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# Foreword

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The idea for the project that generated this book originated some twenty years ago. Having participated in the sale of the investment banking partnership F. Eberstadt & Co. to a global financial services group, I discovered the time to immerse myself in Fernand Braudel's great work, *Civilization and Capitalism* (1982). In the second volume, *The Wheels of Commerce*, Braudel identifies the unique attribute of the capitalist—that which distinguishes him decisively from participants in both the regulated markets of the traditional economy and the nascent “free” markets that were rising to challenge them: “The characteristic advantage of standing at the commanding heights of the economy . . . consisted precisely of not having to confine oneself to a single choice, of being able, as today's businessmen would put it, to keep one's options open” (381).

My colleagues and I had been feeling our way into the emerging domain of venture capital. Braudel's insight delivered a shock of recognition, even as he amply documented that the sort of technological innovation that had become the focus of late-twentieth-century venture capitalists did not represent a relevant option for the preindustrial capitalists whose work he chronicled and placed in context. Braudel endorsed Simon Kuznets as “absolutely right when he says”:

At the danger of exaggeration, one may ask whether there was *any* fixed, durable capital formation, except for the “monuments” in pre-modern times, whether there was any significant accumulation of capital goods with a long physical life that did not require current maintenance (or replacement) amounting to a high proportion of the original full value. If most equipment lasted no more than five or six years, if most land improvements had to be maintained by continuous rebuilding amounting to something like a fifth of the total value per years, and if most buildings were destroyed at a rate cumulating to fairly complete destruction

over a period from 25 to 50 years, then there was little that could be classified as durable capital. . . . The whole concept of fixed capital may be a unique product of the modern economic epoch and of modern technology. (quoted in Braudel 1982, 158)

On the contrary, Braudel's capitalist found his apotheosis as a long-distance *arbitrageur*, financing trade and earning "super profits . . . based on the price difference between two markets very far apart, with supply and demand in complete ignorance of each other" (Braudel 1982, 405). Nonetheless, Braudel's transcendent image remained of the capitalist's unchanging goal: to escape from the "world of transparency and regularity," as he defines the "economy," where the possibility of profit is constrained and even eliminated by the regulations of the traditional market or the competition of the emerging free market. And so, it did not seem fanciful to imagine, the modern venture capitalist seeks the "super profits" that come from financing those innovation that disrupt old and define new markets.

Over the next fifteen years, as I became immersed in financing innovative technology as a partner of Warburg, Pincus, reading in the history of technology and the enterprises built to deploy technological innovation generated a growing sense of frustration. The rich literature on technological innovation is notable for the relatively modest degree of attention paid to the sources of capital that funded the deployment of new technologies. As Carlota Perez (2004) has written:

In Schumpeter's basic definition of capitalism as "that form of private property economy in which innovations are carried out by means of borrowed money", we find his characteristic separation of borrower and lender, entrepreneur and banker, as the two faces of the innovation coin. This is not, however, how his legacy has been interpreted and enriched by the great majority of Neo-Schumpeterians. The accent has almost invariably been on the entrepreneur to the neglect of the financial agent, no matter how obviously indispensable this agent may be to innovation.

The large and diverse body of scholarship on technology-driven industrial development—from Alfred Chandler (1977, 1990) and Richard Nelson (Nelson, Peck, and Kalachek, 1967) through Thomas Hughes (1983) and Leo Marx (Smith and Marx 1996), to Chris Freeman (Freeman and Soete 1997) and Nathan Rosenberg (1994)—provides limited, if any, insight into this critical nexus. The absence is all the more striking

when considered in the still relevant light of the path-breaking work by Davis and North, *Institutional Change and American Economic Growth* (1971). Chapter 6, “Organization and Re-Organization in the Financial Markets: Savings and Investment in the American Economy, 1820–1950,” offers a synoptic overview of the role of private and public finance in economic development. Davis and North thereby also define a research agenda that remains largely incomplete a generation on.

It was in this context that I began a conversation, initially informal, with Craig Calhoun, newly installed as president of the Social Science Research Council (SSRC). Craig engaged David Weiman, then a senior staff member of the SSRC, and the conversation began to take substantive shape: a research project whose purpose would be to generate a range of case studies in the financing of technological innovation. By 2001, Ashley Timmer had taken over responsibility at the SSRC, and—most important—Naomi Lamoreaux and Ken Sokoloff had agreed to lead the project. The result of their intellectual leadership, organizational focus, and (not least) original scholarship is this book.

This book contributes, individually and collectively, toward filling that missing dimension of economic history, where finance intersects invention to generate economically significant innovation. In the aftermath of the great dot-com/telecom bubble of 1998–2000, the relevance of the subject matter verges on the self-evident. But the chapters in this book, rooted in deep and often pioneering empirical excavation, do not only stand as exemplars of research methodology in a substantially unexplored domain. Their publication comes at a time when the dynamics of the capital markets and their role in economic evolution are once again a subject of theoretical as well as empirical study. On the one hand, a variety of imaginative approaches are being deployed to understand the empirical puzzles generated by the attempt to explain—or, rather, explain away—the functioning of the capital markets through the application of the rational expectations hypothesis (Mordecai, Jin, and Motolese 2005; Scheinkman and Xiong 2005; Weitzman 2005). Jointly and severally, this work offers the potential of a reintegration of theoretical finance into mainstream economic theory. On the other hand, these chapters provide specific context and content to inform and constrain renewed interest in the agenda implicitly established by Davis and

North and most recently redefined and renewed by Carlota Perez's work *Technological Revolutions and Financial Capital* (2002).

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