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# Capital is not a factor of production but organizes the allocation and distribution of resources in capitalism

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## Abstract

Economists usually define capital as a factor of production—roughly speaking, as physical equipment. This paper demonstrates the limits of this common approach and develops a meaningful alternative. In actual business life, capital refers to the monetary value of business assets, regardless of what the assets consist of, and as such, it is an important aspect of economic calculations that helps to guide entrepreneurial activities. In this sense, capital is pervasive in capitalist societies. Virtually all goods and services are produced by profit-oriented enterprises. Natural resources, intermediate goods, and finished products all appear on the balance sheets of enterprises and are consequently part of business capital. Likewise, the majority of people are employees of enterprises. They receive their pay because the employing firms consider this to be a profitable investment of their capital. Despite its extreme practical importance, this business notion of capital is ignored by nearly the entire economics profession. The paper shows how economists could profit from adopting the business notion of capital, irrespective of their ideological backgrounds.

**Keywords** Capital · Capitalism · Entrepreneurship

**JEL Classification Codes** L26 · P12 · P16

## 1 Introduction

Capitalism is an economic system in which both the production and distribution of outputs are dominated by enterprises that are supposed to generate as much profit as possible on the *capital* that has been invested in them by their owners or shareholders. Capitalism, in other words, is a system “where capital plays a dominant role”

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(Hodgson, 2014, 1080). As far as economists deal with capitalist societies or market economies we may reasonably consider them obligated to deal with the phenomenon of capital.

However, capital as described in the first paragraph does not play an important role in economics. In particular, the relationship between the organization of the resource allocation and income distribution in the economy and the attempts by enterprises to maximize their return on capital is not covered under established theory.

This is not to say that economists have not bothered with the term capital. Indeed, nothing could be further from the truth. In classical economics, capital occupied a central position as one of the three factors of production along with land and labor. Later, between the 1880s and the 1970s, capital was the subject of three intense and well-known debates on the proper role and definition of capital in economic theory. Among the participants of these debates were eminent economists like J. B. Clark, Böhm-Bawerk, Fisher, Veblen, Knight, Hayek, Pigou, Robinson, Sraffa, and Samuelson (Rosser, 2020).

However, these debates did not solve the issues definitively. Although the neo-classical side admitted that its concept of capital leads to paradoxical results (Samuelson, 1966), this concept remained in use in mainstream economic science after the interest in capital theory had waned in the early 1980s (Cohen & Harcourt, 2003). Outside the general equilibrium framework, the neoclassical school defines capital as an aggregative, homogeneous, and therefore measurable factor of production. The correlated aggregate production function not only plays an important role in textbooks but also, as Felipe and McCombie (2013, 1–2) demonstrate, in numerous theoretical and empirical research papers. In particular, the popular dynamic stochastic general equilibrium (DSGE) approach assumes that economies can be suitably modelled based on a Clark–Solow type aggregate production function with aggregate and homogenous capital (Rosser, 2020, 421–422).

Among the dissenting voices, the most relevant for our topic are those who argue that the assumption of homogenous capital ignores the important role of entrepreneurial activity in capitalist societies. Endres and Harper (2010, 2020), Foss et al. (2007), Foss and Klein (2012), and Bylund et al. (2023) propagate an updated version of the so-called Austrian theory of capital as developed by Böhm-Bawerk (1891), Hayek (1941), and Lachmann (1978). These authors stress the idea that capital is not homogeneous but rather consists of a structure of heterogeneous capital goods. In the Austrian School, “capital goods” is an alternate expression for physical and produced means of production (Mises 1949, 263). From their perspective, it is important to depict the complexity of the structure of capital goods because it helps to illustrate the role and importance of the entrepreneur, whose function is to combine and arrange the otherwise chaotically disconnected capital goods.

By breaking out of the neoclassical homogeneity assumption, this “entrepreneurial approach to capital assets” (Foss et al., 2007, 1171) sheds light on the coordination problem that must be solved. However, the approach has one important thing in common with the neoclassical tradition it criticizes. Both view capital as physical equipment that contributes to the production process. The entrepreneurship literature focuses on the heterogeneity of the goods that constitute

the production factor capital, whereas in the neoclassical view capital is a homogeneous and measurable “jelly” or “shmoo” (Lewin & Cachanosky, 2018b). It is not clear in either of the approaches why capital is a central phenomenon of capitalism. Capital, in the sense of a factor contributing to production, homogeneous or heterogeneous, is not specific to capitalism. To be sure, entrepreneurs may be specific to capitalism, but the same is not true for capital in the sense of heterogeneous capital goods. The combination and coordination of capital goods is a problem as old as humanity. Even humans in the Stone Age knew how to build and use tools, let alone the inhabitants of feudalist or socialist societies. The entrepreneurship approach resembles the neoclassical one in that it does not bother with the specific role that capital plays in individual enterprises in capitalist societies.

In this paper, I argue that in order to comprehensively understand entrepreneurial activity and the organization of capitalism, we must consider the role of capital (in the business sense). Based on the practices and understandings of actual business people in capitalist societies, capital is not a factor of production. It is a term that describes a monetary magnitude used in the economic calculations of business enterprises (Lewin & Cachanosky, 2018b, 424). Menger (1888, 40; translated in Braun, 2020b, 563) offered a precise definition of the business notion of capital. Capital.

...includes business assets, whatever their technical nature may be, inasmuch as their monetary value is the object of our economic calculation—that is to say, if they represent an acquisitive sum of money.

As Mises (1949, 262) would add, it does not matter what these assets consist of, whether they are buildings, equipment, tools, pieces of land, goods of any kind, receivables, claims, cash, or anything else. Whether goods are considered capital has nothing to do with their physical productivity. Mises (1949, 263) makes clear that the “worst outgrowth of the use of the mythical notion of real capital was that economists began to speculate about [...] the productivity of (real) capital”. From the perspective of an enterprise, its assets represent its capital, regardless of their alleged or actual physical productivity. What matters is whether the managers of the enterprise expect them to generate profit. In sum, these assets form the basis of the business operations, and the net income has to be referenced against this basis—the capital—in order to calculate the profitability of the enterprise.

In the field of finance, where questions such as the “cost of capital” are discussed in line with Modigliani and Miller (1958), economists do not define capital as a factor of production but as financial funds, which is why they sometimes also employ the term “financial capital.” It is important to emphasize that the notion of capital defended in this paper not only includes money and other financial funds but, following Menger (1888) and Mises (1949), *all* assets of a business. It is therefore not identical to what is usually called “financial capital.”

In urging economists to return to the business use of the term capital, I build on Hodgson (2014, 2015). The present paper makes three contributions in this

regard. First, while Hodgson focuses on the problems that arise when economists accept concepts like “social capital,” “human capital,” and similar neologisms, this paper delves deeper into the problems that arise from defining capital as a factor of production in economic theorizing. Second, the paper enriches the theory of the entrepreneur by connecting it to the institution of economic calculation and the role of capital therein. By doing so, the paper, third, improves our understanding of the role capital plays in capitalist societies.

This paper is structured as follows. Section 2 provides a brief survey of the literature on the business notion of capital. While this notion has been propagated by members of diverse schools of thought, from libertarian to socialist, no unified body of theory has emerged so far. Section 3 presents the limits and problems of the neoclassical approach to capital, which defines capital as a homogeneous factor of production. Section 4 demonstrates that difficulties arise from the failure of this definition to acknowledge the actual role of capital in capitalism. Section 5 employs the entrepreneurial approach to capital assets to explain the problems that entrepreneurs need to solve while also critiquing this approach for overlooking the role of the business notion of capital. Section 6 demonstrates that the business approach to capital is at the heart of the institutional framework of capitalism and is therefore necessary to describe central processes in capitalist societies. Business capital is inextricably linked to entrepreneurial activity and is central to the coordination and combination of input factors. Both the allocation of resources and the distribution of income depend on the economic calculations of enterprises attempting to maximize the profit on their capital.

## 2 Survey of the literature

Over time, numerous economists have pleaded for adopting the term capital as it is understood in business practice in capitalist societies. Richard and Rambaud (2022a) provide a book-length survey of economists and accounting scholars who endorsed the business concept of capital. Therefore, our survey concentrates on demonstrating that these authors belong to various and diverging traditions or schools of thought.

We find the business usage of the term capital in the works of socialists. In particular, the famous “general formula for capital” (Money – Commodity – Money or M–C–M), used not only by Marx (1909, Ch. IV) but also by Hilferding (1985), illustrates that some important socialists do not view capital as a factor of production. The formula continues to influence the discussion on capital in socialist circles today (Ninos, 2024). Authors in this tradition consider the relationship between capital and labor in capitalism to be exploitative. Workers are not paid the full amount of their contribution to the product, and the resulting gap is where the return to capital comes from. This is why socialists typically oppose capitalism and private property in the means of production.

Surprisingly, we see the same concept of capital in the writings of several economists of the Austrian School. Braun et al. (2016), Braun (2017), and Lewin and Cachanosky (2018a, 2018b, 2019, 2021), are recent examples, but Menger (1888), Fetter (1937), Mises (1949), and Reisman (1996) clearly foreshadowed

their work. Austrian economists do not consider the relationship between capital and labor to be problematic. From their point of view, in a free and competitive market society it is not the capitalists but the consumers who have the ultimate power. In the famous words of Mises (1951, 443), “[a]ll production must bend to the consumers’ will. From the moment it fails to conform to the consumers’ demands it becomes unprofitable.” From the Austrian point of view, the capitalist society is not characterized by exploitative or hierarchical relationships. Rather, it “is a democracy in which every penny represents a ballot paper” (ibid.) in the hands of consumers.

Then again, the opponents of the Austrians in the famous *Methodenstreit*—the Historical and Institutional Schools—also had and have several members who adhere to the business approach to capital (Braun, 2015, 2020a, 2023). Present day institutionalists are critical of capitalism, but they have moved beyond the age-old dichotomy between those who claim that capital exploits labor and those who oppose this view. Instead of objecting to capitalism per se, scholars like Hodgson (2015) and Pistor (2013, 2019) focus on the key institutions that underlie capitalist societies. By revealing the many institutional preconditions of capitalism, all at risk of being manipulated or corrupted, they demonstrate its vulnerability to self-serving interference by politicians, attorneys, and influential capitalists.

We also find prominent Post Keynesians such as Nell (1980) and Vickers (1987) who promote the business concept of capital. Similar to the Institutionalists, the Post Keynesians lean toward the socialists when it comes to the interpretation of capitalism. In his definition of capital, for example, Nell (1980, 495) adopts the Marxian general formula for capital and argues that “the activity of a firm is making a profit in the turnover of its capital.” The formula is still used by some Post Keynesians today (e.g., Javidanrad et al., 2024). Similarly to socialists, many Post Keynesians consider the wage relationship to be characterized by asymmetrical power relationships favoring capitalists. Wage earners are seen as contractually subordinated and defined by their “monetary dependence” (Sindzingre & Tricou, 2022, 230). However, Post Keynesians usually do not demand the abolition of private property or the capitalist system but opt for state interventions (Heise, 2009).

Finally, Joseph Schumpeter (1949, 115 ff.) is an influential economist who is often associated with the neoclassical tradition (e.g., Shionoya 1990) but endorsed the business concept of capital. A possible reason for Schumpeter’s perspective on capital could be that he developed some of his main ideas within the conceptual framework of the German Historical School (Michaelides & Milios, 2009).

All these diverse authors have called for shifting the emphasis of capital theory away from physical and human productive resources and toward the monetary aspects of both tangible and intangible assets in profit-oriented business operations. They stress the fact that, in capitalism, capital is an important element of the economic calculations of the business enterprises that organize the production process. Nonetheless, it is no wonder that no common body of theory has evolved. Obviously, the presented schools differ when it comes to interpreting their observations. In particular, they fundamentally disagree on the moral evaluation of capital and capitalism.

One contribution of this paper is that it presents, to the extent possible, the business approach to capital in a way that is acceptable to all schools of thought. There is a common ground between Marxist, Austrian, Institutional, Post Keynesian, and Neoclassical (in the Schumpeterian tradition) economists in-so-far as they employ the business notion of capital. However, they have not joined forces but rather fought each other to promote or fight against the capitalist system. It is not the purpose of the paper to bring these schools together in terms of interpreting capitalism morally. However, I am convinced that agreeing on certain terminology and the corresponding toolbox would allow them to understand each other better and engage in a more fruitful scientific debate.

### **3 Conceptual problems with the definition of capital as a factor of production**

#### **3.1 The original reason for conceptualizing capital as a factor of production**

Classical economists observed that almost all members of Western or capitalist societies fall roughly into one of three income categories (Hamilton, 1955, 81). There is a group of people receiving wages, another group receiving profits, and a third receiving rents. For the sake of completeness, I must add that during the nineteenth century, the group receiving profits was analytically divided into those who receive interest and those who receive profits.

Whereas it was not controversial to argue that laborers are paid wages as a result of their contributions to the production process, it was different for the rent that went to land owners and particularly for profits or interest that went to capitalists. It was not clear to everyone whether capital- and land-owners actually contributed to the production process in a way that justified their income. In the course of the nineteenth century, this became an ever more important and emotionally charged issue. The question was: Does capital exploit labor?

There is a long tradition of philosophers, scientists, institutions, and religions denying that interest is a remuneration for a productive contribution of a production factor. For example, Aristotle (1932, 1258b) considered interest as usury. Usury is “most reasonably hated,” because “its gain comes from money itself,” and this is, of all forms of getting wealth, “the most contrary to nature.” Böhm-Bawerk (1890, 17) was well aware of the implications of this position. If money breeding money is against nature, interest must be a gain obtained through “abuse and injustice,” not by any productive activity.

For the development of modern economic theory, it was crucial that socialists like Marx (1909) denied that interest was paid for a productive contribution. Marx developed his exploitation theory to demonstrate that return on capital is simply value taken away from workers. According to his theory, the owners of capital are able to retain a part of the produce of labor—the surplus value—not because they produce this value, but because they have appropriated the means of production. In other words, Marx and many socialists saw the fact that capital earns income as the result of an injustice inherent in the capitalist system.

Against this background, there is a good reason why non-socialist economists traditionally stressed that capital is not sterile but productive in the same way as labor. They had to find an answer to the allegations against capital and capitalists if they did not want to abandon capitalism. Therefore, they were eager to demonstrate that interest was actually the earned income of a factor that actively contributes to the production of output. Indeed, the influential economist John Bates Clark (1899, 4) explicitly stated that one purpose of his efforts to prove that the distribution of income coincides with the productive contributions of income earners was to invalidate socialist arguments:

The indictment that hangs over society is that of ‘exploiting labor.’ ‘Workmen’ it is said, ‘are regularly robbed of what they produce. This is done within the forms of law, and by the natural working of competition.’ If this charge were proved, every right-minded man should become a socialist; and his zeal in transforming the industrial system would then measure and express his sense of justice. If we are to test the charge, however, we must enter the realm of production. We must resolve the product of social industry into its component elements, in order to see whether the natural effect of competition is or is not to give to each producer the amount of wealth that he specifically brings into existence.

It is clear from Clark’s statement that, from the perspective of economists following Clark’s tradition, abandoning the idea that capital is productive would imply abandoning capitalism. The consequence would allegedly be that Aristotle, the medieval church, Islamic finance, and the socialists were right after all. It is understandable, therefore, that the idea that capital is a factor of production has been so persistent.

### 3.2 The acknowledged circular argument in the neoclassical approach to capital

For Clark and his neoclassical followers, then, there were several factors of production, including capital, and they were all on equal footing (Hennings, 1990, 116). They were combined in the production process and produced output. A brief look at modern textbooks and research papers reveals that this idea is still dominant (e.g. Novales et al., 2022). Many neoclassical authors continue to assume that capital is a factor of production that can be measured and aggregated. Output is a function of labor  $L$  and capital  $K$ , which both stand peacefully next to each other, for example in the Cobb–Douglas or constant elasticity of substitution (CES) production functions. In the Cobb–Douglas production function, total output  $Y$  is a function of capital input  $K$  and labor input  $L$ .

$$Y = f(L, K) = AL^\alpha K^\beta$$

In this formula,  $A$  stands for total factor productivity and  $\alpha$  and  $\beta$  are the output elasticities of labor and capital, respectively, where  $0 < \alpha < 1$  and  $0 < \beta < 1$ . It is commonly assumed that the first derivative of the production function with respect to capital, that is, the marginal product of capital (MPC), is positive.

$$MPC = \frac{\partial Y}{\partial K} > 0$$

In other words, capital as a production factor supposedly contributes to output. Under perfectly competitive conditions and in equilibrium, the owners of capital get paid the MPC (Harris, 1973, 100). That is, the MPC equals the return on capital (Murphy, 2007, 453). In this way, neoclassical economists not only explain but implicitly *justify* the income of capital owners. After all, according to their analysis, the return on capital is based on the marginal productivity of capital.

However, defining capital as a factor of production creates deep conceptual problems. When economists claim that something is a factor of production, they must be able to quantify and measure it. Otherwise, they could not tell how a change in the amount of this factor affects output, and they would not be able to determine the distributive share that goes to its owners. Yet, what would be the point of a production factor if we could neither determine its contribution to output nor the income it generates?

The Cambridge Capital Controversy revealed the logical difficulties that the neoclassical concept of capital runs into. The argument of the Neo-Ricardians is well known, and I will only summarize it briefly. As we have seen, if we define capital as a factor of production, we must be able to measure it, that is, to determine and state the quantity of capital. Furthermore, as a production factor, capital must somehow be measurable as physical equipment. In Harcourt's (1972, 4) words, capital must be defined "in terms of its own technical unit." Otherwise, the production function would not be able to connect the quantity of physical equipment to the quantity of physical output, and differentiating the function would not result in the MPC. Cobb and Douglas (1928, 139) themselves were already aware of this point. However, it is generally accepted that it is impossible to aggregate and measure the numerous and heterogeneous components of the physical equipment in an economy in a meaningful way. The solution of the neoclassical economists is to measure the quantity of capital by aggregating the *value* of the respective goods, referring to the sum as K. In order to be able to do so, they assume equilibrium conditions, that is, that the available stock of capital is fully employed and that the market clears instantaneously (Solow, 1956, 68, 79, 91).

This procedure implies a circular argument. In order to determine the value of capital goods, neoclassical economists have to assume a given rate of interest. Regardless of whether they argue that the present value of "capital goods" stems from past costs or from discounted future benefits, the rate of interest is necessary to determine this value. Interest is part of the costs that go into the production of capital goods, and the interest rate is also necessary for discounting future benefits to the present. In both cases, the quantity of capital, measured as a value, depends on the rate of interest. But if neoclassical economists argue that the return on capital depends on the quantity of capital, they cannot at the same time argue that the quantity of capital depends on the accumulated or discounted return on capital.

Samuelson (1966) famously conceded this argument. Although the debate did not put a question mark over the idea that capital is a factor of production, it

demonstrated that the neoclassical attempt to *quantify* capital as a factor of production faces unsurmountable logical problems.

It is important to add, however, that, notwithstanding Samuelson's concession, neoclassical economists continue to use the aggregate production function, including the production factor capital (K). Despite Hahn's (1975, 363) remarks to the contrary, the aggregate production function is not confined to textbooks. Felipe and McCombie (2013, 1–2; 2020) demonstrate that it is still used in numerous theoretical and empirical research papers. The reason for this is that the aggregate production function appears to yield good statistical fits with plausible estimates of the coefficients.

Yet, the logical problems of the production function and the neoclassical concept of capital also affect the empirical research in this area. The results of the Cambridge Capital Controversy raise the question of whether Y in the aggregate production function can really be described as depending on K. After all, K is supposed to be a value magnitude that usually depends on the expected stream of income it generates. So in a non-trivial sense, K also depends on Y. An increase in K causes an increase in Y, but an increase in Y also causes an increase in K. Y and K are two sides of the same coin rather than two variables whose functional relationship could somehow be tested empirically.

Accordingly, it has long been realized that it is not any functional relationship between K and Y that can explain the good regression results but rather the existence of an underlying accounting identity (e.g. Phelps Brown, 1957).

This identity,  $Y \equiv wL + rK$  (where Y is value added, w is the wage rate in constant prices, L is employment, r is the rate of profit and K is the constant-price value of the capital stock), can always be mathematically transformed into a specific functional form resembling a production function that gives a very close, or indeed, a perfect statistical fit to the data, even though no aggregate production function actually exists (Felipe & McCombie, 2014, 62, notation has been changed).

The implication of this argument is that the precise form  $Y = f(L, K)$  corresponding to the particular data set  $Y = wL + rK$  must yield a perfect fit if estimated econometrically since all that is being estimated is an identity (Felipe & Fisher, 2003, 252).

## 4 The reason for the conceptual problems of capital as a factor of production

### 4.1 Capital as a production factor is independent of capitalism

In Sect. 3.1, I presented one important reason why it has been and continues to be important for neoclassical authors to maintain that capital is a productive factor of production. The alleged proof that capital is productive, that is, that the MPC is positive, appears to be an implicit justification for the existence of capital and therefore of capitalism as an economic system.

However, it is by defining capital as a factor of production that neoclassical authors have opened the door for the logical problems described in Sect. 3. They did

so by paradoxically ignoring capitalism in their definition of capital while presupposing the economic calculations of capitalist enterprises when it comes to measuring its quantity.

How did they ignore capitalism? The point is that Clark's (1899) defense of capitalism—his demonstration that capital is a productive factor of production—appears to have backfired. If we define capital as a physical factor of production, we are simultaneously admitting that it is not tied to any specific economic system. This was already clearly stated by Cobb and Douglas (1928, 164), who claimed that capital—as a factor of production—may be productive, but “it does not follow that the capitalist always is.” They argued that the productivity of capital is independent of its ownership. One may be a “supporter of socialism, communism, or individualism and still square his social philosophy with the theory of production which we have developed.” Indeed, it cannot be denied that socialist or feudal societies employ physical equipment, that is, capital in the sense of a production factor as well.

A brief look at the empirical work based on the aggregate production confirms that the neoclassical concept of capital is independent of the economic system. Since neoclassical economists from the beginning upheld the idea that capital is a factor of production, nothing hindered them from applying this concept to non-capitalist societies. For example, Kim et al. (2007) apply both the Cobb–Douglas and CES production functions to derive total factor productivity for North Korea. For capital stock, they use North Korean official data on fixed capital investment from 1954 to 1976, and for later years they estimate the data. For a similar attempt, see Bradford et al. (2011). Likewise, Bergson (1989), Berliner (1964), and Desai (1985) apply the Cobb–Douglas and/or CES production functions to explain the output growth (or its retardation) in postwar Soviet industry.

Although the proposition that capital is productive was supposed to be a rebuttal of socialist claims, the resulting neoclassical concept of capital can apparently be found and measured in socialist countries as well. In fact, it is allegedly even possible to measure the productivity of capital in these economies without any problems. *Capital, in this approach, obviously has nothing to do with capitalism.*

## 4.2 Measuring capital in capitalism is not independent of capitalism

It follows that the neoclassical argument that capital is a productive factor of production is not really a defense of capitalism. Actually, it may even make more sense to apply the aggregate production function to socialist countries than to apply it to capitalist ones. The investment expenditures by the North Korean government may indeed be partly or totally independent of the financial return that these expenditures generate, if any. The investment decisions may be based on nutrition policy, *Macht-politik*, or similar non-economic considerations. There is no logical problem here.

The situation is totally different in capitalist countries. There, the investment expenditures are not independent of the expected financial returns. On the contrary, the value of investment goods (e.g., physical equipment or capital goods) is nothing but a reflection of these expected returns. When investors in capitalist economies plan to buy or sell a certain physical asset or capital good, they compare its market

price with the net present value of the cash flows that they expect it to generate in the future (Vickers, 1987, 10; Matschke & Brösel, 2021, 13). What they are paying for it, in other words, depends on their economic calculations. If the present value of the expected cash flows generated by investment objects increases (decreases), their willingness to pay will increase (decrease).

So, in capitalist societies, the value of the capital stock  $K$  depends on the investment decisions of profit-oriented investors, and these decisions, in turn, depend on the income that this capital stock is expected to generate. The logical difficulties of the neoclassical approach to capital, described in Sect. 3, can be explained as a result of the fact that neoclassical economists ignore the capitalist logic behind the value of the capital goods they put into their aggregate production function. The value of the variable  $K$  depends on the buying and selling decisions of enterprises that try to maximize the expected profit from investing in physical inputs. In capitalist societies, the quantity of  $K$  does not determine output, but the expected value of the output determines the quantity of  $K$ . Expected income is prior to economic value (Vickers, 1987, 28, 41).

These observations explain the theoretical and empirical difficulties that arise when economists devise production functions where the quantity of capital ( $K$ ) is supposed to be independent of the return generated by capital. They also demonstrate that the neoclassical approach to capital does not factor in the way the production process is organized under capitalism. If we want to explain why and how business enterprises allocate and distribute resources in their attempts to maximize the return on their capital, the idea that capital is an aggregated production factor named  $K$  does not help in any way.

## 5 The problem of organizing the production process

If we accept the fact that capital is directly related to (and confined to) the economic system of capitalism, we can develop an economic theory of capital that helps us to understand the behavior of enterprises and the organization of both the allocation of goods and services and the distribution of income in capitalist societies. This theory complements an important strand of research. In recent years, a number of scholars working at the interface between entrepreneurship and economics have elaborated on the blind spot in the neoclassical literature on capital when it comes to organizing and combining the various goods that  $K$  (capital) consists of.

The point of this entrepreneurial approach to capital assets is that the concept of an aggregated production factor  $K$  tacitly presupposes that the arrangement and organization of the numerous physical input factors to the production process have already been accomplished. In other words, in a world where capital is a homogeneous factor of production, as in neoclassical economics, no entrepreneur is needed (Foss et al., 2007, 1165). With homogeneous capital, “economic organization is relatively unimportant” (Foss & Klein, 2012, 108). Homogeneous capital “comes close to being a substitute for a zero-transaction-cost assumption.” All entrepreneurial decision problems would be “trivialized as all capital goods possess the same attributes” (Foss & Klein, 2012, 109).

Therefore, economists and entrepreneurship scholars like Foss and Klein (2012) and Harper and Endres (2010; 2020) have dismissed the neoclassical approach to capital. They follow Böhm-Bawerk (1891) and Lachmann (1978) and emphasize the heterogeneity of capital goods and the necessity to coordinate them (Bylund et al., 2023; Foss et al., 2007). They frame questions about capital in terms of entrepreneurial choice and entrepreneurial judgement concerning the coordination and combination of the heterogeneous goods that capital consists of. According to a summary by Harper and Endres (2010, 40), this approach (1) emphasizes the “combinatorial, relational and structural character” of capital, (2) explains “actual relations of complementarity between heterogeneous capital goods as well as the inner workings of capital and its structure,” (3) integrates “process analysis and entrepreneurship into the study of dynamic, heterogeneous capital problems,” and (4) avoids treating capital as “untied to any specific physical form so that it does not require or presuppose any organizational structure whatsoever.”

Authors in this tradition avoid the term “factor of production” since it would give the impression that capital is somehow homogeneous and quantifiable. However, they still view capital as an important input to the production process, but they stress that it consists of heterogeneous and unaggregatable elements that need to be coordinated by entrepreneurs.

From an Austrian School perspective, it is important to note that the “entrepreneurial approach to capital assets,” although certainly based on Austrian sources like Böhm-Bawerk (1891) and Lachmann (1978), does not follow the lines of Menger (1888) and Mises (1949). True, it is possible to detect some traces of the idea that capital consists of physical capital goods in Mises’s writings. For instance, Mises (1949, 512) states that “[c]apital is a praxeological concept” and not “independent of the capital goods in which it is embodied.” However, this appears to be due to the fact that, in this passage, Mises is criticizing the Marxian “mythology of capital,” the idea that capital “reproduces itself and thus provides for its own maintenance.” In order to counter this mythology, Mises stresses that capital is not a self-preserving entity but rather consists of assets that do not appear out of thin air. Still, it is apparent even on the very same page that Mises does not really think that capital consists of physical capital goods. Mises (1949, 512) goes on to write that capital “is inescapably linked with capitalism, the market economy”—an argument that implies that capital is *not* a praxeological concept but has institutional preconditions. Furthermore, Mises’s treatment of capital in chapters XIII and XV and his definition of capital as including “pieces of land, buildings, equipment, tools, goods of any kind and order, claims, receivables, cash, or whatever” (Mises 1949, 262) demonstrate beyond doubt that he does not consider capital to be a structure of physical producer goods but a tool of economic calculation.

The point of the entrepreneurial approach to capital assets is to illustrate the complexities of the structure of production. In the words of Foss and Klein (2012, 109), “in the world of Austrian capital theory the entrepreneur’s primary function is to choose among the various combinations of substitutable and complementary inputs that are suitable for producing particular goods.” Capital theory can serve as a basis for explaining the role of the entrepreneur in bringing order to this complex structure (Braun, 2017, 314 ff.). “Austrian capital theory,” Foss

and Klein (2012, 21) write, “provides a unique foundation for an entrepreneurial theory of economic organization.”

Obviously, these authors do not adapt the business concept of capital. However, its focus on entrepreneurial activity demonstrates that the entrepreneurial approach to capital assets actually deals with organizing the allocation and distribution of goods and services in capitalist societies. Its adherents are well aware of the problem that needs to be solved and that is ignored as long as capital is defined as a homogeneous factor of production. However, their definition of capital as a structure of heterogeneous goods of physical equipment makes it clear that capital in this sense is not restricted to capitalism. Endres and Harper (2010, 39) realize this point, admitting that “a configuration of physical instruments of production in a socialist economy [...] [might] have the same physical properties as a combination in a capitalist economy.” However, this would only be “superficially” correct. The difference is that under socialism, the combination of capital goods “is not brought into being by disequilibrium market prices and entrepreneurial perceptions of profit opportunities generated by breaks in the existing capital structure” (ibid.).

In other words, what is peculiar to capitalism, according to this view, is the existence of markets and entrepreneurial perceptions of profit opportunities. What distinguishes capitalism from socialism, therefore, is the *method* by which the breaks in the existing capital structure are remedied. However, the capital structure itself and the breaks in it clearly appear to exist in both capitalism and socialism. *Capital as defined by this strand of literature is not peculiar to capitalism.*

Actually, Endres and Harper explicitly reject the idea of limiting capital to a monetary or business notion. They claim that this would be “a recipe for *significant* explanatory incompleteness” (Endres & Harper, 2020, 1087, emphasis in original). Their argument against the business notion of capital is reminiscent of the criticism of the adherents to the entrepreneurial approach to capital assets against the aggregate capital concept of neoclassical economics. Endres and Harper argue that the coordination and organization problems that stem from the heterogeneity of capital goods are overlooked once capital is defined as a homogenous monetary magnitude. They (2020, 1088) explicitly state that “an examination often requires departure from ‘the typical business man’s viewpoint’, which is usually restricted to capital value in the pure financial sense.” The business notion of capital.

neglects significant organisational factors in production, including path dependencies, irreversibilities, indivisibilities and rigidities that make it costly to adjust the horizontal or vertical structure of capital goods (at the enterprise or industry levels of the economy), problems of scale, under-or over-investment crises and discrete breakdowns in production caused by unsustainable configurations of capital goods (Endres & Harper, 2020, 1087).

In the following section, I will demonstrate that these concerns are unnecessary. Economic calculation is one of the most important tools by which entrepreneurs make the heterogeneity of input and output factors tractable. It is by reducing the heterogeneity of inputs and outputs to homogeneous monetary magnitudes that the concept of capital allows entrepreneurs to make any rational statements regarding

the profitability of their past actions and the expected profitability of their current investments.

## 6 The role of capital in capitalism

### 6.1 Capital in actual business life

If we want to understand the role of capital in allocating and distributing the societal resources in capitalism, that is, the role of capital in coordinating the combination of countless heterogeneous goods and services, we have to start by observing the economic system we live in, particularly the economic calculations of enterprises. Right away, we realize that, as opposed to the earnings of the production factors labor and land, the return on capital is usually expressed as a percentage rate. Whether we look at contractually fixed interest (on debt capital), the non-contractually fixed return on equity capital, or the return on the entire capital employed, the income supposedly derived from capital can be directly related to capital itself in a meaningful equation (Richard & Rambaud, 2022b, 91). *Capital and its earnings have the same dimension.*

This is an observation that the entrepreneurial approach to capital assets cannot account for. Characteristically, the summary of this approach by Endres and Harper (2010), cited in Section 5, does not contain any reference to the *return* on capital, be it interest or profit (similarly Endres & Harper, 2020). Likewise, in his influential monograph on the structure of capital, Lachmann (1978, 74) pointedly states that “we are not interested in interest as such.” The lack of almost any reference to the return on capital reflects the fact that many Austrian economists are not following up on the attempts of their predecessors (e.g., Böhm-Bawerk 1891) to explain interest as an outflow of the productivity of capital.

It is not the case for the “other” production factors that they have the same dimension as the earnings they generate. Wages, for instance, cannot be expressed as a certain percentage rate of labor. An annual salary of \$50,000 is not, say, ten percent of the labor personified by the worker. This is not to deny that the term “rate of wages” actually exists. In fact, laws on the minimum rate of wages exist in many countries. But this rate is an absolute amount of money paid per labor hour, not a percentage rate of two magnitudes denominated in the same unit.

In actual business life, capital is a term that is necessary in the economic calculations of enterprises. For them, it does not suffice to determine the absolute amount of their profits. It is not very meaningful to say that a certain company made a profit of 1 million dollars in 2023. Whether that is a good or a bad number depends on the capital that has been invested in order to make this million. If the company owns assets worth only 1 million dollars, its return on invested capital is 100 percent. If its assets are worth 1 billion, its return is 0.1 percent, which is a huge difference. If we want to determine the profitability of an enterprise, its profits must be related to its capital.

Accordingly, in the business world, capital is not a factor of production alongside land and labor. A brief glance at typical balance sheet reveals that *land is a*

**Table 1** Balance Sheet of a Business

Assets	Liabilities
book value of land	debt capital (accounts and notes payable)
book value of buildings	
book value of equipment	
book value of tools	
book value of ingredients	
book value of patents	
book value of final products	
book value of receivables	
book value of securities	equity capital (total assets – debt capital)
cash	
Total assets =	Total liabilities

*common component of the capital of a business.* As Table 1 demonstrates, any good can become capital, not only so-called capital goods, that is, produced means of production. The nature of the good, tangible or intangible, “productive” or “unproductive,” does not matter in any way. As long as they are acquired by a business for the purpose of generating profit, they are capital from the point of view of this business. They are in the balance sheet because they represent the capital of the enterprise—they document where the capital of the enterprise has been put. It is in their capacity as capital that they must be related to profits to see how profitably the business is operating.

Not too long ago, when the horror of slavery was still legal in large parts of the world, even labor could become capital. In the United States, slaves typically appeared as tangible fixed assets on farms’ balance sheets (Lautour, 2019, 26; see also Hodgson, 2014, 1071 and Richard & Rambaud, 2022b, 41). Today, this practice has fortunately ceased. However, prepaid wages are sometimes reported on the balance sheet as a current asset. This illustrates that capital is not on the same plane as land, labor, or any other factors or means of production.

Everything that can be legally owned can also become capital. Nothing is capital per se, however. A good becomes capital if and when it is acquired or created by a business enterprise and put into its balance sheet. However, the same goods are *not* capital as long as they are not in such a relationship with business enterprises. If they are owned by private persons, non-profit organizations, the state, or not at all, the assets depicted in Table 1 cease to be capital. They are then mere tools, buildings, claims, land or whatnot without being part of the capital of a business enterprise.

An important implication of the direct relation between capital and economic calculations of business enterprises is that capital is and must be homogeneous. The goods on the assets side of the balance sheet are homogeneous in that it is their book values that are relevant in economic calculations. According to Mises (1951, 123), economic calculation.

serves to bring the original properties of a concern under one denomination, whether they consisted of money or were only expressed in money. The object of its computations is to enable us to ascertain how much the value of this property has altered in the course of business operations. The concept of capital is derived from economic calculation.

Far from being severely limited in its explanatory power, as Endres and Harper (2020) claim, the business notion of capital is essential when it comes to understanding how entrepreneurs solve the problem of coordinating and combining heterogeneous goods and services. Of course, I am only talking about the economic side of this issue. It is the task of engineers to determine whether the combination of heterogeneous input factors is possible and makes sense technically. Unquestionably, the heterogeneity of the input factors is relevant from a technical point of view.

*Economically*, however, it is important whether the capital of the business has been invested profitably in the past or can be invested so in the future. In order to examine these questions, the heterogeneous input factors must be brought down to one common denominator. Only then is it possible to evaluate and compare different actual or potential combinations of heterogeneous goods suggested by engineers. Without reducing these goods to homogeneous magnitudes in their economic calculations, entrepreneurs would not be able to make rational evaluations of and decisions on the employment of their capital and the combination of heterogeneous goods.

It only makes sense to maintain a close relationship between entrepreneurial activity and capital if we define capital in the business way. If we define capital as the structure of heterogeneous physical instruments, as the entrepreneurial approach to capital assets does, there is no reason why capital should have any special relationship to entrepreneurs or enterprises. True, it is entrepreneurs who combine heterogeneous capital goods in order to make profit. However, they do the same with the many heterogeneous kinds of labor, the many heterogeneous kinds of land or nature, and the many heterogeneous kinds of intangible assets. As Boulding (1986, 8) notes, not only capital, but “[l]and, labor, and capital are extremely heterogeneous aggregates, not much better than earth, air, fire, and water.” Capital is not in any way special in this regard (Nell 2019). If the point is that the entrepreneur brings order to the structure of heterogeneous capital goods, capital becomes a term without any special meaning or function. All kinds of goods and services are heterogeneous; all kinds of goods and services have to be coordinated and combined by entrepreneurs. There is no need to pick out produced means of production and call them capital or capital goods.

I would like to stress that it is an empirical observation of real-world capitalist economies that capital and its earnings have the same dimension and that the return on capital is usually expressed as a percentage rate. This proposition has not been introduced or defended by economists to justify or discredit capital, capital-owners, or capitalism. Rather, the opposite appears to be true. It seems as if economists introduced the idea that capital is a factor of production to justify the observation that capital earns a certain percentage rate as income.

## 6.2 The allocation and distribution of goods and services in capitalism

When it comes to the relationship between capital and capitalism, the most important observation is that almost any good or commodity that exists in capitalist societies appears on various balance sheets before it attains its final state. Even goods commonly provided by the state, such as transport infrastructure or public education, are no different in this regard. The final products—the streets and schools—may sometimes be owned by the state and managed on a non-profit basis by public servants. However, the materials necessary for building them and almost all goods and services necessary for equipping, upkeeping, and running them are produced by business enterprises. These respective goods have been capital at one point (or rather numerous points) in their lifetime.

In capitalism, almost all goods and/or components are purchased, processed, and sold by enterprises again and again. The goods that appear in the balance sheet of, say, a bakery have previously been in various other balance sheets. To keep it simple, flour has been owned by a wholesaler and a mill. Before that, it had been grain owned by a farmer and perhaps another wholesaler. The same holds for sugar, eggs, chocolate, paper bags, the baker's oven, and the vitrine—in short, for all assets owned by the bakery. All of them went through numerous, sometimes countless balance sheets, not to mention their components and the inputs that were necessary to produce them in the first place.

The important point is that each enterprise contributes to this process because its owners or shareholders hope to generate a positive return on their capital. By doing so, these enterprises determine the allocation of goods and resources in capitalist societies. In other words, goods and resources go through being capital and being subject to economic calculations multiple times before they reach the final stage of consumption. At each step, they are expected to generate profits for the respective enterprise. This includes what is usually called the factors of production. The allocation of land, labor (rather: labor services), and physical equipment is determined on the basis of economic calculations. Capital is not one of these factors of production. Rather, the factors of production become capital in the course of this process if they (or the results of their services) appear on balance sheets.

Next to the allocation of resources, the distribution of income is also accomplished mainly through the logic of capital. In the United States, there were 132.59 million full-time and 28.17 million part-time employees as of December 2023. The number of government employees has been stable at around 22 million for about 20 years (Statista, 2023, 2024a, 2024b). So, if we set aside non-profit organizations, roughly 138 million US employees serve in businesses. They receive their salary for the same reason that enterprises buy and process assets: They are expected to create revenues for the business that are higher than their gross wages. In other words, they are supposed to contribute to profits. It is the economic calculations of enterprises that determines the distribution of income to most persons in dependent employment.

In the same way, it is mainly profit-maximizing enterprises that determine the amount of rent that goes to the owners of borrowed assets, the amount of dividends that goes to shareholders, and even the amount of interest that goes to creditors.

When it comes to their income, all these groups depend directly or indirectly on the economic calculations and the success of enterprises that try to use their capital profitably.

## 7 Concluding remarks

In this paper, I did not take a stance on the moral justification or condemnation of capitalism as an economic system or capital as a source of income. Rather, I presented a positive approach to capital, where capital is understood and defined in the way it is actually used by business enterprises in capitalist societies. I have demonstrated that capital in this sense is not a factor of production. It is an important element of the economic calculations of profit-oriented enterprises that overwhelmingly organize the allocation of resources and the distribution of income in capitalism. Obviously, socialists, Austrians, Post Keynesians, Institutionalists, and other schools of thought disagree when it comes to evaluating the viability, efficiency, and ethicality of this process. However, I suggest that it would be an important step forward for economists of all backgrounds to agree on a uniform concept of capital. A respective theory of capital could then serve as a basis for discussions on political and ideological issues instead of being the apple of discord itself.

To give an example, recent years have witnessed several revolutions in the sphere of economic calculation. In the field of financial accounting, international standard setters promote the use of so-called “fair values” instead of traditional “historical costs” when it comes to assessing the value of business assets. In the field of investment appraisal, some parts of academia and the business world endorse the shareholder value maximization approach and reject the traditional business objective of maximizing realizable monetary profits. Economists would be better equipped and prepared to comment on these important developments if they had a shared approach to capital that integrates and explains the role of economic calculation in the economy.

The most important theoretical obstacle to an alternative approach to capital is the neoclassical approach to capital. I have shown that this approach runs into the difficulties that the famous Cambridge Capital Controversy has exposed precisely because it defines capital as a factor of production. By defining capital in this way, neoclassical economists assume that its existence is independent of any economic system. However, when it comes to determining the quantity of capital, neoclassical economists must presuppose the capitalist way of valuing physical equipment. They violate their own assumption and, by doing so, encounter the well-known paradoxes of capital.

To demonstrate the utility of the business notion of capital, the paper has drawn on the entrepreneurship literature. I started from the idea that, in capitalist societies, one of the main functions of entrepreneurs is to coordinate and combine the numerous and heterogeneous resources in the production process. I added to this strand of literature by showing that this task can only be accomplished because entrepreneurs base their decisions on economic calculations. Entrepreneurs reduce the heterogeneous goods they own or plan to own to one common denominator. From their

perspective, these goods are homogeneous in that they represent the capital of the business or may do so in the future. For entrepreneurs, the relevant question is not whether a certain combination of inputs is technically possible—that is a question that can only be answered by engineers. They want to know whether this combination is profitable. For this purpose, they unite the respective goods in their calculations, call them capital, and contrast them with the net income they generated or are expected to generate.

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