is also the standard defense based on Friedman's essay, that it is more useful to evaluate economic models on their accuracy of their predictions than on their assumptions (Chetty, 2015: 1).

by lab experiments contacted by behavioral economists. In their view “there are many reasons to suspect that these laboratory findings might fail to generalize to real markets.” (Levitt and List, 2008: 910). Furthermore, they suggest that agents behave far more selfishly in natural settings than in lab experiments (Levitt and List, 2008: 909). Diane Coyle provides a related line of defense when she draws from biological experiments, where many types of creatures “also often seem to act like self-interested maximisers,… as would be predicted by economic models of constrained optimization.” (Coyle, 2019: 3).

Apart from the above types of defenses, the strong bias towards methodological individualism, in its dominant interpretation, prohibits the full incorporation of social preferences and social interactions. The concept was first introduced in economics by Schumpeter and means that “one starts from the individual in order to describe certain economic relationships” (quoted in Hodgson, 2007: 2). Although there are many different approaches to its exact methodological interpretation, most contemporary economists endorse the broad definition that it is necessary to base all accounts of economic interaction on individual behavior (see also Arrow, 1994). A clear demonstration of the central role of methodological individualism in contemporary mainstream theory is the case of representative agent that was discussed before (see also Denis, 2016).

However, adhering to a strict version of methodological individualism cannot justify the exclusive focus on atomistic preferences in economic rationality. Kenneth Arrow takes a clear stance by arguing: “…but I do conclude that social variables, not attached to particular individuals, are essential in studying the economy or any other social system…” (Arrow, 1994: 8). John Davis agrees with Arrow when he maintains that the idea of a genuinely isolated individual,

free of all social relations, is untenable (Davis, 2003). In the same vein, Geoff Hodgson provides a more general criticism:

> However, as the examples of genes in biology and atomic particles in physics both illustrate, explanations in science are never in terms of micro-components alone: they always additionally involve interactive relations. (Hodgson, 2007: 10).

Christian Arnsperger and Yanis Varoufakis point to the strong influence of methodological individualism in neoclassical economics which retains the distinction between the individual and the social context and places the burden of explanation on the individual (Arnsperger and Varoufakis, 2006). It has to be stressed that methodological individualism became gradually established with the emergence of Homo Economicus in the framework of Marginalism and early Neoclassical economics, but it was (and still is) by no means universally accepted among different schools of economics (Hodgson, 2007; Kurz, 2019).

One could combine the previous arguments with the very serious implications of incorporating social comparisons for many standard economic theory and economic policy results. A full integration of non-atomistic individuals would at least weaken key components of mainstream economic theory and policy suggestions. As Ernst Fehr and Urs Fischbacher (2002: C1) suggest, “there is strong evidence indicating that the deviations from self-interest have a fundamental impact on core issues in economics”. A brief summary of findings which have emerged from relevant research, strengthens this point. Interdependent preferences and the resulting conditional demand functions pose serious problems for welfare judgments (Pollak, 1976). In the same framework, if interdependency is ignored, the standard models can lead to a

serious bias in the predicted effects of a tax change (Blomquist, 1993). Keeping up with the Joneses formulations imply that private rates-of-return may have little effect upon decisions (Clark and Oswald, 1996;1998). Suboptimal equilibrium results are also theoretically possible as in the cases of the emergence of positive economic profits (Bagwell and Bernheim, 1996).

In the framework of pay level comparisons, the idea of 'excess burden' of taxation that is used in standard cost-benefit analysis needs to be reevaluated (Layard, 2006). More generally, the concern for relative wages is a negative externality and can result in the over-spending on private consumption and under-provision of public goods (Ng, 2003; Layard, 2006; Powdthavee, 2007; Frank, 2008). In agreement to the results emerging from the keeping up with the Joneses formulations, one of the basic implications of the identity models is to undermine the standard conception of how economic incentives work and therefore the ensuing relevant policy suggestions (Akerlof and Kranton, 2000; 2005; 2010). The incorporation of social preferences by new behavioral economics has produced the notions of fairness, altruism and inequity aversion. Apart from offering a better understanding to free-riding phenomena, employee behavior, and price setting, they also challenge standard results concerning the provision of public goods (Andreoni, 1990; Fehr and Schmidt, 1999; Camerer, Loewenstein, and Rabin, 2004; Konow, 2010).

6. Concluding Remarks

Staring in the 1970's, there were attempts to incorporate social interactions, interdependent preferences and social status in mainstream microeconomic theory. Although they were framed in the standard utility maximizing framework,

these attempts had a rather limited impact, and social comparisons-based formulations did not become part of the main body of economic theory. However, social preferences play a more prominent role in the field of behavioral economics, and given the influence of new behavioral economics, they have started to have a growing impact among mainstream economists.

In spite of the above developments, the discussion indicated that atomistic preferences are still prevalent, especially in the form of the assumption of representative agent. The notion of representative agent is a core assumption in most contemporary neoclassical macroeconomic models and in an emerging influential strand of empirical microeconomics. The various methodological defenses of the standard conception to rationality were also interpreted as a sign of its current dominance and resilience. There are many investigations based on the sociology and philosophy of science which can be useful towards explaining the resilience of mainstream theory. "Epistemic costs" and "harmony of deception" are two of many approaches that have been suggested (e.g. Yalcintas, 2016; Heisse, 2019).[12] As part of the attempt to explain the resilience of the mainstream economic rationality, this paper focused on the role of methodological individualism and on the theoretical implications of non-atomistic individuals. It was argued that the strict methodological individualism, which characterizes mainstream methodology, effectively excludes the incorporation of non-atomistic preferences. In addition, once the core assumption of atomistic individuals is dropped, a number of established theoretical and policy results are undermined as many relevant papers have

[12] For instance, Arne Heisse (2019) focuses on the mainstream resilience of minimum wages' impact on employment by applying the notion of "harmony of deception" suggested by the philosopher of science Ludwik Fleck.

demonstrated. This was suggested as another possible reason for the observed resilience of mainstream economic rationality. Both reasons provide further insights as to why economic rationality still remains conceptually attached to the marginalist hypothesis of atomistic economic agents. The discussion might also contribute to the debate regarding the conceptual underpinnings of mainstream economic theory.

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