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Corporate Sector: A Theoretical and
Empirical Investigation on the US
Economy, 1973-2004**

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**FINANCIALIZATION AND CAPITAL ACCUMULATION IN THE
NON-FINANCIAL CORPORATE SECTOR**

A Theoretical and Empirical Investigation of the U.S. Economy: 1973-2003

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Abstract

Recent research has explored the growing ‘financialization’ process in the U.S. and other advanced economies. The term is a catch-all phrase used to denote important changes in the structure of non-financial corporations’ balance sheets, including the growth of income from financial subsidiaries and investment as well as growth in the transfer of earnings to financial markets in the forms of interest payments, dividend payments and stock buybacks. This paper seeks to empirically explore the relationship between financialization in the U.S economy and real investment at the firm level. Using data from a sample of non-financial corporations from 1973 to 2003, I find a negative relationship between real investment and financialization. First, increased financial investment and increased financial profit opportunities may have crowded out real investment by changing the incentives of firm managers and directing funds away from real investment. Second, increased payments to the financial markets may have impeded real investment by decreasing available internal funds, shortening the planning horizons of the firm management, and increasing uncertainty. These two channels can help explain the negative relationship I find between investment and financialization.

Keywords: Financialization, capital accumulation, corporate governance, investment, financial markets

JEL Classifications: E2, D2, G2, G3

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I. Introduction

‘Financialization’, most broadly understood, refers to the increase in the size and significance of financial markets and financial institutions in the modern macroeconomy. The precise form and usage of the term have been ambiguous. The phrase has been used to designate such broad, interconnected but distinct phenomena as the globalization of financial markets, the rise of financial investment and incomes from such investment¹, the growing importance of ‘shareholder value’ in economic decisions² and the changing structure of corporate governance³.⁴ While much of the literature on financialization focuses on macroeconomic outcomes⁵, the concept has a ready and important analog at the firm level. For the purposes of this study, therefore, I use financialization to designate the changes that have taken place in the relationship between the non-financial corporate sector and financial markets.

There is certainly strong evidence to suggest that the relationship between the non-financial corporate sector and financial markets has become deeper and more complex. Non-financial corporations (NFCs) in the U.S. have, over the last twenty years, been increasingly involved in investment in financial assets and financial subsidiaries and have derived an increasing share of their income from them. At the same time, there has been an increase in financial market pressures on NFCs. This is in part due to changes in corporate governance, starting with the hostile takeover movement of the 1980s and proceeding to the so-called shareholder revolution of the 1990s.⁶ The same period has therefore also witnessed an increasing transfer of earnings from NFCs to financial markets in the forms of interest payments, dividend payments and stock buybacks. These developments reflect a change in the objectives of top management, an

increasing propensity to short-termism in firm decision making, and/or increases in the cost of capital.

In this paper, I seek to explore the effects of increased financialization on the real investment decisions of firms. Specifically, I investigate two channels that have been developed in the theoretical literature. First, I ask whether increased financial investment and increased financial profit opportunities crowd out real investment by changing the incentives of the firm managers and directing funds away from real investment. Second, I examine whether increased payments to financial markets impede real investment by decreasing available internal funds, shortening the planning horizon of the firm's management, and increasing uncertainty.

I empirically test these two effects on a large sample of U.S. firms for the period 1973-2003. Econometric tests provide support for the view that financialization has negative effects on firm investment behavior. These two channels can help explain the negative relationship I find between investment and financialization. I use different sector, industry and size specifications to examine the robustness of this conclusion. While most results are robust across these different specifications, I identify different effects of financialization on firms from different sectors and sizes. For example, while the negative effect of financialization through increased financial payout ratios is unambiguous across industries as well as small and large firms, the negative effect of increased financial profits is most obvious in large corporations which were arguably more involved in financial investments than small corporations. I conclude by discussing the implications of these results both for the U.S. economy and for other economies that are moving or considering a move towards U.S. style capital markets and corporate governance structures.

This paper therefore contributes to the debates around the effects of financialization on the capital accumulation process. There has been much discussion on the relation between financialization and real capital accumulation. For example, Crotty (2005) described a form of financialization in which NFCs have started to increase their investment in financial assets, bought or expanded financial subsidiaries, and shortened their planning horizons. Duménil and Lévy (2004a) drew attention to the fact that interest and dividend payments to financial markets have been on the rise, and they argued that NFCs are therefore left with smaller amounts of funds for real investment. Aglietta and Breton (2001) made the same point and argued that an active market for corporate control pushes firms to boost their share price through dividend payouts or stock buybacks and, as a consequence, the share of earnings devoted to financing growth is reduced. Stockhammer (2004) attempted to empirically trace the link between financialization and capital accumulation at the macroeconomic level. He argued that investment in financial assets by NFCs indicates a change in management objectives towards adopting “rentier preferences,” and he econometrically explored the consequences of this change.

Although there have been analyses about the relationship between real capital accumulation and financialization, the contribution of this paper is unique in that it makes use of a firm-level database to test these hypotheses for the first time. Previous attempts to assess financialization have been limited to aggregate data analyses, which may have prevented the identification of cross-firm differences. Firm-level data permits the analysis of the effects and extent of financialization on firms of different sizes and in different sectors/industries. Just as importantly,

firm-level data makes it possible to analyze the characteristics of large firms, which are most likely to be affected by financialization.

The remainder of the paper is organized in follows. In the next section I review the theoretical literature on the channels through which financialization affects capital accumulation. Then in the third section I introduce the theoretical model and the statistical specification to be tested. In the fourth and fifth sections I present and discuss the data and summarize the results of the econometric investigations.

II. Financialization and Capital Accumulation

The possibility of a link between financialization and capital accumulation has attracted attention in the literature. While NFCs were increasingly involved in investment in financial assets (see Figure 1), deriving an increasing share of their income from financial sources (see Figure 2), and discharging higher amounts of payments to financial markets (see Figure 3), it is clear that the rate of capital accumulation has been relatively low in the era of financialization (see Figure 4).⁷ In this section, I discuss these trends and the potential impacts of financialization on capital accumulation through a review of the literature on financialization.

There are two main channels through which financialization could hamper real investment. First, increased investment in financial assets can have a ‘crowding out’ effect on real investment. Total funds available to a firm can either be invested in real assets or used to acquire financial assets. When profit opportunities in financial markets are better than those in product markets, this creates an incentive to invest more in financial assets and less in real assets. There are two cases

to consider. First, if we assume that external funds are limited because of quantitative constraints, because additional funds are only available at a higher cost, or because internal funds are ‘safer’ than external financing for the firm, then investing more in financial assets crowds out investment in real capital. Second, the pressure on firm management to increase returns in the short-run can force them to choose financial investments, which provide more rapid returns, as opposed to real investments, which provide returns in the medium to long-run. A counter argument might be that if the shift in investment spending from real to financial assets is only in the short-run, this can add to the firm’s funds in the long-run, and hence could potentially have a positive long-run impact on investment. If the firms are investing in financial assets when real investment is less profitable, earnings from financial investments could be used to fund real investment in the long run. I return to this question after a full discussion of the relationship between financialization and capital accumulation and test which of these competing hypotheses is consistent with data in the next two chapters.

A second channel through which financialization could undermine real investment is by means of pressure on NFCs to increase payments to financial markets in the form of dividends and stock buybacks by the firm.⁸ Of course, if the evolution of financial markets and practices in the era of financialization leads to greater debt burdens on NFCs, interest payments will rise as well. The increase in the percent of managerial compensation based on stock options has increased NFC managers’ incentive to keep stock prices high in the short-run by paying high dividends and undertaking large stock buybacks. Simultaneously, the rise of institutional investors, who demand constantly rising stock prices, as well as the aftermath of the hostile takeover movement have pressured NFC managers to raise the payout ratio. NFC managers are thus motivated by both

personal interest and financial market pressure to meet stockholders' expectations of higher payouts via dividends and stock buybacks (a shift in incentives) in the short-run. Both the NFC objective function and its constraint set have changed. As a result, the percent of internal funds paid to financial markets each year has risen dramatically. This creates three distinct restraints on real investment. First, if internal funds are cheaper or safer than external financing, rising financial payments would decrease the funds available to finance real investment by reducing internal funds. Second, the time-horizon of NFC management has dramatically shortened, hampering the funding of long-run investment projects, including research and development. Third, since the firm management does not know how much it will cost to re-acquire the financial capital it pays back to financial markets each year (i.e. it has no idea what the cost of financing for ongoing long-term projects will be next year), uncertainty rises, making some projects with attractive expected gross long-term returns too risky to undertake. All three changes are aspects of the shift from 'patient' to 'impatient' investment financing. I explain each of these two channels in turn.

II.1. Expansion of financial investments and incomes

The increase in the financial investments of NFCs and the resulting increase in their financial incomes have distinguished the last couple of decades of the U.S. economy, as noted by, among others, Krippner (2005), Stockhammer (2004) and Crotty (2005). I look at these trends in Figures 1 and 2. Figure 1 shows the ratio of financial assets to real assets for the non-financial corporate sector in the U.S. for the years 1952-2003, and Figure 2 presents the financial incomes as a percentage of NFC internal funds for the same period. These figures demonstrate that there has been a steady rise in the ratio of financial assets of NFCs to their real assets, which was

accompanied by a rise in their financial income.⁹

This significant rise in the financial investments and incomes of the NFCs did not get much attention in the economics literature except in the works mentioned so far. However, it has often been noted by the business press, with cautions on the fragile character of financial earnings for the NFCs (Eisinger 2004, Business Week 2005, and Covert and McWilliams 2006).

A potentially contradictory relationship between real and financial investment was identified by Tobin (1965). Before the literature on financialization, and even before financialization itself took off in the 1980s and 1990s, Tobin noted that financial investment and real investment could be substitutes. Available funds can be invested in financial assets or real assets. He argued that in times when financial assets offer higher returns than real investment projects, more funds will be invested in financial capital and, as a result, less funds will be available for real investments. In other words, financial investment will crowd out real investment. He also noted that at the macro level investment in financial assets cannot substitute for investment in real assets by a simple reallocation of funds into financial transactions, since no productive resources would be diverted from other uses by pure financial transactions at the macro level (Tobin 1997).

However, Tobin did not elaborate further on any of these assertions.

Binswanger (1999) reasserted the crowding out argument for the current era of financialization and noted the high rate of increase in financial investments relative to real investments by NFCs in the U.S.. Crotty (2005) describes a similar process, in which NFCs increased their financial investments and created or bought financial subsidiaries (or expanded the ones already in

existence). He argues that this increase in financial investments was a response by NFCs to the low real sector profits and high costs of external funds faced during much of the 1980s and 1990s.

Stockhammer (2004) notes that higher financial profits together with the changes in corporate governance led to a change in the priorities and incentives of management. NFC management started adopting the preferences of financial markets, reflected by a focus on short-term returns rather than long-term growth, as a result of these institutional changes. This change in the managerial preferences had a negative effect on real investment, since NFC management now had fewer long-run growth-oriented priorities and instead chose to increase the financial investments of their corporations. Financialization pushed NFC management to act more like financial market players. Therefore, according to Stockhammer, NFCs' shift towards financial investment can be interpreted as a shift away from the earlier main managerial objectives of long-term growth through real capital accumulation, which prevailed under the 'managerial firm' regime up through the 1970s, towards an adoption of institutional investors' interests in short-term stock price appreciation since 1980s.

Crotty (2005) adds that since the NFC management's view of the firm has become increasingly dominated by the "portfolio view of the firm," short-termism has increasingly superseded long-term growth objectives. This portfolio view of the firm is summarized by Fligstein and Markowitz (1990) as the firm being seen as "a bundle of assets to be deployed or redeployed depending on the short-run rates of returns that can be earned" (p. 187, quoted in Crotty 2002: 21).¹⁰ This predominance of the portfolio view of the firm by the management as well as by

financial markets, together with hostile product market conditions that held the profit rate of real assets down, created short-termism on the part of the NFC management that slowed down the rate of capital accumulation in the U.S. compared with the earlier periods.

II.2. Increasing financial payout ratios

Financialization has been characterized by increased financial payout ratios in the form of interest payments, dividend payments and stock buybacks. Figure 3 shows the increasing financial payouts made by the non-financial corporate sector as a percentage of their before-tax profits. This figure shows that, starting in the mid-1970s, total financial payments made by the NFCs have been increasing. Although it had its ups and downs, the post-1980 average of total financial payments has clearly been above that in the earlier era.

Lazonick and O'Sullivan (2000) label this phenomenon as a shift from a 'retain and reinvest' strategy to a 'downsize and distribute' strategy. They argue that management became more focused on distributing the revenues of the corporation in ways that raised the company's stock prices and increased the value of stock options. This is the result of institutional changes including the prominence of the prioritizing of 'shareholder value' together with the rise of institutional investors, the alignment of the interests of managers with those of shareholders through the use of stock options, and the threat of takeover in the active markets for corporate control.

The concept of 'shareholder value' finds its origins in the literature which suggests that the main function of the firm's financial structure is to mitigate managerial incentive or principal-agent

problems.¹¹ The manager of a firm typically has objectives differing from the objectives and interests of its shareholders and creditors. Therefore, the manager should be given incentives that make him run the firm in the best interests of investors. The hostile takeover movement of the 1980s and the following move towards the use of stock options to reward managers were employed to this end. Holmstrom and Kaplan (2001) point out that corporate governance in the U.S. changed dramatically in the 1980s and 1990s. A hostile takeover movement in the 1980s -- during which time nearly half of all major corporations received a takeover offer-- forced managers to adopt the interests of the shareholders (p. 1). And in the 1990s, stock options began to play a significant, if not dominant, role in corporate governance (*ibid*).

Creating 'shareholder value' became more important with the rise of institutional investors such as mutual funds, pension funds and life insurance companies. Institutional investors have clearly become dominant shareholders in large U.S. corporations and are responsible for about three quarters of all stock trades (Crotty 2002: 23). This is important because, as Lazonick and O'Sullivan (2000) points out, the rise of institutional investors made the takeovers advocated by agency theorists possible while giving shareholders increased power to influence the firm management so as to increase the yields and market values of the stocks they held.¹² The characteristics of competition among these institutional investors force them to seek short-term capital gains or risk losing against competitors, which is the source of short-termism.¹³

Duménil and Lévy (2004a) argue that the rate of capital accumulation in the non-financial sector closely follows that of the rate of retained profits (the rate of profit after payments of interest and dividends). Increased financial payouts in the forms of interest and dividend payments reduce

retained profits and so should also diminish the rate of accumulation. Their theoretical argument is consistent with data for France and the U.S., where they observe that the rate of capital accumulation has slowed down while interest and dividend payments have risen.

Aglietta and Breton (2001) also point out the rise of financial payouts. They study the relationship between the developments in financial markets and the investment behavior of NFCs.

Financialization creates an active market for corporate control, which forces the firms to boost their share prices in the face of take-over threats. An active market for corporate control increases the influence of majority shareholders. In order to protect themselves and to please the shareholders, corporations have to maintain a minimum return on equity, for which they have to distribute dividends or buy back their own stocks. As a result, not only is the share of firm funds devoted to real investment reduced, but if buybacks are financed by borrowing, then corporations may also increase their indebtedness and become more constrained by banks.

Aglietta and Breton's (2001) theorization resembles that of Duménil and Lévy (2004a), with an added constraint that comes from increased indebtedness. They conclude that the market for corporate control can lead to a slowdown in growth by increasing the financial cost of capital, imposing constraints on management, and increasing the indebtedness of the firm. As a result, increased financial payouts would have an additional indirect effect on investment through an increase in the total debt of the firm.

Moreover, Boyer (2000) points out that an increase in the return demanded by financial markets would have a negative effect on investment. Even though financialization can ease access to financial markets, it can also restrict investment by raising the cost of capital by making it more

expensive to raise capital from financial markets. While firms are able to raise capital easily from the stock market, the return that they have to provide to the market in the forms of dividends and stock buybacks has increased. This is similar to Crotty's (1990) argument that payments to shareholders are a cost of autonomy for the management and hence these payments tend to constrain investment. For the management, dividend payments, like interest payments, can be considered as a cost of autonomy from financial market constituents. Therefore, the desired rate of firm growth must be balanced against the shareholders demands, which could put a constraint on the growth objectives.

A counterargument could be that if financial markets are 'efficient,' firms should be able to raise funds to finance profitable investment opportunities. However, NFCs are in a position in which they first transfer a significant part of their earnings to the financial markets and then compete with all other borrowers to re-acquire these funds. Recall that Froud *et al.* (2000) call this 'coupon pool capitalism,' where the earnings of corporations are returned to financial markets after which corporations compete to re-acquire these funds. This process of discharging the earnings to the financial markets and then competing to re-acquire them increases the degree of uncertainty and shortens the planning horizon for investment funding. Therefore, unlike the earlier era of 'retain and reinvest', managers now cannot be sure of the amount of these funds they will be able to re-acquire and at what cost. This could especially hamper investments that have longer periods of gestation by creating uncertainty about the ability of the firm to finance the projects in the coming years. The pressure to provide high short-term returns to shareholders can shorten planning horizons, as the attempt to meet the short-term expectations of the financial markets, rather than investment in long-term growth of the firm, becomes the primary objective.

Increasing financial payout ratios have also been discussed extensively in the business and finance literature. However, the approach in that literature has been to focus on rather minor aspects of the phenomena, such as the relationship between various indices of corporate governance, dividend payments and stock buybacks, and corporate performance measured by returns on equity.¹⁴ This literature generally starts from the assumption of efficient financial markets. Consequently, the distribution of earnings to the financial markets at increasing rates cannot be seen as a factor that could hamper investment, since financial markets with full information would allocate firms enough funds to undertake their optimum level of investment.

However, as stressed by Binswanger (1999), financial markets attract short-horizon speculative traders since these markets allow for sequential trading and prices react very quickly to a variety of information influencing expectations on financial markets. Therefore, prices on financial markets tend to be volatile and enable profits (and losses) to be made within very short time periods. Managers of NFCs may be forced, or induced via stock options, to take the short horizon of financial markets as their guideline for decision-making. If financial markets undervalue long-term investments then managers will undervalue them too, as their activities are judged and rewarded by the performance of a company's assets. This may harm the long-run performance of companies. As Crotty (2005) argues, there has been a shift in the financialization era from 'patient' financial markets to 'impatient' financial markets.¹⁵ While the former regime emphasized the pursuit of long-term growth, the latter forces NFCs to pay an increasing share of their earnings to financial agents while also changing managerial incentives and shortening their planning horizons.¹⁶

To sum up, financialization could have negative effects on investment in real assets through two channels. First, increased financial investments could have a negative effect by crowding out real investment and second, increased payments to financial markets can constrain real investment by depleting internal funds, shortening planning horizons, and increasing uncertainty. In the next section, I develop an investment model that can be used empirically to test the relation between financialization and investment.

III. Model

III.1. Theoretical Specification

It is no surprise that the potential effects of financialization on investment have attracted much attention since the “pace and pattern of all business investment in fixed capital ... are central to our understanding of economic activity” (Chirinko 1993: 1875). The growth of an economy ultimately depends on the accumulation of physical capital and the technology it employs.

However, it is not easy to empirically analyze investment as the “estimation of investment functions is a tricky and difficult business and the best posture for any of us in that game is one of humility” (Eisner 1974: 101). Nevertheless, in this section I specify a simple investment model that can account for the potential effects of financialization delineated in the previous section while controlling for other determinants of investment. After theoretically motivating the model, I use it in the next section to empirically investigate the effects of the increased financial incomes and financial payout ratios of NFCs on their investment behavior.

There is a voluminous literature that attempts to explain the investment behavior of firms. The following discussion is based on the literature that attributes importance to both real and financial variables in the determination of investment behavior of firms (see, for example, Galbraith 1967, Eichner 1976, Lavoie 1992, Crotty 1990, 1993 and Crotty and Goldstein 1992). The traditional literature, surveyed by Chirinko (1993) and Kopcke and Brauman (2001), focuses on a variety of issues that have importance in terms of investment. Five variables deserve attention in this regard. These are expected profitability, output or sales, the cost of capital and interest rates, cash flow or internal funds, and the debt ratio.

In what follows, I propose an investment model that includes both real and financial determinants of investment and introduces two financialization variables to account for the potential impacts of financialization on capital accumulation. The investment function is specified as

$$I/K = f(\pi/K, S/K, D/K, P/K, \pi^F/K) \quad (1)$$

where I is investment; π is profits; S is sales; D is long-term debt; P is financial payments; and π^F is financial profits; with the following expected signs:

$$(I/K)_{\pi/K} > 0, (I/K)_{S/K} > 0, (I/K)_{D/K} < 0, (I/K)_{P/K} < 0, (I/K)_{\pi^F/K} < 0,$$

Investment is expected to be positively related to the rate of profit and sales, and negatively related to two financialization variables, payments to the financial markets and financial profits.

The sign of the debt variable will depend on managerial perceptions about the level of safe debt as discussed below. The profit and sales variables reflect both supply and demand conditions.¹⁷ A discussion of these variables follows.

Profitability and demand

On the real side, the growth opportunities of the firm depend on both demand and supply conditions. Profitability and demand are the two related constraints faced by the firm. First, the profitability objective is important as, *ceteris paribus*, firms will undertake investment projects that they expect to be profitable. As Kopcke and Brauman (2001) note

all models of investment recognize that businesses intend to profit from their investments. Yet, the models express this common theme in distinctive ways as they describe the influence of economic conditions on investors' perceptions of future profits and, in turn, on their demand for capital goods (p. 8).

Within the literature, many contributions developed theories of capital accumulation that assign significance to profitability.¹⁸ Expected profitability is a significant determinant of investment in neoclassical, q and options value models as well.¹⁹ The framework I adopt here, however, is more in line with the literature which explicitly takes into account the fact that investors face 'true' uncertainty when they make investment decisions.²⁰ Under 'true' uncertainty, future profits and demand conditions cannot be known, so expectations about future conditions are in large part formed on the basis of past performance. Hence, expected profitability is one of the major determinants of investment.²¹ Consequently, past profitability will be an important determinant of

investment through the indication it gives about future profitability. Moreover, if internal funds are preferred by management to external funds, past levels of profits could affect investment by determining the level of internal funds available for investment.

Investment is positively related to the expected future rate of profit on new capital investments. Given uncertainty about the future, it is reasonable to assume that the extrapolation of recent values of the profit rate on existing capital might be used as a proxy for the expected profit rate on new capital. But a problem with this is the fact that if the profit rate is affected by changes in the degree of capacity utilization, merely projecting past profit rates will not be a good predictor of investment. This is especially true if the degree of capacity utilization is likely to change in the future, or if the firm has been operating below full capacity in recent past, in which case a high observed profit rate on capital does not imply a high expected profit rate on new capital. To take account of this problem, I use sales-to-capital ratio as a proxy for the degree of capacity utilization which has no good macro or micro measurement.²²

Financial payouts

Although I have argued above that we should expect a negative coefficient on the financial payout variable, this is not the only possible outcome. It could be argued that higher financial payments could mean higher future credibility by showing that the firm provides high returns to financial markets. A high financial payout ratio could signal profitability and solvency for the firm and also meet shareholders' liquidity preference. This can increase the firm's future access to finance and decrease the cost of finance by increasing the firm's credit worthiness. This would then imply an expectation that high financial payout ratios could be positively correlated with

high investment. Nevertheless, an increase in the financial payout ratio in the above model may well affect investment in a negative way. The need to increase financial payout ratios indicate that firm has to be careful in the short-run since failure to meet these financial payment obligations could result in loss of autonomy, a takeover threat, and a fall in the value of stock options. Hence, increased financial payout ratios in the short-run make it difficult to undertake investment projects that provide returns only in the long-run and in the meantime require continuous financing. I will subject these competing theses to econometric analyses below.

Debt ratios

Debt-to-equity or debt-to-capital ratios have been used in investment models with the idea that high levels of debt indicate financial fragility which would have negative effects on the investment behavior of the firms. As the debt ratio increases, managers and shareholders incur a growing risk of losing control of their firms. The overall indebtedness of the firm reflects the long-run financial safety of the firm as higher levels of debt increase the fragility of the firm's balance sheet. Hence, debt-to-equity or debt-to-capital indices measure a firm's long-term financial fragility. The relation between investment and debt should depend on the level of debt perceived as safe by the firm's management and by financial markets. If the level of debt is perceived to be above the safe level, then increases in total debt would have a negative effect on investment. Conversely, if the level of debt is below the safe level, then it will either have no effect or a positive effect through an increase in the funds available for the firm.²³ The level of safe debt may vary with the size of the firm as well as with attitudes to firm indebtedness. Such attitudes may change over time.²⁴ In the height of the hostile takeover movement of the 1980s, high debt was considered to be good for the firm because it forced managers to be efficient, thus

minimizing the principal-agent problem, while it protected the firm from hostile takeovers.

Moreover, debt financing of investment creates at least a short-run correlation between debt and investment.

Nonetheless, high leverage can also constitute a threat to the autonomy of the firm management.

Increasing debt indicates higher cash flow commitments by the firm to its creditors. If the future income of the firm turns out to be insufficient to meet these commitments, the management then faces the risk of losing its decision-making autonomy as well as of the firm going bankrupt.²⁵

Short-termism and financial profits

The expectation of a negative coefficient for the financial profit variable developed above is potentially contentious. For one thing, this expectation is in contrast with the financing constraint hypothesis. According to the financing constraint hypothesis, any income, whether from financial or real sources, would contribute to the internal funds of the firm and hence its effect on investment should be positive.²⁶ If in the future, the profit rate on financial assets falls below the profit rate on real assets, firms may use their income from current financial operations to finance their future real investment projects. In this case, past financial income can be positively correlated with the level of current capital expenditures.

These arguments will be examined econometrically below. Two considerations should be noted.

First, it is generally considered to be the case that smaller firms are more likely to be financially constrained than larger firms. Therefore, a positive effect of financial income on real investment for smaller firms can in principle be identified through the use of firm-level data. Second, even

though financial income could be treated as any other income, there is no guarantee that it would be used to finance real investment. Given the increased pressure on the firms to discharge their earnings to the financial markets, financial income might be recycled back to financial markets or used to purchase yet more financial assets.

III.2. Statistical Specification

The model specified above is appropriate for the analysis of the effects of financialization as it considers the pursuit of financial security as a significant constraint on managerial decision-making, and the financialization literature suggests that there have been significant changes in terms of the financial security of the firm. Moreover, it accounts for the effects of increasing financial investments of the firms through the use of a proxy for financial profits made by the firm.

The equation estimated takes the following form:

$$\ln(I_{it}/K_{i,t-1}) = \alpha_0 + \alpha_1 \ln(\pi/K)_{i,t-1} + \alpha_2 \ln(S/K)_{i,t-1} + \alpha_3 \ln(D/K)_{i,t-1} + \alpha_4 \ln(P/K)_{i,t-1} + \alpha_5 \ln(\pi^F/K)_{i,t-1} \quad (2)$$

where \ln is a logarithmic function, $\alpha_0 \dots \alpha_5$ are parameters, the i subscript denotes the firm, and the t subscript denotes the time period.

The regression variables are scaled by lagged capital stock to correct for heteroscedasticity, which is a common practice in investment studies that use firm-level data.²⁷ Logarithmic forms are used to account for potential non-linearities in the relationships between the explanatory variables and

the rate of investment. In order to control for the dynamic effects, I include the first lag of the investment-to-capital ratio in the regressions below.²⁸

The model tests for two effects of financialization –through the π^F and P variables- on the investment behavior of NFCs while controlling for other determinants of investment. Equation (2) is tested using firm-level data. The properties of the data set and the sample selection criteria are explained in the next section.

IV. Data

The data that I use come from Standard and Poors' Compustat annual industrial database. This database provides panel data for a large number of firms. The period covered is from 1972 to 2003, 1972 being the first year when the full set of data items used for this study is reported. The period covered by the data set is appropriate for the purposes of this study. As many studies on financialization have pointed out, there has been an increase in financial incomes, payments and assets in the post-1980 era, while at the same time the rate of capital accumulation has declined compared with the earlier post-war period. I include all non-financial firms from the database (the Standard Industry Classification (SIC) codes 6000-6799 are excluded as they refer to financial firms). However, in order to provide comparability with other investment studies, which in most cases take the manufacturing sector as their sample, I pay specific attention to the manufacturing sector (SIC codes 2000-3999). Additionally, the results for the manufacturing sector are important since it represents a significant part of the production side of the macro-economy and is important in affecting the business cycles. I compare the results with the entire set of non-manufacturing firms.

Financialization is a complicated process that may affect different corporations in different ways. Macroeconomic data, although useful in identifying general trends, fail to pick up the heterogeneity in firm behavior. Firm level analysis provides an opportunity to control for firm-specific effects. The use of data on individual firms has many advantages compared with using aggregate time series data. Biases due to aggregation can be avoided. Furthermore, the cross-sectional variation in panel data increases the precision of parameter estimates while taking the heterogeneity across firms into account.²⁹ The possibility to differentiate between large and small firms, which have potentially different behaviors, is another advantage of panel data.

The sample is an unbalanced panel, as a firm is not required to have observations for all the years in the period. Using a balanced panel sample could introduce certain biases in the sense that only firms that have survived for the whole period would be in the sample and I would have to delete a significant number of firms just because data were not reported on certain items for some years. On the other hand, the coverage of the Compustat database increases over time. One can take advantage of the availability of more firms in recent years by utilizing an unbalanced panel. I require a firm to have at least 10 years of observations after cleaning the missing observations for the regression variables to be included in the sample. In addition, I exclude firms that have had permanently negative profit rates for the years they are in the sample. A significant degree of heterogeneity among the firms might generate large outliers which can bias the empirical results. Firm data usually have large outliers, especially when the variables are expressed in the form of ratios (Chirinko *et al.* 1999). To eliminate outliers I apply a two-step procedure. In the first step, I calculate firm means for each regression variable. Second, I exclude the firms whose means fall in

the 1 percent or the 99 percent tail of distribution of the variable in the sample. Following Chirinko *et al.* (1999), I do not delete outliers for the dependent variable to avoid a censored regression bias.³⁰

Variables used are taken from the Compustat database. I is *capital expenditures* (Compustat data item 128); K is *net property, plant and equipment* (Compustat data item 8); π is *operating income* (Compustat data item 8); S is *sales* (Compustat data item 12); P is the sum of *interest expense, cash dividends, and purchase of [firm's own] common and preferred stock* (Compustat data items 15, 127 and 115); D is *long-term debt-total* (Compustat data item 9); π^F is the sum of *interest income and equity in net earnings* (Compustat data items 62 and 55).³¹ The size variable used is *total assets* (Compustat data item 6). The nominal values of all the variables are deflated in order to obtain real values. I use the price index of investment goods to deflate capital expenditures and capital stock. Other variables are deflated by the GNP deflator. Moreover, the regression variables are scaled by the capital stock at the beginning of the period in order to correct for heteroscedasticity. Table 1 presents summary statistics for the regression variables. It shows that there are large variations within and across firms.

V. Econometric Results

The dynamic investment model in Equation (2) is estimated using the Arellano-Bond Generalized Method of Moments (GMM) estimation technique. GMM eliminates the potential endogeneity problems caused by the inclusion of a lagged value of the independent variable among explanatory variables. To eliminate firm fixed effects, explanatory variables are first-differenced. This accounts for both unobservable time-specific and firm-specific factors such as

technology and managerial ability (Ndikumana 1999: 465) that would have an effect on the investment behavior of the firm.

Results of the regression analyses are presented in Tables 2 and 3. Table 2 presents results for all non-financial firms, for manufacturing firms, and for non-manufacturing firms. Manufacturing firms are further divided into durable and non-durable goods producing industries.³² This split would potentially account for the effects of business cycles since durables industries are considered to be more sensitive to the business cycles. Within these sectors and industries, results for subsamples of large and small firms are also reported. Table 3 takes disaggregation by size a step further and presents results for five different firm sizes within the manufacturing firms.

Real variables

I start by examining whether the base variables in the investment model are appropriate for explaining investment. In general, the real side variables have the expected signs and for almost all specifications have statistical significance. The general specification of the investment function seem appropriate to capture the real side variables' effects on investment and hence provide a good base on which the effects of financialization can be tested. The coefficients of the profit and sales variables, which are proxies for real constraints, have the expected positive signs for all specifications. They are also statistically significant with a few exceptions. The size of the coefficient on the sales variable is larger for small firms, both for manufacturing and non-manufacturing firms. For the whole sample, we observe a larger size for the coefficient of the profit variable in larger firms.

In all regressions except for small manufacturing firms we observe a significant dynamic component represented by the first lag of the investment to capital ratio. The positive effect is larger and statistically more significant for large firms. This is consistent with the argument that for large firms, investment projects tend to run over a longer period, and hence high investment in the previous year would be associated with high investment in the current year. Overall, the first lag of investment to capital ratio is positive and significant for all NFCs as shown in Table 2. This effect is statistically significant for the manufacturing sector and within the manufacturing sector for both durable and non-durable goods producing industries. The effect remains positive for non-manufacturing firms and we also observe significant positive effects of lagged investment in smaller firms in the non-manufacturing sector. Table 3 shows the significant effects for large manufacturing firms.

Long-term debt

On the financial side, the long-term debt-to-capital ratio, which is a proxy for the long-term financial robustness of the firm, has a negative and statistically significant coefficient when all NFCs are considered. This indicates that higher levels of debt constrain investment as it increases the financial fragility of the firms. In terms of its statistical significance this term does not perform as good as the real variables discussed. An interesting note perhaps is that, as shown in Table 3, the long-term debt variable has a positive but small impact on the investment behavior of the larger manufacturing firms and is statistically insignificant. In general, high long-term debt-to-capital ratios do constrain the investment behavior of the firm. The statistical results show that as the long-term indebtedness of the firm increases it may have a negative effect on investment.

Financial payouts

Turning back to the focus of this paper, I next examine the results for the two financialization variables employed, the financial profit and financial payout ratios. The financial payout variable has the negative coefficient predicted by financialization theory and it is statistically significant in most subsamples, as Tables 2 and 3 show. When the sample is divided into small and large firms, the sign of the coefficient remains unchanged. Further, Table 2 shows that it is robust to different industry specifications under the manufacturing sector. In terms of the magnitude of the effect, we observe that it approaches to those of sales and profit variables.

On the whole, these results support the hypothesis that increased financial payout ratios can impede real investment by allocating funds away from real investment and by shortening the planning horizons of the NFCs. This finding is in contrast with the neoclassical investment theory, in which it is the expected profitability of investment that drives investment decisions and every investment project that is profitable would find funding. There is no room in neoclassical theory for an argument that higher financial payments reduce capital accumulation due to a shortage of funds. However, statistical findings presented here support the argument that increased financial payout ratios decrease investment by either directing funds away from investment or by shortening the managerial planning horizon as firms are either trying to meet the short-term return expectations of the financial markets or as the managers are trying to increase the short-term value of the firm and hence maximize their returns from stock options.

Financial profits

The financial profits variable employed in the regressions provides interesting results that are sensitive to firm size. We observe negative and significant coefficients for this variable for large firms across different sectors. This provides strong empirical support for the financialization hypothesis, which reflects an insight not available from either neoclassical or new-Keynesian theories.

Nevertheless, the effect for small firms is positive. This is not entirely surprising. A positive coefficient on the financial profits variable would be consistent with liquidity-based investment theories or with the financing constraint hypothesis. Income from financial investments can be used to finance real investment in the future. However, we observe this only for small firms. Given that small firms are not involved in financial investments as much as large firms, their financial holdings (and hence the interest income -the main financial income they have- derived from these) can be correlated positively with investment if small firms are saving up before undertaking large investments, a result predicted by the new-Keynesian theories of investment. However, the robust and significant results for large firms suggest that increased financial investments by these firms do have a negative effect on real investment. For large firms the coefficient of the financial profits variable is negative and statistically significant, indicating that for these firms, past financial investment does not support current real investment. This is consistent with the argument that increased financial profits reflect a change in the managerial preferences towards short-termism and financial investment and hence affect real investment adversely.

To sum up, I find strong evidence that financialization has negative effects on firm investment

behavior, especially for large firms. The financial payout variable has negative and statistically significant coefficients for almost all specifications and the financial income variable has negative and significant coefficients for the larger firms. These results provide the first firm-level evidence regarding the potential negative effects of financialization on investment.

VI. Concluding remarks

This paper analyzed the potential effects of financialization on the investment behavior of NFCs. Financialization has two aspects. On the one side, NFCs increase their financial investments relative to their real investments and hence derive an increasing part of their income from financial sources. On the other side, NFCs are under increased pressure from the financial markets to increase their returns to these markets. Hence, NFCs transfer an increasing part of their earnings to financial markets in the forms of dividends and stock buybacks, in addition to interest payments.

These two aspects of financialization could have negative effects on real capital accumulation. First, increased financial investments can crowd out real investment by directing funds away from real investment into financial investment and increased financial profits can change the incentives of the firm management regarding investment decisions. Therefore, the first hypothesis developed was that high financial profit opportunities lead to higher financial investment and result in a decline in real investment. Second, increased financial payments can decrease the funds available for real capital accumulation while the need to increase financial payments can decrease the amount of available funds, shorten the managerial planning horizon, and increase uncertainty. Hence, the second hypothesis developed was that the demand for increased financial payout

ratios leaves firms with fewer funds to invest, as well as a shortening of the planning horizon of its management and increasing uncertainty, which leads to lower levels of investment.

The model was tested by using firm-level data. The findings indicate a negative relationship between financialization and capital accumulation, especially for large firms. The results support the view that financialization has negative implications for firm investment behavior. Although the results presented are not necessarily conclusive, they represent a new attempt to examine the relationship between financialization and investment at the firm level.

The negative effects of financialization on investment confirm the concern that financialization could be slowing down the accumulation of capital. Although the findings do not lend themselves to easy policy conclusions, they indicate that overall, the nature of the relationship between financial markets and NFCs does not necessarily support productive investment. On the contrary, it might be creating impediments.

Moreover, the results would have significant implications for developing countries. Changes in financial market and corporate governance structures toward the U.S. system are on the agenda in many countries.³³ However, a shift towards U.S.-style financial markets and corporate governance would not necessarily be in the interest of these countries, especially in terms of growth, if this shift was to have negative effects on investment. Therefore, both in order to better understand the U.S. economy (and in particular the role of financial markets with respect to capital accumulation) and to better assess the impacts of financial market and corporate governance reforms in developing countries, more studies of these relationships need to be

undertaken.

Furthermore, for a long time economists have been discussing the merits of different financial systems.³⁴ Most of the literature has been concerned with comparing U.S. style stock market based systems with German and Japanese style bank-based systems. The debates have been around the roles of financial systems in providing funding and key services to the corporate sector, as well as removing market imperfections. However, the effects of an increase in the size and power of the financial sector has not been discussed much in this literature. The arguments and findings of this paper have relevance for these debates, as I identify two potential channels through which financialization could impede investment in the U.S. economy.

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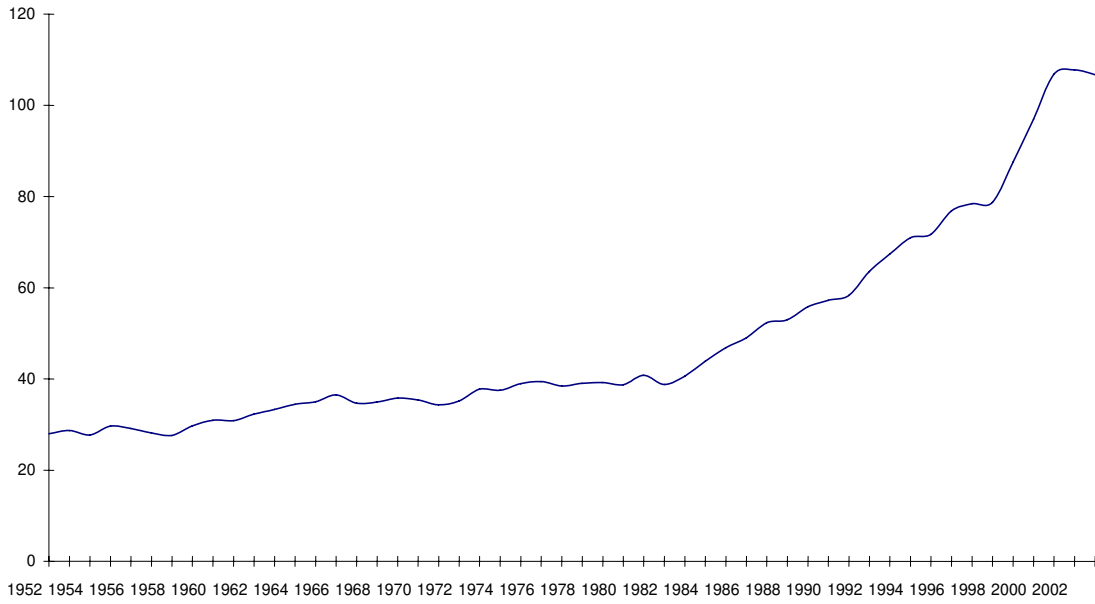
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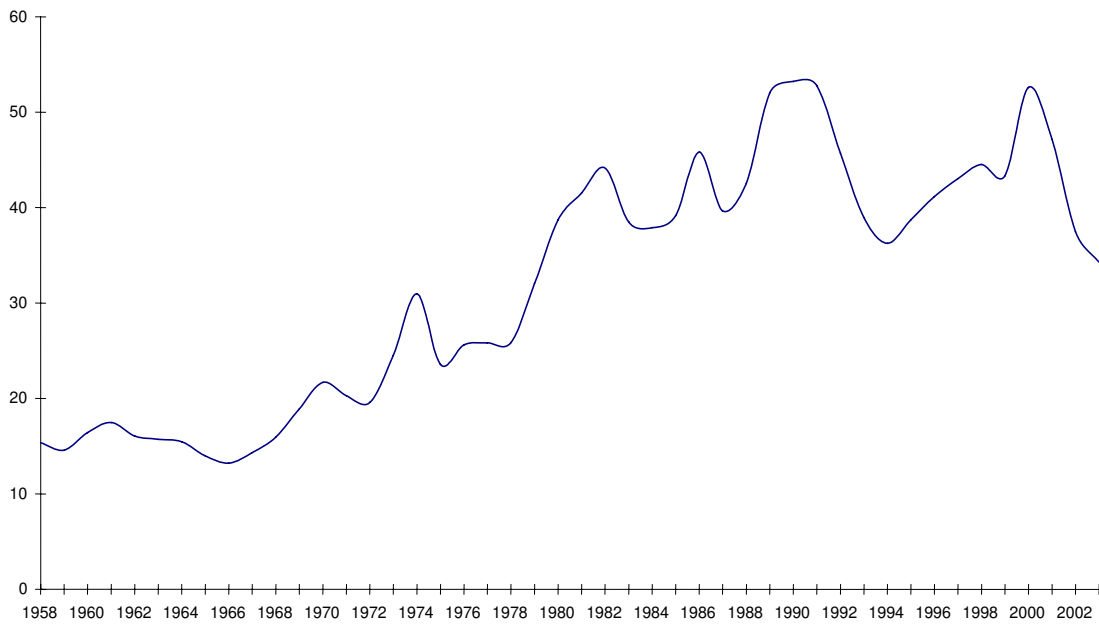
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**Figure 1: Financial Assets as a Percentage of Tangible Assets
Non-financial Corporations, 1952-2003**



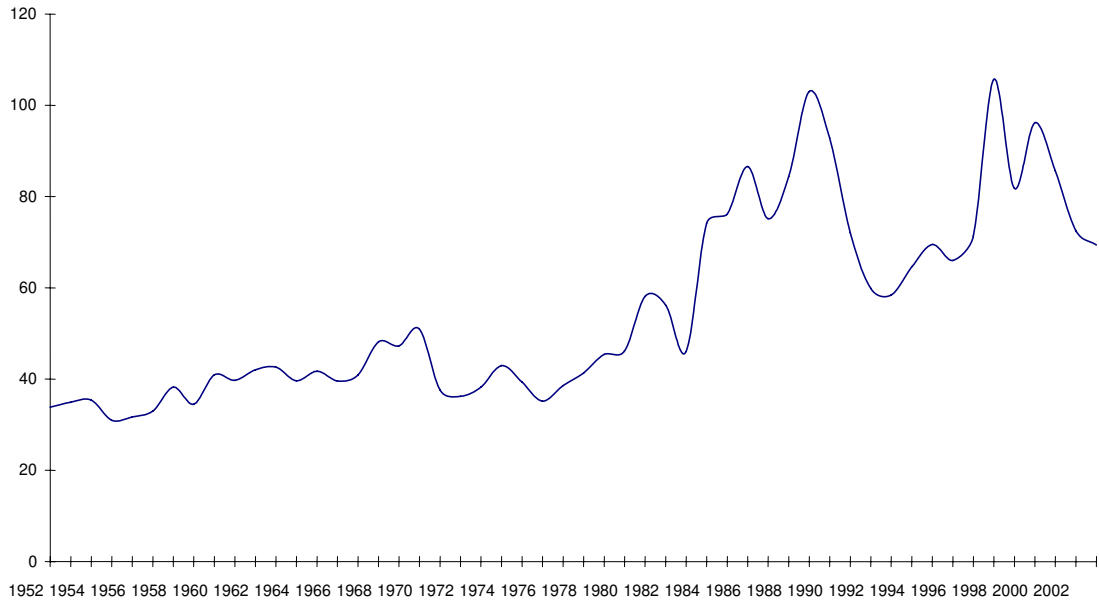
Source: Flow of Funds Table B. 102

**Figure 2: Interest and dividend income as a percentage of internal funds
Non-financial Corporations, 1952-2003**



Sources: Flow of Funds Table F.102 and BEA NIPA Table 7

**Figure 3: Total Financial Payments as a Percentage of Profits Before Tax
Non-financial Corporations, 1952-2003**



Total financial payments include interest expenses, dividend payments and stock buybacks.
Sources: Flow of Funds Table F.102 and BEA NIPA Table 7

**Figure 4: NFC Net Investment in Nonresidential Fixed Assets (annual percent change)
Non-financial Corporations, 1952-2003**

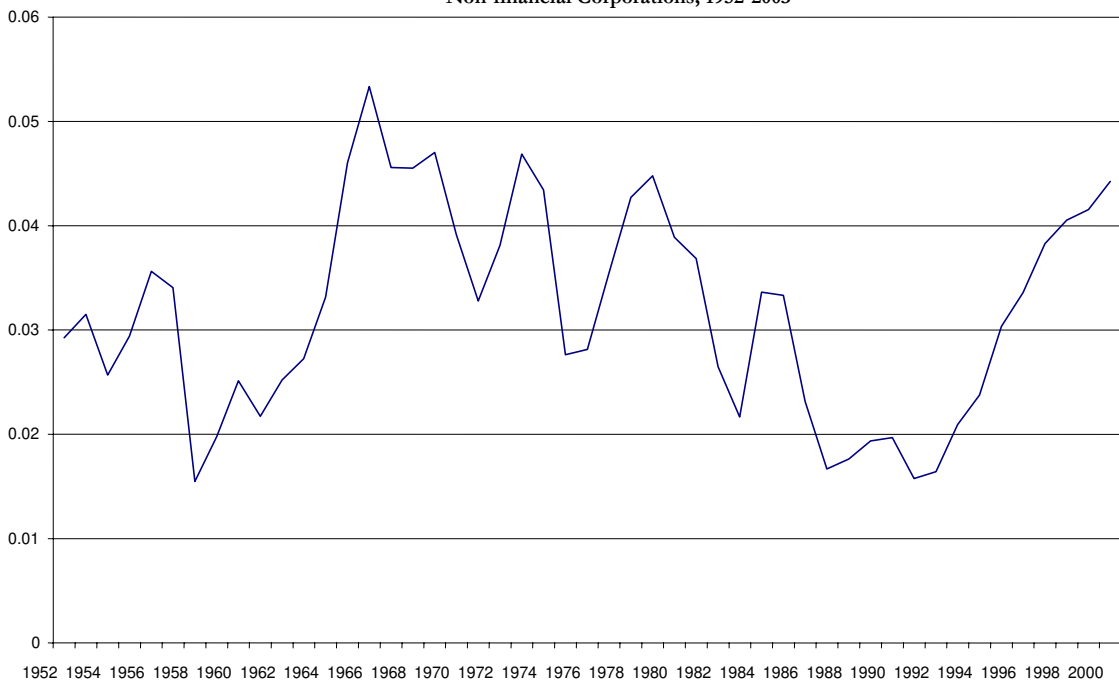


Table 1: Summary Statistics

Variable	Manufacturing firms			All non-financial firms			Non-manufacturing firms		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
<i>Investment</i>									
overall	0.281	0.390	N = 19054	0.263	0.370	N = 36356	0.244	0.348	N = 17371
between		0.159	n = 815		0.164	n = 1573		0.167	n = 759
within		0.364	T-bar = 23.3		0.339	T-bar = 23.1		0.311	T-bar = 22.8
<i>Profit</i>									
overall	0.424	0.847	N = 19051	0.350	0.780	N = 36351	0.269	0.997	N = 17369
between		0.464	n = 815		0.447	n = 1573		0.404	n = 759
within		0.742	T-bar = 23.3		0.669	T-bar = 23.1		0.923	T-bar = 22.8
<i>Sales</i>									
overall	7.148	6.989	N = 19054	6.925	9.767	N = 36356	6.882	12.985	N = 17371
between		5.534	n = 815		8.307	n = 1573		11.246	n = 759
within		4.575	T-bar = 23.3		5.809	T-bar = 23.1		7.293	T-bar = 22.8
<i>Long-term debt</i>									
overall	0.793	1.407	N = 18214	0.819	1.609	N = 34758	0.849	1.774	N = 16612
between		0.857	n = 815		1.056	n = 1573		1.212	n = 759
within		1.200	T-bar = 22.3		1.322	T-bar = 22.0		1.418	T-bar = 21.8
<i>Financial payouts</i>									
overall	0.264	0.406	N = 18659	0.238	0.454	N = 35712	0.211	0.498	N = 17122
between		0.214	n = 815		0.250	n = 1573		0.276	n = 759
within		0.354	T-bar = 22.8		0.392	T-bar = 22.7		0.430	T-bar = 22.5
<i>Financial profits</i>									
overall	0.097	0.234	N = 16944	0.083	0.226	N = 32068	0.070	0.251	N = 15184
between		0.131	n = 815		0.121	n = 1573		0.122	n = 759
within		0.195	T-bar = 20.7		0.191	T-bar = 20.3		0.220	T-bar = 20

Note: All variables are deflated by the capital stock.

TABLE 2: ESTIMATION RESULTS BY INDUSTRY AND SECTOR

Dependent variable: $(I/K)_t$	NON-FINANCIAL			MANUFACTURING			DURABLES		NON-DURABLES		NON-MANUFACTURING		
	All	Large ⁽¹⁾	Small ⁽²⁾	All	Large ⁽¹⁾	Small ⁽²⁾	Large ⁽¹⁾	Small ⁽²⁾	Large ⁽¹⁾	Small ⁽²⁾	All	Large ⁽¹⁾	Small ⁽²⁾
$(I/K)_{t-1}$	.134*** (.017)	.263*** (.052)	.095*** (.022)	.103*** (.021)	.235*** (.060)	.058 (.031)	.243*** (.070)	.068** (.024)	.345*** (.051)	.093* (.038)	.177*** (.027)	.236*** (.044)	.104*** (.030)
$(S/K)_{t-1}$	.142*** (.009)	.064*** (.008)	.155*** (.014)	.159*** (.014)	.059*** (.009)	.175*** (.022)	.070*** (.012)	.170*** (.020)	.041*** (.007)	.109*** (.014)	.091*** (.008)	.031** (.011)	.082*** (.010)
$(\pi/K)_{t-1}$	.038*** (.010)	.076*** (.017)	.049*** (.012)	.046*** (.013)	.099*** (.023)	.058** (.020)	.086** (.030)	.046** (.018)	.056** (.017)	.019 (.033)	.011 (.018)	.079*** (.023)	.026 (.020)
$(P/K)_{t-1}$	-.036* (.016)	-.061*** (.018)	-.042** (.015)	-.023 (.016)	-.070** (.024)	-.055* (.022)	-.092* (.043)	-.037* (.017)	-.015 (.015)	-.028 (.018)	-.061 (.032)	-.066*** (.019)	-.084 (.064)
$(\pi^F/K)_{t-1}$	.055 (.050)	-.084*** (.025)	.061 (.071)	.022 (.058)	-.098* (.040)	.028 (.084)	-.050 (.044)	.002 (.081)	-.036 (.057)	.202* (.088)	.013 (.097)	-.010 (.027)	-.112 (.139)
$(D/K)_{t-1}$	-.033*** (.009)	-.013** (.005)	-.056** (.020)	-.027* (.012)	-.012 (.011)	-.054*** (.011)	-.018 (.015)	-.037* (.019)	.001 (.007)	-.043*** (.009)	-.031** (.011)	-.017 (.009)	-.031 (.023)
Observations	24719	2476	6018	13076	1371	3147	820	4576	551	1978	11718	1143	2836
Firms	1572	258	594	815	126	319	75	371	51	163	758	131	298
J	541.80	233.77	465.06	538.37	102.62	28.78	38.07	342.79	16.19	137.59	554.79	103.61	259.71
Pr>Jn	.01	1.00	.45	.01	1.00	1.00	1.00	1.00	1.00	1.00	.00	1.00	1.00
AR(1)	-5.12	-6.17	-3.47	-3.96	-5.41	-2.89	-3.42	-3.13	.33	-3.45	-4.88	-3.99	-3.66
Pr>|m1|	.00	.00	.00	.00	.00	.00	.00	.00	.74	.00	.00	.00	.00
AR(2)	-1.26	-1.51	-1.56	-1.36	-1.42	-1.50	-2.57	-1.38	-2.39	-.47	-1.54	-.12	-1.23
Pr>|m2|	.21	.13	.12	.17	.16	.13	.01	.17	.02	.64	.12	.90	.22

Estimates are obtained by the Arellano-Bond one-step difference GMM. The instrument set includes all available instruments, beginning from t-2. The coefficients for the year fixed effects and for the constant term are not reported. Robust standard errors are in parentheses. J is the Hansen-Sargan test of overidentifying restrictions obtained from two-step estimations. AR(1) and AR(2) are Arellano-Bond tests of first order and second order autocorrelation in the errors. P-values are reported for all tests. * indicates significance at 10%, ** significance at 5% and *** significance at 1%.

(1) A firm is considered large if the size of its total assets is in the upper 10 percent distribution of the total assets for the sample.

(2) A firm is considered small if the size of its total assets is in the lower 25 percent distribution of the total assets for the sample.

TABLE 3: ESTIMATION RESULTS BY SIZE FOR MANUFACTURING SECTOR

<i>Dependent variable: (I/K)_t</i>	(1)	(2)	(3)	(4)	(5)
$(I/K)_{t-1}$	.264*** (.065)	.235*** (.060)	.233*** (.038)	.058 (.031)	.079*** (.023)
$(S/K)_{t-1}$	.051*** (.008)	.059*** (.009)	.081*** (.009)	.175*** (.022)	.164*** (.017)
$(\pi/K)_{t-1}$	.107*** (.032)	.099*** (.023)	.018 (.020)	.058** (.020)	.050** (.016)
$(P/K)_{t-1}$	-.090*** (.026)	-.070** (.024)	-.015 (.011)	-.055 (.034)	-.032 (.023)
$(\pi^F/K)_{t-1}$	-.086*** (.028)	-.098* (.040)	-.022 (.031)	.028 (.084)	.040 (.072)
$(D/K)_{t-1}$	.002 (.012)	-.012 (.011)	-.005 (.008)	-.054*** (.011)	-.039* (.017)
Observations	693	1371	3213	3147	6554
Firms	72	126	271	319	534
J	32.60	102.62	243.35	28.78	476.58
Pr>Jn	1.00	1.00	1.00	1.00	.31
AR(1)	-4.02	-5.41	-5.29	-2.89	-3.54
Pr>|m1|	.00	.00	.00	.00	.00
AR(2)	.80	-1.42	.25	-1.50	-1.35
Pr>|m2|	.42	.16	.80	.13	.18

*Estimates are obtained by the Arellano-Bond one-step difference GMM. The instrument set includes all available instruments, beginning from t-2. The coefficients for the year fixed effects and for the constant term are not reported. Robust standard errors are in parentheses. J is the Hansen-Sargan test of overidentifying restrictions obtained from two-step estimations. AR(1) and AR(2) are Arellano-Bond tests of first order and second order autocorrelation in the errors. P-values are reported for all tests. * indicates significance at 10%, ** significance at 5% and *** significance at 1%.*

(1) Total assets in the upper 5 percent of the distribution
(2) Total assets in the upper 10 percent of the distribution
(3) Total assets in the upper 25 percent of the distribution
(4) Total assets in the lower 25 percent of the distribution
(5) Total assets in the lower 50 percent of the distribution

Endnotes

1. See Stockhammer (2004), Crotty (2005), Krippner (2005), Duménil and Lévy (2004a, 2004b), and Epstein and Jayadev (2005).
2. See Froud *et al.* (2000), and Feng *et al.* (2001).
3. See Lazonick and O’Sullivan (2000), Bivens and Weller (2004), Henwood (1997, 2003), Morin (2000) and Jürgens *et al.* (2000).
4. Another line of debate on financialization focuses on the system-wide and long run causes and effects of financialization. See, Arrighi and Silver (1999), Arrighi (1994, 2003, 2005), Sweezy (1997), Amin (1996, 2003), Panitch and Gindin (2004, 2005), and Harvey (2003).
5. For example, Boyer (2000), Aglietta and Breton (2001), and Aglietta (2000) discuss the macro and monetary flows in a financialized economy and its relation to “growth regimes.” Moreover, Dore (2000, 2002) analyzes the institutional and sociological aspects of financialization such as relations among corporations and financial institutions and other institutions. Another relevant discourse is shaped around the debates about the relative strengths and weaknesses of different financial regimes. The concept of financialization is not used in that literature, the focus is rather on comparing and contrasting bank-based and market based financial systems. For examples on this, see Grabel (1997), Mayer (1988), and Schaberg (1999).
6. See Lowenstein (2004).
7. Net investment did rise, however, in the over-heated boom of the late 1990s, mostly in telecommunications (Bivens and Weller 2004).

8. Including stock buybacks in financial payments is important. For many major NFCs, stock buybacks “have now become a systematic feature of the way in which they allocate revenues and a critically important one in terms of the money involved” (Lazonick and O’Sullivan 2000: 23). Moreover, Grullon and Michaely (2002) show that stock buybacks “have not only become an important form of payout for U.S. corporations, but also that firms finance [stock buybacks] with funds that otherwise would have been used to increase dividends” (p. 1649).
9. Two qualifications are needed regarding these figures. First, in the Flow of Funds data from which the figures were constructed, a significant part of financial assets are classified as ‘miscellaneous’ and we do not know what is included in this category, as pointed out by Crotty (2005). Second, these figures confirm the trends that have been shown by Crotty (*ibid*) and Krippner (2005). However, note that the financial income calculations I use in Figure 2 include only interest and dividend incomes received by the NFCs while those authors’ calculations use IRS Statistics of Income data to include capital gains made by NFCs as well, for which the BEA or the FFA have no data.
10. According to Fligstein and Markowitz “[t]he normative acceptance of hostile takeovers in the 1980s reflected the more general triumph of this view of the corporation” (*ibid*).
11. See Jensen and Meckling (1976), Ross (1977), Grossman and Hart (1982), Townsend (1979), Gale and Hellwig (1985), and Baker and Smith (1988).
12. ¹An OECD report presents this as a development in the efficiency of the financial markets: “One of the most significant structural changes in the economies of OECD countries in the 1980s and 1990s has been the emergence of increasingly efficient markets in corporate control and an attendant rise in shareholders’ capability to influence

management of publicly held companies. In particular, owing to the expanded possibilities for investors to use the capital market to measure and compare corporate performance of corporations and to discipline corporate management, the commitment of management to producing shareholder value has become perceptibly stronger” (OECD 1998: 15).

13. See Parenteau (2005).
14. Bhagat and Jefferis (2002) provide a succinct overview of the important contributions in this literature. See Allen and Michaely (1995) and Lease *et al.* (2000) for comprehensive reviews of the literature on dividends. Baker *et al.* (2002) reviews the literature on stock buybacks.
15. Literature on institutional investors note that equity markets dominated by institutional investors tend to undervalue firms with good earnings prospects in the long-term but low current profitability. This in turn is held to discourage long-term investment or R&D as opposed to distribution of dividends (Davis and Steil 2001: 323-5).
16. According to Crotty (2002), the beginning of the shortening of NFCs’ planning horizons can be traced to developments such as the shift to extremely restrictive monetary policy undertaken by Federal Reserve Chairman Paul Volcker in the early 1980s, which raised real and nominal interest rates. This rise tended to shorten the planning horizon in NFCs by shortening the payback period used to evaluate potential investment projects (p. 18).
17. It is a standard assumption that investment is determined by the cost of capital, which essentially includes the price of investment goods, expected rates of return and the tax impacts as stressed in a classical article by Jorgenson (1971). Jorgenson’s strong findings

in favor of cost of capital as a primary determinant of investment is not supported by more recent works, including Fazzari *et al.* (1988).

18. See, for example, Marglin and Bhaduri (1990), Bhaskar and Glyn (1995). These studies all consider expected profitability to be one of the most significant determinants of investment.
19. See Kopcke and Brauman (2001) for a review of these usages.
20. The expectation formation under ‘true’ uncertainty is different from that in the neo-classical theory which uses a subjective probability function. Firm management form their expectations based not on a probability function but instead on ‘institutional, social and psychological’ conditions. See Crotty and Goldstein (1992) for a discussion of the implications of uncertainty for firm investment behavior.
21. As noted by many, including early studies done by Kuh and Meyer (1955) and Minsky (1975), current and past profits could serve as indicators of future profitability.
22. Moreover, Kuh and Meyer (1955) and Eisner (1958 and 1960) developed earlier versions of accelerator models in which permanent increases in output/sales induce an increase in capital stock. Later studies such as Fazzari (1993) and Chirinko (1993) also account for a sales effect.
23. Another channel through which high debt would have an effect is put forward by Duesenberry (1958) who emphasizes the opportunity cost of debt:

As debt rises relative to earnings, the risk premium required to cover the leverage of debt service on earnings fluctuations will increase.

The opportunity cost of not repaying the debt will therefore

increase. That opportunity cost increases the return required to justify investing in physical assets whether the investment involves taking an additional debt or failing to repay existing debt (p. 94).

24. For Minsky (1975 and 1986), debt affects investment through the management's perception of the extent of financial fragility or robustness of the firm in the long-run. Also see Crotty and Goldstein (1992: 201) for a similar point of view. Ideally, one would like to be able to measure the difference between the current level of indebtedness and the level the management considers safe in the long-term. Since such a measure is not available in the dataset I use, I leave the expected sign on the coefficient of the debt level indeterminate at the moment.
25. See Crotty and Goldstein (1992) for a thorough discussion on the formation of perceptions on safe debt levels.
26. See, for example, Fazzari *et al.* (1988), Gertler and Gilchrist (1994) and Ndikumana (1999), for details and applications of the financing constraint hypothesis.
27. See Kuh (1963), Eisner (1960), Fazzari et al. (1988) and Carpenter, Fazzari and Petersen (1995) for earlier uses of the method.
28. See Kopcke and Brauman (2001) on the significance of this term in explaining investment. The lagged values of investment account for dynamic effects such as gestation time in investment (investment projects taking more time than one period) and inertia (higher/lower investment leading to higher/lower investment).

29. Moreover, “the availability of micro data allows models to move beyond the notion of a representative firm, so that cross-firm differences in the investment decision process itself can be investigated” (Blundell *et al.* 1996 : 685).
30. See Greene (2003: 761-3) for a discussion of censored data and their distribution. Deleting outliers for the dependent variable does not change the results obtained in any significant way.
31. Unfortunately, it is not possible to obtain a variable that reflects all financial incomes of the firm. For this reason, I use the sum of interest income and equity in net earnings which is the income from holdings of unconsolidated subsidiaries. Compustat does not report firm’s income from capital gains and dividends received.
32. Durables are composed of industries with SIC codes 20-23 and 26-31. Non-durables are composed of industries with SIC codes 24, 25 and 32-38. The category labeled in Compustat as “miscellaneous” contains heterogeneous industries and is not included in these regressions.
33. See Soederberg (2003), Singh (2003) and Glen *et al.* (2000) for discussions of the promotion of U.S. style corporate governance in developing countries.
34. Ndikumana (2005), Levine (2000) and Stulz (2001) are recent studies that review this debate and discuss its importance for corporate finance.