




## Article

# Private Property Rights, Dynamic Efficiency and Economic Development: An Austrian Reply to Neo-Marxist Scholars Nieto and Mateo on Cyber-Communism and Market Process

William Hongsong Wang <sup>1,\*</sup> , Victor I. Espinosa <sup>2,\*</sup>  and José Antonio Peña-Ramos <sup>3,4,\*</sup> 

<sup>1</sup> Department of Applied and Structural Economics & History, Faculty of Economics & Business, Complutense University of Madrid, 28223 Madrid, Spain

<sup>2</sup> Department of Business Administration, Universidad Autónoma de Chile, Providencia 7500912, Chile

<sup>3</sup> Faculty of Social Sciences and Humanities, Universidad Autónoma de Chile, Providencia 7500912, Chile

<sup>4</sup> Department of Political Science and Public Administration, Faculty of Political Sciences and Sociology, University of Granada, 18071 Granada, Spain

\* Correspondence: william.hongsong.wang@outlook.com (W.H.W.); victor.espinosa@uautonoma.cl (V.I.E.); japramos@ugres (J.A.P.-R.)



**Citation:** Wang, William Hongsong, Victor I. Espinosa, and José Antonio Peña-Ramos. 2021. Private Property Rights, Dynamic Efficiency and Economic Development: An Austrian Reply to Neo-Marxist Scholars Nieto and Mateo on Cyber-Communism and Market Process. *Economics* 9: 165. <https://doi.org/10.3390/economics9040165>

Academic Editor: Rui Alexandre Castanho

Received: 28 September 2021

Accepted: 28 October 2021

Published: 3 November 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Abstract:** The Austrian school economics and neo-Marxist theories both have been reviving in recent years. However, the current academic discussion lacks a debate between two schools of economics with diametrically opposed views. This paper is the first and an initial Austrian challenge to Neo-Marxist scholars Nieto and Mateo's argumentation that cyber-communism and the Austrian theory of dynamic efficiency are consistent to enhance economic development. Their argument focuses on two issues: (a) the existence of circular reasoning in the Austrian theory of dynamic efficiency, and (b) dynamic efficiency and full economic development could be strongly promoted in a socialist system through new information and communication technologies (ICT) and the democratization of all economic life. While cyber-communism refers to cyber-planning without private property rights through ICT, dynamic efficiency refers to the entrepreneurs' creative and coordinative natures. In this paper, first, we argue that the hypothesis that dynamic efficiency and cyber-communism is not compatible. Contrary to the above cyber-communist criteria, the Austrian theory of dynamic efficiency argues that to impede private property rights is to remove the most powerful entrepreneurial incentive to create and coordinate profit opportunities. Second, we argue that the cyber-communism system is inconsistent with economic development. In this regard, we explain how the institutional environment can cultivate or stifle dynamic efficiency and economic development. Having briefly outlined the central argument of Nieto and Mateo, we examine the institutional arrangement supporting cyber-communism. After that, we evaluate the implications of cyber-communism in the dynamic efficiency process. It becomes manifest that Nieto and Mateo's accounts are too general to recognize the complexity of how economic development works.

**Keywords:** private property rights; dynamic efficiency; economic development; entrepreneurship; economic calculation; socialism; Austrian economics; cyber-communism; Neo-Marxism; market process

## 1. Introduction

The socialist calculation debate is perhaps one of the most controversial events in the history of economic thought. This debate was presented primarily as a theoretical conflict between the Austrian School led by Ludwig von Mises and Friedrich A. Hayek and the neo-classical school led by Oscar Lange and Richard Taylor. Although there is controversy over who won this big debate (O'Neill 1996; Boettke 2000; Huerta de Soto 2010; Klein 2010), the promoters of the modern socialist theory suggest that these socialist economists did not adequately dismantle Mises and Hayek's challenge on the impossibility of rational socialist

calculation without private property rights (see, for instance, [Cottrell and Cockshott 1993](#); [Adaman and Devine 1996](#); [Cockshott 2017](#)). In As Nieto puts it, “there was never an effective and well-elaborated response to the Austrian approach” ([Nieto 2020](#), p. 132).

In the recent years, the Neo-Marxist scholars restarted the economic calculation debate. One of their most common criticisms of socialism is the impossibility of cultivating an economy’s dynamic efficiency and development in the absence of private property rights. While dynamic efficiency is the innate entrepreneurial ability of individuals to identify and solve human problems, economic development is the widening range of alternatives open to people as more and better solutions for human problems ([Huerta de Soto 2009](#); [Espinosa 2020](#); [Espinosa et al. 2021b](#)). If the dynamic efficiency of socialism is impossible, Austrian economists conclude that it cannot promote economic development. However, [Nieto and Mateo \(2020\)](#) propose a different approach to the long-standing debate on the impossibility of the economic calculation under socialism. These authors suggest that the challenge of the Austrians is overcome by technological development (for example, big data, artificial intelligence, machine learning, and supercomputers). It is “cyber-communism” as a social planning system without private property through information and communication technologies (ICTs). This institutional formula implies: (a) rational calculation in terms of labor time supplemented by currently computational machinery to promote the dynamic efficiency of the real-time allocation of economic resources, and (b) individuals choose their consumption preferences and collective decisions are made democratically, solving the problem of economic development in the absence of market processes.

This paper reviews and discusses Nieto and Mateo’s observations on the relationship between cyber-communism and dynamic efficiency and its feasibility to cultivate economic development. Section 2 provides the theoretical framework and methodology of the paper. It reviews the conceptual tools that we use to demonstrate the relationship between the Austrian theory of dynamic efficiency and its link with economic development. Section 3 reviews the opinions of Nieto and Mateo on the theory of cyber-communism to assess its consistency with dynamic efficiency and economic development from a property rights approach. Section 4 examines the key points between the theory of cyber-communism and the most recent critiques of the economic literature on dynamic efficiency and development. The last section concludes with proposals for new research avenues.

## 2. Theoretical Framework and Methodology

### 2.1. Entrepreneurship: The Driving Force of the Market Economy

This paper uses the Austrian theory of dynamic efficiency and economic development and some principles of political economy ([Huerta de Soto 2009](#); [Espinosa 2020](#); [Espinosa et al. 2021b](#)). In this sense, understanding how dynamic efficiency works requires explaining, albeit briefly, the principles of entrepreneurship. Entrepreneurship etymologically comes from the Latin *inprehendo endi ensum*. In a broad sense, as [Mises \[1949\] \(Mises \[1949\] 1998, p. 254\)](#) says, “the term entrepreneur as used by [economic] theory means: acting man exclusively seen from the aspect of the uncertainty inherent in every action”. In the narrow sense, the entrepreneur is defined as the person who makes a profit by correctly *judging* the difference between the current price and the expected price in the future. The profit that the entrepreneur earns is called *entrepreneurial profit*. If the consumers do not want to buy the products, the entrepreneur will face entrepreneurial loss ([Mises \[1949\] 1998, pp. 286–91](#)). To conclude, entrepreneurship is defined as *a way of thinking or acting*. It consists of creativity, innovation, alertness, judgment, and adaptation ([Foss and Klein 2012, p. 7](#)).

Entrepreneurship judges the suitability of the means to achieve ends under uncertainty. Judgment is the crucial element of entrepreneurship to make uncertain decisions regarding the uses of current or new resources to satisfy future preferences ([Foss and Klein 2012](#); [Bylund and Packard 2021](#)). Therefore, it can be considered that entrepreneurial judgment is the process of forming an opinion by discerning and comparing ideas or plans about identifying and resolving human problems. While a human problem is a condition that

hinders the actor from reaching an end, the identification and solution of human problems are guided by his or her creativity, imagination, aspirations, expectations, and knowledge. What is a human problem? How to solve it? The answers are open judgments to the creative possibilities of individuals.

## 2.2. *The Theory of Dynamic Efficiency*

Efficiency is a concept related to the effectiveness with which the available means are deployed to reach ends—no matter the character of these plans. The word “dynamics” is derived from the Greek δυναμικός, meaning “causing to move”, and the word “static” is from στατικός, which means “causing to stand.” (Espinosa et al. 2020). As Huerta de Soto argues, for any individual, enterprise, institution, or an entire economic system to achieve their targets, the essential goal is not so much to prevent the waste of specific means considered known and given (from the viewpoint of static efficiency), but to continually discover and create new ends means. If entrepreneurial creativity constantly shifts the production possibilities’ frontiers, creative flow of new ends and means has yet to be envisioned (Huerta de Soto 2009, pp. 10–11). Therefore, dynamic efficiency is defined as entrepreneurial coordination and creativity (Huerta de Soto 2009, pp. 10–11; Wang 2017). Hence, as the entrepreneurs not only achieve their targets through the given resources conditions but to dynamically create and coordinate new means to shir the production possibilities frontiers, their competition process is also dynamic. Following Kirzner (2000, p. 92), the dynamic market competition is the widening range of the “domain of what is recognized, continually shifting the location of profitable promises and thus continually inspiring yet further discoveries expanding the domain of what is known”.

The Austrian theory of dynamic efficiency perceives that the ethics of private property rights is both the sufficient condition and necessary condition of dynamic efficiency (Huerta de Soto 2009, 2010). Private property ethics is a necessary condition because if the ownership of the fruits of each action is not respected, the most important incentive to create and discover profit opportunities is removed. As Huerta de Soto (2009, p. 21) says, “to impede the private ownership of the fruits of each human action is to remove the most powerful incentive to create and discover profit opportunities as well as the fundamental source of creativity and coordination that propels the system’s dynamic efficiency.”

Moreover, an environment of freedom, in which entrepreneurs are not coerced, and their private property is respected, is a sufficient condition for dynamic efficiency because it provides the motivation and fosters the entrepreneurial creative and coordination process as dynamic efficiency. As Huerta de Soto (2009, p. 21) indicates, “given the vital drive which characterizes all human beings, an environment of freedom in which they are not coerced and in which their private property is respected constitutes a sufficient condition for the development of the entrepreneurial process of creativity and coordination which marks dynamic efficiency”.

## 2.3. *Private Property Rights*

The Austrians’ concern is that the nature of private property is the control of individuals over the services that can be derived from a good, which means that private property is the pivotal institution of the market economy. As Mises indicates (Mises [1949] 1998, p. 678.), private ownership of the means of production is the fundamental institution of the market economy. Ownership means full control of the services that can be derived from a good. Therefore, where private ownership is absent, there is no question of a market economy. In this sense, Mises concerns that private ownership “is the institution the presence of which characterizes the market economy as such.” (ibid.)

Furthermore, the Austrians understand private property as a natural state of social affairs that has existed since the earliest ages of human history (Mises [1949] 1998, p. 679). If any individual or group of individuals has total control of the services that own these goods, they have private ownership. This definition suggests that a contractual arrangement-based society does not exclude other forms of social organization, such as

collective private property. Yet, the type of collective property that the Austrians oppose is *systematic or unsystematic aggression* on private property (Huerta de Soto 2010). The Austrians distinguish the difference between ownership of property obtained through voluntary actions and property obtained through, for instance, institutional coercion of a governing body (Mises [1949] 1998, pp. 678–79). Hence, the Austrians do not deny the existence of collective private property but oppose the coercive collective property that socialism advocates.

Therefore, the Austrians concern is that government legislation on private property could have two different objectives: (1) protect private property, or (2) control others' property. Both Mises and Hayek indicate the coercive absence of private property under socialism means that money has no role in a socialist state. Hence, the price system disappears, and economic calculation becomes impossible. As Mises [1920] (Mises [1920] 1935, p. 92) reckons, if no production-good will ever become the object of exchange, it will be impossible to determine its monetary value. "Money could never fill in a socialist state the role it fills in a competitive society in determining the value of production-good" and "calculation in terms of money will here be impossible." (Mises [1920] 1935, p. 92)

#### 2.4. Economic Calculation and Socialism's Impossibility

Prices and market are another two essential concepts to understand the Austrian criteria on economic calculation and socialism's impossibility. The Austrians define the function of the price system and its relationship with private property and the market. Regarding market, Mises argues that it is "the social system of the division of labor under private ownership of the means of production" (Mises [1949] 1998, p. 258). In the market, "everybody acts on his own behalf" but each action aims "at the satisfaction of other people's needs as well as at the satisfaction of his own". (ibid.) In other words, everyone in the market receives his own benefit by serving the need of the others. Mises further defines that the market "is not a place, a thing, or a collective entity" but "a process actuated by the interplay of the actions of the various individuals cooperating under the division of labor." (ibid.)

In the market economy, prices connect the exchanges of the entrepreneurs' productions and the consumers' monetary units. Based on private property and the pricing mechanism, producers or entrepreneurs could serve their consumers (Mises [1949] 1998, pp. 679–80; Huerta de Soto 2010). As Rothbard (1991) shows, the market as a process involves many different individual participants under the division of labor and knowledge. Each consumer makes judgments of goods and services in the market while each entrepreneur values (estimates and forecasts) future prices that his potential consumers can accept. As Mises describes, "the state of the market at any instant is the price structure" and price structure is "the totality of the exchange ratios as established by the interaction of those eager to buy and those eager to sell" (Mises [1949] 1998, p. 259). Prices provide signals to the entrepreneurs "what to produce, how to produce, and in what quantity". (ibid.)

The violation of private property rights would therefore impede the function of prices in the market and further makes economic calculation impossible. As the theory of dynamic efficiency states, once private property is being protected, the entrepreneurs would have the incentive to produce for their consumers. The market process, as the institution of voluntary exchange under the division of labor, enable the prices system to communicate what and how producers must serve their customers. However, as the theory of dynamic efficiency indicates, if there is no private property, market coordination becomes impossible. In the violation of private property, there are no price signals. As Mises concludes, "where there is no free market, there is no price mechanism; without a price mechanism, there is no economic calculation" (Mises [1920] 1935, p. 111). The violation of private property is precisely the advocacy of socialism. Therefore, the Austrians' concern is that under socialism, economic calculation is impossible, making socialism utopian. Accordingly, the Austrian approach reveals the causal relationship between individual human action, the market process, the price system, economic calculation, and dynamic efficiency.

### 2.5. The Austrian Theory of Economic Development

The dynamic efficiency standard is linked to entrepreneurship as the driving force of market economy and economic development. Three effects that make the existence and development of civilization (Redford 2020; Espinosa et al. 2020; Holcombe 2021). First, entrepreneurship is essentially creative, which means that every condition that prevents the actor from reaching an end becomes a human problem, the solution of which promises profit. Second, entrepreneurship transmits information in successive waves through the market as a dynamic process of voluntary exchanges of solutions to human problems. While the market is the “vehicle” for voluntary exchanges, the price system is the “fuel” that transmits information on historical exchange relations in monetary units. The price system contains the subjective valuations of individuals who participate in the market or abstain from doing so.

Third, entrepreneurship cultivates social coordination and economic development. Price signals organize society through the division of knowledge (better known as the division of labor), where individuals tend to specialize in what they think they can do best and cooperate with others (Mises 1962; Piano and Rouanet 2020). Some will be suppliers and other consumers of solutions to human problems in different aspects and moments. An institutional environment based on private property rights cultivates dynamic efficiency as a prerequisite for economic development, defined as the widening range of alternatives open to people as more and better solutions to increasingly complex human problems. Hence dynamic efficiency cultivates, in turn, economic development in a virtuous circle in which these processes complement and strengthen each other. In contrast, an institutional environment hostile to private property rights tends to anticipate lower dynamic efficiency, and therefore economic development (Lewin and Cachanosky 2018; Acemoglu and Robinson 2019; Acemoglu et al. 2019; Endres and Harper 2020).

### 3. Review, Assessment, and Discussion

Once the chains of cause and effect that drive the systematic process of dynamic efficiency and economic development have been addressed, we are in the position to review and discuss the debate on the impossibility of socialism. Nieto and Mateo’s (2020) theoretical roots of cyber-communism require an analysis of their previous work entitled “Is Economic Calculation Impossible in Socialism?” (Nieto 2020). The first part of Nieto (2020) explores the formal debate on economic calculation and the rational allocation of resources under socialism. The author distinguishes three main stages of the debate. In the first, Mises [1920] (Mises [1920] 1935, Mises [1922] 1951, Mises [1949] 1998) explains that economic calculation under socialism is impossible: central planning is impossible because, without private property rights of the means of production, there will be no market for means of production. Without a market for the means of production, they will not have money prices. Without money prices that reflect the relative scarcity of capital goods, economic decision-makers cannot calculate their alternative uses. Without rational economic calculation, “socialism is unfeasible” (Mises [1922] 1951, p. 135). Mises’ challenge implies that it is impossible to calculate costs (reduce the inputs used to a common denominator through some unit of account) and, therefore, “efficiently allocate resources to the desired uses, choosing among the innumerable possible combinations of production factors those that minimize costs” (Nieto 2020, p. 129). Every step away from private property rights of the means of production and the use of money is a step away from rational economic activity.

Mises’ challenge was suddenly taken by market socialists, such as Lange, Lerner, Taylor, Dickinson, and Durbin, who sought substitutes for money through trial and error or parametric prices (Lavoie 1985; Caldwell 1997). For these authors, as Lange writes, “only a socialist economy can distribute incomes so as to attain the maximum social welfare” (Lange 1965, p. 99). However, their opinions were based on the Walrasian equilibrium and Pareto efficiency models, that is, static models in which society’s information is given, and the proceeds are included in their formulas. In other words, there is no human action in the



true sense of the word in these models. For this reason, Nieto affirms that socialist theorists erroneously found “a formal similarity between the capitalist and socialist economies” (Nieto 2020, p. 130). In this regard, Arnaert (2018) points out that market socialists did not understand that Mises’ challenge is unrelated to the neoclassical–Keynesian paradigm due to the static and unrealistic essence of mathematical and econometric assumptions. There was never really a debate.

The second stage of the debate corresponds to Hayek’s (1935, 1944, 1945, 1988) criticism of the market socialists, who “transferred [...] the original problem of calculating costs (with some unit of account) to save resources to another [...] of efficient social coordination in a dynamic framework, whose key would be the discovery, transmission and use of information and knowledge dispersed among the agents” (Nieto 2020, p. 131). Hayek states that coordination of individual action plans only makes sense when millions of people’s knowledge is transmitted through the price system. However, socialism assumes that a single central authority can obtain and coordinate all the knowledge dispersed in society. Central planners neglect that the dynamics of modern society (complex phenomena) exceed the capacity of any individual mind. Neoclassical–Keynesian models consider the creation and transmission of knowledge in their equations as if it were something “given” within reach of the governing body. Consequently, Hayek (1945) explains that “the economic problem of society is thus not merely a problem of how to allocate “given” resources—if “given” is taken to mean given to a single mind which deliberately solves the problem set by these “data.” It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know”.

As a general assessment of the economic calculation debate, Professor Nieto affirms that “there was never an effective and well-crafted response to the Austrian approach” (Nieto 2020, p. 132). However, Mises and Hayek’s challenge on the impossibility of socialism was relegated due to the hegemony of the neoclassical–Keynesian approach—“the framework used by market socialists—and the apparent economic development of the Soviet Union” (ibid.). The fall of the Soviet orbit in the eighties and nineties and a political and ideological environment more conducive to economic freedom led to the third stage of the debate. According to Nieto, the economic contributions of Professor Jesús Huerta de Soto in his work entitled *Socialism, Economic Calculation and Entrepreneurship* (Huerta de Soto 2010) offers a complete description of the new Austrian account. From Huerta de Soto’s perspective, “the fundamental economic problem is an entrepreneurial problem of human interaction, the key to which is to discover and mobilize the necessary information about new goals and the means required to achieve them, a key that depends on the free exercise of entrepreneurship” (Nieto 2020, p. 133).

Huerta de Soto (2010) explains that socialism is an intellectual error because the socialist governing body cannot conceivably glean the information necessary to coordinate society. “First, it is impossible for the intervening body to consciously assimilate the enormous volume of practical information spread throughout the minds of human beings. Second, as the necessary information is tacit and cannot be articulated, it cannot be transferred to the central authority. Third, the information actors have not yet discovered or created, which emerges only from the free process of entrepreneurship, cannot be transmitted. Fourth, the exercise of coercion prevents the entrepreneurial process from provoking the discovery and creation of the information necessary to coordinate society” (Huerta de Soto 2010, p. 56; cited by Nieto 2020, p. 133). Socialism faces an inescapable dilemma. If the governing body intervenes coercively in the entrepreneurial market process, it destroys the capacity of the process to generate information, and if it does not intervene, it would not obtain the information.

The second part of Nieto’s article criticizes the Austrian arguments—synthesized in Huerta de Soto—and raises the principles of cyber-communism as the definitive solution to the impossibility of economic calculation in socialism. His first criticism of what he understands as the Austrian vision is the existence of circular reasoning: Austrians take as

a premise (entrepreneurship) that should be explained (how and why entrepreneurship fosters creativity and social coordination). Suppose the Austrians declare: “the free initiative of individuals in the market (that is, the exercise of entrepreneurship) is fundamental for the functioning of the market”. In that case, the market is key “to calculate the costs and solve the information and coordination problems generated by the market itself”. If the Austrians identify “society” with the “market”, “it can only be concluded that” rational calculation is impossible. But it is a mistake to show that rational calculation requires the market [...] starting from the premise that economic calculation is based on the market” (Nieto 2020, pp. 137–38). Nieto argues that circular reasoning leads Mises’ objection to the possibility of economic calculation in socialism only refers to peculiarities of capitalism, which proves nothing about the impossibility of socialism.

Finally, Nieto argues that the Austrian thesis on the impossibility of economic calculation under socialism refers to problems overcome by technological development. He proposes cyber-communism as a social planning system without private property rights through the new information and communication technologies (ICT) (for example, big data, artificial intelligence, the Internet of Things, supercomputers). “Information can be mobilized more flexibly and quickly in a cybernetically planned economy such as that allowed by current technology”, that is, “this type of information is not a problem for socialism” (Nieto 2020, p. 140). There would be no need for subjective cost assessments without a market, which could be calculated directly in labor time. Therefore, the Austrian critique of planimetric models of mathematical optimization would be valid “for the neoclassical matrix models of market socialism, but not for a cybernetically planned socialist economy without market processes” (Nieto 2020, p. 147).

The promise of cyber-communism claims that it would not only be compatible with the Austrian standard of dynamic efficiency—the coordination of individual action plans—but that it would also provide an adequate institutional framework to promote the genuine development of people’s real preferences and needs. Specifically, cyber-communist production would include the real-time changes in the final demand for consumer goods to coordinate social arrangements throughout the chain of cyber-industries. This production strategy would invalidate Hayek’s objection because the new technologies would solve the problems of social incoordination, and “there would also be no obstacle that would prevent channeling the creative initiative of individuals in a decentralized way” (Nieto 2020, p. 148). If technologies promote creativity and social coordination without private property rights, economic development would be efficiently cultivated without technological obstacles.

In cyber-communism, “each one determines their consumer preferences and their life plan, while the decisions that affect the collective are made democratically, not by imposition of a minority owner” (ibid.). As Nieto writes, there can be a plurality of government bodies to organize socialist production, and by trial and error they can correct possible incoordination, perhaps much smaller because no parallel decisions would be made, or entrepreneurial uncertainty would exist” (ibid.). He concludes by saying that “working under orders in a social property command would be as coercive as working in a private company... but, as we have warned, that information can be perfectly captured in a social property framework through the new technologies” (Nieto 2020, p. 149). Notwithstanding these general statements about the possibility of overcoming the challenge of modern Austrians, can cyber-communism cultivate dynamic efficiency and economic development, at least as in a *laissez-faire* economy? How does a cyber-communist society work? Who would decide what, how, how much, and whom to produce without a price system? The answers are in Nieto and Mateo (2020).

### 3.1. The Case of Cyber-Communism

The following is a review of Nieto and Mateo (2020), which explains (1) how cyber-communism works, and (2) how it cultivates dynamic efficiency and economic development. In their words, “our central thesis in this article is that socialist planning of an economy is not only compatible with dynamic efficiency, but indeed that it constitutes

the most favorable institutional framework for its genuine development, freeing dynamic efficiency from the restrictions and distortions imposed by the narrow criterion of profitability, as well as from the uncertainties inherent in markets, and linking more directly to the preferences and real needs of the population" (Nieto and Mateo 2020, p. 44).

Cyber-communism's standard suggests that two sorts of obstacles to genuine communist development were operating that supported each other and led to an impasse (Cottrell and Cockshott 1993). On the one hand, there was a problem of technological insufficiency to efficiently plan an increasingly complex economy, which required the control of increasing volumes of information. On the other hand, an evident political–institutional blockade prevented accurate control over the economy, where the governing bodies gradually abandoned the communist ideal to exercise tyrannical power. For instance, Soviet communism was a top-down dictatorial system where workers could not cultivate dynamic efficiency nor economic development. Despite numerous social conquests, Soviet planning was hardly appropriate for the new situation, which required improving the population's living conditions. Given the failure of the governing bodies to collect and process the information required for the exhaustive calculation of prices to promote general coordination—in the absence, therefore, of an accurate socialist accounting based on labor-time and optimization mathematics—it became evident that cultivating dynamic efficiency was not feasible. The challenge of communism is to explain how a system of production and allocation of resources without private property rights could work in complex societies. Following Cockshott (2017), Nieto and Mateo (2020) suggest that the cyber-communist thesis consists of a system of society without private property rights that is compatible with the feasible and efficient cultivation of dynamic efficiency and economic development through the current technological development, such as big data, artificial intelligence, machine learning, and supercomputers.

Nieto and Mateo (2020) claim that the reality of capitalism shows the essential contradiction of an economic system between the continuous scientific-technical development and the regressive dynamic efficiency that generates unemployment and job insecurity, polarization, and increasingly severe economic crises and environmental destruction. To solve these and other problems, cyber-communist aims to build an alternative to the capitalist order, making possible the modern ideal of citizen self-government. It is the rational control of dynamic efficiency as the only feasibility for the development of society towards democratic goals. Specifically, they propose a communist model that includes current scientific–technical capacities to cultivate economic development (Cottrell and Cockshott 2008). Communist planning of the economic system alludes to the ability to impose general objectives on economic and social development through the rational control of the global productive process by society (as opposed to the existence of individual ends in capitalism). The institutional key to carrying out this project is the abolition of private property rights and, logically, promoting communal control of the means of production and, through it, surplus value.

In a system without private property rights, the guiding principle for communist production is technical relevance for achieving an officer command democratically expressed in the plan, therefore, there would be no profitable or unprofitable activities. The allocation of resources depends on the mathematical optimization techniques for solving millions of equations according to the communal plan and, consequently, money is replaced by a direct accounting of the labor times required to obtain different goods and services.<sup>1</sup> An economic calculation without private property rights refers to estimating the labor time content in the production process, recording their variations to assign them efficiently. By all the above, the feasibility of cyber-communist control of dynamic efficiency and economic development would depend on two conditions: (1) an institutional framework that guarantees the democratic participation of the population at all levels and decision-making areas; (2) an adequate scientific–technical basis to control the necessary information, estimate the labor costs of the products, and efficiently allocate resources in complex economies.



Along with contemporary information and communication technologies (ICT), the fundamental tools for such cybernetic and democratic planning of an economy would include the input–output accounting methodology, which records how the products of some branches are incorporated as inputs for other branches, thus expressing the matrix of interindustry relations (Adaman and Devine 1996, 2002). Increasing mathematical techniques of linear programming would also allow the calculation of the labor time and the optimal allocation of resources in real time. Some of these possibilities are already present in the operations of large leading companies in the application of new information technologies, such as Facebook, Amazon, Spotify, and Netflix (Phillips and Rozworski 2019). In a cyber-communism society, the procedures and techniques to generate and process the necessary information (about what, how, where, and how much to produce) would be much more varied (centralized or decentralized decisions) and would involve different actors and decision levels (national, regional, sectoral). A territorial planning agency could decide how to use the resources in response to the collective demands. The governing body would be the primary mechanism of institutional change through two decentralized and democratic agencies. On one hand, the Investment Councils (IC) would decide the investment allocation of the factors of productions through the introduction of new technologies and the development of new business projects proposed by the entrepreneur associations. On the other hand, the Consumer Councils (CC) would guide ICs to produce consumer goods efficiently.

As Nieto and Mateo (2020) write, the Investment and Consumption Councils would have significant advantages for dynamic efficiency and economic development through technological progress and entrepreneurial innovation, in contrast to a capitalist economy: “(i) socialism allows for greater and more efficient allocation of resources to R&D&I activities, thanks to centralized control of the surplus and the absence of sumptuous consumption and a rentier population; (ii) there are no obstacles to the free dissemination of new products and techniques; (iii) the equal distribution of resources (which guarantees that no basic needs go unmet) allows for discovery and fuller development of talent, which likewise occurs when work is undertaken through tasks that are more balanced for the majority and less routine; (iv) in allocating investment, more information is available and the criteria are more varied than mere expectation of profit; (v) social ownership is more inclusive and participatory than capitalist enterprise in terms of generating and mobilizing knowledge and encouraging innovation; (vi) socialism does not impose short-term innovation cycles looking to generate products that can be commercialized in, say, four to six months, as is typical in capitalist economies”.

The preferences and decisions of individuals are considered twice: *ex ante*, through the democratic choice of the best development goals, and *ex post*, through the consumption choices of individuals. If a revolutionary party controls the Councils through elected delegates of the collective, this can strengthen the proletarian revolution. Without the dominance of the revolutionary party, capitalism would end up winning (Cockshott and Nieto 2017). The collective members would not need to create the information necessary for rational calculation and coordination individually. Much of the relevant information is not wholly scattered in the minds of millions of people. The only dispersed economic information in communism is, obviously, relative to individuals’ consumption preferences, which the socialized productive apparatus oversees registering and processing in real time to achieve their satisfaction. While the need for coherent coordination and strategic vision requires centralization, the promotion of free initiative requires some degree of decentralization. If “the final result proves less favorable than that registered in capitalist economies (a mere conjecture), we expect that this would not constitute a serious objection by which to reject an entire alternative economic and social order based on desired principles and values such as democracy, freedom, equity, efficiency, and stability” (Nieto and Mateo 2020, p. 64). Consequently, cyber-communism can overcome the “capitalist anarchy of production” to control and cultivate dynamic efficiency and economic development rationally and democratically.

### 3.2. *The Impossibility of Cyber-Communism: A Property Rights Approach*

Although Nieto and Mateo's (2020) proposals are ingenious and attractive, we argue that dynamic efficiency and economic development of cyber-communism are impossible. We explain that cyber-communism is an intellectual error because it is impossible to achieve a true harmony of interests by expropriating the private property rights of the means of production. Thus, the promise of cyber-communism has a problem at its origin: "Abolition of private property" (Marx and Engels [1848] 1976, p. 498).

Espinosa (2022) states that people's judgment of identifying a human problem and alternatives to solve it requires private property rights to pursue entrepreneurship. Private property is the right of people to dispose of their bodies and the fruit of their entrepreneurial creativity and, consequently, their unrestricted use. The owner can give it away or inherit it, in addition to exchanging it in the market process, increasing it, not using it, or even destroying it. If there are private property rights, people express their genuine preferences in the entrepreneurial market process as voluntary exchanges of private property rights. For that reason, entrepreneurship cultivates dynamic efficiency and economic development through the social coordination of supply and demand to solve human problems (Boettke and Candela 2014).

As a prerequisite of dynamic efficiency, private property rights can be explained from the communication theory between the transmitters and receivers of the message within a social system (Machlup 1980). Verbal and non-verbal communication of two individuals requires that both parties mutually recognize each other as independent entities from each other. Following Hoppe (1989), no one can propose something and expect the other party to convince itself of the validity of such a proposition, or to reject it and propose something else, unless in advance they presuppose their own and the opposing party's right to the exclusive control of their respective bodies and occupied spaces. Even the communication of coercive propositions tacitly acknowledges the existence of other autonomous rational entities. If individuals do not have the right to their bodies and occupied spaces, the problem of reasoning human propositions and actions would not exist. By implication, social relations through language would not be necessary, and, in such a case, humanity would be treated as a non-rational animal or a plant. The essence of private property rights over people's bodies and space occupied to cultivate exchange relationships is logical and deductive reasoning based on entrepreneurship. Therefore, the creation and transmission of the information constitute prior recognition, implicitly or explicitly, of the private property rights of people.

As the only possible solution to the cultivation of dynamic complexity and economic development, the scientific soundness of private property rights consists of two parts. On one hand, the logic of the transmission of knowledge is sufficient to demonstrate the role of private property rights to promote social coordination, since denying this proposition suggests an argumentative justification (proof, conjecture, refutation) to other autonomous people. On the other hand, only two options remain if individual A is not the owner of his body from him, nor the appropriate means created with his intellect and the economic goods acquired by original appropriation or contracts. If a person A does not own his body, nor the appropriate means and created with his intellect, along with the economic goods acquired by original appropriation or contracts, then only two options remain: (1) another person or group of individuals own the body of A, together with the appropriate means, created or acquired by A, or (2) all individuals are co-owners.

The first is the socialist alternative, a system or condition of society in which the means of production are owned and controlled by the state, resulting in an oligarchy of a few expropriators (supermen), who would be the owners of the body, creation, and work of A. Hence A is reduced to the condition of slave and subject of exploitation (subhuman creature). Socialist decisions are defined ex ante by the collective, which coordinates the people's action plans according to the needs of the governing body. Without private property rights, people's genuine preferences cannot be manifested through entrepreneurship because there is no market, price system, and economic calculation. The promise of coor-

minating supply and demand for a widening range of entrepreneurial alternatives open to people as more and better solutions to human problems is impossible. The governing body's comparative judgments on the different resource allocation techniques are inexorably arbitrary and wasteful. Therefore, socialism must be rejected because it prevents the emergence of dynamic efficiency and economic development.

Alternatively, equal co-property means communism or cyber-communism. If cyber-communism, the final stage of society in Marxist theory based on universal co-property, were applied, humanity would perish. All human actions demand scarce means, but if all actions and means are co-owned, then no individual could say or do something without the approval of the rest of the community. As [Hoppe \(1993, p. 384\)](#) said, communism is a logical impossibility: "How could anyone grant such consent without being the exclusive owner of his own body? He would first need the consent of others to be able to express his from him, but those others could not give his consent from him without first having theirs, and so on". People's ownership will be transferred to the members of the revolutionary party, who thereby become a ruling class, as in socialism. While the cyber-communist ideal is impossible, the communist reality involves the emergence and strengthening of totalitarian socialist regimes ([Ebeling 2015](#); [Boettke 2020](#); [Espinosa 2021a](#)).

Regardless of modern computing, the abolition of private property implies the impossibility of dynamic efficiency and economic development, increasing the fog of cyber-communist decision-makers' ignorance. Thus, [Huerta de Soto \(2010\)](#) explains that communism and socialism are better understood as a system of institutional aggression to repress entrepreneurship. [Rothbard \[1973\] \(Rothbard \[1973\] 2002, p. 22\)](#) defines aggression—used synonymously with coercion—as "the initiation of the use or threat of physical violence against the person or property of anyone else". Cyber-communist democracy and production strategies (represented in Councils and led by the revolutionary party members) will be arbitrary and wasteful. If the individual does not exist and only the collective matters, why ask for the opinion of individuals? How will they decide if they are not masters of their bodies and entrepreneurial creativity? Again, the impossibility of communal co-ownership makes the appearance of a socialist governing body inevitable: an exploiting oligarchy. The governing body will decide on all matters that concern the collective, that is, the lives of all individuals. If economic decisions are determined with political criteria, it would be impossible to consider profitability criteria if, by chance, it had been possible to achieve the same objection with less labor and material means (Mises' objection).

If people cannot freely exercise their entrepreneurship, it is impossible to achieve social coordination such as true harmony of interests (Hayek's objection). It should be no surprise that the relatively most repressed countries have more unemployment, poverty, crime, and corruption ([Miller et al. 2020](#); [World Bank 2020](#); [Transparency International 2020](#); [Espinosa and Carreiro 2021](#)). In this case, entrepreneurs judge that they may have a better chance of achieving their goals if they use their creativity to influence political decision-making: the "corruption effect" cultivates unproductive or destructive entrepreneurship ([Espinosa et al. 2021a](#)). Cyber-communism faces some effects on the economic system synthesized in the following principle: higher risks of abolishing private property rights (e.g., low maintenance of public order and legal equality, instability in political and economic institutions, unstable monetary conditions, and confiscatory policies through high levels of taxation and regulation) tend to anticipate lower levels of entrepreneurship, genuine savings, and productive investment, where the economy becomes less capital-intensive and people's well-being declines ([Rothbard \[1970\] 1977](#); [Baumol 1990](#); [Ikeda 2015](#)). Cyber-communism's risks of confiscation obstruct the entrepreneurial ability to have a long-term vision to adopt new ideas and take risks in identifying and solving human problems. Accordingly, cyber-communism is a significant obstacle to dynamic efficiency and economic development.

#### 4. Challenge Key Points

Having explained the impossibility of cyber-communism from a property rights perspective, we analyze some additional considerations of the most recent criticisms of the economic literature on dynamic efficiency and economic development. Suppose we accept the premise that private property rights are inherent in dynamic efficiency. In that case, we may recognize three key points of the political economy that strengthen our thesis of cyber-communism as an intellectual error: (1) the circular reasoning in the Austrian theory dynamic efficiency, (2) the feasibility of economic calculation in labor time through modern computing, and (3) the feasibility of entrepreneurship in cyber-communism.

Table 1 shows how the Austrian criteria, along with the theory of dynamic efficiency, offer new insights on the impossibility of cyber-communism. The first is the circular reasoning of the Austrian theory of dynamic efficiency. As Nieto and Mateo (2020, p. 42) write, the Austrians say that “dynamic efficiency requires the free exercise of entrepreneurship and the market, given that said efficiency is defined as that same entrepreneurship and market”. However, this statement is wrong. The Austrian theory of dynamic efficiency is based on methodological individualism, analyzing social phenomena from individual human actions. It is built of verbal chains of logic from the entrepreneurial ability of people to identify and solve human problems to the effects of institutional arrangements in cultivating social coordination and economic development (the entrepreneurial market process) or social incoordination and poverty (socialism). Hence, economics is a science free of value judgments; it does not dispute people’s ends. Economic science studies human action as the general theory of the categories of action in any institutional environment in which it operates (Rothbard 1951; Selgin 1988; Hoppe 1995; Kirzner 2017; Boettke 2019). Following Espinosa (2021b, p. 175), Nieto and Mateo’s critique of circular reasoning “only makes sense in Marxist holism, disregarding the logical and deductive analysis of a priori theoretical knowledge: the category of human action as a fundamental element of all economic science”.

The second is the feasibility of economic calculation in labor time through modern computing. The cybernetic models would run as an equation-processing machine, where the collective representatives would look for the correct button to press. However, this model is alien to the cognitive processes of people. At the cognitive level, what people consider valuable is subjective, that is, they value goods depending on how they satisfy their subjective preferences according to their action plans.<sup>2</sup>

Consumer judgments spontaneously determine the prices of consumer goods. Meanwhile, entrepreneurs estimate the prices at which they judge that they will sell their products and are willing to incur costs today (they demand factors of production), which, finally, sets the price of the factors of production (among them, the price of labor time). The price of the factors of production does not determine the prices of consumer goods because no one is guaranteed to be able to sell at a price higher than the costs incurred. The market prices result from the judgments of the actors on the economy of tomorrow.<sup>3</sup>

The replacement of subjective evaluations of spontaneous emergence by machine criteria is arbitrary. Hence the delivery of coupons according to labor time has two additional unsolvable problems, even with the help of modern computing: (1) the criterion of labor time does not apply to entrepreneurial creativity—it does not require material means to be exercised—and neither to non-reproducible natural resources—they allow us to achieve ends without using hours of work; (2) the labor factor does not exist, but instead there are numerous different categories and classes of labor. As Bylund and Manish (2017, p. 428) write, without private property, “such a socialist economy does not support a discovery process for identifying how best to satisfy consumers. Thus, the prices cannot approximate the social opportunity cost involved in resource allocation—they are arbitrary”.

**Table 1.** A comparison between the theory of cyber-communism and the literature on the theory of dynamic efficiency and economic development.

Key Points	Cyber-Communist Criteria	Austrian Criteria
Circular reasoning in the Austrian theory of socialism	The Austrians say that “dynamic efficiency requires the free exercise of the entrepreneurship and the market, given that said efficiency is defined as that same entrepreneurship and market” (Nieto and Mateo 2020, p. 42).	“The dynamic efficiency theory, based on methodological individualism, is not circular reasoning. It is a construction of verbal chains of logic, from the essence—entrepreneurship as the innate ability of individuals to identify and solve human problems—to institutional analysis: a theory of voluntary (market) or coercive (socialism) exchanges. For this reason, Nieto and Mateo’s criticism about circular reasoning only makes sense in Marxist holism, disregarding the logical and deductive analysis of a priori theoretical knowledge: the category of human action as the pivotal element of all economic science” (Espinosa 2021b, p. 175).
The feasibility of economic development in labor time through modern computing	Without private property rights, the economic calculation would be in labor time “through mathematical optimization for efficient allocation, based on modern information and communication... One fundamental instrument to this end would be the construction of an input-output super-matrix that brings together all sectoral and business interdependencies in the national economy” (Nieto and Mateo 2020, p. 52).	“The Marxist theory of labor value suggests that the value of things arises from their labor time. However, the modern theory of value explains that what human beings consider valuable is subjective, that is, they value goods depending on how they satisfy their subjective preferences according to their action plans. Regardless of modern computing, once the inherently subjective and speculative nature of all resource allocation is recognized, private property in the means of production emerges as the necessary institutional prerequisite to facilitate economic calculation. Without it, there can be no speculation tempered by the threat of suffering losses. [...] Such a socialist economy does not support a discovery process for identifying how best to satisfy consumers, and thus the prices cannot approximate the social opportunity cost involved in resource allocation—they are arbitrary” (Bylund and Manish 2017, pp. 416, 428).
The feasibility of cyber-communist entrepreneurship	“In socialism, ownership and management are separate: the community is the principal and, represented by a planning authority, it provides the resources that companies must manage efficiently through democratically elected management personnel” (Nieto and Mateo 2020, p. 57).	“[The socialist governing body] may employ workers, managers, technicians, inventors, and the like, but it cannot, by definition, employ entrepreneurs, because there are no money profits and losses. Entrepreneurship, and not labor or management or technological expertise, is the crucial element of the market economy. As Mises puts it: Managers of socialist enterprises may be allowed to “play market”, to act as if they were managers of private firms with their own interests at stake, but entrepreneurs cannot be asked to “play speculation and investment”. In the absence of entrepreneurship, a complex dynamic economy cannot allocate resources to their highest valued use” (Foss and Klein 2012, p. 41).

The last key point is the feasibility of entrepreneurship in cyber-communism to cultivate dynamic efficiency and economic development. The focus of cyber-communism is to demonstrate that socialist planning is superior to capitalist planning due to its quantitative tools capacity to develop productive forces. The technical-administrative coordination of cyber-communist companies would allow directing production and distribution “towards



the uses that the group deems most convenient at all times” (Cockshott and Nieto 2017, p. 147). The collective would control the companies with modern computing, just as private companies do, but avoid the market’s material waste. Despite appearances, the governing body can employ workers, managers, technicians, and inventors but cannot, by definition, employ entrepreneurs because there are no monetary profits or losses.

As Huerta de Soto (2010, p. 15) argues, entrepreneurship is “an integral and fundamentally creative feature of all human beings, and also as the set of coordinating abilities which spontaneously permit the emergence, preservation, and development of civilization”. Hence, the entrepreneurial judgment process is guided by the actor’s creativity, imagination, aspirations, expectations, and knowledge under uncertainty, which presuppose private property rights. It is a mistake to evaluate the strength and validity of quantitative tools applied to an economic system where there is no entrepreneurship in the true sense of the word. Entrepreneurship, not work, managerial or technological experience, is crucial in cultivating dynamic efficiency as the main engine of economic development, which arises in institutional arrangements of private property rights. Managers of cyber-communist companies can be allowed to “play the market”, acting as if they were entrepreneurs of private companies with their interests at stake, but entrepreneurs cannot be asked to play speculation and investment (Foss and Klein 2012). Without entrepreneurship, a complex and dynamic economy cannot allocate resources to their most valued use.<sup>4</sup>

## 5. Conclusions

Although some of the crudest lapses of the 20th-century communism have been toned down, they are still widespread. Nieto and Mateo (2020) present the theory of cyber-communism as the current Marxist promise in the debate on the impossibility of economic calculation. Its objective is to harmonize collective interests in society through modern computing. In other words, cyber-communists seek to cultivate dynamic efficiency and economic development without private property rights. Its immediate exposition has been made more difficult, in part, by the great confusion between technological progress and the promotion of politics, and the subordination of the former to the latter to the detriment of both, and partly also because of the construction of a facade of mathematical techniques and econometric methods that at times have acted as a protective screen around elementary lapses. However, this paper explained that dynamic efficiency is impossible in a cyber-communist society because it destroys the foundations that make possible the existence of civilization and its development. The forced replacement of people’s private property rights to identify and solve human problems by the will of the socialist governing body result in arbitrary and uneconomic criteria. Besides, as the theory of dynamic efficiency shows, private property is directly linked with basic and fundamental freedoms and civil liberties, especially entrepreneurship. These were absent in communism, where private property was traded for so-called public property (in essence a contradiction in terms). Hence, if the proposal of Nieto and Mateo hints to absence of private property, this proposal undermines everything that our societies have striven for since WW2. To claim that there is no need for private property, in the 21st century, is blasphemy! In the face of such shortcomings and mistakes, the Austrians’ challenge remains strong. Understanding some key lapses of cyber-communism as an intellectual error requires little more than a superficial knowledge of economic theory: it requires observation and reflection, and occasionally some knowledge of history. This could be one of the directions of future studies on cyber-communism from the Austrian perspective.

**Author Contributions:** Conceptualization, W.H.W.; methodology, W.H.W., V.I.E.; formal analysis, W.H.W., V.I.E.; investigation, W.H.W., V.I.E.; resources, W.H.W., V.I.E., J.A.P.-R.; writing—original draft preparation, W.H.W.; writing—review and editing, W.H.W., V.I.E., J.A.P.-R.; funding acquisition, J.A.P.-R. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Acknowledgments:** For comments and criticism, the author wishes to thank Jesús Huerta de Soto and the three anonymous referees.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Notes

- <sup>1</sup> Following [Cockshott and Cottrell \(1997\)](#), any complex social system with a developed division of labor needs to compute what it costs to produce the material conditions in terms of the key resource available to individuals: labor time. In capitalist economies, accounting occurs spontaneously through money, voluntary exchanges, and competitive market price formation. In contrast, communism replaces the calculation of market prices with labor time: (i) labor as a measure of costs, and (ii) a remuneration system in job bonds (as certificates that indicate the hours of labor that a worker has contributed to the communist production system) to replace the capitalist wage system. In communism, the cost of the different goods must be calculated according to the amount of labor time (vertically integrated labor) required in each case. A part of the total produced by a worker would go to a community fund, and the rest would be a job bond to exchange for consumer goods. It requires an advanced information technology system and an input-output table that solves matrix algebra problems in real-time.
- <sup>2</sup> The fundamental difference between human action and the entities of nature is the category of purpose. Following [Menger \[1871\]’s \(Menger \[1871\] 1976\)](#) subjective theory of value: If individual judges a good as useful to achieve his end, there must be a human need, an object that satisfies it, and the subjective knowledge that this object exists or could exist. The same physical good can be useful one moment and useless another. Therefore, utility and scarcity are subjective elements depending on the action plans.
- <sup>3</sup> The law of price of productive factors explains the inconsistency of the Marxist theory of labor exploitation ([Boettke and Candela 2017](#)). First, there is no exploitation in a private property-based society because individual relationships are contractual. Second, the entrepreneur cannot pay the undiscounted value of marginal productivity today because the production outcomes will be prolonged in the future (for example, at the close of the accounting year). Third, suppose workers do not want to work for someone else. In that case, they provide services to another person, company or institution in exchange for a salary or remuneration—and are paid in advance the value discounted by the market interest rate, they can choose to work for their account (self-employed entrepreneurs), or through cooperatives (worker associations). The opposite occurs in a no-private property-based society, where the governing body coercively imposes the determination of prices, wages, and occupations.
- <sup>4</sup> Whoever questions the existence of the economy denies that the well-being of individuals is affected by scarcity. A world without scarcity implies that individuals could enjoy the absolute satisfaction of all their desires. This assertion corresponds to the myth of perfect abundance proclaimed by Marxist and Keynesian doctrines, where abundance will be inevitable and it will be feasible to give “to each according to his needs” ([Caldwell 1997](#)). However, the doctrines are alien to elementary empirical evidence. Human beings act because they are not omniscient, omnipotent, or omnipresent: they do not have the power to make conditions completely satisfactory.

## References

- Acemoglu, Daron, and James A. Robinson. 2019. Rents and Economic Development: The Perspective of Why Nations Fail. *Public Choice* 181: 13–28. [[CrossRef](#)]
- Acemoglu, Daron, Suresh Naidu, Pascual Restrepo, and James A. Robinson. 2019. Democracy does cause growth. *Journal of Political Economy* 127: 47–100. [[CrossRef](#)]
- Adaman, Fikret, and Pat Devine. 1996. The Economics Calculation Debate: Lessons for Socialists. *Cambridge Journal of Economics* 20: 523–37. [[CrossRef](#)]
- Adaman, Fikret, and Pat Devine. 2002. A Reconsideration of the Theory of Entrepreneurship: A Participatory Approach. *Review of Political Economy* 14: 329–55. [[CrossRef](#)]
- Arnaert, Brecht L. 2018. Talking to Walls: The Socialist Calculation Debate that Never Really was One. *Procesos de Mercado* 15: 339–57. [[CrossRef](#)]
- Baumol, William J. 1990. Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy* 98: 893–921. [[CrossRef](#)]
- Boettke, Peter J. 2000. *Socialism and the Market: The Socialist Calculation Debate Revisited*. London and New York: Routledge.
- Boettke, Peter J. 2019. How Misesian Was the Hayekian Research Program? *Procesos de Mercado* 16: 251–57. [[CrossRef](#)]
- Boettke, Peter J. 2020. Property, Predation and Socialist Reality. *Journal of Institutional Economics* 16: 185–97. [[CrossRef](#)]
- Boettke, Peter J., and Rosolino A. Candela. 2014. Development and Property Rights. In *Encyclopedia on Law and Economics*. Edited by Alain Marciano and Giovanni B. Ramello. New York: Springer, pp. 1–9.
- Boettke, Peter J., and Rosolino A. Candela. 2017. Price Theory as Prophylactic Against Popular Fallacies. *Journal of Institutional Economics* 13: 725–52. [[CrossRef](#)]

- Bylund, Per L., and G. P. Manish. 2017. Private Property and Economic Calculation: A Reply to Andy Denis. *Review of Political Economy* 29: 414–31. [\[CrossRef\]](#)
- Bylund, Per L., and Mark D. Packard. 2021. Subjective value in entrepreneurship. *Small Business Economics*, 1–18.
- Caldwell, Bruce J. 1997. Hayek and Socialism. *Journal of Economic Literature* 35: 1856–90.
- Cockshott, W. Paul. 2017. *Big Data and Supercomputers: Foundations of Cyber Communism*. Glasgow: University of Glasgow.
- Cockshott, W. Paul, and Allin F. Cottrell. 1997. Labour Time versus Alternative Value Bases: A Research Note. *Cambridge Journal of Economics* 21: 545–49. [\[CrossRef\]](#)
- Cockshott, W. Paul, and Maxi Nieto. 2017. *Ciber-Comunismo: Planificación Económica, Computadoras y Democracia*. Trotta: Madrid.
- Cottrell, Allin, and W. Paul Cockshott. 1993. Calculation, Complexity and Planning: The Socialist Calculation Debate Once Again. *Review of Political Economy* 5: 73–112. [\[CrossRef\]](#)
- Cottrell, Allin, and W. Paul Cockshott. 2008. Computadores y Democracia Económica. *Revista de Economía Institucional* 10: 161–205.
- Ebeling, Richard M. 2015. F. A. Hayek and Why Government can't Manage Society. *Procesos de Mercado* 12: 343–59.
- Endres, Anthony M., and David A. Harper. 2020. Economic Development and Complexity: The Role of Recombinant Capital. *Cambridge Journal of Economics* 44: 157–80. [\[CrossRef\]](#)
- Espinosa, Victor I. 2020. Epistemological Problems of Development Economics. *Procesos de Mercado* 17: 55–93.
- Espinosa, Victor I. 2021a. Salvador Allende's Development Policy: Lessons after 50 Years. *Economic Affairs* 41: 96–110. [\[CrossRef\]](#)
- Espinosa, Victor I. 2021b. Ciberplanificación, Propiedad Privada y Cálculo Económico. *Revista de Economía Institucional* 23: 163–84.
- Espinosa, Victor I. 2022. *Principios Modernos de Economía del Desarrollo: Teoría y Práctica*. Madrid: Unión Editorial, in press.
- Espinosa, Victor I., and Óscar R. Carreiro. 2021. Old and New Development Economics: A Reassessment of Objectives. *Quarterly Journal of Austrian Economics* 24: 254–85. [\[CrossRef\]](#)
- Espinosa, Victor I., William H. Wang, and Haijiu Zhu. 2020. Israel Kirzner on Dynamic Efficiency and Economic Development. *Procesos de Mercado* 17: 283–310.
- Espinosa, Victor I., José Antonio Peña-Ramos, and Fátima Recuero-López. 2021a. The Political Economy of Rent-seeking: Evidence from Spain's Support Policies for Renewable Energy. *Energies* 14: 4197. [\[CrossRef\]](#)
- Espinosa, Victor I., Miguel A. Alonso Neira, and Jesús Huerta de Soto. 2021b. Principles of Sustainable Economic Growth and Development: A Call to Action in a Post-COVID-19 World. *Sustainability*: in press.
- Foss, Nicolai J., and Peter G. Klein. 2012. *Organizing Entrepreneurial Judgment: A New Approach to the Firm*. Cambridge: Cambridge University Press.
- Hayek, Friedrich A. 1935. *Collectivist Economic Planning*. London: Routledge & Kegan Paul.
- Hayek, Friedrich A. 1944. *The Road to Serfdom*. London and New York: Routledge.
- Hayek, Friedrich A. 1945. The Use of Knowledge in Society. *American Economic Review* 35: 519–30.
- Hayek, Friedrich A. 1988. The Fatal Conceit: The Errors of Socialism. In *The Collected Works of Friedrich August Hayek*. Edited by W. W. Bartley II. London and New York: Routledge, vol. I.
- Holcombe, Randall G. 2021. Entrepreneurial Economies. *Economics* 9: 123. [\[CrossRef\]](#)
- Hoppe, Hans-Hermann. 1989. *A Theory of Capitalism and Socialism*. Boston: Kluwer Academic Publishers.
- Hoppe, Hans-Hermann. 1993. *Economics and Ethics of Private Property*. Boston: Kluwer Academic Publishers.
- Hoppe, Hans-Hermann. 1995. *Economic Science and the Austrian Method*. Auburn: The Mises Institute Press.
- Huerta de Soto, Jesús. 2009. *The Theory of Dynamic Efficiency*. London and New York: Routledge.
- Huerta de Soto, Jesús. 2010. *Socialism, Economic Calculation and Entrepreneurship*. Cheltenham and Northampton: Edward Elgar.
- Ikeda, Sanford. 2015. Dynamics of Interventionism. In *Oxford Handbook of Austrian Economics*. Edited by Peter J. Boettke and Christopher J. Coyne. New York: Oxford University Press, pp. 393–416.
- Kirzner, Israel M. 2000. *The Driving Force of the Market: Essays in Austrian Economics*. London and New York: Routledge.
- Kirzner, Israel M. 2017. The Entrepreneurial Market Process: An Exposition. *Southern Economic Journal* 83: 855–68. [\[CrossRef\]](#)
- Klein, Peter G. 2010. *The Capitalist & the Entrepreneur*. Auburn: Ludwig von Mises Institute.
- Lange, Oskar. 1965. *Problems of Political Economy of Socialism*. New Delhi: People's Publishing House.
- Lavoie, Don. 1985. *Rivalry and Central Planning: The Socialist Calculation Debate Reconsidered*. Cambridge: Cambridge University Press.
- Lewin, Peter, and Nicolas Cachanosky. 2018. Value and Capital: Austrian Capital Theory, Retrospect and Prospect. *Review of Austrian Economics* 31: 1–26. [\[CrossRef\]](#)
- Machlup, Fritz. 1980. *Knowledge: Its Creation, Distribution, and Economic Significance, Volume I: Knowledge and Knowledge Production*. Princeton: Princeton University Press.
- Marx, Karl, and Friedrich Engels. 1976. Manifesto of the Communist Party. In *Marx-Engels Collected Works*. New York: International Publishers, vol. 6, pp. 477–519. First published 1848.
- Menger, C. 1976. *Principles of Economics*. New York: New York University Press. First published 1871.
- Miller, Terry, Anthony B. Kim, and James M. Roberts. 2020. *Index of Economic Freedom*. Washington, DC: The Heritage Foundation.
- Mises, Ludwig. 1935. Economic Calculation in the Socialist Commonwealth. In *Collectivist Economic Planning*. Edited by Friedrich August Hayek. London: Routledge & Kegan Paul, pp. 87–130. First published 1920.
- Mises, Ludwig. 1951. *Socialism: An Economic and Sociological Analysis*. New Haven: Yale University Press. First published 1922.
- Mises, Ludwig. 1998. *Human Action. A Treatise on Economics*. Auburn: Mises Institute. First published 1949.

- Mises, Ludwig. 1962. Profit and Loss. In *Planning for Freedom and Other Essays and Addresses*, 2nd ed. Edited by Ludwig von Mises. South Holland: Libertarian Press, pp. 108–50.
- Nieto, Maxi. 2020. Is Economic Calculation Impossible in Socialism? Criticism of the New Austrian Reading. *Revista de Economía Institucional* 22: 127–51. [[CrossRef](#)]
- Nieto, Maxi, and Juan P. Mateo. 2020. Dynamic Efficiency in a Planned Economy: Innovation and Entrepreneurship without Markets. *Science & Society* 84: 42–66.
- O'Neill, John. 1996. Who Won the Socialist Calculation Debate? *History of Political Thought* 17: 431–42.
- Phillips, Leigh, and Michal Rozworski. 2019. *The People's Republic of Wal-Mart: How the World's Biggest Corporations Are Laying the Foundation for Socialism*. Verso: New York.
- Piano, Ennio E., and Louis Rouanet. 2020. Economic Calculation and the Organization of Markets. *Review of Austrian Economics* 33: 331–48. [[CrossRef](#)]
- Redford, Audrey. 2020. Property Rights, Entrepreneurship, and Economic Development. *Review of Austrian Economics* 33: 139–61. [[CrossRef](#)]
- Rothbard, Murray N. 1951. Praxeology: Reply to Mr. Schuller. *American Economic Review* 41: 943–46.
- Rothbard, Murray N. 1977. *Power and Market: Government and the Economy*. Kansas City: Sheed Andrews and McMeel. First published 1970.
- Rothbard, Murray N. 2002. *For a New Liberty: The Libertarian Manifesto*. Auburn: The Mises Institute Press. First published 1973.
- Rothbard, Murray N. 1991. The End of Socialism and the Calculation Debate Revisited. *Review of Austrian Economics* 5: 51–76. [[CrossRef](#)]
- Selgin, George A. 1988. Praxeology and Understanding: An Analysis of the Controversy in Austrian Economics. *Review of Austrian Economics* 2: 19–58. [[CrossRef](#)]
- Transparency International. 2020. *Corruption Perceptions Index*. Berlin: Transparency International Group.
- Wang, William Hongsong. 2017. Jesús Huerta de Soto: The Synthesizer of the Austrian School. *Procesos de Mercado* 14: 173–202. [[CrossRef](#)]
- World Bank. 2020. *Doing Business 2020*. Washington: World Bank Group.