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Opening the black boxes of global finance

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ABSTRACT

This paper advocates the application to global finance of one of the central heuristics of science studies: open the black box. Black boxes are devices, practices, or organizations that are opaque to outsiders, often because their contents are regarded as ‘technical’. The goal of opening black boxes is to discover how they are kept opaque; how they structure their ‘contexts’; and how those contexts are inscribed within them. Four types of black box in finance are discussed: option pricing theory; arbitrage; ‘ethnoaccountancy’; and regulation. The limitations of the opening of black boxes as an oppositional strategy are also discussed.

KEYWORDS:

Science studies, option pricing, arbitrage, ethnoaccountancy, regulation, black box.

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Notes

1 The introduction to the field that best captures this diversity is Biagioli's reader (Biagioli 1999).

2 See, e.g., Brügger (2000), Izquierdo (1998), Izquierdo (2001), Knorr Cetina and Bruegger (2000) and (2002), Lépinay and Rousseau (2000), Millo (forthcoming a & b), Muniesa (2000a), 2000b, and 2003), Preda (2001) and (2002)

3 See Godechot (2000) and (2001), p. 218-30). My own fieldwork amongst Chicago derivatives traders also suggests a prevalence of chartist beliefs and practices that would be surprising to the financial economist.

4 A high proportion of the written records of ancient civilizations is comprised of records of ownership and taxation: ‘The earliest known written documents – marks baked in clay – are tallies of livestock, grain, and oil,’ writes McMillan (2002, 4).

5 I think I owe this formulation to a remark by Sheila Jasanoff, although the heuristic itself is widely shared.

6 See, e.g., Latour (1987), but again the heuristic is pervasive.

7 See, e.g., Rosenberg (1982), although from the perspective of more recent science and technology studies Rosenberg lifts the box's lid only partially. Market microstructure theory is another form of ‘black box opening’ (see Madhavan and Panchapagesan 2000). For its relations to science-studies approaches see Muniesa (2003).

8 This is, in a sense, simply the Weberian account of bureaucracy: see Weber (1970)

9 See, e.g., Giddens (1990).

10 This critique is, of course, the basis of the infamous ‘science wars.’ My thoughts on these will be found in MacKenzie (2002).

11 Perhaps most vocal in this critique has been Langdon Winner e.g. Winner (1993.).

12 See MacKenzie (1990, pp. 209-214) for a discussion of the design of accelerometers and of the bearings upon which their gyroscope wheels spin.

13 MacKenzie (2003c).

14 There was much earlier work on option pricing by Bachelier (1900)., which was not taken up for fifty years.

15 To short sell an asset is to sell an asset one does not own, for example by borrowing it, selling it, and later repurchasing and returning it. A short seller profits from a price decline, because the asset can be repurchased for less than the proceeds of the initial sale.

16 See the remarks of a trader quoted by Godechot (2001, p. 227-8)

17 A ‘derivative’ is a security or contract the price of which depends upon the price of another asset (or index level or interest rate): an option is one example of a derivative in that its price depends upon that of the block of shares or other underlying asset.

18 Data from Bank for International Settlements, www.bis.org

19 For details, see MacKenzie and Millo (2003).

20 See especially Beunza and Stark (2002). A number of studies, for example in the sociology of the financial markets, have examined traders at least some of whose trades are arbitrages, but without focusing specifically on arbitrage.

21 See MacKenzie (2003b).

22 The figures for total returns are calculated from the data in Perold (1999. A19); the figures for returns net of fees are taken from Perold (1999. A2).

23 The consequent demands for capital would lead most economists to argue that what LTCM did was therefore not ‘really’ arbitrage. The response is simple (see Shleifer and Vishny 1997.): much real-world arbitrage, including the real-world counterparts of some of the classic arbitrages of finance theory, demands capital and involves at least some risk. See MacKenzie and Millo (2003) on options arbitrage.

24 This is the key insight of Shleifer and Vishny (1997), a prescient piece of work in that it models one key feature of 1998: the flight of arbitrage capital in the face of improving arbitrage opportunities. It does not, however, model the other key feature: the imitative superportfolio. For Shleifer's own remarks on LTCM, see Shleifer (2000), (107-111).

25 Since completing the first draft of this article I discovered an excellent study in the ‘law and economics’ tradition of the regulatory background to single-stock futures: Partnoy (2001).

26 Q.v. Douglas (1970). Millo (forthcoming b) .discusses the key outcome of SEC-CFTC negotiation: the Shad-Johnson Accord. It is telling that regulatory bodies should have needed this ‘peace treaty.’

27 See Partnoy (2003) on the barriers to short selling. Of course one should not exaggerate these barriers. Thus Harvard University's endowment fund took a large short position on Enron via the hedge fund Highfields Capital Management (Bryce 2002: 268) and must have profited handsomely from so doing.

28 In principle, a futures contract requires delivery of the underlying asset at the contract's maturity. In practice, delivery is seldom or never required, and economically equivalent gains or losses are achieved by futures exchanges requiring daily payment or refund of balances held by the exchange clearing house.

29 A particular issue in 1987 was the large-scale employment of portfolio insurance, a technique based on Black-Scholes-Merton option pricing that sets a ‘floor’ to losses. Purchase of portfolio insurance is a means of expressing a negative opinion – the fear that stocks are overpriced and will crash – but one whose most important effects are delayed: the technique requires increased sales of stock or of index futures as prices fall. For its possible contribution to the 1987 crash, see MacKenzie (forthcoming b).

30 Underhill argues that most scholars in international political economy ‘despite their protestations, still see the state and the market as separate and indeed antagonistic dynamics’ (Underhill 2000, p. 808).

31 That does not imply that American investment banks, hedge funds, etc., are necessarily highly regulated, because such entities have a considerable degree of discretion as to the jurisdictions within which they operate. Since completing the first draft of this article, I discovered Vogel's fine study of liberalization in Britain and Japan. His title, Freer Markets, More Rules (Vogel 1996), captures precisely the point I wish to make.

32 That an interview is an act of hospitality that imposes obligations can be forgotten when, as is overwhelmingly the case in the social sciences in general, the interviewee is lower in the socio-economic scale or otherwise less powerful than the interviewer. Obligations to the less powerful are, of course, notoriously easier to ignore.

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Ambiguous numbers: Trading technologies and interpretation in financial markets
Source: American Ethnologist
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Source: The Bell Journal of Economics and Management Science
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