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THE FINANCIALIZATION OF THE NONFINANCIAL CORPORATION IN THE POST-1970 U.S. ECONOMY

A Dissertation Presented

by

LEILA E. DAVIS

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
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Department of Economics

THE FINANCIALIZATION OF THE NONFINANCIAL CORPORATION IN THE POST-1970 U.S. ECONOMY

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LEILA E. DAVIS

Approved as to style and content by:

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In addition to my committee, I have been lucky in the support I have received throughout my education. In particular, I truly want to thank Daniel Bromley, who was a formative, generous mentor and teacher throughout my undergraduate education. As I started to learn and think about economics, he taught me to be critical and firm. I have also learned so much from other faculty in the economics department at the University of Massachusetts. Jim Crotty is a wonderful teacher, and was also generous to read and discuss my research with me. Deepankar Basu read my dissertation work in early stages and provided me with very useful comments. The participants of the Analytical Political Economy Graduate Workshop suffered through my presentations at many stages of my work; I very much appreciate their comments and engagement with my project. Finally, Michael Lawlor at Wake Forest University also read early drafts of my work; his encouragement was deeply meaningful to me.

As many people say when leaving the economics department at UMass, the spirit of collaboration and support among graduate students is incredible. Two friends

ABSTRACT

THE FINANCIALIZATION OF THE NONFINANCIAL CORPORATION IN THE POST-1970 U.S. ECONOMY

SEPTEMBER 2014

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This dissertation analyzes the financialization of nonfinancial corporations (NFCs), emphasizing changes in firm-level financial behavior in the post-1970 U.S. economy. The dissertation consists of four essays. These essays ask what is the financialization of NFCs, explore why NFCs have 'financialized', and evaluate the implications for fixed investment behavior. Chapter 2 lays out a simple stylized framework describing firm-level portfolio choice and utilizes this framework to analyze the implications of increasing NFC involvement in the provision of financial services, increasingly entrenched shareholder value norms, and rising firm-level demand volatility for NFC financial structure. By articulating underlying determinants of firm-level portfolio and financing decisions, this chapter isolates specific features of the post-1970 U.S. economy that can be identified with the 'financialization' of nonfinancial corporations, and links these factors to expected changes in financial structure.

Chapter 3 identifies the key phenomena constituting the financialization of NFCs via a detailed decomposition of firm-level balance sheets, thereby addressing the ques-

tion of what is the financialization of NFCs. Changes in NFC financial behavior are reflected in both an increasing share of – largely liquid – financial assets in firm portfolios, and in changes in the structure of external finance, including increased indebtedness and equity repurchases among large firms. Chapter 4 explores the increasing intertwinement of industry and finance in the case of General Electric, thereby analyzing in more detail the 'financialization' of large firms. This case study exemplifies important complementarities and interdependence between the industrial and financial aspects of GE's business. The shifts in GE's balance sheet structure towards greater financial asset holdings, increased indebtedness and a reduction in outstanding equity are, furthermore, consistent with GE's increased emphasis on 'creating' shareholder value and engagement in banking activities since the mid-1980s.

Chapter 5 uses a firm-level panel to econometrically analyze the relationship between financialization and fixed investment, exploring the implications of changes in financing behavior, increasingly entrenched shareholder value norms and rising firm-level demand volatility for NFC investment rates between 1971 and 2011. Both shareholder value norms and rising volatility are identified as factors associated with an empirically and economically meaningful decline in NFC investment rates. This analysis also highlights key firm-size differences, building on the discussion in Chapters 3 and 4. In particular, shareholder value norms are found to primarily influence the financial decisions and investment behavior of large firms, whereas rising volatility most substantially impacts small firms.

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CHAPTER 1

INTRODUCTION

1.1 Finance in the U.S. economy

This dissertation analyzes the recent 'financialization' of nonfinancial corporations (NFCs) in the U.S. economy by exploring the key trends pointing to the 'financialization' of NFCs, laying out determinants underlying observed changes in NFC financial behavior, and analyzing the implications for fixed investment. The discussion emphasizes the role of increasingly entrenched shareholder value norms, rising firm-level demand volatility, and NFC expansion into the provision of financial services in driving changes in the portfolio and financing behavior of NFCs in the post-1970 U.S. economy. Both shareholder value norms and rising firm-level volatility are, furthermore, found to be associated with a decline in fixed investment rates.

This project fits into a growing literature on the 'financialization' of the U.S. economy. Broadly, financialization is often defined as the "increasing role of financial motives, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein 2005, p. 3). While the precise concept varies considerably across analyses, the shared underlying premise is that financial sector growth is indicative of an important structural change over recent decades in the U.S. economy. The increasingly dominant role of finance in the U.S. macroeconomy is evident, for example, in the shares of manufacturing, services, and FIRE (finance, insurance, and real estate) in total corporate profits over the post-WWII period (Krippner 2005, p. 179). From 1950 to 2001, the share of profits earned by FIRE rose from barely 10% to approximately 45% of total corporate profits, while the share

of profits earned by manufacturing declined from approximately 50% to barely 10%. Service sector profits, less FIRE, account for less than 10% of total corporate profits for the full post-WWII period.[1] Given a concurrent increase in *non*-financial corporate income derived from financial sources, these statistics, furthermore, constitute a lower bound for total financial profits in the U.S. economy.

A structural shift in the U.S. economy towards finance is manifested not only in growth in the size and scope of the financial sector, but also in the behavior of nonfinancial actors and in nonfinancial outcomes.[2] With respect to macroeconomic policy, Epstein (2002) discusses the implications of inflation targeting by central banks. Che and Sethi (2013) analyze the impact of a specific financial innovation – naked credit default swaps – on the cost of capital, and find a shift in the terms of lending against borrowers. At the aggregate level, Skott and Ryoo (2008), Aglietta and Bretton (2001) and van Treeck (2009) analyze the implications of 'financialization' for macroeconomic outcomes and dynamics, and Boyer (2000) analyzes the possibility of a 'finance-led' growth regime. With respect to households, Scott and Pressman (2009) investigate the impact of rising household debt on household financing and consumption decisions, and Basu (2011) analyzes the implications of rising household debt for aggregate growth rates. Focusing on income inequality, Galbraith (2012) argues that rising inequality in the U.S. is the direct consequence of the expansion of financial incomes. Emphasizing the opposite direction of causality, Skott (2013) investigates the role of rising inequality in financial instability. Epstein and Jayadev (2005) emphasize changes in the functional distribution of income, documenting a rising 'rentier' share of income; Tomaskovic-Devey and Lin (2011) also analyze in-

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[1]While finance is a growing source of profits, it is not an employment-intensive sector. Over the same time period, the relative employment shares of manufacturing, FIRE and services show a different picture of structural change, namely an often-cited growth in the (nonfinancial) service sector. Again, the relative size of the manufacturing industry declines, but now service-sector employment largely compensates for the decline in the manufacturing sector.

[2]Hein and van Treeck (2010) review the literature on financialization in the Keynesian tradition.

come shifts into the financial sector. Lin and Tomaskovic-Devey (2013) find that increased reliance among nonfinancial companies on financial earnings is associated with a decline in the labor share of income.

1.2 A brief review of the existing literature

1.2.1 'Financialization' and capital investment

Economic theories relying on the assumption of efficient financial markets contend that deeper financial markets improve the economy-wide allocation of credit, with positive implications for capital accumulation (Levine, 1997). Greenwood and Scharfstein (2013) find growth in financial services since 1980 has been largely concentrated in asset management and household credit, and – with respect to asset management – argue that, "the professionalization of asset management brought significant benefits. The main benefit was that it facilitated an increase in financial market participation and diversification, which likely lowered the cost of capital to corporations" (p. 6). The financial system provides liquidity, performs risk-sharing functions, provides information and monitoring, and supports both market-making and innovation; all of these functions support capital investment among non-financial actors of the economy. Particularly in light of the 2008 financial crisis, however, the 'scale' of finance in the U.S. has received growing attention. The question arises of 'how big is too big' with respect to the overall size of the financial system (Epstein and Crotty, 2013). Cecchetti and Kharoubi (2012) find an inverted-U relationship between the size of the financial sector and aggregate productivity growth, suggesting that financial deepening may improve efficiency up to some point, but not beyond.

Furthermore, a growing body of empirical evidence provides support for the contention that a broadly-defined phenomenon of financialization inhibits capital accumulation. Stockhammer (2004) finds that rising rentiers' income explains roughly one third of a slowdown in capital investment in the U.S. (p. 736), and van Treeck (2008)

argues that rising rentier incomes are responsible for a diversion of funds from physical investment into consumption expenditure. At the firm level, Orhangazi (2008) finds that higher financial profits earned by nonfinancial companies and higher payments paid to the financial sector inhibit investment, particularly among large firms.[3] The final chapter of this dissertation analyzes the implications of changes in financing behavior, increasingly-entrenched shareholder value norms, and rising firm-level volatility for firm-level investment, and finds both shareholder value norms and firm-level volatility to be associated with an economically and statistically-significant decline in investment rates.

1.2.2 The theory of the firm

A second strand of the literature on financialization, lying more specifically at the firm level, focuses on changes in corporate governance largely associated with the shareholder value movement. Since the 1980s, the 'maximization of shareholder value' has become an increasingly dominant ideology driving corporate governance decisions in the United States. Shareholder value principles contend that agency problems between shareholders (owners) and managers within nonfinancial corporations lead to inferior corporate performance (Jensen, 1986, p. 323).[4] Accordingly, agency theory suggests two mechanisms to better-align the interests of managers with those of shareholders, with the purported effect of improving firm-level efficiency: a hostile market for corporate control, which 'disciplines' managers via a threat to managerial

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[3]In a developing country context, Demir (2008) finds that an increasing rate of return gap between financial and fixed investment, and growing uncertainty have a statistically significant negative effect on real investment rates in Argentina, Mexico and Turkey, which has increasingly led firms to invest in reversible short-term financial capital over long-term fixed investments. Gezici (2007) similarly finds that financial liberalization in Turkey negatively impacts firm-level real investment via increasing uncertainty and volatility.

[4]The agency problem is argued to derive primarily from moral hazard: managers may apply "insufficient effort", undertake "extravagant investments", pursue "entrenchment strategies" to make themselves indispensible, or exploit expensive perks like private jets or box tickets to ball games (Tirole 2005 p. 17).

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autonomy (Jensen, 1986 p. 324), and stock-option based executive compensation, which directly links managerial pay to the firm's stock market performance (Jensen and Murphy, 1990).[5]

A growing literature contends, however, that shareholder value ideology is detrimental both for firm performance and for aggregate outcomes. The critique lies along various dimensions. Lazonick and O'Sullivan (2000) and Lazonick (2009) argue that the shareholder value movement corresponds to a shift in business model from a strategy of "retain and reinvest" (retain workers and reinvest earnings in the firm's growth and innovative capacity) to "downsize and distribute" (downsizing of the corporate workforce and distribution of earnings), adversely impacting long-term employment and 'sustainable prosperity' in the United States. Stout (2012) emphasizes the increasing power of short-term shareholders (largely, institutional investors) relative to long-term shareholders, resulting in "corporate myopia" (p. 65). Stockhammer (2004) relates the shift in corporate governance strategy to capital accumulation, and argues that the increasing emphasis of managers on 'shareholder value' has led to a decline in desired investment rates at the firm level.

These developments in firm orientation and corporate governance strategy have been summarized by a growing 'portfolio conception' of the nonfinancial firm, characterized by an increasing orientation by NFCs towards financial markets (Fligstein, 1990; Crotty, 2005). Changes in the conception of the firm are characterized by a shift,

> "from an implicit acceptance of the Chandlerian view of the large NFC
> as an integrated, coherent combination of relatively illiquid real assets

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[5]Interestingly, this literature on agency problems in many ways represents a disavowal of the Modigliani-Miller view of the firm. Famously, the Modigliani-Miller theorem says that—in an environment of complete markets, no transaction costs and no other 'distortions' (such as taxes)—the financial structure of the firm is irrelevant to the firm's performance (Modigliani and Miller, 1958). Tirole (2005) writes that the Modigliani-Miller theorem "acted as a detonator for the theory of corporate finance" (p. 1), while the introduction of agency theory to discussions of the firm has re-raised issues of corporate governance and financial behavior.

assembled to pursue long-term growth and innovation, to a 'financial' conception in which the NFC is a 'portfolio' of liquid subunits that home-office management must continually restructure to maximize the stock price at every point in time" (Crotty, 2005, p. 88).

These changes in the conception of the firm are embedded in larger shifts in the institutional context within which NFCs operate, including the growth of institutional investors, changes in corporate tax law making stock-option based executive pay tax deductible, an active market for managerial talent, and the corporate takeover market.

1.3   Dissertation outline

This dissertation is structured in four essays. These essays ask what *is* the financialization of the nonfinancial corporation in the U.S. economy, explore *why* NFCs have 'financialized', and evaluate the *implications* for domestic fixed investment behavior. The analysis emphasizes shareholder value norms and rising firm-level volatility as two key characteristics of the post-1970 period in the U.S. economy that underlie changes in firm-level portfolio and financing decisions and that are, in particular, associated with a decline in fixed investment rates, and also emphasizes the expansion of nonfinancial companies into banking activities. Because the dissertation is formatted as essays, rather than as a single manuscript, some overlap between the chapters is necessary to motivate each chapter as a free-standing essay. This is particularly true in the introductions to each chapter and, for example, in the final econometric chapter on investment, which utilizes the framework originally laid out in the first chapter.

The analysis in this project lies at the firm level, which allows for a detailed analysis of firm behavior. The dissertation emphasizes the question of why nonfinancial corporations in the U.S. have changed their behavior in such a sustained way over recent decades such that U.S. NFCs are increasingly oriented towards and intertwined with financial markets. In doing so, this dissertation builds on the existing litera-

ture, in which the behavioral changes that have led to an increasingly 'financialized' firm remain largely unexplored. This elaboration of the behavioral mechanisms underlying trends in firm-level behavior has important implications for macroeconomic analysis as well; by articulating specific behavioral mechanisms, the analysis can help to inform analyses of aggregate trends in capital accumulation, rising nonfinancial corporate debt and cash holdings in the U.S. economy. The firm-level analysis furthermore allows for a decomposition of the sector, and the findings emphasize systematic differences between small and large firms.

1.3.1 The financialization of nonfinancial firms and a portfolio approach to firm behavior

Chapter 2 identifies three factors specific to the post-1980 period in the U.S. potentially driving firm changes in NFC financial behavior, and links these changes to firm-level portfolio and financing decisions, utilizing a simple conceptual framework describing firm-level balance sheets and financial decisions. First, there has been a shift in NFC activity towards greater involvement by 'non'-financial companies in banking activities; second, increasingly entrenched shareholder value norms are associated with changes in managerial objectives towards greater emphasis on short-term stock market-based indicators of performance; and third, increased firm-level volatility has changed the constraints subject to which managers make portfolio and financing decisions. These three factors are themes that reappear throughout the dissertation. By identifying three factors specific to the post-1970 U.S. economy that can be directly linked to changes in firm-level financial behavior, this chapter augments the existing literature, in which financialization is generally proxied by rising flows of financial income between NFCs and the financial sector — an approach that raises the question of why NFC behavior changed specifically in the post-1970

period so as to generate significant increases in, for example, the financial profits earned by NFCs.

1.3.2 What is the 'financialization' of the nonfinancial corporation?

Chapter 3 develops the concept of 'financialization' at the level of the nonfinancial corporation by laying out the key stylized facts describing changes in NFC financial behavior between 1950 and 2011 via a detailed decomposition of firm-level balance sheets. As with the definition of financialization more broadly, the concept of the 'financialization of nonfinancial firms' is ambiguous, reflecting the wide range of phenomena explored in the existing literature. Thus, in laying out these key stylized facts, this chapter contributes to the literature on financialization by systematically outlining the key trends in firm-level financial behavior that, first, point to the 'financialization' of NFCs and, second, that need to be explained. The analysis points to sustained changes in the portfolio and financing behavior of NFCs over the post-1980 period, summarized by an increased share of financial assets held in NFC portfolios, increasing indebtedness and equity repurchases among large firms, and simultaneous de-leveraging among small firms. Together, these trends point to the growing 'financialization' of nonfinancial corporations. Finally, the chapter briefly discusses the interdependence of these observed trends in NFC portfolio and financing behavior, and the insights that stand to be gained by analyzing these stylized facts in a conceptual framework that emphasizes the ways in which changes occurring across NFC balance sheets are linked. These links were also highlighted in the framework discussed in Chapter 2.

1.3.3 A case study of General Electric: links between finance and industry in a nonfinancial corporation

To explore in more detail the case of large firms, Chapter 4 explores interactions between industry and finance in a case study of General Electric. Articulating the

story of a particular firm, which both has a large financing arm and is often cited in regard to the shareholder value movement, helps elaborate mechanisms underlying the large-sample descriptive discussion of large firms. As a result of dramatic expansion in its financial services division, GE Capital, since the mid-1980s, GE has increasingly operated as a conglomerate combining industry with finance. Simultaneously, there is a shift in GE's balance sheet structure towards greater financial asset holdings, a dramatic expansion in outstanding debt, and a reduction in outstanding equity. These changes are consistent both with involvement in banking activities and with shareholder value orientation. The case study of GE, furthermore, exemplifies important complementarities between the industrial and financial aspects of GE's business. Between 1985 and the mid-2000's, GE's financial arm supported the industrial business, but also depended upon the industrial business – both its credit rating and the fact that GE was regulated as an industrial rather than a financial firm – to grow. By analyzing the specific case of GE, it is possible to clearly distinguish changes in GE's behavior that resulted in an increasingly financial orientation, and to isolate two specific factors – shareholder value orientation and engagement in financial services – driving changes in GE's balance sheet structure.

1.3.4 'Financialization' and firm-level fixed investment

In turn, the observed changes in the portfolio and financing behavior of NFCs raise the question of accompanying changes in fixed investment behavior. Using a firm-level panel, Chapter 5 econometrically analyzes NFC investment behavior, exploring the implications of changes in financing behavior, increasingly entrenched shareholder value norms, and rising firm-level demand volatility for investment between 1971 and 2011. Again, both shareholder value norms and firm-level volatility are, in particular, identified as two characteristics specific to the post-1970 U.S. economy that are associated with an economically and statistically significant decline in investment rates.

The analysis also reiterates and highlights the firm-size differences laid out in Chapter 3. In particular, the implications of shareholder value norms for fixed investment are primarily limited to large NFCs, while rising volatility most substantially impacts small firms. In identifying an empirical relationship between fixed investment and both shareholder value norms and firm-level volatility, this chapter isolates two factors specific to the recent period of financialization in the U.S. economy that underlie the rising flows of financial income between nonfinancial corporations and the financial sector that are generally used as indicators of financialization in the existing literature on financial-sector growth and fixed investment.

CHAPTER 2

UNDERLYING DETERMINANTS OF THE FINANCIALIZATION OF NONFINANICAL CORPORATIONS IN THE POST-1980 U.S. ECONOMY

2.1 Introduction

Within the literature on the 'financialization' of the U.S. economy, there has been growing emphasis in recent years on the 'financialization' of non-financial actors, including nonfinancial corporations (NFCs). The growth of finance in the post-1980 U.S. economy is exemplified by a sustained increase in the share of financial-sector profits in total corporate profits (Krippner, 2012). Over the same time period, NFCs also derive a growing proportion of profits from financial sources, such that growth in financial profits extends beyond that directly captured by the profits of financial institutions. Accordingly, the financialization of the U.S. economy is not limited to changes in the size and structure of the financial sector, but is also manifested in changes in the behavior of nonfinancial corporations. This financialization of NFCs has, furthermore, been linked to nonfinancial outcomes, including investment (Stockhammer, 2004, 2006; Orhangazi, 2008; Davis, 2013), distribution and income dynamics (Tomaskovic-Devey and Lin, 2011; Epstein and Jayadev, 2005), and employment (Lazonick, 2009).

A precise definition of the financialization of the U.S. economy remains nebulous, and this ambiguity also extends to the financialization of nonfinancial firms. All definitions of the financialization of NFCs share, however, an emphasis on either an increasingly complex relationship between NFCs and financial markets, or on a stronger orientation of NFCs to financial measures of performance. Thus, Orhangazi

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(2008) uses the concept quite broadly to "designate the changes that have taken place in the relationship between the non-financial corporate sector and financial markets" (p. 3). Stockhammer (2004) defines 'financialization' by "the engagement of non-financial businesses in financial markets...[where] financial activities are interpreted as reflecting a shift in the firm's objectives and a rising influence of shareholder interests in the firm" (p. 721). Lazonick (2012) discusses the 'financialization' of corporate resource allocation, stemming from the fact that companies are increasingly evaluated by financial measures, such as earnings per share, rather than by the goods and services they produce. Crotty (2005) discusses the "portfolio conception" of the firm: as short-term goals have been prioritized above long-term growth objectives, NFCs are increasingly viewed as bundles of assets rather than as capital-accumulating enterprises. Furthermore, a significant strand of the literature on financialization accords a primary role to the shareholder value movement in explaining both the 'financialization' of the U.S. economy more broadly, as well as related changes in firm behavior (Lazonick and O'Sullivan, 2000; Stockhammer, 2004; Davis, 2009). In particular, shareholder value orientation is often associated with a change in corporate strategy from one aimed to "retain [workers] and reinvest [corporate profits]" to one aimed to "downsize [the workforce] and distribute [profits to shareholders]" (Lazonick and O'Sullivan, 2000).

With the exception of changes in corporate strategy stemming from the shareholder value movement, however, the existing literature on the financialization of NFCs has not clearly linked observed outcomes, such as higher financial profits earned by nonfinancial companies or a growing portfolio share of financial assets, to specific changes in firm behavior underlying these outcomes. The implications of shareholder value orientation have, similarly, not been systematically linked to changes in firm financial behavior. Financialization is generally captured by rising financial flows between NFCs (or the nonfinancial corporate sector) and the financial sector and, while

these indicators capture dramatic changes in, for example, where profits accrue in the post-1980 U.S. economy, they also raise further questions. Specifically, what has changed in NFC decision-making — for example, in managerial objectives, or in the constraints subject to which financial decisions are made — such that a break in firm behavior occurs specifically in the post-1980 period in the U.S.? These underlying determinants have important implications for understanding the relationship between 'financialization' and NFC outcomes. For instance, the implication of higher leverage (with, correspondingly, higher interest payments) for fixed investment is likely to differ if firms borrow to acquire fixed capital, to repurchase outstanding stock, or to fund banking divisions.

This chapter identifies three factors specific to the post-1980 period in the U.S. potentially driving changes in NFC financial behavior, and links these changes to firm-level portfolio and financing decisions using a simple framework describing firm-level portfolio choice. First, there has been a shift in *activity* towards the increasing involvement of (large) 'non'-financial companies in the provision of financial services — i.e. borrowing and lending for profit. Second, increasingly entrenched shareholder value norms are associated with changing managerial *objectives*, and increased emphasis on stock market-based firm performance targets. Third, increased firm-level volatility reflects changing *constraints* subject to which NFCs make decisions. By laying out a simple framework describing firm-level portfolio and financing behavior, this chapter explores links between behavioral changes associated with each of these factors and observed changes in NFC financial structure since the 1980s, which include an increased share of financial assets in firm portfolios, growing indebtedness and equity repurchases among large firms, and concurrent de-leveraging among small firms; these trends are discussed in detail in Chapter 3. For example, increased involvement in banking activities – whereby firms first borrow in order to lend out funds

for financial profits – is reflected in both a larger portfolio share of financial assets and higher leverage.

These factors are neither proposed as jointly nor mutually exclusive explanations of changes in firm behavior in the post-1980 U.S. economy; other factors, including technological changes and increasingly globalized production chains, are also likely to be part of a full explanation of documented changes in firm behavior. However, identifying three particular factors underlying changes in NFC portfolio and financing decisions opens a discussion aimed at explaining the changes in NFC *behavior* that have yielded an increasingly 'financialized' nonfinancial firm. The factors laid out in this chapter are themes that are then revisited throughout the dissertation. The chapter is organized as follows: Section 2.2 discusses concepts of financialization utilized in the existing literature, and argues that a discussion detailing changes in firm behavior is complementary to the existing literature on financialization and NFCs; Section 2.3 lays out a stylized framework describing firm-level balance sheet structure and portfolio choice; Section 2.4 discusses, within this framework, how financing activities, shareholder value motives and rising firm-level volatility are consistent with observed changes in NFC balance sheet structure; and Section 2.5 concludes.

2.2 Concepts of financialization in the existing literature

2.2.1 Identifying the 'financialization' of the U.S. economy

While specific concepts of financialization differ considerably across analyses, the phenomenon is perhaps most often defined as the "increasing role of financial motives, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2005, p. 3). As this definition covers considerable ground, a wide range of implications and phenomena are carried under its umbrella. Nonetheless, clear and systematic evidence of 'financialization' at the level of the

U.S. macroeconomy is evident in growth in financial profits and in the magnitude of financial flows, both within and across sectors.

Krippner (2005, 2012) documents both an increase in the share of financial-sector profits in total corporate profits and an increase in financially-derived income earned by the nonfinancial corporate sector in the post-1970 U.S. economy. Beginning in the 1970s and accelerating during the 1980s, the share of profits earned by finance, insurance and real estate (FIRE) rises from barely 10% to approximately 45% of total corporate profits by 2001. The share of profits earned by manufacturing concurrently declines from 50% to barely 10% of total corporate profits; service-sector profits, non-inclusive of financial services, account for less than 10% of corporate profits for the full post-WWII period.[1] Epstein and Jayadev (2005), similarly, find evidence of the growing financialization of the U.S. economy (as well as other OECD economies) in a rising 'rentier share' of national income since the mid-1970s, where rentiers' income is defined as profits earned by financial firms – including banks, stockbrokers and insurance companies – and interest income from the rest of the private economy (p. 50).

As evidence of financialization, Krippner points not only to an increased share of financial profits in total corporate profits in the U.S. macroeconomy, but also to the increased importance of financial revenue for nonfinancial businesses since the early 1970s.[2] The ratio of portfolio income to corporate cash flow – where portfolio

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[1]Thus, Krippner defines financialization, "as a pattern of accumulation in which profit-making occurs increasingly through financial channels rather than through trade and commodity production" (Krippner, 2005, p. 181). Importantly, Krippner emphasizes that financialization is most evident through this profit-based lens of identifying structural change: FIRE grows as a share of national income over the same period, but is essentially matched as a share of GDP by non-financial services. Furthermore, because finance is an employment-unintensive sector, employment-based measures of structural change do not register substantial growth in finance.

[2]There is substantial evidence of rising flows of financial income both within and across other sectors of the economy as well. Montecino et al (2014) find that intra-financial lending as a share of total financial lending has grown nearly five-fold since the early 1950s. By 2007, intra-financial sector lending is found to account for nearly half of all financial sector lending, as compared with approximately 10% between 1950 and 1980. These intra-financial lending statistics, which would

income is defined as interest income, dividend income and realized capital gains – for nonfinancial business also begins to increase during the 1970s and accelerates during the 1980s, then stabilizing at approximately five times the level of the initial post-WWII decades of the 1950s and 1960s (Krippner, 2012, p. 184). As such, Krippner (2005) argues that an understanding of financialization requires "both a sectoral and an extra-sectoral perspective" (p 181): growth of finance in the U.S. economy is "reflected in the expansion of banks, brokerage houses, finance companies and the like, but *equally* it is reflected in the behaviour of non-financial firms" (p. 182). While the growth in NFC portfolio income documented by Krippner at the sector level captures that NFC financial behavior has changed since the early 1970s, the index cannot capture specific ways in which firm behavior has changed. Thus, by systematically defining the process of structural change that has occurred in the U.S. economy, Krippner's analysis raises important new questions about the changes in firm behavior underlying the documented trends.

2.2.2 'Financialization' and NFC investment behavior

While this section does not present an exhaustive literature review, a detailed discussion of a few influential papers that analyze the 'financialization' of NFCs – and, in particular, the implications for fixed investment – clarifies both what has been done in the literature, and the key questions raised by this existing work. Financial flow-based indicators of financialization are common across the existing empirical literature on financialization and investment. At the firm level, Orhangazi (2008) finds that increased payments by NFCs *to* the financial sector, and increased financial profits earned *by* NFCs constrain fixed investment, particularly among large firms.

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be masked in sector-level statistics, provide further evidence of a vast expansion in financial flows pointing to the financialization of the U.S. economy. There is, furthermore, evidence of rising financial flows between finance and households, clearly manifested in an expansion in household leverage and interest payments leading up to the financial crisis in 2008 (Cynamon and Fazzari, 2008).

Empirically, NFC payments to the financial sector are defined as the sum of interest payments, dividend payments and own stock repurchases; and financial profits are defined as the sum of NFC interest and dividend income. Both measures are found to be negatively associated with fixed investment rates; thus, the empirical analysis captures systematic negative relationships between fixed investment and increased flows between NFCs and the financial sector.[3] From these results, Orhangazi concludes that there is a negative relationship between financialization and fixed investment (p. 882). However, the fact that these financial flows stem from firm decisions to acquire financial assets, or to borrow, repurchase stock or pay dividends, raises the question of *why* NFCs changed their portfolio and financing behavior over the post-1970 period in the U.S. such that these indicators rose in a dramatic and sustained way. Why have NFCs 'financialized'?

Given that firms make investment decisions subject to a finance constraint, the decision to invest is inherently interdependent with the decision of how to finance that investment, as well as with the decision not to allocate that finance towards another use – for example, to acquire financial assets or to finance (discretionary) shareholder payouts.[4] As such, financial profits and NFC payments to the financial sector are endogenous to the investment decision, and – as an explanation of the 'financialization' of NFCs – cannot isolate what has changed in the post-1970 economy such that firms have changed their financial behavior in a sustained way. The behavioral motivations that underlie the changes in NFC portfolio and financing behavior are important for

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[3]Similarly to Orhangazi, Van Treeck's (2008) investment specification captures shareholder value orientation via the inclusion of interest and dividend payments, which are both found to have a statistically significant negative effect on capital accumulation. The fact that the strength of the effect of dividends on investment exceeds the strength of the effect of interest payments is taken as evidence of shareholder value orientation among managers.

[4]Note that, while interest obligations are contractual, both repurchases and dividends (or the retention rate) are discretionary for a firm's managers.

interpreting the relationship between investment and income flows between NFCs and the financial sector.

Consider, for example, an increase in NFC payments to the financial sector that reflect higher interest payments deriving from an increase in leverage. On the one hand, increased interest payments draw (by definition) on the pool of available funds and, therefore, come at a short-run tradeoff with other uses of funds, including physical investment. On the other hand, higher leverage — and the corresponding increase in interest payments — is itself the result of a firm's decision to borrow in pursuit of some objective: for example, financing fixed investment to grow or earn profits, financing repurchases to target a stock price increase, or covering rising interest obligations. Importantly, the implications for fixed investment are expected to vary with this motivation. Thus, high leverage can reflect very different factors – borrowing to invest in an attractive capital investment project differs from borrowing to buyback stock.

Further research of the financialization of NFCs, therefore, requires analysis of the changes in NFC behavior that have driven observed trends. As noted in the introduction, the primary behavioral channel that has been elaborated in the existing literature derives from a shift in corporate governance norms associated with the growing entrenchment of shareholder value ideology in the U.S. economy (Lazonick and O'Sullivan, 2000; Davis, 2009; Froud et al., 2006). Arising out of the application of agency theory to firms, shareholder value ideology contends that agency problems between shareholders (owners) and a firm's management lead to inferior corporate performance. Subsequently, norms supporting the 'maximization of shareholder value' by managers have become increasingly entrenched via wide-reaching institutional changes including, for example, changes in the structure of stock ownership, wherein shareholding is increasingly dominated by large institutional investors that hold shares for short periods of time — a marked departure from an earlier pe-

riod dominated by long-term household-level stockholding (Stout, 2012). Shareholder value ideology, in turn, establishes returning value to shareholders – largely via an appreciating stock price – to be the primary goal of firm performance.

Stockhammer (2004) develops a theoretical framework that analyzes the implications of shareholder value orientation for investment, arguing that, since the early 1980s, managerial interests have become increasingly aligned with those of shareholders, such that managerial priorities have shifted from growth-maximizing to profit-maximizing objectives. The theoretical specification emphasizes the separation between ownership and control (Crotty, 1990) and, accordingly, differing preferences of managers and shareholders: prior to the entrenchment of shareholder value ideology, managers maximize firm growth (the investment rate), despite owners' preference for profit maximization. The investment decision in Stockhammer's framework, pictured in Figure 2.1, is determined by managerial objectives, the firm's finance constraint and the firm's growth-profit trade-off. The finance constraint defines the maximum level of growth that can be financed by a given rate of profit (g^{FC}), and the firm is assumed to operate on the concave portion of its output-expansion function (r^{RG}), such that additional investment harms profits — i.e. there is a 'growth-profit tradeoff'.[5] In managerial capitalism managers maximize the investment rate, which is limited by the finance frontier (g^{MF}). With shareholder value orientation, managerial priorities become increasingly aligned with those of shareholders. Thus, managers become increasingly profit-oriented and their utility functions rotate, reflecting the increasing alignment of managerial preferences with those of owners. The consequence of

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[5]The specification of the finance constraint is based on the premise that internal and external funding differs for the firm such that managers are only willing to accept a given leverage rate (borrowers' risk), and banks provide credit to firms that are already profitable, taking the current profit rate as a proxy for a firm's 'reliability' (lenders' risk); thus, investment, which depends on available finance, depends on the profit rate. The concave portion of the growth-profit tradeoff reflects growing managerial inefficiency associated with excessively fast growth of the firm, the 'Penrose effect'.

Figure 2.1: The investment decision in Stockhammer (2004)
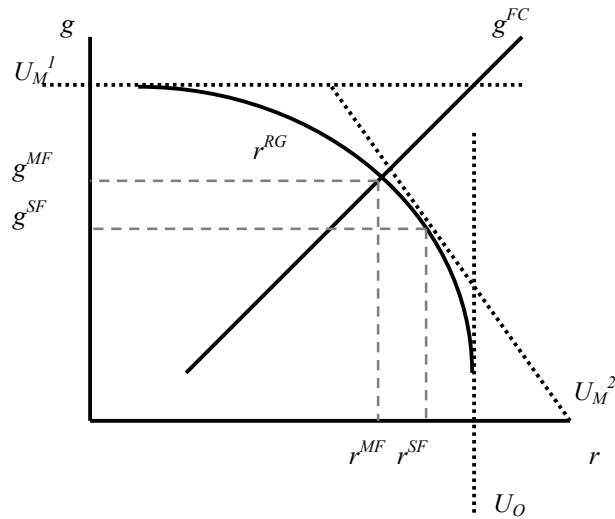
Source: Adapted from Stockhammer (2004); r is the profit rate and g is the investment (growth) rate, g^{FC} is the finance constraint; r^{RG} is the growth-profit tradeoff; U_O is the utility function of owners (defined as $U_O = u(r)$), and U_M is the utility function of managers. With the shift from managerial capitalism to shareholder value orientation, managerial utility functions shift from $U_M = u(g)$ to $U_M = u(g, r)$. Investment declines from g^{MF} (growth in the managerial firm) to g^{SF} (growth in the shareholder-oriented firm), and profit rates rise from r^{MF} to r^{SF}.

shareholder value orientation is, thus, a decline in the firms' desired investment rate (g^{SF}).

This decline in the firm's investment rate relies on an increasingly 'profit-maximizing' orientation among managers. However, maximizing shareholder returns need not be equivalent with profit maximization. Shareholder value orientation among managers is in large part a consequence of pay packages linking managerial compensation with the stock price, suggesting that value-maximizing objectives are geared towards stock price maximization, and empirical evidence suggests that since the 1980s shareholder payouts have increasingly taken the form of stock price increases (i.e. capital gains) rather than growth in dividend payments (Grullon and Michaely, 2002). If the stock price is a key indicator of shareholder value, two identical firms earning the same

profits could generate different 'shareholder returns' depending on their financial policy and payout behavior: if one firm repurchases stock, then by decreasing the total stock of outstanding equity, the per-share price increases. Then, despite equivalent profitability, the manager of the firm that has repurchased stock appears to have more successfully improved stock-market performance and 'shareholder value' than the one that paid out dividends; thus, growing shareholder value orientation is not clearly identified with a shift to profit-maximizing objectives. This issue is addressed in more detail in Section 2.4.2.

Furthermore, the framework does not incorporate that changes in investment behavior (the desired growth rate) have accompanying implications for a firm's portfolio and financing decisions and, thus, for the position of the finance constraint. Increased managerial orientation towards shareholder value is likely to have implications for a firm's financial decisions including, for example, either a higher distribution of profits (a lower retention rate) or an increase in share buybacks. Hein and van Treeck (2010) note that these changes in financial behavior are reflected in downward shifts in the finance constraint (g^{FC}). With respect to the position of the firm's constraints, it is also important to consider interactions between micro-level behavior and macro-level outcomes. If each individual firm moves along its output-expansion frontier to a lower investment rate, aggregate demand falls: thus, "an individual firm may face a perceived trade-off but this perceived trade-off does not extend to the macroeconomic level: changes in accumulation and financial behaviour affect aggregate demand and thereby the position of the frontier" (Skott and Ryoo, 2008, p. 834). While this aggregation issue may not be vital for specifying the behavior of an individual firm, the empirical application of the model extends the firm-level framework to an aggregate setting.

Thus, despite the emphasis on shareholder value orientation in driving changes in firm behavior in the existing literature, the precise channels through which these

changes are manifested in NFC behavior remain incompletely defined. The existing literature captures that changes in NFC behavior have occurred making NFCs more intertwined with financial markets and more oriented towards financial indicators of firm performance; however, a detailed behavioral story remains to be filled in.

2.3 A simple stylized framework: NFC portfolio decisions

This section develops a stylized framework describing the investment and financing behavior of an individual firm, which summarizes the determinants of the firm's investment and financing decisions. By laying out the factors describing the firm's decisions to invest in fixed capital, and to acquire financial assets and debt, this framework can be used to analyze determinants underlying observed changes in firm financial behavior over the post-1970 period in the U.S. economy. As such, this framework can be used to approach the question of *why* firms have changed their financial behavior over the post-1970 period so as to yield an increasingly 'financialized' or 'financially-oriented' firm.

2.3.1 The finance constraint

Consider a stylized depiction of a firm that can invest in two types of assets – fixed, tangible capital (K) and financial assets (M). The firm's total wealth is, therefore, captured by its total assets (A), where $A = K + M$. The firm's acquisitions of new assets are financed by a combination of internal funds – defined as the profits earned on both fixed and financial capital less shareholder payouts and interest payments – and external finance, where external finance derives from debt (D) and proceeds from new equity issues (νN). Importantly, a firm's portfolio decisions involve not only a choice about where to invest (fixed or financial capital), but also a choice about how to finance that investment; thus, a firm's portfolio and financing decisions are intrinsically linked.

The firm's finance constraint, which equates the firm's uses and sources of funds, can then, therefore, be expressed as:

$$p_I I + \dot{M} + Div + i^{debt} D = P + i^{dep} M + \nu \dot{N} + \dot{D} \qquad (2.1)$$

where a dot over a variable denotes a time rate of change. The firm's uses of funds include the acquisition of new physical capital ($\dot{K} = I$, where p_I is the price of the investment good), new financial assets (M), dividend payments to shareholders (Div), and interest payments on outstanding debt ($i^{debt} D$, where i^{debt} is the firm's cost of borrowing). The firm's sources of funds include profits earned on fixed capital (P, where $P = rK$ and r is the profit rate on capital), returns earned on financial assets ($i^{dep} M$, where i^{dep} is the financial profit rate), new share issues ($\dot{N}$ new shares at a price of ν per share), and new borrowing ($\dot{D}$).

Equation 2.1 highlights the endogeneity of indicators of financialization based on income flows with respect to the investment decision. Financial profits ($i^{dep} M$), for example, depend on the outstanding stock of financial assets (M), which is a portfolio choice. Normalizing p_I to one for simplicity, and writing $Div = (1 - s_f)(P + i^{dep} M - i^{debt} D)$ (following Skott and Ryoo, 2008; Lavoie, 1992) where s_f is the retention rate, the finance constraint can be written:

$$I + \dot{M} = s_f(P + i^{dep} M - i^{debt} D) + \nu \dot{N} + \dot{D} \qquad (2.2)$$

Equation 2.2 highlights that that new assets acquired – the sum of new fixed and financial capital – are equivalent to the sum of retained earnings and new external finance.

2.3.2 The firm's desired stock of capital in a static setting

A simple maximization problem is illustrative in laying out the baseline determinants of the firm's financial decisions. First consider the firm's decision to invest in

fixed capital. To do so, it is instructive to begin by laying out the determinants of the firm's desired level of the capital stock (K^*) in a very simplified, static setting that does not incorporate financing considerations. To begin, the firm's objective function is taken as given. The objective function may depend on various arguments, such as profits, sales, or CEO pay, and these objectives may, furthermore, vary based on the institutional context in which the firm operates. In particular, a transition to increasingly 'shareholder value'-oriented objectives will be discussed below. As a baseline scenario, however, it is assumed that the firm maximizes profits, where profits are standardly defined as:[6]

$$\Pi = pY - wL - cK \tag{2.3}$$

The firm is assumed to be a price-taker in factor input markets, such that the wage (w) and the cost of capital (c) are exogenous to the individual firm; this assumption regarding the cost of capital will be relaxed below. On the other hand, due to imperfect competition in product markets, the firm is not a price taker in goods markets and, therefore, faces a (firm-specific) demand curve that defines the relationship between the price the firm earns from the sale of its output (p) and its output (Y):

$$Y^d = Bp^{-\gamma} \tag{2.4}$$

where $B > 0$ and $\gamma > 1$. The parameter γ, which captures the firm's elasticity of demand, is taken to be constant, and the parameter B captures the position of the demand curve. The restrictions on the demand curve imply that it is downward sloping and convex.

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[6]Of course, firms do not directly maximize objective functions; however, strict maximization is not necessary here for the qualitative discussion to hold. The main point is that firms engage in 'goal-oriented' behavior (Skott, 2012).

For simplicity, the firm's production technology can be described by a Leontief form of the production function:

$$Y = F(K, L) = min\{\mu L, \sigma K\} \tag{2.5}$$

where μ and σ are technological parameters that capture labor productivity and capital productivity, respectively. The firm's desired level of capital in this static one-period setting can, thus, be derived from the firm's profit maximization problem. This maximization exercise is useful in that it lays out the key parameters defining the firm's desired capital stock in any given period. Assuming monopoly power such that there are barriers to entry, the firm chooses capital (K) and labor (L) so as to maximize profits, where – using Equations 2.3, 2.4 and 2.5 – profits can be written:

$$\Pi = B^{1/\gamma}(\sigma K)^{(\gamma-1)/\gamma} - w\frac{\sigma}{\mu}K - cK \tag{2.6}$$

Thus, the first order condition defining the firm's desired capital stock (K^*) is:

$$\frac{\partial \Pi}{\partial K} = B^{1/\gamma}(\sigma)^{(\gamma-1)/\gamma}(\frac{\gamma-1}{\gamma})[K^*]^{-1/\gamma} - (w\frac{\sigma}{\mu} + c) = 0 \tag{2.7}$$

and the firm's desired capital stock is:

$$K^* = (\frac{\gamma-1}{\gamma})^\gamma B\sigma^{\gamma-1}(w\frac{\sigma}{\mu} + c)^{-\gamma} \tag{2.8}$$

Therefore, K^*, in a static setting with imperfect competition, given input costs, and given technology is determined by the parameters that define the demand function $(B$ and $\gamma)$ and unit factor costs $(w\frac{\sigma}{\mu} + c)$:

$$K^* = K^*(B, \gamma, w\frac{\sigma}{\mu} + c) \tag{2.9}$$

K^* defines the level of the capital stock that the profit-maximizing firm would ideally hold, given current demand conditions and factor costs, if it were able to costlessly and immediately adjust its capital stock to its desired level.

2.3.3   The investment decision

The investment decision is, however, inherently dynamic, and adjustment of the capital stock is not costless. This non-flexibility of the capital stock derives, for example, from the irreversibility of investment, and time lags between the investment decision and implementation of new capacity (Skott, 1989; Crotty, 1992).[7] Investment, therefore, takes the form of a stock adjustment from the current and towards the desired stock of capital:

$$\dot{K} = \lambda(K^* - K) \tag{2.10}$$

where $K^* = K^*(B, \gamma, w\frac{\sigma}{\mu} + c)$, and λ captures the speed of adjustment of the capital stock.

With adjustment costs in the evolution of the capital stock it is, furthermore, expected that the firm will hold excess capital capacity. Firms operate at less than full capacity for various reasons, including, for example, to deter entry of new firms, or to grant themselves flexibility to increase production in the case of an increase

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[7]Thus, the non-flexibility of the capital stock does not derive from the standard neoclassical assumption of convex adjustment costs (Skott, 1989), which imply that it is not only costly to adjust the capital stock, but also that the cost of adjustment is increasing in the size of the investment:

> "...it is not reasonable to suppose that costs are convex as a function of the size of the program. On the contrary, one would expect important indivisibilities and increasing returns: (i) the unit cost of new capacity may be smaller for a completely new and purpose-built factory than for marginal additions and modifications to existing plant; (ii) there may be fixed costs associated with the installation of new machinery...(iii) information and learning by doing make the costs of installing two machines...less than double the costs of installing only one" (p. 91).

Indivisibilities of the capital stock at the firm level imply 'lumpiness' in the adjustment of the capital stock, such that the adjustment process is not necessarily 'smooth' as expressed in Equation 2.10; this caveat does not, however, affect the qualitative conclusions.

in demand.[8] Excess capacity implies that $\tilde{\sigma} < \sigma$, where σ is the firm's maximum (technologically-determined) amount of output that can be produced with a given stock of capital, and $\tilde{\sigma}$ is capital productivity when the firm's capital stock is utilized at its desired rate. On the other hand, assuming no labor hoarding, such that the firm does not hire excess labor and that all workers hired by the firm are 'fully employed', $Y = \mu L$. Thus, the production function can be expressed as $Y = \mu L < \tilde{\sigma} K$.[9]

While the parameters B and γ capture the firm's demand conditions, the demand curve is unobservable to the firm.[10] In each period, however, the firm does observe a particular point on its demand curve, defined by the current combination of the price (p) at which it is selling its product and the level of output (Y), which signal the current demand conditions facing the firm. Because future demand is unknown at the time of the investment decision, the firm uses this information regarding current demand to make determinations about the expected profitability of additions to the capital stock. For given unit costs, expected profitability can, therefore, be summarized by the combination of the firm's current profit share of income ($\pi = P/Y$, where P denotes profits) and current output (Y), which together capture the demand conditions facing the firm. Since in practice recent experience is likely to be an important determinant of current expectations regarding future demand, current profitability and output are taken to signal expected future demand.

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[8]The use of excess capacity to deter entry assumes that entry willingness depends on the amount of excess capacity among existing firms; thus, excess capacity deters entry as it "signals the willingness of the firm to defend its position – should new entry take place – by expanding production and cutting prices" (Skott, 1989, p. 53).

[9]With excess capacity and adjustment costs, the firm's maximization problem changes slightly. Given that the capital stock cannot be costlessly adjusted, the firm chooses the current level of production (Y) so as to maximize profits ($\Pi = pY - wL$), where the current capital stock is fixed. The level of production (Y^*) that is determined by this maximization problem determines K^*, and K^* is defined as a function of the same parameters as above.

[10]It can be assumed that the firm has a conjectured price elasticity of demand for its product, such that it forms expectations regarding the position of the curve (defined by B), for a given price elasticity (γ), which defines the slope of the curve.

Thus, the determinants of the firm's desired stock of capital can be summarized as $K^* = K^*(\pi, Y)$, such that the firm's investment rate ($I/K = \hat{K} = \dot{K}/K$) is:

$$\hat{K} = \lambda(\frac{K^*(\pi, Y) - K}{K}) \tag{2.11}$$

Both the profit share and output are positively associated with the investment rate ($K_\pi^* > 0$ and $K_Y^* > 0$). Assuming that output is homogenous of degree one in capital, the adjustment principle implies that the investment rate ($\hat{K}$) depends on $u = Y/K$; because un-utilized capital does not earn profits, the expected return on additional capital also depends on whether the additional unit of capital will be utilized.

2.3.4 Financing behavior and financial structure

Up to now, the cost of capital (c) has been treated as an exogenous parameter that is independent of the firm's financial decisions. This assumption only holds within a Modigliani-Miller framework, in which a firm's performance is independent of its financial structure and financing decisions. The Modigliani-Miller framework is, however, based on strict assumptions regarding perfect information, perfect capital markets, no bankruptcy, and no other 'distortions', for example, stemming from the tax code (Modigliani and Miller, 1958). Moving out of the Modigliani-Miller world, the fact that investment must be financed implies that the firm's cost of capital depends on its financial decisions. For example, internal finance is cheaper to the firm than external finance. In contrast to internal funds, debt entails future cash payment commitments, and a larger stock of outstanding debt increases both lenders' and borrowers' risk (Keynes, 1936; Minsky, 1975). From the perspective of the manager, a larger stock of debt reduces the firm's margin of safety with which to respond to adverse shocks (Kalecki, 1971), and from the perspective of lenders, a larger stock of debt signals potential solvency problems. The tax code is also likely to influence a

firm's financial behavior; for example tax advantages, whereby capital gains are taxed at a lower rate than dividend income may encourage repurchases over dividends.[11]

Thus, a wide-ranging set of factors — from imperfections in financial markets, to the tax code, to managerial preferences for lower-risk internal over external funds — influence the cost of financing faced by an individual firm. While these financing conditions are vastly complex, the various factors influencing the individual firm's cost of capital are summarized here by two interest rates: the firm's rate of return on its financial assets, or 'financial profit rate', (i^{dep}) and the firm's cost of borrowing (i^{debt}). These interest rates are firm-specific: the cost of borrowing, for example, captures not only the macroeconomic interest rate environment, but also how the interest rate facing the individual firm depends on factors such as current leverage and wealth. Imperfections in financial markets imply that even with discrepancies between these two interest rates, managers will hold finite amounts of financial assets and debt. If $i^{dep} < i^{debt}$, the firm will still hold a non-zero stock of financial assets, for example for transactions purposes or precautionary reasons. Similarly, if $i^{debt} < i^{dep}$, imperfections in credit markets requiring, for example, a firm to hold collateral in order to obtain external financing, limit the stock of debt that the firm can acquire. Thus, the firm's decision about how to finance a capital investment — whether via internal funds, new borrowing or equity issues — influences the cost of financing, and the firm makes portfolio and financing decisions so as to minimize the cost of finance. As such:

$$K^* = K^*(\pi, Y, i^{dep}, i^{debt})\qquad(2.12)$$

where i^{dep} and i^{debt} are used as a shorthand for the complex set of factors determining the terms at which the firm can borrow annd lend.

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[11]Although the Tax Reform Act of 1986 reduced the relative tax advantage of capital gains, the incentive effect remains positive (Grullon and Michaely, 2002). Repurchases furthermore allow investors to postpone the realization of capital gains and, therefore, defer tax payments.

The cost of borrowing is expected to have a negative effect on the firm's desired stock of capital: an increase in the cost of external funds increases the cost of any given investment project, reducing the desired stock of capital. The relationship between the financial profit rate and K^* is, however more ambiguous, particularly over recent decades as NFCs are increasingly involved in the provision of financial services. On the one hand, an increase in the return on financial assets may drive a portfolio reallocation away from fixed capital. On the other hand, if, for example, financial profitability derives from the provision of consumer financing services by an industrial firm for its own industrial product (i.e. captive finance), then higher financial profit rates may in turn lead to a higher desired stock of fixed capital. Consider, for example, auto companies, which offer financing for their cars. The financial profits earned from the financing activity may be complementary with the non-financial (industrial) aspects of the firm's business, such that financial profitability may be positively associated with the firm's desired stock of fixed capital. Similar intuition applies in the case of store credit cards, which effectively capture demand for a particular company's products, while also generating financial profits for the firm. Therefore:

$$\hat{K} = \lambda(\frac{K^*(\pi, Y, i^{dep}, i^{debt}) - K}{K}) \tag{2.13}$$

2.3.5 Balance sheet adjustment

The fact that investment decisions are made subject to a finance constraint implies that the stock of capital is determined interdependently with the stocks of financial assets and debt. For given demand and financing conditions, the firm, therefore, also has a desired stock of financial assets (M^*) and a desired stock of debt (D^*). Like with the stock of fixed capital, the fact that portfolio and financing decisions are interdependent, furthermore, implies that the firm's desired stock of financial assets depends not only on the return on financial assets, but also on the returns that could be earned by instead allocating funds towards fixed capital as well as

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the cost of borrowing. Similarly, the desired stock of debt depends not only on the cost of borrowing, but also on demand conditions and the financial profit rate, which determine the returns that could be earned from allocating additional funds towards fixed capital or financial assets. Thus, like K^*, the firm's desired stocks of financial assets and debt can be expressed as:

$$M^* = M^*(\pi, Y, i^{dep}, i^{debt}) \tag{2.14}$$

$$D^* = D^*(\pi, Y, i^{dep}, i^{debt}) \tag{2.15}$$

As noted above, imperfections in financial markets ensure that the desired stocks of financial assets and debt are finite.

The expected partial derivatives determining the desired stock of financial assets can be summarized as follows: $M^*_\pi \lesseqgtr 0$, $M^*_Y \lesseqgtr 0$, $M^*_{i^{dep}} > 0$, and $M^*_{i^{debt}} < 0$. First, improved demand conditions may, on the one hand, drive a portfolio reallocation towards fixed capital, thereby reducing the firm's desired holdings of financial assets. As with the relationship between the desired stock of capital and the financial profit rate, however, the sign is ambiguous, and is likely to reflect the nature of the relationship between the firm's financial and nonfinancial activities. If there are substantial complementarities between the financial and nonfinancial aspects of a firm's business, the sign may instead be positive, reflecting that improved demand conditions may induce a firm's management to also expand the firm's financial services division. Second, higher financial profits make holding financial assets more attractive, thereby increasing the desired stock of financial assets and, third, a higher cost of borrowing decreases the relative attractiveness of holding financial assets. Finally, $D^*_\pi > 0$, $D^*_Y > 0$, $D^*_{i^{dep}} > 0$, and $D^*_{i^{debt}} < 0$, such that the desired stock of debt depends positively on demand and the returns that the firm can earn with the borrowed funds, but negatively on the cost of obtaining those external funds.

Like with the adjustment of the capital stock, the adjustments of the firm's outstanding stocks of financial assets and debt are described as a stock adjustment from the current level and towards the desired level of each stock. Because the firm's portfolio and financing decisions are interdependent, however, the evolution of each stock depends not only on the difference between that stock and its desired level, but also on the discrepancies across other parts of the firm's balance sheet. Thus, Equation 2.11, which describes investment as an adjustment towards the firm's desired stock of capital, is amended to also include the current discrepancies between the firm's current and desired stocks of financial assets and debt. For example, even if demand conditions are favorable such that $K^* > K$, investment ($\dot{K}$) will be lower if the firm is holding fewer liquid assets than it would ideally like to hold ($M^* > M$) than if it is holding its desired stock of liquid assets ($M^* = M$), because the firm will also allocate funds towards financial assets.

Thus, the evolution of the firm's balance sheet can be described as follows:

$$\dot{K} = f(K^* - K, M^* - M, D^* - D)$$
$$\dot{M} = h(K^* - K, M^* - M, D^* - D)$$
$$\dot{D} = z(K^* - K, M^* - M, D^* - D)$$

where these three expressions must be jointly satisfied. The speed of adjustment of each stock differs; in particular, the capital stock adjusts more slowly than the firm's stock of (more liquid) financial assets. Note that, given the stocks of capital, financial assets and debt, the book value of equities is simply a residual and need not be separately defined.

The adjustment equations leave the firm with one extra degree of freedom with which to achieve the adjustment process, given that, from Equation 2.2, we know that the firm has choice over both the retention rate (s_f) and the rate of new eq-

uity issues ($\dot{N}$). This extra degree of freedom can be closed by objectives preferring repurchases (i.e. the use of $\dot{N}$) over dividends (i.e. the use of s_f) that may derive, for example, from CEO compensation schemes linking managerial pay to the stock price. Abstracting for the moment from these complications, we can assume that the distinction between the retention rate and the rate of new equity issues does not matter, although this point is addressed further in Section 2.3.2.

Assuming linear homogeneity, we can divide through by the stock to get a growth rate, thereby defining the determinants of the evolution of each stock. For example:

$$\hat{K} = \frac{\dot{K}}{K} = \frac{I}{K} = f(\frac{K^* - K}{K}, \frac{M^* - M}{K}, \frac{D^* - D}{K}) = f(\frac{K^*}{K}, \frac{M^*}{K}, \frac{M}{K}, \frac{D^*}{K}, \frac{D}{K}) \quad (2.16)$$

where the ratios of the desired to the current level of K ($\frac{K^*}{K}$, $\frac{M^*}{K}$, $\frac{D^*}{K}$) are jointly determined by π, Y, i^{dep} and i^{debt}. If output is homogenous of degree one in capital, then π and Y can be re-written as the combination of profit rate on capital, $r = P/K$, and the utilization rate of capital, $u = Y/K$. Therefore:

$$\hat{K} = f(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}) \quad (2.17)$$

$$\hat{M} = h(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}) \quad (2.18)$$

$$\hat{D} = z(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}) \quad (2.19)$$

Equations 2.17-2.19 are useful in that they give important information regarding the evolution of the firm's balance sheet and the determinants of changes in firm-level financial structure. We can, thus, trace changes in the firm's balance sheet structure to changes in (exogenous) relative returns, managerial objectives, and the constraints subject to which the firm makes portfolio and financing decisions. Changes in relative returns have direct effects on the desired stocks of capital, financial assets and debt, as shown from the expressions for K^*, M^*, and D^*. If a firm faces an increase in the cost

of borrowing, for example, then K^* is expected to decline, leading also to a decline in the investment rate. Changes in objectives and constraints, on the other hand, lead to changes in the way in which given financial conditions influence a manager's portfolio and financing decisions. A change in objectives, for example, may be reflected in a lower or higher desired stock of fixed capital at otherwise equivalent demand, financial profitability and borrowing costs: a firm's manager may react differently to the same demand conditions and financial indicators depending on their objectives regarding the firm's performance.

The asset adjustment principle, in turn, gives the effect on $\hat{K}$, $\hat{M}$ and $\hat{D}$. Take, for example, Equation 2.17, which describes the evolution of the capital stock (i.e. fixed investment behavior). Because K^* enters the investment demand function directly, any factor that increases K^* increases the investment rate, and vice versa. Thus, improved demand conditions, captured by r and u, are both expected to positively impact the firm's desired stock of capital (K^*) and, in turn, to positively impact the firm's investment rate ($\hat{K}$). Similarly, the ambiguity regarding the impact of an increase in financial profitability on the desired stock of capital, discussed above, extends directly to the investment rate as well, such that the sign is *a priori* inde-terminate.[12] Finally, an increase in the cost of borrowing, by decreasing the firm's desired stock of fixed capital, is expected to lead — all else equal — to a decline in the investment rate.

Turning to the outstanding stocks of assets, first, an increase in the stock of finan-cial assets is expected to have a positive impact on the investment rate. To understand

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[12]Empirical evidence for the investment function, shown in Chapter 5, finds a negative relationship between financial profitability and fixed investment in all specifications and subsamples, with the exception of among the largest quartile of nonfinancial corporations in the U.S. economy. It is argued that this positive relationship among the largest firms may reflect that large firms are engaged in different types of activities (and, accordingly, hold different types of financial assets) than smaller firms (or most firms) in the U.S. economy, and are able to generate complementarities between the financial and nonfinancial aspects of their businesses that are not available to the majority of firms.

Table 2.1: Expected partial derivatives for Equations 2.17-2.19

	r	u	i^{dep}	i^{debt}	M	D	K
$\hat{K}$	+	+	$-/+$	$-$	+	$-$	$-$
$\hat{M}$	$-/+$	$-/+$	+	$-$	$-$	$-$	+
$\hat{D}$	+	+	+	$-$	$-$	$-$	$-$

the intuition, note that – holding all else equal – the firm's desired portfolio composition is defined by K^* and M^*. Thus, an increase in the stock of financial assets will induce a portfolio reallocation towards capital, so as to maintain the desired relative ratio of capital to financial assets.[13] An increase in the stock of debt, on the other hand, is expected to decrease the investment rate, all else equal. Because debt entails future cash payment commitments, a larger stock of debt increases both lenders' and borrowers' risk, thereby reducing the firm's investment demand (Keynes, 1936; Minsky, 1975). Finally, an increase in the stock of capital reduces the firm's investment demand. The intuition is the inverse of that for an increase in the stock of financial assets: for a desired stock of capital defined by the current demand conditions, financial profit rate and cost of borrowing, an increase in the current stock of capital will induce a portfolio reallocation towards financial assets. A similar adjustment process, based on the partial derivatives for M^* and D^*, applies to the evolution of the firm's stocks of financial assets and debt. Table 2.1 summarizes the expected partial derivatives for Equations 2.17-2.19, and notes cases where the expected partial derivatives are ambiguous.

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[13]This adjustment process is consistent with that described by Tobin (1965), who argues that in a monetary economy with two types of assets "the community will hold the two assets in proportions that depend on their respective yields" (p. 678), such that "Capital deepening in production requires monetary deepening in portfolios" (p. 679).

2.4 Determinants of shifts in NFC behavior

By specifying determinants underlying firm-level decisions to invest in fixed capital, acquire financial assets, or hold debt, this framework allows us to specify changes in firm behavior as deriving from changes in relative returns or interest rates, changes in objectives, or changes in constraints facing NFCs. Thus, we can analyze determinants underlying the changes in NFC financial behavior that point to an increasingly 'financialized' nonfinancial corporation. This approach, in turn, links the financial-flow based indicators of financialization discussed in Section 2.2 to underlying changes in firm behavior, given that rising flows of financial income between NFCs and the financial sector derive from changes in NFC balance sheet composition and financing behavior. The objective is to explain possible determinants of changes in NFC financial structure that have occurred since the early 1970s: a portfolio shift towards a greater share of financial assets, an increase in debt and repurchases among large NFCs, and a decline in indebtedness among small NFCs.

2.4.1 The provision of financial services

The concurrent increase in the stocks of both financial assets and gross debt held on NFC balance sheets may, first, reflect an expansion in the scope of NFC *activities* into the provision of financial services, whereby 'non'-financial firms increasingly operate banking divisions. Expansion into financial services is consistent with growth in financially-derived income earned by NFCs relative to total profits over the post-1980 period (Krippner, 2012). A movement of large NFCs into banking activities is, furthermore, consistent with anecdotal evidence of large corporations — like General Electric, General Motors, and Ford — that have been increasingly involved in consumer financing over the post-1980 period. Automobile companies are, in particular, well-known for the provision of 'captive' finance, wherein they not only manufacture and sell cars, but also sell consumer financing for these cars. The case of General

Electric, which has moved into a wide range of financial services since the mid-1980s, extending from captive finance to the management of other firms' private-label credit cards, is explored in detail in Chapter 4.

From Equations 2.17-2.19, it is clear that – for given objectives and constraints – changes in demand conditions, financial profitability, and the cost of borrowing lead to changes in the firm's financial structure via changes in the desired balance sheet composition (K^*, M^* and D^*). In particular, a movement into banking activities may derive from an increase in the return a firm can earn on financial assets (i^{dep}) relative to its cost of borrowing (i^{debt}). If the firm is able to borrow at a lower rate than at which it can lend, profits can be earned by first borrowing and then lending out the same funds – i.e. borrowing and lending for profit. Evidence for an increase in financial profitability is found in an increase in the rate of return that NFCs could earn on deposits beginning in the late 1970s with tight money policy and interest rate deregulation (Krippner, 2012). Simultaneously, certain NFCs – particularly large firms with bond ratings – have faced a decline in the cost of borrowing as debt has increasingly taken the form of bond (rather than bank) finance. NFCs may, furthermore, have advantages in the provision of financial services relative to financial companies, due to the fact that they are not officially banking/financial institutions and, therefore, are not regulated as financial firms. Relatively lighter regulation – for example, in the interest rates that NFCs can charge on outstanding consumer receivables – provides NFCs with profit advantages in financial services relative to purely financial companies.

Both a decline in the cost of borrowing (i^{debt}) and an increase in the financial profit rate (i^{dep}) work in the same direction so as to increase the desired stocks of both financial assets and debt held on the firm's balance sheet. First, a decline in the cost of borrowing is expected to increase the firm's desired stocks of both financial assets and debt ($M^*_{i^{debt}} < 0$, such that a decrease in i^{debt} leads to an increase in M^*,

and $D^*_{i^{debt}} < 0$ such that a decrease in i^{debt} leads to an increase in D^*). Second, an increase in the financial profit rate is, similarly, expected to increase the firm's desired stocks of both financial assets and debt ($M^*_{i^{dep}} > 0$ such that an increase in i^{dep} leads to an increase in M^*, and $D^*_{i^{dep}} > 0$ such that an increase in i^{dep} leads to an increase in D^*). In turn, $\dot{M} > 0$ and $\dot{D} > 0$, such that the outstanding stocks of financial assets and debt both rise over time as firms adjust their balance sheets towards the desired composition reflecting the expansion into financial services. Thus, an expansion in the scope of a nonfinancial firm's activity into the provision of financial services is expected to be reflected in greater outstanding stocks of both financial assets and debt on the firm's balance sheet.

An increase in the stocks of debt and financial assets on the firm's balance sheet deriving from NFC involvement in financial services has important implications for understanding growth in nonfinancial corporate debt and financial asset holdings in the post-1980 U.S. economy. Rising leverage deriving from an expansion of NFC activities into financial services is not clearly indicative of growing balance sheet fragility. Given that the activities of financial firms are less reliant on physical capital than those of nonfinancial firms, and that financial firms hold larger outstanding stocks of both debt and financial assets because profits are generated by the interest-rate differential between them, a 'non'-financial company that is increasingly operating as a financial firm is *expected* to have a more leveraged balance sheet structure than a nonfinancial company exclusively engaged in industrial activities or the provision of (non-financial) services. The issue of leverage among NFCs engaged in the provision of financial services is again commented on in Chapters 3 and 4.

Furthermore, an increase in financial asset holdings is often cited as crowding out the acquisition of fixed capital. If, however, financial asset holdings are higher because firms are borrowing and lending for profit, there is no a priori reason to expect the firm's fixed investment rate to decline. First, a decline in the cost of

borrowing is expected to be associated with an increase in the desired capital stock and, accordingly, in the investment rate ($K^*_{i^{debt}} < 0$). Second, the impact of a change in the financial profit rate on the firm's desired capital stock is ambiguous and – as discussed above in Section 2.3 – is likely to depend on the activity from which financial profits are derived. More specifically, if financial profits are derived from the provision of captive financing services for the firm's own industrial product, there are reasons to expect that financial profitability will positively impact the desired stock of capital (such that $K^*_{i^{dep}} > 0$) The empirical evidence presented in Chapter 5, which finds the financial profit rate to be positively related to the investment rate for the largest quartile of firms in the U.S. economy, is consistent with this account.[14]

2.4.2 Shareholder value ideology

The post-1980 period in the U.S. economy is also marked by significant changes in corporate governance associated with growing shareholder value orientation among NFC managers. The entrenchment of shareholder value ideology has been supported by both a market for corporate control (which 'disciplines' managers by creating a threat to the manager's position of authority) and stock option-based compensation (which provides managers a 'carrot' for improving the firm's stock market perfor-

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[14]Note that a portfolio shift towards financial assets in the firm's portfolio could also derive from a deterioration in demand conditions, stemming, for example, from increased international competition in the post-1970 period (Crotty, 2005). Deteriorating demand conditions are expected to lead to a lower desired stock of fixed capital (K^*). Furthermore, if a simultaneous increase in financial profitability *decreases* the firm's desired stock of fixed capital ($K^*_{i^{dep}} < 0$), then an increase in financial profitability would further decrease the firm's desired stock of fixed capital. An increase in financial profitability has the opposite effect on the desired stock of financial assets, such that M^* increases, and the firm's desired ratio of K^* to M^* declines. Importantly, it is likely that the effect of the financial profit rate on the firm's desired stock of capital differs for different types of firms and, in particular, for firms of different sizes; this claim is supported by the empirical evidence in the final chapter of the dissertation. Whereas large firms may be moving into the provision of financial services – wherein an increase in financial profitability has a potentially positive impact on K^* and $\hat{K}$ – small firms facing adverse demand conditions may simply invest in fixed capital at a slower rate, such that a portfolio shift towards financial assets on the balance sheets of small NFCs simply reflects a lack of profitable investment opportunities.

mance).[15] By directly linking managerial interests with the firm's stock price performance, these institutional mechanisms have arguably led to changing managerial objectives and, specifically, a growing emphasis on stock-price maximization. Importantly, the firm's desired balance sheet composition and financial behavior also depend on the firm's objectives, such that – for given demand conditions, financial profitability and cost of borrowing – changes in objectives may lead to changes in K^*, M^* and D^*. Thus, this shift in objectives is expected to lead to changes in the firm's financial behavior.

The implications of shareholder value orientation for NFC financial decisions is most clearly manifested in a dramatic increase in buybacks at the sector level and among large NFCs, discussed further in Chapter 3. By reducing the firm's stock of total outstanding equity, stock buybacks directly improve stock-market based measures of firm performance, including the short-term share price, earnings per share, and return on equity. Consider two otherwise identical firms – with the same production technology, product-market demand conditions, financial profitability and cost of borrowing – that earn the same profits in any given year, and pay out the same proportion of these profits to shareholders. One firm does so in the form of dividends, whereas the second firm utilizes buybacks. Given that the firms are otherwise identical, the total market valuation of the two firms (νN) is identical. The firm that bought-back its stock, however, decreased the total number of outstanding shares ($\dot{N} < 0$) such that the per-share price (ν) has risen. Thus, while in a Modigliani-Miller framework, there is no difference in firm stock market valuation if shareholder payouts come in terms of dividends (i.e. by utilizing the retention rate, s_f) or the rate of new equity issues ($\dot{N}$), managers oriented towards maximization of the firm's

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[15]While both of these mechanisms were theoretically intended to more closely align the interests of managers with those of shareholders (Jensen, 1986; Jensen and Murphy, 1990), recent work has shown that the market for corporate control may, in fact, aggravate the agency problem within firms (Skott and Guy, 2013).

share price are more likely to pay out shareholders via repurchases. Empirical evidence furthermore points to a substitution of repurchases for dividends in shareholder payouts since the early 1980s (Grullon and Michaely, 2002).

Given that repurchases are a use of funds, they must be financed via a separate source of funds and, consequently, may also be linked to the firm's other financial decisions. In particular, the increase in stock buybacks in recent decades is symptomatic of changes in objectives, towards an increased emphasis on 'maximizing shareholder value'. A shift in objectives is expected to be associated with a shift in the firm's demand for capital, financial assets and debt – given otherwise equivalent π, u, i^{dep} and i^{debt}. Thus, the firm's portfolio choices can be re-expressed as follows, where a shift in firm objectives towards 'value' maximizing norms is captured by Sv:

$$\hat{K} = f(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; Sv) \qquad (2.20)$$

$$\hat{M} = h(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; Sv) \qquad (2.21)$$

$$\hat{D} = z(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; Sv) \qquad (2.22)$$

While the precise effect of shareholder value norms on the firm's acquisition of each balance sheet component remains open to further investigation, some clear hypotheses can be laid out. With respect to investment in fixed capital, it is expected that a firm targeting value-maximizing objectives will be less willing to invest in fixed capital – at otherwise equivalent r, u, i^{dep} and i^{debt} – than a firm maximizing profits. Thus, a 'value'-maximizing firm is less willing, even at the same expected profitability, to tie up funds in long-term fixed capital investment projects, given that capital investments are both irreversible and take an extended period of time to realize returns. In effect, shareholder value norms strengthen the link between managers' investment and financing decisions and the expectations of stock-market participants, such that managers increasingly focus on meeting stock market expectations. Empirical evidence

in Chapter 5 supports this prediction for the largest firms in the U.S. economy, such that $\hat{K}_{Sv} < 0$.[16] In general, this trend is expected to reduce managerial willingness to tie up funds in irreversible and plant-specific capital investment projects.[17]

Conversely, one may expect that decreased willingness to tie up funds in physical capital investment projects may instead be associated with an increased desire to hold financial assets (M) at otherwise equivalent r, u, i^{dep} and i^{debt}. In contrast to physical capital, financial assets are more liquid and provide managers with the flexibility, for example, to reorient funds towards shareholder payouts should the stock price falter, or should the firm fail to meet value-based goals of performance. In that case, $\hat{M}_{Sv} > 0$. Finally, it is expected that a value-maximizing firm is more willing to hold debt than a profit maximizing firm, such that $\hat{D}_{Sv} > 0$. In particular, there may be a substitution of debt for equity on the balance sheets of NFCs, wherein managers borrow in order to buyback stock. Further empirical evidence is required to fully determine these signs. If, however, an increase in financial assets and debt on NFC balance sheets derives from shareholder value objectives, there are clearly vastly different implications for investment and long-term firm performance than in the case of movement in the provision of financial services. Finally, it is important to note that if this behavior is true of a sizable number of firms in the economy, demand conditions change as well: if investment declines across the sector, then demand conditions for the products of individual firms will deteriorate as well. Thus, there are derived macro effects on utilization and the profit share; a decline in aggregate demand is expected,

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[16]Furthermore, evidence that stock option-based pay — which is a clear mechanism that aligns managerial interests with the share-price performance of the firm and, therefore, is likely drive a shift in managerial objectives — is larger both in absolute value and relative to firm size among large firms than small firms (Core et al, 1999), suggests that shareholder value norms and a corresponding shift in managerial objectives is likely limited to large NFCs in the U.S. economy.

[17]One could, however, also imagine scenarios in which the effect would operate in the other direction; during a stock market boom, for example, if stock market participants expect or 'demand' infrastructure investment, managers that are more strongly oriented towards fulfilling shareholder expectations may be more likely to invest in fixed capital.

in turn, to influence firm behavior. While these effects are outside the scope of this dissertation, they are potentially integral to macro-level analyses of shareholder value orientation and capital accumulation.

2.4.3 Rising firm-level volatility

Rising firm-level volatility is also a stylized characteristic of the post-1980 period in the U.S. economy that may have contributed to changes in NFC portfolio and financing behavior. For given objectives, a firm's desired balance sheet composition also depends on its environment, and rising volatility signals changes in the environment in which firms make financial decisions. Despite a moderation in aggregate volatility, an increase in firm-level volatility has been extensively documented (Comin and Phillipon, 2005), and has been linked, for example, to new information and communication technologies leading to shorter product life cycles (Skott and Guy, 2013).

Higher demand volatility reflects changes in the constraints subject to which NFCs make portfolio and financing decisions. Higher demand volatility, reflecting greater uncertainty, is expected to (1) increase liquidity preference (drive higher demand for financial assets, M^*), (2) decrease managerial willingness to tie up funds in long-term fixed capital, thereby reducing the desired stock of capital (K^*), and (3) decrease managerial willingness to hold debt, all at otherwise equivalent expected returns on fixed and financial capital and cost of borrowing. Because volatility changes the desired stocks at otherwise equivalent rates of return, volatility – like shareholder value norms – causes shifts in the functions describing NFC demand for capital, financial assets and debt:

$$\hat{K} = f(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; V) \tag{2.23}$$

$$\hat{M} = h(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; V) \tag{2.24}$$

$$\hat{D} = z(u, r, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}; V) \tag{2.25}$$

where $\hat{K}_V < 0$, $\hat{M}_V > 0$ and $\hat{D}_V < 0$. The implication is a lower demand for fixed capital, greater demand for liquid financial assets and lower demand for debt. All of these trends are consistent with changes in the financial behavior of small nonfinancial corporations over this period. Furthermore, the increased demand for liquid financial assets is, in particular, one change in firm behavior that is often cited as pointing to an increasingly 'financialized' nonfinancial corporation. Thus, volatility may also be a factor that has driven behavior that appears increasingly 'financialized' among NFCs.

2.5   Conclusion

This chapter lays out a framework describing firm-level portfolio and financing decisions, and uses the framework to discuss three factors that potentially underlie the changes in financial behavior that point to the financialization of nonfinancial corporations. Since the early 1970s, NFCs in the U.S. economy have acquired growing shares of financial assets in their portfolios, large firms have become increasingly leveraged and involved in repurchases of their own stock, and small firms have slowly de-leveraged their balance sheets. Increasing involvement of (primarily large) NFCs in the provision of financial services, a shift in managerial objectives towards a growing emphasis on stock market performance, and rising firm-level volatility are three factors that may have driven the changes in NFC balance sheet structure and financial behavior that point to the 'financialization' of nonfinancial corporations in the U.S. economy.

These three factors, furthermore, can be clearly linked to the existing literature on financialization and NFC investment. Both a shift in objectives towards the maximization of stock market performance and increasing involvement in the provision of financial services, for example, are consistent with the increase in gross payments by NFCs to the financial sector that Orhangazi (2008) utilizes to proxy financialization.

Similarly, if rising firm-level volatility drives the acquisition of financial assets among NFCs, and large firms also earn financial profits because of increasing engagement in banking services, these factors are also consistent with the increase in financial profits (or what is termed rentiers' income at the aggregate level) earned by NFCs. This chapter builds on this existing literature, however, by exploring specific behavioral mechanisms that underlie observed increases in financial flows. In doing so, the discussion in this chapter begins to move beyond the idea that a broadly-defined phenomenon 'financialization' has directly changed firm behavior, and to instead narrow in on specific characteristics of the post-1970 period that have led NFCs to engage in behavior that appears increasingly oriented towards financial markets. Interestingly, however, the case of rising firm-level volatility – while likely inducing firms to hold relatively greater shares of financial assets in their portfolios and, thus, appear increasingly 'financialized' – does not clearly stem from the expansion of financial markets.

The three factors introduced in this chapter are themes that reappear through out this dissertation. Chapter 3 lays out in more detail the specific changes in balance sheet structure and firm-level financial behavior that this chapter begins to explain, and Chapter 4 explores two of the mechanisms discussed in this chapter — the provision of financial services and shareholder value orientation — in the case of General Electric. Finally, the framework introduced in this chapter is again utilized in Chapter 5, which econometrically analyzes the specification of the investment function presented here, and the methodology used in Chapter 5 could, in turn, be extended to other parts of the firm's balance sheet as well. Empirical evidence is presented supporting the contention that rising firm-level volatility and increasingly entrenched shareholder value norms negatively impact firm-level fixed investment rates among NFCs in the U.S. economy.

CHAPTER 3

THE 'FINANCIALIZATION' OF THE NONFINANCIAL CORPORATION IN THE U.S. ECONOMY: A DECOMPOSITION OF FIRM-LEVEL BALANCE SHEETS

3.1 Introduction

The increasingly dominant role of finance over recent decades in the U.S. economy has led, in recent years, to a growing literature on 'financialization'. While the precise concept of financialization varies considerably across analyses, the shared premise is that financial sector growth signifies an important structural change in the U.S. economy, highlighted by sustained growth in the share of financial-sector profits in total corporate profits beginning in the early 1970s (Krippner, 2012). Importantly, 'financialization' is manifested not only in changes in the size and structure of the financial sector, but also in the behavior of nonfinancial corporations (NFCs) and in an increasingly complex relationship between NFCs and the financial sector. For example, many large NFCs have increasingly come to resemble financial companies (Froud et al, 2006), and the hostile takeover movement and shareholder value ideology have been associated with changes in corporate governance that have arguably increased the weight of short-term valuations of firm performance in managerial decision-making (Crotty, 2005; Lazonick and O'Sullivan, 2000). Changes in NFC financial behavior have, in turn, been linked to nonfinancial outcomes, including fixed investment (Davis, 2013; Orhangazi, 2008; Stockhammer, 2004), employment (Milberg and Winkler, 2013; Lazonick, 2009), inequality (Epstein and Jayadev, 2005; Tomaskovic-Devey and Lin, 2011; Lin and Tomaskovic-Devey, 2013), and macrodynamics (Skott and Ryoo, 2008; Aglietta and Bretton, 2001).

As with the definition of financialization more broadly, the concept of the 'financialization of nonfinancial firms' is ambiguous, in large part reflecting the range of phenomena explored in the existing literature. Accordingly, various changes in NFC financial behavior have been isolated and analyzed, but the literature does not include a systematic, detailed discussion of the changes in financial behavior – i.e. the stylized facts – summarizing the 'financialization' of nonfinancial corporations. It is, however, necessary to understand precisely what has happened with regard to NFC financial behavior before explaining why these changes have occurred, or to what effect. Thus, this chapter develops the concept of financialization insofar as it applies to nonfinancial corporations via a detailed decomposition of firm-level balance sheets, laying out the key trends in NFC financial behavior over the post-1980 period in the U.S. economy.[1] In laying out these stylized facts using firm-level data, this chapter contributes to the literature on financialization by defining the specific changes in firm-level behavior that need to be explained. The primary objective is, therefore, descriptive, and does not aim to provide a detailed account of why these behavioral changes occurred, or of what the implications for NFC outcomes have been.

Three stylized facts are presented, each corresponding to one part of the firm's balance sheet. First, NFCs are holding a growing share of – largely liquid – financial assets relative to fixed capital in their portfolios. Second, large NFCs have become increasingly leveraged, but the *majority* of NFCs have de-leveraged their balance sheets. Third, there has been a change in the role of equity, specifically manifested in a dramatic increase in stock buybacks, again concentrated among large firms. Taken together, these stylized facts point to pronounced changes in the financial behavior of NFCs in the post-1980 U.S. economy. These stylized facts, furthermore, highlight systematic differences between small and large firms. While differences

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[1]The analysis utilizes Compustat data; variable definitions are summarized in Table A.1 in the appendix.

Figure 3.1: Capital and financial assets relative to sales (yearly medians)
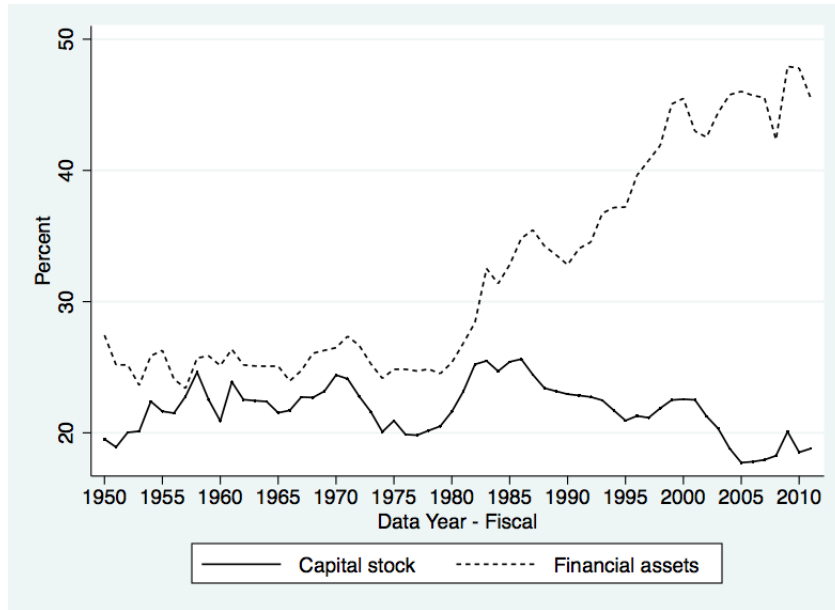
Source: Compustat, author's calculations

among firms are – of course – to be expected, the systematic differences by firm size point to differences in how the constraints facing small and large firms have evolved over recent decades. In contrast, while an industrial decomposition is also discussed, systematic differences in financial behavior across industries are not found. The chapter concludes with a brief discussion of the insights into the financialization of NFCs that can be gained by analyzing these stylized facts in a conceptual framework that emphasizes the interdependence of portfolio and financing decisions.

The chapter is organized as follows. Sections 3.2-3.4 constitute the primary analysis of the chapter, laying out recent trends in NFC portfolio composition, debt, and equity holdings respectively, with an emphasis on the post-1980 period. Section 3.5 discusses the implications of these changes in firm financial structure for analysis of financialization and nonfinancial corporations, and Section 3.6 briefly concludes.

Table 3.1: Portfolio composition, relative to sales (yearly medians)

	1950	1960	1970	1980	1990	2000	2010
Capital stock	19.52%	20.90%	24.41%	21.62%	22.95%	22.57%	18.52%
Financial assets	27.44%	25.12%	26.49%	25.36%	32.81%	45.49%	47.79%
Cash & short-term assets	13.18%	7.14%	4.32%	3.49%	4.39%	7.52%	14.23%
Receivables	10.38%	11.94%	15.41%	14.79%	15.51%	15.72%	14.42%
Advances	0.49%	0.39%	0.62%	0.14%	0.00%	0.00%	0.00%
Other assets	1.14%	1.41%	2.26%	2.27%	4.78%	8.10%	7.61%

Source: Compustat, author's calculations

3.2   Portfolio composition

The asset side of NFC balance sheets captures a sustained shift in firm-level portfolio composition away from fixed capital and towards – largely liquid – financial assets. Krippner (2012) traces the portfolio shift towards financial assets to high and volatile interest rates in the 1980s, which increased uncertainty regarding the cost of capital, thereby discouraging the acquisition of long-term irreversible fixed capital. Simultaneously, high interest rates and interest-rate deregulation opened opportunities for higher relative profits on financial assets, further supporting a portfolio shift towards financial assets.[2] Furthermore, this shift has also been cited in a growing 'portfolio conception' of nonfinancial corporations, wherein NFCs are increasingly viewed as bundles of assets with returns to be maximized, rather than in a coherent way as capital-accumulating and productive enterprises (Crotty, 2005; Fligstein 1990). This portfolio shift has also been related to a growing corporate emphasis on 'core competence', which has reduced the (domestic) investment needs of U.S. firms, and thereby supported instead the acquisition of financial assets (Milberg and Winkler, 2010).

Figure 3.1 plots the across-firm yearly medians of fixed capital and financial assets measured relative to sales between 1950 and 2011. Until the early 1980s, the two

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[2]It is important to note that this portfolio shift does not, a priori, correspond to a decline in the investment *rate*; for example, financial investments may be increasingly *complementary* to capital investment in an increasingly volatile environment. Davis (2013) finds evidence of complementarities between financial investments and capital investment among NFCs in the post-1970 U.S. economy, and Orhangazi (2008) finds differential effects of financial profits on investment by firm size.

ratios move in close unison, highlighting that NFCs acquired new fixed capital and financial assets in relatively constant proportions.[3] Beginning in the early 1980s, however, NFCs began to acquire financial assets at a faster rate than fixed capital. The first two rows of Table 3.1 summarize the evolution of fixed capital and financial assets relative to sales from 1950 to 2010, recording the value of each ratio at the beginning of each decade. Over the full period, the median ratio of capital to sales remains relatively constant, from 19.5% in 1950 to 18.5% in 2010. Narrowing in on the post-1980 period, however, capital to sales declines after the mid-1980s, from a peak of 25.6% in 1986. The shift in NFC portfolio composition is, however, driven more directly by an increase in financial asset holdings, which rise from 25.4% of sales in 1980 to 47.8% in 2010.

3.2.1   Financial assets

Figure 3.2 decomposes total financial assets into four (exhaustive) subcategories: cash and short-term investments, total current receivables, other investments and advances, and miscellaneous 'other' financial assets. While it is important to note that any definition of financial assets is constrained by current accounting rules, this definition usefully summarizes the categories of financial assets that NFCs have acquired over recent decades. The four sub-categories are defined as follows. First, 'cash and short-term investments' includes cash and all securities that are readily transferable to cash with original maturities less than one year. Among other examples, this category includes commercial paper, government securities, other marketable securities, money-market funds, and certificates of deposit. While, due to accounting rules, 'cash'

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[3]The qualitative pattern is similar when capital and financial assets are instead measured as the across-firm yearly mean, or when normalized by total assets. The fact that the mean and median move together highlights that the portfolio shift occurs across the distribution of NFCs; this point will be addressed further in Section 3.2.3. Here, asset stocks are normalized by sales, rather than total assets, to avoid possible biases stemming from the fact that an increase in financial assets relative to assets definitionally requires a decline in non-financial assets relative to assets. Instead, sales provide a useful proxy for firm size.

Figure 3.2: Components of financial assets relative to sales (yearly medians)
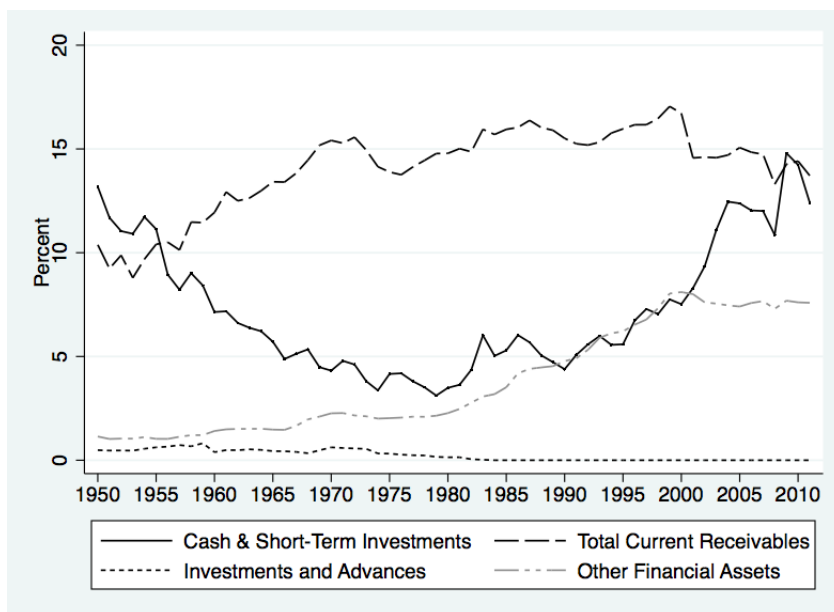
Source: Compustat, author's calculations

cannot be disaggregated from other short-term investments, this category includes a firm's most liquid and short-term assets. Second, receivables are standardly defined as outstanding claims collectible in cash (generally within one year). As is clear from Figure 3.2, together, receivables and cash and short-term investments dominate NFC financial assets holdings over the entire time period.

Third, 'investments and advances' include assets such as bank or savings & loans securities, or investments in and advances to unconsolidated subsidiaries. These are assets that are classified as neither capital nor as R&D related expenditures (and, therefore, do not include copyrights or other intellectual property). While the ambiguity of this definition raises questions regarding whether all of these 'investments and advances' are necessarily financial, this sub-category constitutes a small proportion of total financial assets, and the discussion is not sensitive to a definition of financial assets that does or does not include this component. In contrast, the final category of 'other' financial assets grows substantially over this period, and particularly since the

early 1980s. While the documentation is unclear regarding what exactly comprises this miscellaneous category of assets, one can draw inferences from the business press, which Krippner (2012) cites in listing "an array of new financial instruments—money market funds, 'stripped' treasuries, Euromarket and Caribbean offshore dollar markets, foreign currency instruments, and portfolios composed of options and futures contracts" on NFC balance sheets (p. 55). An increase in 'other' financial assets is also evident at in the aggregate level (Flow of Funds) data, in which the largest category of financial assets is an unidentified miscellaneous category (see Crotty 2005 for a discussion).

Figure 3.2 highlights that NFC financial asset acquisitions over the post-1980 period are concentrated in cash and short-term investments, and in miscellaneous financial assets. The remaining rows of Table 3.1 summarize the change in each component of financial assets over time. As noted above, the ratio of investments and advances to sales is low over the full period, and since the early 1980's receivables have also, on average, grown proportionally to firm-level sales. Simultaneously, however, 'miscellaneous' financial assets rise from 1.1 percent of sales in 1980 to 7.6 percent in 2010, and even greater growth occurs in holdings of liquid financial assets, which rise from 3.5 percent to 14.2 percent of sales between 1980 and 2010.

This build-up of liquid financial assets is consistent with a large literature on growing corporate cash holdings, for which various explanations have been proposed. Foley et al (2007) argue that growing cash stocks reflect tax motives: given that profits earned abroad are taxed if repatriated, foreign profits are instead held (and recorded) as cash. While this account likely applies primarily to large NFCs, which are more often multinational and earn foreign income, Bates et al (2009) find that even firms without foreign income exhibit secular growth in cash holdings, and instead attribute the rise to growing firm-level (idiosyncratic) risk between 1980 and 2006. The longer-term perspective in Figure 3.2, however, which also includes data for the

original post-WWII period, suggests that recent growth in cash has largely returned cash holdings to the level of the early 1950s: cash holdings declined substantially in the 1950s and 1960s, began to rise again in the early 1980s, and accelerated since the 1990s.

It is, furthermore, important to recognize that current accounting standards do not allow for disaggregation of 'cash' from other 'short-term' investments. Before the adoption of new accounting regulations in 1988, a pure cash number – bank drafts, checks, demand deposits and money orders – could be isolated from all other short-term assets, which were categorized separately. Here the composite category is used for all years to ensure comparability in the series over time. However, in light of the 2008 financial crisis, during which markets for securities that were very highly rated and thought to be very liquid froze leaving (financial) firms insolvent, a note of caution should be applied to the aggregation of cash with other securities. Take, for example, commercial paper, which is classified as a short-term financial asset on NFC balance sheets and, therefore, included in the 'cash and short-term investments' category. While commercial paper has generally been considered a stable investment, the market for commercial paper froze in 2008 when Lehman Brothers failed; thus, a category of assets that was thought to be safe and liquid – i.e. as good as cash – proved risky (see Kacperczyk and Schanbl, 2010). As such, a note of caution should be applied to the interpretation of growing NFC cash hoards over recent decades. Subject to this qualification, however, this category is treated as liquid assets.

3.2.2 The capital stock

In examining the asset side of NFC balance sheets, it is important to explore the potential objection that the portfolio shift away from fixed capital primarily captures problems with the definition of the capital stock stemming, in particular, from intangible capital. This objection would contend that the documented portfolio shift

towards financial assets does not reflect 'financialization', but instead captures (1) corporate reorganization, both domestic and international, and (2) a shift towards less (tangible) capital-intensive and more brand-based, and knowledge- and technology-intensive production in the U.S. economy. With respect to corporate reorganization, there is evidence that, over this period, NFCs have downsized the *scope* of their operations, so as to focus on 'core competence', reflected in increasingly 'modular' production (Skott and Guy, 2013).[4] Taking into account the increasingly global nature of production (Milberg, 2008; Milberg and Winkler, 2010), this shift in scope implies that that U.S. NFCs increasingly hold relatively more 'intangible' as opposed to 'tangible' capital, reflecting a transition towards less (tangible) capital-intensive technology and more knowledge-based technology. This objection would in turn contend that the documented portfolio shift towards financial assets via a comparison with (fixed, tangible) capital is invalid.

This criticism has teeth, given that firms in the U.S. are increasingly involved in less capital-intensive activities over the decades in question. Importantly, however, Figure 3.1 highlights that shift in portfolio composition derives more from an increase in financial asset holdings than from a decline in capital. Thus, relative to firm size, NFCs are holding more financial assets than they used to, independently of the definition of capital. Furthermore, as will be shown in Section 3.2.3, manufacturing firms continue to dominate the nonfinancial corporate sector after the 1980s, pointing to a continued role for fixed capital in understanding the behavior of NFCs.[5]

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[4]This shift towards core competence occurs across firms within the U.S., but also captures the increasing globalization of production, whereby U.S. firms focus less on heavy manufacturing, and more on 'light' aspects of production, such as branding and marketing. Milberg and Winkler (2013) cite the example of corporations like The Gap, which no longer engage in manufacturing and instead earn their profits entirely through the marketing, branding and sale of already-manufactured goods.

[5]Furthermore, with respect to offshoring, Krippner (2012) contends that there is no a priori reason to expect that nonfinancial activities abroad exceed financial activities abroad for nonfinancial corporations – citing, for example, the expansion of international financial markets such as Eurodollar markets. Krippner supports this claim with aggregate-level evidence that international portfolio

At a directly practical level with respect to this analysis, there are significant difficulties involved in measuring intangible capital, and there is no clear or standard method of valuation. Brown et al (2009) explain that, "Measurement of the R&D stock is...fraught with difficulties. The absence of a long series of R&D expenditures makes perpetual inventory methods for stock computations infeasible and the depreciation rate for an intangible asset like R&D is hard to determine" (p. 161). These difficulties are reflected also in Compustat, in which data for intangibles is (very) incomplete, and consistently non-zero values begin only during the 1990s. Finally, recent attempts at the valuation of intangibles are often premised with the objective of resolving a 'paradoxical' discrepancy between the book value and market value of outstanding equities. Given NFC involvement in the stock market (via repurchases) over the same period, this starting point raises flags about the assumptions made in the calculations of intangibles. In this discussion, intangibles are, therefore, not explicitly valued, and the capital stock is defined more simply as domestic, tangible capital.

3.2.3   Firm size and industry

An advantage of firm-level data is that it allows for sectoral decomposition and, in particular, for exploration of systematic differences across sub-categories of firms. Both firm size and industry provide informative lenses with which to analyze the sample. The sample is divided into four size quartiles according to total assets, and ten distinct industries based on standard industrial classifications (SIC codes); an eleventh industry, high tech, is defined as a composite category drawing from other industries.[6]

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income (i.e. financial income) earned by U.S. NFCs is comparable in scale to domestic portfolio income. The data required to make similar comparisons at the firm level are unavailable.

[6]The industries are agriculture, forestry and fishing; mining; construction; manufacturing; transportation, communications, electric, gas & sanitary services; wholesale trade ; retail trade; services; non-operating establishments; and conglomerates. High tech includes high-tech manufacturing,

Because the majority of these ten industries are quite small, comprising less than 5% of total assets over the entire period, the discussion here emphasizes three industries: manufacturing, services, and high tech. With respect to industrial composition, it is important to note that – despite a simultaneous decline in manufacturing as a share of U.S GDP – manufacturing remains the largest industry in the sample over the full time period. A substantial decline in the share of assets held by manufacturing firms (and a corresponding increase in the share of services) disappears from the sample when financial firms – i.e. financial services – are excluded. Nonetheless, given that this period in the U.S. is often associated with deindustrialization, growth in the service economy, and the expansion of high tech and information technologies, these three industries are particularly relevant to analysis of this time period, and it is important to evaluate whether the trends in firm-level financial behavior outlined in this chapter differ systematically across these industries.[7]

Table 3.2, which summarizes the evolution over time of portfolio composition for these three industries and by firm-size quartile, highlights that the shift in portfolio composition occurs across firm size and industry, albeit with differences in the magnitude of the portfolio shift. Note that, because Table 3.2 records yearly medians, the sub-components are not additive. Among manufacturing firms the decline in capital is much smaller than among service firms. Despite the smaller decline in capital, however, manufacturing firms record an increase in financial assets similar to other industries. After remaining fairly constant between 1950 and 1980, financial

communications services, and software and computer-related services. Details on the industrial classifications are in Table A.2 in the appendix.

[7]The industrial composition of the sample over time is summarized Table A.2 in the Appendix for five-year periods between 1950 and 2009, both for the full sample and each size quartile of firms. For a clearer sense of industrial composition, the next two largest industries – transportation and communications, and retail – are also included in Table A.2. The sample registers a relatively small decline in the total share of manufacturing – from 58.6% of total assets in 1950-1954 to 45.4% in 2005-2009 – such that, for the entire period, the sample is dominated by manufacturing firms. After manufacturing, transportation is consistently the second largest industry, comprising at least 30% of total assets in each subperiod, and high tech grows over time, peaking in 2000-2004.

Table 3.2: Portfolio composition for key industries and by firm size, relative to sales (yearly medians)

	1950	1960	1970	1980	1990	2000	2010
Manufacturing							
Capital stock	20.00%	20.97%	22.22%	17.77%	20.01%	21.14%	16.12%
Financial assets	27.99%	24.66%	26.14%	25.13%	31.60%	42.28%	50.46%
Cash & short-term assets	13.81%	7.35%	4.04%	3.22%	4.55%	7.65%	18.42%
Receivables	10.51%	12.09%	16.11%	16.04%	16.02%	16.56%	15.40%
Advances	0.47%	0.38%	0.51%	0.00%	0.00%	0.00%	0.00%
Other assets	1.01%	1.34%	2.12%	2.01%	4.37%	7.61%	7.28%
Services							
Capital stock	15.33%	22.99%	27.54%	25.30%	17.38%	15.46%	8.98%
Financial assets	27.37%	39.25%	39.04%	32.64%	43.85%	67.35%	55.00%
Cash & short-term assets	14.05%	9.30%	7.67%	6.06%	6.61%	17.82%	19.82%
Receivables	9.00%	11.68%	17.91%	16.17%	18.68%	20.19%	15.79%
Advances	0.97%	0.00%	1.61%	0.76%	0.00%	0.00%	0.00%
Other assets	2.45%	2.18%	4.50%	3.36%	5.88%	10.63%	8.21%
Tech							
Capital stock	13.02%	17.93%	21.50%	18.60%	16.70%	16.27%	10.77%
Financial assets	27.50%	25.98%	33.40%	30.20%	39.88%	77.97%	63.28%
Cash & short-term assets	9.71%	6.43%	5.07%	4.01%	6.55%	26.97%	26.60%
Receivables	12.38%	14.16%	19.05%	18.89%	18.54%	20.85%	16.40%
Advances	0.27%	0.00%	0.37%	0.00%	0.00%	0.00%	0.00%
Other assets	0.87%	1.60%	2.92%	2.38%	5.44%	11.41%	7.93%
1st Quartile							
Capital stock	16.34%	15.75%	18.18%	16.00%	15.11%	14.54%	8.07%
Financial assets	23.92%	23.06%	26.69%	29.45%	37.48%	48.56%	50.56%
Cash & short-term assets	10.62%	6.33%	4.62%	5.41%	6.32%	11.37%	18.13%
Receivables	10.86%	12.00%	15.88%	15.91%	15.77%	15.80%	13.67%
Advances	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other assets	1.19%	1.85%	2.13%	2.12%	3.88%	6.50%	5.61%
2nd Quartile							
Capital stock	18.03%	19.62%	20.32%	17.61%	18.24%	18.66%	14.09%
Financial assets	27.93%	24.51%	24.65%	25.39%	31.94%	47.94%	52.10%
Cash & short-term assets	12.87%	7.01%	3.94%	3.76%	5.25%	12.20%	20.52%
Receivables	10.26%	11.91%	14.92%	15.74%	16.22%	17.53%	15.37%
Advances	0.42%	0.32%	0.22%	0.00%	0.00%	0.00%	0.00%
Other assets	1.14%	1.33%	2.22%	1.95%	4.00%	7.10%	6.27%
3rd Quartile							
Capital stock	19.62%	22.77%	25.90%	20.74%	22.98%	22.13%	20.46%
Financial assets	27.75%	25.97%	26.59%	24.16%	30.44%	37.68%	40.20%
Cash & short-term assets	13.99%	7.27%	4.33%	3.14%	3.71%	5.32%	12.66%
Receivables	10.08%	11.93%	15.31%	14.66%	15.31%	16.77%	13.85%
Advances	0.55%	0.79%	0.91%	0.18%	0.00%	0.00%	0.11%
Other assets	1.13%	1.25%	2.27%	2.26%	4.41%	7.50%	7.30%
4th Quartile							
Capital stock	29.15%	36.24%	53.65%	38.66%	43.47%	41.05%	39.12%
Financial assets	32.23%	27.83%	29.11%	23.94%	33.53%	47.42%	48.96%
Cash & short-term assets	15.30%	8.47%	4.46%	2.56%	2.98%	4.35%	10.78%
Receivables	10.42%	12.06%	15.52%	13.39%	14.41%	16.57%	14.21%
Advances	1.84%	2.65%	3.44%	1.93%	2.52%	2.84%	3.41%
Other assets	1.10%	1.35%	2.51%	2.87%	7.48%	12.04%	11.05%

Source: Compustat, author's calculations.

Note that because the table records yearly medians, the component categories are not additive.

Figure 3.3: Components of financial assets relative to sales by firm size (yearly medians)
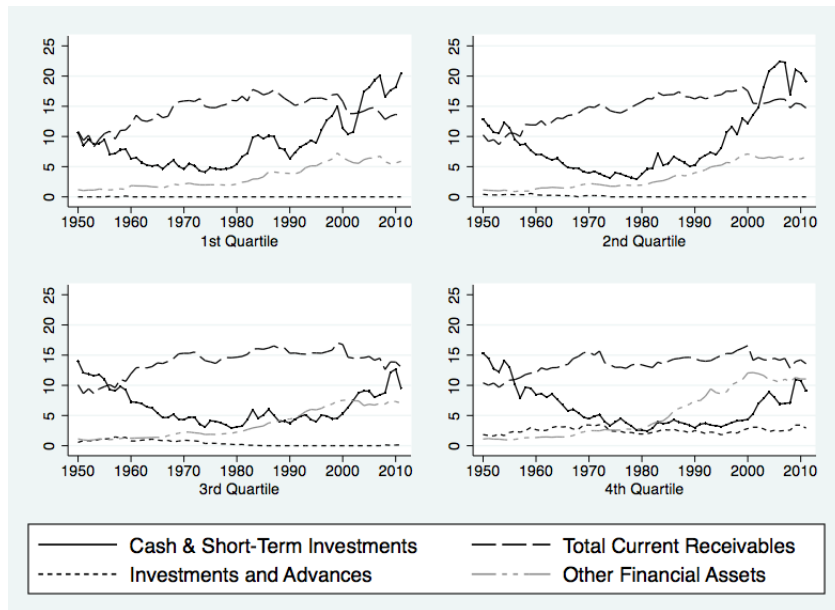
Source: Compustat, Author's Calculations

asset holdings of manufacturing firms rise sharply after 1980, doubling from 25.1% to 50.5% of sales between 1980 and 2010. Among service firms, the share of financial assets grows more smoothly over the entire period, from 27.4% of sales in 1950 to 55.0% of sales in 2010. Among these three industries tech firms record the largest increase in financial assets relative to sales – from 27.5% in 1950 to 63.3% in 2010. In both services and tech, capital to sales increases between 1950 and 1970, and then declines over the remainder of the period. Furthermore, growth in the stock of financial assets is concentrated in liquid assets and 'other' financial assets for all sub-samples of firms.

Across firm size, the trends are similar.[8] For all size quartiles, the ratio of the capital stock to sales declines after 1970, at which point financial assets relative to sales rise. However, both the magnitude of the shift and the relative shares of liquid versus miscellaneous assets acquired vary systematically across firm size.[9] First, the total increase in financial asset holdings is relatively larger among smaller firms, falling as firm size increases. Second, among smaller firms, financial asset holdings are increasingly dominated by liquid financial assets, whereas among large firms, financial asset holdings are increasingly concentrated in miscellaneous financial assets. This pattern is indicated in Figure 3.3, which plots the across-firm yearly medians of the components of financial asset holdings by firm size quartile. Cash holdings of firms in the bottom quartile rose from 5.4% in 1980 to 18.1% in 2010, and miscellaneous assets rose from 2.1% to 5.6% over the same period. Concurrently in the largest quartile, on the other hand, cash and short-term investments only increased from 2.6% to 10.8% of sales, whereas miscellaneous assets grew from 2.9% to 11.5% of sales. These statistics suggest that large firms have acquired new financial instruments that are not easily classifiable on NFC balance sheets, and may also be consistent with evidence that many large firms have developed their own financing arms – ranging from store credit cards to consumer credit loans – during this period.

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[8]It seems unlikely that the firm-size decompositions are dominated by differences in industrial composition by firm size. Table A.2 points to broadly similar industrial shifts across size quartiles — namely, a rise in services and tech, and a decline in manufacturing – although there are differences in the relative magnitude of these shifts by firm size. Smaller firms move more decisively into both tech and services, and accordingly exhibit a greater decline in manufacturing. Among the largest quartile of firms, on the other hand, manufacturing is far more stable, and services barely exceed 5% of total large-firm assets in 2005-2009.

[9]The differences between small and large firms are mirrored by differences between newer versus well-established firms, and size and age are strongly correlated in the sample. There are clear theoretical reasons to expect differences by firm size and age: well-established and large firms have advantages of incumbency, networks in product markets, access to external finance, possibly bond ratings, and larger absolute stocks of cash and other resources with which to compete.

Figure 3.4: Debt relative to the capital stock
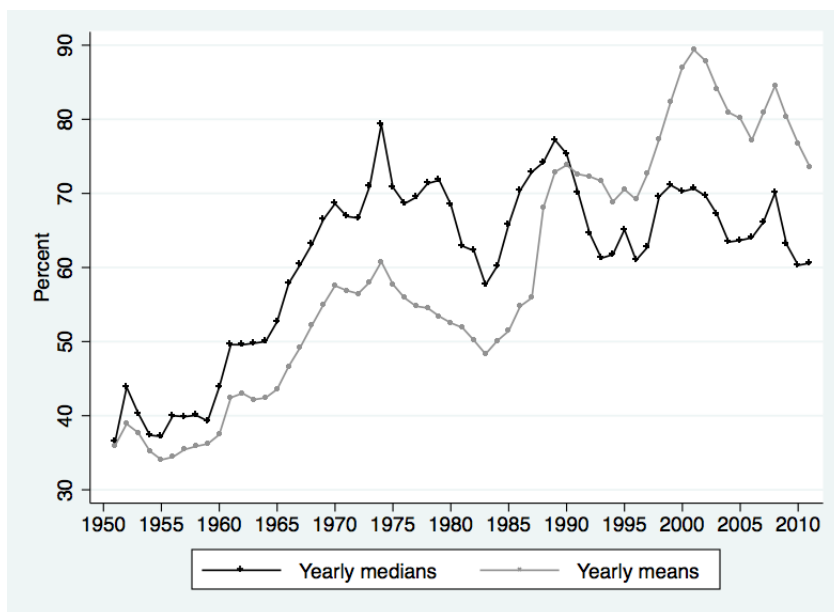
3.3 Debt

The second key stylized fact pointing to the 'financialization of nonfinancial firms' is manifested in NFC liability structure. An increase in gross corporate debt over the post-1970 period has been cited as a definitive characteristic of the financialization of NFCs (Palley, 2007), and Flow of Funds data clearly documents rising corporate leverage at the sector level. The firm-level data highlights, however, that changes in debt holdings differ decisively by firm size: the post-1970/post-1980 period is characterized by rising leverage among large firms, but concurrent de-leveraging among small firms. To this effect, Figure 3.4 plots leverage, defined as gross debt relative to the capital stock, and illustrates that rising mean leverage across NFCs since the early 1970s is simultaneous with declining median leverage. In Figure 3.4, debt is defined as total debt and, therefore, neither distinguishes between bank and bond debt, nor by length to maturity. Table 3.3a summarizes the evolution of gross leverage over time for the full sample of firms.

Figure 3.5: Change in the distribution of debt by firm size

(a) Bottom (1st) Quartile   (b) Top (4th) Quartile
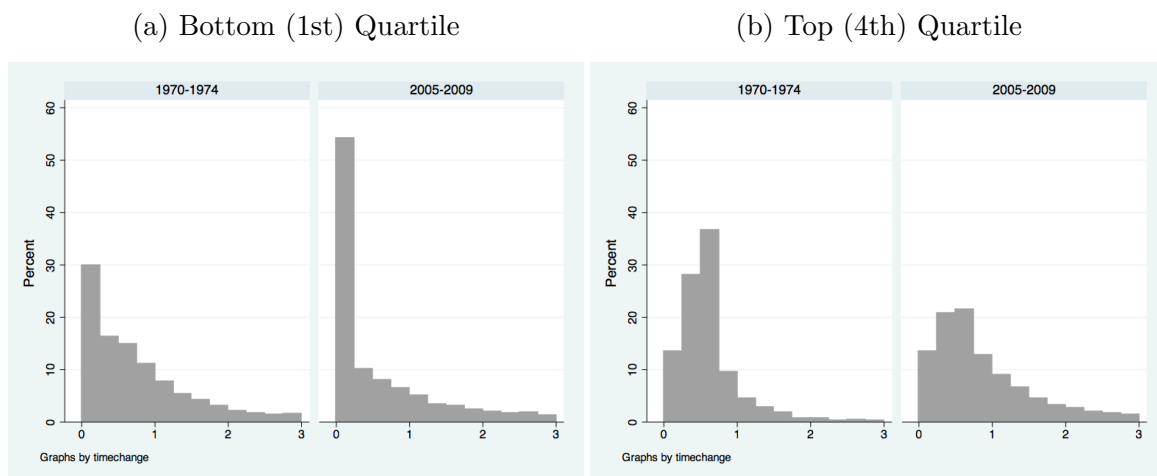
Source: Compustat, Author's Calculations

Figure 3.4 illustrates, first, that both mean and median leverage increased faster during the 1950s and 1960s than over the subsequent period of financialization. Thus, while it is true that NFC leverage – in both the mean and median– is substantially higher in 2011 than in 1950, increasing indebtedness is neither concentrated in nor limited to the post-1980 U.S. economy. Furthermore, over the initial post-WWII period, mean and median leverage moved together, suggesting that debt holdings over this period evolved fairly uniformly across the distribution of firms. Beginning in the 1980s, however, trends in mean and median leverage diverged; while mean leverage rose from 52.5% to 73.6% between 1980 and 2010, median leverage declined moderately from 68.5% to 60.6%. This time frame is consistent with accounts attributing rising corporate debt to leveraged buyouts during the hostile takeover movement of the 1980s (Holmstrom and Kaplan, 2001).

The divergent trends in mean and median gross indebtedness during the early 1980s point to increasing leverage among large firms and concurrent de-leveraging among small firms. This firm-size distinction is summarized by the histograms in Figure 3.5, which describe the distribution of debt to capital for firms in the bottom

Table 3.3: Evolution of debt over time, full sample

	1950	1960	1970	1980	1990	2000	2010
(a) Debt relative to the capital stock							
Median	24.63%	43.86%	68.61%	68.49%	75.33%	70.24%	60.29%
Mean	33.16%	37.45%	57.54%	52.52%	73.81%	87.03%	76.73%
(b) Debt relative to total assets							
Median	8.44%	15.58%	28.30%	27.47%	28.12%	22.21%	18.70%
Mean	15.24%	18.96%	33.13%	29.80%	33.93%	31.22%	28.33%

Source: Compustat, Author's calculations

and top quartiles of the asset distribution in 1970-1974 and 2005-2009.[10] Among small firms the distribution of debt has become increasingly skewed towards zero, such that in 2005-2009 more than 55% of small firms hold debt between zero and twenty-five percent of capital (the lowest bin). The percentage of small firms with zero leverage also increases substantially, from 13.7% in 1970-74 to 23.7% in 2005-09. Among large firms, on the other hand, the distribution of debt shifts to the right, such that in 2005-2009 there are fewer firms with 'low' leverage than in 1970-74.[11] Furthermore, only 1.7% and 2.4% of large firms hold no external debt in 1970-1974 and 2005-2009, respectively. The top panel of Table 3.4a summarizes the evolution of gross debt over time by firm size quartile, and reiterates this bifurcation in the acquisition of debt between small and large firms: leverage only increased between 1980 and 2010 among firms in the largest quartile of the asset distribution. In contrast to these firm-size differences, each industry largely mirrors the full sample pattern. The industrial data

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[10]Because the distribution of debt is dramatically skewed to the right and also bounded at zero, the full range of debt to capital is truncated in these histograms; without truncating the distribution, however, it is impossible to capture any detail in the figures.

[11]With financial disintermediation in the 1970s, the nonfinancial corporate sector relied less on traditional bank finance and increasingly on bond finance. This trend points to a likely bifurcation in the cost of finance for small and large firms that corresponds with differences in the pattern of leverage outlined here: large firms (that are more reliant on bond finance) are likely to face a declining cost of finance relative to small firms (that are more reliant on banks) over the period shown in Figures 3.3 and 3.4.

Table 3.4: Evolution of debt over time by firm size and industry; yearly medians

	1950	1960	1970	1980	1990	2000	2010
(a) Debt relative to the capital stock							
Firm Size							
1st Quartile	20.00%	40.00%	66.17%	86.42%	92.24%	69.97%	54.17%
2nd Quartile	24.59%	43.47%	80.06%	78.17%	75.24%	49.95%	27.42%
3rd Quartile	26.65%	47.07%	77.10%	74.18%	80.78%	77.55%	68.37%
4th Quartile	26.57%	41.77%	59.63%	53.30%	60.38%	76.61%	76.71%
Industry							
Manufacturing	18.12%	38.46%	73.49%	79.27%	85.16%	77.55%	68.37%
Services	51.79%	72.95%	86.44%	72.80%	86.95%	54.11%	70.26%
Tech	35.12%	37.42%	94.29%	78.29%	76.34%	48.44%	63.64%
(b) Debt relative to total assets							
Firm Size							
1st Quartile	6.90%	13.56%	19.98%	23.64%	22.37%	13.33%	8.72%
2nd Quartile	6.44%	14.94%	26.61%	26.15%	23.28%	10.90%	4.64%
3rd Quartile	9.38%	16.53%	30.80%	28.58%	30.69%	26.97%	23.25%
4th Quartile	11.73%	18.45%	34.52%	29.37%	32.29%	31.98%	28.85%
Industry							
Manufacturing	6.13%	13.95%	25.27%	23.62%	24.97%	20.56%	14.20%
Services	16.49%	23.08%	36.17%	26.30%	23.47%	8.75%	11.48%
Tech	8.74%	13.43%	28.61%	25.89%	20.48%	7.09%	8.72%

Source: Compustat, Author's calculations

in Table 3.4a highlights that the across-firm yearly medians describing the evolution of leverage for manufacturing, service, and tech firms all follow the full-sample pattern of rising leverage in the initial post-WWII period, followed by declining leverage since the 1970s/1980s.

Given that mean leverage rose simultaneous with growing stocks of – largely liquid – financial assets, debt measured relative to total assets also provides insight into the evolution of the financial robustness or fragility of NFCs. A shift in balance sheet structure, such that firms hold both more liquid assets and more debt, could, for example, reflect an interest rate differential between borrowing and lending, leading firms to borrow and lend for profit – i.e. an expansion into banking activities. Figure 3.6 plots the across-firm yearly means and medians of debt relative to total assets. Like debt relative to capital, NFC indebtedness relative to total assets increased in

both the mean and the median in the initial post-war decades. This trend is to be expected, given that gross leverage increased over these decades, whereas the portfolio shift towards financial assets did not begin until the early 1980s. Unlike gross leverage, however, debt relative to assets has not risen in either the mean or the median since the early 1980s. For the full sample of firms, debt relative to assets declines very slightly between 1980 and 2010, from 29.8% to 28.3% in the mean and more substantially from 27.5% to 18.7% in the median. Descriptive statistics summarizing the evolution of debt relative to assets for the full sample of firms are shown in Table 3.3b.

The fact that net indebtedness has fallen suggests, on the one hand, that rising leverage is not necessarily indicative of growing balance sheet fragility among (large) NFCs in the post-1980 period. Higher stocks of outstanding debt and financial assets are an inevitable outcome of running a financing arm, wherein a firm first borrows and then lends for profit. A firm running a credit card division, for example, first borrows in order to then lend out consumer loans. On the other hand, however, the increase in gross debt – viewed independently – may nonetheless capture increased fragility insofar as crisis may more deeply and adversely affect NFC balance sheet structure. If, for example, assets are not able to be liquidated in a time of crisis, a firm could still face the liquidity or solvency issues of a highly leveraged nonfinancial firm without any financing division.

Table 3.4b summarizes the evolution of debt relative to assets by firm size and industry over time. These descriptive statistics reiterate expected firm size differences: small firms – which hold relatively more liquid assets and less gross debt – register a sharp decline in debt to assets, and as firm size increases, the magnitude of the decline decreases. Among large firms, the across-firm median of debt to assets declines less than one percentage point, from 29.4% in 1980 to 28.9% in 2010. Finally, the sub-samples of manufacturing, services and tech firms all mirror the full sample, albeit with differences in magnitude. In particular, there is a greater decline in debt relative

Figure 3.6: Debt relative to total assets
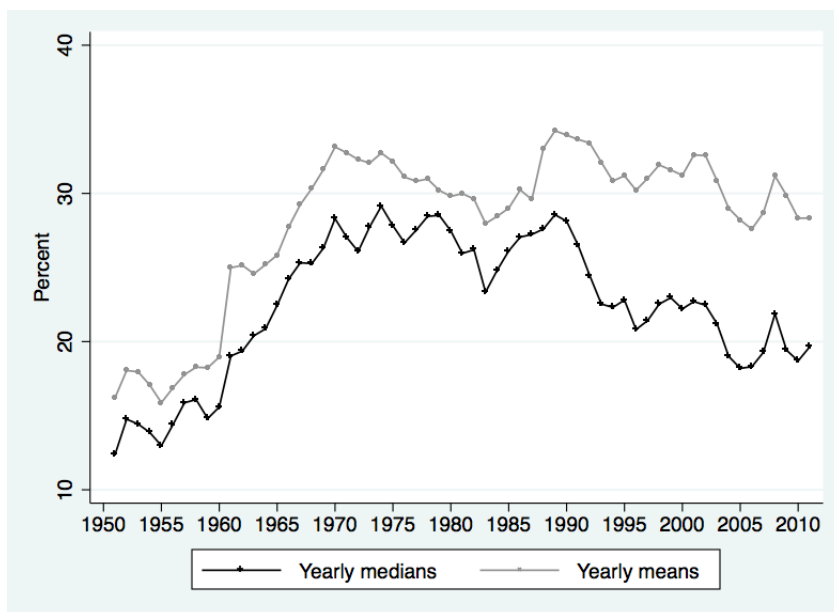
to total assets for tech firms, which is consistent with these firms' larger increase in cash holdings.

3.4   Stock repurchases and the shareholder value movement

The increase in the indebtedness of large NFCs beginning in the early 1980s has been accompanied by a dramatic increase in NFC repurchases of own stock. The sector-level explosion in buybacks is well documented, and has received considerable attention in the literature on financialization and the shareholder value movement (Lazonick and O'Sullivan, 2000; Lazonick, 2009; Stout, 2012; Davis, 2009). Shareholder value principles contend that agency problems between managers and shareholders (owners), deriving primarily from moral hazard on the part of managers, lead to inferior corporate performance.[12] Accordingly, agency theory suggests two mech-

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[12]This moral hazard is argued to occur because managers apply "insufficient effort", undertake "extravagant investments", pursue "entrenchment strategies" to make themselves indispensable, or exploit expensive perks like private jets or box tickets to ball games (Tirole, 2006, p. 17).

anisms to better-align the interests of managers with those of shareholders and – by ameliorating agency problems within the firm – improve firm-level efficiency: a hostile market for corporate control, which 'disciplines' managers via a threat to managerial authority (Jensen, 1986) and stock option-based compensation (Jensen and Murphy, 1990). The concurrent rise of institutional investors has both supported a transition away from long-term stock holding towards higher trading frequency, which requires increased attention to the firm's short-term stock price (Lazonick and O'Sullivan, 2000; Stout, 2012), and the push for stock option-based managerial compensation (Krippner, 2012).

Stock repurchases are a clear manifestation of increasing managerial emphasis on 'shareholder value'. By repurchasing the firm's stock, managers improve – for given profits – stock market-based measures of firm performance, including the (short-term) share price, return on equity (ROE), and earnings per share. Consider, for example, two otherwise identical firms – with the same level of profits in any given year and the same stock market valuation (the stock of outstanding shares multiplied by the per share price). Both firms direct the same proportion of these profits for shareholder payouts, but one firm does so in the form of dividends, whereas the other firm does so in the form of repurchases. Then, even though the total stock market valuation of the two otherwise identical firms is the same, the firm that has reduced the outstanding stock of equity via stock repurchases will have a higher per share price. Increases in repurchases are, thus, consistent with the transition to stock option-based managerial pay. Empirical evidence suggests, accordingly, a substitution of repurchases for dividends after the mid-1980s (Grullon and Michaely, 2002).

The firm-level data reinforces the sector-level trend of stock buybacks, but highlights that repurchases are concentrated among large firms. Figure 3.7a plots the yearly mean of gross equity repurchases relative to total outstanding equity across NFCs for the full sample of firms, as well as for the largest and smallest quartiles

Figure 3.7: Gross stock repurchases relative to total equity

(a) Full sample, 1st and 4th quartile
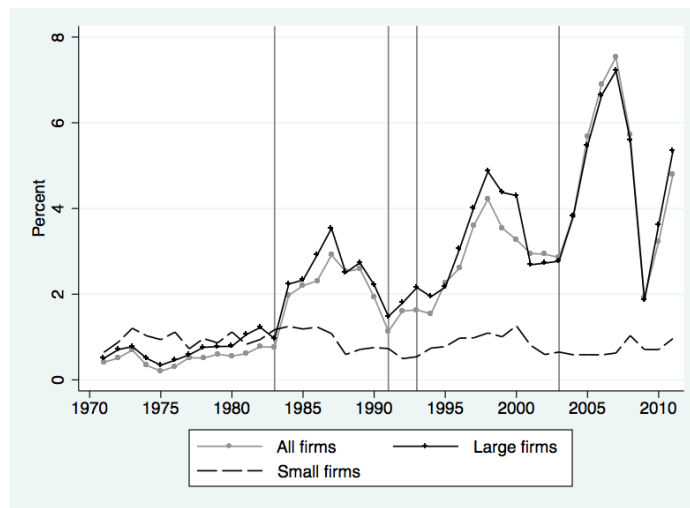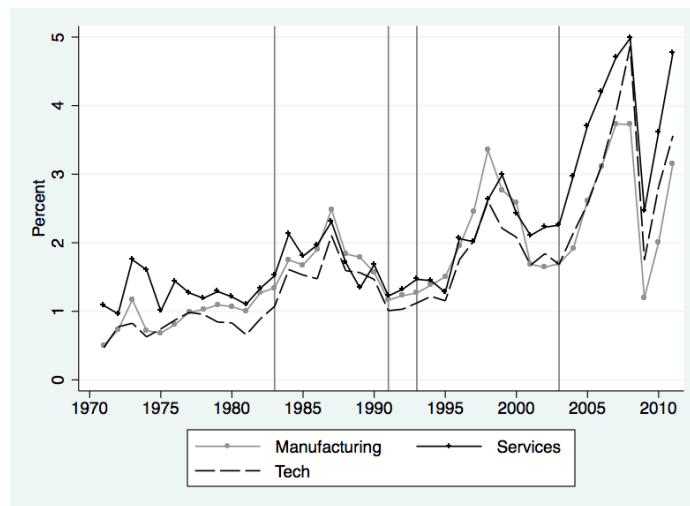
(b) Manufacturing, service and tech firms

of firms.[13] This figure underscores that equity repurchases by large firms dominate the full-sample trend, whereas repurchases by small firms remain low over the entire period. Furthermore, Figure 3.7b indicates that, despite this significant difference by firm size, manufacturing, service and tech firms all on average mirror the full-sample trend in Figure 3.7a. In contrast to the mean trend, median equity buybacks are zero in each year. This point is unsurprising given the bulky and episodic nature of stock repurchase programs: firms announce that a given quantity of stock will be repurchased over a specified time frame — for example, that $15 million dollars worth of stock will be repurchased via open market purchases within the next year — to be followed by years without repurchases. Thus, it is not expected that *most* firms would repurchase stock in any given year.

Within the broader process of institutional change that has supported the entrenchment of shareholder value ideology, repurchases have been directly supported by specific regulatory changes. Four key regulatory changes – in 1983, 1991, 1993 and 2003 – are denoted by the vertical lines in Figures 3.7a and 3.7b; plotting repurchases against this regulatory backdrop points to correlations between specific changes in regulation and NFC repurchases. Prior to the early 1980s, stock repurchases were effectively prohibited under the anti-manipulation provisions of the Securities and Exchange Act of 1934. Scope for (legal) large-scale repurchases was first opened in November 1982, with SEC Rule 10b-18, which provides 'safe harbor' by guaranteeing that a firm's managers will not face insider trading and manipulation charges for targeting the stock price if each day's open-market repurchases are less than 25% of average daily trading volume for the previous four weeks, and if the company does not repurchase shares at both the beginning and end of a day's trading (Grullon

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[13]Due to availability of repurchase data, Figure 3.7 only covers the post-1970 period.

and Michaely, 2002). Following this regulatory change, a first period of growth in repurchases is recorded beginning in 1983.

Subsequently, an amendment to Rule 10b-18 in 1991 shortened the required holding period between when executives exercise their stock options and when they are allowed to sell the stock. This amendment made it easier for managers paid in stock options to exploit short-term increases in a firm's share price, without being subject to the uncertainty of possible declines in the value of the shares in the period between exercising one's stock option and selling the stock (Lazonick, 2013). In 1993, changes to the tax code further strengthened incentives to link managerial pay to stock market-based metrics (Stout, 2012). Code 152(m) stipulates a one million dollar cap on the tax-deductibility of non-performance based pay, without instituting a similar cap on the tax-deductibility of 'performance-based' pay. As 'performance' quickly became synonymous with stock price (Stout, 2012), this law provided clear incentives for stock option pay and, accordingly, for repurchases. Finally, additional updates were made to Rule 10b-18 in 2003, to "simplify and update the safe harbour provisions" (Lazonick, 2013). Following these rule revisions, 2003 corresponds to a third period of dramatic growth in NFC repurchases.

While Figure 3.7 points to correlations between the volume of stock repurchases and specific regulatory changes, Figure 3.8 plots the trend in average yearly gross equity repurchases for the full sample of firms relative to the business cycle, indicating that repurchases are also procyclical. The vertical lines in Figure 3.8, which denote NBER-dated recession years, highlight that repurchases decline during business-cycle downturns and increase during macroeconomic expansions.[14] This observation is consistent with the expectation that one advantage of repurchases over dividends as

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[14]The NBER dates recessions monthly; thus, a vertical line denotes any year with a recession, although the recession need not last the entire year. The annual data can, therefore, provide only a relatively crude breakdown of this relationship.

Figure 3.8: Gross stock repurchases relative to total equity; shown against the business cycle
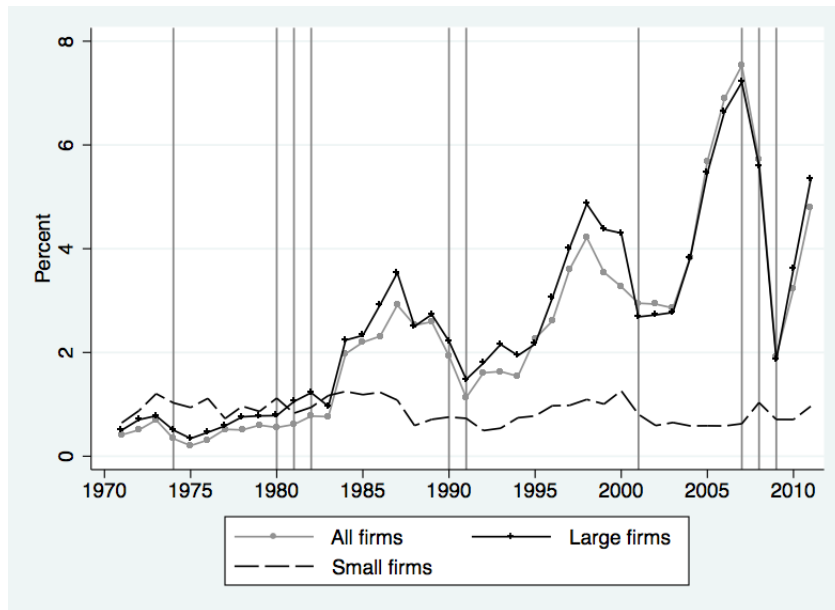
Vertical lines denote years that include an NBER-dated recession. The NBER dates recessions monthly and, thus, a vertical line includes any year with a recession, although the recession did not necessarily last the entire year.

a form of shareholder payouts – from the perspective of management – derives from the more 'discretionary' nature of repurchase programs: declining dividend payouts are likely to be met with greater market hostility than declining repurchases, which are *expected* to be intermittent. Jagannathan et al (2000) provide evidence that, while repurchases are strongly procyclical, dividends tend to steadily increase over time. Finally, Figure 3.8 highlights that, prior to 2007, declining repurchases lead the official recessions; at the beginning of the 2007 recession, however, gross equity repurchases were at an all-time high.[15]

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[15]However, clearer analysis of the relationship between repurchases and recessions requires quarterly or monthly data, as well as comparisons between the relationship of repurchases to the business cycle and to stock market performance. Empirical and theoretical evidence suggests that firms should repurchase stock following poor stock market performance – for example, in order to boost the firm's stock market valuation and ward off takeover bids; thus, growing decoupling between 'real' economic

3.5 Discussion

The trends laid out in Sections 3.2, 3.3 and 3.4 summarize sustained changes in the portfolio and financing behavior of NFCs since the early 1980s that point to the 'financialization' of nonfinancial corporations. Importantly, considerable insight into the causes and implications of these behavioral changes stands to be gained by exploring the relationships between these stylized facts. Because firms make portfolio and financing decisions subject to a finance constraint, a firm's sources of funds (profits earned on fixed and financial assets, new borrowing, and proceeds from new equity issues) are in each period definitionally equivalent to the firm's uses of funds (the acquisition of new assets, interest payments on outstanding debt, and payouts to shareholders). Thus, a firm's choice to acquire capital or financial assets, or repurchase stock is inherently interdependent with both the decision of how to finance that use of funds and the decision not to allocate those funds towards another use. Because this chapter is descriptive, it is beyond the scope of the discussion to propose either a complete account of links between changes in NFC financial behavior, or a detailed causal argument regarding the factors underlying these changes. Nonetheless, a brief discussion of growing NFC involvement in banking activities and the shareholder value movement provides insight into these stylized facts and basic links between these changes in NFC financial structure.

First, evidence points to the increasing involvement of (large) nonfinancial corporations in the provision of financial services (see, for example, Froud et al, 2006). As noted in Section 3.3, a shift towards banking activities would be reflected in a structural shift in NFC balance sheets: firms that borrow and lend for profit hold relatively greater stocks of financial assets and outstanding liabilities, relative to firm size, than firms that are engaged purely in production. This factor suggests that

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performance and corporate profits/stock market trends since 2007 suggests that stock market trends may be more relevant than the official business cycle.

Figure 3.9: Correlation between borrowing and investment

Source: Compustat, Author's calculations

increases in both financial asset holdings and debt, particularly among large firms, (partly) reflect a shift in *activity* aimed, for example, at exploiting a growing differential between returns on financial and fixed assets. Importantly, this shift need not *a priori* come at the expense of directing these funds towards fixed capital and, therefore, is not necessarily consistent with a line of the financialization literature suggesting that financial asset holdings come at the expense of investment in fixed capital (for example, Milberg and Winkler, 2013).

Second, the implications of shareholder value ideology are not limited to increasing equity repurchases, but are also likely linked with changes in debt and cash holdings.[16] At a most basic level, stock buybacks must be financed; greater buybacks come at

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[16]In fact, a stated theoretical rationale for designing incentives to enforce shareholder value maximization is to "disgorge the cash" (Jensen, 1986) and, as such, 'successful' implementation of shareholder value principles is *designed* to be linked with shifts in the structure of NFC balance sheets. Within the economics literature, this rationale signifies a marked departure from the Modigliani-Miller view of the firm (Tirole, 2006), according to which a firm's financial structure is irrelevant for its non-financial outcomes (Modigliani and Miller, 1958).

a (short-run) trade off with other uses of funds. Figure 3.9 documents a declining correlation between NFC borrowing and fixed investment since the 1970s, such that — despite rising average debt holdings — new borrowing is less and less channeled into fixed investment.[17] Importantly, both repurchases and increases in gross debt are concentrated among large firms. The shareholder value movement has, furthermore, been argued to drive increasing 'short-termism' in managerial priorities, which, in turn, further supports the 'portfolio conception' of the nonfinancial firm by stream-lining the process of shuffling and re-shuffling (parts of) corporations to maximize portfolio return (Fligstein, 1990; Crotty, 2005). Thus, changes in corporate behavior associated with the shareholder value movement are likely to have related implications for NFC financial behavior, spanning the use of financial assets and the propensity to borrow external funds, in addition to changes in the form and magnitude of pay-outs to shareholders. While the discussion here of the relationships between changes across NFC balance sheets is only suggestive, it points to the insights to be gained by exploring links between the stylized facts presented in this chapter.

3.6 Conclusion

Within the literature on financialization, there is an increasing emphasis on the non-financial implications of financial sector growth and, in particular, on the 'fi-nancialization' of nonfinancial firms. Despite growing attention to financialization of NFCs, however, there has been no systematic discussion of what precisely has hap-pened at the firm level, such that the basic stylized facts describing changes in NFC financial behavior have remained quite vaguely defined. This chapter develops the concept of the financialization of the nonfinancial corporation by laying out, using firm-level data, three stylized facts — one corresponding to each part of the firm's

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[17]A version of this graph appeared in Mason (2013).

balance sheet — describing changes in firm financial behavior in the post-1980 U.S. economy. First, since the early 1980s NFCs are holding a growing share of, largely liquid, financial assets relative to fixed capital in their portfolios. Second, large NFCs have become increasingly leveraged, even as the majority of NFCs have de-leveraged their balance sheets. Third, there is a change in the role of equity, specifically manifested in a dramatic increase in stock buybacks that is concentrated among large firms. Together, these trends point to an increasingly 'financial-orientation' among NFCs in the U.S. economy, and an increasingly complex relationship between NFCs and financial markets. Furthermore, the analysis emphasizes systematically different trends in NFC behavior by firm size, which highlight that the constraints facing small and large firms have evolved differently over the recent financialization of the U.S. economy, and, consequently, that the behavioral stories underlying the financialization of small and large firms differ.

This chapter, therefore, contributes to a clear and unified conception of the financialization of nonfinancial corporations and, in turn, the clear elaboration of the firm-level stylized facts opens scope for approaching the questions of why NFCs have changed their financial behavior, and to what effect. Two factors, which are also raised in Chapter 2, are discussed in this chapter – the increasingly involvement of NFCs in the provision of financial services, and a growing shareholder orientation among NFC managers. Importantly, both factors point to the insights that stand to be gained by analyzing the firm-level stylized facts in a unified framework, rather than exploring each in isolation. Growing NFC involvement in the provision of financial services, for example, leads to increased holdings of both financial assets and debt on the firm's balance sheet; a large stock of debt that is matched by large holdings of financial assets need not have any a priori implications for non-financial outcomes, namely investment behavior. Changes in NFC financial behavior are, however, expected to have implications for firm-level fixed investment rates; this question is taken

up in Chapter 5, which finds econometric evidence that increasingly entrenched share-holder value norms are negatively associated with the investment rates of large NFCs in the U.S. economy. Thus, the primary objective of this chapter — to establish the evidence for the financialization of NFCs in the U.S. economy — has important implications for the analysis of the nonfinancial implications of financialization in the U.S. economy.

CHAPTER 4

INDUSTRIAL-FINANCIAL LINKS IN U.S. NONFINANCIAL CORPORATIONS: A CASE STUDY OF GENERAL ELECTRIC

4.1   Introduction

Over the post-1980 period, General Electric (GE) developed a large financing arm – GE Capital – which grew in size relative to its parent company from the early 1980s through the early 2000s, reflecting dramatically expanded involvement by a 'non'-financial company in the provision of a wide portfolio of financial services, ranging from private-label credit cards, to airline leasing, to providing finance for leveraged buyouts. The result has been that, over the post-1980 period, General Electric Consolidated has increasingly operated as an industrial-financial conglomerate. This expansion in GE's financial services division not only captures, within an individual firm, a breakdown in boundaries separating finance and industry in the post-1980 U.S. economy, but also highlights that financial and industrial aspects of GE's business are highly interdependent. This interdependence is evident, for example, in that GE's high credit rating, which provides the company with the access to cheap credit that funds its financial division, is based off the industrial, rather than the financial, core of the business.

For these reasons, GE offers insight into the 'financialization' of nonfinancial corporations over recent decades in the U.S. economy. The financialization of nonfinancial business is manifested both in the growing orientation of nonfinancial firms towards financial markets, and in an increasingly complex and interdependent relationship between nonfinancial firms and the financial sector. These changes are reflected, for

example, in the fact that, since the early 1980s, the nonfinancial corporate sector has earned a growing share of total profits from financial activities (Krippner, 2012). Concurrently, shareholder value ideology has been associated with changes in corporate governance, which arguably increase managerial emphasis on short-term (financial) valuations of firm performance (Crotty, 2005; Lazonick and O'Sullivan, 2000). Corresponding changes in the financial behavior of nonfinancial firms are reflected in both an increasing share of financial assets in firm portfolios, and in changes in the structure of external finance, including increasing indebtedness and growing equity repurchases among large firms (see Chapter 3).[1]

This chapter analyzes a case study of General Electric to address the question of how and why nonfinancial companies are increasingly linked to and oriented towards financial markets in the post-1980 U.S. economy. Case studies can complement the existing literature on 'financialization' and NFCs by narrowing in on institutional details of changes in firm behavior that are only evident with analysis of individual firms. There are important limitations to analyses of the financialization of nonfinancial corporations based on aggregate and firm-level data. In both aggregate and firm-level statistics, for example, the largest category of financial asset growth after 1980 consists of 'miscellaneous' financial assets, and in the aggregate data, this category is simply an accounting residual (see Crotty, 2005, for a discussion). Case studies, on the other hand, can garner specific insights into the types of financial activities in which firms are involved and, thus, into the types of financial assets that they are holding. This insight into specific financial activities can, furthermore, clarify the interpretation of results from firm-level econometric studies by pointing to specific behavioral channels underlying large-sample patterns.

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[1]A growing literature emphasizing the 'financialization' of nonfinancial companies, furthermore, links changes in financial behavior to nonfinancial outcomes, including fixed investment (Davis, 2013; Orhangazi, 2008; Stockhammer, 2004), income distribution (Epstein and Jayadev, 2005; Tomaskovic-Devey and Lin, 2011), and macrodynamics (Skott and Ryoo, 2008; Aglietta and Bretton, 2001).

General Electric is a particularly useful case study for at least three reasons. First, significant media attention has provided an important source of information about the firm's behavior and activities. General Electric is famous for twenty years of unbroken increases in quarterly profits during the 1980s and 1990s: "quarter after quarter, year after year, GE's earnings came gushing in" (Fortune, 3-4-2002). Media reports follow success, and comparable media attention is not available for many other nonfinancial firms. Second, because GE is structured as a conglomerate, there is a (relatively) clear delineation between the financial statistics for GE Consolidated and GE Capital. Third, GE's CEO between 1981 and 2001, Jack Welch, is often referenced in the business world as the 'father' of shareholder value, in regard to his famous 1981 speech "Growing fast in a slow-growth economy". GE also ranks consistently high among U.S. firms in terms of share repurchases (Lazonick, 2009). Thus, in light of the shareholder value 'revolution' over the post-1980 period, GE is particularly relevant for considering the 'practice' of emphasizing shareholder value.

In this chapter, three major themes are emphasized in explaining GE's growing links with finance after the mid-1980s. First, GE has dramatically expanded into banking activities, reflected both in a significant increase in GE Capital's share of GE's total earnings and in a significant shift in the firm's financial (balance sheet) structure. Second, GE's financial statistics show a shift in the composition of external finance towards greater holdings of debt and a reduction in outstanding equity, which is consistent with involvement in banking activities and also with shareholder value orientation. Third, the industrial and financial aspects of GE's business are complementary and co-dependent. Between the mid-1980s and the mid-2000's, GE's financial arm supported the industrial business, but also required the industrial business — both its credit rating and that it is not regulated as a financial company — to grow. The 2008 financial crisis and ensuing changes in the regulatory environment suggest, however, that GE's financial arm is a growing liability for the firm, leading

management to reduce the size and alter the form of GE Capital, ostensibly return-
ing to greater emphasis on providing financing for GE's own industrial goods and
services.

Thus, this chapter contributes to the literature on the financialization of *non-
financial* corporations by analyzing specific channels through which finance and in-
dustry are linked within an individual firm, and connecting these channels to observed
changes in the structure of GE's balance sheet. The discussion in this chapter uti-
lizes annual reports, Compustat data, media attention, and the existing academic
literature. Published data and media reports summarize the financial structure of
GE, as well as investors' perceptions of the company. Froud et al (2006) present
a particularly detailed case study of GE and financialization, which places primary
emphasis on shareholder value and the different narratives – for example, from the
media or industrial financial analysts – by which success in 'creating' shareholder
value is evaluated.[2] While this case study builds on that by Froud et al, the emphasis
here is different, and – rather than explaining evaluations of GE's performance by
different actors – focuses on explaining links and interdependencies between finance
and industry in the case of General Electric.

The chapter is organized as follows: Section 4.2 discusses the development and
performance of GE as a conglomerate linking industry with finance; Section 4.3 relates
GE's increasing involvement in financial services to its financial structure; Section 4.4
discusses post-2008 GE and recent downsizing in GE's financial arm; and Section 4.5
concludes by drawing links to the financialization literature and inferences about the
scope of applicability of the case of GE.

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[2]Froud et al. (2006) write, the "basic argument is that, because shareholder value as social
rhetoric can be appropriated and inflected by different social actors, financialization is not associated
with one invariant set of consequences in terms of firm performance or management behavior" (p.
7).

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4.2 An industrial-financial conglomerate

4.2.1 GE's corporate structure

Since the early 1980s, General Electric has derived a significant and increasing proportion of total earnings from its capital division, resulting in an 'industrial-financial conglomerate' that clearly intertwines nonfinancial and financial activities within an individual firm. This industrial-financial model is the outcome of a corporate strategy made famous during the tenure of Jack Welch as CEO of GE, which utilized acquisitions and divestments so as to focus on a core of high-performing businesses. Famously, Welch mandated that each division was to be number 1 or number 2 in its industry, or else risk being divested; this strategy applied to subsidiaries as well, and is reflected in GE Capital's evolving portfolio of activities over the post-1980 period.[3] This objective was, furthermore, entirely consistent with expansion into seemingly unrelated businesses, highlighted both by the growth of GE Capital and by movement into broadcasting with the acquisition of NBC.

Consequently, General Electric is associated today with a wide diversity of both industrial and financial products, ranging from household appliances and lightbulbs, to aircraft engines and leasing, medical equipment, and corporate real estate services. As a result of this diversity, while GE is not necessarily identified with a single product or industry, the company is often listed as one of the world's most successful *brands* by business media outlets including Forbes and Business Week. Importantly, Welch pursued this conglomerate-based expansion strategy as conglomerates were falling out of fashion.[4] Thus, Welch focused on branding the apparent diversity in GE's

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[3]The same "No.1/No.2" attitude applied to managers: each year managers were rated as A, B,or C. 'A' managers received stock options, and 'C' managers were fired. Together with dramatic downsizing of the non-managerial workforce soon after Welch became CEO, these policies earned Welch the nickname of "neutron Jack".

[4]Following a proliferation of conglomerates in the 1960s (Chandler, 1977), shareholder value ideology and its institutional expression in the hostile takeover market supported a narrowing of firms' core businesses so as to allow investors to pick their own risks (Davis et al, 1994). Interestingly, other firms often associated with significant financing arms – including Ford and General Motors –

Table 4.1: Sales Growth

	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009
GE Consolidated	14.5%	2.0%	13.3%	6.7%	0.9%
GE Capital	36.7%	9.2%	23.2%	5.6%	-4.4%

Source: Compustat, author's calculations

Table 4.2: GE Capital's share of total sales

1985	1990	1995	2000	2005	2010
13.5%	25.6%	38.1%	51.7%	40.3%	33.9%

Source: Compustat, author's calculations

divisions, arguing that the parts of GE fit together in a way that added value. Welch argued GE was a 'business engine' united by a 'common set of values' and successful 'business leadership', which made for a strong whole (Tichy and Charan, 1992). Even with this growing diversity in *both* the industrial and financial aspects of the business, General Electric in the post-1980 period is most clearly defined by expansion of the financial services division, GE Capital.

Beginning in the mid-1980s, GE Capital is a major source of growth for the consolidated company. While GE Consolidated's sales growth averaged 7.3% a year between 1980 and 2010, this performance captures, in large part, growth in financial services, for which growth averaged 12.4% per year.[5] Table 4.1 records five-year averages of GE's sales growth since 1985 for GE Capital and for the consolidated company, which

also retained a conglomerate orientation during the declining popularity of conglomerates (Davis et al 1994). In this capacity, expansion into finance may be better understood instead as a manifestation of product-line diversification among large firms following the end of the conglomerate movement (Auerbach, 1988). With respect to GE, a diversification strategy may have been a particularly important "defensive response to changing technology" (p. 230), given its emphasis on electronics, where the profitability of different sectors changes rapidly.

[5]Data for GE Capital is available beginning in 1985. Sales are measured on a gross basis and defined, according to generally accepted accounting rules (GAAP), as money received from the normal operations of the business. For banks and financial service companies, this measure includes both interest income and fee income.

includes GE Capital, GE's industrial divisions, and all other subsidiary branches of GE. Prior to 2000, GE Capital's sales growth consistently exceeds sales growth for the consolidated company.[6] The relative decline in GE Capital's sales growth post-2000 is driven by contractions in 2001, 2005 and 2008-2009 and, in particular, by a 24.5% contraction in 2009 following the financial crisis. Simultaneously with growth in the capital division, GE's industrial growth follows the pattern of (falling) value-added in the U.S. manufacturing sector between 1980 and 1998 (Froud et al, 2006, p.333).

Together, growth in finance concurrent with declining industrial performance has made GE increasingly reliant on its capital division over time. This growing reliance is captured by Table 4.2, which summarizes the share of GE's total sales derived from GE Capital: between 1985 and 2000, GE Capital grew as a share of the total company from 13.5% in 1985 to a peak of 51.7% in 2000 and, in 2010, GE Capital was still responsible for over one third of GE's total sales. GE's performance – particularly between 1980 and 2000 – is, therefore, one of unimpressive industrial growth augmented by growth in financial services, which provided cash (sales) in the face of declining real-sector earnings. The sales growth statistics in Tables 4.1 and 4.2, therefore, summarize that GE Capital constitutes an increasingly important source of sales and cash for the consolidated company over the post-1980 period, and also that downswings in the capital division are more dramatic than in the industrial division of the firm.

4.2.2 Expansion into financial services

General Electric first moved into financing activities in 1932 with the extension of consumer credit for home appliances. The company rationale cites that, with the Great Depression, GE introduced "GE Consumer Finance so that customers could pay

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[6]Between 1985 and 2000, GE Capital's sales growth is lower than that of the consolidated company only in 1994; in 1994, sales growth in both GE Capital and GE was negative, and the magnitude of the decline was greater in the financial-services division than the industrial division.

for new appliances over time, helping them build a better home even when times get tough" (https://www.ge.com/about-us/history/1925-1934). Thus, GE's movement into captive finance – i.e. the provision of financing for its own industrial products – was designed to promote sales in the face of falling demand. With the extension of financing options, GE both encouraged industrial sales, and earned profits not only from the sale of the original good, but also from the financing. This expansion of a 'non'-financial company into captive finance is not limited to General Electric, although it was a particularly early player. Ford, Sears and General Motors are other well-known examples of nonfinancial firms with large financing arms, largely involved in providing captive finance for their own industrial products.

GE stands out from other large nonfinancial firms, however, in the extent to which its financial activities extend beyond captive finance. Today, GE Capital, "pours wealth into the corporate coffers by doing just about everything you can do with money except print it" (Fortune, 2-2-1994; quoted in Froud et al, 2006, p. 351). The growth in GE Capital has not only made the division increasingly important to its parent company, but has also been so dramatic as to impact the structure of the financial sector. In 2008, GE Capital was the seventh largest bank in the United States measured in terms of total assets, and in 2013 it was the eighth largest bank. GE Capital's expansion since the mid-1980s has been accompanied by involvement in a diverse portfolio of financial activities, many of which extend beyond any contact with a GE industrial product. Furthermore, as the acquisition and divestment strategy popularized under Welch applied to GE Capital as well as to the parent company, the *range* of GE Capital's activities has also evolved considerably over time.

In 1983, for example, General Electric moved into retail finance, issuing a private-label credit card for Apple Computers; this was the first time a credit card was issued for a specific manufacturers' product (Froud et al., 2006). GE Capital has since become the largest manager of private-label credit cards, managing consumer credit

for a wide variety of companies including Wal-Mart, Ethan Allen Interiors, Gap, and Banana Republic. In 2004, GE moved into the subprime mortgage industry with the acquisition of Western Mortgage Company (WMC). When GE divested this mortgage business in 2007 after the subprime bubble burst (at losses estimated at more than one billion dollars), GE Capital was the tenth-largest subprime mortgage lender in the U.S. — ranking above well-known examples of financial companies including Lehman Brothers, Citigroup and Wachovia (Business Week, 5-6-2009). Thus, although data on acquisitions and divestments is opaque, specific examples like WMC highlight the role of acquisitions in GE Capital's expansion – both in terms of total size, and with respect to the range of activities in which the company has been involved.

As of early 2014, GE's website advertises financing for a dramatic range of products and services: online consumer finance for jewelry, home landscaping, and sporting goods; leasing in aviation; financing for healthcare equipment; corporate real-estate lending; retail credit financing; and financing for leveraged buyouts, to name just a few. With respect to consumer finance, GE's website boasts that the company has "teamed up with more than 150,000 retailers, contractors, dealers and healthcare providers nationwide....making it quick, safe and easy to apply for financing online" (https://www.gogecapital.com/en/consumer-credit-financing/find-merchants.html). GE Capital's diverse portfolio of activities is, correspondingly, reflected in holdings of a wide variety of financial assets, including credit card receivables and asset-backed securities backed by residential mortgages, commercial mortgages, and student loan debt.

4.2.3   GE's competitive advantage in financial services

GE Capital's expansion was supported both by direct competitive advantages that General Electric faces vis-a-vis other financial companies in the provision of financial services, as well as by important complementarities between the financial and the

industrial aspects of its own business. Relative to financial companies, GE has advantages on both sides of the interest-rate spread determining financial profitability — i.e. the cost of borrowing relative to the returns to providing financial services. With respect to financial profitability, GE benefits from the fact that banking-sector regulations do not apply to nonfinancial companies (or did not apply to GE prior to 2012). Thus, by operating within the parallel- or shadow-banking sector (see, for example, D'Arista and Schlesinger, 1993), GE captures advantages from regulatory arbitrage, whereby GE is able to circumvent regulations applied to financial institutions.[7] These regulations for traditional banks establish, for example, admissible asset to liability ratios and provide for Federal Reserve oversight of the quality and valuation of assets. Laxer regulation compared to traditional financial institutions has allowed GE to move into (and out of) a wider spectrum of financial services, with considerably less regulatory attention, than comparable financial institutions.[8] GE has arguably faced less regulatory oversight in its industrial divisions as well: by virtue of GE's size, branches that would be subject to more stringent financial disclosure requirements as individual firms are masked within GE's aggregated statistics (Froud et al., 2006).

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[7]Definitions of the shadow banking system differ in regard to the specific 'non-bank' financial actors included; however, "some elements are central to most descriptions. This includes a financial institution that is not subject to banking regulatory supervision engaging in activities typically considered 'banking'. Traditional banking activities involve intermediation — channeling deposited savings into investments, and providing a system for transferring payments from one entity or person to another" (Taub, 2013, p. 449). D'Arista and Schlesinger's original definition of 'parallel banking' included actors such as hedge funds and money market mutual funds, but also the financing arms of nonfinancial firms, including GE Capital (D'Arista and Schlesinger, 1993).

[8]This point is exemplified by the example of Western Mortgage Company, which reflects GE's constantly evolving portfolio of financial activities. Froud et al. (2006) write that "Because such finance businesses have few barriers to entry, the classic pattern is that returns fall with intensifying competition and the flip side of serial acquisition is serial exit as GE protects its margins on finance by quitting commodified areas. It is much easier to do this in finance by withdrawing capital than in manufacturing where employees, suppliers and dealers are all affected" (Froud et al., 2006, p. 352), and where there are fewer firm-specific irreversibilities in assets.

GE has also had access to an exceptionally low cost of borrowing and, thus, enjoyed competitive advantages on the other side of the interest-rate spread as well. Until 2012 GE's debt was rated triple-A, providing the firm with virtually unlimited low-cost external finance. Importantly, this rating depended not on the firm's financial services division, but on the industrial base. Moody's ratings rationale for GE Capital states explicitly that the rating includes "uplift associated with strong implicit and explicit support from parent General Electric Company" (Moody's 12-05-12). Thus, as Froud et al. (2006) argue, the expansion of GE Capital reflects, in part, the 'structural advantage' of this triple-A rating, which made the financial business (as the user of the credit rating) dependent on the industrial business (on which the credit rating was based). Prior to the 2008 financial crisis, GE was one of only a few nonfinancial firms with this coveted triple-A rating and, thus, had a greater capacity to expand into financial activities than other nonfinancial firms. Perhaps more importantly, however, GE Capital's rating was higher than that of comparably-sized financial institutions such as Citigroup, which — prior to the financial crisis — was rated AA+.

General Electric's movement into financing activities is, therefore, supported by its ability to earn relatively high returns on the extension of credit (via less regulation) and to borrow relatively cheaply (via a high credit rating). While the financial business, therefore, depends strongly on the industrial business, evidence suggests the relationship is mutual. In particular, the financial divisions can be argued to have supported the consolidated firm's ability to consistently achieve earnings that meet shareholder expectations. This objective has been increasingly important in the post-1980 period as institutional changes in the structure of the stock market associated with the shareholder value movement — reflected, for example, in increasingly short-term stock holding — have arguably made consistent monthly or quarterly earnings growth increasingly important (Stout, 2012; Lazonick and O'Sullivan, 2000). Evi-

dence, therefore, suggests that the financial division in an industrial context made 'growth in shareholder value' easier to achieve.

4.2.4 Limits to financial services growth for GE

There are, however, limits to financial growth for a nonfinancial firm. Industrial classification is determined on the basis of a firm's primary activity, which is defined as "the activity that generates the most revenue for the establishment" (http://www.census.gov/eos/www/naics/faqs/fqs.html#q8). With 50.3% of sales deriving from GE Capital in 1999 and 51.7% of sales deriving from GE Capital in 2000, further growth in financial services after early 2000s would make GE risk reclassification as a financial company. Reclassification as a financial company would both subject GE to more stringent regulation, and was also likely to lead to a credit downgrading in line with the (lower) credit ratings of comparable financial institutions, such as Citigroup. Both of these changes would erode the competitive advantage that GE enjoyed relative to financial companies between the 1980s and the financial crisis in 2008. Thus, in the early 2000's, GE began to push the limits of finance-led growth, such that further expansion into financial activities would necessarily be accompanied by either divestments in other financial areas, or a relatively faster expansion of the firm's industrial base.[9]

4.3 Financial structure

The expansion of GE's financial services division has been accompanied by changes in the structure of the company's balance sheet reflected in both an increase in finan-

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[9]The timing also coincides with a change in GE's leadership, from Jack Welch to Jeffrey Immelt in 2001. GE's governance under Immelt will necessarily differ from governance under Welch, and there is considerable evidence that Immelt is working to 'rebrand' GE as a technology-driven, rather than a finance-driven, company. However, considerable financial acquisitions took place under Immelt as well; most notably, the acquisition of WMC in 2004. Major downsizing of the capital division occurred after the 2008 crisis.

Figure 4.1: Portfolio composition of GE Consolidated; relative to total assets

(a) Financial assets and capital
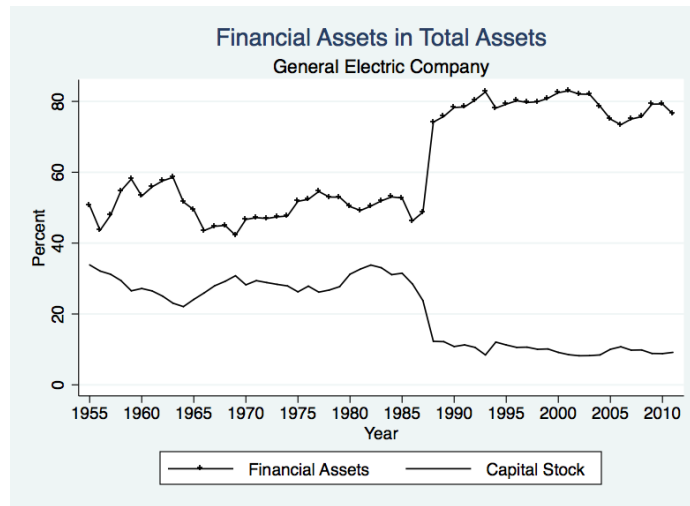
(b) Components of financial assets
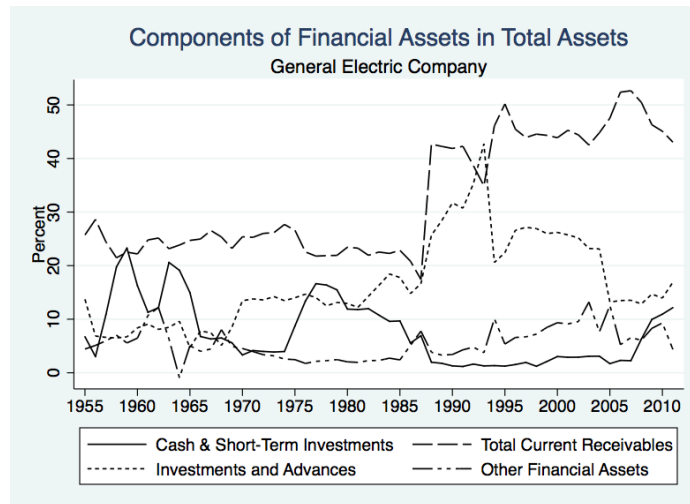
Source: Compustat, Author's Calculations

cial asset holdings and outstanding debt, accompanied by a decline in outstanding equity.[10] Thus, on the asset side, there has been a shift towards greater holdings of financial assets as a share of total assets in GE's portfolio. Figure 4.1a plots total financial assets and the capital stock relative to total assets between 1955 and 2011. While the shares of financial assets and capital in GE's portfolio are relatively constant between 1955 and the mid-1980s, there is a dramatic shift in portfolio composition between 1986 and 1987, when the share of financial assets in GE's portfolio increases from 46.3% to 85.6%.[11] After 1987, the structure of GE's portfolio is again relatively stable, but at a higher relative share of financial asset holdings.

Figure 4.1b decomposes total financial assets into four (exhaustive) subcategories: cash and short-term assets, total current receivables, investments and advances, and 'other' financial assets. Cash and short-term investments include cash and cash-like assets and securities with original maturities of less than one year; given current accounting standards, a pure cash number cannot be disaggregated from other short-term assets. Current receivables are standardly defined as outstanding money owed to GE, such as credit card receivables. Investments and advances include assets such as saving and loans securities, or investments in and advances to unconsolidated subsidiaries; these are assets that are classified as neither capital nor R&D related expenditures.[12] Finally, the documentation on what constitutes 'other' financial as-

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[10]GE is a multinational company with both fixed and financial international investments. For example, GE issues bonds in thirteen different currencies (Layne and Christie, 2008). Accounting procedures for the international dimensions of GE's business are opaque and the available data is based on U.S. accounting rules; thus, this discussion is largely focused on domestic aspects of GE's business.

[11]Inventories are not included in Figure 4.1a, such that the shares of capital and financial assets in total assets do not add to one.

[12]Neither fixed capital nor any of the financial asset component categories include intangibles, which would include not only research and development, but also the intangible value of GE's 'brand'. Exclusion of intangibles may mean that the capital stock is undervalued as a share of total assets, but nonetheless, the portfolio shift towards financial assets is entirely consistent with the expansion of GE Capital over this period.

sets is unilluminating, although one can — for nonfinancial firms more generally – draw inferences from the business press, which Krippner (2012) cites in listing "an array of new financial instruments–money market mutual funds, 'stripped' treasuries, Euromarket and Caribbean offshore dollar markets, foreign currency instruments and portfolios of options and futures contracts" (p. 55).

Figure 4.1b highlights that receivables constitute the majority of GE's financial assets, and – on the basis of visual inspection – drive the portfolio shift towards financial assets in 1987. Figure 4.1b, furthermore, highlights that growth in cash holdings, which have received considerable attention in the recent literature on non-financial firms (Bates et al., 2009; Foley et al., 2007), only characterize GE's balance sheet over the period since the crisis began in 2007. While the shift in GE's portfolio composition towards financial assets is consistent with the full sample descriptive statistics discussed in Chapter 3, the *composition* of financial assets in GE's portfolio differentiates GE from other (large) nonfinancial firms, who have seen less growth in receivables and relatively greater increases in cash and 'miscellaneous' assets. GE's portfolio concentration in receivables is, however, consistent with its extensive (and unmatched) involvement in private-label credit cards.

It is important to highlight that, while the dramatic jump in financial assets as a share of GE's portfolio between 1986 and 1987 appears to signal a structural break, there is no reason to expect that it derives from changes in accounting rules. GE Capital's portfolio consists almost entirely of financial assets and, thus, an expansion in GE Capital relative to the industrial parent company must be reflected in a decline in the portfolio share of capital. GE Capital was set up as a subsidiary in 1985; between 1986 and 1987, GE's balance sheet registers a jump in both financial assets and outstanding debt (debt is discussed further in Section 4.3.2). This portfolio shift, thus, reflects that GE utilized its top-notch credit rating to dramatically increase bond issues and, simultaneously, to acquire additional financial assets. In particular, the

Figure 4.2: Breakdown of total valuation; GE Consolidated
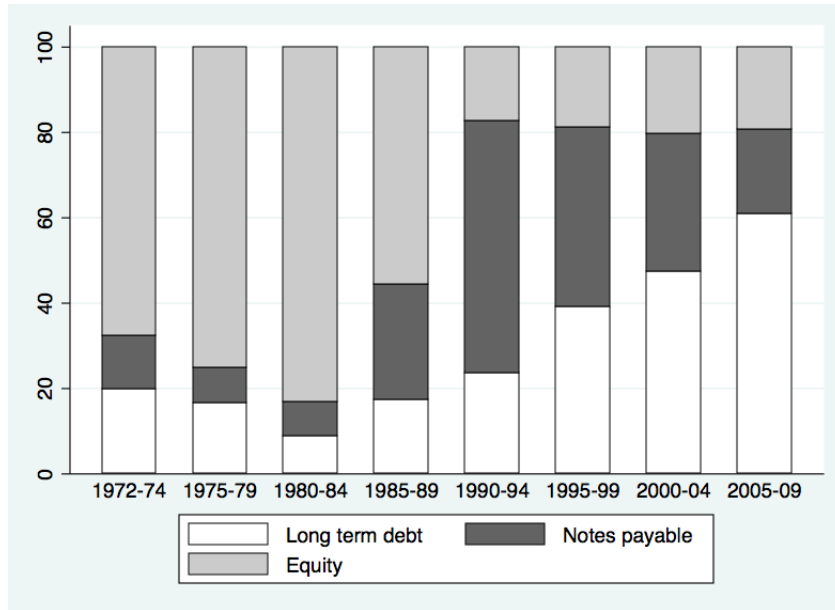
General Electric Consolidated Company
Source: Compustat, Author's Calculations

timing coincides with GE's expansion into retail finance via private-label credit cards, which is, furthermore, concurrent with increased holdings of (credit-card receivables) on GE's balance sheet.

Simultaneous with the rise in financial assets, GE's balance sheet registers a shift away from equity, an increase in total outstanding liabilities, and a shift within these liabilities towards long-term debt. Figure 4.2 decomposes the firm's total valuation into three components — long-term debt, short-term liabilities (notes payable) and outstanding equity — and graphs each component five-year periods between 1985 and 2009. Figure 4.2 captures the shift away from equity on GE's balance sheet: shareholder equity as a component of outstanding external funds declines to approximately 20% of total funding beginning in the early 1990s, from more than 50% prior to the expansion of GE Capital in the mid-1980s.

The decline in outstanding equity as a share of GE's balance sheet is concurrent with a rise in GE's repurchases of its own stock. Figure 4.3, which graphs five-year

Figure 4.3: Gross stock repurchases relative to total equity
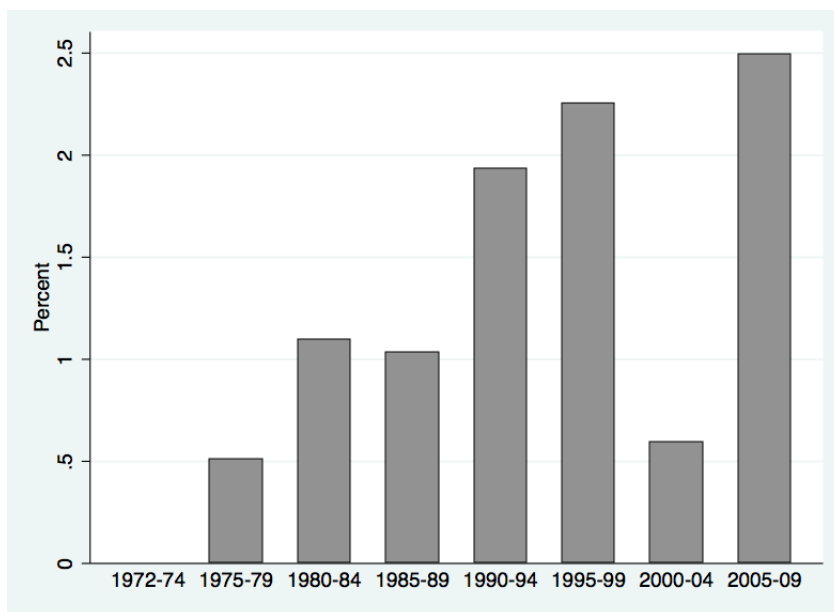
General Electric Consolidated Company
Source: Compustat, Author's Calculations

averages of GE's gross stock repurchases relative to total outstanding equity, indicates that GE's repurchases rise continuously after the mid-1970s, with the exception of a decline in the sub-period with the dot-com bust in the early 2000s after which repurchases rebounded to previously unseen levels. GE's behavior is, furthermore, consistent with both the sector-level trend and with the firm-level descriptive statistics in Chapter 3, which highlight that growth in repurchases is concentrated among the largest firms in the U.S. economy. A dramatic expansion in repurchases at the sector level is often cited as a clear manifestation of a growing emphasis on the 'maximization of shareholder value' (Lazonick and O'Sullivan, 2000): by reducing the number of outstanding shares at given profits, repurchases improve stock market-based measures of firm performance, including the short-term share price and return on equity (ROE).[13] While equity has never been a significant source of finance for

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[13]Scope for large-scale stock repurchases was first opened in November of 1982 with Rule 10b-18, which amended the Securities and Exchange Act of 1934, providing 'safe harbor' by guaranteeing

nonfinancial firms in the U.S. (Crotty, 2005), the nonfinancial corporate sector became a net (re)purchaser of (nonfinancial corporate) stock during the 1980s. In fact, GE is an important driver of the sector-level trend. Lazonick (2009) lists GE as number six of the top fifty share repurchasers between 2000 and 2007 among firms listed in the S&P index in January 2008.

As with other large nonfinancial companies in the U.S., GE's total external liabilities have simultaneously risen. Figure 4.4a graphs external funds relative to the capital stock over time, where the bottom two bars – long-term debt and notes payable, relative to capital – reflect a standard measure of firm leverage. Figure 4.4a highlights that GE's leverage rose dramatically after the mid-1980s; as noted above, this timing is consistent with the sudden expansion of financial asset holdings, primarily concentrated in receivables. Furthermore, while the increase in GE's leverage was first dominated by rising short-term debt, rising leverage after the mid-1980s is concentrated in long-term borrowing.

The vast majority of GE's total outstanding liabilities are concentrated in GE Capital. Table 4.3 decomposes total short-term and long-term debt outstanding for the industrial divisions of GE and GE Capital for five selected years leading up to and surrounding the financial crisis, and the bottom panel records the percentage of short-term and long-term debt, respectively, held in GE Capital as a share of the consolidated firm's total outstanding debt. In all five years, GE Capital accounts for a minimum of 97.9% of GE's total outstanding short-term debt and 96.4% of GE's total outstanding long-term debt. These statistics highlight that – as with the increase in financial assets – GE Capital has been responsible for the vast majority of GE's leverage, again capturing the extent to which GE increasingly operates as

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that management will not face stock-price manipulation charges for open-market repurchases of the company's stock (Grullon and Michaely, 2002). From Figure 4.3 it is clear that GE repurchased stock prior to the implementation of this rule, but that the magnitude of repurchases increased dramatically beginning in the 1980-1983 sub-period.

Figure 4.4: Two measures of GE's leverage

(a) Outstanding debt relative to capital
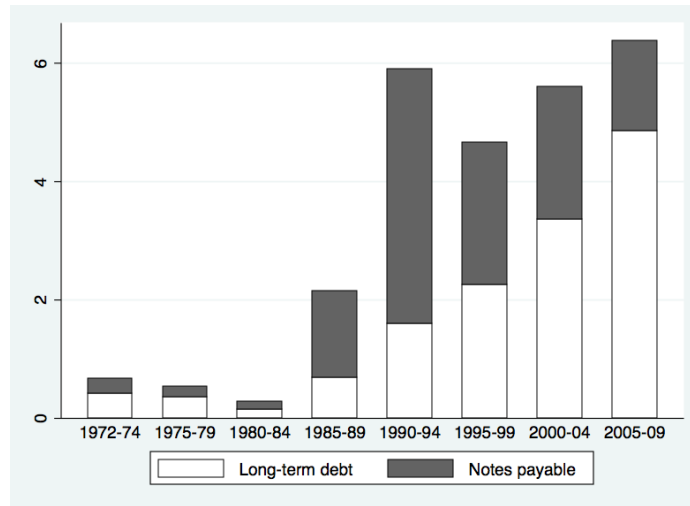
(b) Outstanding debt relative to total assets
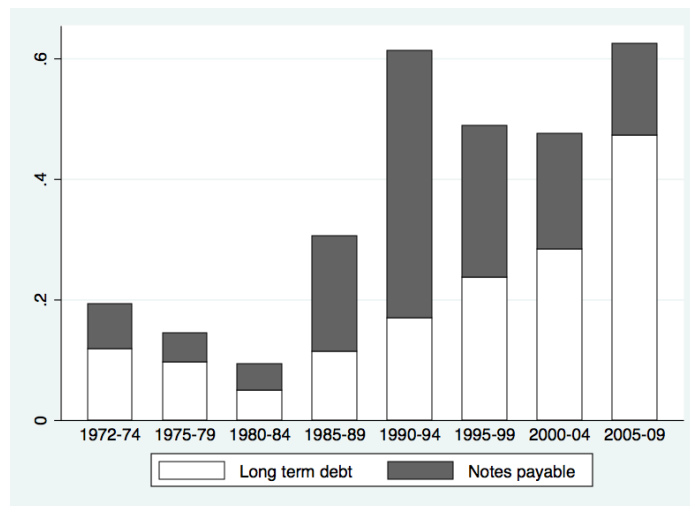
General Electric Consolidated Company; note the different scales for Figures 4.4a and 4.4b.
Source: Compustat, Author's Calculations

Table 4.3: Liabilities of GE Industrial and GE Capital

	2006	2007	2008	2009	2010
General Electric (Industrial divisions)					
Short-term debt	2,212	4,106	2,375	504	456
Long-term debt	9,085	11,656	9,827	11,681	9,656
General Electric Capital Services					
Short-term debt	173,316	192,421	193,533	133,939	118,797
Long-term debt	252,963	308,504	321,068	327,472	284,407
Percent of total liabilities held by GE Capital					
Short-term debt	98.7%	97.9%	98.8%	99.6%	99.6%
Long-term debt	96.5%	96.4%	97.0%	96.6%	96.7%

Millions of U.S. dollars
Source: Annual reports, selected years; Author's compilation

a financial company. Thus, GE's increase in leverage is consistent with a shift in balance sheet structure that derives from a movement into financial services relative to industrial activities. Finally, the increase in debt held by the consolidated corporation is furthermore consistent with shareholder value-based explanations of changes in firm behavior, according to which firm managers increasingly substitute debt for equity.

While an increase in leverage of the magnitude shown in Figure 4.4a would suggest structural fragility for an industrial firm, the expansion of GE Capital since the mid-1980s, and the fact that the overwhelming majority of GE's debt is concentrated in the financial services division, suggests that GE's financial structure should be understood differently than that of a purely nonfinancial company. Thus, to the extent that GE's increase in leverage (and financial assets) derives from the provision of financial services, whereby the firm exploits a differential between the cost of borrowing and the return to lending, the expansion of debt (and financial assets) captures a shift in GE's focus away from industrial and towards financial activities. Given that a similar shift in balance sheet structure has occurred over the same period for a large contingent of U.S. industrial firms, the case of GE suggests that this shift reflects, to some degree, a movement by nonfinancial companies into the provision of financial services.

For a variety of reasons, financial companies carry more leveraged balance sheets than nonfinancial companies. At a very basic level, physical capital is less important in the operations of financial firms and, thus, measures of debt to capital are higher for financial as compared to industrial firms. Furthermore, financial firms derive profit from the spread between borrowing and lending. Debt and financial asset holdings, therefore, rise concurrently and, assuming compatibility in term structure or liquid markets for a firm's financial assets, these assets can – at least theoretically – be liquidated to meet liabilities.[14] To account for this switch in activity, Figure 4.4b graphs the evolution of GE's outstanding debt relative to total assets, rather than physical capital. Debt relative to assets increased during the mid-1980s, concurrent with the expansion of GE Capital; beginning in 1990-1994, net leverage has, however, remained relatively constant.

4.4 A retreat from finance? GE after the 2008 financial crisis

As was highlighted by the financial crisis in 2008, however, the issue of balance sheet risk for an industrial-financial conglomerate is not nearly so simple. As GE Capital – like other large financial institutions – faced a major contraction, the narrative surrounding GE and GE Capital quickly changed, such that GE Capital was increasingly seen as a liability, rather than a dynamic source of earnings growth. One news report writes, for example, that "With interests in technology, manufacturing and media, General Electric is highly diversified – a position that should help prop up earnings in this troubled economic environment. GE has one blemish, however, GE Capital" (CBS News, 12-28-2008). A particularly clear example of GE's losses

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[14]This is by no means to say that financial firms were not excessively leveraged in the years leading up to the financial crisis in 2008 and there has been considerable recent attention to reigning in leverage and raising capital requirements, generally in the context of (officially) financial firms (for an example, see Crotty, 2009). Furthermore, the interest rate spread is not financial firms' only source of profits, and fee income has become increasingly important over the period discussed in this chapter as well.

from the crisis is the failure of Western Mortgage Company, whose failure saddled GE with \$1 billion in direct losses.

Rather than being limited to one bad acquisition, however, the crisis illustrated more fundamental problems with the highly leveraged nature of GE's balance sheet. When asset markets froze, previously liquid assets became difficult to liquidate, as was evident with WMC.[15] GE also faced problems on the liability side of its balance sheet, illustrated most starkly when the market for commercial paper froze in 2008, making it increasingly difficult for GE to roll over its short-term debt. While financial firms are the largest players on both the supply and demand side of the commercial paper market, very large nonfinancial firms are also issuers of commercial paper, and GE is among the largest issuers (Kacperczyk and Schnabel, 2010). Table 4.4 records the percentage of GE Capital's liabilities between 2006 and 2010 concentrated in commercial paper, and illustrates that, going into the crisis, GE relied heavily on commercial paper to meet its short-term obligations. The vast majority of GE's commercial paper was unsecured – i.e. not backed by any in-house asset.[16]

During the financial crisis and recession, GE therefore faced not only a decline in demand for its industrial products, but also a balance sheet contraction stemming from its highly leveraged financial structure. This fragility was, in fact, foreshadowed by the relative sales growth of GE Capital and the Consolidated company, even prior to 2000: while sales growth in GE Capital generally exceeded that of the consolidated

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[15]Furthermore, GE's official balance sheet numbers did not reflect securitized loans — credit-card debt, commercial mortgages and equipment financing — held off-balance sheet in special-purpose entities, which required the parent company to post collateral if defaults reached a set rate. In 2007, GE's holdings of these off-balance sheet securities was estimated at \$43 billion (Business Week Magazine).

[16]In October 2008, GE accessed the Commercial Paper Funding Facility (CPFF), which was set up as a liquidity backstop to counter-act the freezing of the commercial paper market (Kacperczyk and Schnabel, 2010). Additionally, the FDIC's Temporary Liquidity Guarantee Program (TLGP) backed \$139 billion in GE Capital's (unbacked) debt (Layne and Christie, 2008). GE was able to qualify for this funding facility due to a loophole by which GE owned both a federal savings bank and an industrial loan company and, therefore, already had a part of its business covered by FDIC insurance.

Table 4.4: Share of commercial paper in GE's outstanding liabilities

	2006	2007	2008	2009	2010
Total Commercial Paper Outstanding	**38.41%**	**24.20%**	**22.86%**	**14.70%**	**3.24%**
Unsecured U.S. Commercial Paper	25.85%	22.69%	19.02%	11.17%	0.00%
Asset-backed U.S. Commercial Paper	2.47%	1.50%	1.11%	0.72%	0.00%
Non-U.S. Commercial Paper	10.09%	0.01%	2.74%	2.82%	3.24%

Millions of U.S. dollars; commercial paper measured relative to total liabilities of GE Condolidated
Source: Annual reports, selected years; Author's compilation

company, the declines in bad years were also more dramatic. In effect, GE Capital is more volatile than the company's industrial core. Thus, the case of GE highlights the difficulties of interpreting growing leverage among firms linking industrial and financial activities. This point applies, more broadly, to nonfinancial firms that operate large financial divisions: while "commercial firms are increasingly creating finance subsidiaries in order to benefit from the upside of riskier trading operations, the crisis showed that it is difficult for parent companies to both benefit from profits in good times and insulate themselves from risk in bad times" (Taub, 2010).

Since the financial crisis, GE has furthermore lost aspects of its competitive advantage in financial services. First, GE's bond rating was downgraded by S&P in 2009 from triple-A to AA+, and by Moody's in 2012 to Aa3. Moody's further downgraded the debt of GE Capital to A1 – one notch lower than the parent company. Second, GE was designated 'systematically important' by the U.S. Financial Stability Oversight Council set up under the Dodd-Frank Wall Street Reform and Consumer Protection Act to provide stability monitoring for the financial sector. This designation establishes GE as a 'non-bank financial company' under Section 113 of the Dodd-Frank Act, and subjects GE to increased regulation. Importantly for the structure of the firm, the designation requires GE to reduce the size of its capital division to less than thirty percent of the consolidated company's revenues, sales or profits.

To reduce the size of its financial arm, GE is preparing to sell off its retail arm, and in March 2014, filed for an IPO for Synchrony Financial, which includes the company's well-known private-label credit card division, expected to take place later in 2014. In reducing the size of its capital division, there is a clear reduction in the scope of the finanical division to 'captive finance' – i.e. towards focusing on those financial services that are directly related to GE's industrial products including, for example, aviation services (aircraft leasing). Thus, GE is not moving out of finance entirely, but returning to captive finance and, thus, to establishing stronger links between the industrial and financial aspects of the business. The fact that the range of GE Capital's activities has expanded so far beyond captive finance in the first place highlights that GE is in some respects exceptional relative to other nonfinancial companies with financing divisions. While financial services can support industrial earnings and even crowd in industrial demand – as the rationale for GE's consumer finance division in 1932 illustrates – financial service divisions also open up nonfinancial firms to an additional source of risk. This additional source of risk is the flip-side of the interdependent expansion of industry and finance in the context of GE elaborated in Section 4.3.

4.5 Conclusion

The example of GE captures changes in both the behavior of nonfinancial firms and in the structure of the financial sector, wherein 'non'-financial companies are increasingly involved and competitive in financial activites. Among nonfinancial firms, GE is exceptional both in terms of sheer size and in the extent to which GE Capital has moved beyond 'captive finance'. This exceptionalism, however, makes GE an excellent case study with which to explore the 'financialization' of nonfinancial corporations in the U.S. economy. The case of GE highlights, first, that the dramatic expansion in both financial asset holdings and outstanding debt – both of which are trends that

have been highlighted in the existing literature on financialization and nonfinancial corporations – are strongly linked with GE's increasing involvement in the provision of financial services. Second, the case study is consistent with accounts emphasizing shareholder value motives as an important driver of changes in firm financial behavior in the post-1980 U.S. economy. Importantly, GE's financial services division may have made it easier for the nonfinancial (parent) company to meet (or beat) stock-market earnings expectations. Furthermore, these conclusions can be linked with the large-sample econometric results in Chapter 5, which suggest, on the one hand, that the provision of financial services may positively influence fixed investment among very large firms like GE, but on the other hand, that shareholder value norms are negatively associated with investment rates.

Thus, the case study of GE provides important insights into the nature of the link between finance and industry within nonfinancial corporations in the U.S. economy. Importantly, the case of GE does not clearly suggest that movement into financial services came at the expense of an expansion in industrial activity. As such, GE's narrative does not lend credence to the contention that financial asset holdings, or 'financialization' more broadly, necessarily crowd out nonfinancial firms' investment in fixed capital. Quite the contrary, the case of GE highlights some clear sources of interdependence, particularly in the case of captive finance activities. Captive finance activities provide nonfinancial companies the opportunity to capture or 'crowd in' demand for their industrial products, while simultaneously earning profits from the provision of the financial service. However, the case of GE also points to differential 'upside' and 'downside' risks to a large financial services division. In particular, via GE Capital, General Electric not only faced a contraction in demand, but was also open to significant additional balance sheet risk in the 2008 financial crisis. Furthermore, given that GE's primary source of short-term financing (commercial paper)

froze, this balance sheet risk did not have a clear counter-advantage in less interrupted access to credit markets that one may expect for a firm managing its own financing.

While the example of GE is dramatic, given the size and scope of GE Capital, it develops intuition regarding the financialization of large corporations in the post-1980 U.S. economy. Most importantly, detailed examination of an individual firm can both clearly delineate the ways in which that firm has become increasingly intertwined with financial markets, and the implications for understanding observed changes in a firm's balance sheet structure. In turn, these behavioral mechanisms contribute to the literature on financialization and nonfinancial firms, in which clear links between firm behavior and firms' financial statements or balance sheet outcomes are often blurred. As such, a case-study approach complements large-scale firm-level or aggregate-level empirical studies, and the case study approach in this chapter points to the potential for qualitative approaches in analyzing the financialization of nonfinancial corporations.[17]

Importantly, the scope of the intuition garnered from the case of GE is limited to the largest firms in the U.S. economy. Small (or even medium-sized) firms do not, on the other hand, command the same competitive advantages as (very) large nonfinancial companies in the provision of financial services and, accordingly, have likely engaged with financial markets in the post-1980 period in dramatically different ways. As Chapter 2 highlighted, the financial structure of small firms has evolved differently from that of large firms in the post-1970 U.S. economy, suggesting that the stories of the financialization of small and large firms differ. The largest firms among which GE is included are, however, important drivers of employment and capital accumulation, and better understanding of the links between finance and industry within these firms is likely to have important macroeconomic implications. As such,

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[17]The journal "Studies in Economics and Finance" did a special issue on qualitative research in finance in 2007.

the case of GE, by pointing to specific changes in an individual firm's behavior and linking these changes to GE's financial structure, complements existing analyses of financialization and NFCs.

CHAPTER 5

AN INVESTIGATION OF FIRM-LEVEL INVESTMENT BEHAVIOR, 1971-2011

5.1 Introduction

The increasingly dominant role of finance over the post-1970 period in the U.S. has, in recent years, led to a growing literature on financialization. While the precise concept of financialization varies considerably across analyses, the shared premise is that financial sector growth signifies an important structural change in the U.S. economy. The growing dominance of finance is highlighted by a sustained increase in the share of financial-sector profits in total corporate profits since the early 1970s (Krippner, 2012). With respect to nonfinancial business, financialization is manifested in an increasingly complex relationship between nonfinancial corporations (NFCs) and the financial sector. Many large NFCs increasingly resemble financial companies, while the hostile takeover movement and the emergence of shareholder value ideology point to changes in corporate governance that have arguably increased the weight of short-term valuations of firm performance in managerial decision-making (Crotty, 2005; Lazonick and O'Sullivan, 2000). Changes in NFC financial behavior are reflected in both an increasing share of financial assets in firm portfolios, and in changes in the structure of external finance, including increasing indebtedness and growing equity repurchases among large firms.

This chapter explores changes in firm-level fixed investment behavior in the post-1970 U.S. economy, emphasizing the implications of changes in NFC financing behavior, increasingly entrenched shareholder value norms, and rising firm-level volatility

for fixed investment. Recent work provides empirical support for the contention that changes associated with a broadly-defined phenomenon of financialization inhibit fixed investment. Stockhammer (2004) finds that rising rentiers' income explains roughly one third of a slowdown in capital accumulation in the U.S. (p. 736), and Van Treeck (2008) argues that rising rentier incomes are responsible for a diversion of funds from physical investment into consumption expenditure. This literature generally emphasizes the aggregate level, a key exception being Orhangazi (2008), who finds that increased payments by NFCs to the financial sector and higher financial profits earned by NFCs constrain fixed investment, particularly among large firms.

While these analyses point to important empirical relationships regarding fixed investment and increased flows between NFCs and the financial sector, they also raise further questions. In particular, the use of financial profits, rentiers' income or payments to the financial sector as indicators of financialization raises the question of what changed over the post-1970 period causing these measures to rise in a dramatic and sustained way. Take, for example, Orhangazi's (2008) finding that increased flows of funds between NFCs and the financial sector constrain NFC investment rates. These financial flows stem from firm decisions to acquire financial assets, or to borrow, repurchase stocks or pay dividends. On the one hand, an increase in NFC payments to the financial sector — due, for example, to an increase in interest payments — draws (by definition) on the pool of available funds and, therefore, comes at a short-run tradeoff with other uses of funds, including physical investment. On the other hand, higher leverage — and correspondingly higher interest payments — results from a firm's decision to borrow in pursuit of some objective: profits, long-run growth, a stock price increase, or to cover rising interest obligations. The implications for fixed investment are likely to vary with this motivation; borrowing to acquire fixed capital, for example, differs from borrowing to buyback stock. Thus, the question arises of why NFC leverage grew over the post-1970 period and, more broadly, what factors

underlie the observed changes in NFC financial behavior over recent decades and with what implications for fixed investment?

This chapter explores this question via an econometric investigation of a firm-level investment function. The empirical specification draws on theories of investment in the spirit of Keynes and Minsky, which impart a key role to financial factors in investment decisions. Because the decision to invest involves not only a decision about the proposed investment, but also a decision about how to finance that investment, a firm's investment and financing decisions are interdependent. A large empirical literature based on this body of theory emphasizes the relevance of financial determinants of investment (Kuh and Meyer, 1957; Fazzari and Mott, 1986; Fazzari et al., 1988; Ndikumana, 1999; Brown et al., 2009). This theoretical perspective starkly contrasts a mainstream literature, which – on the assumptions of perfect capital markets and perfect information – disregards financial factors in describing investment behavior (Modigliani and Miller, 1958; Jorgenson, 1963).

In addition to financial variables, the econometric specification in this chapter includes two variables capturing changes in the context within which NFCs make investment and financing decisions specific to the post-1970 period: increasingly entrenched shareholder value norms, and rising firm-level volatility. Using a firm-level panel of publicly-traded firms in the U.S., the empirical results highlight the economic significance of both factors in inhibiting the allocation of funds for fixed investment. In doing so, this chapter extends the existing literature on financialization and investment by isolating two factors that underlie changes in firm-level financial decisions: changes in investment behavior are linked to financial decisions, but are rooted in new corporate governance norms and rising firm-level volatility. The empirical analysis also emphasizes systematic firm-size differences: shareholder value norms significantly impact the behavior of large firms, while investment among smaller firms is more strongly inhibited by rising volatility.

The chapter is organized as follows. Section 5.2 summarizes the stylized facts describing changes in NFC financial structure from 1971 to 2011. Section 5.3 motivates the econometric specification, and Section 5.4 presents the empirical specification and data. The econometric results are presented in Section 5.5 and Section 5.6 concludes.

5.2 The 'financialization' of the nonfinancial corporation

5.2.1 NFC financial decisions: portfolio composition and external finance

Trends in the structure of firm-level balance sheets summarize the changes in NFC investment and financing behavior over the post-1970 period that point to the 'financialization' of nonfinancial firms.[1] On the asset side of firm balance sheets there has been a marked decline in the share of fixed capital held in NFC portfolios: between 1971 and 2011 the across-firm yearly median of fixed capital relative to sales, shown by the black line in Figure 5.1a, declined 5.3 percentage points, from 24.1 percent in 1971 to 18.8 percent in 2011.[2] Concurrently, financial assets relative to sales rose 18.1 percentage points, from 27.4% in 1971 to 45.5% in 2011. This portfolio shift away from fixed capital and towards financial assets has been cited in the literature on financialization to motivate a possible 'crowding out' relationship between financialization and fixed investment, whereby financial investments increasingly replace investment in physical assets.

The increase in NFC financial assets holdings is concentrated, first, in liquid short-term investments and, second, in 'miscellaneous' financial assets. Figure 5.1b decomposes total financial assets into four (exhaustive) subcategories: total current receivables, cash and short-term investments, investments and advances, and 'other'

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[1]The data is from Standard & Poor's Compustat annual industrial database for 1971 through 2011; details on the variables are in Section 5.4.2 and summarized in Table A.2 in the appendix.

[2]The trend is similar if financial assets are measured relative to total assets. Sales are used here to proxy for firm size.

Figure 5.1: Financial assets and capital relative to sales

(a) Financial assets and the capital stock relative to sales
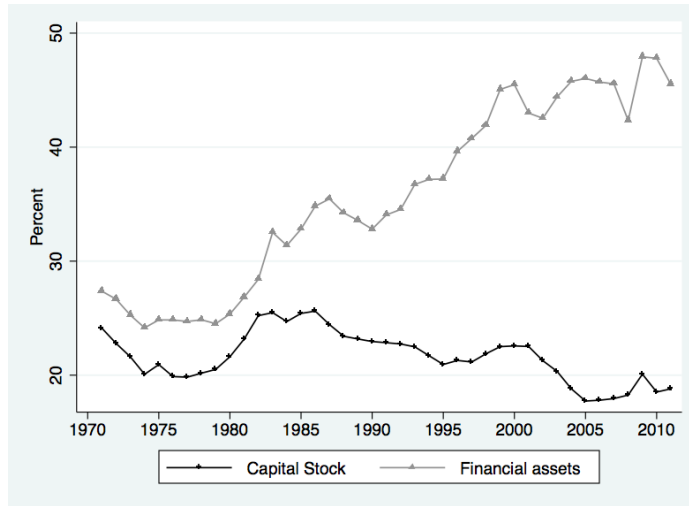
(b) Components of financial assets relative to sales
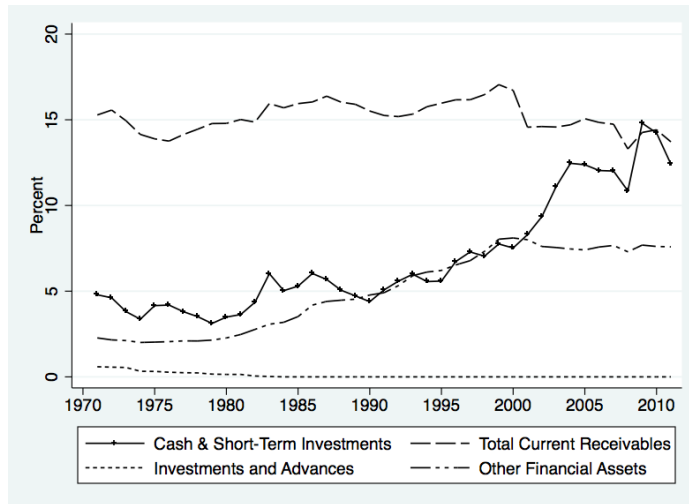
Yearly medians

Source: Compustat, author's calculations

Table 5.1: Changes in components of financial assets relative to sales for small and large firms; medians

	All firms			Small firms*			Large firms**		
	1971	2011	pp change	1971	2011	pp change	1971	2011	pp change
Total financial assets	27.4%	45.5%	18.1	28.5%	51.4%	22.9	29.8%	47.2%	17.4
Cash & short-term investments	4.8%	12.4%	7.6	5.5%	20.4%	14.9	4.9%	9.1%	4.2
Current receivables	15.3%	13.7%	-1.6	16.0%	13.3%	-2.7	15.0%	13.6%	-1.4
Advances	0.6%	0.0%	-0.6	0.0%	0.0%	0	3.3%	2.9%	-0.4
'Other' financial assets	2.3%	7.6%	5.3	2.3%	5.9%	3.6	2.5%	11.1%	8.6
Capital	24.1%	18.8%	-5.3	18.2%	9.7%	-8.5	52.4%	43.9%	-8.5

* A firm is categorized as small if its total assets are in the bottom quartile of the asset distribution for any given year.

** A firm is categorized as large if its total assets are in the top quartile of the asset distribution for any given year.

Source: Compustat, author's calculations

financial assets. The first panel of Table 5.1 summarizes the change in total financial assets, each subcategory and capital between 1971 and 2011. Current receivables and advances have both grown relatively proportionally to firm-level sales. 'Other' miscellaneous financial assets, however, rose from 2.3 percent of sales in 1971 to 7.6 percent in 2011, and the largest increase is in liquid financial assets, which grow from 4.8 percent of sales in 1971 to 12.4 percent in 2011.[3]

This portfolio shift towards financial assets occurs across firm size. The second and third panels of Table 5.1 summarize the change in each portfolio component between 1971 and 2011 for sub-groups of small and large firms, where small firms are defined as firms with total assets in the bottom quartile of the asset distribution in a given year, and large firms as those with total assets in the top quartile of the asset

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[3]The documentation on what constitutes 'other' financial assets is unilluminating. A similar issue arises in the Flow of Funds data, in which the largest category of financial assets is an unidentified category (see Crotty 2005 for a discussion). One can, however, draw inferences from the business press, which Krippner (2012) cites in listing "an array of new financial instruments—money market mutual funds, 'stripped' treasuries, Euromarket and Caribbean offshore dollar markets, foreign currency instruments, and portfolios composed of options and futures contracts" held on NFC balance sheets.

'Cash and short-term investments' includes both cash and securities with original maturities less than one year; because of accounting rules, 'cash' cannot be disaggregated from other 'short-term investments'.

Figure 5.2: Debt relative to the capital stock
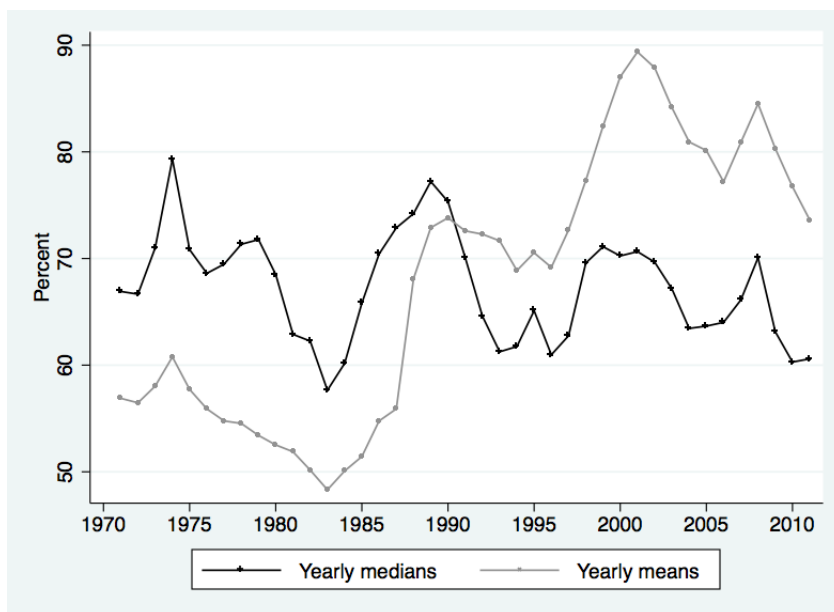
Source: Compustat, author's calculations

distribution. Among small firms, total financial assets rose from 28.5 percent of sales in 1971 to 51.4 percent in 2011, while fixed capital declined from 18.2 percent of sales to 9.7 percent. Similarly, total financial assets held by large firms increased from 29.8 percent of sales in 1971 to 47.2 percent in 2011, and fixed capital declined from 52.4 to 43.9 percent of sales. While this growth in financial asset holdings is concentrated in short-term and 'other' financial assets for both small and large firms, small firms have acquired relatively greater shares of liquid assets. Among small firms, liquid financial assets rose from 5.5 percent of sales in 1971 to 20.4 percent in 2011, while 'other' financial assets rose from 2.3 percent to 5.9 percent of sales. Among large firms, on the other hand, financial asset acquisitions are dominated less by liquid assets, and are instead concentrated in 'other' financial assets, which increased from 2.5 percent to 11.1 percent of sales from 1971 to 2011.

While the shift in NFC portfolio composition occurs across the distribution of firms, albeit to varying degrees, changes in the structure of both debt and equity

Figure 5.3: Equity buybacks
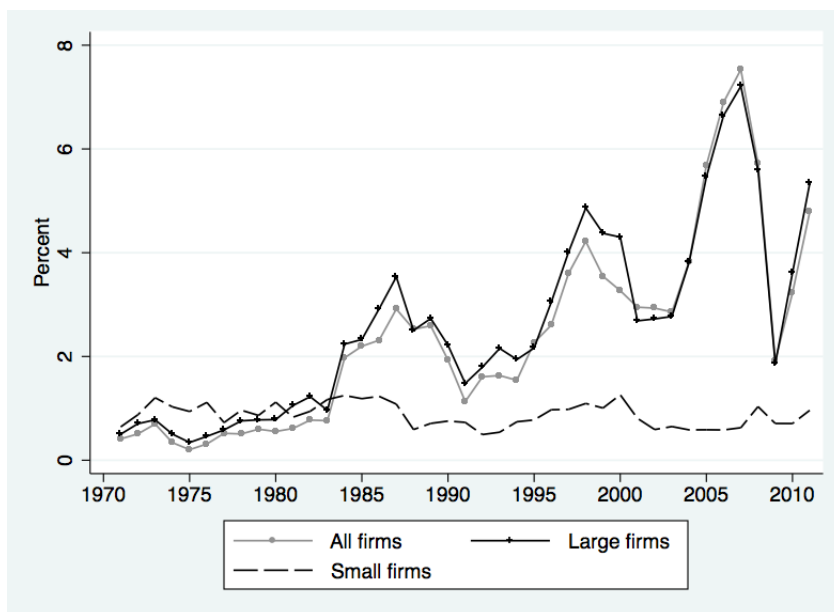
Source: Compustat, author's calculations

differ decisively by firm size. An increase in gross corporate debt has been cited as a definitive characteristic of the financialization of nonfinancial corporations (Palley, 2007), and Flow of Funds data clearly documents rising leverage at the sector-level. At the firm level, however, rising mean leverage across NFCs is simultaneous with declining median leverage, shown in Figure 5.2, pointing to rising leverage among large firms and concurrent de-leveraging among small firms. Since the early 1970s, the distribution of debt among small firms has become increasingly skewed towards zero, such that in the last five years of the sample (2005-2009) more than 55 percent of small firms have leverage between zero and twenty-five percent of capital. Among large firms, on the other hand, the distribution of debt has shifted to the right, such that there are fewer large firms with 'low' leverage in 2011 than in the early 1970s.

Rising debt among large firms is accompanied by a dramatic increase in repurchases of own stock. Stock repurchases have received considerable attention in reference to the shareholder value movement (Lazonick and O'Sullivan, 2000; Lazonick,

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2009), and the sector-level trend of rising buybacks is well known. While the firm-level data reinforces this sector-level trend, it also highlights that repurchases are concentrated among large firms. Figure 5.3 plots the across-firm yearly mean of gross equity repurchases relative to total outstanding equities for the full sample of firms and by firm size. While equity repurchases among large firms follow the full-sample pattern quite closely, repurchases are low among small firms over the entire period. Furthermore, median buybacks in any given year, both for the full sample and each sub-sample of firms, are zero, reflecting the bulky and episodic nature of repurchase plans: firms announce that stock will be repurchased over a set number of years, followed by years without repurchases.

Concurrent with these changes in the structure of external finance, the correlation between new borrowing and investment – shown in Figure 5.4 – has declined, indicating that rising leverage among large firms is not channeled into physical investment.[4] Holmstrom and Kaplan (2001) argue, for example, that leveraged buyouts during the hostile takeover movement, particularly during the 1980s, contributed to the rise in corporate debt. Borrowing to buyout a company has no direct link to capital investment. The same is true of repurchasing stock. The concurrent rise in debt and repurchases over this period, therefore, suggests that equity may be replaced with debt on the balance sheets of large firms, while 'traditional' financing behavior – debt finance for the acquisition of physical assets – is breaking down. As with changes on the asset side of NFC balance sheets, changes in the structure of external finance, therefore, raise questions about fixed investment in the post-1970 U.S. economy.

5.2.2 Changing corporate governance norms: shareholder value ideology

The growing entrenchment of shareholder value norms is one factor that has likely shaped the changes in NFC behavior over the post-1970 period that point to the fi-

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[4]A version of this graph appeared in Mason (2013).

Figure 5.4: Correlation between investment and borrowing over time

nancialization of nonfinancial firms. Institutional changes supporting the emergence of shareholder value principles began in the 1970s — as inflation increased the value of corporate plant and equipment relative to low stock prices, supporting the emergence of a corporate takeover market (Krippner, 2012) — and became increasingly entrenched over the 1980s and 1990s, with the rise of agency theory, institutional investors and changing norms regarding managerial pay (Lazonick and O'Sullivan, 2000). Agency theory suggests two mechanisms to alleviate agency problems between managers and shareholders (owners) within firms: a hostile market for corporate control, which 'disciplines' managers via a threat to managerial autonomy (Jensen, 1986, p. 324), and stock option based executive compensation (Jensen and Murphy, 1990). The concurrent rise of institutional investors has supported both a transition away from long-term stock holding towards higher trading frequency (Lazonick and O'Sullivan, 2000; Stout, 2012), and the push for stock-option based managerial pay (Krippner, 2012).

These institutional changes have gradually led to the internalization of 'value maximization' as a motive driving managerial decision-making. This emphasis on 'value maximizing' objectives is summarized by an introductory corporate finance text, which defines the "fundamental objective of corporate finance: maximizing the current market value of the firm's outstanding shares...[The] objective overrides other plausible goals, such as 'maximizing profits"' (Brealey and Meyers, 2012, p. 13). Observed changes in firm-level balance sheets, furthermore, suggest that this shift in objectives influences managers' portfolio and financing decisions. Stock buybacks, in particular, are a clear manifestation of shareholder value-maximizing objectives: buybacks improve (stock) market-based valuations of firm performance, reflected in both a higher share price and in higher return on equity. As such, buybacks both diminish the likelihood of hostile takeover and increase the value of stock options.

The influence of shareholder value norms on managerial decision-making may, however, be primarily limited to large firms. This distinction is suggested by Figure 5.3, which indicates that equity buybacks over the post-1970 period are concentrated among large firms, and is also consistent with evidence that stock option-based pay is greater among large firms, both in absolute values and relative to firm size, than among small firms (Core et al, 1999).

5.2.3 Rising firm-level volatility

Rising firm-level volatility over the post-1970 period may have also contributed to the changes in firm-level financing and investment behavior that point to the financialization of nonfinancial corporations. Rising firm-level volatility has been extensively documented in the existing literature (Comin and Phillipon, 2005), and has been linked, for example, to new information and communication technologies leading to shorter product life cycles (Skott and Guy, 2013). Figure 5.5 plots demand volatility for firms in this sample, defined as the coefficient of variation in the firm-

Figure 5.5: Volatility (the coefficient of variation in S/K)
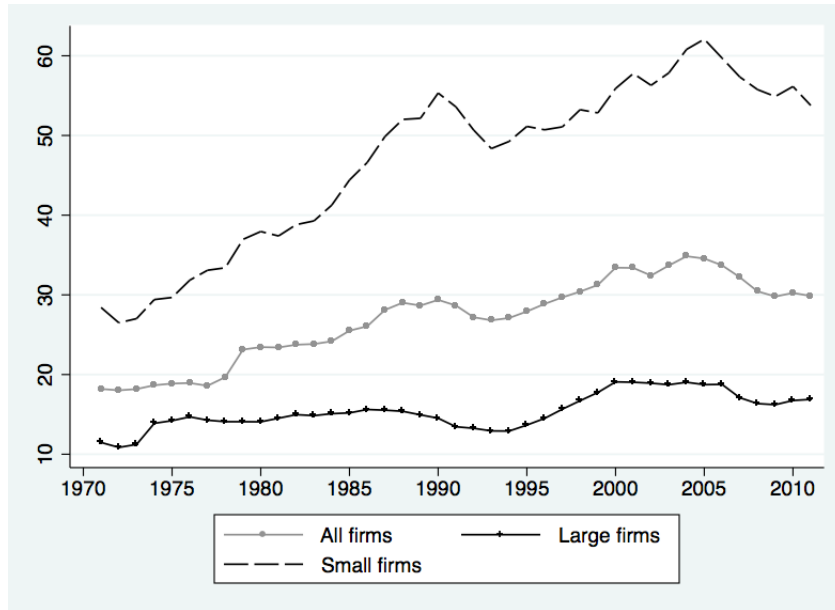
level sales-to-capital ratio, where the standard deviation and mean are based on five years of lags. Volatility for the full sample of firms, shown by the grey line, rises almost one hundred percent between 1971 and 2011, and volatility among large firms increases approximately fifty percent, from 11.5 percent in 1971 to 16.9 percent in 2011. Relative to large firms, however, volatility among small firms increased far more dramatically, nearly doubling from 28.4 percent in 1971 to 53.8 percent in 2011. Figure 5.5, therefore, suggests that rising firm-level demand volatility provides particular insight into the behavior of small firms over the recent financialization of the U.S. economy.

For example, higher volatility, reflecting greater uncertainty, is likely to drive higher demand for liquid assets. Bates et al (2009) find evidence that idiosyncratic risk (firm-level volatility) is a determinant of increased cash holdings over this period (p. 2018). This evidence is consistent with the fact that small firms hold relatively greater shares of liquid – as opposed to non-liquid – financial assets than large firms (see

Table 5.1). Higher volatility and correspondingly greater uncertainty regarding future demand may similarly be a factor behind de-leveraging among small firms. Similarly, volatility may affect the decision to invest in fixed capital. Capital investments are long-term and largely irreversible; in a more volatile environment, investment demand is likely to be lower for given expected returns.

5.3 Investment

5.3.1 Framework

To motivate the econometric specification used below, this section outlines the firm-level determinants of investment demand, providing a framework for exploring the implications of changes in NFC portfolio composition and financing behavior for fixed investment. Consider a firm that invests in two types of assets – fixed capital (K) and financial capital (M) – and that finances its expenditures via a combination of internal funds, new debt (D), and proceeds from new equity issues. Using a dot over a variable to denote a time rate of change, the firm's uses of funds include the acquisition of new assets, whether fixed capital ($\dot{K} = I$) or financial assets ($\dot{M}$), dividend payments to shareholders (Div), and interest payments on outstanding debt ($i^{debt}D$, where i^{debt} is the firm's cost of borrowing). The firm's sources of funds include profits earned on fixed capital (P), returns earned on financial assets ($i^{dep}M$, where i^{dep} is the financial profit rate), new share issues ($\dot{N}$ new shares at a price of ν per share), and new borrowing ($\dot{D}$).

The firm's finance constraint can then be expressed as:

$$pI + \dot{M} + Div + i^{debt}D = P + i^{dep}M + \upsilon\dot{N} + \dot{D} \tag{5.1}$$

where p denotes the price of the investment good. Equation 5.1 is an identity, capturing that a firm's total sources of funds must be equivalent to the firm's total uses

of funds. This expression highlights the interdependence of investment and financing decisions: decisions to invest in fixed capital or to acquire financial assets are concurrent with decisions about how to finance that asset acquisition.

For a given set of objectives, the firm's desired stocks of capital, financial assets and debt (K^*, M^*, and D^*) can be defined as the levels the firm would select if it could adjust each stock freely in pursuit of these objectives, subject to labor market, demand and financing constraints.[5] A higher expected profit rate on fixed capital (π^e) makes holding capital more desirable ($K^*_{\pi_e} > 0$). Because future profits are unknown, investment depends on the *expected* profit rate on new capital. Financing constraints include both the macroeconomic interest rate environment, and also how the interest rate faced by an individual firm depends on factors such as leverage and wealth. All else equal, a higher financial profit rate (i^{dep}) makes holding financial assets more desirable ($M^*_{i_{dep}} > 0$), and a higher cost of borrowing (i^{debt}) leads to a smaller desired stock of debt ($D^*_{i^{debt}} < 0$). Due to imperfect competition in goods markets and imperfections in financial markets – requiring, for example, collateral to obtain external financing – the desired stocks are finite.

The adjustment of the firm's capital stock can be described by a stock adjustment from the current level of each stock towards the desired level. Because K, M and D are jointly determined, the evolution of the capital stock depends not only on the discrepancy between the current and desired level of capital, but also on the simultaneous discrepancies between the current and desired levels of financial assets and debt. The adjustment of the firm's capital stock over time ($\dot{K}$) can, therefore, be summarized as:[6]

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[5]Of course, firms do not directly maximize objective functions; however, strict maximization is not necessary. The key point is that, at any point in time, firms have desired stocks of capital, financial assets and debt, which are determined in pursuit of the firm's objectives, and which are jointly determined due to the finance constraint.

[6]After including capital, financial assets and debt, the book value of equity is simply a residual; the adjustment of the stock of equity is, therefore, not included separately here.

$$\dot{K} = f(K^* - K, M^* - M, D^* - D)$$

It is plausible to assume linear homogeneity, such that a doubling of K^*, for example, will lead to a doubling of $\dot{K}$. Thus, the firm's accumulation rate can be written:

$$\hat{K} \quad = \quad \frac{\dot{K}}{K} = \frac{I}{K} = f(\frac{K^* - K}{K}, \frac{M^* - M}{K}, \frac{D^* - D}{K}) \qquad (5.2)$$

$$= \quad f(\frac{K^*}{K}, \frac{K^*}{K}\frac{M^*}{K^*}, \frac{M}{K}, \frac{K^*}{K}\frac{D^*}{K^*}, \frac{D}{K}) \qquad (5.3)$$

As discussed above, the desired levels of each stock (expressed in Equation 5.3 as $\frac{K^*}{K}$, $\frac{M^*}{K^*}$ and $\frac{D^*}{K^*}$) are jointly determined by the expected profit rate, the financial profit rate and the cost of borrowing.[7] Assuming that individual NFCs do not have price-setting power in financial markets, both the financial profit rate and the cost of borrowing are exogenous determinants of investment. With imperfect competition in product markets, however, expected profitability is not an exogenous parameter; expected profitability is, instead, summarized by the combination of current profits (π) and the utilization rate of fixed capital (u), which together capture the demand and production conditions facing the firm (Skott, 1989). Because expectations regarding future profits are formed largely on the basis of recent performance, the current profit rate (π) is one indicator of expected future profitability. However, un-utilized capital does not earn profits; thus, the expected return on additional capital also depends on whether the additional unit of capital will be utilized. If the firm's utilization rate is below its desired level, the expected profit rate on additional capital is correspondingly low. Equation 5.4, therefore, summarizes the determinants of investment demand:

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[7]The stock adjustment in Equation 5.2 similarly describes the adjustment of stocks of financial assets and debt ($\dot{M}$ and $\dot{D}$):

$$\dot{M} \quad = \quad h(K^* - K, M^* - M, D^* - D)$$
$$\dot{D} \quad = \quad z(K^* - K, M^* - M, D^* - D)$$

These three adjustment processes must be jointly satisfied.

$$I/K = \tilde{f}(\pi, u, i^{dep}, i^{debt}, \frac{M}{K}, \frac{D}{K}) \qquad (5.4)$$

The expected signs follow from the discussion above. The profit rate and the utilization rate are positively related to the investment rate. Financial profitability, on the other hand, is negatively associated with the investment rate. The financial profit rate captures the opportunity cost of acquiring fixed rather than financial assets and, therefore, the 'hurdle' rate of return that a manager must expect to earn on fixed capital in order to invest in fixed rather than financial assets. Similarly, a higher cost of borrowing is associated with a lower investment rate. Because capital investments are generally financed with a combination of internal and external funds, an increase in the cost of external funds decreases investment demand at otherwise equal expected rates of return.

Turning to the current stocks of financial assets and debt in the firm's portfolio, first, the stock of financial assets is positively related to the investment rate. If the firm's outstanding stock of financial assets exceeds the desired stock of financial assets, resources will be reallocated into capital investments, and investment will rise. The relationship between financial assets and capital, therefore, captures a portfolio adjustment process whereby, at given rates of return on fixed and financial assets, a firm holds both financial assets and fixed capital in a relatively stable proportion.[8]

Last, an increase in the stock of debt, all else equal, decreases the investment rate. Contrary to financial assets, debt entails future cash payment commitments, and a larger stock of debt increases both lenders' and borrowers' risk, reducing the firm's investment demand (Keynes, 1936; Minsky, 1975). From the perspective of management, a larger stock of debt reduces the firm's margin of safety with which to

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[8]This adjustment process is consistent with Tobin (1965), who argues that in a monetary economy with two types of assets, "the community will hold the two assets in proportions that depend on their respective yields" (Tobin, 1965, p. 678), such that "Capital deepening in production requires monetary deepening in portfolios" (p. 679).

respond to adverse shocks (Kalecki, 1971), thereby decreasing managerial willingness to tie up funds in capital investments. From the perspective of creditors, a large stock of debt signals potential solvency problems and intensifies agency problems in the lending relationship, such that a large stock of debt may inhibit a firm's ability to obtain (additional) external funds, constraining future investment.

5.3.2 Shareholder value norms

The desired stocks of capital, financial assets and debt (K^*, M^*, and D^*) depend on the firm's objectives and, thus, the specific functional form of investment demand depends on these objectives as well. As of yet, these objectives have not been specified. As discussed in Section 5.2, however, the increasing entrenchment of shareholder value norms over recent decades has led to the internalization of 'value maximizing' norms and, accordingly, a shift in objectives towards a growing emphasis on 'value'. It has, furthermore, been a frequent claim in the literature that this growing emphasis on shareholder value has shortened managerial time horizons, such that managers targeting value are less likely to tie up funds in long-term, irreversible capital investments than managers targeting 'traditional' objectives.

The implication is that a growing emphasis on 'value maximizing' objectives has a direct negative effect on NFC investment rates, which can be captured via a shift in the investment demand function:

$$I/K = \tilde{f}(u, \pi, i^{dep}, i^{debt}, K, M, D; Sv) \tag{5.5}$$

where Sv denotes shareholder value objectives and $(I/K)_{Sv} < 0$. Equation 5.5 states that at an otherwise equal financial profit rate, expected profit rate, utilization rate, cost of borrowing, and stocks of capital, financial assets and debt, a manager aiming to maximize a firm's stock market valuation will allocate fewer funds towards long-term capital investment projects than a manager targeting traditional objectives.

Stockhammer (2004) also argues that shareholder value ideology constrains investment via changing managerial preferences. Empirically, Stockhammer equates shareholder value objectives with rentiers' income, a variable that is similar to financial profits. Because rentiers' income is endogenous to the investment decision, however, it is also interrelated with the firm's other financial decisions, such as the use of debt and equity. Equating shareholder value objectives with rentiers' income, therefore, omits changes in a firm's response to a given cost of borrowing or financial profitability that may accompany an increased emphasis on shareholder value. Here, the implications of shareholder value norms are, instead, explored via a shift in the finance constraint to allow for possible impacts of shareholder value norms on other financial decisions, in addition to investment. Specifically, the implications of shareholder value objectives are explored via the impact of shareholder value *norms* on investment, where the growing entrenchment of these norms can be understood as exogenous to the individual firm.

5.3.3 Firm-level volatility

On the other hand, for given objectives, a firm's desired stocks of capital, financial assets and debt also depend on its environment, and rising volatility over the post-1970 period signals changes in the environment within which NFCs make investment and financing decisions. Higher volatility reflects greater uncertainty; thus, all else equal, a manager facing high volatility is expected to invest less in fixed capital, which is generally long-term and largely irreversible, than a manager facing low volatility. As with shareholder value norms, the impact of firm-level volatility on the investment decision can be expressed via a shift in the investment demand function, capturing that managers react differently to the same financial variables in a highly volatile or a less volatile environment. Incorporating volatility (V), Equation 5.6 presents the final investment specification:

$$I/K = \tilde{f}(u, \pi, i^{dep}, i^{debt}, K, M, D; Sv, V) \tag{5.6}$$

In addition to shareholder value norms and volatility, other factors – in particular, changes in the competitive environment stemming from increased international competition and the globalization of production – are also likely to influence NFC investment behavior over the post-1970 period.[9] Rather than proposing an exhaustive explanation of factors causing changes in investment behavior, however, this chapter focuses more narrowly on the implications of two particular channels for domestic investment. The exclusion of other potentially relevant factors is, however, a limitation of this chapter.

5.4 Empirical strategy and data

5.4.1 Statistical specification

The empirical specification of the investment function follows from the discussion in Section 5.3:

$$\begin{aligned}
(I/K)_{it} =&\beta_0 + \beta_1 (I/K)_{i,t-1} + \beta_2 u_{i,t-1} + \beta_3 \pi_{i,t-1} + \beta_4 i^{dep}_{i,t-1} + \beta_5 i^{debt}_{i,t-1} \\
&+\beta_6 (\frac{M}{A})_{i,t-1} + \beta_7 (\frac{D}{A})_{i,t-1} \\
&+\beta_8 R_{k,t-1} + \beta_9 V_{i,t-1} + \epsilon_{it}
\end{aligned} \tag{5.7}$$

where A denotes total assets, the subscript i denotes the firm, t denotes the year, and k denotes industry.

In addition to the terms discussed above, the empirical specification includes a lagged dependent variable to incorporate dynamic effects in the adjustment of the capital stock. These dynamic effects capture persistence and path dependencies in

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[9]The development of global value chains and the offshoring of production, such that capital is moved abroad but sales are recorded in domestic income accounts, are additional factors behind the declining capital to sales ratio (see, for example, Milberg, 2008).

investment stemming from the long-term nature of capital investments, irreversibilities in investments, and adjustment costs in the acquisition and implementation of new capital. Thus, the coefficient is expected to be positive $(\beta_1 > 0)$.

The remaining expected signs follow from Section 5.3. The coefficient on capacity utilization (u) is expected to be positive $(\beta_2 > 0)$ and, controlling for capacity utilization, the coefficient on the profit rate is also expected to be positive $(\beta_3 > 0)$. Both the financial profit rate and the cost of borrowing are expected to be negatively related to fixed investment $(\beta_4 < 0$ and $\beta_5 < 0)$. Finally, the coefficient on the stock of financial assets is expected to be positive $(\beta_6 > 0)$, while the coefficient on the firm's outstanding stock of debt is expected to be negative $(\beta_7 < 0)$.

In the empirical specification, shareholder value norms are represented by the yearly industry-level average of gross stock repurchases relative to total equity (R_{kt}). The variable captures the impact on investment of the expectations of (stock) market participants that managers target stock market-based indicators of firm performance over profit or growth objectives. It is important to note that, because the objective is to explore the implications of changing corporate governance norms on investment, the repurchases variable does not explore the direct effect of an individual firm's decision to repurchase stock on its own investment. The independent inclusion of firm-level repurchases would, however, provide little econometrically relevant information about investment due to the bulky and episodic nature of stock repurchase plans.

The expectation is that norms encouraging managerial 'maximization' of market-based value impinge on the allocation of resources for fixed investment $(\beta_8 < 0)$. In particular, managers operating in industries in which average repurchases increase, then also face pressure to target financial indicators of firm performance, due to the fact that the firms in each industry constitute a comparison group against which managerial performance is evaluated. An increase in average repurchases among firms in industry k indicates that other firms in industry k are repurchasing stock, thereby,

both improving financial metrics of performance such as earnings per share and return on equity, and increasing the value of their own stock options. Consequently, as a manager in this industry, you also face pressure to target these financial indicators. Not doing so, first, makes your firm appear undervalued on the stock market relative to your competitors, thus making your firm a candidate for corporate takeover and risking your position of authority as a manager. Second, the value of the stock option pay of other managers in your peer group rises relative to your own. The resulting pressure to reallocate funds towards financial performance squeezes fixed investment.

As suggested by the discussion in Section 5.2, however, shareholder value norms are expected to primarily influence the behavior of large corporations. These large corporations also drive the sector-level trends. Thus, the relationship between the repurchases variable and the investment rate is expected to be negative for large firms and for the full sample; however, the effect is expected to be stronger for large firms. With less evidence that shareholder value norms impact the behavior of smaller firms, the coefficient is expected to be insignificant for subsamples of small firms.

Similarly, managers of firms facing high volatility are expected to be less willing to tie up funds in long-term fixed investment projects, and more apt to acquire financial assets. Thus, an increase in firm-level volatility is expected to have a negative effect on fixed investment ($\beta_9 < 0$). Furthermore, like shareholder value norms, volatility is expected to have differential effects on investment for different sized firms, and in particular, to most strongly impact investment rates of small firms.

5.4.2 Estimation strategy

The empirical specification also includes time- and firm-level fixed effects. These fixed effects capture unobservable year- and firm-specific factors that are relevant for describing a firm's behavior but cannot be explicitly controlled for in the regression — in the case of firm fixed effects, for example, managerial capability. The estimations

use the Arellano-Bond Generalized Method of Moments (GMM), which accounts for potential endogeneity arising from the inclusion of a lagged dependent variable and firm-level fixed effects in a panel setting.

The estimations also include additional lags of the explanatory variables. The inclusion of lags is standard in empirical work on investment functions (Fazzari et al, 1988; Fazzari and Mott, 1986; Ndikumana, 1999). Because managers act subject to uncertainty and imperfect information, investment decisions are based on expectations regarding the future. These expectations, formed on the basis of recent experience, are captured empirically by lags of the explanatory variables. Results are reported for three lags of the explanatory variables. Estimations with two lags are similar but show evidence of second order autocorrelation in the errors, which is ameliorated by the inclusion of the third lag. Because volatility is constructed on the basis of a five-year moving average and, therefore, incorporates multiple years of information, only the first lag of volatility is included.

It is, finally, important to note inherent difficulties in empirical analyses of investment functions. The interdependence of portfolio and financing decisions introduces potential endogeneity between the financing variables and the investment decision. In this analysis, two steps are taken to ameliorate the potential for bias. First, the estimates are based on lagged rather than contemporaneous values of the explanatory variables. Fazzari and Mott (1986) use a similar procedure: "Because all investment must be financed somehow, either internally or externally, current investment is closely linked to current finance by definition. Omitting the contemporaneous finance variables from the regression and using only lagged values alleviates this problem" (p. 179).[10] The investment rate is, similarly, defined as a function of lagged explanatory

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[10] Additional justification for this choice stems from the fact that, for example, profits earned in period t are still unrealized when investment decisions in period t are made, whereas profits from period $t-1$ are already realized and, therefore, a determinant of the decision to invest.

variables in Orhangazi (2008) and Stockhammer (2004). Second, the Arellano-Bond methodology, which corrects for endogeneity introduced by the lagged dependent variable by instrumenting I/K_{t-1} with its own lags, is extended to the other potentially endogenous variables. Thus, the variables appearing in the firm's finance constraint (π, i^{dep}, i^{debt}, M, D) are also instrumented with their own lags using GMM.

5.4.3 Data

The sample is an unbalanced panel of annual data for publicly traded nonfinancial U.S. firms from Standard & Poor's Compustat database between 1971 and 2011. Table 5.2 summarizes descriptive statistics for the full sample and by size quartiles, where size is defined by total assets. The variable definitions are as follows. The investment rate is capital expenditures relative to the capital stock. This investment rate refers to domestic investment. Capacity utilization is defined as sales relative to the capital stock. Because there is no direct analog for capacity at the firm level, this definition of capacity utilization is standard in empirical studies using firm-level data (Fazzari and Mott, 1986; Orhangazi, 2008). The profit rate on fixed capital is defined as profits (gross operating income) relative to the capital stock. Analogously, the financial profit rate is financial profits (non-operating income) relative to the outstanding stock of financial assets. Financial assets are the sum of cash and short-term investments, current receivables, 'other' investments, and advances. The cost of borrowing is the firm's effective interest burden: interest payments relative to total debt. This variable captures factors contributing to a firm's cost of obtaining external finance, such as the firm's bond or credit rating, banking relationships and outstanding lines of credit. The financial profit rate and effective interest burden are adjusted for inflation using the GNP deflator. Shareholder value norms are captured by the yearly industry average of gross stock repurchases relative to total outstanding equity. Finally, volatility is the coefficient of variation in firm-level sales-to-capital

Table 5.2: Descriptive statistics

		All firms			1st Quartile (Small)			2nd Quartile			3rd Quartile			4th Quartile (Large)		
Variable		Median	Std Dev	Obs	Median	Std Dev	Obs	Median	Std Dev	Obs	Median	Std Dev	Obs	Median	Std Dev	Obs
$(I/K)_{t-1}$	overall		0.22	N=237,427		0.29	N=59,677		0.23	N=64,927		0.18	N=58,925		0.13	N=53,898
	between		0.17	n=17,999		0.22	n=91,32		0.21	n=10,512		0.18	n=7,634		0.14	n=4,062
	within	0.27	0.18	T-bar=13.2	0.24	0.24	T-bar=6.5	0.25	0.17	T-bar=6.2	0.21	0.12	T-bar=7.7	0.16	0.08	T-bar=13.3
$(S/K)_{t-1}$	overall		18.02	N=240,654		24.92	N=60,357		18.18	N=65,577		13.37	N=59,702		9.30	N=55,018
	between		15.68	n=18,023		20.07	n=9,163		17.10	n=10,544		13.54	n=7,670		9.81	n=4,092
	within	4.45	11.19	T-bar=13.4	5.90	16.20	T-bar=5.9	5.81	9.48	T-bar=6.2	4.59	5.97	T-bar=7.8	2.37	4.18	T-bar=13.4
π_{t-1}	overall		16.93	N=240,025		12.68	N=60,190		4.68	N=65,441		1.72	N=59,558		1.03	N=55,018
	between		14.55	n=18,017		9.92	n=9,153		4.80	n=10,534		1.86	n=7,655		1.08	n=4,092
	within	0.32	11.01	T-bar=13.3	-0.06	8.22	T-bar=6.6	0.38	2.95	T-bar=6.2	0.43	1.18	T-bar=7.8	0.31	0.78	T-bar=13.4
i^{dep}_{t-1}	overall		0.08	N=239,537		0.11	N=62,793		0.07	N=65,194		0.06	N=58,748		0.07	N=52,802
	between		0.05	n=18,029		0.06	n=9,243		0.05	n=10,549		0.05	n=7,652		0.05	n=4,076
	within	-0.01	0.07	T-bar=13.3	0.00	0.09	T-bar=6.8	-0.01	0.05	T-bar=6.2	-0.01	0.05	T-bar=7.7	-0.01	0.06	T-bar=13.0
i^{debt}_{t-1}	overall		0.23	N=208,477		0.33	N=47,912		0.25	N=65,274		0.18	N=54,088		0.12	N=53,424
	between		0.17	n=18,028		0.23	n=8,343		0.22	n=10,550		0.15	n=7,304		0.10	n=4,018
	within	0.05	0.20	T-bar=13.4	0.07	0.27	T-bar=5.7	0.06	0.20	T-bar=5.5	0.05	0.15	T-bar=7.4	0.05	0.10	T-bar=13.3
$(M/A)_{t-1}$	overall		0.25	N=240,553		0.27	N=63,372		0.24	N=65,410		0.21	N=58,880		0.19	N=52,891
	between		0.06	n=18,035		0.23	n=9,297		0.24	n=10,568		0.22	n=7,660		0.19	n=4,081
	within	0.41	0.06	T-bar=13.3	0.53	0.17	T-bar=6.8	0.45	0.11	T-bar=6.2	0.37	0.09	T-bar=7.7	0.31	0.09	T-bar=13.0
$(D/A)_{t-1}$	overall		0.35	N=244,573		0.55	N=63,533		0.27	N=65,961		0.25	N=59,959		0.19	N=55,121
	between		0.28	n=18,044		0.37	n=9,303		0.26	n=10,589		0.24	n=7,694		0.20	n=4,100
	within	0.24	0.25	T-bar=13.6	0.18	0.40	T-bar=6.8	0.18	0.15	T-bar=6.2	0.27	0.14	T-bar=7.8	0.30	0.11	T-bar=13.4
R_{t-1}	overall		0.01	N=260,380		0.01	N=64,171		0.06	N=61,583		0.06	N=56,993		0.07	N=52,126
	between		0.01	n=18,054		0.01	n=9,314		0.04	n=10,214		0.04	n=7,465		0.04	n=4,013
	within	0.02	0.01	T-bar=14.4	0.02	0.01	T-bar=6.9	0.00	0.05	T-bar=6.0	0.00	0.05	T-bar=7.6	0.00	0.06	T-bar=13.0
V_{t-1}	overall		0.29	N=163,528		0.41	N=30,404		0.28	N=41,455		0.19	N=44,467		0.14	N=47,202
	between		0.31	n=14,757		0.40	n=5,364		0.29	n=7,088		0.21	n=5,937		0.15	n=3,565
	within	0.18	0.16	T-bar=11.1	0.38	0.23	T-bar=6,7	0.23	0.16	T-bar=5.9	0.16	0.11	T-bar=7.5	0.12	0.10	T-bar=13.2

Source: Compustat, author's calculations

ratio, where the mean and standard deviation are averaged over the previous five years of data. The ratios are winsorized. These variable definitions, with the Compustat reference numbers, are also summarized in Table A.3 in the appendix.[11]

5.5 Results

Table 5.3 presents the regression results for the full sample and for size quartiles. Long-run multipliers, summarizing the total effect of the three lags of each explanatory variable on investment, are shown in Table 5.4.[12]

5.5.1 Non-financial determinants of investment

Together, the non-financial determinants of investment — the lagged dependent variable, capacity utilization and the profit rate — point to the validity of the regression model, and are largely consistent with the standard baseline determinants of investment. For the full sample of firms, the coefficient on the first lag of the dependent variable is positive and significant, capturing dynamic effects in investment behavior. With the exception of the smallest quartile of firms, this coefficient is also positive for all size sub-samples, and the magnitude of the effect becomes stronger as firm size increases.

The coefficients on capacity utilization and profitability also have the expected signs in most specifications. Coefficients on both the first lag and the long-run multipliers for capacity utilization are positive and significant for the full sample of firms

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[11]The rates of return here are pre-tax rates of return; this is a limitation of the available data. While a firm's average tax rate can be calculated, it is not possible to determine whether those taxes are applied to financial or nonfinancial income. The extent to which firms are differentially able to avoid taxation further discredits attempts to incorporate a firm's tax burden into the measured profit rates (tax havens, for example, are likely to be more heavily utilized by large multinational corporations).

[12]The long-run multipliers are calculated as follows. Consider, for example, a basic investment function, in which investment is a function of three lags of both investment and profits: $(I/K)_t = \sum_{i=1}^{3} \alpha_i (I/K)_{t-i} + \sum_{i=1}^{3} \beta_i \pi_{t-1}$. The long-run multiplier for profits (LR_π) captures the cumulative effect of a change in profits on investment: $LR_\pi = (\sum_{i=1}^{3} \beta_i)/(1 - \sum_{i=1}^{3} \alpha_i)$.

Table 5.3: Estimation results; dependent variable I/K

	All NFCs	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
$(I/K)_{t-1}$	0.2600***	0.0435*	0.1519***	0.2991***	0.4127***
	(0.0118)	(0.0232)	(0.0200)	(0.0189)	(0.0202)
$(I/K)_{t=2}$	0.0165*	-0.0654***	-0.0231*	0.0007	0.0040
	(0.0083)	(0.0156)	(0.0119)	(0.0119)	(0.0121)
$(I/K)_{t-3}$	0.0032	-0.0381***	-0.0265***	-0.0056	-0.0078
	(0.0068)	(0.0132)	(0.0101)	(0.0100)	(0.0090)
$(S/K)_{t-1}$	0.0035***	0.0030***	0.0043***	0.0031***	-0.0001
	(0.0003)	(0.0004)	(0.0004)	(0.0006)	(0.0011)
$(S/K)_{t-2}$	-0.0007***	-0.0001	-0.0006*	0.0003	-0.0005
	(0.0002)	(0.0003)	(0.0004)	(0.0005)	(0.0011)
$(S/K)_{t-3}$	-0.0001	0.0001	0.0001	-0.0005	0.0003
	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
π_{t-1}	-0.0007	-0.0016	0.0005	0.0067***	0.0094**
	(0.0015)	(0.0011)	(0.0019)	(0.0023)	(0.0046)
π_{t-2}	0.0000	-0.0014	0.0009	-0.0040*	0.0003
	(0.0014)	(0.0013)	(0.0022)	(0.0024)	(0.0022)
π_{t-3}	0.0011	0.0009	0.0009	0.0004	-0.0006
	(0.0011)	(0.0012)	(0.0010)	(0.0017)	(0.0017)
i^{dep}_{t-1}	-0.1222*	-0.0422	-0.0535	-0.1110	0.0227
	(0.0670)	(0.0715)	(0.0894)	(0.0705)	(0.0371)
i^{dep}_{t-2}	0.0884	-0.0045	-0.0328	-0.0029	0.0554*
	(0.0591)	(0.0749)	(0.0799)	(0.0524)	(0.0316)
i^{dep}_{t-3}	-0.0157	-0.0417	0.1017**	-0.0335	-0.0224
	(0.0284)	(0.0414)	(0.0442)	(0.0337)	(0.0201)
i^{debt}_{t-1}	-0.0468	-0.0069	-0.0208	-0.0093	-0.0460
	(0.0295)	(0.0287)	(0.0269)	(0.0250)	(0.0284)
i^{debt}_{t-2}	0.0301	0.0099	0.0015	0.0033	0.0009
	(0.0319)	(0.0323)	(0.0272)	(0.0245)	(0.0228)
i^{debt}_{t-3}	0.0099	0.0138	0.0124	0.0039	0.0227**
	(0.0094)	(0.0124)	(0.0116)	(0.0113)	(0.0116)
$(M/A)_{t-1}$	0.1549***	0.1689***	0.1620***	0.1417**	0.1082**
	(0.0552)	(0.0601)	(0.06222)	(0.0588)	(0.0472)
$(M/A)_{t-2}$	0.1036*	0.1607***	-0.0087	0.0878*	0.1105***
	(0.0560)	(0.0583)	(0.0641)	(0.0514)	(0.0417)
$(M/A)_{t-3}$	-0.1002***	-0.0326	-0.0657	-0.0533	-0.0895***
	(0.0360)	(0.0448)	(0.0431)	(0.0375)	(0.0322)
$(D/A)_{t-1}$	-0.1024***	-0.0670**	-0.05661	-0.1513***	-0.1640***
	(0.0314)	(0.0284	(0.0404)	(0.0405)	(0.0422)
$(D/A)_{t-2}$	0.0680**	0.0483*	-0.0629	0.0515	0.0124
	(0.0334)	(0.0278)	(0.0408)	(0.0384)	(0.0385)
$(D/A)_{t-3}$	-0.0234	-0.0130	-0.0101	-0.0038	0.0369
	(0.0236)	(0.0234)	(0.0284)	(0.0268)	(0.0265)
R_{t-1}	-0.3366**	-1.0764*	0.2419	-0.1991	-0.4463***
	(0.1551)	(0.6253)	(0.3826)	(0.2140)	(0.1621)
R_{t-2}	-0.2130	-0.7491	-06556*	0.1486	-0.1891
	(0.1469)	(0.6308)	(0.3733)	(0.2036)	(0.1408)
R_{t-3}	-0.1862	-1.2875	0.1784	0.0321	-0.4648**
	(0.1792)	(0.7978)	(0.4555)	(0.2363)	(0.1840)
V_{t-1}	-0.0990***	-0.0895***	-0.0859***	-0.0726***	-0.0653***
	(0.0094)	(0.0168)	(0.1434)	(0.0158)	(0.0165)
Obs	99,096	13,624	21,830	28,397	35,245
Firms	10,316	2,835	4,153	4,177	3,006
Firm dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Sargan (p value)	0.0000	0.5706	0.0003	0.0321	0.0000
2nd order auto.	0.4691	0.5347	0.9105	0.5287	0.7697

The regressions are based on the Arellano-Bond Generalized Method of Moments. The instrument set includes includes instruments beginning from $t-2$, and is restricted to three additional lags of the explanatory variables to keep the number of instruments less than the number of groups. Coefficients for the year fixed effects are not reported. Robust standard errors are in parentheses. The p values for the Hansen-Sargan test of overidentifying restrictions and for the Arellano-Bond test of second order autocorrelation are obtained from two-step estimations.
* Significant at 10%; ** Significant at 5%; *** Significant at 1%.
Each firm-size quartile is defined according to total assets (the first quartile includes firms with total assets below the 25th percentile of total assets for that year, the second quartile includes firms with total assets above the 25th percentile and below the 50th percentile of total assets for that year, etc.).

Table 5.4: Long-run coefficients; dependent variable I/K

	All NFCs	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
(S/K)	0.0038***	0.0029***	0.0041***	0.0040***	-0.0005
	(0.0005)	(0.0005)	(0.0006)	(0.0007)	(0.0020)
π	0.0005	-0.0020	0.0026	0.0044	0.0153
	(0.0026)	(0.0018)	(0.0034)	(0.6248)	(0.0096)
i^{dep}	-0.0687	-0.0834	0.0172	-0.2088*	0.0943**
	(0.0730)	(0.0963)	(0.1368)	(0.1144)	(0.0408)
i^{debt}	-0.0009	0.0158	-0.0077	-0.0028	-0.0378
	(0.0568)	(0.0426)	(0.0439)	(0.0415)	(0.0519)
(M/A)	0.2197***	0.2802***	0.0975	0.2496***	0.2186***
	(0.0503)	(0.0655)	(0.0162)	(0.0679)	(0.0519)
(D/A)	-0.0802***	-0.0300	-0.1444***	-0.1469***	-0.1940***
	(0.0283)	(0.0279)	(0.0461)	(0.0388)	(0.0401)
R	-1.0215**	-2.9371**	-0.2622	-0.0261	-1.8613**
	(0.4398)	(1.1785)	(0.8218)	(0.6248)	(0.5762)
V	-0.0990***	-0.0895***	-0.0859***	-0.0726***	-0.0653***
	(0.0094)	(0.0168)	(0.1434)	(0.0158)	(0.0165)

The long-run coefficients are based on the regression results in Table 5.3. Results for volatility are based replicated from Table 5.3 for comparison. Long-run coefficients are calculated on the basis of an autoregressive process: the sum of the coefficients on the lags of each variable, divided by one minus the sum of the coefficients on the lags of investment. The p-values are based on a Chi^2 statistic. The standard errors, shown in parentheses, are calculated by dividing the estimate by square root of the Chi^2 statistic.
* Significant at 10%; ** Significant at 5%; *** Significant at 1%.

and the first three size quartiles; for the largest quartile of firms the coefficient is negative, but insignificant. The magnitude of the short-run relationship between capacity utilization and investment, captured by the coefficient on the first lag of S/K, is large: in the full sample, a one standard deviation increase in capacity utilization implies a 0.29 standard deviation increase in the investment rate. The short run coefficient on the profit rate also has the expected sign in the largest three quartiles, and the estimate is significant for sub-samples of above-median firm size. The long run coefficients have the expected sign in all but the smallest sample of firms, but are insignificant. An insignificant coefficient on the profit rate is, however, unsurprising given that, together, many of the other explanatory variables jointly capture the profit conditions facing a firm.

5.5.2 Financial determinants of investment

The results highlight the relevance of changes in NFC financial behavior since the early 1970s for NFC investment behavior. Beginning with the financial profit rate, the coefficients on both the first lag and the long-run multiplier for the full sample of firms are negative as expected, although not statistically significant. In the case of the financial profit rate, the firm size results are, however, particularly interesting. While the short run coefficients on the first lag of the financial profit rate for the smaller three quartiles of firms are negative as expected, the coefficients on both the first lag and the long-run multiplier for the largest quartile of firms are positive and – in the case of the long-run effect – statistically significant.

The positive relationship between the financial profit rate and investment among large firms suggests that large firms capture complementarities between financial profits and the non-financial components of their business that are not generated by smaller firms. As noted in Section 5.2, large firms have also acquired relatively more non-liquid ('other') financial assets than smaller firms. Together, the different composition of financial assets by firm size and the positive coefficient on the financial profit rate for large firms suggest that small and large firms have different motivations for acquiring financial assets. While the liquid assets acquired by small firms may hedge against volatility and risk, the 'other' financial assets held by large NFCs may instead reflect movement into the provision of financial services, namely borrowing and lending for profit. NFC expansion into car loans and store-issued credit cards are particularly cogent examples (Froud et al, 2005). Store-issued credit cards, for example, generate financial profits and also capture demand for the firm's non-financial products, thereby supporting fixed investment.

The coefficient on the first lag of the effective interest burden is negative in all specifications, but statistically insignificant. Furthermore, the magnitude of the effect is quite small. For the full sample, a one standard deviation increase in the effective

interest rate corresponds to a 0.05 standard deviation decline in the investment rate. The long-run multiplier is also insignificant in all specifications, suggesting that a higher cost of borrowing has no significant long-run effect on investment. Notably, Orhangazi (2008) finds a negative, but in most subsamples significant, relationship between the first lag of NFC payments to the financial sector and fixed investment. However, Orhangazi's payments variable combines interest payments with shareholders payouts (dividend payments and stock buybacks). Importantly, the difference between Orhangazi's results and those presented here suggests that the strength of Orhangazi's finding captures payouts to shareholders, rather than to creditors.

The stock of financial assets has a positive and robust relationship to fixed investment in both the short-term and the long-run in most specifications. This finding does not lend support to the proposition in the financialization literature that financial assets are crowding out physical investment. Instead, the stock of financial assets is the only avenue through which post-1970 changes in NFC financial structure are found to support investment. In the full sample, a one standard deviation increase in the stock of financial assets is associated with a 0.18 standard deviation increase in the investment rate. This positive relationship is consistent with the portfolio adjustment process described in Section 5.3: for given expected returns, firms hold both fixed and financial assets, and investment increases if the stock of financial assets rises above the desired level.[13] Thus, firms acquire financial assets – which ameliorate inherent risks of long-term and irreversible capital investments – concurrently with fixed capital. The magnitude of the coefficient is smaller for large firms, particularly in the short run, which is consistent with the idea that large firms face fewer constraints

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[13]Empirically, the stock of financial assets may also capture a 'financing motive' , summarizing profitability and demand from previous periods as firms saved up to invest. The empirical results are, however, robust to omitting financial assets from the regression.

than small firms in obtaining external finance and, therefore, depend less strongly on the smoothing function of financial assets.

The stock of financial assets has not been included in the empirical literature on financialization and investment, and the independent inclusion of the stock of financial assets and the financial profit rate is an innovation of this analysis. While the stock of financial assets is found to have a robust positive relationship to fixed investment, the financial profit rate is negatively related to investment in most specifications. The difference points to different time implications of the financial profit rate and an acquired stock of financial assets. An increase in the financial profit rate may drive a short-term reallocation of funds towards financial assets, but a larger stock of financial assets provides flexibility to carry out long-term fixed investment projects despite uncertainty regarding future profits or the cost and availability of external finance.

Last, for the full sample and all size sub-samples, an increase in the stock of debt is found to constrain investment. In both the short run and the long run, debt has a negative and significant relationship to fixed investment in most specifications, and particularly among large firms. In the full sample, a one standard deviation increase in the stock of debt is associated with a 0.16 standard deviation decline in investment. This finding is consistent with the existing literature, which also highlights a robust negative relationship between a firm's stock of debt and investment rate (Ndikumana, 1999; Orhangazi, 2008). Thus, among large firms, whose stocks of debt rose substantially after the 1970s, this negative relationship points to a marked decline in the support of external finance for fixed investment in recent decades.

5.5.3 Shareholder value norms

The results, furthermore, capture a negative relationship between shareholder value norms and fixed investment rates. Both the first lag and the long-run multi-

plier of the repurchases variable are found to have a significant negative relationship to NFC investment rates for the full sample of firms, implying that an increase in average industry-level repurchases leads to a decline in the investment rates of other firms in that industry. This result suggests that managers in industries in which average repurchases rise also face pressure to target financial performance indicators. The pressure to reallocate funds towards financial targets squeezes fixed investment. This finding is consistent with the financialization literature emphasizing changes in corporate governance associated with shareholder value ideology (Lazonick and O'Sullivan, 2000), and the findings here draw a direct link between shareholder value norms and investment behavior. These conclusions are consistent with Stockhammer's (2004) analysis of the impact of shareholder value objectives on investment, but provide explicit firm-level, rather than aggregate-level, empirical support for a negative relationship between shareholder value norms and fixed investment.

The empirical results also reiterate the expected firm-size differences: shareholder value norms are found to most strongly impact the investment behavior of the largest quartile of firms. While average industry-level repurchases are also found to be significant for the full sample and weakly significant for the smallest quartile of firms, the magnitude of the effect among the largest firms is considerably greater than for either the full sample or small firms.[14] A one standard deviation increase in average industry-level repurchases is associated with only a 0.02 standard deviation decline in investment for the full sample of firms, and a 0.05 standard deviation decline in investment for the smallest firms. For the largest quartile of firms, however, a one standard deviation increase in average industry-level repurchases is associated with

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[14]Sub-period estimations, shown in Table A.4 in the appendix, furthermore show that the negative relationship between shareholder value norms and investment strengthens over the post-1970 period. Dropping the 1970s – the decade during which shareholder value ideology had not yet become firmly entrenched – strengthens the estimated effect of shareholder value norms on fixed investment. Additional robustness checks in the appendix further support the conclusion that shareholder value norms most substantially and robustly impact the investment behavior of large NFCs.

a 0.14 standard deviation decline in investment, highlighting that the impingement of shareholder value norms on fixed investment is largely a phenomenon of large corporations.

5.5.4 Firm-level volatility

The results also highlight the importance of rising volatility in explaining changes in NFC investment behavior, particularly among small firms. Rising firm-level volatility is found to have a negative and significant relationship to fixed investment rates for both the full sample and each subsample of firms. In the full sample, a one standard deviation increase in volatility is associated with a 0.13 standard deviation decline in the investment rate. The magnitude of the effect is, furthermore, greater for the smallest quartile of firms: among small firms, a one standard deviation increase in volatility is associated with a 0.17 standard deviation decline in the investment rate. Among the largest quartile of firms, on the other hand, a one standard deviation increase in volatility is associated with only a 0.04 standard deviation decline in the investment rate. Thus, smaller firms are more sensitive to a given increase in volatility than larger firms, which is consistent with the fact that small firms – with fewer total assets and market power – are more vulnerable to swings in sales than large firms. Given that the total increase in volatility is also especially dramatic among small firms, the cumulative effect of rising volatility is particularly important in explaining the investment behavior of small NFCs over the post-1970 period. Volatility has not been raised in the existing literature on financialization and investment; however, these results suggest that rising volatility is relevant factor underlying changes in NFC investment rates over the post-1970 period, therefore, contributing to the changes in firm financial structure pointing to the 'financialization' of NFCs.

5.6 Conclusion

Changes in the portfolio composition and external financing behavior of NFCs over the post-1970 period in the U.S. raise important questions about fixed investment and accumulation in a 'financialized' economy. This chapter contends that shareholder value norms and rising firm-level volatility are two factors driving changes in portfolio composition and external financing behavior, and that both factors have inhibited the allocation of funds for capital investment between 1971 and 2011. In doing so, this chapter builds on the literature on financialization, which emphasizes relationships between fixed investment and financial profits, payments to the financial sector, and rentiers' income. These indicators of financialization are, however, endogenous to the individual firm's investment decision and are ultimately driven by other changes – for example, in managerial priorities or the institutional context within which firms operate. This chapter explores the role of changing managerial priorities and rising firm-level volatility in driving the sustained changes in NFC financial behavior over the post-1970 period that have led to sustained growth in financial profits and rentiers' income.

Shareholder value norms inhibit fixed investment by inducing a shift in managerial priorities towards financial targets. A large literature critical of shareholder value ideology has raised concerns regarding the implications of shareholder value norms for a host of key economic variables, including employment, growth, sustainable prosperity and investment. By emphasizing a link between shareholder value norms and declining investment rates, this chapter corroborates some of the claims in this literature. It does so in a novel way, by examining the implications of changing *norms* regarding corporate governance and the appropriate allocation of funds for investment behavior. Rising firm-level volatility similarly makes managers less willing to tie-up funds in long-term and irreversible investment projects and, accordingly, also inhibits fixed investment.

Both the descriptive and econometric analysis in this chapter emphasizes differences by firm size, pointing to two different stories of financialization for large and for small firms and indicating that the constraints facing small and large firms have evolved differently over the post-1970 period. While shareholder value norms have significantly impacted the investment behavior of large firms, the dramatic increase in volatility facing small firms highlights that rising volatility is particularly important for explaining the financial behavior of smaller NFCs. Concurrent de-leveraging and a declining share of capital in small firm's portfolios, furthermore, suggests that small firms have faced growing real-side constraints that have led them to borrow less, hold more liquidity, and invest less in fixed capital.

The analysis in this dissertation lies entirely at the firm level. In many cases, particularly with the descriptive statistics, large firms mirror the sector and drive the aggregate trends. Still, further analysis linking the firm level to the aggregate level is necessary to draw conclusions about capital accumulation and macroeconomic dynamics in the U.S. economy. The econometric results also raise some more specific questions; for example, that large firms may exploit complementarities between financial and non-financial activities that are not available to smaller firms, suggested by the positive relationship between the financial profit rate and investment for large firms. This finding suggests that further investigations of financialization and nonfinancial corporations should delve more specifically into the types of financial activities that NFCs engage in. Because of the ambiguity regarding the definitions of 'other' financial assets in both the firm level and the aggregate (Flow of Funds) data, this point also highlights the importance of case studies in further research on financialization and nonfinancial firms. Overall, however, the findings in this chapter suggest that the increasingly financial orientation of firms in the U.S. economy inhibits fixed investment, particularly among the largest NFCs, which are traditionally important sources of both investment and employment in the U.S. economy. As such, the find-

ings presented in this chapter raise fundamental questions about the sustainability of increasingly finance-oriented growth.

APPENDIX

SUPPLEMENTARY TABLES

Table A.1: Summary of variable definitions

Variable	Compustat Item Numbers
Financial assets: Cash and short-term investments, current receivables, other current assets (less inventories), and 'other' investments and advances. Measured relative to sales.	Financial assets: 1, 2, 68, 31, 32, 69, respectively. Sales: 12
Capital: Property, plant and equipment. Measured relative to sales.	Capital: 141. Sales: 12
Total debt: Current and long-term debt.	34 and 142, respectively.
Repurchases: Gross repurchases. Measured relative to total equity.	Gross repurchases: 115 Total equity: 144

Table A.2: Industrial composition of sample over time

	1950-1954	1955-1959	1960-1964	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009
All firms												
Manufacturing	58.62%	56.73%	54.28%	53.15%	51.48%	48.38%	46.55%	46.99%	49.81%	46.03%	43.25%	45.43%
Transportation	30.24%	32.95%	34.02%	32.98%	32.86%	36.48%	37.10%	34.54%	30.23%	31.96%	35.42%	30.67%
Services	0.87%	1.17%	1.60%	2.54%	3.35%	3.25%	3.77%	4.90%	5.28%	6.71%	6.57%	6.34%
High Tech	11.00%	11.27%	12.03%	11.72%	12.35%	15.17%	15.35%	16.29%	16.97%	20.83%	23.59%	19.69%
Retail	4.27%	3.73%	4.06%	4.64%	4.88%	4.38%	4.77%	5.39%	5.46%	4.68%	4.33%	4.42%
1st Quartile												
Manufacturing	76.04%	71.06%	68.01%	66.24%	63.67%	55.81%	50.69%	48.90%	48.94%	49.75%	51.99%	55.59%
Transportation	8.09%	12.18%	5.69%	3.27%	2.88%	4.30%	4.67%	4.59%	5.59%	4.86%	4.92%	5.24%
Services	0.93%	1.15%	8.64%	9.73%	9.68%	17.24%	17.45%	21.56%	24.39%	28.51%	25.94%	22.57%
High Tech	6.64%	8.54%	10.21%	14.10%	16.38%	20.73%	22.39%	26.18%	26.93%	32.20%	31.07%	28.68%
Retail	8.19%	7.81%	6.53%	8.01%	9.91%	6.94%	5.87%	4.64%	5.02%	4.64%	4.91%	4.29%
2nd Quartile												
Manufacturing	73.82%	70.31%	65.11%	62.02%	57.22%	56.78%	53.09%	50.04%	50.78%	47.42%	46.99%	49.44%
Transportation	9.34%	14.36%	10.73%	7.94%	6.31%	7.34%	7.22%	8.04%	7.97%	7.03%	7.28%	8.45%
Services	1.11%	1.54%	5.00%	8.15%	9.74%	10.77%	14.15%	17.92%	19.24%	26.34%	28.17%	23.97%
High Tech	6.35%	5.78%	6.48%	7.15%	8.41%	13.01%	20.29%	23.36%	24.58%	28.78%	29.88%	28.35%
Retail	8.52%	7.59%	9.04%	10.96%	12.66%	10.31%	8.10%	7.97%	8.32%	7.75%	7.31%	7.59%
3rd Quartile												
Manufacturing	58.21%	54.35%	61.00%	59.14%	57.06%	51.22%	50.06%	46.68%	45.12%	43.55%	43.56%	40.99%
Transportation	28.27%	30.71%	21.17%	18.22%	13.62%	13.85%	14.21%	14.87%	15.12%	13.92%	14.38%	16.31%
Services	2.15%	2.37%	2.77%	4.39%	8.08%	8.29%	10.09%	13.43%	13.90%	18.45%	19.68%	19.27%
High Tech	3.56%	2.72%	6.55%	6.37%	7.45%	10.17%	13.31%	15.36%	14.15%	17.62%	19.47%	18.48%
Retail	6.09%	5.66%	7.86%	8.75%	9.05%	11.08%	10.29%	11.39%	11.53%	10.62%	9.42%	8.94%
4th Quartile												
Manufacturing	57.41%	56.01%	52.97%	52.07%	50.74%	48.09%	46.31%	46.98%	50.00%	46.12%	43.18%	46.69%
Transportation	32.30%	34.93%	36.61%	35.72%	35.50%	38.28%	38.55%	35.64%	31.10%	33.12%	36.70%	30.24%
Services	0.64%	0.93%	1.29%	2.09%	2.71%	2.82%	3.34%	4.40%	4.77%	5.91%	5.73%	5.10%
High Tech	12.63%	13.17%	12.91%	12.45%	12.87%	15.48%	15.40%	16.27%	17.01%	20.88%	23.71%	17.76%
Retail	3.62%	3.06%	3.40%	3.94%	4.27%	3.90%	4.46%	5.10%	5.18%	4.37%	4.07%	3.83%

Source: Compustat, author's calculations

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Table A.3: Summary of variable definitions

	Variable	Definition	Compustat Items
I/K	Investment rate	Capital expenditures relative to the capital stock (net property, plant and equipment)	Capital expenditures (128) Capital stock (141)
S/K	Capacity utilization	Sales relative to the capital stock	Sales (12) Capital stock (141)
π	Profit rate	Gross operating income relative to the capital stock	Sales (12) Capital stock (141)
i^{sep}	Financial profit rate	Gross non-operating income relative to financial assets [1]	Non-operating income (61) Financial assets (see below)
i^{debt}	Effective interest burden	Interest payments relative to total debt (the sum of current and long-term debt)	Interest payments (15) Total debt (34 and 142)
M^{dep}	Financial assets	Cash and short-term investments, current receivables, other current assets (less inventories), and 'other' investments and advances (which includes, for example, investments in and advances to unconsolidated subsidiaries and affiliates, and banks and savings & loan investment securities, and miscellaneous assets such as stock or debt issuance costs) Relative to total assets in econometric specification)	Financial assets (1, 2, 68, 31, 32, and 69 respectively) Total assets (6)
D	Total debt	Current and long-term debt (Relative to total assets in econometric specification)	Total debt (34 and 142)
R	Industry average of gross repurchases	Gross repurchases relative to total equity	Gross repurchases (115) Total equity (144)
V	Coefficient of variation in sales to capital ratio[2]	The standard deviation of S/K relative to the mean; five year average	Sales (12) Capital stock (141)

[1] The results are robust to financial profits defined as the sum of interest and dividend income.
[2] The results are robust to defining the coefficient of variation in profits to capital ratio.

Inflation adjustment based off the GNP deflator.

Table A.4: Additional specifications; dependent variable I/K

	Column 1	Column 2	Column 3	Column 4	Column 5	1971-2011	1981-2011
$(I/K)_{t-1}$	0.2561***	0.2799***	0.2762***	0.1333***	0.4381***	0.2600***	0.2600***
	(0.0102)	(0.0118)	(0.0102)	(0.0186)	(0.0204)	(0.0118)	(0.0130)
$(I/K)_{t=2}$	0.0324***	0.0115	0.0266***	-0.0159	0.0142	0.0165*	0.0170*
	(0.0062)	(0.0077)	(0.0067)	(0.0118)	(0.0128)	(0.0083)	(0.0089)
$(I/K)_{t-3}$	0.0099*	-0.0012	0.0091	-0.0187*	-0.0030	0.0032	0.0043
	(0.0052)	(0.0067)	(0.0057)	(0.0105)	(0.0095)	(0.0068)	(0.0076)
$(S/K)_{t-1}$	0.0030***	0.0038***	0.0035***	0.0035***	00007	0.0035***	0.0032***
	(0.0003)	(0.0003)	(0.0002)	(0.0003)	(0.0010)	(0.0003)	(0.0003)
$(S/K)_{t-2}$	-0.0006***	-0.0005**	-0.0006***	-0.0002	-0.0003	-0.0007***	-0.0005**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0006)	(0.0002)	(0.0002)
$(S/K)_{t-3}$	0.0001	-0.0003	-0.0005***	-0.0004*	0.0002	-0.0001	-0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)
π_{t-1}	-0.0008	-0.0011				-0.0007	-0.0012
	(0.0014)	(0.0015)				(0.0015)	(0.0017)
π_{t-2}	-0.0016	-0.0001				0.0000	0.0007
	(0.0014)	(0.0015)				(0.0014)	(0.0013)
π_{t-3}	0.0004	0.0013				0.0011	0.0013
	(0.0009)	(0.0012)				(0.0011)	(0.0012)
i^{dep}_{t-1}	-0.1447**	-0.1487**	-0.1684**	0.0024	0.0185	-0.1222*	-0.1608**
	(0.0631)	(0.0715)	(0.0705)	(0.0829)	(0.0381)	(0.0670)	(0.0669)
i^{dep}_{t-2}	0.0562	0.0697	0.0999	0.0226	0.0401	0.0884	0.0599
	(0.0580)	(0.0635)	(0.0665)	(0.0858)	(0.0345)	(0.0591)	(0.0609)
i^{dep}_{t-3}	0.0087	-0.0048	0.0147	0.0084	-0.0190	-0.0157	0.0009
	(0.0242)	(0.0293)	(0.0268)	(0.0393)	(0.0211)	(0.0284)	(0.0282)
i^{debt}_{t-1}	-0.0121	-0.0455				-0.0468	-0.0813***
	(0.0302)	(0.0329)				(0.0295)	(0.0285)
i^{debt}_{t-2}	0.0586*	0.0290				0.0301	0.0215
	(0.0282)	(0.0325)				(0.0319)	(0.0318)
i^{debt}_{t-3}	0.0083	0.0124				0.0099	0.0123
	(0.0067)	(0.0095)				(0.0094)	(0.0098)
$(M/A)_{t-1}$	0.2368***		0.2023***	0.2407***	0.1748***	0.1549***	0.1425**
	(0.0546)		(0.0578)	(0.0695)	(0.0521)	(0.0552)	(0.0580)
$(M/A)_{t-2}$	0.0902*		0.0233	0.0467	0.0756	0.1036*	0.0871
	(0.0522)		(0.0616)	(0.0730)	(0.0467)	(0.0560)	(0.0597)
$(M/A)_{t-3}$	-0.1131***		-0.0120	0.0447	-0.1087***	-0.1002***	-0.1037***
	(0.0302)		(0.0373)	(0.0466)	(0.0345)	(0.0360)	(0.0383)
$(D/A)_{t-1}$	-0.1059***	-0.1078***	-0.1186***	-0.0888***	-0.0835**	-0.1024***	-0.1101***
	(0.0284)	(0.0328)	(0.0313)	(0.0295)	(0.0402)	(0.0314)	(0.0336)
$(D/A)_{t-2}$	0.0892***	0.0702**	0.0148	0.0106	-0.0422	0.0680**	0.0706**
	(0.0309)	(0.0344)	(0.0339)	(0.0317)	(0.0412)	(0.0334)	(0.0349)
$(D/A)_{t-3}$	-0.0178	-0.0190	0.0149	0.0051	0.0360	-0.0234	-0.0173
	(0.0159)	(0.0249)	(0.0229)	(0.0241)	(0.0301)	(0.0236)	(0.0242)
R_{t-1}		-0.3038*	-0.2103	-0.4433	-0.3805**	-0.3366**	-0.6048***
		(0.1554)	(0.1542)	(0.5467)	(0.1594)	(0.1551)	(0.1597)
R_{t-2}		-0.2974**	-0.1778	-0.6922	-0.1328	-0.2130	-0.1643
		(0.1448)	(0.1427)	(0.5032)	(0.1423)	(0.1469)	(0.1525)
R_{t-3}		-0.2631	0.1265	-0.5874	-0.4876***	-0.1862	-0.6536***
		(0.1821)	(0.1759)	(0.6741)	(0.1858)	(0.1792)	(0.1830)
V_{t-1}		-0.0939***	-0.0995***	-0.1003***	-0.0760***	-0.0990***	-0.0946***
		(0.0092)	(0.0086)	(0.0149)	(0.0172)	(0.0094)	(0.0099)
Obs	123,556	99,096	121,510	21,286	37,033	99,096	81,917
Firms	13,319	10,316	11,833	3,683	3,125	10,316	9,394
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sargan (p value)	0.0000	0.0000	0.0000	0.3352	0.0000	0.0000	0.0000
2nd order auto.	0.3618	0.2219	0.3716	0.3530	0.0843	0.4691	0.5320

The estimation strategy is identical to that in Table 5.3. * Significant at 10%; ** Significant at 5%; *** Significant at 1%.
Column 1: a baseline investment model that omits shareholder value norms and volatility.
Column 2: omits the stock of financial assets.
Columns 3-5: omits financing variables that are insignificant in full sample and show firm-size results (column 3 shows the full sample, column 4 the smallest quartile of firms, and column 5 the largest quartile of firms). The results are robust to dropping insignificant variables, and also reinforce that shareholder value norms primarily impacts large NFCs.
The last two columns show sub-period estimations: column 6 reproduces the full sample estimations, and column 7 drops 1971-1980.

BIBLIOGRAPHY

[1] Aglietta, M. and R. Bretton (2001). Financial systems, corporate control and capital accumulation. *Economy and Society 30*(4), 433-466.

[2] Auerbach, P. (1988). *Competition: The economics of industrial change*. Oxford: Blackwell.

[3] Basu, D. (2011). Financialization, household credit and economic slowdown in the U.S.. *Political Economy Research Institute Working Paper Series #261*.

[4] Bates, T., K. Kahle and R. Stulz (2009). Why do U.S. firms hold so much more cash than they used to? *The Journal of Finance 64*(5), 1985-2021.

[5] Boyer, R. (2000). Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis. *Economy and Society 29*(1), 111-145.

[6] Brealey, R. and S. Myers (2012). *Principles of corporate finance*. Mc-GrawHill, 7th edition.

[7] Brown, J., Fazzari, S., and B. Petersen (2009). Financing innovation and growth: cash flow, external equity, and the 1990s R&D boom. *The Journal of Finance 64*(1), 151-185.

[8] Business Week (2009, May 6). The top 25 subprime lenders. Online: http://www.businessweek.com/bwdaily/dnflash/content/may2009/db2009056 _672318.htm (accessed March 24, 2014).

[9] Chandler, A. (1977). *The visible hand: The managerial revolution in American business*. Cambridge: Harvard University Press.

[10] Cecchetti, S. and E. Kharoubi (2012). Reassessing the impact of finance on growth. *BIS Working Paper Series #381*.

[11] Che, Y. and R. Sethi (2013). Credit market speculation and the cost of capital. *Columbia University Department of Economics Discussion Paper Series No. 1314-07*.

[12] Comin, D. and T. Phillion (2005). The rise in firm-level volatility: causes and consequences, *NBER Macroeconomics Annual 2005 22*, 166-228.

[13] Core, J., R. Holthausen, and D. Larcker (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics 51*(3), 371-406.

[14] Crotty, J. (1990). Owner-manager conflict and financial theories of investment instability: A critical assessment of Keynes, Tobin and Minsky. *Journal of Post Keynesian Economics 12*(4), 519-542.

[15] Crotty, J. (1992). Neoclassical and Keynesian approaches to the theory of investment. *Journal of Post Keynesian Economics, 14*(4), 483-496.

[16] Crotty, J. (2005). The neoliberal paradox: the impact of destructive product market competition and 'modern' financial markets on nonfinancial corporation performance in the Neoliberal era. In G. Epstein (Ed.), *Financialization and the world economy*, 77-110. Northampton: Edward Elgar.

[17] Crotty, J. (2009). Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture'. *Cambridge Journal of Economics 33*(4), 563-580.

[18] Cynamon, B. and S. Fazzari (2008). Household debt and the consumer age: Source of growth – risk of collapse. *Capitalism and Society 3*(2).

[19] D'Arista, J. and T. Schlesinger (1993). The parallel banking system. *Economic Policy Institute Briefing Paper*.

[20] Davis, G. (2009). *Managed by the markets*. Oxford: Oxford University Press.

[21] Davis, G., K. Diekmann, and C. Tinsley (1994). The decline and fall of the conglomerate firm in the 1980s: the deinstitutionalization of an organizational form. *American Sociological Review 59*(4), 547-570.

[22] Davis, L. (2013). Financialization and the nonfinancial corporation: an investigation of firm-level investment behavior in the U.S.: 1971-2011, University of Massachusetts Department of Economics Working Paper #2013-08.

[23] Demir, F. (2008). Financial liberalization, private investment and portfolio choice: financialization of real sectors in emerging markets. *Journal of Development Economics 88*(2), 314-324.

[24] Epstein, G. (2002). Financialization, rentier interests and central bank policy. *manuscript, Department of Economics, University of Massachusetts, Amherst, MA, December*.

[25] Epstein, G. (2005). Introduction. In G. Epstein (Ed.), *Financialization and the world economy*, 3-16. Northampton: Edward Elgar.

[26] Epstein, G. and J. Crotty (2013). How big is too big? On the social efficiency of the financial sector in the United States. *Political Economy Research Institute Working Paper series #313*.

[27] Epstein, G. and A. Jayadev (2005). The rise of rentier incomes in OECD countries: financialization, central bank policy, and labor solidarity. In G. Epstein (Ed.), *Financialization and the world economy*, 46-76. Northampton: Edward Elgar.

[28] Fazzari, S., R. Hubbard and B. Petersen (1988). Financing constraints and corporate investment. *Brookings Papers on Economic Activity 1*, 141-206.

[29] Fligstein, N. (1990). *The Transformation of Corporate Control.* Cambridge: Harvard University Press.

[30] Foley, C., J. Fritz, S. Titman and G. Twite (2007). Why do firms hold so much cash? A tax-based explanation. *Journal of Financial Economics 86*(3), 1629-1658.

[31] Fox, J. (2002, March 4). America's most admired companies. Fortune Magazine. Online: http://money.cnn.com/magazines/fortune/fortune_archive/2002/03/04/319114/index.htm (accessed March 24, 2014).

[32] Froud, J., J. Sukhdev, A. Leaver, and K. Williams (2006). *Financialization and strategy: Narrative and numbers.* New York: Routledge.

[33] Galbraith, J. (2012). *Inequality and instability: a study of the world economy before the great crisis.* Oxford: Oxford University Press.

[34] Gezici, A. (2007). Investment under financial liberalization: channels of liquidity and uncertainty. *manuscript, Department of Economics, University of Massachusetts, Amherst, MA.*

[35] Greenwood, R. and D. Scharfstein (2013). The growth of finance. *The Journal of Economic Perspectives 27*(2), 3-28.

[36] Grullon, G. and R. Michaely (2002). Dividends, share repurchases, and the substitution hypothesis. *The Journal of Finance 57*(4), 1649-1684.

[37] Hein, E. and T. van Treeck (2010). 'Financialisation' in post-Keynesian models of distribution and growth: a systematic review. In M. Setterfield (Ed.), *Handbook of alternative theories of economic growth,* 277-292. Northampton: Edward Elgar.

[38] Holmstrom, B. and S. Kaplan (2001). Corporate governance and merger activity: making sense of the 1980s and 1990s. *Journal of Economic Perspectives 15*(2), 121-144.

[39] Jagannathan, M., C. Stephens and M. Weisback (2000). Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics 57*(3), 355-384.

[40] Jensen, M. (1986). Agency cost of free cash flow, corporate finance, and takeovers. *American Economic Review 76*(2), 323-329.

[41] Jensen, M. and K. Murphy (1990). Performance pay and top management incentives. *Journal of Political Economy 98*(2), 225-264.

[42] Jorgenson, D. (1963). Capital theory and investment behavior. *American Economic Review 53*(2), 247-259.

[43] Kacperczyk, M. and P. Schanbl (2010). When safe proved risky: commercial paper during the financial crisis of 2007-2009. *Journal of Economic Perspectives, 24*(1), 29-50.

[44] Kalecki, M. (1971). *Selected essays on the dynamics of the capitalist economy 1933-1970.* Cambridge: Cambridge University Press.

[45] Keynes, J. (1936). *The general theory of employment, interest and money.* London: Macmillan.

[46] Krippner, G. (2005). The financialization of the American economy. *Socio-Economic Review 3*(2), 173-208.

[47] Krippner, G. (2012). *Capitalizing on crisis: The political origins of the rise of finance.* Cambridge: Harvard University Press.

[48] Kuh, E. and J. Meyer (1957). Acceleration and related theories of investment: an empirical inquiry. *Review of economics and statistics 38*(3), 217-230.

[49] Lavoie, M. (1992). *Foundations of Post Keynesian Anaysis.* Northampton: Edward Elgar.

[50] Layne, R. and R. Christie (2008, Nov 12). GE wins FDIC insurance for up to $139 billion in debt. Online: http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3I211f0pz9s& refer=home (accessed March 24, 2014).

[51] Lazonick, W. (2009). *Sustainable prosperity in the new economy: New business organization and high-tech employment in the United States.* Kalamazoo: W.E. Upjohn Institute for Employment Research.

[52] Lazonick, W. (2013). From innovation to financialization: how shareholder value ideology is destroying the US economy. In M. Wolfson and G. Epstein (Eds.) *The handbook of the political economy of financial crises,* 491-511. Oxford: Oxford University Press.

[53] Lazonick, W. and M. O'Sullivan (2000). Maximizing shareholder value: a new ideology for corporate governance. *Economy and Society 29*(1), 13-35.

[54] Levine, R (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature 35,* 688-726.

[55] Lin, K. and D. Tomaskovic-Devey (2013). Financialization and US income inequality: 1970-2008. *American Journal of Sociology, 118*(5), 1284-1329.

[56] Mason, J. (2013). What is business borrowing for? Available online: slackwire.blogspot.com/2013/01/what-is-business-borrowing-for.html.

[57] Milberg, W. (2008). Shifting sources and uses of profits: sustaining US financialization with global value chains. *Economy and Society 37*(4), 420-451.

[58] Milberg, W. and D. Winkler (2010). Financialisation and the dynamics of offshoring in the USA. *Cambridge Journal of Economics 34*(2), 275-451.

[59] Milberg, W. and D. Winkler (2013). *Outsourcing economics: Global value chains in capitalist development.* Cambridge: Cambridge University Press.

[60] Minsky, H. (1975). *John Maynard Keynes.* McGraw Hill.

[61] Modigliani, F. and M. Miller (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review 48*(3), 261-297.

[62] Montecino, J., G. Epstein and I. Levina (2014). Long-term trends in intra-financial sector lending in the U.S.: 1950-2012. *Political Economy Research Institute Working Paper #344.*

[63] Ndikumana, L. (1999). Debt service, financing constraints, and fixed investment: evidence from panel data. *Journal of Post Keynesian Economics 21*(3), 445-478.

[64] Orhangazi, O. (2008). Financialisation and capital accumulation in the non-financial corporate sector. *Cambridge Journal of Economics 32*(6), 863-886.

[65] Palley, T. (2007). Financialization: what is it and why it matters. Political Economy Research Institute Working Paper #153.

[66] Phillips, D. (2008, Dec 28). General Electric taps TARP for additional capital. CBSnews, Moneywatch. Online: http://www.cbsnews.com/news/general-electric-taps-tarp-for-additional-liquidity/ (accessed March 24, 2014).

[67] Scott, R. and S. Pressman (2009). Consumer debt and the measurement of inequality in the US. *Review of Social Economy 67*(2), 127-146.

[68] Skott, P. (1989). *Conflict and effective demand in economic growth.* Cambridge: Cambridge University Press.

[69] Skott, P. (2012). Pluralism, the Lucas critique and the integration of micro and macro. *University of Massachusetts Deaprtment of Economics Working Paper no. 2012-04.*

[70] Skott, P. (2013). Increasing inequality and financial instability. *Review of Radical Political Economics 45*(4), 478-488.

[71] Skott, P. and F. Guy (2013). Power, luck and ideology in a model of executive pay. *University of Massachusetts Department of Economics Working Paper #2013-01.*

[72] Skott, P. and S. Ryoo (2009). Macroeconomic implications of financialisation. *Cambridge Journal of Economics 32*(6), 827-862.

[73] Stockhammer, E. (2004). Financialisation and the slowdown of accumulation. *Cambridge Journal of Economics 28*(5), 719-741.

[74] Stockhammer, E. (2006). Shareholder value and the investment-profit puzzle. *Journal of Post Keynesian Economics 28*(2), 193-215.

[75] Stout, L. (2012). *The shareholder value myth: How putting shareholders first harms investors, corporations and the public.* Berrett-Koehler Publishers.

[76] Taub, J. (2010). Comment letter on advance notice of proposed rulemaking regarding authority to require supervision and regulation of certain nonbank financial companies. *SAFER Policy Brief #26.*

[77] Taub, J. (2013). What we don't talk about when we talk about banking. In M. Wolfson and G. Epstein (Eds.) *The handbook of the political economy of financial crises*, 447-466. Oxford: Oxford University Press.

[78] Tichy, N. and R. Charan. Speed, simplicity, self-confidence: An interview with Jack Welch. In J Gabarro (Ed.) *Managing people and organizations*, 432-446. Cambridge: Harvard University Press.

[79] Timmons, H. (2002, April 7). Does GE Capital deserve that AAA? Business Week Magazine. Online: http://www.businessweek.com/stories/2002-04-07/does-ge-capital-deserve-that-aaa (accessed March 24, 2014).

[80] Tirole, J. (2005). *The theory of corporate finance.* Princeton: Princeton University Press.

[81] Tobin, J. (1965). Money and economic growth. *Econometrica 33*(4), 671-684.

[82] Tomaskovic-Devey, D. and K. Lin (2011). Income dynamics, economic rents, and the financialization of the US economy. *American Sociological Review 76*(4), 538-559.

[83] van Treeck, T. (2008). Reconsidering the investment-profit nexus in finance-led economies: an ARDL-based approach. *Metroeconomica 59*(3), 371-404.

[84] van Treeck, T. (2009). A synthetic, stock-flow consistent macroeconomic model of distribution and growth. *Cambridge Journal of Economics 33*(3), 467-493.