


# Engineering value, engineering risk : what derivatives quants know and what their models do

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Abstract

This thesis examines the 'evaluation culture' of derivatives 'quants' working in the over-the-counter markets for interest rate derivatives tied to Libor. Drawing on data from interviews with quants, financial mathematicians, and economists conducted primarily in the United Kingdom and the United States, combined with fieldwork at derivatives 'quant' conferences and an extensive set of technical sources, this thesis explores the historical development and contemporary patterning of modelling practices that are used within derivatives dealer banks to price and hedge Libor-based interest rate derivatives. Moreover, this thesis uses the historical development of interest-rate modelling techniques, beginning in the late 1970s, as a lens through which to understand the establishment, differentiation and separation of this 'derivatives quant' evaluation culture as a body of knowledge and practice distinct from financial economics. The analysis is carried out in nine chapters. The thesis begins with an introductory chapter, a chapter reviewing the relevant sociological and historical literature on economic and financial modelling, and a chapter covering the research methodology employed in the thesis. In Chapters 4-5, I provide background on the mathematical techniques used by derivatives quants and financial economists, the social and institutional structure of the Libor derivatives markets, and the instruments that are traded in these markets. In Chapter 6, I explore the organisational patterning of modelling practices in these markets and highlight the tacit and experiential nature of quant expertise. In Chapters 7-8, I investigate the 'social shaping' of models that are currently used to price so-called 'exotic' Libor derivatives. These models originated within the discipline of economics and were designed for a set of purposes different from models currently used by derivatives quants. By tracing out how these models were adapted to serve as derivatives pricing 'engines' within banks, I highlight how modelling practices are shaped by the organisational contexts in which they are used.

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