Scarcity Concept in the contemporary mainstream economic science: an analysis of its ontological and epistemological ambiguity

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Abstract: Different economic schools have studied the scarcity concept, reaching other explanations. Accordingly, the discussion underlines that for the Classical School of Political Economy (CSPE), scarcity is considered an empirical fact in contrast to the Marginalist School, which instead finds it as a theoretical consequence derived from its axioms. Following both schools, the Marshallian theorists introduce an ontological and epistemological ambiguity about scarcity. With this background, this article will try to clarify the concept and characteristics of scarcity. It examines the concept from different schools of economic thought, considering a new ontological and epistemological path. The article concludes by highlighting that the scarcity characteristics of mainstream economics neglect the sociocultural, historical, and political dimensions, making the consideration to abolish them through social, political, and economic changes a problematic and –at times – vain option.

Keywords: Scarcity, Abundance, Sufficiency, Needs and Wants, Classical School of Political Economy, Marginalist School of Economics, Marshallian synthesis of economics.

1. Introduction

The object of study of contemporary Mainstream Economics (ME), understood in this article as Neoclassical economics (Schiffman 2004; Dzeraviaha 2018), is defined as the study of the problem of the satisfaction of multiple needs and wants of the people from scarce resources. This object of study can be found in current economics textbooks, such as Mankiw (2009: 4): *"Economics is the study of how society manages its scarce resources*."

Upon this conceptualization, it is possible to observe that scarcity plays a crucial role within the ME since only scarce resources are considered the objects of the study of economics. According to Daoud (2007), the notion of universal scarcity, in the form of the scarcity postulate, is a central axis in contemporary ME.

Nevertheless, scarcity sometimes had a different relevance in economics definition as today. Thus, in the Classical School of Political Economy (CSPE), the scarcity of resources and goods was not considered a crucial concept, as observed in Mill's definition of economics:

'The science which traces the laws of such of the phenomena of society as arise from the combined operations of mankind for the production of wealth, in so far as those phenomena are not modified by the pursuit of any other object'. (Mill 2000 [1844], p. 99).

In Mill's definition of economics, the focus of the object of study was on production and social relations of production rather than the allocation of scarce resources and goods. Although some economic schools of thought have focused on the concept of scarcity to explain economic phenomena, today, scarcity plays a fundamental role in many ecological, economic, and social theories (Daoud 2018).

However, the concept remains unclear and suffers from limitations that can lead to dead-end conceptualizations (Buechner 2014) and hinder understanding the relations between society, the environment, and the economy in a system of connected causalities and network complexities (Jennings 2021). On the one hand, these limitations may include many scarcity concepts and approaches needing more effective entanglements (Daoud 2018). On the other hand, we can be in front of an unclear understanding – and sometimes absent considerations – of the sociocultural dimensions that drive scarcity (Daoud 2010) and then witness an analytical lack of theoretical and practical consequences for assuming different concepts of scarcity (Matthaei 1984).

Some previous studies have approached the concept of scarcity from different perspectives to overcome the above limitations. For example, Matthaei (1984), drawing upon the economic debate animated by Neoclassical and neo-Malthusianism schools about the concept of scarcity, criticizes their essential assumption of the inevitability of scarcity by proposing an alternative conception of economic life under capitalism, based on the Marxian theoretical tradition. Baumgartner et al. (2006) identify and analyze some difficulties with the interdisciplinary integration between economics and ecology when studying biodiversity loss. They focused their analysis on the concept of relative scarcity and absolute scarcity, arguing that economic science limits its analysis to the former while ecology to the latter. Likewise, Buechner (2014, p.13) emphasizes the concept of relative scarcity by stating that absolute scarcity refers to an *"aspect of individual goods considered in isolation, that is, the quantity of a good is insufficient to reach end. Relative scarcity is about the prices of goods in relation to one another. Replacing either concept with the other is not a meaningful idea. The purpose rather is to move scarcity to the sidelines of economics and to give relative scarcity a central place".* Tchipev (2006) analyses the concept of scarcity and its consequences within the Neoclassical economic paradigm.

Daoud (2007) formulated a sociological critique of the scarcity in ME. He explored Robbins and Malthus's views on scarcity, abundance, and sufficiency and how these concepts overlap and vary.

For him, the dynamic analysis of these three concepts benefit socio-ecological research (Doud 2010; 2018).

Accordingly, this article proposes an analytical framework that systematizes these types of studies. Other studies, such as Mehta, Huff, and Allouche (2019), explore the cross-scalar dynamics of what they consider as new scarcity policies, which consist of the configuration of contemporary social and economic relations of domination and control around scarcity events. Finally, Scoones, Smalley, Hall, and Tsikata (2019) analyze the policy-related narratives of scarcity on the global phenomenon of the land rush.

With this background, this article will try to clarify the concept and characteristics of scarcity. It examines the concept from different schools of economic thought, considering a new ontological and epistemological path. The article is guided by the following four research questions: (a) what analytical elements have characterized the evolution of the concept of scarcity through the CSPE, MSE, and MSHE[1]? (b) what is the ontology of scarcity in the schools mentioned above? (c) what are the consequences of accepting different ontologies in the concept of scarcity? (d) what alternative economics scarcity concept can be proposed to capture a broader spectrum of economic phenomena than the ME scarcity concept?

By answering these research questions, the following sections corroborate the existence of ontological and epistemological differences in the concept of scarcity adopted by the CSPE and MSE.

In this sense, it discusses how this ontological difference remains in the MSHE in the form of ontological and epistemological ambiguity. Secondly, how the concept of scarcity of the ME leaves essential dimensions of economic phenomena on the margin of economic science; finally, it explores new knowledge trajectories about scarcity from a sociocultural, political, and historical perspective.

Accordingly, the structure of the article divides as follows. The text focuses on scarcity in the CSPE, MSE, and MSHE from sections two to four. The fifth section analyzes the consequences of adopting the idea of scarcity of ME in explaining the economic phenomena. Finally, the last section delineates possible perspectives for a new conceptualization of scarcity in economics.

2. Classical School of Political Economy and Scarcity as an empirical fact

Adam Smith laid out his ideas on the division of labor and market in his book, *An Inquiry into the Nature and Causes of the Wealth of Nations*. For him, the concept of scarcity within developed societies could have been more meaningful since these societies reached both a high division of labor and a considerable market expansion. The impact of these two conditions is that organizations can considerably increase their productivity by achieving a high division of labor (Pohoață, Diaconaşu, Crupenschi 2018). Therefore, scarcity becomes an unreal configuration.

Furthermore, if the market frontier continues expanding, the division of labor will not be limited but, on the contrary, will increase. Smith (2007 [1776], p. 13) expressed the fact that developed societies should not suffer from scarcity:

'It is the great multiplication of the productions of all the different arts, in consequence, the division of labor, which occasions, in a well-governed society, that universal opulence which extends itself to the lowest rank of the people'.

In light of this, Smith pointed out that societies could experience progress by moving from a condition of scarcity to a state of abundance. The literature argues that Smith reached this conclusion because his methodological analysis was at different levels. In the first place, at the global level, that is, understanding society as a complete entity. Secondly, at the historical level, that is, understanding knowledge by a historical period that is broad enough to allow observing changes in social and productive structures (Myrdal 1965; Dobb 1975; Hill 2007).

This progress is in Smith's empirical exemplification of the pin industry. Only by changing the level of the analysis, that is – in this case – locally and temporally contextualized, Smith considered the scarcity condition as a realistic hypothesis. In this sense, local means a unique good traded in a specific market, and temporal means a limited period where social and productive structures do not change.

These different levels of analysis allowed Smith to explain the difference between natural and market prices. The former is the price at which the goods tended; from a theoretical point of view, it originated from the relation between the natural rates of wages, capital benefits, and land rent (Schliesser 2005; Andrews 2014). The latter was instead the observed price that gravitates around the natural price, but it differs due to the differences between adequate supply and demand (Spencer and Schliesser 2017). According to Smith (2007 [1776], p.49):

'The natural price, therefore, is, as it were, the central price, to which the prices of all commodities are continually gravitating. Different accidents may sometimes keep them suspended a good deal above it and sometimes force them down even somewhat below it. But

whatever may be the obstacles which hinder them from settling in this center of repose and continuance, they are constantly tending towards it. The whole quantity of industry annually employed in order to bring any commodity to market naturally suits itself in this manner to the effectual demand'.

Therefore, for Smith, the discussion on scarcity acquires sense and relevance only in a localized and temporally contextualized analysis. In this case, at a specific moment, and in a specific market, increasing demand for goods facing insufficient supply could generate a relative scarcity. However, such scarcity could only last for a while because having excess demand would raise the prices of commodities above the natural price.

Consequently, the capitalists would be interested in transferring capital to industries with supernatural prices (Spencer and Schliesser 2017). This situation would increase the supply, equaling it to the demand, finally redirecting the market price to the natural price level. The relevant conclusion here is that, for Smith, scarcity is derived from an empirical situation in the short term. In this case, demand exceeds the supply of a particular good.

Ricardo considered that scarcity plays two roles. First, scarcity serves as the basis for the exchange value of some goods, and second, following Smith, it determines the market price. Ricardo pointed out that a necessary condition for goods to have value in exchange is that they must satisfy some needs. Only after the above condition is met the exchange value is derived from two causes, scarcity and the amount of labor required to produce the goods. In this sense, Ricardo pointed out that some goods' exchange value is derived solely from scarcity because no amount of work can increase their supply. For instance, these are statues, sculptures of merit, old books, coins, and exceptional quality wines. These goods, whose value is independent of the amount of work required to produce them, will vary in price only according to the degree of wealth and inclinations of those who wish to possess them (Ricardo, 2004 [1871]). However, for Ricardo and Smith, the case of scarce goods is not the focus of their research because goods with this characteristic are the minority of goods. According to Ricardo (2004 [1871]), most goods can be produced and reproduced by human industry, so eventually, scarce goods could not exist.

Ricardo adopted the same explanation as Smith when scarcity regulates the market price. The answer lies in the market price, around the natural price, which is temporary and local. If market prices are higher than natural prices, there is an incentive for capitalists to transfer their capital to that industry where there are profits. This fact causes an increase in production and an adequate supply and demand adjustment. Finally, this mechanism tends to equalize the market

price with the natural price. However, what mattered to Ricardo was explaining the determinants of the natural price of goods.

Hence, until now, for Smith and Ricardo, scarcity is derived from empirical facts and allows them to explain the market price. Scarcity is not a postulate, and it is not universal. Consequently, Ricardo and Smith's certainty about the productive progress of society is based on the empirical observation that societies were undergoing an accelerated transition from a society of scarcity to a society of abundance thanks to the strong division of labor and the accelerated industrial revolution (Postel, Sobel 2009).

Malthus's position on scarcity was developed in opposition to Smith and Ricardo's optimistic prefiguration. Malthus began his reflections considering an unstable political environment, full of promises for the future and social changes derived from the French Revolution (Becker et al. 2005). That is why his book *"An Essay on the Principles of Population"* is part of open dialogue, contrasting the position of those who adhere to the old political regime against the revolutionaries. The specific aspect that Malthus was interested in concerns the perfectibility of humanity.

According to Malthus (1998 [1798]), the perfectibility of humankind was the possibility that it constitutes a society whose members could have a life of rest, happiness, and relative laziness and who did not feel anxious about the difficulty of providing the means of subsistence that they and their families need. Malthus rejected humanity's perfectibility, arguing its impossibility of reaching a state of abundance (Foster 1998).

Malthus based his argument on two postulates: (a) food is necessary for man's existence, and (b) passion between the sexes is necessary and will remain nearly in its current state (Malthus 1998 [1798]). Based on these postulates, he concluded that the population increases in a geometric progression. In contrast, food production increased in arithmetic progression. Thus, the population grew faster than food production causing scarcity.

Unlike Smith and Ricardo, Malthus conceived scarcity as an inevitable condition in human societies. For him, even in developed societies, scarcity remained an unavoidable fact of the two postulates discussed above (Ehrlich and Lui 1997). Malthus (1836) pointed out that a society that begins the development process or has already developed requires more labor to sustain that development. The high demand for work increases the worker's salary and incentivizes the population to refrain from controlling the birth rate since it has sufficient resources to support newborns. However, in the medium term, the increase in the birth rate causes an increase in the workforce as societies have more people willing – or who need – to work. In turn, the increase in

the workforce produces a decrease in wages. Finally, it causes a scenario where there is an over-demand for food and an excess population, which, according to Malthus, generates inevitable misery. In short, the new scenario is characterized by more food-demanding people, high food prices, and low-wage workers (Hertel et al. 2020). In this new scenario, some people die of hunger, and many have difficulties starting a family, discouraging marriages, and slowing the population's growth.

Malthus considered scarcity an unavoidable fact, but it is important to note that in his theory, scarcity remains an empirical fact; this implies that scarcity is regarded as a historical hypothesis derived from empirical observations. For example, it is assessing or quantifying the amount of a particular good needed to satisfy a specific number of people. Methodologically, the postulates about the human need for food and passion between the sexes are based on empirical observations. Furthermore, the arithmetical ratio of the growth of food and the geometrical ratio of the growth of population is based on empirical observation too. Therefore, because of his theory, Malthus asserted that society oscillated between periods of scarcity and abundance of food. This argument is supported by the extensive later literature that attempted to test Malthus's theory based on empirical observations, such as, Hertel et al (2020), Bretschger (2020) and, Moreno-Cruz and Taylor (2020).

Although Malthus's conclusion is pessimistic, if it is considered the optimistic conclusion of Smith and Ricardo, it is possible to point out that scarcity and abundance are empirical states of society for them. In addition, since a historical approach, there is a clear differentiation in the time and geographical scale of the analysis. In this perspective, scarcity could occur locally and at a specific time. Hence it has relevance in the explanation of the market price (Smith 2007 [1776]; Ricardo 2004 [1871]). Therefore, globally and historically, for Smith and Ricardo, scarcity could be overcome, while for Malthus, society oscillates between periods of scarcity and abundance.

3. Marginalist School of Economics and Scarcity as a theoretical consequence

In this section, the discussion focuses on the radical change introduced by the MSE about the concept of scarcity since – for its theorists – scarcity ceased to be an empirical fact, as understood in the CSPE, and became a theoretical consequence. It can be conceptualized in terms of educational value when scarcity can be derived as a logical consequence of a set of axioms, for example, by postulating that people have innumerable needs and wants, which implies that

numerous goods are required to satisfy them. Consequently, it is possible to witness a state of permanent scarcity.

According to Menger (2007 [1871]), Jevons (1888 [1871]), and Walras (1926 [1874]), the basis of the human economy is the satisfaction of human needs and wants through the production of goods. For the representatives of the MSE, there is a relationship between needs, wants, and goods. Quantitatively, this relationship can take the following three forms:

(a) Abundance: human needs and wants are quantitatively more than the available quantity of goods that can satisfy them.

(b) Scarcity: human needs and wants are quantitatively less than the available quantity of goods needed to satisfy them.

(c) Sufficiency: human needs and wants are quantitatively equal to the number of goods that satisfy them, that is, a sufficient situation.

According to Menger (2007 [1871]), in real life, the most common situation is (b), and the goods that are in this quantitative relation are economic goods. He considered the goods found in the quantitative relations (a) and (c) non-economic goods. Consequently, he argued that in a situation of abundance, people do not need to economize because all members of a society can be satisfied without any problem. Therefore, these types of goods are not subject to the human economy.

The Austrian economist also introduced the difference between low and high good orders. The former refers to goods that directly satisfy a human need. The latter is composed of goods that indirectly meet a human requirement; namely, this type of good must be processed in combination with other goods to be transformed into a low-order good.

The fundamental key element for understanding the economic theory of Jevons, Walras, and Menger is the discussion on the law of variation of utility, which defines that the degree of utility [2] varies depending on the variation in the number of goods. In other words, the level of utility decreases as the quantity of goods increases, and vice versa. The logic is that the more a need is satisfied, the more the utility of an additional amount of the good that satisfies this need decreases. For the ME, this law is known as the principle of marginality, which is the hallmark and MSE's undisputable legacy. Jevons (1888 [1871]) argued that the utility variation law applies to a good that satisfies a particular need and when hierarchies between needs are established. For example, a good that meets two or more needs will cause a more excellent utility to the person when it is used to satisfy a high hierarchy than a need in a lower one.

This section intends not to blur differences in Marginalist thought under the homogenizing umbrella of the "Marginal Revolution." As Blaug (1968 [1965]) specifically underlined and cautioned - after titling "The Marginal Revolution," Chapter 8 of his Economic Theory in Retrospect of 1962 - "to speak of a marginal revolution is in itself somewhat misleading." In the seventies, Jaffé lamented that the widely "disseminated practice of lumping Menger, Jevons and Walras together under one caption has grossly distorted the history of their contributions to economic analysis; according to him, differences that characterize their thoughts, especially regarding the understanding of marginal utility, are of interest, "the passage of time has revealed more important [these differences] than anything they [the authors] may have had in common" (Jaffé, 1976: 511). However, as pointed out two decades later by Peart (1998: 307), the attempt to " de-homogenize Jevons, Walras, and Menger may have obscured some key similarities among the early neoclassicals. Here the intention is to focus on the conceptualization of scarcity, intended by the MSE, as a condition resulting from the quantitative relationship where needs and wants exceed the goods that satisfy them. Nonetheless, critical questions arise on how Menger, Jevons, and Walras understand the nature of needs and wants. This means that by offering an overview of the conceptualization of scarcity, this article is far from homogenizing theoretical perspectives, yet it tries to integrate them. Likewise, Jaffe's attempt to de-homogenize Menger, Jevons, and Walras is still topical in some circumstances and for some specific explanatory needs; this perspective can be crucial to acknowledge and understand the economic contributions of these authors as separate (Fontaine 1998) mainly if this can enrich a specific theoretical focus such as this of the nature of needs and wants.

In this respect, we highlight that according to Jevons (1888 [1871]), needs are susceptible to satisfaction sooner or later, but the degree of utility only sometimes arrives at a zero level because the more refined and intellectual the needs are, the less capable they are of satisfying them. In Jevons (1888 [1871], p. 53) words:

'All our appetites are capable of satisfaction or satiety sooner or later, in fact, both these words mean, etymologically, that we have had enough, so that more is of no use to us. It does not follow, indeed, that the degree of utility will always sink to zero. This maybe the case with some things, especially the simple animal requirements, such as food, water, air, etc. But the more refine and intellectual our needs become, the less are they capable of satiety. To the desire for articles of taste, science, or curiosity, when once excited, there is hardly a limit'.

For Jevons, the more societies advance, the better means of production they have, especially in industries that produce essential goods such as food or housing. Therefore, advanced societies have more capacity to satisfy basic needs, which he calls "*simple animal requirements*." However,

more sophisticated needs and wants are generated in new and advanced societies. In this sense, people always need "*something*." Menger is even more explicit than Jevons. For him, not only the needs developed over time but also the human being today has multiple needs that together seem limitless. Menger clarified:

'A further point that must be taken into consideration here is the capacity of human needs to grow. If human needs are capable to growth and, as is sometimes maintained, capable of infinite growth, it could appear as if this growth would extend the limits of the quantity of goods necessary for the satisfaction of human needs continually, indeed even to complete infinitely, and that therefore any advance provision by men with respect to their requirements would be made utterly impossible." Therefore "*any advance provision by men with respect to concerning their requirements would be made utterly impossible'* (Menger 2007 [1871], p. 75).

This concept of necessity seems to be conceived as the fact that *"someone"* lacks *"something,"* which in this case are economic goods. The point is that *"something"* is always external to *"someone"* who needs or wants it. Consequently, after completely consuming that "something" the *"someone"* who needs or wants it, after completely consuming that *"something"* will be in the same situation of scarcity as before obtaining it. However, this theory of needs does not shed light on the formation of such needs. Then, the statement that people eventually have *"an almost limitless variety of needs"* or *"needs are capable of infinite growth"* is simply a postulate about human nature.

Furthermore, these theories assumed a methodological individualism if the will or inclination of the person is taken as the sole criterion of what is (or is not) useful (Jevons 1888 [1871]). In this respect, Jevons extended this postulate to a whole society, understanding by society that a set of people added to each other. In the philosophy of science, there is a controversy with this methodological approach because it leaves out the possibilities of emergent properties (Johnson 2006).

Therefore, it is possible to conclude that, at least theoretically, it is perfectly probable that everyone can manifest that desire or need for any good and any quantity. The reason is that there would be no external parameter to judge the desire or need more than the subjective opinion of each person. Thus, for example, there would be no reason to doubt someone who claims to need to own a spaceship parked in his backyard. Furthermore, following the methodological individualism principle, the same phenomenon would occur at the societal level. Hence, from the previous postulates, it can be concluded that if the needs or desires of people are innumerable and capable of infinite growth, then people and societies are always in a condition of scarcity.

In conclusion of this section, the MSE needs and wants to become a cornerstone of economic theory. T hus, scarcity became universal, and the possibility of empirical abundance decays since it could always be argued that a person needs or wants more available goods.

4. Marshallian synthesis and an ontological-epistemological ambiguity in the concept of scarcity

As argued so far, scarcity for the CSPE was an empirical fact, while for the MSE, it derives as a theoretical consequence of its postulates. In this section, it will be argued that Marshall´s economic theory, by synthesizing both schools, introduced an ontological and epistemological ambiguity about scarcity, oscillating between an empirical fact and a theoretical consequence.

Marshall's pinnacle work was the book *"Principles of Economics"* published in 1890. In this book, he exposed his ideas about demand, supply, the relationship between them, and the distribution of wealth. Marshall developed his demand theory by taking two theoretical concepts from the MSE. First, he accepted the relationship between needs, wants, and goods that satisfy them and argued that this relationship is the foundation of the consumption theory. Second, he adopted the principle of marginality (Bharadwaj 1978). However, he does not opt for measuring the utility a person receives from consuming a good, as instead, marginalist thinkers did. He argued that the intensity of desires cannot be measured directly and, consequently, the satisfaction or usefulness of the good to satisfy a need is not quantifiable either (Ranson 1980). He opted for a different methodological path. He pointed out that price is the only empirical variable that can be measured. He proposed that demand prices measure how much a person is willing to pay to consume a good (Alford 1956). In other words, price is an empirically verifiable indirect measure of the consumer's utility. Consequently, Marshall stated that: *"The price will measure the marginal utility of the commodity to each purchaser individually."* (Marshall 1920 [1890], p. 52). Then, he applied the principle of marginality to the prices and not to the utility itself.

By combining the demand price with the marginality principle, Marshall defined what is currently known as the Marshallian demand function, a function that specifies the quantity of a good that consumers would buy at any price level (Alford 1956). Furthermore, he postulated the total demand function as the linear sum of individual demand functions. In this sense, Marshall had the same idea as Jevons about methodological individualism (Ranson 1980). Once the entire demand function has been postulated, he related it to the desires and needs of consumers, introducing the concept of elasticity, which is defined as the percentage change of a variable X to

another variable Y. In general, this concept serves as a sensitivity measure of the variation of one variable about another. For example, in the case of the demand function, elasticity would measure the percentage change in the quantity of some good that a person demands a change in its price (Alford 1956). Therefore, the concept of elasticity introduces the impact of wants and needs in the demand function. If a person wants or needs more goods, the variation in the quantity demanded will be less in the face of an increase in its price than if the goods were less wanted or needed.

Needs and wants are a cornerstone of Marshall's consumption theory (Aspers 1999), but how does Marshall understand the nature of needs and wants? He considered that needs and wants are varied in type and number and grow as societies develop (Marshall 1920 [1980]). According to him, this occurs because people in civilized societies have satisfied their basic needs, which leads to developing other types of needs. Therefore, people need more goods that meet their needs and a variety of goods (Aspers 1999). Furthermore, Marshall explicitly holds, as a principle of human nature, that people always desire more and more goods due to the desire for distinction and variety.

Therefore, from Marshall's theory of consumption, it is possible to derive the same conclusion as from the MSE: *wants and desires are countless in number and very various in kind.* Moreover, societies are always in a condition of scarcity because they also require many goods to satisfy them.

According to Marshall (1920 [1890]), although wants and desires are innumerable, also "*they are generally limited and capable of being satisfied*", which transfers the analysis to the supply function. Marshall took the production costs of the theory of value from the CSPE and incorporated the principle of marginality (Bharadwaj 1978). On this, he laid the foundations of his theory of supply. Marshall (1920 [1890]) pointed out that people obtain utility when they satisfy their needs and desires by consuming goods. However, this is only part of economic activity because people must sacrifice dis-commodities to produce goods.

This dis-commodity comes from the dilemma that people face when they must work now to produce goods or not work now and endure the sacrifice of postponing consumption. In this sense, Marshall agreed with Jevons (1888 [1871]), who, in turn, took this doctrine from Bentham (1834) that work generates pain and consumption pleasure. Once Marshall postulated that work generates disutility, he applied the marginalist principle (Bharadwaj 1978). For him, with each increase in employment severity and duration, work disutility increases proportionally more. Therefore, according to him, the more a person works, the more remuneration should receive.

After this subjective foundation of work disutility, by following the CSPE, he argues that goods cannot be produced only with work. Other factors, such as land or machines, are necessary. Furthermore, following Ricardo's labor theory of value, he proposed that the additional supplies needed for good production can ultimately be reduced to labor. Following this path, he formulated the supply function, where he related the supply quantities of goods to their supply prices (Frisch 1950).

In Marshall's theory, the quantitative relationship between supply and demand defines a state of scarcity, abundance, or sufficiency. The state of abundance is defined when supply is more significant than demand. The state of scarcity is defined as when demand is more important than supply. Finally, goods are sufficient when supply and demand are equal (Alford 1956). According to Marshall, the market oscillates between disequilibrium and equilibrium throughout the price adjustment (Frisch 1950). For example, suppose the market price of apples falls. In that case, farmers will be less willing to maintain the equilibrium supply of apples in the market because this possible price may need to be higher to cover their marginal cost of production. In this case, farmers will offer fewer apples to the market, causing the quantity supplied to fall below the amount demanded. Therefore, the scarcity of apples forces the price to rise, expecting the price to increase to the equilibrium price. This quantitative relationship between supply and demand is empirically testable. Consequently, it would also be possible to determine empirically whether scarcity, abundance, or sufficiency exists.

In summary, the concept of scarcity in Marshall's theory could be interpreted as an empirical fact or a theoretical consequence. The way out of this ontological ambiguity could be to assume that there are observed periods of scarcity, abundance, and sufficiency only for certain local markets and specific periods. Furthermore, an additional element is to think that (globally and historically) societies are in a condition of universal scarcity because "*human wants, and desires are countless in number and very various in kind.* "Marshall opted for this second solution by postulating a relationship between needs and wants and activities that made them codetermine one another since needs and wants generate activities, which create needs and wants again. In Marshall's words:

'Speaking broadly, therefore, although it is man's wants in the earliest stages of his development that give rise to his activities, yet afterwards each new step upwards is to be regarded as the development of new activities giving rise to new wants, rather than of new wants giving rise to new activities' (Marshall 1920 [1890], p.48).

5. Consequences of assuming scarcity as an empirical fact or a theoretical consequence

Assuming scarcity as an empirical fact or a theoretical consequence has been correlated with the object of study of economics and, therefore, its definition is indicated by different economic schools of thought. If scarcity is assumed as an empirical fact, then it is possible to assume that societies could eventually be in states of scarcity, abundance, and sufficiency. In this sense, Ricardo (2004[1817]: 6) explicitly pointed out that *'the greatest part of those goods which are the objects of desire are procured by labour; and they may be multiplied, not in one country alone, but in many, almost without any assignable limit…'*. For Ricardo, wealth is defined as the stock of good and services available in a country and the stock could increase by the production. According to Ricardo (2004[1817]: 185), *'there will be double the quantity of commodities annually produced in the country, and therefore the wealth of the country will be doubled…'.* Therefore, according to Ricardo, while societies have more wealth, they have more production and less scarcity. The question is in production is involved land, labour and capital. In this sense, it makes sense to consider the object of study of economics, the social relations of production, and the distribution of wealth to overcome scarcity, moving societies towards abundance. This was the object of study of the economy of the CSPE. For example, according to Ricardo (2004 [1817], p. 18):

'To determine the laws which regulate this distribution[3] *is the principal problem in Political Economy'*.

CSPE lacked a specific theory of consumption. Therefore, for them, scarcity was not relative to the individual wants or desires, but to the capacity of societies to satisfy what in this historical epoch they consider necessary, for example, food in the case of Malthus. This idea could be sustained with the following quote from Ricardo (2004[1817]: 185) *'It may be said, then, of two countries possessing precisely the same quantity of all the necessaries and comforts of life, that they are equally rich, but the value of their respective riches would depend on the comparative facility or difficulty with which they were produced'.* In this quote Ricardo refers to the "necessaries and comforts of life" of a country, not of a person.

In contrast, MSE and MSHE have a specific theory of consumption based on individual wants and needs, which are assumed limitless and capable of infinite growth. This theoretical assumption of human nature implies that scarcity is a theoretical consequence and universal due to innumerable needs and wants in the face of limited resources and goods. In light of this, it makes sense to consider the main economic problem of matching wants and need with resources and goods in the best way. In other words, the maximization in allocating scarce resources and goods

to satisfy needs and wants is the object of study of the economy. This idea is exposed in some contemporary definitions of economics, for example, according to Robbins (1932, p. 16):

'Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses'.

According to the current economic textbooks, such as Nicholson and Snyder (2007, p. 17):

'Economics is the study of how scarce resources are allocated among alternative uses'.

Hence, if the ontology of scarcity is assumed as empirical, the economy's object of study will focus more on the production and distribution of wealth. In contrast, if it is considered theoretical on the consumption of resources and goods.

If the focus of the object of study of the economy changes, then the target changes from social production and distribution of wealth to individual consumption. This implies that the economic analysis level moves from a general social level to an individual level. This level of analysis creates difficulties in the differentiation between needs and wants because there would be no external parameter to judge what is a need and what is a want rather than the subjective opinion of each person. In other words, it seems impossible for an outside judge to assess what is a need and what is a want. If it is not possible to distinguish between these concepts, it also does not seem likely to differentiate between social needs and individual wants[4]. According to McGregor, Camfield, and Woodcock (2009), when basic needs are expanded to include relational and psychological aspects, the theoretical distinction between needs and wants begins to fade because social meanings and subjective interpretations come into play.

Furthermore, assuming universal scarcity, assessing scarcity's sociological, political, and ethical aspects is impossible. In this case, scarcity is not a decision but a condition derived from the human nature of innumerable needs and wants in the face of limited resources and goods. According to Scoones et al. (2019), neither the absolute nor relative conceptualization of scarcity considers the political nature of scarcity. Therefore, it is impossible to address questions such as: how scarcity is perceived and created to satisfy interests (Mehta 2001); how scarcity narratives unfold in political contests for resources (Scoones, 2010); or how scarcity arises in conflict situations, such as wars. In this sense, economic theories that assume scarcity as a theoretical consequence lack an explanatory position on why scarcity arises (Daoud 2018).

6. Towards a new ontology of the scarcity

The core of a more holistic ontology of scarcity is proposed to include at least the following elements.

Firstly, there is the need to focus on differentiating between social needs and individual wants. The scope of this article is not to establish a clear and definitive definition of social needs and individual wants. However, a social need is preliminarily understood as a specific need that society considers that each person should have satisfied. Therefore, this definition of social need considers a social dimension because society defines what this concept is; a historical dimension because what society considers a social need can change over time; and a geographical dimension because it depends on what a society with a specific culture, placed in some locality, considers a social need. For example, a specific society might now consider – as a social need –access to water or achieving food security for each person in the community. In turn, it is believed that an individual's wants or desires of a person that is not essential for the person's survival and is merely subjective to the person who has the desire. Despite these preliminary definitions, the issue of what constitutes need *versus* want and how to distinguish them are subjects of considerable controversy (McGregor et al. 2009).

The ME assumes the consumer's sovereignty; that is, the only person who can judge what is considered a need or wants is the person himself and the revealed preferences, which means that the person declares the preferences throughout the mechanism of market prices. This assumption dilutes the debate on the differentiation between needs and wants because the market rather than the government provides the most appropriate tool to satisfy both (McGregor et al. 2009). However, a clear differentiation between social needs and individual wants could introduce scarcity's political, sociological, and ethical dimensions into economic analysis. This happens because if countless individual wants of one person produce an event of scarcity, then neither the society nor another person can judge the political and ethical dimension of that scarcity event. However, suppose a scarcity event is produced by a lack of satisfiers of a social need, then it is possible to introduce the role (political dimension) and responsibility (ethical dimension) of the government and other social and economic institutions as suppliers and distributors of satisfiers of the social needs of society. For example, it is possible to argue that the political, social, and ethical dimension of wanting a luxury car (individual want) differs from the need for water (social need). In this sense, future researchers could investigate the ontology of what could be considered a social need and individual want.

Secondly, a holistic scarcity ontology will consider scarcity, abundance, and sufficiency as one ontological entity and will be susceptible to empirical testing. Scarcity, abundance, and sufficiency derive from the quantitative relationship between the needs, wants, and goods and resources available to satisfy them. According to Daoud (2018, p. 211), the definition of scarcity is:

'a situation in which an agent controls insufficient direct satisfiers to satisfy his or her wants; or when the agent controls insufficient indirect satisfiers to exchange or exchange or produce satisfiers. A combination of these two situations also qualifies as a case of scarcity'.

However, as Daoud (2018) pointed out, this definition, like the Neoclassical School of Economics, does not differentiate between human needs and desires. The reason is that scarcity will arise regardless of whether the situation concerns essential or non-essential goods. According to Daoud (2018), this definition focuses on identifying a scarcity, abundance, and sufficiency event rather than causal connections. However, it is argued that the causal mechanism that explains an event of scarcity and its consequences differs if the scarcity is related to social needs or individual wants. How is it different? It is a subject for further research, but it is preliminarily suggested that when scarcity derives from insufficient satisfaction of social needs, it is directly related to scarcity's political and ethical dimensions. This led us to ask, what needs does society consider as social needs? How does society produce and distribute goods to satisfy the social needs of the entire population? Who has the responsibility to do it? How do planetary boundaries hinder the satisfaction of social needs? Etc.

In this approach, absolute scarcity plays an essential role because it could be evaluated as an ethical trade-off between the environment and the necessity to satisfy the social needs of the entire population. In turn, it is suggested that when scarcity derives from insufficient satisfaction of individual wants, this is related to individual consumption choices given a specific budget. In this approach, relative scarcity plays an essential role because it is possible to assume the universal scarcity postulate due to innumerable wants in the face of limited resources and goods. However, simultaneously, it is possible to take relative scarcity, abundance, and sufficiency due to the empirical satisfaction of some innumerable but limited wants.

Therefore, it is proposed to keep Daoud's (2018) definition of scarcity for individual wants but change it for social needs, as follows:

Definition 1: Scarcity is a situation in which society controls insufficient direct satisfiers to satisfy the social needs of each person in the community; or when the society holds insufficient indirect satisfiers to exchange or produce satisfiers. A combination of these two situations also qualifies as a case of scarcity.

Table 1 summarizes the ontological and epistemological characteristics of the scarcity concept in different economic thought schools.

Table 1 A comparison of the concept of scarcity between different schools of economic thought

	Classical School of Political Economy	**Marginalist School of Economics**	**Marshallian Synthesis**	**Towards a new concept of scarcity**
Unit of analysis	Society	Individual	Individuals and society as a linear sum of individual agents	Society considers a complex entity with emerging properties for social needs and individual for individual wants
Ontology	Materialistic	Idealistic	Idealistic for the side of demand and materialistic for the side of the supply	The socio cultural, historical, and political construction of social needs and individual wants
Origin of scarcity, abundance, or sufficiency	A relationship between one kind of resource/goods and one kind of needs/wants	A relationship between one kind of resource/goods and several competing needs/wants	A relationship between one kind of resource/goods and several competing needs/wants	Social needs are a relationship between resources/goods and one kind of social need. For individual wants a relationship between one type of resource/goods, and several competing individuals want
The character of needs/wants and resources/good relation	Needs/wants and resources/goods are changing over time and space	Both needs/wants and resources/goods are given	Needs/wants and resources/goods are changing over time and space	Needs/wants and resources/goods are changing over time and space
Main research problem	Social relations of production and distribution move societies from scarcity states to abundance states.	To find the optimal allocation of resources/goods related to countless needs/wants	Find optimal allocation of resources/goods related to countless needs/wants at the consumer level and maximize the production given a budget at the supply	Social relations of production, distribution, and consumption to moves societies from scarcity states to sufficiency states considering planetary boundaries, circular economy, and ecology

			level.	perspectives.
Kind of analysis	Causal	Rational (optimal) choice	Rational (optimal) choice	Causal
Disciplinary affinities	Politics and economics	Economics	Economics	Politics, economics, circular economy, sociology, psychology, biology, ecology, ethics, philosophy.
The human condition and the view of scarcity, abundance, and sufficiency	Scarcity is not naturalized (inevitable) and universal. Scarcity is an Empirical fact. Abundance may be reached in growth economies	Scarcity is naturalized (inevitable) and universal. Scarcity is a theoretical consequence. Abundance is unattainable.	Scarcity is not naturalized (inevitable) and universal. There is a co-determination between needs/wants and the activities to produce resources/goods to satisfy them. Scarcity is an empirical fact for the supply side but a theoretical consequence for the demand side. The abundance of specific resources/goods may be reached in growth economies, but this causes more needs/wants.	Scarcity is not naturalized (inevitable) and universal. Scarcity is socio cultural, historical, and political. Scarcity is an Empirical fact. Sufficiency may be reached in steady-state economies.

Source: Own elaboration.

7. Conclusions

This article analyzed scarcity's ontological and epistemological characteristics in the CSPE, MSE, and Marshallian synthesis. Furthermore, we have tried to explore a new ontological and epistemological way to understand scarcity. According to the introduction, four research questions have guided the article; the first two questions were: (a) what was the evolution of the concept of scarcity through the CSPE, the MSE, and the MSHE? Moreover, (b) what is the ontology of scarcity in the schools mentioned above?

About these two questions, the previous sections stated that scarcity differs in several ontological and epistemological characteristics in all these schools of economic thought. These differences are summarized in Table 1.

Throughout history, different thinkers have tried to explain economic phenomena, such as value and price, social and economic development, poverty, social production, and distribution of wealth, among others. In this sense, the concept of scarcity has played a central role in theories that have tried to explain these economic phenomena. However, different schools of economic thought have pointed out various concepts of scarcity, arriving at different explanations. A clear understanding of the ontological and epistemological characteristics of scarcity, given by different thinkers and schools of economic thought, helps to understand at least two critical points. On the one hand, what economic phenomenon did the thinker try to explain? All scientific theory attempts to explain a part of reality; economics is not the exception, but reality changes with time and space. Hence, it is common to think that theories in different times and contexts try to explain different economic phenomena.

On the other hand, a deep understanding of a theory's key concepts help clarify the logic and causal relations of the theory itself. In this sense, it is possible to conclude that in each school of economic thought presented in this article, scarcity helped explain different parts of the various theories. For example, for the CSPE, the scarcity concept has described the price markets and, for the MSE, the principle of marginal utility.

Focusing on the third question, namely, "(c) what are the consequences of accepting different ontologies in the concept of scarcity?" It is possible to state that depending on the ontology of scarcity, it is assumed that the object of study of the economy can focus more on the production and distribution of wealth or the optimal allocation of resources and goods. Therefore, scarcity's sociocultural, historical, and political dimensions should be addressed. The problem is that when scarcity is not considered a social product, it is the same as admitting that scarcity cannot be abolished through social, political, and economic changes. Consequently, the last research question proposed in this article becomes relevant "(d) what alternative concept of scarcity in economics is it possible to propose to capture a broader spectrum of economic phenomena than the concept of scarcity in the ME?" Answering this question is a matter of further research.

We can assert that the new scarcity concept should consider these sociocultural and historical conditions and political dimensions. This would once again re-embed in society the ethical responsibility to provide the resources and goods necessary for the subsistence of humanity.

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[1] Marshallian synthesis of economics is considered as the starting point of the Neoclassical School of Economics (Dimand 2000).

[2] Jevons defined utility as the abstract quality whereby an object serves human purposes and becomes entitled to rank as a commodity (Jevons 1888 [1871]: 38). He defined the degree of utility as the utility that the consumption of an additional unit of the same good generates for a person and, the final degree of utility as the utility that the last unit of that good consumed generates for a person (Jevons 1888 [1871]).

[3] Ricardo refers to the distribution of the society production between the three social classes, i.e., the landowner, the owner of the stock or capital and the labourers.

[4] The authors appreciate the reviewer´s helpful comments to tighten our manuscript and improve the study. In response to one reviewer´s comment, we wrote this endnote to clarify that we agreed with the argument of

considering the idea of social need (a specific need that society considers that each person should have satisfied) implies that society is something more than the sum of its individuals. This idea opens up myriad of questions regarding what exactly is “society” and whether it does have "needs" at all. In addition, it could pollute economics with ideology and, in fact, one of the goals of the neoclassical research program was to minimize such exposure, using an analytical system that has strong explanatory capabilities without going further than consumer preferences and sorting them into “needs” and “wants”.

The authors recognize that the debate about the concept of needs and wants is something controversial among different school of economic thought. Nevertheless, we consider that neoclassical research project is based on the methodological individualism which places the individual as the primary unit of analysis. It suggests that social phenomena and collective behavior can be understood and explained by examining the actions, motivations, and choices of individual actors. In fact, according to the methodological individualism society is the sum of its individuals. However, following authors, such as, Pierre Bourdieu, Charles Taylor, Anthony Giddens, and Margaret Archer, we consider methodological individualism fails to adequately consider the role of social structures, cultural contexts, and collective forces in shaping individual behavior. In this sense, we argue that it reduces social phenomena solely to the actions and choices of individuals oversimplifies the complexity of social interactions and neglects the influence of broader social factors. In this respect, key points that methodological individualism does not seem to consider are: (i) Structural constraints, ignoring the ways social structures, institutions and power dynamics shape and constraint individual choices, wants, needs, and desires. (ii) Social context and culture, ignoring its influence on individual behavior. (iii) Emerging properties of complex social phenomena, such as, social movements or market dynamics that arise from the interactions and interdependencies between individuals, but that cannot be solely attributed to individual motivations or choices. (iv) The bidirectional dimension of agency and structure, where individuals have agency and can shape their social reality, but at the same time they are also influenced and shaped by structural forces.

Despite the previous discussion, we agree with the reviewer that neoclassical economics has clear arguments to assume the methodological individualism and wants and needs are the same, but in the article our main aim was to clarify the characteristic of the concept of scarcity in the different schools of economic thought. As the reviewer points out, we agree that a deeper discussion is needed on this point, especially to propose a new ontology of the concept of scarcity. However, our intention with section 6 is not to propose a new definitive ontology of the concept of scarcity due to the extension that a project like this would take. Despite this, our intention in this section is to show that the concept of scarcity of neoclassical economics cannot afford to explain the social, political and ethical dimension of scarcity, if it is derived as a logical consequence of the axioms of the theory of consumption based on the idea that wants and needs are the same. That is why, we attempted to explore a distinction between individual wants and social needs to broaden the analysis of the concept of scarcity.