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Łukasz Pyfel

University of Lodz, Poland

Book Review:

Material Markets. How Economic Agents Are Constructed by Donald MacKenzie. Oxford University Press, 2009

During recent decades many economists started to be interested in perspectives from outside the science of economics and scholars from other disciplines (e.g., psychology, sociology or anthropology) turned their attention to problems traditionally associated with economics. Behavioral economists/economic psychologists[1] try to explain human behavior on markets (including financial markets) using concepts and theories from the field of psychology (Kahneman, Knetsch and Thaler 1986; Akerlof and Schiller 2009). Many economic sociologists have investigated the problem of social embeddedness of markets and economic actors (Granovetter 2002 [1985]). *Material Markets* by Donald MacKenzie also offers a social sciences perspective on financial markets (and on markets in general), but the perspective presented in this book is substantially different from the perspective of today's fashionable behavioral economics with its methodological individualism. Furthermore, this perspective is broader and has different aims from the perspective of many other economic sociologists. These differences will be explained in the next parts of the review.

For understanding a book, it is very helpful to know the background of the author. Donald MacKenzie is a Professor of Sociology at the University of Edinburgh. Before he focused his interests on financial markets, he made some important contributions to the field of Science and Technology Studies. Interestingly, he gained his first degree (BSc) not in any social science or humanities, but in mathematics, which certainly helps him in investigating contemporary financial markets. Donald MacKenzie has been awarded an ESRC-funded Professorial Fellowship on social studies of finance (2004-2007), which enabled him to undertake in-depth research in

[1] Terms economic psychology and behavioral economics are very often perceived as synonymous (Wärneryd 2004).

financial markets and write this book. According to the title of MacKenzie's Professorial Fellowship, this book presents a field which is labeled with the term 'social studies of finance.' One may distinguish two meanings of the term; its broad meaning refers to the application of social science methods and theories to financial markets analyses, whereas a more specific meaning of this term denotes studies of financial markets inspired by science and technology studies. Social studies of finance are presented in this book in the latter meaning of this term. However, the author emphasizes that *secretarianism is never a virtue* (p. 2). So he does not limit himself to an application of science and technology studies to the field of finance, yet he borrows concepts and research results from other social sciences (what is reflected in broad literature is used).

The aim of this book is to answer the question: *what can an approach rooted in social studies of science and technology contribute to understanding of markets* (p. 6). In my opinion, despite the fact that this book consists partly of earlier works published elsewhere, its structure helps to fulfill this goal. *Material Markets* consists of eight chapters. The first two chapters (*Introduction* and *Ten Precepts for the Social Studies of Finance*) can be treated as an introduction to the social studies of finance approach. The next five chapters (3-7) comprise case studies exemplifying and detailing concepts presented in the second chapter. The eighth chapter includes a concise conclusion where the place of social studies of finance among other social sciences and generally in society are discussed. This book also contains a short glossary of financial terms. It will certainly help a lay person understand presented ideas. Yet, I would strongly recommend to a reader without knowledge of financial markets to use not only this glossary, but also some introductory textbook on finance in order to really understand the content of this book.

As it has been stated above, the social studies of finance is an application of social studies of science and technology framework to financial markets and this approach not only differs significantly from behavioral economics but also transcends classical concerns in economic sociology. What distinguishes social studies of finance and what is most characteristic about its field? According to the author, the most distinctive feature of social studies of finance is taking into account, as stated in the title of the book, the materiality of markets. MacKenzie understands materiality of markets as their physicality, corporeality and technicality. It means that physical forms of the elements of financial markets, embodiment of economic actors, technological systems and conceptual tools are incorporated into analysis as important (or even crucial) factors.

These and other distinctive features of this approach are described in the second chapter in which the author enumerates ten precepts of social studies of finance. It must be noticed that, according to MacKenzie, this presented list of precepts is incomplete and not everyone linked with social studies of finance has to agree with all of these precepts. The first assumption is that *facts matter*. This means that facts are produced, socially constructed and they are not external entities like platonic ideas. It concerns both scientific and financial facts. The best example of such a fact in wide use in finance is London Interbank Offered Rate (LIBOR), which enables liquidity of the interest-rate derivatives markets. The second precept, *actors are embodied*, may seem trivial but is almost never taken into consideration in market analysis. Human beings, including traders, brokers, analysts et cetera, are limited by their body's and brain's capacities. The conjecture that *equipment* (both physical and conceptual) *matters* is the third precept. Technological devices like computers or communication networks help to go beyond the human body's limitations and are reshaping the market, while algorithms, procedures, models and other elements of conceptual equipment are used by actors to categorize financial reality and to interact with highly complicated markets. The next precept posits that *cognition and calculations are distributed and material*. Cognition processes of combinations of human actors and objects as a whole have different properties than the sum of the cognition processes of single human actors and the former cannot be reduced to the latter. Materiality of calculation processes is easily visible in the example of advanced numerical computation in financial institutions (e.g., in risk-management), impossible without using a large set of computers. The problem of calculation is closely connected to the problem of measurement, hence the science and technology of metrology, answering the questions what and how to measure, very often plays a key role in markets. The fifth precept, *actors are agencements*, is derived from one of the pioneers of social studies of finance, Michel Callon[2] (and Caliskan 2005:24-25 cited in MacKenzie 2009:21), who defined *agencement* as *socio-technical arrangements when they are considered from the point of view of their capacity to act and to give meaning to action*. These *agencements* are constituted not only by human beings and social networks, but also by non-human objects like equipment, technical devices, algorithms or other conceptual tools. That approach has a few important virtues. It implicitly poses the question of attribution of agency, which is very often connected with gender. It also suggests that an actor should not be perceived as having fixed natures and characteristics. Finally, by tracing the make up of an economic actor, it can prevent social scientists from focusing only on high-status human beings (*action's glamorous agential peaks*) and turn the attention to less high-status persons. The statement that *classification and rule following are finitist processes* is the sixth precept. Finitists assume that every rule is flexible and rules are not just applied, but rather interpreted and reinterpreted. There are no two identical cases, so every time we categorize an individual case we have to make a decision interpreting a rule (e.g., it has very important implications for accounting). In these interpretations we are limited by other people and by technical devices. The seventh precept, *economics does things*, has been the main topic of another MacKenzie book (2006). Economic models included in technical and conceptual tools influence actions of people regardless of their knowledge about these models – these models become parts of *agencements*. The eighth precept, *innovation isn't linear*, is the refutation of the thesis that innovations are simply deduced from implications of scientific discoveries. One of the sources of financial innovation is economics, yet financial innovation is also affected and shaped by other factors like legal structures, politics or culture. This non-linearity of financial innovation implies the next precept – *market design is political matter.* Due to the assertion that financial innovation is not a linear result of economic discoveries, but depends on many others factors, politics shaping the financial innovation process and its outcomes becomes possible. According to the tenth precept, *scale isn't stable*, social studies of finance remains sceptical to the presumption that 'macro' phenomena stays big and 'micro' phenomena stays small. As studies of science and technology have shown, details and technicalities are very often ones that matter. In my opinion, this chapter is the

[2] And Callon borrowed this concept from Deleuze.

most important chapter in *Material Markets* because it presents, in a very concise and accessible way, the main ideas of social studies of finance.

The next five chapters are case studies and show the application of the aforementioned precepts to studying markets. These chapters will be summarized only very briefly here. The third chapter comprises the results of MacKenzie's and Ian Hardie's research on hedge funds (short-term observation in one of the hedge funds and interviews with people working in or with hedge funds) nowadays, which are very important actors of financial markets. The notion of *agencement* is applied in this research and the hedge funds are treated as socio-technical combinations. The author describes the legal and political context in which hedge funds function, the social organization of work in hedge funds, its infrastructure and its distributed, multi-site cognition processes. This chapter shows, that the application of the concept of *agencement* to financial markets, if selective, can really broaden and enhance our understanding of economic action.

The fourth chapter is an introduction to the field, which can be labeled as sociology of derivatives. Derivatives are relatively new financial instruments of rapidly growing importance. Because of their construction, they are 'abstract' and 'virtual.' However, as it was stated above, even virtuality has a material effect, thus material production of virtuality is explored in this chapter. The author limits his analysis to only three aspects of this process; innovations, impact of culture and 'facticity.' Similarly to technological innovations, financial innovations are not linear and are influenced by the science of economics and other factors, but they are more sensitive to the tax system than technological innovations and the legal protection of innovative financial products is very limited. Despite the globalization of financial markets, local cultures of trading and legal boundaries still have an impact on production of this virtuality. Facts crucial for derivatives, like LIBOR, have to be perceived as adequate representations and as resistant to manipulation. However, the last financial crisis resulted in LIBOR losing its status of fact in the perception of some economic actors.

The next chapter, co-authored by Ian Hardie and Daniel Beunza, concerns arbitrage – the practice of benefiting from price discrepancies between two or more markets. This chapter is based on three main data sources: participant observation in the trading rooms of global investment banks supplemented by in-depth interview, 26 interviews with arbitrageurs and the data from the abovementioned study of hedge funds. It should be noted that the definition of arbitrage in social sciences is broadened and more realistic than in financial economics because the latter excludes demand of capital and involvement of risk. The central idea of this chapter is that the price is a 'social thing,' which indicates materiality and sociality of prices. Prices always have to take physical forms and the speed of their mobility is essential for arbitrage. Arbitrageurs' capacities and equipment also matter. Sociality of the process of arbitrage means that social relations among people practicing arbitrage and between arbitrageurs and others (e.g., their managers or clients) need to be included into analysis.

In chapter six, the author focuses on the processes of measuring profits. This study shows the importance of lower counterparts of accountants, book-keepers, who have never been a subject of social science research. If the notion of finitism is applied to the field of accounting, it turns out that it is book-keepers who play a key role in preparing corporate accounts. According to finitism classifying does not mean automatically following the rule, but it means making decisions in every case. As Bloor (1997:19-20 cited in MacKenzie 2009:29) states, *We could take our concepts or rules anywhere, in any direction.* But, there are some constraints which determine the process of classification. Both social and technological factors should be recognized as these constraints (e.g., training and habit, organizational context, technological systems). Hence, this chapter uncovers a very interesting and significant field, which requires deeper exploration.

The last case study, presented in the seventh chapter, concerns not financial markets in a narrow sense, but markets in general. The author examines the emergence (or maybe creation is a better word here) of markets in pollution permits. Imposing tax or fixed limits on contaminators are another means to cutting down pollution, but, thanks to combining 'left-wing' care about the environment with satisfying 'right-wing' pro-market sentiment, constructing emission markets is politically more attractive than taxation or fixed limits. Designers of emission markets, economists and politicians, have to reach many decisions concerning both fundamental problems and small technicalities. But, the latter cannot be omitted, because, as it has been mentioned earlier, technicalities also matter and can determine success or failure. The designers of such markets, for example, have to decide how to allocate allowances and they have to choose a system of measurement. The author underlines the need for adequate politics of market design, which pays attention not only to overall virtues and flaws of market solutions, but also to technopolitical specifics.

In his conclusion, MacKenzie emphasizes two main interconnected points of social studies of finance. Firstly, the market cannot be treated as a singular entity, what divides politics in 'pro-market' and 'anti-market' (with the 'third way' between them). Market itself, as policy tool, is neither bad nor good. There is no one single market, but many different markets exist. The shape of these markets depends on technologies, politics, ways of constructing economic agents, their design and so on. And here, we come to another main point of social studies of finance. Technicalities do matter (it is well described in the example of emissions markets). What is often omitted as a small technicality, left for specialists and as unimportant in comparison with more general political disputes, is often crucial for the final outcome.

The author also discusses the place of the social studies of finance among other social sciences. He does not claim that this approach *supplants previous approaches* (p. 180). MacKenzie insists that he does not want to compete with financial economists, just as philosophers of physics do not try to compete with physicists. Moreover, social studies of finance does not aspire to replace existing economic sociology. Rather, it is compatible with a large part of its works and theories. Investigating networks of interpersonal connections goes well together with investigating technicalities, matching 'social' with 'technical.'

Except for its academic ambitions, social studies of finance has the ambition to become a 'public social science.' The author's point of view is that this book's contribution to academic and social life is opening the black box of finance like hedge funds (as organizations), accounting or derivative markets. In the last sentence the author expresses hope that his book will be not only interesting intellectually, but also will have some consequences in real-world action. In my opinion, this book certainly is intellectually stimulating, yet time will tell if it has any impact on real-world actions. Moreover, because of its coherent structure, clear style and avoidance of jargon, this book can be read by academics as well as by lay people. People without some background in social sciences may not be able to understand fully some specific ideas, but they would definitely benefit from reading this book.

Despite my general positive opinion about this book, I have some doubts. Firstly, it is mainly based on a large set of qualitative interviews and short-term participant observations. These techniques may be insufficient to find what is ultimately going on in reality. The author is completely aware of this lack of long-term ethnographical observation and explains that it would be extremely difficult to obtain permission to do ethnographical research in financial institutions. This does not undermine the merit of this book, but shows the possible direction of further research in the field of social studies of finance to gain a deeper knowledge.

Another doubt concerns the overall concept of social studies of finance. Reading *Material Markets* for the first time, I, at times, had a feeling that some presented concepts are simply trivial and I wondered if social studies of finance is not just *a jargon into which to translate banal description and narrative* (p. 57). One economist even labeled work connected to this approach as *nerdish case studies* (Beunza 2010). It puzzled me what would be the opinion of some traders, brokers or other 'insiders' about this book. Could such a person find something really interesting or new in it? However, before accusing social studies of finance and this book of triviality, the case of Akerlof's *Market for Lemons* (1970) should be taken into account. This significant and widely-cited article was initially rejected by economic journals because of its triviality (Swedberg 1990). This demonstrates how the incorporation of things, which may seem trivial, into analysis can contribute to the development of the theory. Of course, some people, after having read MacKenzie's book, superficially and selectively can think that this approach is all about how important a broker's ear is, yet I think that this book presents a coherent and interesting, although controversial, view of finance.

This is not a place to weigh arguments for and against social studies of finance. This approach can arouse some controversy, it can be liked or not, yet it is worth learning its perspective. Therefore, I recommend reading this book, which is an excellent introduction to social studies of finance, especially to persons academically or professionally linked with the financial markets. They should read this book not necessarily to become followers of social studies of finance, but to learn this interesting perspective and maybe to change their view of markets a little, as did the author of this review.

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