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Full Length Article

The end of capitalism as a concept: Towards a new political economy for understanding monetary societies in the biosphere

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ABSTRACT

Political economy has two major concepts of capital. In one, capital is defined as money. Adam Smith proposed the other, which considers capital as anything that has a role in the creation of wealth even if peripheral. It includes, for instance, machines, the biosphere ("nature capital" or "natural capital"), and even human beings ("human capital"). The concept of capitalism is generally derived from Smith's overinclusive concept of capital. This led to ambiguity and tautology. However, the pre-Smith concept of capital does not require the concept of capitalism. By removing non-monetary elements from the concept of capital, this study reaches an alternative 'monetary society in the biosphere' concept, which avoids confusion regarding monetary and non-monetary flows. This new concept integrates the economic and societal production in the biosphere. Furthermore, it recognizes that various monetary flows can be detrimental to ecological crises. Abandoning the concept of capitalism can contribute to conceptual precision in addressing the political economy of societal, environmental, and green development phenomena.

1. Introduction

The term capitalism cannot be defined without considering the previous concept of capital, because it is used to characterize societies that rely on capital. Nevertheless, the definitions of capital currently prevalent in economics, political economy, and other social sciences are overinclusive, ambiguous, and employed in a multiplicity of different contexts. These definitions fail to clearly distinguish between money and many other elements. For instance, money as capital is treated akin to human beings (*human capital*[1]), machinery (*physical capital*, *intellectual capital*[2]), and the biosphere (*natural capital*, *nature capital*[3]).

This confusion regarding the defining features of capitalist societies prevents us from obtaining a better understanding of how human beings are embedded in the biosphere, and how green development can be achieved. In this study, the biosphere is not only understood as living beings, but also as the requirements for the existence of living beings in our planet's atmosphere, hydrosphere, and geosphere.[4]

Without an analytical concision regarding the concept of capital, capitalism has become an inconsistent concept with limited analytical value for the examination of any society. Therefore, the definition of capitalism can significantly undermine research on both contemporary and ancient societies. Furthermore, it may restrict the employment of adequate measures to deal with sustainability and green development, as well as environmental and climate crises. To address this problem, this study presents a new research question: can we provide theoretical alternatives to the concept of capitalism to describe societies in which monetary flows are vital for human survival and existence?

In addition, this study proposes an alternative concept of 'monetary society in the biosphere,' which restricts the concept of capital to that of just money, as in the pre-Adam Smith concept of capital. This concept integrates economic and societal production in the biosphere and recognizes that monetary flows can have both positive and harmful

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[1] See for instance Ahakwa et al. (2024); Danta and Rath (2024); Gerhart and Feng (2021); Kozera-Kowalska (2024); Hao et al. (2021); Loiseau et al. (2016); Wang et al. (2021).

[2] See for instance Chang and Chen (2012); Meran (2023); Small et al. (2023); Wang and Juo (2021); Xu et al. (2021).

[3] See for instance Bastien-Olvera et al. (2024); Bateman and Mace (2020); Hein et al. (2020); Hua and Wang (2023); Managi et al. (2023); Ogilvy et al. (2022); Zao et al. (2020).

[4] Cardao-Pito (2021); Cardao-Pito and Abdyrakhmanova (2024).

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outcomes in contemporary crises. For instance, many instances of pollution are motivated by a propensity to generate monetary flows, especially in the direction of polluting firms, their owners/shareholders, and debtholders, and government benefits from the taxes raised.[5]

One could argue that in economics and interrelated social sciences, conceptions such as those of social and environmental efficiency (or optimality) take into consideration eventual externalities, such as for example pollution, social ills, or nature depredation, in contrast to the conception of private efficiency (optimality) that tends to ignore them.[6] Even in social and environmental efficiency frameworks, however, the idea of externality is associated with outwardness regarding economic and societal activity defined through monetary flows. The latter are treated as the constitutive being (ousia) of economic and social activity.[7]

The new conception of monetary society in the biosphere eliminates the outwardness that describes the idea of externality. For instance, the pollution necessary to generate monetary flows in the direction of polluting firms, their owners/shareholders, debtholders, and government mentioned above must not be considered as a form of externality that outwards monetary flows. By contrast, such pollution is an integral part of how monetary flows are generated, and we can only understand these monetary flows by understanding the pollution necessary to generate them.[8]

We may have become accustomed to the idea of capitalism in our lives and career. Undeniably, ideas and divergences of opinion regarding capitalism existed before living human beings were born. Nevertheless, this fact does not help resolve many of the analytical fragilities that exist regarding the concepts of capital and capitalism, which have afflicted economics and interrelated social sciences for a long time. Even inconvincible readers can benefit by further thinking about the meaning of capitalism and how it can describe any society.

Owing to the environmental emergency crisis facing the world in which we live, there is a pressing need for emergent economic theories. This study may be fruitful by generating a debate on what capitalism stands for. Identifying the above research question may be a greater contribution to knowledge than the subsequent solution presented to address this question.

By abandoning the ambiguous concept of capital, we can contribute to conceptual precision in addressing societal phenomena, green and ecological phenomena, and the ensuing crises. Furthermore, we can augment the participation of social sciences beyond the sphere of economics in the study of economic and green phenomena. In the end of this article, we exemplify three areas in which future research can benefit from the more rigorous conceptual framework suggested in this study, namely, environmental, social, and corporate governance (ESG), green marketing, green finance, and environmental policy.

The remainder of this article is organized as follows. The next section explains that the concept of capitalism is undeniably tied to the post-Adam Smith concept of capital, which includes anything with even a peripheral role in wealth creation. The third section explains that the pre-Smith concept of capital equates capital with money, and, as such, we no longer need the overreaching concept of capitalism. It introduces the alternative concept of a monetary society in the biosphere. The fourth section explains that the new concept is much more productive in disentangling monetary flows from non-monetary flows and recognising the role of the former in contemporary societies, the biosphere, and in preventing and causing ecological crises. The fifth section exemplifies several areas of research to which the new concept can contribute. Finally, the sixth section concludes the study.

[5] Cardao-Pito (2021); Cardao-Pito and Abdyrakhmanova (2024).

[6] See for instance Berman (2002); Mankiw and Whinston (1986), Lefeber and Vietorisz (2007), Arrow (1970), Paniagua and Rayamajhee (2023); Picazo-Tadeo and Prior (2009); Schläpfer and Vatn (2023).

[7] Cardao-Pito (2021); Cardao-Pito and Abdyrakhmanova (2024).

[8] Cardao-Pito (2021); Cardao-Pito and Abdyrakhmanova (2024).

2. The concept of capitalism requires a concept of capital

Economic concepts are relevant and cannot be restricted to mathematical analyses.[9] Economics ought to be a scientific discipline that can understand capitalist societies like none do. For an academic discipline that is extraordinarily concerned with the "market," at least one of the economics' selling points should be the understanding of capitalist societies. According to the dominant economic view, purported free markets in capitalist societies can address humankind's most pressing problems. For rival theory (of which Marxism is perhaps the most famous version), a conflict between workers (labor) and (the owners thereof) capital is cited as a permanent fixture of capitalism. However, this possible conflict may be better understood if we change the terminology of capitalism.

The description of capitalism as a profit-driven society that is autonomous, coherent, and self-regulated is illusory, because societies are interlinked with politics and governmental activity. Furthermore, we are deceived that our current economic system cannot be fundamentally improved or replaced[10]. We need to better understand the narrative that sustains this appearance and its consequences for society and the biosphere. Socioecological transformations are necessarily political.[11]

It is impossible to systematically define capitalism in the absence of a sound concept of capital. This conceptual difficulty has been troubling in economic and interrelated analyses for more than two centuries. A few recent examples of good ideas thwarted by these problematic concepts include late capitalism used to described an advanced form of the capitalist society,[12] surveillance capitalism employed to describe the exploitation of people' privacy and personal data as a form of capital done by various technological corporations ,[13] and financialized capitalism used to describe the growing importance of financial actors, markets, practices, measurements, and narratives within capitalism, which resulted in the structural transformation of households, firms, states, and economies in contemporary societies .[14] Other less-contemporary concepts that are often employed include, for instance, the above-mentioned work-capital struggle in capitalist societies, which was already anticipated before Karl Marx in Smith's and David Ricardo's work-based theories,[15] and the free market concept, which is based on the almost mystical forces of supply and demand.[16] These frameworks operate as if capital is clearly defined. However, it has not.

Since Adam Smith (1776, 1999), economists have employed capital to imply elements that enhance wealth and create advantages.[17] As summarized by Marshal (1890, 53), "*Adam Smith said that a person's capital is that part of his stock from which he expects to derive an income.*" As put by (Fisher 1906, 54): "*Adam Smith's concept of capital is wealth which yields 'revenue' (income).*" Smith presents the following definition of capital:

[9] Fine (1999); Fourcade-Gourinchas (2001); Goddard et al. (2019); Leeson (2020), Lenton et al. (2022); Holmqvist (2021); Leach et al. (2018); Røpke (2020); Salis and Leng (2023); Schwarzkopf (2022); Salomaa and Juhola (2020).

[10] Block (2018); Clémençon (2021); Fougères et al. (2022); Hagens (2020); Laruffa (2022); le Ravalec et al., (2022); Nyberg & Wright, (2022); Pichler (2023); Poitras (2021); Polanyi (1944, 2001); Taherzadeh (2021); Scown et al. (2023); van den Bergh and Savin (2023); Wagner (2022).

[11] Pichler (2023); Massenberg et al. (2023).

[12] Arboleda (2020); Kemple (2007); Luisetti (2019); Mandel (1975); Morinville and van Lier (2021)

[13] Zuboff (2019 a,b); Aho and Duffield (2020).

[14] De Cock and Nyberg, (2016); Golka, (2023); Langley (2020); Aalbers (2017); Lagoarde-Segot (2017); Van der Zwan (2014).

[15] Skinner (1999, 2003); Pohoaţă et al. (2018); Cardao-Pito (2021); Sobel (2020).

[16] Polanyi (1944, 2001); Block (2018); Cardao-Pito (2021); Souleles (2019).

[17] Cannan (1921); Hodgson (2014, 2015, 2016); Schumpeter (1954); Cardao-Pito (2021).

> "*When the stock which a man possess is no more than sufficient to maintain him for a few days or a few weeks, he seldom thinks of deriving any revenue from it. He consumes it as sparingly as he can, and endeavours by his labour to acquire something which may supply its place before it be consumed altogether. His revenue is, in this case, derived from his labour only. This is the state of the labouring poor in all countries.*
>
> *But when he possesses stock sufficient to maintain him for months or years, he naturally endeavours to derive a revenue from the greater part of it; reserving only so much for his immediate consumption as may maintain him till this revenue begins to come in. His whole stock, therefore, is distinguished into two parts. That part which, he expects, is to afford him this revenue is called capital*' Smith (1776a, 1999a, p. 375).

Smith considered that everything related to creating revenue should be treated as capital. After Smith's conceptual modification, the expression of capital has come to involve anything that can merely have a tangential role in the creation of wealth, including those noted above: machines, buildings, patents, raw materials, the biosphere ("*nature capital*" or "*natural capital*"), and even us human beings ("*human capital*"). This broad definition of capital (including nearly anything and anyone) offers unreliable foundations and leads to ambiguous analysis. Furthermore, it suffers from circularity (tautology) because while capital explains wealth and the creation of advantage, it is also explained by wealth and the creation of advantage.

These overreaching conceptions of capital inform studies in other social sciences where the post-Smith concept of capital has been expanded to encompass not only the creation of wealth but also some form of advantage or improved societal position.[18] For example, Bourdieu (1980, 1986; Lebaron, 2006) suggested forms of capital such as economic, social, cultural, and symbolic capital, which nonetheless relate to the idea of obtaining forms of material, social, cultural, or symbolic gain. In more than one way, such sociological conceptions of capital are not very distant from those of Smith. While Bourdieu and his followers may not explicitly refer to capitalism itself, they allude to human societies based on these different forms of capital and accordingly imply capitalist societies.

Nevertheless, prior to Smith, capital generally indicated money invested or which is investable in business. This term has a similar meaning to that which can still be found in popular and business spheres.[19] This equation of capital with money can be confirmed in old dictionaries as well as in texts written by medieval merchants and Roman jurists[20]. However, Smith (1776, 1999) encompasses other elements in his concept of capital rather than just money.[21]

We must present, discuss, and test new theoretical propositions. Although new explanations may be imperfect, they can still contribute to advancing our knowledge.

3. A conceptual alternative to capitalism: the concept of monetary society in the biosphere

Various scholars have resisted the post-Smith concept of capital because they consider it confusing, ambiguous, and/or inadequate.[22] Nonetheless, if we follow their advice, we can return to the pre-Smith concept of capital, and we can also be open to abandoning the term capitalism to describe any society.

By maintaining what is certainly a peculiar tradition, there is no gain in using the term capitalism to simply describe a society based on monetary flows. This confusing expression of capitalism is not required to observe that in most contemporary societies, vital flows that are necessary for human survival and existence are based on tangible monetary flows. This affirmation applies to basic human activities such as obtaining food, shelter, knowledge, entertainment, and health advice. Using the term capitalism for this characterization would entangle us with the over-inclusive, ambiguous, and tautological post-Smith concept of capital.

If capital is assumed to imply money, then there is no need to adopt the intermediation of the term of capitalism, for we can simply describe our societies whereby the expression of capital as money implies '*monetary societies*.' This alteration does not preclude studying many societal phenomena, such as the means of production, which is a concern that existed prior to the advent of Marxism,[23] the creative destruction of productive processes,[24] and the role of government in economic affairs,[25] or other important phenomena that can be further researched with the assistance of the monetary society in the biosphere concept.

Rather than treating capital, owners of capital, or governments as abstract entities, we need to better understand how and why monetary flows are vital for human survival and existence. Likewise, we need to better understand how certain specific and identifiable human beings possess a large degree of control over monetary flows, and how such control can be maintained or impaired.[26] Monetary flows are seldom, if ever, random and/or nonhuman phenomena.[27]

From this new perspective, we can try to further understand the important elements of monetary societies, namely that monetary flows require members of society to accept monetary instruments,[28] and the existence of a corpus of institutions created to safeguard their possibility, occurrence, and implementation.[29] Accordingly, this study proposes the following new definition.

> '***Monetary society in the biosphere:*** *a human society integrated in the biosphere where vital activities for human survival and existence are reliant on monetary flows. This type of society requires the acceptance of monetary modalities by its members. It also requires the existence of a corpus of institutions to implement monetary modalities and assist, supervise, and control monetary flows.*'

Table 1 summarizes how this new concept is compared to the concept of capitalism. As explained in the table, the concept of monetary society in the biosphere introduces a rupture in the view of human beings and our integration in the biosphere. As explained below, this results from deconstructing the metaphysical status of money into an empirical status[30]. In this empirical status, monetary flows are just one type of flow necessary for human survival and existence. They do not have explanatory privileges (either ontological or epistemological) regarding other flows, such as food, shelter, knowledge, entertainment, health advice, and various other biophysical flows. Rather than explaining the other flows, the occurrence of monetary flows entails phenomena that require study and explanation.

In the new concept, the biosphere is understood both as living beings and as the requirements for the existence of living beings in our planet's atmosphere, hydrosphere, and geosphere. Economic and societal production is fully integrated into the biosphere. Negative impacts on the

[18] Bourdieu (1980, 1986); Putnam (1993).
[19] Cannan (1921); Hodgson (2014, 2015, 2016); Cardao-Pito (2021); Schumpeter (1954).
[20] Cannan (1921); Hodgson (2014); Schumpeter (1954).
[21] Marshal (1890); Cannan (1921); Hodgson (2014); Cardao-Pito (2021); Schumpeter (1954).
[22] See for instance Cannan (1921); Innes (1914); Schumpeter (1954, 323–324); Weber (1978, 1921, vol. 1, 90–100); Hodgson (2014, 2015, 2016); Cardao-Pito (2021).
[23] Smith (1776, 1999); Senior (1836, 1965, p.26); Skotnicki and Nielsen (2021).
[24] Schumpeter, (1954); Reinert and Reinert (2006).
[25] Skidelsky (2018); Mazzucato (2015); Weiss, (1998).
[26] Tyler, (2011); Luisetti (2019).
[27] Cardao-Pito (2012, 2021).
[28] Davies, (2016), Ferguson, (2009); Weatherford (1997); Williams (1997).
[29] Hodgson (2015, 2016); Cardao-Pito (2012, 2021); Marx, (1990, 1867); Schumpeter (1954); Weber, (1978, 1921).
[30] Cardao-Pito (2021); Cardao-Pito and Abdyrakhmanova (2024).

Table 1
Comparison between the concepts of capitalism and monetary society in the biosphere.

	Capitalism	Monetary society in the biosphere
Definition	A human society where production is based upon capital. This capital tends to be mostly privately owned (private capital) but can also be owned by the state (state capital).	A human society integrated in the biosphere where vital activities for human survival and existence are reliant on monetary flows. This type of society requires the acceptance of monetary modalities by its members. It also requires the existence of a corpus of institutions to implement monetary modalities and assist, supervise, and control monetary flows.
Concept of capital	The post-Adam Smith concept of capital where capital is understood as anything that has a role in the creation of wealth (or advantage) even if peripheral. It includes, for instance, machines, the biosphere ("nature capital" or "natural capital"), and even human beings ("human capital"). Nonetheless, this concept suffers from circularity (tautology) because in it although capital ought to explain wealth (or advantage) creation, capital is explained by wealth (or advantage) creation.	The pre-Adam Smith concept of capital where capital is understood as money. Monetary flows have no explanatory precedence over non-monetary flows. Various non-monetary flows are necessary to generate monetary flows.
Status of monetary flows	*Metaphysical:* monetary flows are understood as the constitutive being (ousia), explanator, and first cause of economic and societal phenomena. Monetary flows are invoked to explain why other things exist in accounting, organizational, and economic phenomena, but money and monetary flows do not need to be explained.	*Empirical:* Monetary flows are just one type of flow necessary for human survival and existence. They do not have explanatory privileges (either ontological or epistemological) regarding other flows such as flows of food, shelter, knowledge, entertainment, health advice and various other biophysical flows. Rather than being what explains the other flows, the occurrence of monetary flows entails phenomena requiring study and explanation.
Perspective on the biosphere	The biosphere is treated as natural capital or nature capital, and often considered in terms of monetary flows. The negative impacts of production on the biosphere (e.g. pollution and depredation) are generally treated as externalities of production when not directly reflected in the generation of monetary flows.	The biosphere is understood both as living beings and the requirements for the existence of living beings in our planet's atmosphere, hydrosphere, and geosphere. Economic and societal production is fully integrated in the biosphere. Negative impacts on the biosphere (e.g. pollution and depredation) caused by monetary flow generation are not external but rather an integral part of how those monetary flows are generated.
Perspective on human beings	Humans are generally observed in connection to monetary flow generation and often described by constructions derived from the post-Smith concept of capital such as human capital, or similar constructs as human asset or human resource.	Humans are observed without metaphors that involve monetary flows. Constructions derived from the post-Smith concept of capital such as human capital, human asset or human resource are not acceptable. Monetary flows have no explanatory privileges over the other flows necessary for human survival and existence.

Source: the author

biosphere (e.g., pollution and depredation) caused by monetary flow generation are not external (externalities), but rather an integral part of how those monetary flows are generated. Furthermore, humans are observed without metaphors that involve monetary flows. This allows us to exclude constructions derived from the post-Smith concept of capital, such as human capital, human asset or human resource. Monetary flows have no explanatory privileges over the other flows necessary for human survival and existence.

4. Recognising the role of monetary flows in our ecological and climatical crises

As explained above, the current definitions of capitalism are characterized by substantial confusion regarding the meaning of capital. Money as capital is treated as akin to human beings (*human capital*), machinery (*physical capital* and *intellectual capital*), and the biosphere (*natural capital* and *nature capital*). Money is attributed a metaphysical status because other elements participating in economic and societal production are not clearly distinguishable from monetary flows.

This conception originates from intangible flow theory (Cardao-Pito, 2012, 2021; Cardao-Pito & Abdyrakhmanova, 2024). The metaphysical status of money is an ontological and epistemilogical status in which monetary flows are understood as the constitutive being (ousia), explanator, and first cause of economic and societal phenomena. Monetary flows are invoked to explain why other things exist in accounting, organizational, and economic phenomena, but money and monetary flows do not need to be explained. Accordingly, money is implicitly defined as an ontological basic entity. Indicators measured in money, such as profits, dividends, investment rates, GDP, and monetary valuations, among others, are given primacy in explaining organizations, societies, and the biosphere, which we are an integral part of.

However, according to intangible flow theory, the metaphysical status of money can be deconstructed into an empirical status through which monetary flows have no explanatory primacy over other flows necessary for human survival and existence. In this empirical status, monetary flows are denied the ontological and epistemological primacy that occurs in the metaphysical status of money. In other words, monetary flows are no longer those flows that explain why the other flows exist but are themselves in no need of explanation. The empirical status of money allows for a drastic modification in the understanding of populations' well-being because other flows necessary for human survival and existence gain ontological and epistemological legitimacy, which are not necessarily tied to monetary flows. For instance, monetary flows have no explicative primacy over other flows related to food, clothes, transport, housing, or health care. Human survival and existence are fundamentally dependent on the biosphere. Hence, decision makers and researchers studying populations' well-being must avoid attributing undemonstrated explanatory privileges to monetary flows.

This study does not deny that monetary flows are relevant to human survival and existence in contemporary society. In the above concept of monetary society in the biosphere, monetary flows are devoid of any metaphysical status. In contemporary societies, monetary flows are in effect one type of flow, among many others that are necessary for human survival and existence. Economic and societal production is immersed in the biosphere. There is no obvious reason for monetary flows to have explanatory primacy over the other flows necessary for human survival and existence. Although humans in monetary societies rely on monetary flows for their survival and existence, monetary flows do not necessarily define or create other vital flows by themselves.

For thousands of years, our species has mediated our relationship with the biosphere through monetary modalities. However, monetary flows must not be taken for granted, neither obscured. The biosphere provides the conditions for living beings. In a time of environmental and climate crises, it is the metaphysical status of money that prevents us from observing that many instances of environmental and climatic degradation have been motivated by a will to generate flows of money in the direction of certain organizations, states, and individuals. For example, monetary flows that move in the direction of highly profitable yet polluting firms, their shareholders, and debtholders, and cases when governments benefit from tax revenues.

We can study with much more precision the crucial role that monetary flows have played in environmental and climate crises by abolishing

the ambiguous and tautological post-Smith concept of capital, which founded the concept of capitalism. As explained earlier, the post-Smith concept causes substantial confusion between monetary and non-monetary flows whereby the latter are described as akin to monetary flows in frameworks such as human capital, physical capital, intellectual capital, natural capital or nature capital. However, the current confusion regarding the concept of capital contributes to the excuse and turning of a blind eye to the activities of highly polluting organizations and governments, which cause enormous harm to our planet. Perhaps, this time has ceased capitalism as a valid concept. In future research, abandoning the concept of capitalism for a more precise monetary society in the biosphere may contribute to the development of long-source socio-ecological alternatives.[31]

The new concept enhances our understanding of the role of monetary flows in green and social development, as well as in environmental, social, and other crises. This is because the metaphysical status of money is deconstructed into an empirical status. Indeed, monetary flows must not be taken for granted, as in the metaphysical status of money followed in most of economics and interrelated social sciences. Rather, how monetary flows flow and to where are important research questions worthy of investigation.[32] Likewise, how monetary flows can contribute to benefiting or harming green and social development consists of important research programs.

5. Directions for future research

In future research, there are many areas that can build on the more rigorous conceptual framework proposed in this study to develop a new political economy to understand monetary societies in the biosphere. This section offers brief comments on three examples, namely, environmental, social, and corporate governance (ESG); green marketing and green finance; and environmental policies.

ESG criteria systems attempt to identify elements to evaluate both governmental and private investing, which go beyond mere monetary return/profit making considerations.[33] They have been growing in recent years.[34] However, difficulties exist related to the identification of the factors to be measured and their standardization.[35] Furthermore, some critics have pointed out the possibility that ESG approaches could be employed for greenwashing.[36] Several firms offer ESG ranking services such as ISS, MSCI, Refinitiv, S&P, MorningStar, and Moody's.[37] However, their criteria are difficult to compare because they are not uniform or standardized. Cases occur where the same firm scores high in one ranking and low in another.[38] Thus, the risk of greenwashing is real. Intentional polluters can either avoid ESG reporting altogether or choose one that is more convenient. Following the current study, future research could take measures to avoid confusing monetary and non-monetary flows. A more precise identification of flow types can be used to identify ESG criteria that are both more realistic and rigorous.

Green marketing is the practice of marketing for services, goods and hybrid products that are sustainable and eco-friendly.[39] Similarly, green finance adopts financial policies to fund sustainable and eco-friendly production systems[40]. In future research, the object of study of both green marketing and green finance can be made more rigorous by distinguishing between monetary and non-monetary flows. As explained above, monetary flows can address and worsen ecological crises. The monetary flows are not self-explanatory. Currently, they are just one type of flow that is necessary for human survival and existence.

Likewise, future research on environmental policy can benefit from abandoning the post-Smith circular concepts such as environmental capital, natural capital, and human capital. Monetary flows should not be confused with other flows. Green development and ecological development cannot be identified through monetary measures alone such as profits, dividends, investment rates, GDP, and monetary valuations because these measures can, on some occasions, be misleading. Take, for example, the case of carbon pricing, where the price of pollution is deemed a solution for excessive emissions. However, such monetary-based systems cannot solve the real problem of innovating in green development, which requires the creation and development of technologies and economic systems that replace previously polluting ones. Furthermore, innovations in monetary technology may contribute to green development productively.

6. Case study: Flows in China's Belt and Road Initiative

The current study suggests a new framework for observing human integration in the biosphere and green development. However, this is an early stage of the proposal, which can indubitably benefit from the contributions of other researchers in the future. There are possible themes, methodologies, and associated findings that can only be developed with further research work. The new proposal aims to remove the explanatory primacy that monetary flows have over other flows necessary for human survival and existence in economics and the interrelated social sciences. Monetary flows are just one type of flow, among numerous others. Many non-monetary flows are key to human well-being and integration into the biosphere. Nevertheless, these non-monetary flows are connected to key epistemological issues. Various of them are tangible because they can be identified with precision after they occur in a specific time and space, such as the flows of physical goods and raw materials. Although several of these flows can be linked to monetary flows, they are not monetary. Nonetheless, quantitative research methodologies are adequate to study these tangible flows.

However, many other flows are intangible because they cannot yet be precisely identified, such as various flows of knowledge, information, services, and several biophysical flows. Quantitative research methodologies are not technologically equipped to address these intangible flows. Qualitative research technologies are necessary to investigating intangible flows. In contrast to various alternative approaches in social sciences, such as postmodernism and poststructuralism, which are prone to relativism and deny the possibility of access to outside knowledge, in intangible flow theory there is no denial of quantitative research methodologies to investigate the real world. Indeed, quantitative research is quite significant for studying tangible flows. However, quantitative research methodologies are not technologically prepared to address intangible flows that are identifiable, but not with precision. Thus, this new approach avoids falling into the pretence dichotomy between the economics that only accepts quantitative research methodologies, and the postmodernism/poststructuralism that denies the validity of quantitative research methodologies. Rather, both quantitative and qualitative research methods are necessary and important.

How can this new proposal be employed to investigate actual

[31] See for instance, Bridges et al.,(2022); Bardsley et al. (2022); Greaves (2023); Haderer (2023); Hopster et al. (2024); Horner and Davidson (2021); Morrow (2023); Pichler (2023); Quinche-Martín and Cabrera-Narváez (2020); Niu et al. (2024); Wahlund and Hansen (2022); Blühdorn (2022); Schaltegger (2018).

[32] Cardao-Pito (2021).

[33] Chen et al. (2024); Drempetic et al. (2020); Friede et al. (2015); Niu (2024); Rau and Yu (2024); Van Duuren et al. (2016).

[34] Zairis et al. (2024); Jiang (2024); Niu (2024).

[35] Dimson et al. (2020); Edmans (2023); Kotsantonis and Serafeim (2019); Rau and Yu (2024).

[36] See for instance Baldi and Pandimiglio (2022); Yu et al. (2020); Todaro and Torelli (2024); Zhang (2023).

[37] See for instance European Commission (2020).

[38] Dimson et al. (2020).

[39] Bhardwaj et al. (2023); Chamorro, Rubio, and Miranda (2009); Kilbourne (1998), Kumar (2016).

[40] Debrah et al. (2023); Gafor et al. (2024); Lee et al. (2023); Li and Umair (2023).

instances of development? A recent article offers an interesting case study because it applied intangible flow theory to obtain further insights into China's Belt and Road Initiative (or New Silk Road).[41] The Belt and Road Initiative was launched in 2013 by the Chinese Government to connect China with more than 150 other countries in Asia, Africa, Europe, Latin America, and the Caribbean.[42] This Initiative involves extensive infrastructure and development endeavours in other countries and China. It aims to integrate logistics and supply chains in the digital era, with special attention to the flows of products, raw materials, services, and workflows.[43]

In fact, the impact of the Belt and Road Initiative cannot be understood merely by accounting for the monetary amounts invested and treating the other flows simply as akin to monetary flows, as would be done through the post-Smith concept of capital. The metaphysical status of money makes it difficult to observe how these investments contribute to the flow of goods, raw materials, services, and work from and to China. China's achievement of being the leading exporter of goods and the largest manufacturing nation[44] must be understood in the context of the flows systematically enhanced by the Belt and Road Initiative.

Furthermore, the case study followed a specific firm participating in the Belt and Road Initiative, whose managers recognized that intangible flows (e.g., flows of information) were most significant for the occurrence of tangible flows of money, goods, and raw materials. The study noted that, in the context of the Belt and Road Initiative, "tangible and intangible flows are intertwined and mutually reinforcing within global supply chains. They interact and influence each other in various ways, from optimising logistics operations to driving innovation and shaping consumer behaviour. Recognising and managing the interconnectedness of these flows is vital for organizations to effectively navigate the complexities of modern supply chains and gain a competitive advantage in the global marketplace."[45] This is an example of how future research programs can study green development in the context of monetary societies in the biosphere.

7. Conclusion

As leading economic theories have predominated during several decades of severe ecological degradation, it could be acceptable to develop and test new theoretical propositions. The post-Smith concept of capital is over-inclusive, ambiguous, and tautological and provides reduced analytical usefulness for understanding economic, societal, ecological, and green development phenomena.

Nevertheless, a return to the previous definition of capital as money can occur without adopting the term capitalism. For instance, as an alternative, the expression of 'monetary society in the biosphere' treats monetary flows as merely one type of flow among the many flows that are necessary for economic and societal production. The biosphere provides basic conditions for human livelihoods. Although we have been leaving long-lasting marks on our planet in the Anthropocene, the fact of the matter is that we still rely on the biosphere for survival and existence.

Furthermore, the concept of a monetary society helps us identify the substantial empirical role that monetary flows play in ecological and climatic crises. Indeed, monetary flows can be quite important in dealing with sustainability and ecological crises, for example, when they are directed towards the creation of renewable and energy-efficient technologies or for activities aimed at reducing, reusing, recovering, or recycling. However, monetary flows can also lead to crises. For example, many instances of pollution are caused by the motivation to direct monetary flows in the direction of certain people, organizations, and governments. The confusion surrounding money, people, machinery, and the biosphere within the concept of capital makes it difficult to observe the role of monetary flows in the human relationship with the biosphere.

This study demonstrates the feasibility of attempting to understand human societies and their phenomena without adopting the post-Smith framework, which results in the tautological concept of capitalism. Likewise, it is hoped that those who are still not prepared to abandon the use of the term capitalism can benefit from being challenged to think more about what expression means in practice. Rather than modifying the predominant terminology, this study aimed to provide a productive and sustainable discussion. In future research, the conceptual rigor proposed in this study may be highly productive. The study exemplified three research fields that can benefit from the more rigorous conceptual framework suggested by this study: environmental, social, and corporate governance (ESG), green marketing, green finance; and environmental policy.

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