



The spatial and temporal dynamics of value in financialization: Analysis of the infrastructure of carbon markets



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ABSTRACT

Countries around the world are developing carbon emissions markets as a governance mechanism to reduce greenhouse gas emissions. Drawing on relational economic geography this article maps the infrastructure and social networks of the markets to evaluate the nature and function of these systems. Carbon markets are representative of a growing emphasis on managing social and environmental problems through market mechanisms and must be understood from the standpoint of financialization. This article extends the critical literature on carbon markets by considering market financialization as a form of time–space compression. I argue financialization divorces the use value of resources from the exchange value of financial instruments. The separation of exchange value from its objective material context allows for the creation of distortions and heightens the demand for accelerated rates of resource production. I analyze how the infrastructure (including processes and agents) of the emissions markets operates with respect to space and time under three mechanisms of financialization: ownership, commensuration and mobilization. Since carbon markets are intended to be demonstration markets that will eventually be extended for the management of other environmental systems, the problems of financialization inherent within these markets suggest adverse consequences for other environmental markets. While social and economics systems can adjust to the demands of accelerated production, the function of environmental systems is deeply embedded in space and time and cannot readily withstand time–space compression.

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1. Introduction

The increasing economic and political importance of finance generates an opportunity and imperative to move finance into the heart of economic geographic analysis and to clarify the connections between entangled geographies—economic, social, cultural and political (Clark and Wojcik, 2007; Dixon, 2011). Of particular significance is the growing predominance of market-based mechanisms directed at addressing climate change (Goodland et al., 2009; Newell and Paterson, 2010). Since the Kyoto Protocol came into force in 2004, a number of regulated and voluntary carbon management systems have been setup around the world aiming to achieve CO₂ emissions reductions, largely through cap and trade mechanisms (Michaelowa and Michaelowa, 2007). Carbon markets embody a new form of climate capitalism as well as a new era of environmental finance—the spread of finance to other environmental asset classes including forestry and biodiversity (Balch, 2009; Knight, 2011; Newell and Paterson, 2010).

Orthodox economics frames carbon emissions markets as a basic practice of pricing externalities (Pezzey, 2003). However, analysis of carbon markets also lends itself to a broader understanding

of the function and development of modern financial markets (Ellerman et al., 2003; Knight, 2011). Carbon credits are artificial commodities in the sense that they are constructed from the absence of emissions, rather than the existence of something (Knox-Hayes, 2010; Bumpus, 2011). Yet, since carbon credits mirror the function of other financial commodities, they enable an investigation into the nature of value transfer in financialization, particularly as it relates to space and time. I investigate how the financialization of emissions credits converts use value to exchange value thereby compressing the representation of the space and time of the underlying commodities. Financial markets are designed to accelerate the rate of capital turnover. The application of these markets to the management of environmental systems may suggest adverse consequences for environmental systems by undervaluing the rate at which environmental systems operate and reproduce themselves.

In analyzing carbon markets from the perspective of time–space analysis, the article explores the unique framing of spatiality and temporality that economic geography can offer to environmental finance and to economic models more generally. After exploring the nature of value, I argue that financialization creates real world distortions in the representation of financial value and in the application of that value to manage natural resources. In particular, by removing value from its objective spatial and temporal connota-

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tion, financialization introduces a disjuncture between the representation of value and the production of value by environmental processes. This disjuncture in turn means that policies intended to preserve natural resources are ineffective or potentially counterproductive, in that they lead to pressure for accelerated rates of production. Ironically, the emissions markets and the environmental markets that will follow from them are intended to grant value to undervalued services, but through financialization they diminish environmental value.

At the analytical heart of this article is relational economic geography, an approach that analyzes complex economic action and its localized consequences by focusing on the people, firms, institutions and other organizations involved in and subject to the consequences of economic decision-making (Bathelt and Glücker, 2003; Boggs, 2003). Financial centers can be used to gain a broader perspective on market function, because they represent spaces of concentrated financial activity (Peck and Theodore, 2007; Sayer, 2009; Wójcik, 2011). By mapping the networks and functions of developing climate finance regimes, I situate carbon markets as systems of environmental financialization and demonstrate that markets divorce financial products from the material contexts they purport to represent. To counter criticisms that relational economic geography overemphasizes macro-processes—ignoring nodes and agents (Hall, 2011)—I emphasize the institutional structure of the markets, including economic relations among agents and their practices, in nodes of power such as London and New York.

The article utilizes techniques of grounded theory to explore market development and function (Strauss and Corbin, 1998): 140 interviews with market designers and participants in Europe, the United States and Asia provide sociological and economic insight into the development of emissions markets within financial centers.¹ Specifically market practices were studied through close dialogue (semi-structured interviews that guide the conversation but allow the interlocutor the flexibility to address topics they consider significant) with actors from banks, brokerages, utilities, legal firms, wire services, consultancies, regulatory agencies and legislatures. Individuals were asked questions about the nature of their firms, practices, network relationships, and perspectives on the evolution of the markets. The interviews were coded and used to generate insights on the structure of emissions markets, the agents that operate the markets, and the scope of the activity within regions.

The article proceeds in five sections. I first develop a framework to understand value relative to space and time. I then review critical studies of finance and carbon markets, and apply theories of time–space compression to emissions markets. Analysis of carbon emissions markets is used to generate insights on financial markets more generally as well as the processes of value transfer that underpin financialization. I explore how the markets operate with respect to space and time under three mechanisms of financialization: ownership, commensuration and mobilization. Analysis of these processes elucidates the ways in which markets distort value. Here, I map the processes and various organizational dimensions of the market under each mechanism. I then consider the potential impact of the markets on environmental materiality. The article concludes by suggesting the ability of the markets to distort value and compress the space and time of production threatens the material integrity of natural systems.

¹ To gain access and due to the specifications of IRB, the interlocutors have been guaranteed anonymity. Where quoted, they are referenced with their job title, type of agency and the date and location of the interview.

2. Value, valuation and financialization

2.1. Value

Drawing extensively on philosophers, particularly Leland and Comte-Sponville, Annick Bourguignon (2005) reviews the meaning of value and provides a wide-ranging typology. Value refers to three core concepts (1) measurement—the quantification of objects and processes in ‘reality’, (2) economic value, which can either be use or exchange value, and (3) philosophical value—the worth of something to individuals. For the sake of analytical clarity in this article, which considers the nature of environmental value in exchange systems, I restrict consideration of value primarily to economic value. However, I extend the consideration of value through analysis of its relationship to space and time.

Contemporary definitions of value within economics are derived from a common understanding of two primary forms of value, use value and exchange value. Smith (1776) elaborated the dichotomy of value: “The word value. . .has two different meanings, and sometimes expresses the utility of some particular object, and sometimes the power of purchasing other goods which the passion of that object conveys. The one may be called ‘value in use’; the other, ‘value in exchange.’” From use value and exchange value scholars have derived a number of additional meanings. Yet, the relationship of space and time to value is rarely directly addressed. Clarifying the relationship of space and time to value elucidates and helps to synthesize the various conceptions of value and valuation.

In the context of the use-exchange duality, I argue that use grounds value in objective space and time, while exchange liberates value in subjective space and time. Use value is objective in the sense that it is value that is fixed in space and time. It is embedded in both the object and the activity that uses it. In other words, the use value of anything requires a specific set of actors, at a determined location, performing a particular activity for a defined duration. The spatial and temporal dimensions of use value can be identified on a Cartesian grid and located in a specific frame of time. Exchange, in contrast, is a process of liberating or moving value in space and time. The very purpose and nature of exchange is to move value. However, exchange does not guarantee that use will occur nor that use value will be accrued. For example, exchange value can be mobilized such that value is represented in numerous spaces and times. A wheat derivative can represent the value of wheat in multiple cities and different time horizons. But it does not guarantee the production of wheat. In this regard, exchange value is potential rather than realized value because it is subject to judgment and future use. I elaborate the potential versus realized dichotomy and the significance of these concepts through examples from the literature.

In an important survey of definitions of value in management studies, Ramsay (2005) establishes two forms of value in business relationships, ‘potential value’ and ‘realized value.’ Potential value is the benefit or advantage that accrues from the exchange of resources while realized value is the benefit or advantage accruing from the use of a resource. Ramsay’s definition raises the important question: Does value ‘exist’ when a resource is not in use? He provides the following example:

Imagine a firm with a warehouse full of a product that enjoys high sales demand. Now suppose that one of the company’s competitors launches a clearly superior and cheaper alternative on the market. The value that the firm and its stored product previously appeared to “possess” evaporates or “moves” to the competitor in an instant. (Ramsay, 2005, p. 558)

Ramsay raises the point that before the value of an object is realized through its use, the value is subjective; it is exclusively a product of human perceptions. Reframed in spatial and temporal

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