

EPISTEMOLOGICAL PROBLEMS OF DEVELOPMENT ECONOMICS

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Abstract: This article explores some of the epistemological problems that have been neglected in the history of mainstream development economics. The research is focused on how epistemology influences the conception of development and the role of the economist in development policy. The epistemological foundations of economics and its methodological and theoretical implications were analyzed first. Then, these points of view were connected to explain the rise of development economics as a purely technical field. The main development theories were contrasted with empirical evidence to reveal their disregard for reality. Furthermore, the Austrian theory of dynamic efficiency was presented to overcome the epistemological problems of development economics. The results helped in redefining the concept of development based on purposeful human action. Finally, some patterns of economic progress were identified to challenge the mainstream role of the economist in development policy.

Keywords: Epistemology, Positivism, Development, Dynamic Efficiency, Property rights, Capital-theory

JEL Classification: B41, B53, O11, O12

Resumen: Este artículo explora algunos de los problemas epistemológicos que se han descuidado en la historia de la economía del desarrollo convencional. La investigación se centra en cómo la epistemología influye en la concepción del desarrollo y el papel del economista en la política de desarrollo. Primero se analizaron los fundamentos epistemológicos de la economía y sus implicaciones metodológicas y teóricas. Luego, estos puntos de vista fueron

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conectados para explicar el surgimiento de la economía del desarrollo como un campo puramente técnico. Las principales teorías del desarrollo fueron contrastadas con evidencia empírica para revelar su desprecio por la realidad. Además, se presentó la teoría austriaca de la eficiencia dinámica para superar los problemas epistemológicos de la economía del desarrollo. Los resultados ayudaron a redefinir el concepto de desarrollo basado en la acción humana decidida. Finalmente, se identificaron algunos patrones de progreso económico para desafiar el papel convencional del economista en la política de desarrollo.

Palabras clave: Epistemología, Positivismo, Desarrollo, Eficiencia Dinámica, Derechos de propiedad, Teoría del capital

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“Positivism’s world view distorts the fundamental experience of mankind, for which the power to perceive, to think, and to act is an ultimate fact clearly distinguishable from all that happens without the interference of purposive human action. It is vain to talk about experience without reference to the factor that enables man to have experience”

— Ludwig von Mises (1978, 126)

I INTRODUCTION

Contemporary theories of development economics are founded on methodological positivism and epistemology that does not distinguish between natural and social sciences¹ and supports neoclassical-Keynesian economics. Positivism applies methods of natural science to the sphere of human action. As Professor Jesús Huerta

¹ Epistemology comes from the Greek words *episteme* (knowledge) and *logos* (reason). This philosophical discipline examines the reason behind human knowledge by emphasizing that “the course of progress of social knowledge ... is ineradicable, and that, therefore, even one’s own point of view may always be expected to be peculiar to one’s position” (Kaufman 1958, 186). Different epistemologies arise in methodological debates (e.g., rationalism-empiricism, subjectivism-objectivism, monism-dualism, determinism-indeterminism).

de Soto states, "This view presupposes given knowledge of the ends and means, and, thus, it reduces the economic problem to a technical problem of simple allocation, maximization or optimization" (2010, 83). If all the inputs, outputs, and equilibrium prices can be computed and the production functions can be defined, the profits for any economic activity can be predicted. Furthermore, if this is the case, the market process would be a trivial exercise in which the role of the economist would be that of a technician, and the problems of economic underdevelopment could be solved with social engineering.

These notions are well-known among scholars in the history of economic thought. Consider the opinion of Philip Mirowski:

"Physics metaphors have driven the evolution of neoclassical thought ... as they have been encouraging engineers to believe in their own capacities to successfully plan economic activity The neoclassicals opted to become scientific by ignoring what the physicists and the philosophers of science preached and to cut the Gordian knot by directly copying what the physicists did. There is no more pragmatic definition of science than this: imitate success" (1989, 356–57).

The adoption of the epistemology of the natural sciences in economics has more deep-seated problems that reveal some theoretical confusion in the economic development literature. First, human action, endowed with an innate creative and entrepreneurial capacity, is expunged from mainstream development theories (Harper 2003; Powell 2008). Although Austrian economists have studied the theory of entrepreneurship in detail, its epistemological foundation in the study of development economics is not adequately addressed.

Second, positivism has driven quantitative methods in economics and their fragmentation in autonomous subareas, such as macroeconomics and microeconomics. As a result, development economics only circumscribes a study at the macro level, while the microeconomic foundations of human action are excluded from the models (Mirowski 1984; Kriesler 2016). The historians of economic thought have analyzed the macro-micro dichotomy in its

historical course, but this research program does not explain its epistemological impacts on development economics.

Third, the Pareto allocative-efficiency criterion is the foundation of mainstream normative economics. However, most of the development theories have not explained the essence of economic progress. Although Leibenstein (1978) was one of the few who recognized a type of inefficiency absent from the Paretian standpoint, he failed to link this idea with entrepreneurship, as the epistemological issues were dismissed.

This article explored these and other epistemological problems that have been neglected in mainstream development literature. The focus of our research was on how epistemology influences the conception of development as well as the role of the economist in development policy. This analysis rested on the normative debate regarding who should design human action for driving economic development. Should an individual themselves decide their actions? Alternatively, should others, such as the government, decide their actions for them? It has been argued that these problems may be better understood by analyzing the theoretical approach of the Austrian school and its concept of dynamic efficiency. This framework was founded on the creative and coordinating potential of entrepreneurship as the driving force of economic development.

The rest of the article is structured as follows: Section II examines the epistemological foundations of mainstream economics and its methodological as well as theoretical implications. Section III connects these findings to explain the rise of development economics as a purely technical field by putting the principal theories in contrast with the most basic empirical evidence to demonstrate their disregard for reality. Section IV presents the core elements of the Austrian theory of dynamic efficiency as an alternative perspective to overcome the epistemological problems of development economics. This framework helps in redefining the concept of development in terms of purposeful actions. Section V improves this theoretical framework to identify patterns of sustainability in economic progress and, thus, challenge the conventional role of the economist in development policy. Finally, Section VI closes with some avenues for further research and consequences for practice.

II EPISTEMOLOGICAL ROOTS

Neoclassical economists have failed to recognize the fundamental nature of entrepreneurship and its relationship with economic development. As Kirzner writes, "The circumstance that the 'chosen' course of action is seen as already inexorably implied in the given configuration of preferences and constraints, of ends and means, makes the choice 'mechanical' or 'automatic' —and thus not a true choice at all" (1992, 123). This issue is generally associated with Robbins, who presented the definition of economics that is most accepted in the textbooks. For Robbins, "economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses" (1935, 16). Market outcomes seem to be mechanically determined by mathematical research, turning economics into a kind of social physics. Both the creative and subjective nature of human action have been expunged from neoclassical models. This section explains how the purely static sense of mainstream economics has an epistemological root associated with the concept of efficiency.

The Oxford Latin dictionary states that the word "efficiency" comes from the Latin word *efficientia*, which means being "capable of acting" or "active to produce or give rise to something" (2012, 648). Its lexicon includes the prefixes *ex-* (develop), *facere* (do), *-nt-* (agent, who does the action), and the suffix *-ia* (quality). Accordingly, the term efficiency refers to the innate creative ability of individuals to act in order to improve their situation in subjective terms.

Attempts to understand the meaning of this words in the context of economics suggest going back to *Oikonomikos* (380 BC) by Xenophon, who was the first to use the concept of economics (*oikonomia*), mainly for the purpose of describing the art or personal ability to manage property. His assumption was that "everything a man possesses is part of his estate" (1997, 365). The economic problem, as Xenophon saw it, was about how to manage scarce resources more efficiently. He explained that there are two ways to go about it. On the one hand, there are the values that make the best possible use of the *available* or *given* goods so as to

avoid waste, which we call static efficiency. Xenophon summarized the static line in the following manner: “if a man wants to serve in the cavalry, farming is his most efficient partner in furnishing keep for his horse; if on foot, it makes his body brisk” (1997, 403). Alternatively, he presented his dynamic perspective of efficiency, which implies increasing property through human *creativity* and the *perception* of profit opportunities. For Xenophon, dynamic efficiency:

“is the name of a branch of knowledge, and this knowledge appeared to be that by which men can increase estates, and an estate appeared to be identical with the total of one’s property, and we said that property is that which is useful for supplying a livelihood, and useful tiling’s turned out to be all those things that one knows how to use” (1997, 409).

The most significant feature of dynamic efficiency would be the coordinating characteristic of human action. Xenophon noted that it promotes specialization in society “to leave to the mind the greatest amount of spare time for attending to the interests of one’s friends and the city” (1923, 411). He described prosperity in a purely subjective way as the excess of goods over needs or whatever is useful to life, and usefulness as everything that anyone knows how to use (Trever 1916). From this perspective, progress is based on human creativity to act efficiently (in static and dynamic terms).

The dynamic and static dimension of efficiency survived well into the Middle Ages (Lowry 1987). For example, Augustine of Hippo recognized that the management of given resources should be complemented with the technological innovations brought about by human creativity.² Following these ideas, Thomas

² Augustine had a favorable opinion on entrepreneurship since he considered it as a process of individual personality development. He argues that this potential “flowers into that wisdom and virtue which enable the soul to battle with the arms of prudence, fortitude, temperance, and justice against error ..., and to conquer them with a purpose that is no other than that of reaching the supreme and immutable Good Just think of the progress and perfection which human skill has reached in the astonishing achievements of cloth-making, architecture, agriculture, and navigation In saying this, of course, I am thinking only of the nature of the human mind as the glory of this mortal life, not of faith” (1954: 484). Indeed, Augustin praised the individual’s

Aquinas identified the relationship between human action and private property in order to encourage dynamic efficiency through the market process, in which “their dealings with one another, as regards such things, depend on their own will, for instance in buying, selling, giving, and so forth” (1955, 493). Property can increase prosperity since its protection leads significantly to the preservation of society.

Bernardino de Siena summarized the allusions of efficiency made at this time, suggesting that, from a static perspective, a merchant’s success is dependent on their acting diligently in the management of their given resources. A dynamic perspective, however, entails “being well informed about prices, costs, and qualities of the product, and being ‘subtle’ in assessing risks and profit opportunities... on successful investments to keep him [the merchant] in business and compensate him for all his hardships” (Rothbard 1995, 82).

Between the 14th and 17th centuries, the political, economic, and cultural movement of the Renaissance emerged and spread throughout Europe. In the field of philosophy, the natural sciences were exalted as the model to be followed for all other sciences, in which the scholastic framework of the Aristotelian natural philosophy gradually became absorbed into the Neoplatonic synthesis (Schmitt 1973). Plato offered methodological monism to study all the sciences, since, for him, “one science covers all these several spheres, whether it is called royal science, political science, or science of household management” (Lowry 1987, 12). In *The Republic*, Plato states his thinking regarding a utopian government led by philosophers and sages who act as guardians and benefactors of people’s happiness. In this system, politicians must act as the managers of the new supreme state because they have real knowledge (*episteme*) of what is the form of good for society, and which are the purposes of the inhabitants of a state or nation. Plato exalted a central planning regime, because he thought that the profitable assets of a society are given to the rulers, which reduced efficiency to its static features.

ability to perceive social maladjustments and resolve them through creative human action.

In their works, Francis Bacon and René Descartes presented the scientific method based on empirical contrasts. As Rothbard emphasized, with Bacon “stemmed the English ‘empiricist’ tradition, steeped mindlessly in incoherent data, and from Descartes the purely deductive and sometimes mathematical tradition of continental rationalism” (1995, 130). Accordingly, sensory experiences are useful for obtaining historical data, establishing mathematical specifications, and making quantitative predictions. From this method, Isaac Newton and Gottfried Leibniz developed both differential and integral calculus to spread the physical principles of energy conservation. They combined movement flow, functional equivalence, and time exclusion into their models.

The rise of mechanical physics began in the 19th century (see Mirowski 1989). These studies were initiated by Carnot, Clausius, and Kelvin, among others, who identified four laws of thermodynamics. The zero law states that if two systems A and B (with different temperatures) are in contact and isolation, they will reach thermal *equilibrium* by mutual attraction, *ceteris paribus*. The first law describes that constant energy is *neither created nor destroyed*, only transformed. The second law points out that a machine is efficient if it *avoids wasting* energy, and the process is reversible. If a machine has dissipation, it will not be efficient or reversible. The third law states that it is possible to *predict the evolution of a given system under equilibrium states quantitatively*. These laws attempt to maximize the efficiency of movement (static) with minimal energy consumption or waste. From these findings, Pierre-Simon Laplace concluded that physics may reduce all the phenomena to a single mathematical formula, which may describe the entire world by quantifying assessments and eliminating uncertainty. As stated by Capek, the Laplacian dream implied the exaltation of social engineering as the usurpation of God’s place in the universe:

“An intellect with at a given instant knew all the forces acting in nature, and the position of all things of which the world consists—supposing the said intellect were vast enough to subject these data to analysis—would embrace in the same formula the motions of

the greatest bodies in the universe and those of the slightest atoms; nothing would be uncertain for it, and the future, like the past, would be present to its eyes" (1961, 122).

Although mechanical physicists such as Euler, Lagrange, and Hamilton tried, unsuccessfully, to model Laplace's principles, Auguste Comte recommended the term "positivism" to support methodological monism. He considered the quantitative-experimental knowledge of the natural sciences as the only authentic knowledge, declaring the logical-deductive analysis for the social sciences useless. Comte wrote, "To it [physics], we owe that decisive impulse given to the inductive spirit which every step in positive philosophy has developed and strengthened...[in physics] we have the exact degree of difficulty required for the satisfactory presentation of Inductive Logic" (1968, 418). He rejects knowledge of the "first causes or final causes... of the essence of things, and that all such questions must be banned from science" (Heilbron 1990, 154).

These epistemological issues gradually influenced the development of economics. Physiocrats introduced the Cartesian concept of conservation, motion, and static efficiency, which were fully included in the Quesnay's *Tableau Economique*. Individual utility replaced physical energy in a given context of people's means and ends, and the creative and coordinating potential of human action was displaced by zero-intelligence agents, which gave the impression to economists that market processes run by themselves. From Adam Smith, classical economists emulated the *Tableau* in their descriptions of the production structure. The entrepreneurial function in the design, management, leadership, and coordination of social imbalances practically has no place at all in the analytical schemes of classical economists (Schumpeter 1965). Yet, a central point in the classical literature was the impact that Comte's positivist thought had on the last classical economists such as John Stuart Mill, John Elliot Cairnes, and the leading methodologists of neoclassical economics, John Neville Keynes. Positivism influenced, although negatively, the economic understanding (Ekelund and Olsen 1973). Indeed, Mill maintained that Comte's positivism should be included in the economic analysis:

“The Empirical Laws of Society are of two kinds ... Comte gives it the title of Social Statics or Social Dynamics, conformably to the distinction in mechanics between the conditions of equilibrium and those of movement The first branch of the science ascertains the conditions of stability in the social union; the second, the laws of progress. Social Dynamics is the theory of society considered in a state of progressive movement, while Social Statics is the theory of the consensus already spoken of as existing among the different parts of the social organism.” (1965, 106).

The strengthening of Comte’s positivism in neoclassical economics has two disruptive phases, which denote the beginning of the imitation of the natural sciences and with the intensive use of quantitative-experimental methods. The first was in the 1870s, when methodological positivism became the scientific guarantee for economists (the only exception was the Austrian School, which will be analyzed in Section IV). The pioneers of this change included Stanley Jevons, Leon Walras, Francis Edgeworth, Irving Fisher, Vilfredo Pareto, Alfred Marshall, and many others, who “copied the physical mathematics literally term for term and dubbed the result mathematical economics” (Mirowski 1991, 147). These economists used the law of thermodynamics to rebuild economic science as a social mechanic.

The pivotal goal of neoclassical economics was to make quantitative predictions about market outcomes through mathematics, statistics, and, later, econometrics. The flesh-and-blood entrepreneur was substituted by fictions such as the *homo economicus*, analyzed in equilibrium states without raising any suspicion about its epistemological validity. In these models, the outcomes were already implicit in the present (given) and conditioned by the formula (static efficiency). If equilibrium patterns predetermined market outcomes, economists wrongly believed that they could predict the future quantitatively. If subjective human knowledge was assumed to be given to a single mind, economists would be justified in managing the market activities. Hence, the role of the economist became a kind of oracle or platonic guardian who could plan the economy like a social engineer.

The second phase emerged in the 1920s with the Welfare Economics, which emerged in parallel with the heyday of socialism/

marxism as a large-scale movement (Medema 2007). This research program started with Henry Sidgwick, who followed Mill in his acceptance of the role of government in the allocation of scarce resources in the society. Sidgwick thought that both individual valuations and utilities are given, if prosperity only depends on how goods are distributed. From this perspective, Pigou understood welfare in two propositions: "first, that welfare includes states of consciousness only, and not material things or conditions; secondly, that welfare can be brought under the category of greater and less" (1912, 1). It involves value judgments to justify interpersonal comparisons of quantitative utilities between different individuals. In this case, static efficiency may be maximized when the marginal utilities among all the individuals are equal. This approach, however, faced the impossibility of calculating what the optimal point of equilibrium is.

Vilfredo Pareto broke into this debate by proposing that social welfare is optimal when it is impossible to make anyone better off without making someone else worse off. In a static world of given data, as Pareto stated, "this whole theory... rests on nothing more than facts of experience, that is, in the determination of quantities of goods that constitute a combination where individuals are indifferent. The theory of economic science thus acquires the rigor of rational mechanics" (1971, 113). In the 1930s, Hicks, Lerner, Lange, and others worked to determine the requirements that mathematically satisfy Pareto's efficiency. Bergson and Samuelson, then, modeled a social welfare function to weigh individual utilities (Little 2002). These models sought to justify government intervention in economic activity to optimally adjust market failures and manage individuals' welfare. These economists inferred that if human actions do not adjust to their equilibrium patterns, the market will be inefficient. Hence, the relevance of these insights was evident in the work of O'Driscoll and Hoskins (2003), who revealed that the neoclassical welfare models often disregard the relationship between property rights and the price system. If human action played any role and the information on human needs was given, then mainstream economists could calculate market prices to efficiently allocate resources (see Lavoie 1985). Then, neoclassical welfare economists cheerfully concluded that

they found no discrepancy between a capitalist and a socialist economy.

As Arrow (1951) wrote in response to welfare theorists, if all the people have their order of elections, it is not possible to design a social welfare function. It is illusory to believe that individual preferences can be added to a global preference unless there is a static world with a dictator to control people's behavior. Sen (1977) added that traditional models of welfare economics are restrictive even with the richest welfare information, but when the information is poor, their explanatory strength is particularly limited. However, these criticisms of welfare economics are spurious, as according to these, the solution is to replace certain mathematical specifications with more sophisticated ones. This attitude was strengthened by Robbins' definition of economics as a science focused on allocative efficiency. As Backhouse and Medema (2009) argued, the economist's profile became more technical to maximize the allocation of the given resources and avoid waste.

III DISREGARD OF REALITY

In the 1930s and 1940s, methodological monism became fashionable, and the demand for economists increased across academia, business, government, and international organizations. The role of the economist as a scholar of the market's spontaneous orders changed into a technician to make recommendations on how the government could intervene efficiently (Coyne and Boettke 2006). These vicissitudes in the profession are closely associated with the spread of Keynesian thought.

John Maynard Keynes was one of the most influential economists of the 20th century. Influenced by Comte's positivism through theorists such as J. N. Keynes, Marshall, Pigou, and Pareto, he provided support for the government's leading role in the management of the economic activity (Rueff 1947). His chief purpose was to convince both economists and politicians about the instability of the capitalist system so as to reach a full-employment equilibrium. Keynes's claim that his *General Theory* was superior to

a particular case theory can be seen as analogous to the relationship between Albert Einstein's general theory of relativity and Newtonian physics (Toye 2018).

Keynes (1923, 65) demonstrated that his analysis was static and short-term, since "in the long run, we are all dead." The long term is "a task too useless if in tempestuous seasons they [economists] can only tell us that when the storm is long past the ocean is flat again." Hence, mathematical techniques and statistical data would be required to control the aggregate data to carry out efficient macroeconomic planning. As Keynes claimed, *The General Theory* deals "with aggregate incomes, aggregate profits, aggregate output, aggregate employment, aggregate investment, aggregate saving rather than with the incomes, profits, output, employment, investment and saving of particular industries, firms or individuals" (2012, xxii). Moreover, he stated, "We ... take the subjective factors as given; we shall assume that the propensity to consume depends only on changes in the objective factors" (2012, 91).

The Keynesian emphasis on aggregate magnitudes and mathematical formalism generated the dichotomy between macroeconomics and microeconomics.³ In his macroeconomic theory, the process of multiplier consumption is the primary determinant of the levels of investment, employment, and economic wealth. These tools allowed economists to execute a *Big Push* of *effective demand* to manage the employment level. Keynes' anti-savings and pro-consumption point of view implied that, in times of unemployment, an increase in savings would make the economic position go "worse and worse in a *vicious circle of poverty*" (1963, 152). Thus, the

³ For Keynes, the micro-macro dichotomy should replace the neoclassical dichotomy between monetary and real analysis: "The division of economics between the theory of value and distribution on the one hand and the theory of money, on the other hand, is, I think, a false division. The right dichotomy is, I suggest, between the theory of the individual industry or firm and the rewards and the distribution between different uses of a given quantity of resources on the one hand, and the theory of output and employment as a whole on the other hand ... as soon as we pass to the problem of what determines output and employment as a whole, we require the complete theory of monetary economy" (2012, 293). Macroeconomic factors themselves describe aggregate variables, while microeconomic factors describe their composition.

economic policy became more technical to excuse government interventionism in the economy.⁴

The Pareto static efficiency criteria, Robbins' allocative definition, and the Keynesian macroeconomic planning provided the methodological basis for the rise of development economics (Alacevich 2018).⁵ As Hirschman put it, development is "the process of change of one type of economy into some other more advanced type... [That is] how the underdevelopment equilibrium can be broken into at any point" (1958, 51). Yet, the birth of this field is generally attributed to Rosenstein-Rodan (1943), who introduced a theory of underdevelopment for southeast Europe. This work presented the mantras of mainstream development economics. First, he emphasized the impact of overpopulation on low productivity in poor countries. Second, he discussed the institutional and cultural elements of poor countries that make industrialization difficult. Third, he argued that capital accumulation and industrialization are essential to overcome poverty. Fourth, he proposed that state planning is crucial to solve problems of social coordination and stimulate economic progress. If the effective demand is insufficient, investment opportunities are paralyzed, and poverty is self-perpetuated. This

⁴ As Keynes himself stated, his theory "is much more easily adapted to the conditions of a totalitarian state, that is the theory of the production and distribution of a given output produced under conditions of free competition and a large measure of *laissez-faire*" (2012, xix).

⁵ There are mainly five events that led to the emergence of development economics. First, the apparent success of Keynesian policies in developed countries during the 1940s led politicians and economists in underdeveloped countries to replicate them. Second, the experience of US aid plans to rebuild Europe (Marshall Plan) and Japan (MacArthur Plan) showed the political need to do the same with emerging countries. Third, the statistical works of Simon Kuznets, Colin Clark, and Hollis Chenery revealed, for the first time, the substantial income differences between rich and poor societies. Fourth, the study gap between growth and economic development has tended to disappear due to the Harrod-Domar and Solow models, which strongly influenced mainstream economists. These models indicate that investment and forced savings are essential to reducing unemployment in emerging countries. The result was what became known as the investment gap theory, in which capital accumulation was critical because growth was proportional to the investment level. Finally, the United Nations (UN), the International Monetary Fund (IMF), the World Bank (WB) appeared to examine the condition of developing countries. For more details on this, see Arndt (1987).

gives rise to a vicious circle of poverty, which implies that poverty is an irremissible obstacle.

Bauer (2000, 7) explained that the vicious circle of poverty has been the pivotal statement in mainstream development literature from its beginning and has “influenced policy considerably.” Furthermore, “it was the major element in the advocacy of massive state economic control.” Bauer suggested that most models of economic growth consider the following as their fundamental variables: (1) the growth of income is a function of the rate of capital accumulation, i.e., investment, (2) investment depends on saving, but saving is a function of income, (3) the growth of income depends on capital, and the latter, in turn, depends on income. These models expose a static situation where, *ceteris paribus*, low income represses the accumulation of capital necessary for increasing income.⁶ Moreover, Easterly argued that a vicious circle of poverty is the meta-scientific framework of the United Nations agenda, which states that “the least developed countries are caught in a Poverty Trap, from which they need a Big Push” (2006, 292). This is how an epistemological error, represented by the positivist criterion of static allocative efficiency, support mainstream development economics (Thirlwall 2007).

Consider, for instance, Sachs, McArthur, Schmidt-Traub, and Kruk (2004, 123), members of the UN Millennium Project, who assumed that the critical problem for underdevelopment countries is the vicious circle of poverty.⁷ They presented a standard growth model in which q is the output per capita produced by an $Af(k)$ production function. Here, A is the total factor productivity, k is the capital-labor relation, s is the national saving rate, d is the depreciation

⁶ On the demand side, with a reduction in per capita income, the propensity to save is also small, which leads to insufficient capital, low productivity, and again, falling per capita income. On the supply side, if the purchasing power is reduced, production will be scarce. The drop-in productivity and per capita income will finally complete the poverty trap. Private investment cannot help because of the essential elements of a more impoverished country, which blocks investment opportunities. For other formulations on the poverty trap, see Samuelson (1948), Nurkse (1953), Nelson (1956), Baran (1957), and Myrdal (1956, 1968).

⁷ In the 21st century, the most important programs of the United Nations are the Millennium Development Goals (2000–2015) and the Sustainable Development Goals (2015–2030). For more on this, see UN Millennium Project (2005); Sachs (2012).

of capital, and n is the population growth rate. dk/dt denotes the rate of capital accumulation that is provided by:

$$dk/dt = sAf(k) - (n + d)k$$

This equation shows that capital deepening depends on the change in the capital-labor relationship. Also, $(n + d)k$ is the expansion of capital and is equal to the amount of per capita savings required to maintain the capital-labor ratio constant with population growth and depreciation. If k is deficient, the vicious circle of poverty can arise in three ways. First, the marginal productivity of capital tends to be very low (rather than almost infinite, as the standard theory assumes), because a minimum capital threshold is needed before modern production processes can start. Second, the savings rate can be very low or even negative, because impoverished households do not save, but poor people must use all (or more than all) of their current income in the struggle to stay alive. Third, another factor that can force an economy into a poverty trap is the growth of the population at low levels of k . Accordingly, if the economist has the data to manage poverty, development problems can be solved more efficiently through top-down development planning.

TABLE 1: POVERTY HEADCOUNT RATIO
AT \$3.20 A DAY (2011 PPP) (in percent of population)

| <i>Subregions</i> | <i>1990</i> | | <i>2015</i> | |
|----------------------------|-------------|-------------------|-------------|-------------------|
| | <i>%</i> | <i>Population</i> | <i>%</i> | <i>Population</i> |
| East Asia & Pacific | 85.3 | 1.821.481.246 | 12.5 | 2.283.108.073 |
| Latin America & Caribbean | 28.3 | 445.044.474 | 10.8 | 631.062.657 |
| Middle East & North Africa | 26.8 | 255.989.130 | 16.3 | 428.974.903 |
| South Asia | 81,7 | 1.133.089.464 | 53,9 | 1.744.199.94* |
| Sub-Saharan Africa | 74.9 | 512.177.101 | 66.3 | 1.005.850.049 |
| World | 55.1 | 5.288.103.214 | 26.3 | 7.357.559.450 |

Note: Tabulations from the World Bank database.

* For South Asia, we used the 2013 poverty data, which are the latest available to date.

Nevertheless, the poverty trap hypothesis is refuted by the most basic empirical evidence: the continuous reduction of poverty worldwide (Table 1). Between 1990 and 2015, the world population increased from 5.3 billion to 7.4 billion, while the poverty rate of \$3.20 per day fell from 55.1% to 26.3%, respectively. Although the population increased 1.4 times in that period, close to 1 billion people were out of a state of poverty. If the model of vicious circle were correct, countless people, families, groups, societies, and countries, both in the West and in the Third World, could not have risen from poverty. Indeed, if it were valid, humanity would never have left the caverns.

The very existence of developed countries should be enough to demonstrate that the theory is inconsistent. All the rich countries were poor with low levels of income and capital. Consider the cases of North America, Western Europe, Japan, Australia, and New Zealand, as well as more recent examples such as Singapore, Taiwan, Hong Kong, Ireland, Estonia, Chile, among many others. These countries fulfilled at least one of the requirements of the theory: lack of natural resources, high demographic pressure, and a very precarious internal market.

TABLE 2: THE ECONOMIC WORLD IN 1990/2015
(Current US\$, billions of dollars)

| <i>Country or economic group</i> | 1990 | | | 2015 | | |
|--------------------------------------|------------|------------------------|----------------------------------|------------|--------------------------|----------------------------------|
| | <i>GDP</i> | <i>World GDP %</i> | <i>Population (millions)</i> | <i>GDP</i> | <i>World GDP (%)</i> | <i>Population (millions)</i> |
| World | 22.6 | 100 | 5288 | 75 | 100 | 7357 |
| Australia | 0.3 | 2 | 17 | 1.4 | 2 | 23 |
| Canada | 0.6 | 3 | 27 | 1.6 | 2 | 35 |
| European Union | 7.6 | 34 | 478 | 16.4 | 22 | 509 |
| Japan | 3.2 | 14 | 123 | 4.4 | 6 | 127 |
| New Zealand | 0.1 | 0 | 3 | 0.2 | 0 | 5 |
| United States | 6 | 27 | 250 | 18.1 | 24 | 321 |
| Total (First World) | 17.8 | 79 | 898 | 42 | 56 | 1022 |

| <i>Country or economic group</i> | 1990 | | | 2015 | | |
|----------------------------------|------------|--------------------|------------------------------|------------|----------------------|------------------------------|
| | <i>GDP</i> | <i>World GDP %</i> | <i>Population (millions)</i> | <i>GDP</i> | <i>World GDP (%)</i> | <i>Population (millions)</i> |
| China | 0.4 | 2 | 1136 | 11.1 | 15 | 1371 |
| India | 0.3 | 1 | 870 | 2.1 | 3 | 1309 |
| Tota, (China/India) | 0,7 | 3 | 2006 | 13.2 | 18 | 2680 |
| Rest of the world | 4,1 | 18 | 2384 | 19.8 | 26 | 3655 |

Note: Tabulations from the World Bank database.

Notwithstanding these observations, the concept of a vicious circle is still supported by institutions such as the IMF, World Bank, and the UN MDGs, which declare that the divergences between income levels and living standards will be rising (Sachs 2005). This is the hypothesis of a widening gap, which predicts an intensification of global inequality. However, if there were a growing gap between the rich and developing countries, should not this have been translated in the statistics? Table 2 describes some critical evidence. In 1990, 898 million people generated 79% of the world's production, while 4,390 million produced only 21% of it, indicating that those 898 million people produced four times more than those 4,390 million people. This data demonstrates that 898 million people in the First World produce almost 20 times more than 1 million people in the rest of the world. The production ratio between the industrialized countries and the others is 20 to 1. Instead, in 2015, we could see a significant reduction in the gap. While 1,022 million people generated 56% of the world's production, 6,335 million produced 44% of it. Although the First World provides 1.3 times more production than the rest of the world, which implies that the production ratio between the most developed and developing countries is 8 to 1, the data reveals a continuous decrease in the gap between the different economic areas.

The disregard for the reality of the poverty trap and widening gap hypotheses are evident. Sustained economic growth in many countries has freed hundreds of millions of people from poverty. Material well-being has increased as mortality rates have decreased,

and people live longer and more prosperous lives (Deaton 2013). These facts reveal better levels of poverty, mortality, education, employment, and international trade in all the poor countries with different levels (see development data at the World Bank 2019). As a result, Bauer revealed that much of the development literature was “irrelevant or confusing travesties of reality: instead of illuminating the scene, they confuse the issues” (1976, 288).

The demographic explosion of the last decades is a blessing since it reflects a reduction in mortality levels, which means an improvement in people’s well-being. Some people or societies emerged before poverty than others, while the personal, cultural, and institutional factors of the former serve as patterns of action for the latter. Both capital and infrastructure are the results of a successful economic performance, not its prior condition. In a nutshell, positivism hinders the recognition of the essence of economic phenomena, such as wealth or poverty, because it neglects the dynamic real life of human action.

IV DEVELOPMENT RECONSIDERED

The Austrian epistemological framework recognizes entrepreneurship as the driving force behind economic development. It describes the market as a dynamic process founded on purposeful human actions.⁸ Indeed, Austrians hold a methodological dualism in contrast to the monism of mainstream economics, since the method used to address problems at the scientific level varies whether they are natural sciences or social sciences (Hayek 1952). Natural sciences study simple phenomena (inert or purely instinctive elements), while social sciences analyze complex phenomena (ideas driven by

⁸ The market is not a thing or a place, but a dynamic process of human interactions in which its dispositions are determined by entrepreneurship. “There is nothing inhuman or mystical with regard to the market. The market process is entirely a resultant of human actions. Every market phenomenon can be traced back to definite choices of the members of the market society” (Mises 1966, 259). In an equilibrium market, there can be no such thing as purposeful human action (see Hayek 1937).

purposeful human action). Accordingly, Austrians recommend methodological individualism because it provides the scientist with the epistemological foundations to recognize the collective entities in terms of the purposes and plans of individuals.

Austrians indicates that, in contrast to the mainstream epistemology, “the solution of the most important problems of the theoretical social sciences in general and of theoretical economics ... is, thus, closely connected with the question of theoretically understanding the *origin* and *change* of ‘organically’ created social structures” (Menger 1883, 147). Economic logic, as Mises wrote, is an evident and indispensable truth for all human minds, which focuses on “the cognition of *action*, that is, the cognition of the fact that there is such a thing as consciously aiming at ends” (1978, 6). Action is all deliberate behavior in which the will is mobilized through ideas regarding the most appropriate means to achieve the most valued purposes. Human beings act because they are not omniscient, omnipotent, or omnipresent; therefore, they lack the power to make circumstances wholly satisfactory.

Praxeology is the method of the Austrian economics, which positions human action at the heart of its theoretical constructs (see Mises 1966; Rothbard 1951, 1976; Selgin 1988). The “pure” theory makes statements about the real world through logical deductions derived from the axiom that human beings act. It is a chain of cause and effect that states the abstract truths which apply to all the actions. Lachmann (1973a, 204) argued that Austrians assign two tasks to economics. The first one is “to make the world around us intelligible in terms of human action and pursuit of plans,” while the second is “to trace the unintended consequences of such an action.” Hayek (1942, 288) added that economic problems arise only “in so far as the conscious action of many men produces undesigned results, in so far as regularities are observed which are not the result of anybody’s design” and “[an] order arises as a result of individual action but without being designed by any individual that a problem is raised, which demands a theoretical explanation.” The Austrian method supports a radical subjectivism in economic analysis that is value-free.⁹

⁹ Here, the ends are not disputed, but the spontaneous courses of action and their consequences in economic activity are examined. Yet, Rizzo wrote that Austrian

The purposefulness of human action means that people direct their behavior toward the achievement of their subjective *ends*. This fact implies that an actor assigns *value* to their ends. As Huerta de Soto wrote, value is the “subjective and more or less psychically intense appreciation that the actor assigns to his ends” (2010, 16). After choosing the most valued ends, the actor chooses specific *means* because they subjectively assume, they will allow them to achieve their end. The means are chosen according to their *utility*, which means the subjective measuring rod of the value of goods (Streissler 1988).

Scarce resources are means (consumer or capital goods), while superabundant resources are general conditions of human welfare (free goods).¹⁰ Scarcity is what drives the human intellect to overcome this condition, so the set of scarce goods is not given. Since the ends can only be achieved in the immediate or distant future, *time* is scarce in means. Huerta de Soto (2010, 17) argued that, in economics, time is described “not in the deterministic, Newtonian, physical or analog sense, but in its subjective sense; that is, the time that the actor perceives and subjectively experienced in the context of each action.” Time is a subjective judgment of the individual who is acting and culminating stages to reach their ends. The subjective identification of ends and means are incorporated into an *individual action plan*, which is only carried out as a result of an *act of will*. If the elements of human thinking are *ex nihilo*, quantitative predictions are impossible due to the *ineradicable uncertainty* (or the ignorance about the creative potential of human beings).

economics “has been called ideology, or even worse, an economic apology for libertarianism.” If the consequences of such accusations were not serious, it would be easy to dismiss the whole matter as absurd because it really does come out of a negligent misunderstanding of the Austrian political economy” (1992, 251).

¹⁰ There are two kinds of economic means. On the one hand, consumer goods (of the first order) are destined to satisfy human needs directly. On the other hand, the capital goods or factors of production (of a higher order) are employed to indirectly satisfy human needs, through the intervention of other goods and after a temporal process. The productive process is constituted by a series of stages and culminates in a consumer good. The goods are of a higher order than the farther they are from the consumer good. The goods acquire value because the final goods are valued. This is through the concept of utility (see Garrison 1990).

All the actions involve *costs*, which is the subjective value that the actor assigns to the waived end. If the actor thinks that the value of their end is higher than their alternative ends (costs), then they have made a *profit*. In the opposite case, which is also called *pure error* (the profit and loss system guide human actions toward ends that are subjectively more valued), the actor incurs a loss. Moreover, the profit indicates to the actor that their choice of ends and means has been correct (incentive to act), while the loss indicates that their choice has been a waste of resources (incentives to stop the action).

Purposeful human decisions make it clear that equilibrium models ignore a more significant dimension of microeconomic analysis. Human action is inherently creative, which corresponds to the economic notion of entrepreneurship.¹¹ As Mises said, “in any real and living economy, every actor is always an entrepreneur” (1966, 253). For Kirzner, this feature reveals that, in addition to the exploitation of the given resources by an external observer (static efficiency), entrepreneurship implies that creativity drives the human intellect toward the discovery of unperceived opportunities and acting in order to obtain a profit (dynamic efficiency):

“The recognition that knowledge by the outside observer of the data surrounding a decision-making situation is not sufficient to yield a prediction of the decision that will be made. The observer’s calculation of the optimum choice ... may be profoundly irrelevant ... The essence of the entrepreneurial decision consists of grasping knowledge that might otherwise remain unexploited.” (1979, 109)

Entrepreneurship changes the entire knowledge map in a surprising manner, often without being deliberately searched. It is the

¹¹ Entrepreneurship arises etymologically from the Latin verb in *prehendo-endi-ensum*, which means “to discover, to see, to perceive, to realize, to attain” (Huerta de Soto 2010, 15). The Royal Spanish Academy (2019) defines an enterprise as an “action or task that involves difficulty and whose execution requires decision and effort.” It is also the “attempt or design to do something,” which suggests an action. Furthermore, an entrepreneur is one who “undertakes with resolution actions or innovative companies,” and the faculty “owner of the person.”

eureka moment in terms of the subjective interpretation acquired through daily experiences and expectations (Kirzner 1997, 2009, 2017). Furthermore, entrepreneurship implies alertness, i.e., the speculative capacity and the vision of creating something in the future that can be divided into two types (Yu 2001). First, ordinary creativity is the process of doing things better through a backward interpretation of existing situations by routine or imitation (Leibenstein 1966; Baumol 1968). Second, extraordinary creativity is a forward elucidation of events, exploring new profit opportunities by disruptive innovations (Schumpeter 1942). These notions are imitative/adaptive or innovative/pioneering roles of entrepreneurship, respectively.

Entrepreneurial knowledge is crucial to recognize the dynamic processes of real life. This type of knowledge is subjective, practical, and not scientific, since an individual acquires it through their actions (Oakshott 1991). Moreover, it is scattered and dispersed in all human minds, which drives the division of labor (or division of knowledge). Individuals generate bits of information in their minds about different unrepeatable historical circumstances (Hayek 1945). Additionally, it is also tacit and non-articulable, in which the actor assimilates and develops practical habits of behavior, often without knowing the scientific root of each aspect of their action (Polanyi 1959). The impossibility to articulate practical knowledge is statically manifested, in the sense that it is subjective and tacit but also dynamic because it is something to be done the future.

The theory of dynamic efficiency explains how entrepreneurship tends to perceive and overcome the discoordination of individual plans (Huerta de Soto 2009). First, entrepreneurship is inherently creative. When an actor perceives a latent demand, a profit opportunity arises, *creating* new knowledge in their mind. For example, A has an end X and a resource R of little use, while B has an end Y and needs the means R to reach it. If C perceives this plan discoordination, a profit opportunity appears to be adjusted through entrepreneurship. If this is the case, C has an incentive to contact A and B, buy the resource from A at a low price, and then sell it to B at a higher price.

Second, entrepreneurship transmits the knowledge created in straight waves of information through the market process. The

action of C modifies the behavior of A and B. Indeed, A notices that others need their resource R. They must take care of it and exchange it so that they can attain their goal X. Furthermore, B sees that the resource required is available so that they can acquire it to reach their end Y. These signals are communicated in the market through the price system, which joins knowledge about the relative scarcity of the available means.¹² Market prices tell entrepreneurs what, how, and for whom to produce, as well as in what quantity. The prices denote the historical exchange ratio in monetary units, which is used to perform a rational economic calculation.

Third, entrepreneurship drives a coordinating effect that fosters economic progress. As a result, entrepreneurial actors A, B, and C tend to discipline and coordinate their behavior spontaneously in terms of the others' needs. When a discoordination of plans is adjusted, market participants make a profit. Such plan coordination improves their subjective condition, i.e., the welfare of these people increases. However, the process of cooperative actions never reaches an equilibrium state. The very market process may tend to pursue superior profit opportunities. This coordinating tendency generates new discoordination to be perceived and adjusted by entrepreneurs, which configures their reputation through *ceaseless* and *unexpected* activities.

Fourth, entrepreneurship is inherently competitive (a situation where different products and prices are offered to consumers); hence, the rivalry never stops or ends.¹³ The dynamic market

¹² Equilibrium price theories show an automatic adjustment between mythical supply and demand curves. These models do not explain the sequence of human actions that determine market prices. In real life, the market price is the consequence of the generic-causal process. The price is determined dynamically by consumers. Entrepreneurs estimate the subjective valuations of consumers to decide the price of goods. From this judgment, the entrepreneurs are willing to incur costs, which configures the factors of production prices (Böhm-Bawerk 1930 [especially Book IV]; Mayer 1994).

¹³ The dynamic conception of competition has nothing in common with neoclassical theories of perfect or imperfect competition (a situation in which all profit opportunities are given; therefore, human action is pictured). Perfect competition means that both sellers and buyers are price-acceptors. If this were the case, paradoxically, there can be no competition. Alternatively, imperfect competition arises when sellers can impose prices on their goods to the detriment of consumers. But this theory does not explain that there are no rights acquired in the free market. The predominance of

competition consists of the interaction between two sets of variables (Kirzner 1992). The underlying variables (UVs) are outlined by consumer preferences, available resources, population, property rights, and technological possibilities, while the induced variables (IVs) include prices, production methods, quantity, and quality of output. The feedback between UVs and IVs drives the market trends to create pure profit opportunities and, with greater or lesser rapidity, remove plan discoordination. The entrepreneurial coordination process is dynamically efficient in the sense that entrepreneurs may only prosper if they continually adjust their intellect to meet the others' needs.

Economic development can be redefined in a purely economic and non-technical sense: *It arises when ends and means compete and knowledge is not given but is continuously being created, transmitting, and coordinating the individual plans in the market process by entrepreneurship. Purposeful actions drive the enrichment of knowledge and the extension in quantity and quality of the available goods, which means the presence of more and better choices to solve human problems. All of this takes place in the context of free exchanges that make the existence of life in society and its progressor possible.* The opposite is also true: if entrepreneurship is limited or restricted in certain areas, the process of dynamic efficiency would be distorted, and the individual would not even be aware of the creative opportunities that would have arisen in the absence of coercion. *Poverty emerges from exogenous factors to the market process, such as legal or institutional barriers to repress entrepreneurship, which cause the economy to slow down, stagnate, or even regress.*

The theory of dynamic efficiency overcomes the vision of Robin's allocation and the Pareto's static efficiency criterion. If plan coordination is a manifestation of spontaneous human actions, reality frustrates any claim of development planning. As a result, Austrian epistemology leaves the methodological positivism

an enterprise (or a few) is a signal that provides an excellent service to consumers. If they do not fully satisfy the consumers' needs, or if they decide to set higher prices than consumer dispositions, profit opportunities will arise to be exploited by entrepreneurship. Then, a monopoly can only emerge when there are governmental privileges or barriers to entrepreneurial entry (Armentano 1978; DiLorenzo 1996).

without effect.¹⁴ Accordingly, the free exercise of entrepreneurship not only guarantees the highest degree of static efficiency humanly possible but also motivates disruptive creativity. Although a quantity of errors and waste is inevitable, entrepreneurship is the driving force of the dynamic market process to perceive plan discoordination and explore creative ways to solve them.

V

DEVELOPMENT POLICY RECONSIDERED

From a dynamic efficiency perspective, the Austrian capital theory is the missing link between macroeconomics and its micro-foundations of entrepreneurship (Horwitz 2000) The production structure comprises of stages that coexist with each other over time. On the other hand, from the perception of some profitable opportunities, it is the acquisition and combinations of productive factors, marketing, and distribution, until the good is available to final consumers. Therefore, capital (or infrastructure) is the consequence of the exercise of entrepreneurship and not its prior condition.¹⁵

If a person has a great need for some assets, although they have reason to expect that they will be better in a future period, they will always value a given amount of immediately available goods at a higher figure than the same amount of future goods (Böhm-Bawerk

¹⁴ Mainstream economists hold that individuals have cognitive biases that generate coordination failures. They cheerfully assume that they must plan human action, although they have these biases. For mainstream economic epistemology, market solutions “will correspond to the one electronically calculated Pareto-efficient solution which maximizes, subject only to tastes, technology, and initial endowments, that particular welfare function.” All this is built from the static vision of efficiency, which ignores “the decentralizing efficiency of that regime of signals, rules and built-in sanctions which defines a price-market system” (Bator 1958, 352).

¹⁵ Capital is the value estimated at the market price of capital goods, which is valued for their ability to produce other goods, and their goal is consumption. Capital goods are heterogeneous and multi-specific due to their physical dimensions and the different plans they can satisfy. Since the economy entails adjustment processes, the Austrians focus on the structure of the capital stock and not on its measurement aggregation. For more on heterogeneous capital, see Machlup (1940) and Powell (2010).

1930, 249). Moreover, when an actor has purposes with a higher subjective value, actions of a longer duration and greater complexity are undertaken. Either it is impossible to reach the same goal immediately, or the expected result is more significant than what could be achieved in shorter time processes. The quantity and quality of solutions to human problems, expressed in first-order goods, depend on the availability of higher-order goods.

Huerta de Soto stated that “the *sine qua non* for producing capital goods is saving, or the relinquishment or postponement of immediate consumption” (2006, 273). Those who offer present goods renounce their potential consumption in exchange for more or better goods in the future, while those who demand present goods renounce obtaining some goods in the future in exchange for a smaller amount at present. These actions generate the price of time, better known as the interest rate, which includes the social rate of time preference. It is a signal that guides entrepreneurs about which investment projects are more profitable (Fisher 1930). A high degree of impatience (low level of savings) means that there is a greater individual preference for present goods than for future goods, which tend to raise the interest rate. On the other hand, a low time preference rate (higher level of savings) indicates that there is a greater individual preference for future goods than for present goods, which tends to lower the interest rate. This information strengthens dynamic efficiency at an intertemporal level, as far as humanly possible.

The dynamic efficiency approach serves to recognize the role of voluntary savings in the sustainability of economic development (Hayek 1931, 1941; Lachmann 1973b; Garrison 2001; Skousen 2015). It begins with an individual’s higher willingness to postpone the present consumption in exchange for more and better future goods (less time preference), which increases the supply of loan funds,¹⁶

¹⁶ The market of loanable funds expresses the coordinating trend of intertemporal preferences between the interest rate and the level of savings-investment. The supply of loanable funds represents the willingness to lend at different interest rates, while the demand for loanable funds represents the desire to borrow. All loans involve the ex-ante savings of the lenders in exchange for a return, and the dissaving of the borrowers reflects those who go into debt.

and the interest rate tends to decrease. If fewer consumer goods are demanded, the accounting benefits of the enterprise closest to the first-order goods decline, and the benefits of the most remote stages are not altered.¹⁷ The reduction in the price of first-order goods produces a rise in real wages, which, to entrepreneurs, indicates that it is more beneficial, in relative terms, to substitute labor for capital goods. Instead, workers tend to move to stages away from final consumption. Furthermore, the prices of capital goods tend to rise (or not fall significantly), and new profit opportunities emerge to be perceived and exploited by entrepreneurs. Additionally, more capital-intensive projects are carried out, which tend to create new stages of the production of capital goods.

As Wieser wrote, if production “becomes more highly developed, it extends through a greater number of stages. It operates with the aid of many more capital goods and much more labor. The advanced methods, however, tap more abundant natural resources, and the total yield is, therefore, greater” (1927, 72). This fact generates a reduction in both cost and production time, which means higher productivity. When these investments mature, there are capital goods increasingly sophisticated to produce consumer goods of higher quantity and quality at lower prices, that is, the real wage grows. There are more and better solutions available to solve human problems, which improve people’s welfare.

The above reasoning can be reversed, *mutatis mutandis*, to explain the macroeconomic effects of a politically induced savings contraction. If the savings level decrease, the relative benefit of the enterprises closest to the final consumption and the interest rate increases, while the price of capital goods decreases, as does its attractiveness for investments in higher-order goods. Entrepreneurs have incentives

¹⁷ Entrepreneurship drives a tendency in the market process toward equalizing the profit rate of all economic activities, both horizontally (i.e., within each stage) and vertically (i.e., between different stages). For example, a capital good with high durability has been produced and provides its services in different stages of the productive structure. “The market value of this capital good tends to equal the value of its expected future flow of rents, discounted by the interest rate. An inverse relationship exists between the present (discounted) value and the interest rate” (Huerta de Soto 2006, 325). If the interest rate goes down, the shares of the enterprises furthest away from consumption will rise to a greater extent.

to disinvest in higher-order goods stages and invest in low-order goods ones. The prices of consumer goods rise and, if nominal wages do not change, real wages fall, and labor becomes more profitable than capital goods. A less capital-intensive structure of production emerges, and the quantity and quality of the available consumer goods decrease at higher prices. The consequence is a dynamically inefficient propensity toward the impoverishment of society and the loss of welfare. It turns out, then, that the Keynesian anti-savings and pro-deficit-spending thesis is incompatible with the pure theory of capital.¹⁸

The sustainability or unsustainability of economic progress depends on the institutional arrangements that foster or repress entrepreneurship.¹⁹ Property rights²⁰ and the rule of law are the

¹⁸ The Keynesian paradox is built on a standard model of circular income flow. This timeless consumption-investment design can be traced back to Walras-Marshall's equilibrium models and Clark-Knight's static conception of capital. As Hayek suggests, "this basic mistake ... is the idea of capital as a fund which maintains itself automatically, and that, in consequence, once an amount of capital has been brought into existence, the necessity of reproducing it presents no economic problem" (1936, 403). This error established the static patterns of traditional macroeconomics, disregarding the microeconomic foundations of human action. Huerta de Soto (2006, 559) concluded that "Keynes's lack of an adequate theory of capital also explains his development of a mechanistic conception of the multiplier investment, which defines the reciprocal of one minus the marginal propensity to consume" and "the greater the marginal propensity to consume, the more an increase in investment will boost the national income. However, the investment multiplier hinges on a purely mathematical argument that contradicts the most basic economic logic of the capital theory." Indeed, if every attempt to reduce consumption must necessarily result in an immediate and proportionate reduction in production, no addition to the accumulated wealth of society could result from savings. For more details on this, see Böhm-Bawerk (1901), Machlup (1935) and Haberler (1936).

¹⁹ North defined institutions as "the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)" (1991, 97). Institutions are the rules of the game devised evolutionarily by human beings to create order and reduce uncertainty in exchanges.

²⁰ Property right implies that every human being is the owner of their body and, therefore, of their work. Moreover, by extension, they are the owner of any property that they have created, acquired through contractual relationships or collected without previous use and owner. If the owner can dispose of their belongings freely, they can, for example, give it away, inherit it, exchange it in the market, increase it, do not use it, or even destroy it (see Böhm-Bawerk 1890, especially Book VI).

two key institutions that provide for dynamic efficiency and economic progress (Bauer 1976; North 1990; Olson 1996; Johnson, McMillan & Woodruff 2002; Boettke & Subrick 2003a; Boettke & Coyne 2003b; Acemoglu & Johnson 2005; Alesina & Giuliano 2016). Yet, institutional coercion is at the heart of corruption in search of political privileges. Coerced entrepreneurs notice they may have more possibilities to achieve their goals if they use their creativity to influence political decision-making. Thus, increased risks of confiscation (e.g., levels of tax, inflation, and risk of default or expropriation), trade barriers (e.g., market regulations), and corruption in the public sector may anticipate lower levels of private savings and investment (The economy becomes less capital intensive, and the people's welfare decreases).

The fundamental problem of top-down development planning is epistemological (Mises 1935, 1981). First, human action involves an endless volume of practical knowledge that is scattered in people's minds. Second, entrepreneurial knowledge is subjective, tacit, and not articulable. Third, plan coordination requires a prospective vision of people's expected ends and means. It is not possible to transmit information that has not yet been created by entrepreneurship. Fourth, coercion distorts, corrupts, hinders, or makes impossible the formation of market prices and economic calculation. Fifth, politicians and bureaucrats also have their ends, such as winning elections and remaining in power (Bylund & Manish 2017). They seek to increase their influence in the economy to make others believe they are indispensable. Finally, social engineering faces an evident paradox that reveals the logical failures of positivism and socialism. "If the governing body intervenes coercively in this process," Huerta de Soto argues, "it will destroy the capacity of the process to create information, and if it does not intervene, it does not obtain any information either" (2010, 56). As real life is unlikely to resemble the formulation of mainstream development theories, both the positivist and the socialist ideals are impossible from the Austrian theory of dynamic efficiency.

It is evident that predictions in economics are more modest than usually accepted in mainstream development literature. From the dynamic efficiency prospect, the development policy analysis only admits, at most, estimates of qualitative and theoretical tendencies

(what Hayek calls *pattern predictions*) about the probable consequences of specific policies that influence entrepreneurship. The economist's role in development policy would be limited to *instruct politicians, intellectuals, businessmen and people in general on the relationship between entrepreneurship and economic progress, and the institutional and legal conditions that support or repress it*. This procedure is free of value judgments because it does not "enforce a unitary scale of concrete ends and [does] not attempt to secure that some particular view about what is more and what is less important [govern] the whole of society" (Hayek 1966, 605). In this case, mathematics, statistics, and econometrics are only useful as *auxiliary* and *illustrative* tools on historical events and related to a specific sector, period, variable, and data. The opposite would be to consider that an economist can know the quantitative effects of different future events from the past data that is incomplete and partial.

Further progress in development economics requires intellectual humility to recognize the epistemological frontiers of both development economics and the economist's role in the society. The truths of economics should be promoted through economic education rather than force. Otherwise, the epistemological problems will remain to support the spurious perspective of intellectual propaganda on top-down development planning.

VI CONCLUDING REMARKS

Positivism does not endow the economists with the highest scientific standard but instead provides them with an erroneous epistemology that studies individuals as if they were machines. In this article, the theory of dynamic efficiency was introduced to overcome this and other epistemological problems. It argued that the essence of development economics rests in the economic notions of entrepreneurship and plan coordination. The focus is on the processes and not on the content of human actions; therefore, the praxeological analysis is free of value judgments. Development was redefined from a static-allocative-efficiency approach to one based on dynamic efficiency. This vision involves the

creative and coordinating potential of entrepreneurship to extend the quantity and quality of available goods, resulting in *more and better options to solve human problems*.

Sustainability patterns for economic development were noted in the theory of capital, which is founded on private property to makes the economic calculation and plan coordination possible. Finally, the epistemological limits of positivism and the role of the economist in development policy were redefined. The counterproductive character of positivism to implement development planning was emphasized, which makes the economic analysis biased. After explaining the limits of prediction in economics, the role of an economist who is free of value judgments as a scholar and educator was proposed.

The theory of dynamic efficiency provides broader principles for future research on a variety of other subjects, such as the shortcomings of a randomized controlled trial, economic distress of inflation by decree, and the challenges now facing developing countries. These contributions will allow the gap between entrepreneurship and economic development to continue to narrow. Thus, economics can return to its foundations of purposeful human action that Ludwig von Mises' work augured.

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