The Relationship between Psychology and Economics: Insights from the History of Economic Thought

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September 2021

ABSTRACT

Psychological ideas had always played a role on the formation of economic thought as can be seen in the works of many influential pre-classical and classical authors. Up to the beginning of the 20th century, there was almost no methodological objection regarding the incorporation of ideas from psychology into economic theories. After this period, a fundamental shift in mainstream economics took place which is also known as the *Paretian turn*. This conceptual change, initiated mainly by Vilfredo Pareto and completed with the emergence of the theories of choice in the first decades of the 20th century, attempted to expel all psychological notions from economic theory. However, in the last three decades, the increasing appeal of subjective well-being research and especially of the new behavioral economics, re-brought the topic onto the surface. The paper starts with a brief sketch of the history of the relationship between economics and psychology, focusing also to the recent literature which points to a reconsideration of this relationship. After an examination of psychological ideas found in influential pre-marginalist writers, the paper discusses the arguments supporting the case for the interaction between the two fields. It also suggests that the work of Richard Jennings can be seen as the peak of the early interaction between economics and psychology. Finally, it considers the relevance of these arguments for the current debate concerning the relationship between economics and psychology.

JEL Codes: B00, B4, A12

Key words: History of Economic Thought, Economics and Psychology, Economic Methodology; Relation of Economics to other Disciplines

I. Introduction

The theme of the relationship between economics and psychology has a long and rather complicated history. Psychology is considered as probably the closest neighboring field to economics. Psychological ideas had always played a role on the formation of economic thought even before the classical school of economics. The presence of psychological elements and observations became even more obvious in the works of major classical economists. The same trend can be observed with the emergence of the marginalist school and the shift towards the study of individual economic behavior. The marginalists were paying more attention to psychological ideas and especially to the particular theory of psychological hedonism (Drakopoulos, 1991; Wärneryd, 1994). Up to the beginning of the 20th century, there was almost no methodological objection regarding the incorporation of ideas from psychology into economic theories. After this period, a fundamental shift in economics took place which is also known as the *Paretian turn* (Bruni and Sugden, 2007). This conceptual change, initiated mainly by Vilfredo Pareto and completed in the first decades of the 20th century by John Hicks, Roy Allen and Paul Samuelson, attempted to expel all psychological notions from economic theory (Lewin, 1996; Frey and Benz, 2004; Hands, 2010). The main consequence of the establishment of axiomatic rational choice theory by the above authors, was that economics explicitly severed its ties from psychological research. The same trend continued in the following decades with the formation of the 'microfoundations' and the 'rational expectations' literature which extended rational choice theory to macroeconomics. The subsequent application of rational choice theory to most areas of economics such as public choice theory and labor economics, completed the Paretian turn of mainstream economics (see also Bruni and Sugden, 2007).

Although there has been continuous criticism of the isolation of economics from other social sciences and especially from psychology, the dominance of orthodox economics ensured the methodological justification and reign of the Paretian turn (Earl, 1990; Lewin, 1996). However, in the last three decades, the increasing appeal of subjective well-being research and especially of the new behavioral economics re-brought the issue onto the surface (Sent, 2004; Frey, 2008; Frantz, 2009). The relationship between economics and psychology and its ensuing methodological dimension is currently attracting increasing attention (Rabin, 2002; Bruni and Sugden,

2007). In particular, one of the main characteristics of the new behavioral economics is the criticism of mainstream economic rationality in terms of research findings from psychology. A very important consequence of these developments was that it re-opened the methodological issue of the role and the place of psychological assumptions in economics.

The issue of the relationship between economics and psychology effectively contains two central points which are the following: 1) To what extent do economic assumptions need to be based on sound psychology, and 2) the possibility of independence of economics from psychology (Lewin, 1996; Camerer and Loewenstein, 2004, Frey and Benz, 2004). It is clear that these two points also exhibit a strong historical and methodological bend. Thus and in order to get further insights to the above, a substantial part of the relevant literature is focused on the history of the relationship between economics and psychology. The bulk of this literature deals with the relation between economics and psychology after the marginalist revolution. In particular, the strive of late marginalist/neoclassical economics to expel psychology from economic theory (Pareto, Slutsky, Hicks, Allen, Samuelson) is a well-researched topic (e.g. Hands, 2010; Earl, 2016). Given the recent discussion of re-introducing psychological elements in economics mainly in the context of behavioral economics, other papers focus on the history of behavioral economics since WWII. In general, most of the research concentrates to the period that followed the marginalist revolution and only mentions briefly the historical developments before that period (see for instance, Angner and Loewenstein, 2012; Nagatsu, 2015; Earl, 2016). Thus, there is a considerable gap which lies on the earlier ideas on the role of psychology in economics. In fact, for many pre-marginalist major authors, the issue of incorporating psychological elements in economic discourse was also an important theme. There are many such examples in the works of Whately, Banfield, Lloyd, and Gossen. More detailed discussion and arguments can also be found in the economic thought of Senior and Jennings.

In order to contribute to the recent discussion concerning the relationship between the two disciplines, the focus of this paper is on the works of early authors on this subject. An investigation of the views regarding psychological ideas and their methodological justification might assist to the further understanding of the complicated issue of the interaction between economics and psychology. In particular, the paper will start with a brief sketch of the history of the relationship between

economics and psychology, focusing also to the recent literature which points to a reconsideration. In the next section there will be an examination of psychological ideas found in influential pre-marginalist writers. Consequently, the paper will discuss the arguments supporting the case for the interaction between the two fields. Emphasis will be placed on the methodological justification found in the works of Senior and Jennings. A concluding section will close the paper.

II. Economics and psychology: A rather circular story

The discussion of the formation of human nature and how it affects human behavior is very old. In the writings of Aristotle, we may find the roots of both Associationism and Hedonism, two intellectual movements which influenced early economists' thought during the 18th and 19th centuries. Questions of human nature are significant for economics since they help us examine motives and behavior in economic matters. Although the fundamental assumption of rationality in mainstream economic theory "avoids the necessity of studying human thought processes (…) the psychological approach is relevant to economics in that it provides a more realistic basis to explain behavior and behavioral change" (Antonides, 1996, p. 13).

The interaction between economics and psychology has many episodes in the history of both fields. Since the 18th century, economists have usually founded their own economic theories on some principles and ideas about human nature; accordingly, economics was not independent from psychological foundations. As Peter Earl (2005, p. 915) points out, "if we probe more deeply into a person's reasoning, sooner or later their emotional core will be reached, and the person will be unable articulate a basis for why a particular issue matters to them: it just 'does'. This aspect of psychological economics is very much in line with the intuition of Adam Smith and David Hume and it naturally takes us into the origins of aesthetics (i.e., principles of good taste), and other customs that underpin many choices".

Before the marginalist revolution, there were major writers who attempted to infuse psychological ideas and concepts into economics. Influenced mainly by psychological hedonism, these classical writers accepted a subjective theory of value and explicitly argued for the necessity of psychological reasoning. As will be seen in more detailed manner in Section III, these authors adopted many significant

behavioral and psychological assumptions with respect to economic activities, opening the ground for future developments such as the emergence of psychological economics. It seems that the work of Richard Jennings can be regarded as the height of this early interaction between economics and ideas from psychology.

Marginalism and Psychology

The emergence of marginalism witnessed a conceptual shift towards the marginal utility based theory of value followed by the gradual formation of a model of individual economic behavior. The concept of marginal utility was central in the theory of value along with the selfish maximization of pleasure or satisfaction. Most leading marginalists explicitly acknowledged the philosophy and psychology of Benthamite hedonism as their main influence. In this respect they were open in borrowing ideas from other intellectual areas. For instance, Jevons explicitly admits the influence of utilitarianism when in the introduction of his book he states: "I have no hesitation in accepting the Utilitarian theory of morals" (Jevons, 1871, p. 27). Furthermore, Jevons' well-known definition of economics in terms of calculus of pleasure and pain indicates his emphasis on psychological sensations.[1] Thus, in Jevons the concept of Economic Man is a psychological construction and already equipped with all abstractions necessary for the application of mathematical methods in economics (see also Bensusan-Butt, 1978, p. 128). In a similar vein, Walras conceives all land-owners, workers, and capitalists as pleasure maximizers (Walras 1874, pp. 42-43). Finally, Menger thought that the object of economic research was to discover those laws governing market phenomena which can be traced back to their ultimate genetic determinants in man's physiological, psychological and social nature (Jaffe, 1976, p. 522).

Psychological hedonism was the underlying framework in Edgeworth's most important work *Mathematical Psychics: An Essay of the Application of Mathematics to Moral Sciences* (1881). As the title indicates and as Edgeworth himself is keen to point out, his main aim was: "The application of mathematics to the world of soul is countenanced by the hypothesis (agreeable to the general hypothesis that every

[1] "Pleasure and pain are undoubtedly the ultimate objects of the calculus of Economy (...) In other words, to maximize comfort and pleasure, is the problem of Economy" (Jevons, 1871, p. 44).

psychical phenomenon is the concomitant, and in some sense the other side of a physical phenomenon), the particular hypothesis adopted in these pages, that Pleasure is the concomitant of Energy" (Edgeworth, 1881, p. 9). Edgeworth's thought were explicitly rooted in Bentham's utilitarianism. He was also a supporter of methodological individualism clearly advocating the unification of all sciences. The aim of a unified science of physical and mental phenomena can be found in his notion of "psychophysics". Edgeworth often cites contemporary works in psychology and especially the work of psychophysicists such as Ernst Weber, Gustav Fechner, and Wilhelm Wundt (for a detailed discussion, see Maas, 2009). One can note here the contrast with the subsequent aversion by most orthodox theorists of incorporating research from psychology into economics. In particular, Edgeworth states:

> This 'moral arithmetic' is perhaps to be supplemented by moral differential calculus, the Fechnerian method applied to pleasures in general. For Wundt has shown that sensuous pleasures may thereby be measured, and, as utilitarians hold, all pleasures are commensurable. (Edgeworth, 1881, p. 60)

Edgeworth was very supportive of employing the findings of psychophysics into the economic and utilitarian calculus. A good example in this respect, is Fechner's Law which relates the quantity of sensation to the quantity of stimulus (intensity of stimulus), and the stimulus threshold. In his previous work (1877), Edgeworth modified this "Law" in view of his subsequent hedonic calculus as follows:

$$\pi = k \left| f(y) - f(\beta) \right|$$

where the symbols π, k, f, y and β respectively denote, "the pleasure of a sentient element", "capacity for pleasure", a function which the first differential is positive and the second is negative, the quantity of pleasure for stimulus and "the 'threshold', the lowest value of stimulus for which there is sense of pleasure at all", while β and k are co-efficients (Edgeworth, 1877, p. 42). He will employ this relationship in order to set a basis for his utilitarian calculus where he ultimately links it to the Bentham's Greatest Happiness Principle and even to the Malthusian relationship between the quantity of food and the level of population (see also Newman, 1987, pp. 90-91).

As was discussed, Edgeworth was in favor of incorporating psychological findings, but this stance should be seen in the context of his overall methodological perspective. Importantly, Edgeworth viewed psychological phenomena as a legitimate

field for the application of mathematical tools. Thus, his willingness to link "hedonic calculus" from psychophysics to utilitarian calculus in economics.[2] In general, the dominant methodological framework of the time was encouraging the incorporation of ideas from psychology. As Bruni and Sugden rightly observe: "Neoclassical theory was based on assumptions about the nature of pleasure and pain. Those assumptions were broadly compatible with what were then recent findings in psychophysics (…) The usual methodology in economics at this time was John Stuart Mill's concrete deductive method, by which theories about economic phenomena are arrived at by deduction from a set of relatively simple empirical regularities or 'laws' in which (it is claimed) the theorist can have great confidence" (Bruni and Sugden, 2007, p. 149).

The Emergence and the completion of the Paretian Turn

Edgeworth's work can be viewed as the peak of the interaction between economics and ideas from psychology after the marginalist revolution. However, in the closing decades of the nineteenth century when the second marginalist generation of economists emerged, the influence of positivism as the dominant scientific philosophy became much more prevalent (Seligman, 1969). One of the basic tenets of positivism was that the enormous success of the physical sciences meant that their scientific methodology should also be followed by the other disciplines (methodological individualism). The application of the methodology of physical sciences to economics, called for the rejection of all normative, ethical or metaphysical elements (for a discussion, see Mirowski, 1989). Psychological elements were also considered as value-laden and therefore unacceptable for the corpus of economic theory (see also Coats, 1976; Lewin, 1996). The important consequence of this methodological stance was that many leading economists of the period became indifferent – or even hostile – to the findings of other social sciences, and especially to psychological theories. As will be seen, this tendency continued with subsequent mainstream economists.

Vilfredo Pareto was extremely influenced by the prevailing positivist scientific philosophy. His methodological ideal for the discipline of economics was that it should be a mathematical science, part of the natural sciences such as physiology and

[2] It should be noted that Edgeworth's psycho-economics was greatly influenced by Jevons, who in turn was influenced by Jennings (Edgeworth, 1881).

chemistry (Pareto, 1896, p. 21). In the spirit of positivism, this required that economics should be freed from any philosophical or psychological notions that hamper the application of the positivist methodology (for an extensive discussion, see Drakopoulos, 1997; Caldwell, 2013). In the same conceptual tradition, Pareto believed that the construction of the fictional model of economic man was adequate for the needs of economic theory, thus clearly implying that psychological findings are not necessary (Pareto, 1907; see also Bruni and Guala, 2001; Bruni, 2010; McLure, 2010).

Similarly to Pareto, Fisher was against the inclusion of psychological concepts in economics. His intentions are clearly stated in the beginning of his *Investigations*:

> To fix the idea of utility the economist should go no farther than is serviceable in explaining economic facts. It is not his province to build a theory of psychology (Fisher, 1892, p.11).

It should be pointed out that Fisher thought of psychology as a "soft" subject not worthy for consideration by the "hard" science of economics. In this sense, the following statement is indicative: "But the economist need not envelope his own science in the hazes of ethics, psychology, biology and metaphysics" (Fisher, 1892, p. 23).

Pareto's and Fisher's anti-psychology stance resulted in the reformulation of consumer theory as an allegedly psychology-free theoretical construction. The reformulation was completed in the works of Hicks, Allen, and Samuelson, and mainstream economics expelled (at least nominally) any psychological and sociological notions found in earlier marginalist writings (see also Drakopoulos, 1991; 2012; Davis, 2003; Bruni and Sugden, 2007; Hands, 2010).[3] The new concept of psychology-free economic rationality would also form the basis of the general equilibrium model that emerged during the same period (Arrow and Debreu, 1954; Arrow and Hahn, 1971). The extension of economic rationality in the form of axiomatic expected utility theory in the works of John von Neumann, Oscar Morgenstern, and Leonard Savage was also in the spirit of independence of any psychic state (von Neumann and Morgenstern, 1944; Savage, 1954). In the middle of the twentieth century, Milton Friedman's (1953) essay on economic methodology was

[3] The methodological views of M. Weber and L. Robbins concerning the relation between economics and psychology also played a key role in establishing the boundaries of economics (see Maas, 2009).

an effort to shield the rationality assumption from criticism mainly originating from psychological research (see also Düppe, 2011). In Friedman's opinion, psychological assumptions were largely irrelevant to the validation of theories (see also Sent, 2004; Muramatsu, 2009). These developments completed the Paretian turn of mainstream economics.[4]

Economics and Psychology: The revival

In the late 1970s, the theoretical and empirical validity of expected utility theory started to be questioned by psychologists Daniel Kahneman, Amos Tversky, and Paul Slovic (Kahneman and Tversky, 1979; Kahneman, Slovic and Tversky, 1982). These works marked the revival of psychological ideas in economic analysis. Even the mainstream response to this criticism was the attempt to alter the expected utility models by including explicit psychological variables such as regret and disappointment (e.g. Loomes and Sugden, 1982). Moreover, Kahneman and Tversky's work is considered to have given the stimulus for the emergence of new behavioural economics. Kahneman and Tversky's approach had a strong orientation towards psychology and many key ideas found in new behavioural economics were stimulated by psychological literature. Notions such as reference dependence, loss aversion, adaptation, endowment effects, and framing effects are commonplace in modern behavioural economics (see Rabin, 1998; 2002). For instance, Ernst Fehr and Klaus Schmidt acknowledge that their work concerning fairness is connected to the relevant psychological theories: "Our theory is motivated by the psychological evidence on social comparison and loss aversion" (Fehr and Schmidt, 1999, p. 856). Furthermore, some of the more recent models originating from the new behavioural economics draw on explicitly from findings from neuroscience and cognitive psychology. Their aim is to offer an improved understanding of how cognition and emotion might interact to bring phenomena of economic relevance, such as cooperation, intertemporal choice and risky decision (e.g. Camerer, Loewenstein and Prelec, 2005; for a detailed discussion, see also Muramatsu, 2009).

[4] Non-mainstream economics has a long history of interactions with psychology. Indicative examples are the works of T. Veblen and T. Scitovsky (for discussions see Frey and Benz, 2004; Pugno, 2014; Drakopoulos, 2016).

Another source of renewed interest to psychological findings relates to the rise of research on subjective well-being (or happiness economics). This relatively new field has an explicit link to psychology and especially to positive psychology. Key concepts of the field such as life satisfaction, positive and negative affect, quality of life, as well as the cardinal approach to utility measurement indicate the strong interaction with psychology (e.g. Clark, Frijters and Shields, 2008; see also Bruni, 2004). The increasing appeal of happiness research with its extensive use of psychological notions represents a challenging tendency to the mainstream resistance to explicitly interact with psychology (see also Frey, 2008). There are also renewed methodological calls for the need of interaction of economics with other social sciences (e.g. Colander, 2014). In short, new behavioural economics and happiness economics represent the main manifestations of the current revival of the interaction between economics and psychology, and therefore bring back important aspects of the pre-Paretian turn of mainstream economics.[5]

III. Early arguments supporting the interplay between Economics and Psychology

The Philosophical and Psychological Background: British Empiricism and Psychological Hedonism

As has been mentioned, before the marginalist revolution there were various attempts to infuse psychology into economic discourse. Early economists intentionally connected their behavioural assumptions with the so-called Psychological Hedonism, a "doctrine" of motives generally advocated by major British philosophers since 17th century. This "doctrine" affirms that human beings behave according to the following rule: all men try to obtain (the greatest possible) pleasure and avoid pain. "Any person was supposed, that is, before willing any action, to make a quick calculation of the probable results in pleasure or pain to himself of each of the possible courses he might take, and then to choose and carry out that course which promises the largest hedonic results" (Dickinson, 1922, p. 11).

[5] The modern use of Bentham's approach to the measurement of experienced utility is an example of the "return" towards pre-Paretian turn notions (see for instance, Kahneman, Wakker, and Sarin, 1997).

Thomas Hobbes (1651/1962), one of the founders of British Empiricism, regarded men as machines which consist of matter and motion. He adopted a hedonistic theory of stimulation; thus, he argued that human behavior is driven by appetites and aversions. In a similar vein, John Locke (1706/1974) also developed a hedonistic theory of human motivation. Pleasure and pain were the two basic feelings and all the other passions/affections like love, hatred, fear, hope, desire etc., derive from the former. Moreover, British empiricism developed the theory of ideas' association or Associationism. For instance, George Berkeley formulated the principle of association: "all sensations that are consistently experienced together become associated. In fact, (…) objects were aggregates of sensations and nothing more" (Hergenhahn, 2009, p. 142).[6]

David Hume (1748/1957) also adopted the empirical tradition arguing that science should be founded on experience and observation. Following the previous mentioned authors, he further developed the three laws of association that influence humans' thought: (a) the law of resemblance (b) the law of contiguity and (c) the law of cause and effect.[7] Furthermore, Hume, like his contemporary Adam Smith, was deeply engaged in describing and analyzing the psychological foundations of human behaviour. "David Hume assigned major roles in the choice process to passions, stubbornness and desires for action and liveliness, as well as more obviously 'economic' motives such as desires for consumption and gain" (Earl, 2005 p. 909. See also Angner and Loewenstein, 2012). Around the same time, Adam Smith, mainly in his *Theory of Moral Sentiments* (1759), dealt with the psychological aspects of choice: "Our continual observations upon the conduct of others, insensibly lead us to form ourselves certain general rules concerning what is fit and proper either to be done or to be avoided (…) Those general rules of conduct, when they have been fixed in our mind by habitual reflection, are of great use in correcting the misrepresentation of self-love concerning what is fit and proper to be done in our particular situation"

[6] It is here noteworthy that a similar empiricist tradition existed in France through the work of French sensualist authors who stressed the significance of senses towards the attempt to explain any conscious experience. As well as the afore-mentioned British philosophers, Sensationalists argued that all ideas derive from experience, underlying the significance of the laws of association. Etienne Bonnot Abbe de Condillac has been regarded as a genuine representative of French sensualism. His work includes significant psychological treatises such as the *Traité des sensations* (1754). In economics, his work *Commerce and Government* (1776) is essential since here Condillac contributes to utility and its impact on human motivation. Condillac, as well as Galliani and Turgot, may be the first writers who explicitly connect value and utility.

[7] David Hartley was another writer who extended the principles of association as those had been formulated by Hobbes, Locke, etc.

(Smith, 1759, p. 141). Smith, in the *Wealth of Nations*, regarded self-interest and self-love as the fundamental motives of human motivation and action. However, in his *Theory of Moral Sentiments*, by recognizing the plurality of human incentives, he emphasizes the pleasure of mutual sympathy: "How selfish so ever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it" (Ibid, p. 4). Smith's interest in the influence of emotion and sentiment on socio-psychological motivation, "foreshadows a number of areas in modern behavioural economics, particularly models of social influence" (Baddeley, 2013, p. 5. See also Nagatsu, 2015).

During the first decades of the 19th century, associationist psychology was further developed. One of the most complete overviews of the theory of association was James Mill's *An Analysis of the Phenomena of the Human Mind* (1829/1869). Mill, influenced by Hume, Hartley and Thomas Brown, "attempted to show that the mind consisted of only sensations and ideas held together by contiguity. He insisted that any mental experience could be reduced to the simple ideas that made it up. Thus, he gave us a conception of the mind based on Newtonian physics. For Newton, the universe could be understood as consisting of material elements held together by physical forces and behaving in a predictable manner. For Mill, the mind consisted of mental elements held together by the laws of association; therefore, mental experience was as predictable as physical events" (Hergenhahn, 2009, p. 154). Mill's approach was consistent with the attempt of those political economists like Richard Jennings who investigated the "natural laws" of human action with respect to economic matters.

Furthermore, both James and John Stuart Mill were influenced by Bentham and the utilitarian principles. Jeremy Benham was the leading figure of utilitarianism. The ancient notion of hedonism (from the Greek word *ηδονή-hedone* which means pleasure) is found in the core of Bentham's philosophical and political theory (Drakopoulos, 1991). According to Bentham's philosophy, human happiness depends on our ability to secure pleasure and avoid pain. Thus, individual actions and most importantly, government policies were judged in terms of the greatest amount of happiness to the greatest number of people (Bentham, 1823, pp. 1-2; 1882). Due to his emphasis on the quantification of happiness and the development of a hedonic calculus, Bentham has been regarded as one of the intellectual forebears of today's

happiness, well-being and behavioral economics literatures (Baddeley, 2013; Quinn, 2016). However, "it must be emphasized that for Bentham as for his followers, utility was a psychological (or physiological) magnitude which measured an individual's inner happiness; it was not, as it is in many modern texts, simply a proxy for the degree to which an individual has reached what-ever goals he seeks (Lewin, 1996, p. 1297).[8]

To sum up, British Empiricism has been associated with psychological hedonism, and especially with the feelings of pleasure and pain. In particular, individuals pursue the greatest amount of pleasure/happiness and try to avoid pain. "All knowledge is considered to be built up from simple sensations by means of association, and all motives in the same fashion are derived from the added dynamic character of sensations in being pleasant or painful" (Dickinson, 1922, p. 67).

Classical Economists: Psychological assumptions and economic motives

Apart from the major authors mentioned above, the psychological bases of economic behavior were a subject that captured the interest of many other significant figures of the classical school. Senior's tutor Richard Whately, on his *Introductory Lectures on Political Economy* (1831), introduced some psychological motives or human instincts related to the "Science of Exchanges". More precisely, the "inclination for self-indulgence and ostentation" as well as the desire for a variety of consumption goods are some of the most characteristic incentives of human beings with respect to economic behavior. "The main result of such incentives is the emergence of emulation among men (…). This emulation activity results in an increased work effort and production activity that will increase economic development (…)" (Karayiannis, 2001, p. 21). Thus, Whately analysed the spirit of emulation and how it is connected to wealth: "As wealth increased, the continued stimulus of emulation would make each man strive to surpass, or at least not fall below, his neighbours, in this" (1831, p. 157). However, he pointed out that both the desire of wealth and emulation are not, in

[8] Shira Lewin develops one of the main objections against hedonism when she points out that "Psychological hedonists such as Alexander Bain (1859) attempt to use only one human motive to explain all of human activity (…) they assume without foundation that behavior always aims at the goal of maximum pleasure and minimum pain; but behavior is often impulsive, not goal-oriented (…) Even if pleasure and pain were well-defined magnitudes, it would still be unrealistic to model people as so goal-oriented that they always sought the hedonic optimum" (Lewin, 1996, pp. 1299-1300).

themselves, either virtuous or vicious. The final outcome depends on the way that men utilize these motives (see Ibid, p. 158).

Whately's student Mountifort Longfield, on his *Lectures on Political Economy* (1833), argued that value depends on demand and supply. Effectual demand is associated with utility, while supply is related to the cost of production. Furthermore, he mentioned the motive for variety ("the love or necessity of variety") in determining the extension of demand for luxury goods and connected (positively) this incentive with work effort (Longfield, 1833, p. 44). He also explicitly connected consumption with enjoyment. In his own words: "By enjoyment I understand every advantage or pleasure which the consumer derives from the use of the article, without the mediation of any exchange" (Ibid, p. 166).

According to J. E. Cairnes, Political Economy depends equally on physical and mental laws and stands in precisely the same relation to physical as to mental nature (Cairnes, 1857/1869, p. 23). Due to this complex character, the laws of political economy depend both on the laws of matter and on those of mind. In *The Character and Method of Political Economy* (1857/1869, p. 24), Cairnes argues that "psychology is a mental science, the subject matter of it being mental states and feelings (…) the psychologist (…) consists in endeavoring by means of reflection on what passes in his own mind, to ascertain the laws by which the phenomena of our mental constitution succeed and produce each other". He was a proponent of introspection when he argued that "those principle of the science which require no proof, depending directly upon consciousness, as for example, the desire for wealth and the aversion to labour, they have silently assumed, proceeding at once to argue on them without formally stating them" (Ibid, p. 59). The method of introspection, whose power was widely accepted among social scientists of that period, was not inconsistent with the premises of hedonic psychology. Economists' reliance on this method led them to see "little reason to use alternative methods to confirm the empirical adequacy of the foundations of their economics" (Angner and Loewenstein, 2012, p. 647; see also Bruni and Sugden, 2007). Although from the above remarks the association of psychology with economics may be unavoidable, it is worth stressing here that Cairnes seems to be quite skeptical about a strong connection between the two fields. In his own words: "nothing but confusion and error could arise from extending economic inquiry beyond the limits which have hitherto been observed" (Cairnes, 1857/1869, p. 182). Consequently, despite Cairnes' recognition of the

complex character of political economy, it seems that he is one of the first economists who explicitly cast doubt on the relevance of psychology for economics.

On the other hand, Nassau Senior "explicitly emphasized the variety of human motives more than any other classical economist (including J. S. Mill) in justifying his methodological views, not only in regard to the character of economics, but also in the way that its premises may be deduced" (Karayiannis, 2001, p. 19). Additionally, he stressed the fact that in order to explain economic behavior we should first examine the various principles and motives that shape human economic action. He considered "the desire for wealth" as the fundamental human motive, since it is "the cornerstone of the doctrine of wages and profits, and, generally speaking, of exchange. In short, it is in Political Economy what gravitation is in Physics" (Senior, 1836, p. 28). Furthermore, according to Senior, the fundamental factors that determine products' value are utility, transferableness and limitation in supply. The last, which is regarded by him as the most significant of the three, is influenced by "two of the most powerful principles of human nature, the love of variety, and the love of distinction" (Ibid, p. 11).[9] The psychological basis of these two principles is evident.

Senior's economic analysis was based upon the hedonistic principle, stating that "every man desires to obtain additional wealth with as little sacrifice as possible" (Ibid, p. 26). Accordingly, "the 'desire for wealth' motive is explained by Senior not only through the self-interest principle (…) but, furthermore, by the motives for variety and distinction, as wealth determines individual's rank in society (…) and is a standard of 'power and pre-eminence' in the civilized countries (…) (Karayiannis, 2001, p. 20). In addition, Senior "introduced as a by-product of the 'desire for wealth' the profit motive, in explaining not only the allocation of resources among the various production activities, but also the accumulation of capital through the abstinence behavior" (Ibid, p. 24). In other words, the idea of profit as remuneration for the cost of "abstinence" included psychological elements for the explanation of interest, an approach that would be adopted later on by the Austrian School.

[9] It is here noteworthy that "the desire for distinction" can also be found on other contemporary writers such as John Rae and William Whewell (see White, 1992, p. 69). John Rae (1834) also placed emphasis on the conspicuous consumption behavior, explaining it as a consequence of the rich individuals' selfishness and vanity (Mason, 1998).

The precursors of marginalists: Utility and the subjective/psychological theory of value

Before the marginalist revolution, there were authors who, influenced mainly by psychological hedonism, adopted a subjective theory of value. Their analysis relied upon subjectivist psychological notions and explicitly argued for the necessity of psychological reasoning. Thus, some of them have been regarded as definite forerunners of the marginalist approach.

W.F. Lloyd, in the *Lecture on the Notion of Value* (1833/1834), developed arguments for the distinction between value and utility. An explicit description of the law of diminishing marginal utility can also be found in this work (see 1833/1834, pp. 11-12). Lloyd claimed that the value of an object is proportional to want and arises out of it. "(…) the value, properly speaking, is the feeling of affection or esteem for the object, arising from a sense of the loss of the gratification contingent on the loss of the object. In its ultimate sense, then, the term undoubtedly signifies a feeling of the mind, which shows itself always at the margin of separation between the satisfied and unsatisfied wants" (Ibid, p. 16). Hence, it is clear that Lloyd adopted a subjective/psychological theory of value, as the previous and the following quotations reveal: "The term value, therefore, does not express a quality inherent in a commodity. It expresses (…) a feeling of the mind, and is variable with the variations of the external circumstances which can influence that feeling, without any variation of the intrinsic qualities of the commodity which is the object of it" (Ibid, p. 31).

T. C. Banfield was also a proponent of the subjective theory of value, regarding it as a revolution in economics. It is indicative that Jevons considers Banfield as one of his major sources of inspiration (Jevons, 1871, p. 41). In his *Four Lectures on the Organization of Industry* (1844/48) Banfield writes: "Not any intrinsic qualities in the objects (…) but the utility which the consumer expects to desire from them that gives to each its value" (1844, p. 17). The tastes, the wants and the feelings of men are all determining factors of products' value. Accordingly, the value of an object differs between individuals (as between nations), since it is a matter of the estimation of each person. "We see that the range of human desires which passes the limit of physical wants, and includes moral advantages as well as objects of sense does not lie beyond the sphere of the political economists" (Ibid, p. 13). Following Senior, Banfield stressed the importance of "the gradations of the wants of man" which substantially

affect value. Moreover, he strongly criticizes Ricardo and his followers because they were "incompetent to discriminate between the mind and the nerves by which the mental powers are called into activity" (Ibid, p. i). The criticism has an obvious psychological bend.

Many contemporary writers view Hermann Heinrich Gossen as an explicit precursor of marginalists. Through his laws of pleasure, he offered a mathematically founded theory and philosophy of pleasures, which can be defined as "the feeling experienced during enjoyment" (see Georgescu-Roegen, 1983, p. lxxix). As Georgescu-Roegen points out, Gossen adopted a so-called hedonistic epistemology: "each man endeavors to make his life as full of pleasure as possible" (Ibid, p. xxxiii). Gossen's chief rule for human conduct was the following: "Man should organize his life so that his total life pleasure becomes a maximum" (1854/1983, p. 5). The first sentence in his book states that "man wants to enjoy life and makes it his goal to increase pleasures enjoyed throughout life to the highest possible level" (Ibid, p. 3). Thus, Gossen's purpose was the examination of "the laws according to which the force of enjoyment operates" (Ibid, p. 6). By criticizing the limitations of political economy, he speaks of the science of pleasure, which extends the limit purposes of economics (Ibid, pp. 38-39).

In short, the afore-mentioned authors considered that psychological assumptions are not irrelevant to economics in that they provide a more sound or realistic basis to explicate economic behaviour and elucidate substantial economic issues like products' value. Accordingly, they connect value with psychological features and affective states like the "feelings of the mind" and try to associate economics with psychological laws. These authors foreshadow early neoclassical economists (e.g. Jevons) who "understood utility in terms of conscious experience like pleasure or happiness" (Angner and Loewenstein, 2012, p. 646).

IV. The work of Richard Jennings: The peak of the early interaction between economics and psychology

Richard Jennings was one of the first economists who tried to extensively use principles of psychology in his work. He offered a psychological theory of economic behavior and his work may be regarded as the most complete early attempt to relate the study of physiology and psychology to economics. Jennings argued that political

economy deals with the relationship between human nature (physiology) and human behavior (psychology). By having an adequate knowledge of natural sciences and following the British empiricist tradition which is represented by authors like James Mill, Jennings attempted to reform/modify the character of the science of political economy. In his most significant work entitled *Natural Elements of Political Economy* (1855), he sought to analyze the mental and physical phenomena that influence human economic behavior in order to form scientific laws that describe/explain the relevant human actions (1855, pp. 10-11). According to Jennings, if we want to find common economic laws and universal principles, we should carefully examine how the combination of psychological and physiological factors affects human economic actions (Ibid, pp. 16, 20-21). In other words, the fundamental principles of psychology were the "groundwork of political economy"; thus, it is necessary for the understanding of political economy to start exploring the postulates of psychology. In his framework, the starting point is the explanation of the function of human mind through introspection, a key tool for 19th century psychology. In particular, we should explain the mental laws which govern human actions and incentives: Political economy deals only with those incentives related to the "attraction of gratification and the avoidance of pain". It does not concern with moral or religious matters. In order to avoid giving a metaphysical aspect in these incentives, we should recur to physiology (Ibid, pp. 45-46, 81 and 88).

Furthermore, Jennings argued that deduction was the proper methodology of doing economic research, and held that the abstract method is the best methodology for the scientific examination of the fundamental economic laws. Through the abstract method and the simultaneous use of mathematical techniques, the social scientist can combine the fields of psychology and physiology in order to analyze the economic phenomena (Ibid, pp. 9, 20, 33 and 35).

Jennings was convinced that human beings are influenced by two forces: pleasure and pain. These two forces provide different incentives to man, especially with respect to economic issues (Ibid, p. 45). In particular, the economic activities of exchange, consumption and production cause two kinds of emotions/feelings to man: indifference and the sense of pleasure or pain (Ibid, p. 85). Unlike pain or pleasure, indifference cannot lead to an economic action (Ibid, p. 86). For example, consumption causes pleasure and production (not in all cases however) pain. More precisely, the pleasure that an individual enjoys from the consumption of goods

constitutes the basis of exchanges, while the pain that caused to man from work constitutes the basis of labour and production (Ibid, pp. 70, 81-83).

Let now examine the role that pleasure plays on the determination of products' and services' value. For Jennings, individuals enjoy different degrees of pleasure from the consumption of different quantities of a commodity, namely pleasure is a function of the disposable quantity for consumption (Ibid, pp. 97, 183). In the words of Jennings, "the purpose of our present inquiry leads us now to examine, by the evidence of our own feelings, the changes in the degree and the duration of sensations that are occasioned by changes in the quantity of the Commodities by which they are excited (…)" (Ibid, p. 93).

Jennings approached in a pioneering way the causal relationship between the feeling from consumption (pleasure or utility) and the consumed quantity. In particular, the consumption utility increases with diminishing return as the quantity consumed increases – the law of diminishing utility (Ibid, pp. 97-99). In his own words: "the increments of sensation resulting from equal increments of the Commodity are obviously less and less at each step" (Ibid, p. 99). Thus, Jennings acknowledges the marginal relationship that exists between quantity and satisfaction, stressing that each successive further quantity of the consumed commodity provides gradually less and less pleasure to the consumer (Ibid, p. 209). This causal relationship determines the value of commodities, which, however, cannot be measured with accuracy (Ibid, pp. 177-178).

In contrast to other previous or contemporary economists who claimed that products' value is derived from labour, land or money, Jennings argued that there is a close relationship between exchange value and the feeling of satisfaction or the avoidance of pain that every object offers. In this context, "the feeling of satisfaction eventually grows into the conception of value" (Ibid, p. 182), which is a "complex mental conception". In other words, prices are dependent on sensations. Additionally, the value of a commodity is derived from the past pleasure that individuals have enjoyed and this feature accompanies the commodities with respect to the present or future satisfaction that give to men (Ibid). The influence of past experience on the current commodity's evaluation is more than obvious. In his own words, "(…) the degrees of satisfaction which will arise from the Consumption of existing or of future quantities: on this ground they act, and by their united acts indicate the Exchangeable Value of each Commodity" (Ibid, p. 183). Moreover, the exchange value of the

commodities that cause positive feelings (satisfaction/pleasure) is analogous to the degree of emotion that cause.

As far as the theory of labour is concerned, Jennings may be regarded as a precursor of the neoclassical approach. More precisely, the similarities with Jevons' theory of labour are more than obvious.[10] According to Jennings, labour has a "positive value on account of its pecuniary reward (…) [and] a negative value on account of the toilsome feelings" (Ibid, p. 187; brackets added). The basic hypothesis of his analysis was man's "aversion to toil in different degrees". Hence, as work effort increases, the toilsome sensation increases in a more rapid way: "The degree of toilsome sensation would increase and would become insupportable, if the work should be protracted indefinitely" (Ibid, p. 118).

Jennings pointed out that physiological and psychological evidence of his time showed that "actions can be (…) performed without the attention or the intention or even the excitement of consciousness in the mind of the agent, being the simply automatic or instinctive effects of either Sensations, Ideas or Emotions" (Ibid, p. 137). Accordingly, he placed emphasis on human reflex actions, arguing that "a variety of experiments can prove that any mental state is the efficient cause of any bodily action (…) If certain sensations be excited, certain actions may be caused by them without the intention or the consciousness of the individual" (Ibid, p. 138). Actions of political economy "naturally follow the occurrence of certain states of mind and only meet with occasional disturbances from the intervention of the will" (Ibid, p. 141). Thus, there is a natural connection between certain states of mind and certain actions, as a cause and effect mechanism. For that reason, "predictions of the future course of Production, Interchange and Consumption cease to be empirical, since it is now only necessary to determine their causes and to deduce from them the natural consequences" (Ibid, p. 142). In addition, Jennings tried to explicitly link the laws of association to the industrial actions. The process of "Mental Combination", viz. the combination of two ideas may lead to a different result compared to the original ideas, "renders possible the modes of Consumption, of Production and of Interchange, that are carried on in human societies" (Ibid, p. 166).

Jennings' attempt to build a (psychological) theory of economic relations that relied upon subjectivist psychological concepts, has been in contrast to mainstream

[10] Jevons explicitly acknowledged Jennings' influence on his analysis. See also White, 1994.

economists' view on an economic science that deals only with rational behavior on a basis of e.g. some well-structured preferences, whatever the actual psychological cause. "(…) Before the Paretian turn, neoclassical economics was based on what was then state-of-the-art research on the psychology of sensation (…) what we see as the 'road not taken' is a potential continuation of nineteenth-century neoclassical economics, leading in the direction of behavioural economics" (Bruni and Sugden, 2007, p. 147). Jennings seems to be chiefly influenced by the theory of association, which was the dominant psychological theory in the early 1840's. He explicitly cited Carpenter's *Principles of Human Physiology* (1842) and the related laws of the association of ideas, which supply the fundamental principles of explaining all mental phenomena. Furthermore, according to Michael White, Jennings, by relying upon physiological psychology, clearly differentiated himself from previous authors at least with respect to two aspects: "First, Jennings showed that it was possible to distinguish between 'natural laws' of behavior and the social manifestations of those laws (…) Instead of an undifferentiated 'man', there was the human body conceptualized as a neurophysiological system/organism. Social behavior could then be accounted for by the organism's environment and could be observed with statistics. Second, the new theoretical object of the body enabled a different conceptualization of behavior to explain the 'system of action' (…) [Jennings] showed that it was possible to posit a theory of action with a calculating neurophysiological organism" (White, 1994, pp. 213-214; brackets added).

V. Conclusions

The dominance of mainstream economics since the second half of the twentieth century had effectively closed the issue of the relationship between economics and other social disciplines, and especially psychology. The increasing influence of positivism and of the physics scientific ideal resulted in the Paretian turn which isolated mainstream economics from psychology. However, the rise of new behavioral economics and of the economics of happiness with their extensive use of psychological concepts, is the main reason for the recent revival of the discussion concerning the relationship of economics and psychology. The current discussion concerning the role of psychological assumptions and findings has important methodological and theoretical implications. The issue has also a strong historical

bend given that the relationship between the two has had a continuous presence in the history of economic thought.

In order to investigate the topic, and after a brief sketch of the major historical episodes of the interaction between the two, the paper focused on psychological ideas found in influential pre-marginalist economists. It was observed that early authors on economics matters such as T. Hobbes, and J. Locke intentionally connected their behavioural assumptions with psychological hedonism. Subsequently, David Hume was deeply engaged in describing and analyzing the psychological foundations of human behavior. Hume's contemporary Adam Smith dealt with the psychological aspects of choice by recognizing the plurality of human incentives. The trend continued in the works of James and John Stuart Mill who were influenced by Bentham and the utilitarian principles. The psychological bases of economic behavior were a subject that captured the interest of many other significant figures of the classical school such as R. Whately and M. Longfield. Nassau Senior explicitly emphasized the variety of human motives more than any other classical economist. Many of the precursors of marginalists such as W. F. Lloyd, T. Banfield and H. Gossen adopted a subjective/psychological theory of value. Their analysis relied upon subjectivist psychological notions and explicitly argued for the necessity of psychological reasoning.

The work of R. Jennings was the peak of the early interaction between economics and psychology. He was one of the first economists who tried to extensively use principles of psychology in his work. He offered a psychological theory of economic behavior and his work may be regarded as the most complete early attempt to relate the study of physiology and psychology to economics. Jennings' psychological approach to economics influenced W. S. Jevons as the similarities of their theories of labour clearly demonstrate and as Jevons himself admits. Most of the leading marginalists freely adopted concepts and ideas from psychology. The work of F.Y Edgeworth is a clear example of this trend.

In general, our discussion indicates that apart for leading marginalists, the incorporation of psychological ideas was commonplace for many major classical authors too. In particular, one can distinguish a continuity in the line of thinking of Whately – Senior – Banfield – Jennings –Jevons and Edgeworth (see also White, 1994). For this line of thinking, the integration of psychological concepts to economic argumentation was considered as methodologically admissible and useful. The fact

that most figures were well aware of its implications for economics is also supported by Cairnes' explicit objection to Jennings' attempt to marry economics and psychology.

Contrary to the mainstream economics attitude towards psychology that emerged with the Paretian turn, the study of the pre-marginalist economic thought indicates that there were no methodological objections against using concepts, findings and ideas from psychology. This is in sharp contrast with the subsequent anti-psychologism that dominated mainstream economic methodology and theory. It also counters the prevailing idea that major economists of the past were not interested in psychological notions. Furthermore, it demonstrates that the mainstream attitude towards psychology and towards other neighboring social fields is the product of a specific methodological framework which emerged rather recently. Given that important elements of the "Pre-Paretian turn" conceptual framework have started to re-surface, the current debate regarding the methodological and theoretical implications of the rejection of anti-psychologism can certainly benefit from the history of the relation between the two fields of study.

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