



Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Full length article

The financial *Logos*: The framing of financial decision-making by mathematical modelling



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ARTICLE INFO

Article history:

Received 14 August 2015
 Received in revised form 7 January 2016
 Accepted 27 January 2016
 Available online 4 February 2016

JEL classification:

A1
 B4
 C4
 G1

Keywords:

Performativity
 Mathematisation
 Mathematical modelling
 Financialisation
 Ethics
 Finance

ABSTRACT

This paper introduces the notion of “financial *Logos*”, defined as a structuring discourse embedded in management tools and beliefs of financial practices. I hypothesize that this discourse contains a specific representation of risk mathematically modelled by probability measures. Next I use a performativity based approach to describe the concrete action of the financial *Logos* on financial practices: the framing of financial decision-making by mathematical modelling. I argue that it is not possible to think of a given financial practice without epistemologically and sociologically thinking of the contribution of the mathematical modelling to this practice. I conclude with consequences for ethics of finance: extending ethics of action to epistemic ethics, I suggest that, in finance, any preference in mathematical modelling is also a preference in ethics.

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1. Introduction

Most analyses of the 2008 financial crisis have focused on the responsibilities of the actors. The report of the Financial Crisis Inquiry Commission (FCIC) appointed by the United States government with the goal of investigating the causes of the financial crisis takes a similar approach. Although it states that there was “a systemic breakdown in accountability and ethics” (p. xxii), it started with the phrase: “The crisis was the result of human action and inaction, not of Mother Nature or computer models gone haywire” (p. xvii). Besides the fact that the notion of a model is reduced here to its sole computing aspects, this sentence completely ignores a phenomenon which is nevertheless easy to understand: financial management and therefore human action are equipped with technical and mental tools (beliefs). Even if the FCIC analysis stresses human choice – perverted by greed, or power (management boils down to competition between men) – the fact remains that those who decide, those who have power, those who command are equipped with technical and mental tools whose linkages are assumed to be rational (Chiapello and Gilbert, 2009). The relationship between effective management,

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management tools and the beliefs of managers that use them has been described as a management technology (Gilbert, 1998). Many studies have shown that there is a real influence of management technology on behaviour and the principles of organizational standardization (Berrebi-Hoffmann and Boussard, 2005). To say it differently, these various tools shape professional behaviour.

It is therefore important to investigate how the human actions are equipped with beliefs and tools. For example, are such technical or mental tools made up of: job structures, performance evaluation systems, compensation rules, methods of performance evaluation, calendars, timelines etc.? One of the crucial beliefs is the representation of *risk*. It has been shown that modern finance should be treated as a branch of industry devoted to risk modelling issues (Armatte, 2009), that is an activity which simultaneously implements ideas, theories, models, mechanisms and institutions. The actors' decision-making equipment in this area is constituted in particular of representations of risk. Vigilance concerning the components of the equipment of this very specific belief is therefore necessary in the case of financial supervision. For example, the Chinese mathematician David Li developed a formula called Gaussian copula function, which was adopted by everybody from bond investors and Wall Street banks to ratings agencies and regulators. It was based on the concept of probability, which here acts as a strong belief concerning the nature of financial uncertainty. The Li's formula was accused to "kill Wall Street" (Salmon, 2009) because of a wrong belief about uncertainty.

In this paper, I present and stress the importance of the inclusion of these technical and mental tools of representing risk within the area of vigilance to be implemented in the ethics of finance. I introduce the notion of "financial *Logos*" and next I use the notion of performativity of the financial *Logos* to enter the issue of ethics of finance. Section 1 presents the notion of financial *Logos*. Section 2 gives insights of performativity applied to mathematical finance in the way mathematical finance tools shape professional finance and in this sense constitute an "invisible technology" (Berry, 1983), which is all the more dangerous as it is ignored.

Section 3 suggests some consequences for ethics of finance by introducing the idea of Archimedean point: epistemology of mathematical modelling.

2. Financial theory and financial practices: The "financial *Logos*" at work

2.1. The financial *Logos* and the risk representations

Technical and mental tools fix the formats of action, and create a unity of action among groups which sometimes have conflicting interests: they produce a sort of organized action (Chiapello and Gilbert, 2013). It is certainly a unified vision of the company, presented as an organization oriented to a clearly defined purpose. This is a sociological perspective that removes all conflicts and any lack of coordination between different departments, as well as internal power issues. It can therefore be regarded as not being especially realistic (Cyert and March, 1963). However, regardless of specific situations or internal conflicts, management tools are responsible for things which remain unified and finalized in a company. The strategy of a company is marked by a system of management and information (e.g., integrated Enterprise Resource Planning or ERP). On a daily basis it creates management actions and decisions embodying a management philosophy in technical measures (Hatchuel and Weil, 1992). Persons responsible for management can thus be considered as "servants of a rational rule" (Boussard, 2005). From this point of view, companies are part of the historical trend to the rationalization of modernity described by Max Weber (1905), in the sense that the "manager project" is rational and technical.

The three dimensions of the "manager project" – control, performance and rationality – have been tied together and called the "manager *Logos*" (Boussard, 2008), that is to say, both an organizing principle of professional practice and a discourse supporting these practices. The intention of rationality by the "manager *Logos*" has been accentuated in financial industry, an industry characterized by an exacerbation of computational rationality which promotes the automation of decision-making: transaction programs in high-frequency trading being the latest illustration of this project. I extend the notion of "manager *Logos*" to the financial industry and I introduce the term "financial *Logos*". The financial *Logos* is a structuring discourse which is incorporated into the financial management arrangements of banks, insurance companies, and asset management companies and into the practices of monitoring and controlling financial activities. This discourse is composed of three kinds of productions: written (such as the formalization of rules for investment or risk dispersion), oral (e.g., the discourse on what should be the proper financial management of a pension fund or an investment bank) and technical (e.g., the methods of calculation of risk for equity). This discourse engrains financial metrics and reasonings in places where finance was not existent and, in this sense, the financial *Logos* is a vector of "financialisation" (Epstein, 2005) in the Chiapello's approach: a colonisation by specific financialised techniques and calculation methods (Chiapello, 2015). This discourse concerns in particular representations of risk, a specific culture monitored by the epistemic authorities of financial regulation (Lebaron, 2009; Vanel, 2010), that is to say a sharing of mandatory knowledge.

The choice of randomness embedded in the financial *Logos* stems from a school of thought on risk, based on setting simplistic probabilistic measures in situations of uncertainty. It has had the effect of contracting time to the most immediate short-term (profitability, solvency) and contaminating prudential and accounting standards in a hegemonic way (see Luchtenberg and Vu (2015) for a recent account on the notion of contagion). Despite the 2008 financial crisis, the financial *Logos* continues to "talk" and continues to influence the ideas at work in attempts to overhaul the economic system.

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