Does the Stock Market Allocate Capital Efficiently? Evidence from Aggregate Earnings

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Abstract:
We find that *cross-sectional* capital allocation by the U.S. stock market significantly reduces subsequent aggregate earnings over the past 47 years. This negative impact deteriorates consistently over time and persists for at least 10 years following the capital allocation. This effect is explained, at least partially, by equity capital chasing firms with high top-line growth and equity valuation but low future profitability; further, it is more pronounced during years with a shorter investor horizon and lower price informativeness. Our findings suggest that informationally inefficient stock prices might contribute to inefficient capital allocation in the real economy.

Keywords: stock markets, equity capital flows, capital allocation, aggregate earnings
JEL classification: G14, G23, G32, E44, E22, M40, M41

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1. Introduction

A fundamental principle of capitalism is that resources should be allocated primarily through the market mechanism (Smith, 1776). The stock market is one of the most important components of such a mechanism (Allen and Gale, 1997; Levine, 1997; Levin and Zervos, 1998; Beck and Levine, 2002). It is often argued that, by aggregating information about future investment opportunities, stock prices should help direct equity capital toward more productive uses (e.g., Fischer and Merton, 1984; Tobin, 1984). However, economic theories suggest that informational efficiency is not a *sufficient* condition for allocative efficiency (e.g., Hart, 1975; Stiglitz, 1981; Greenwald and Stiglitz, 1986; Dow and Gorton, 1997). Moreover, the stock market is far from perfectly efficient (e.g., Hirshleifer, 2015), and noise in stock prices may distort firms' financing and/or investment decisions (e.g., Dessaint, Foucault, Fresard, and Matray, 2019; Xiao, 2021), leading to inefficient capital allocation at the market level. Thus, it is an important empirical question to examine whether and to what extent the stock market allocates equity capital efficiently.[1]

In this paper, we tackle this question from a new perspective by investigating how the *cross-sectional* allocation of equity capital affects subsequent aggregate earnings. Specifically, we decompose the aggregate earnings of all public firms and develop a measure to estimate the amount of aggregate earnings attributable to the cross-sectional allocation of new equity capital. This measure has an intuitive meaning and is greater if the stock market allocates disproportionally more (less) equity capital to firms that are subsequently more (less) profitable, aligning perfectly with the notion that the efficient allocation of equity capital entails (re)allocating capital from firms with lower to higher future profitability (Fama, 1970; Bagehot, 1873; Tobin, 1989; Levine, 2005).

Armed with this measure, we estimate the impact of cross-sectional capital allocation by the U.S. stock market on aggregate earnings over the period 1972-2018 and find it consistently negative. Compared to a benchmark of random (or passive) allocation, actual capital allocation reduces aggregate earnings by a striking 15.1% on average in the past 47 years. This effect is particularly pronounced surrounding the dotcom bubble and subprime

[1] Empirical evidence on the efficiency of stock market allocation is scarce. As Zingales (2015) suggests, "*There is remarkably little evidence that the existence or size of an equity market matters for growth.*"

mortgage crisis periods. Excluding these two crisis periods, capital allocation still reduces aggregate earnings by 5.6% a year on average. We also estimate the capital allocation efficiency, defined as the ratio of aggregate gains from capital allocation to the total amount of capital allocation, and find that it deteriorates consistently over time. Specifically, each dollar of capital allocation decreases aggregate earnings by approximately 1.1 cents in the 1970s, 3.5 cents in the 1980s, 8.7 cents in the 1990s, 10.3 cents in the 2000s, and 10.5 cents in the 2010s. Moreover, this negative impact persists for at least three years in the future, with each dollar of capital allocation reducing aggregate earnings on average by 7, 7, and 6.8 cents over the subsequent three years, respectively.

Additional analyses suggest that both capital inflows (i.e., stock issuance) and outflows (i.e., repurchase and dividends) contribute to efficient capital allocation, with each dollar of capital inflows and outflows reducing aggregate earnings by 7.5 and 5.7 cents, respectively. Furthermore, while prior studies mostly focus on inter-industry capital allocation (e.g., Wurgler, 2000; Lee, Shin, and Stulz, 2021), we find that inefficient capital allocation is largely driven by intra-industry capital allocation. Out of the 7-cent drag in aggregate earnings for each dollar of capital allocation, approximately 5.6 cents come from intra-industry allocation, while inter-industry allocation contributes 1.4 cents.

Having documented inefficient capital allocation at the aggregate level, we next turn to firm-level analyses to understand the micro foundation of the results. Consistent with the negative contribution of capital allocation to aggregate earnings, we find a negative cross-sectional association between net equity financing (NEF) and the future return on equity (ROE). Mirroring the decreasing trend of capital allocation efficiency, the negative association decreases monotonically from -11% in the 1970s to -48% in the 2010s. Further analyses rule out the alternative explanation that the stock market allocates capital to firms with lower risk, and thus requires lower future accounting returns. These results suggest that firms receiving more equity inflows tend to have lower subsequent equity capital productivity, providing a micro foundation for the negative impact of capital allocation at the aggregate level.

We conduct several set analyses to test the robustness of the results. The first set examines the robustness of the results to various alternative measures of profitability. First, net equity financing is negatively associated with other future profitability measures such as return on assets (ROA), return on invested capital (ROIC), and cash flow-based profitability (CROE). Second, to mitigate the concern that the U.S. GAAP mandating the full expensing of R&D outlays reduces the reported profitability of capital raisers with high R&D expenses, we adjust reported earnings and the book value of equity for R&D capitalization and find that NEF remains negatively correlated with the resulting R&D-adjusted ROE over the subsequent three years. Third, to mitigate the concern that the accounting book value of equity may understate firms' equity value, we also compute future ROEs using the *market value of* equity instead. The results show that NEF is also negatively associated with the return on the market value of equity over the subsequent years.

The second set investigates the robustness of the results to alternative measures of net equity finance. Instead of a net equity financing measure based on cash flow statements, we estimate two alternative measures based on a clean-surplus relationship and changes in market capitalization, respectively, and find that the negative associations between net equity financing and future ROEs remain intact. In the third set, we examine future profitability over longer horizons to alleviate the concern that a three-year window is too narrow to fully capture the potential value creation by new equity capital. We find that net equity financing is negatively associated with future ROEs measured from t+4 to t+10, as well as the t+10 market-to-book ratio that captures the potential value creation after t+10. Finally, instead of *average* future profitability, we develop an alternative proxy for profitability that measures the *marginal* return to new equity capital, which allows new equity investment to earn a return that differs from the existing capital in place; we continue to find that it is negatively correlated with net equity financing. Thus, the overall results present compelling and robust evidence that companies receiving (distributing) equity capital have systematically lower (higher) subsequent equity capital productivity, sharply contradicting the prediction of the efficient capital allocation hypothesis.

To better understand the reason for the above results, we investigate how the stock market allocates equity capital across firms, and whether such an allocation drives the negative impact of capital allocation on aggregate earnings. We find that firms with higher past sales growth, higher equity valuation, and lower free cash flows attract more equity capital inflows, despite the fact that they tend to have lower future profitability. In contrast, the market allocates less capital to firms with high past profitability, even though the profitability tends to persist into the future (Dichev and Tang, 2009). Collectively, these determinants are important contributors to equity capital misallocation. Controlling for these determinants reduces the negative association between net equity financing and future profitability by approximately 30%, 20%, and 16% over the subsequent three years, respectively.

Finally, we examine the time-series determinants of the cross-sectional capital allocation efficiency. We find that equity capital misallocation is particularly severe when the stock price is less informative about future fundamentals (Bai, Philippon, and Savov, 2016), when there is a higher presence of short-term investors with weaker incentives to discover information about long-term profitability (Bushee, 1998; Chen, Harford, and Li, 2007), and when investor sentiment is higher (Lee, Shleifer, and Thaler, 1991; Baker and Wurgler, 2000, 2006). The overall results are thus consistent with the notion that informationally inefficient stock prices might impede the efficiency of equity capital allocation, and therefore have a negative impact on the real economy.

Our paper contributes to the literature in several ways. First, we provide the first large-sample evidence on whether the stock market allocates equity capital efficiently in the cross-section. While conventional wisdom suggests that "the invisible hand" of the market should guide valuable resources toward more productive uses (e.g., Smith, 1776), *a priori*, it is unclear whether and to what extent the stock market allocates equity capital efficiently. At the theoretical level, informationally efficient stock prices do not guarantee efficient capital allocation (e.g., Hart, 1975; Stiglitz, 1981; Greenwald and Stiglitz, 1986; Dow and Gorton, 1997). Furthermore, capital market imperfections (and even noise in stock prices) may cause inefficient investment and financing decisions, and therefore capital misallocation (Greenwald and Stiglitz, 1993; Hubbard, 1998; Ovtchinnikov and McConnell, 2009). Our paper extends the literature by developing a novel approach[2] to measure the cross-sectional capital allocation

[2] One popular approach in the literature measures capital allocation efficiency as the extent to which an economy increases investment in industries with more growth opportunities, proxied by the current Tobin's Q or value added (e.g., Wurgler, 2000; Lee et al., 2021). However, a higher Tobin's Q may reflect temporary equity overvaluation or economic rents (Lee et al., 2021), and therefore may not necessarily translate into higher future productivity. Our approach mitigates this problem by directly using *realized* future profitability and assessing the efficiency of capital allocation based on the impact on actual aggregate earnings. Furthermore, in addition to equity capital, corporate investment can be funded by internal cash and debt. Thus, these studies do not speak to the question of capital allocation efficiency by the stock market.

efficiency and by providing compelling evidence of inefficient cross-sectional allocation of equity capital.[3]

Our paper is also related but distinct from the broad literature on resource misallocation (e.g., Hsieh and Klenow, 2009; Midrigan and Xu, 2014; David, Hopenhayn, and Venkateswaran, 2015; Fuchs, Green, and Papanikolaou, 2016; David and Venkateswaran, 2019; Whited and Zhao, 2021). These studies mostly focus on the allocation of *physical* capital that occurs in the asset market between corporations, which is fundamentally different from the allocation of *equity* capital carried out in the stock market between firms and investors.[4] While some studies show that corporate asset transactions such as M&As and asset sales lead to efficiency gains (e.g., Maksimovic and Phillips, 2001; David, 2021), we find that the (re)allocation of equity capital via equity transactions fails to outperform the simple benchmark of random allocation.

Our study also contributes to the literature on aggregate earnings. Prior studies suggest that aggregate earnings are an important driver of GDP growth (e.g., Fischer and Merton, 1984; BEA, 2004; Konchitchki and Patatoukas, 2014). Our paper is among the first to study the contribution of capital allocation by the stock market to aggregate earnings. Our earnings decomposition framework shows that aggregate earnings can be enhanced if equity capital is reallocated from firms with lower to higher future profitability. However, empirical evidence suggests that the actual allocation is in the opposite direction, resulting in a significant drag on aggregate earnings. [5]

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[3] Our results that investors allocate equity capital inefficiently in the cross-section also complement Dichev (2007)'s finding that investors' *intertemporal allocation* of aggregate equity capital is poorly timed.

[4] Most of these studies estimate the efficiency of resource allocation relative to the first best condition of an equal marginal product of capital (MPK) across firms. However, dispersion in the MPK may arise naturally as firms respond to production shocks, and therefore may be efficient in a dynamic sense (Asker, Collard-Wexler, and Loecker, 2014). Furthermore, as the first best condition is unattainable, any actual allocation would necessarily be "inefficient" compared to this benchmark; the literature therefore mostly adopts a cross-country setting and compares the relative allocation efficiency among different countries.

[5] While prior literature shows that firm performance deteriorates following initial or seasoned equity offerings (e.g., Ritter, 1991; Loughran and Ritter, 1995; Teoh, Wong, and Rao, 1998; Teoh, Welch, and Wong, 1998, 2002; Bradshaw, Richardson and Sloan, 2006), this literature is silent on how the equity issuances of individual firms affect the capital allocation efficiency of the aggregate market, given that the post-issuance underperformance of individual firms does not necessarily imply a reduction in subsequent aggregate earnings. As long as these firms still have higher future profitability than other firms (in the cross-section), these transactions may still enhance aggregate earnings, even if their profitability is lower than pre-issuance levels.

The rest of the paper is structured as follows. Section 2 provides a framework of decomposing aggregate earnings. Section 3 describes the sample and variable construction. Section 4 reports evidence on the contribution of capital allocation to aggregate earnings. Section 5 investigates how the market allocates capital, and what explains inefficient capital allocation. Section 6 explores the factors driving the time-series variation in the (in)efficiency of capital allocation. Section 7 concludes.

2. Decomposition of Aggregate Earnings

Our primary goal is to understand how the cross-sectional allocation of equity capital by the stock market (via equity transactions such as stock issuance and repurchase) affects the real economy through its impact on aggregate earnings. We first decompose aggregate earnings to better understand the channel of this impact.

Aggregate earnings are the sum of earnings by all K firms in the market:

$$AggE_{t+1} = \sum_{k=1}^{K} E_{k,t+1} = \sum_{k=1}^{K} (BV_{k,t} * ROE_{k,t+1}) \quad (1)$$

where $E_{k,t+1}$ and $BV_{k,t}$ are the earnings and the book value of equity of firm k in year t+1, respectively, and $ROE_{k,t+1}$ is the corresponding return on equity, defined as $E_{k,t+1}/BV_{k,t}$.

A firm's book value at the end of year t comes from the following sources: the book value (BV) at the end of year t-1, earnings (E) of year t, equity inflow (I) from the equity issuance, and equity outflows/distributions (D) in the form of repurchases and dividends:

$$BV_{k,t} = BV_{k,t-1} + E_{k,t} + I_{k,t} - D_{k,t} \quad (2)$$

where $I_{k,t}$ and $D_{k,t}$ represent the equity transactions between firms and equity investors, which constitute the channel through which the stock market allocates capital across firms. For the sake of notational simplicity, we define $BVBE_{k,t} \equiv BV_{k,t-1} + E_{k,t}$. $BVBE_{k,t}$ represents the book value of equity of firm k at the end of year t before any equity transactions (financing). Furthermore, we define the difference between the equity inflow (I) and outflow as the net equity finance (NEF), i.e., $NEF_{k,t} \equiv I_{k,t} - D_{k,t}$. Thus, we can rewrite (1) as:

$$AggE_{t+1} = \sum_{k=1}^{K} (BVBE_{k,t} * ROE_{k,t+1}) + \sum_{k=1}^{K} (NEF_{k,t} * ROE_{k,t+1}) \quad (3)$$

The first component of Equation (3) represents the aggregate earnings-to-equity capital in place before any new equity transactions, while the second component represents the effect of all new equity transactions in year t on the aggregate earnings of year t+1. Even if the aggregate new equity capital flow $\sum_{k=1}^{K} NEF_{k,t}$ were allocated randomly in the cross-section among firms, it would help generate a certain amount of aggregate earnings. This part of the earnings represents the effect of the aggregate capital flow rather than the gain from (efficient) cross-sectional capital allocation. Thus, we further strip it out from the second component to obtain the amount of aggregate earnings attributable to the cross-sectional allocation of new equity capital, leading to the following decomposition of aggregate earnings:

$$AggE_{t+1} = \sum_{k=1}^{K} \left(BVBE_{k,t} * ROE_{k,t+1}\right) + \overline{ROE_{t+1}} * \sum_{k=1}^{K} NEF_{k,t} + \sum_{k=1}^{K} \left(NEF_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right) \quad (4)$$

where $\overline{ROE_{t+1}}$ represents the profitability to the aggregate equity capital flow if it is allocated randomly in the cross-section, which we expect to be roughly equal to the average profitability of all companies. We compute $\overline{ROE_{t+1}}$ as the average profitability of all firms weighted by their book values of equity before equity transactions, i.e., $\overline{ROE_{t+1}} \equiv \frac{\sum_{k=1}^{K} BVBE_{k,t} * ROE_{k,t+1}}{\sum_{k=1}^{K} BVBE_{k,t}}$.

To summarize, assuming that the amounts of the equity transactions are small relative to the equity capital in place (and thus do not dramatically change the profitability (ROE)), the three components of Equation (4) can approximate the following important constructs:

i) **Aggregate earnings to equity capital in place:** The first component of Equation (4), $\sum_{k=1}^{K} \left(BVBE_{k,t} * ROE_{k,t+1}\right)$, represents the amount of aggregate earnings had no equity transactions taken place at all in year t, i.e., earnings to the equity capital in place.

ii) **Aggregate earnings to net aggregate equity capital flows:** The second component, $\overline{ROE_{t+1}} * \sum_{k=1}^{K} NEF_{k,t}$, represents the (expected) aggregate earnings to the aggregate equity capital inflows ($\sum_{k=1}^{K} NEF_{k,t}$) if the aggregate capital flows are allocated randomly.[6]

[6] As we define $\overline{ROE_{t+1}} \equiv \frac{\sum_{k=1}^{K} BVBE_{k,t} * ROE_{k,t+1}}{\sum_{k=1}^{K} BVBE_{k,t}}$, the second component can also be thought of as aggregate earnings to a *passive* allocation, where each firm receives a share of the aggregate net equity inflow in proportion to its pre-equity transaction book value, i.e., $\frac{BVBE_{k,t}}{\sum_{k=1}^{K} BVBE_{k,t}}$. To see this, we can plug in the definition of $\overline{ROE_{t+1}}$ and

iii) **Aggregate gain from *cross-sectional* capital allocation:** The third component, $\sum_{k=1}^{K}\left(NEF_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)$, captures the gain/loss from the *cross-sectional* allocation of the aggregate net capital inflows, showing that one can increase aggregate earnings by reallocating equity capital from firms with relatively low profitability (i.e., $NEF_{k,t} < 0$ and $ROE_{k,t+1} < \overline{ROE_{t+1}}$) to those with relatively high profitability (i.e., $NEF_{k,t} > 0$ and $ROE_{k,t+1} > \overline{ROE_{t+1}}$), even if the aggregate capital inflows $\sum_{k=1}^{K} NEF_{k,t} = 0$.

We then scale the gain from the cross-sectional capital allocation by the total amount of capital allocation to measure the capital allocation efficiency:

$$Capital\ Allocation\ Efficiency = \frac{\sum_{k=1}^{K}\left(NEF_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)}{\sum_{k=1}^{K}\left|NEF_{k,t}\right|} \quad (5)$$

Equation (5) has an intuitive meaning, which equals the dollar amount of aggregate gain from each dollar of the cross-sectional capital (re)allocation.

3. Data and Descriptive Statistics

3.1 Data and key variables

We start with all firms in the intersection of Compustat and the Center for Research in Security Prices (CRSP) from 1972 to 2018. We start from 1972 because Compustat data on NASDAQ stocks are unavailable before then. We restrict the sample to NYSE, AMEX, and NASDAQ firms with share codes 10 and 11, and exclude firms with a missing or negative book value of equity. We also augment the data with delisting-firm-years, which are identified from the CRSP delisting events.

Net equity financing (NEF) is the equity capital inflow minus the capital outflow. The capital inflow is the total issuance of common stocks, measured as the sales of common and preferred stocks (*SSTK*) less any increase in preferred stocks. For delisting-firm-years, the capital outflow is set to the delisting amount (i.e., the market value before the delisting day multiplied by one plus the delisting returns) multiplied by –1.[7] The capital outflow is the sum

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rearrange it: $\overline{ROE_{t+1}} * \sum_{k=1}^{K} NEF_{k,t} = \sum_{k=1}^{K}\left(\frac{BVBE_{k,t}}{\sum_{k=1}^{K} BVBE_{k,t}} * \sum_{k=1}^{K} NEF_{k,t}\right) * ROE_{k,t+1}$

[7] For missing delisting returns of firms delisted due to poor performance (delisting codes 500 and 520-584), we

of the repurchase of common stocks and dividends paid to common stock owners. Following Banyi, Dyl, and Kahle (2008) and Hirshleifer and Jiang (2010), the repurchase of common stocks is the purchase of common and preferred stocks (Compustat variable *PRSTKC*) less any decrease in preferred stocks; depending on the availability, we use redemption (*PSTKRV*), liquidating (*PSTKL*), or par value (*PSTK*) for the value of preferred stock.[8] Dividends are common stock dividends (*DVC*). By definition, the book value of equity before any equity transactions (*BVBE*) equals the book value of equity (*CEQ*) minus NEF.

Return on equity (ROE_{t+k}) is the net income before extraordinary items in year $t+k$ (*IB*) divided by the book value of equity in year *t+k-1*. $\overline{ROE}$ is the annual *BVBE*-weighted average *ROE*. Following Baker and Wurgler (2002) and Faulkender and Smith (2016), negative weights are set to zero. To calculate capital allocation efficiency, if a firm delists in year t (and thus has missing accounting data in Compustat), *BVBE* in year *t* is set to *NEF* multiplied by -1; the ROE in year t is set to -1 in the case of bankruptcy, and to its lagged value otherwise; the ROE from year t+1 onward is set to 0 in the case of bankruptcy, and the $\overline{ROE}$ of the year otherwise. Appendix I contains a complete list of variable definitions, and Appendix II describes how we handle missing accounting data under different scenarios.

3.2 Descriptive statistics on equity capital allocation

Figure 1 presents the evolution of aggregate equity financing from 1972 to 2018. All dollar values are reported in real 2010 dollars using the Consumer Price Index (CPI). It shows a sharp increase in repurchases starting after 1982. Dividends also increase over time but with a smoother slope. Repurchases start exceeding dividend payments from 1997 and also increase substantially after the 2008 financial crisis. These findings are consistent with the evidence in Skinner (2008), Floyd, Li, and Skinner (2015), and Kahle and Stulz (2021) on the growing importance of repurchases. We also find that delists, another form of capital outflow, are high during 1998-2001 and the 2008 financial crisis, which is largely consistent with Gao, Ritter, and Zhu (2013) and Doidge, Karolyi, and Stulz (2017).

Turning to the inflow of equity capital, stock issuances peak during the period 1996 to 1999 and fall sharply by 2002. They surge again from 2004 to 2009, and then start to decline.

assume a delisting return of –100% (Shumway, 1997; Bradshaw et al., 2006).

[8] If the stock issuance or stock repurchase is negative, we set it to zero (Skinner, 2008).

Since 2003, aggregate repurchases and dividends have consistently exceeded stock issuances in every year (except in 2009). Also, aggregate dividends, together with repurchases, consistently exceed the equity issuances in our sample period. Lastly, Figure 2 plots the weighted-average ROE over time. The average ROE is always positive; it stays above 0.1, except in 1987, 1991, 2001, 2002, and 2008, when recessions hit.

4. Initial evidence on the contribution of capital allocation to aggregate earnings

4.1 Aggregate-level evidence

We first compute the aggregate earnings and components over the 47 years between 1972 and 2018 and present the results in Table 1. Panel A shows the average yearly aggregate real dollar amounts and ratios of interest for each decade. To ease the interpretation of our results, earnings are measured in year t+1. Therefore, Panel A reports the contribution of capital allocation in year t to aggregate earnings in year t+1, as demonstrated in Equation (4). Over the sample period, annual aggregate earnings increase from $326 billion (constant 2010 U.S.$) in the 1970s to approximately $0.9 trillion in the 2010s, with an annualized growth rate of 2.67%. However, the aggregate earnings are entirely attributable to the equity capital in place of the prior year. Both the aggregate capital flow and cross-sectional capital allocation contribute negatively to aggregate earnings, which reduces aggregate earnings by 8.2% and 15.1%, respectively. Taking the 2010s as an example, the aggregate earnings attributed to the equity capital in place amount to approximately $1.1 trillion; the aggregate capital (out)flow reduces it by approximately $118 billion, while the cross-sectional capital allocation further reduces it by approximately $95 billion. The effect of cross-sectional capital allocation on aggregate earnings is particularly pronounced surrounding the dotcom bubble and subprime mortgage crisis periods. Excluding these two crisis periods, the cross-sectional capital allocation reduces aggregate earnings by 5.6% a year on average.

Panel B of Table 1 reports the capital allocation efficiency, measured as the contribution of each dollar of capital allocation to the aggregate earnings. The efficiency deteriorates consistently over time: each dollar of capital allocation decreases aggregate earnings by 1.1 cents in the 1970s, 3.5 cents in the 1980s, 8.7 cents in the 1990s, 10.3 cents in the 2000s, and

10.5 cents in the 2010s. To assess whether the negative effect reverts over longer horizons, we replace ROE_{t+1} in Equation (5) with ROE_{t+2} and ROE_{t+2}, respectively, and continue to find a negative effect. As shown in Panel B of Table 1, each dollar of capital allocation reduces aggregate earnings by 7, 7, and 6.8 cents, respectively, over the subsequent three years.[9]

The above results suggest that the cross-sectional capital allocation by the stock market reduces the subsequent aggregate earnings. To shed light on the source of the effect, we decompose the net equity financing in two ways and investigate how the components contribute to inefficient capital allocation. We first decompose net equity financing into capital inflows (i.e., stock issuances) and outflows (distributions) and examine the impact of the two components on subsequent aggregate earnings. Specifically, we can plug in the definition of NEF in the third component of Equation (4) as follows:

$$\sum_{k=1}^{K}\left(NEF_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)$$

$$= \sum\nolimits_{k=1}^{K}\left(I_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right) - \sum\nolimits_{k=1}^{K}\left(D_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right) \qquad (6)$$

The first component, $\sum\nolimits_{k=1}^{K}\left(I_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)$, represents the gain from the equity capital inflow to relatively more profitable firms, whereas the second component, $-\sum\nolimits_{k=1}^{K}\left(D_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)$, represents the gain from the equity capital outflow from less profitable firms. We then scale them by the total dollar amount of the capital inflow outflow, respectively, to measure the equity capital inflow (outflow) efficiency:

$$Inflow\ Efficiency = \frac{\sum\nolimits_{k=1}^{K}\left(I_{k,t}*\left(ROE_{k,t+1}-\overline{ROE_{t+1}}\right)\right)}{\sum\nolimits_{k=1}^{K}\left|I_{k,t}\right|} \qquad (7)$$

$$Outflow\ Efficiency = \frac{-\sum\nolimits_{k=1}^{K}\left(D_{k,t}*\left(ROE_{k,t+1}-\overline{ROE_{t+1}}\right)\right)}{\sum\nolimits_{k=1}^{K}\left|D_{k,t}\right|} \qquad (8)$$

Resembling Equation (5), Equations (7) and (8) represent the dollar amounts of the aggregate gain from each dollar of the capital inflow and outflow, respectively. Panel A of

[9] We use accounting profitability to proxy for future value creation, as our focus is on the impact of cross-sectional capital allocation on aggregate earnings. The efficiency of cross-sectional allocation continues to be negative, with a magnitude of -0.028, if we use stock returns as an alternative proxy for future value creation.

Table 2 shows that each dollar of the capital outflows reduces aggregate earnings by 5.7 cents, whereas each dollar of the capital inflows reduces aggregate earnings by 7.5 cents. These results suggest that both inflows and outflows contribute to inefficient cross-sectional capital allocation. However, as Figure 1 indicates, the amount of capital inflows (i.e., issuance) is dwindled by the amount of capital outflows, especially in the recent years. Thus, the aggregate dollar impact of capital outflows to subsequent earnings is more pronounced (-$32.7 billion vs. -$12 billion a year on average).

Second, equity capital can be allocated cross-sectionally among different industries (i.e., inter-industry allocation) as well as among different firms in the same industries (i.e., intra-industry allocation). Thus, gains/losses from capital allocation can also be decomposed into the following two sources:

$$\sum_{k=1}^{K}\left(NEF_{k,t} * \left(ROE_{k,t+1} - \overline{ROE_{t+1}}\right)\right)$$
$$= \sum_{i=1}^{I}\left(\sum_{k=1}^{K_i}\left(NEF_{i,k,t} * \left(ROE_{k,t+1} - \overline{ROE_{\iota,t+1}}\right)\right)\right) + \sum_{i=1}^{I}\left(NEF_{i,t} * \left(\overline{ROE_{\iota,t+1}} - \overline{ROE_{t+1}}\right)\right) \quad (9)$$

where $NEF_{i,t}$ is the aggregate net equity finance (inflow) for industry i, which equals the sum of the net equity financing for K_i firms in the industry: $\sum_{k=1}^{K_i} NEF_{i,k,t}$; $\overline{ROE_{\iota,t+1}}$ is the weighted-average profitability of all K_i firms in industry i: . $\frac{\sum_{k=1}^{K_i} BVBE_{i,k,t} * ROE_{i,k,t+1}}{\sum_{k=1}^{K_i} BVBE_{i,k,t}}$

It can be easily shown that the first component of Equation (9) represents the gain from the intra-industry equity capital allocation (from relatively less profitable firms to relatively more profitable ones), while the second component represents the gain from the inter-industry equity capital allocation (from industries with relatively low to high industry profitability $\overline{ROE_{\iota,t+1}}$).

We define the industry based on two-digit SIC codes. Our results are robust to using the Fama-French 48 or 30 industries. Panel B of Table 2 reports the results, showing that inefficient allocation is largely attributable to intra-industry capital allocation. Out of the 7-cent drag in aggregate earnings for each dollar of capital allocation, 5.6 cents come from intra-industry allocation, while inter-industry allocation only contributes 1.4 cents. The results highlight one of the important differences between our paper and Wurgler (2000), who focuses exclusively on the inter-industry allocation of capital (including capital from all sources such as banks, etc.). Our results show that intra-industry misallocation may have a greater impact on the real economy than inter-industry misallocation.

4.2 Firm-level evidence

Conventional wisdom suggests that efficient capital allocation entails directing capital toward more productive use, and by doing so, will improve economy growth (Smith, 1776; Wurgler, 2000). However, the above results show that cross-sectional capital allocation by the stock market reduces subsequent aggregate earnings. In this section, we turn to firm-level analysis and investigate whether equity capital flows toward firms with higher or lower subsequent equity capital productivity. Following our aggregate earnings decomposition framework, we use the accounting return on equity (ROE) as our primary measure of the productivity of equity capital.

Panel A of Table 3 examines the cross-sectional correlation between *NEF/AT* (net equity financing scaled by assets) and the future ROE. [10] We compute the correlation in each year and tabulate the average value in each period. The results show that the average correlation between net equity financing and the t+1 ROE is -29%, suggesting that firms with net equity financing consistently underperform their counterparts in the following year. The results are similar for ROE measured over years t+2 and t+3, respectively.[11] Moreover, the negative correlation between net equity financing and the future ROE also increases over time—from -11% in the 1970s to -48% in the 2010s for t+1 ROE, lending support to the aggregate-level evidence that capital allocation efficiency declines over time.

The result that equity capital flows to firms with a lower future ROE is consistent with inefficient cross-sectional capital allocation. However, one could argue that these firms may be less risky; therefore, investors may demand lower accounting returns to the investment. To address this concern, we perform Fama and MacBeth (1973) regressions by regressing the future ROE on *NEF/AT* and proxies of firm risk, including CAPM Beta (*CAPM Beta*), yearly return volatility (*Return Vol*), and the volatility of annual earnings in the previous five years

[10] The inference is qualitatively similar if we do not scale net equity financing by total assets.

[11] For the firm-level tests, if a firm delists in year t+k, which results in missing profitability measures from year t+k onward, we set the earnings in t+k to the delisting amount, and from t+k+1 onward to zero.

(*Earning Vol*). Panel B of Table 3 reports the mean coefficients and their associated Newey-West (1987) adjusted standard errors using the future ROE measured in years t+1, t+2, and t+3, respectively. After controlling for these risk proxies, the net equity financing is still negatively associated with the future ROE.

In sum, these firm-level analyses provide evidence that equity capital flows into (out of) firms with lower (higher) future profitability, leading to the negative contribution of cross-sectional capital allocation to aggregate earnings.

4.3. Robustness tests

The above results suggest that cross-sectional equity capital allocation by the stock market reduces subsequent aggregate earnings. These results are consistent with the notion that the stock market fails to allocate capital efficiently, as further evidenced by the negative association between net equity financing and the subsequent profitability of equity capital. In this section, we test whether the negative association is robust to alternative measures.

4.3.1. Alternative measures of profitability

Our main measure of future profitability is the future realized returns on equity. To test the robustness of the results to alternative measures of future profitability, we first employ readily available alternative accounting profitability measures, including the cash return on equity (CROE, the operating cash flow to the book value of equity), return on assets (ROA, earnings to the book value of assets), and return on invested capital (ROIC, earnings to invested capital). Panel A of Table 4 reports the results. Each cell represents the average cross-sectional correlation between *NEF/AT* and each proxy (as indicated on the left) measured from t+1 to t+3. We find that the correlation is always negative, regardless of the choice of proxy for future profitability.

In our primary measure of ROE, equity capital is the accounting book value of equity computed from a historical cost basis. One concern is that the historical cost-based book value of equity may understate firms' equity value, and therefore distort the measure of equity capital productivity. To address this concern, we also compute the future equity capital productivity using the market value to measure the equity capital. Results in Panel A of Table 4 suggest that the resulting measure, return on the market value of equity (ROME), remains negatively correlated with the net equity financing over the three years subsequent to the equity capital allocation.

The above profitability measures rely on earnings and/or book value measures reported by companies following the U.S. GAAP rules. One concern is that the U.S. GAAP mandates full expensing of R&D outlays, which might impair the reliability and relevance of both the reported accounting earnings and book value numbers (e.g., Lev and Sougiannis, 1996). To alleviate this concern, we adjust the reported earnings and book value of equity for R&D capitalization. We assume that firms adopt a straight-line amortization approach with an estimated useful life of five years.[12] The adjusted earnings are computed as the reported earnings plus the reported R&D expenditures minus the R&D amortization expenses; the adjusted book value of equity is the reported book value of equity plus the book value of R&D capital. The final row of Panel A, Table 4 shows that the net equity financing is negatively associated with the adjusted ROE (i.e., adjusted earnings divided by the adjusted book value of equity) measured from t+1 to t+3. These results suggest that our main findings are robust to alternative measures of future equity capital productivity.

4.3.2. Alternative measures of net equity financing

Next, we show that our inferences are robust to two alternative measures of net equity financing. First, we infer the net equity financing from the clean-surplus relationship—net equity financing in year t equals the change in the book value of equity from years t-1 to t, minus the comprehensive income of t. Following Dhaliwal, Subramanyam, and Trezevant (1999), comprehensive income is the change in comprehensive retained earnings plus common stock dividends.[13] The first row of Panel B, Table 4 shows that the correlations between this alternative measure of net equity financing and the future ROE remain negative over the measurement window from years t+1 to t+3.

Second, our measure of net equity financing based on cash flow statements (i.e., the cash inflow from equity issuance minus the cash flow from payouts) does not account for indirect equity issuances (Fama and French, 2005). To mitigate this concern, we calculate the

[12] The results are robust if we set the estimated useful life to 10 years.

[13] When comprehensive income is missing in the non-delisting year, we set it to the earnings. For the delisting year, the net equity financing is set to the delisting amount times -1.

net equity financing based on the change in market capitalization—net equity financing in year t equals the market capitalization at the end of year t minus the market capitalization at the end of year t-1 times one plus the annual returns in year t. For IPO years with a missing value of t-1 market capitalization, the net equity financing is computed based on the cash flow statement. The second row of Panel B, Table 5 shows that this alternative measure of net equity financing is negatively related to the future ROE measured from years t+1 to t+3.

Finally, Panel C of Table 4 shows that the correlation between the net equity financing based on the change in market capitalization and the returns on the market value of equity continue to be negative over the measurement window from years t+1 to t+3. Overall, our inferences are robust after considering indirect stock issuance and using market capitalization to measure firms' equity value.

4.3.3. Value creation over longer horizons

Another concern is that a three-year window may not fully capture the value created by new equity financing because it might take a longer period for firms to put capital raised from the equity market into use and generate accounting earnings. To address this possibility, we examine the future ROEs measured from year t+4 onward. Columns (1) to (7) of Table 5 show that the correlations between net equity financing and the future ROE remain negative over the measurement window from years t+4 to t+10, and the magnitudes of the negative correlations increase consistently over time. Finally, we use the market-to-book ratio at the end of year t+10 to capture the degree of potential value creation after t+10 and test its cross-sectional correlation with the net equity financing. Column (8) of Table 5 again shows a significantly negative correlation, suggesting that firms that attract equity capital inflows in general underperform those with equity capital outflows in the long run.

4.3.4. Marginal returns to net equity financing

The above analyses, which rest on average firm performance, assume that new equity financing earns the same return as the existing assets in place. This section demonstrates that our results are not sensitive to this assumption by developing an alternative measure of profitability that captures the marginal returns to new equity financing. We assume that, without new equity financing in year t, the assets in place would still earn the same profitability as the prior year. Thus, the earnings of firm k in year t+1 that are attributable to the assets in place equal $BVBE_{k,t} * ROE_{k,t}$, while the earnings that are attributable to the new equity investment can be estimated as $E_{k,t+1} - BVBE_{k,t} * ROE_{k,t}$. It follows that the marginal return to the new equity financing ($RONEF_{k,t+1}$) can be expressed as $\frac{(E_{k,t+1} - BVBE_{k,t} * ROE_{k,t})}{NEF_{k,t}}$. We then examine its correlation with $NEF_{k,t}$ (scaled by assets) and tabulate the results in Table 6. To mitigate the issue of a small scalar, we exclude firm-years with the absolute value of $NEF_{k,t}$ smaller than $1 and $5 million in columns (1) and (2), respectively. We find that the correlation between $NEF_{k,t}$ and $RONEF_{k,t+1}$ is, on average, significantly negative. This correlation remains consistently negative since the 1980s. Overall, the results suggest that equity capital does not flow into firms with higher marginal returns.

5. How does the market allocate capital, and what explains inefficient capital allocation?

The above results show consistent evidence that equity capital does *not* flow to (from) firms with higher (lower) subsequent profitability, as prescribed by the efficient allocation hypothesis. In this section, we explore how the market allocates equity capital, i.e., where equity capital flows, to shed light on the mechanism underlying the observed negative effect of cross-sectional capital allocation. To this end, we examine the cross-sectional correlation between net equity financing and firm characteristics, including past profitability, sales growth, equity valuation (EBIT/EV), Tobin's Q, and free cash flows.

We report the results in Panel A of Table 7. First, we find that the stock market does not allocate capital toward firms with high past profitability, as the lagged ROE is negatively correlated with net equity financing (*corr. = −20%*). In contrast, firms with high past sales growth and growth opportunities proxied by Tobin's Q[14] attract more capital inflows (e.g., Smith and Watts, 1992; DeAngelo, DeAngelo, and Skinner, 2004)—the correlation of net equity financing with the lagged sales growth and Tobin's Q is 19% and 33%, respectively. Moreover, firms with a low *EBIT/EV* (i.e., high equity valuation) also receive more capital inflows, perhaps because firms time the market and issue (repurchase) equity when their stocks

[14] Consistent with Lee et al. (2021), the relationship between Tobin's Q and net equity financing becomes negative if we use the asset-weighted correlation, suggesting that Tobin's Q represents economic rents for large firms and growth opportunities for small firms.

are overvalued (undervalued) (Baker and Wurgler, 2002; Dittmar and Dittmar, 2008; Hirshleifer and Jiang, 2010). Finally, firms with greater financing needs, i.e., those with a lower ratio of free cash flows to capital expenditures, also have higher net equity financing, suggesting that investors allocate capital to firms to mitigate cash flow deficits (DeAngelo, DeAngelo, and Stulz, 2010; Huang and Ritter, 2016) but require more payouts from firms with surplus cash (Skinner, 2008). It is also interesting to note that the positive correlation between net equity financing and past sales growth, and the negative correlations between net equity financing and EBIT/EV and financing needs increase over time.

We next examine how these determinants are associated with the future ROE. Panels B of Table 7 show that the firm characteristics associated with greater equity capital inflows mostly have a negative association with future profitability. For instance, while firms with high past profitability receive less equity financing, they tend to have a higher future ROE (Dichev and Tang, 2009). Similarly, although firms with high past sales growth, a lower EBIV/EV, and a higher Tobin's Q attract more equity inflows, their ROE is lower subsequent to capital allocation.[15] These findings suggest that the cross-sectional allocation of capital to these firms may contribute to capital allocation inefficiency.

Panel C of Table 7 repeats these analyses using multivariate regression models to account for the correlation between these determinants. Column (1) regresses *NEF/AT* (multiplied by 100) on all these determinants, whereas columns (2) to (4) replace the dependent variable in column (1) with the future ROE measured from t+1 to t+3, respectively. The results are largely consistent with Panels A and B. The coefficients for regressions with NEF and future profitability as the dependent variables always bear exactly the opposite signs. While net equity financing is positively associated with lagged sales growth (coef. = 2.045, t-stat = 9.17), sales growth is significantly negatively related to the future ROE. Similarly, while net equity financing is negatively associated with the lagged ROE (coef. = −5.267, t-stat = −10.00), EBIT/EV (coef. = −7.542, t-stat = −5.26), and free cash flows (coef. = −0.095, t-stat = −7.07),

[15] The negative correlation between past sales growth and future profitability is consistent with previous findings that stocks with high past growth underperform in the future (Lakonishok, Shleifer, and Vishny, 1994), and that firms with high growth in operating assets tend to have lower future profitability (Fairfield, Whisenant, and Yohn, 2003). The positive correlation between EBIT/EV and future profitability is consistent with Basu (1977) and Fama and French (1992), who show that stocks with a high earnings-to-price ratio earn higher returns.

all these determinants are consistently positively related to ROE over subsequent years.

Finally, we assess the extent to which these determinants explain inefficient cross-sectional capital allocation. To maintain a fair comparison, in the odd columns of Table 8, we rerun each specification of Panel B, Table 3 in the sample with the availability of all these determinants; in the even columns, we augment the specification with these determinants. Columns (1) and (2) report the results using the proxies for profitability in t+1, which shows that including these determinants reduces the coefficient on NEF by approximately 30% from -0.566 to -0.399 for t+1 ROE. We also conduct the same analysis using the t+2 and t+3 ROE and find that the magnitudes of the coefficients on NEF drops by approximately 20% and 16%, respectively, after including the above determinants. Thus, the results suggest that the stock market allocating capital to firms with the above characteristics (i.e., firms with lower past profitability and free cash flows but a higher Tobin's Q, sales growth, equity valuation) is an important driver of the negative effect of cross-sectional capital allocation on subsequent aggregate earnings. However, they are not the complete explanation for equity capital misallocation.

6. Time-series determinants of cross-sectional capital allocation efficiency

In this section, we examine what explains the time-series variation in cross-sectional allocation efficiency. *Ex post* efficient cross-sectional allocation requires the market to allocate capital to firms with higher future profitability. Whether investors acquire information about future fundamentals and make their investment decisions accordingly would have a significant impact on the efficiency of cross-sectional capital allocation. Thus, we predict that stock price informativeness (about future fundamentals), investor sentiment, and investor horizons might affect the time-series variation in the efficiency of stock market allocation. [16]

Price Informativeness: The economic growth models (Levin, 2005) contend that information production in financial markets enables efficient investment. Consistent with this argument, Bai et al. (2016) find that rising price informativeness contributes to an increase in aggregate investment efficiency. Following Bai et al. (2016), we construct a time series of price

[16] While the managerial agency problem might also affect capital allocation efficiency by the stock market, we do not have a reliable measure of time-series variation in agency problems; therefore, we do not examine it here.

informativeness from the yearly cross-sectional regressions of future earnings on the current stock market valuation ratios using all U.S.-listed public firms.[17] We posit that more informative prices allow investors to better assess a firm's future profitability and allocate capital more efficiently.

Investor Sentiment: Prior research shows that during a high market sentiment period, investors pay less attention to fundamentals, and stock prices are more affected by speculative demand (Baker and Wurgler, 2000; Baker and Wurgler, 2006; Lee et al., 1991). Consequently, high investor sentiment may reduce the efficiency of cross-sectional capital allocation. We measure market sentiment as the orthogonalized first principal component of a number of sentiment measures from Baker and Wurgler (2006).

Investor horizon: Prior studies contend that transient institutions tend to make investment decisions based on the likelihood of short-term trading profits, and hence have little incentive to gather information about long-run profitability (Jacobs, 1991; Porter, 1992; Bushee, 1998).[18] By contrast, long-term investors have greater incentives to gather information about firms' future profitability (Chen et al., 2007). Following Bushee (1998), we use the fraction of institutions that are dedicated investors to proxy for the investor horizon. Note that we restrict the test to the sample period from 1982 to 2018 due to the availability of information concerning institutional ownership.

Panel A of Table 9 shows the regression results by regressing our measures of cross-sectional allocation efficiency on these explanatory variables. Column (1) reports the results for allocation efficiency based on t+1 ROE. We find that capital allocation efficiency is significantly higher during subperiods with high price informativeness, low investor sentiment, and long investor horizons. Columns (2) and (3) show that these associations remain similar when we measure the allocation efficiency in years t+2 and t+3, respectively. Columns (4) to (6) further include the time trend and show similar results (except that the coefficient of the investor horizon becomes insignificant in column (6)). Overall, these results suggest that the

[17] Bai et al. (2016) focus their measure primarily on S&P 500 companies. We use the entire sample of U.S.-listed firms to construct the measure, as our interest lies in how investors allocate capital among firms in the market.
[18] Short-term investors also pressure firms to make myopic operational (Bushee, 2001) and financing (e.g., repurchase) decisions to boost short-run stock prices at the expense of future profitability (Gaspar, Massa, Matos, Patgiri, and Rehman, 2013).

stock price informativeness, investor sentiment, and investor horizon contribute to aggregate-level capital allocation efficiency.

We then turn to the firm-level analyses and examine whether inefficient capital allocation behaviors, i.e., allocating too much capital to firms with high past growth and valuation but poor fundamentals, contribute to the results. Specifically, we partition the sample into periods with high and low price informativeness, investor sentiment, and investor horizon based on the sample median, and we rerun column (1) of Panel C in Table 7 for each subsample separately. The results are presented in Panel B of Table 9. Columns (1) and (2) indicate that the tendency to allocate equity capital toward firms with poor fundamentals (i.e., low ROE and FCF/CAPX) but high valuation (i.e., low EBIT/EV and a high Tobin' Q) is more pronounced when the stock price is less informative. However, the effect of past sales growth on capital allocation is statistically insignificant between the two subperiods. Columns (3) and (4) show that high investor sentiment exacerbates equity capital allocation toward firms with poor fundamentals and a high Tobin's Q. However, the effect of EBIT/EV on NEF is indistinguishable between the two subperiods, and the effect of sales growth on NEF is greater during low investor sentiment periods. Finally, columns (5) and (6) show that a shorter investor horizon also aggravates equity capital allocation toward firms with weak fundamentals but high sales growth and valuation (i.e., low EBIT/EV). However, the effect of Tobin's Q on capital allocation is more positive when investors have longer horizons. Thus, the results in Table 9, Panel B suggest that investors chasing firms with higher past growth and equity valuation but poorer fundamentals contribute at least partially to the lower capital allocation efficiency in these periods. The overall results suggest that investors' information acquisition regarding future fundamentals and the resulting stock price informativeness have a significant impact on the efficiency of cross-sectional capital allocation, and therefore the real economy.

7. Conclusions

This study examines whether and to what extent cross-sectional capital allocation by the stock market improves aggregate earnings. We develop a framework to decompose aggregate earnings into three distinct components: i) earnings to equity capital in place (before any equity transactions); ii) (expected) earnings to net aggregate equity capital flows; and iii) aggregate gains from cross-sectional capital allocation. We find that cross-sectional capital allocation negatively contributes to aggregate earnings over the past 47 years, and the contribution remains negative for at least up to 10 years following the capital allocation. Firm-level analyses provide consistent evidence that there is a negative cross-sectional association between net external equity financing and the productivity of equity capital over the subsequent 10 years.

Further analyses suggest that firms with high past sales, high equity valuation, and poor fundamentals (ROE and free cash flows) attract more equity capital. However, these firms fail to produce high subsequent profitability, resulting in an overall negative impact of capital allocation on future aggregate earnings. We also find that the equity capital misallocation is particularly severe during periods with lower stock price informativeness, higher investor sentiment, and shorter investor horizons, which can be partially attributable to the exacerbated inefficient allocation behaviors during these periods. Collectively, our paper suggests that i) even the (arguably) most developed and informationally efficient stock market in the world fails to allocate equity capital efficiently in the cross-section and ii) insufficient attention to fundamentals, the extrapolation of past growth, and overreliance on the (potentially noisy) stock market signals not only lead to informationally inefficient stock prices, as documented by prior literature, but also contribute to inefficient allocation of scarce equity capital in the real economy.

References:

Allen, F. and Gale, D. (1997). Financial markets, intermediaries, and intertemporal smoothing. *Journal of Political Economy*, *105*(3), 523-546.

Asker, J., Collard-Wexler, A., and De Loecker, J. (2014). Dynamic inputs and resource (mis) allocation. *Journal of Political Economy*, *122*(5), 1013-1063.

Bagehot, W. (1873). *Lombard Street: A description of the money market*. HS King & Company.

Bai, J., Philippon, T., and Savov, A. (2016). Have financial markets become more informative? *Journal of Financial Economics*, *122*(3), 625-654.

Baker, M. and Wurgler, J. (2000). The equity share in new issues and aggregate stock returns. *The Journal of Finance*, *55*(5), 2219-2257.

Baker, M. and Wurgler, J. (2002). Market timing and capital structure. *The Journal of Finance*, *57*(1), 1-32.

Baker, M. and Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns. *The Journal of Finance*, *61*(4), 1645-1680.

Banyi, M. L., Dyl, E. A., and Kahle, K. M. (2008). Errors in estimating share repurchases. *Journal of Corporate Finance*, *14*(4), 460-474.

Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios: A test of the efficient market hypothesis. *The Journal of Finance*, *32*(3), 663-682.

Beck, T. and Levine, R. (2002). Industry growth and capital allocation: Does having a market-or bank-based system matter? *Journal of Financial Economics*, *64*(2), 147-180.

Bradshaw, M. T., Richardson, S. A., and Sloan, R. G. (2006). The relation between corporate financing activities, analysts' forecasts and stock returns. *Journal of Accounting and Economics*, *42*(1-2), 53-85.

BEA (Bureau of Economic Analysis). (2004). Corporate profits in the GDP accounts. BEA paper series, No. 0040. United States Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis.

Bushee, B. J. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review*, 305-333.

Bushee, B. J. (2001). Do institutional investors prefer near-term earnings over long-run value? *Contemporary Accounting Research*, *18*(2), 207-246.

Chen, X., Harford, J., and Li, K. (2007). Monitoring: Which institutions matter? *Journal of Financial Economics*, *86*(2), 279-305.

Dhaliwal, D., Subramanyam, K. R., and Trezevant, R. (1999). Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics*, *26*(1-3), 43-67.

David, J. M. (2021). The aggregate implications of mergers and acquisitions. *The Review of Economic Studies*, *88*(4), 1796-1830.

David, J. M., Hopenhayn, H. A., and Venkateswaran, V. (2016). Information, misallocation, and aggregate productivity. *The Quarterly Journal of Economics*, 131(2), 943-1005.

David, J. M. and Venkateswaran, V. (2019). The sources of capital misallocation. *American Economic Review*, *109*(7), 2531-67.

DeAngelo, H., DeAngelo, L., and Skinner, D. J. (2004). Are dividends disappearing? Dividend concentration and the consolidation of earnings. *Journal of Financial Economics*, *72*(3), 425-456.

DeAngelo, H., DeAngelo, L., and Stulz, R. M. (2010). Seasoned equity offerings, market timing, and the corporate lifecycle. *Journal of Financial Economics*, *95*(3), 275-295.

Dessaint, O., Foucault, T., Frésard, L., and Matray, A. (2019). Noisy stock prices and corporate investment. *The Review of Financial Studies*, *32*(7), 2625-2672.

Dichev, I. D. (2007). What are stock investors' actual historical returns? Evidence from dollar-weighted returns. *American Economic Review,* 97(1), 386-401.

Dichev, I. D. and Tang, V. W. (2009). Earnings volatility and earnings predictability. *Journal of Accounting and Economics*, *47*(1-2), 160-181.
Dittmar, A. K. and Dittmar, R. F. (2008). The timing of financing decisions: An examination of the correlation in financing waves. *Journal of Financial Economics*, *90*(1), 59-83.
Doidge, C., Karolyi, G. A., and Stulz, R. M. (2017). The US listing gap. *Journal of Financial Economics*, *123*(3), 464-487.
Dow, J., & Gorton, G. (1997). Stock market efficiency and economic efficiency: Is there a connection? *The Journal of Finance*, *52*(3), 1087-1129.
Fairfield, P. M., Whisenant, J. S., and Yohn, T. L. (2003). Accrued earnings and growth: Implications for future profitability and market mispricing. *The Accounting Review*, *78*(1), 353-371.
Fama, E. F. (1970). Session topic: stock market price behavior. *The Journal of Finance*, *25*(2), 383-417.
Fama, E. F. and French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance*, 47(2), 427-465.
Fama, E. F. and MacBeth, J. D. (1973). Risk, return, and equilibrium: Empirical tests. *The Journal of Political Economy*, *81*(3), 607-636.
Fama, E. F. and French, K. R. (2005). Financing decisions: Who issues stock? *Journal of Financial Economics* 76 (3), 549-582.
Faulkender, M. and Smith, J. M. (2016). Taxes and leverage at multinational corporations. *Journal of Financial Economics*, *122*(1), 1-20.
Fischer, S. and Merton, R. C. (1984). Macroeconomics and finance: The role of the stock market. In the *Carnegie-Rochester conference series on public policy* (Vol. 21, pp. 57-108). North-Holland.
Floyd, E., Li, N., and Skinner, D. J. (2015). Payout policy through the financial crisis: The growth of repurchases and the resilience of dividends. *Journal of Financial Economics*, *118*(2), 299-316.
Fuchs, W., Green, B., and Papanikolaou, D. (2016). Adverse selection, slow-moving capital, and misallocation. *Journal of Financial Economics*, *120*(2), 286-308.
Gao, X., Ritter, J. R., and Zhu, Z. (2013). Where have all the IPOs gone? *Journal of Financial and Quantitative Analysis*, *48*(6), 1663-1692.
Gaspar, J. M., Massa, M., Matos, P., Patgiri, R., and Rehman, Z. (2013). Payout policy choices and shareholder investment horizons. *Review of Finance*, *17*(1), 261-320.
Greenwald, B. C., and Stiglitz, J. E. (1986). Externalities in economies with imperfect information and incomplete markets. *The Quarterly Journal of Economics*, *101*(2), 229-264.
Greenwald, B. C., and Stiglitz, J. E. (1993). Financial market imperfections and business cycles. *The Quarterly Journal of Economics*, *108*(1), 77-114.
Hart, O. D. (1975). On the optimality of equilibrium when the market structure is incomplete. *Journal of Economic Theory*, *11*(3), 418-443.
Hirshleifer, D. (2015). Behavioral finance. *Annual Review of Financial Economics*, 7: 133-159
Hirshleifer, D. and Jiang, D. (2010). A financing-based misvaluation factor and the cross-section of expected returns. *The Review of Financial Studies*, *23*(9), 3401-3436.
Hsieh, C. T. and Klenow, P. J. (2009). Misallocation and manufacturing TFP in China and India. *The Quarterly Journal of Economics*, *124*(4), 1403-1448.
Huang, R., Ritter, J. R., and Zhang, D. (2016). Private equity firms' reputational concerns and the costs of debt financing. *Journal of Financial and Quantitative Analysis*, 29-54.
Hubbard, G. R. (1998). Capital-market imperfections and investment. *Journal of Economic Literature*, 36(1), 193-224
Jacobs, M. T. (1991). *Short-term America: The causes and cures of our business myopia*. Harvard Business Review Press.
Kahle, K. and Stulz, R. M. (2020). Why are payouts so high in the 2000s? *Journal of Financial Economics.* Forthcoming.
Konchitachki, Y. and Patatoukas, P. N. (2014). Accounting earnings and gross domestic product.

Journal of Accounting and Economics, *57*, 76-88
Lakonishok, J., Shleifer, A., and Vishny, R. W. (1994). Contrarian investment, extrapolation, and risk. *The Journal of Finance*, *49*(5), 1541-1578.
Lee, D. W., Shin, H. H., and Stulz, R. M. (2021). Why does equity capital flow out of high Tobin's industries? *The Review of Financial Studies*, *34*(4), 1867-1906.
Lee, C. M., Shleifer, A., and Thaler, R. H. (1991). Investor sentiment and the closed-end fund puzzle. *The Journal of Finance*, *46*(1), 75-109.
Lev, B. and Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics*, 21(1), 107-138.
Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, *35*(2), 688-726.
Levine, R. and Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, 537-558.
Levine, R. (2005). Finance and growth: Theory and evidence. *Handbook of Economic Growth*, *1*, 865-934.
Loughran, T. and Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance*, *50*(1), 23-51.
Maksimovic, V., & Phillips, G. (2001). The market for corporate assets: Who engages in mergers and asset sales and are there efficiency gains? *The Journal of Finance*, *56*(6), 2019-2065.
Midrigan, V. and Xu, D. Y. (2014). Finance and misallocation: Evidence from plant-level data. *American Economic Review*, *104*(2), 422-58.
Newey, W. K. and West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, *55*(3), 703-708.
Ovtchinnikov, A. V., and McConnell J. J. (2009). Capital market imperfections and the sensitivity of investment to stock prices. *Journal of Financial and Quantitative Analysis*, 44(3), 551-578.
Porter, M. E. (1992). Capital choices: Changing the way America invests in industry. *Journal of Applied Corporate Finance*, *5*(2), 4-16.
Ritter, J. R. (1991). The long-run performance of initial public offerings. *The Journal of Finance*, *46*(1), 3-27.
Shumway, T. (1997). The delisting bias in CRSP data. *The Journal of Finance*, 52(1), 327-340.
Skinner, D. J. (2008). The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics*, *87*(3), 582-609.
Smith, A. (1776). *The wealth of nations*. New York: The Modern Library.
Smith Jr, C. W., and Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, *32*(3), 263-292.
Stiglitz, J. E. (1981). The allocation role of the stock market: Pareto optimality and competition. *The Journal of Finance*, *36*(2), 235-251.
Teoh, S. H., Welch, I., and Wong, T. J. (1998). Earnings management and the long-run market performance of initial public offerings. *The Journal of Finance*, *53*(6), 1935-1974.
Teoh, S. H. and Wong, T. J. (2002). Why new issues and high-accrual firms underperform: The role of analysts' credulity. *The Review of Financial Studies*, *15*(3), 869-900.
Teoh, S. H., Wong, T. J., and Rao, G. R. (1998). Are accruals during initial public offerings opportunistic? *Review of Accounting Studies*, *3*(1), 175-208.
Tobin, J. (1984). On the efficiency of the financial-system. *Lloyds Bank Annual Review*, (153), 1-15.
Tobin, J. (1989). Money, capital, and other stores of value. In *General Equilibrium Models of Monetary Economies* (pp. 25-37). Academic Press.
Whited, T. M. and Zhao, J. (2020). The misallocation of finance. *The Journal of Finance.* Forthcoming.
Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of Financial Economics*, *58*(1-2), 187-214.
Xiao, S. C. (2020). Do noisy stock prices impede real efficiency? *Management Science*, *66*(12), 5990-

6014.
Zingales, L. (2015). Presidential address: Does finance benefit society? *The Journal of Finance*, *70*(4), 1327-1363.

Appendix I: Variable Definitions

Variable	Definition
NEF_t	Capital inflow minus capital outflow. Capital inflow is the sale of common and preferred stocks less any increase in preferred stocks. Capital outflow is the sum of the repurchase of common stocks and common stock dividends; the repurchase of common stocks is the purchase of common and preferred stocks less any decrease in preferred stocks.
NEF/AT_t	The ratio of NEF in year t to total assets in year t.
BV_t	The book value of equity in year t.
$BVBE_t$	The book value of equity minus NEF.
ROE_{t+k}	The ratio of earnings before extraordinary items in year t+k to the book value of equity in year t+k-1.
$CROE_{t+k}$	The ratio of operating cash flows in year t+k to the book value of equity in year t+k-1.
ROA_{t+k}	The ratio of earnings before extraordinary items in year t+k to total assets in year t+k-1.
$ROIC_{t+k}$	The ratio of earnings before extraordinary items in year t+k to capital invested in year t+k-1.
$ROME_{t+k}$	The ratio of earnings before extraordinary items in year t+k to the market value of equity in year t+k-1.
$R\&D\ Adjusted\ ROE_{t+k}$	The ratio of R&D adjusted earnings in year t+k to the R&D adjusted book value of equity in year t+k-1. The adjusted earnings is the reported earnings plus the reported R&D expenditures minus the R&D amortization expenses; the adjusted book value of equity is the reported book value of equity plus the book value of R&D capital.
CAPM Beta	The CAPM Beta estimated by regressing daily stock returns on daily market returns.
Return Vol	The annualized standard deviation of daily stock returns in a year.
Earning Vol	The standard deviation of the ratio of the annual ROA from years t-5 to t, requiring a minimum of three observations.
Sale Growth	The growth of sales from t-1 to t.
EBIT/EV	The ratio of earnings before interest and taxes to the enterprise value. The enterprise value is the sum of the market value of equity, book value of debts, and book value of preferred stock minus cash and cash equivalents.
Tobin's Q	The ratio of the market value of assets divided by the book value of assets. The market value of assets is the market value of equity plus the book value of debt plus the book value of preferred stock minus investment tax credits.
FCF/CAPX	The ratio of the free cash flow — the operating cash flow minus capital expenditures — to capital expenditures.
Investor Sentiment	The orthogonalized first principal component of several sentiment measures from Baker and Wurgler (2006).
Investor Horizon	The market value of all public shares owned by dedicated investors divided by the market value of all public shares owned by all institutional investors.
Price Informative	The coefficient of current stock market valuation ratios estimated from the yearly cross-sectional regressions of future earnings on current stock market valuation ratios using all U.S.-listed public firms.

Appendix II: Definition of BVBE and NEF (for the aggregate-level analysis)

	Case I	**Case II**	**Case III**	**Case IV**
t-1	Reported	Missing	Reported	Reported
t	Reported	Reported	Reported	Missing
t+1	Reported	Reported	Missing	Missing
$\boldsymbol{BVBE_{k,t}}$	$BV_{k,t} - NEF_{i,t}$	$BV_{k,t} - NEF_{i,t}$	$BV_{k,t} - NEF_{i,t}$	$-NEF_{i,t}$
$\boldsymbol{NEF_{i,t}}$	Reported	Reported	Reported	$-CAPT_{i,t-1} * (1 + delisting\ ret_{i,t})$
$\boldsymbol{ROE_{i,t+1}}$	Reported	Reported	$ROE_{i,t}$ for non-bankruptcy, -1 for bankruptcy	$\overline{ROE_{t+1}}$

Figure 1: Equity Financing

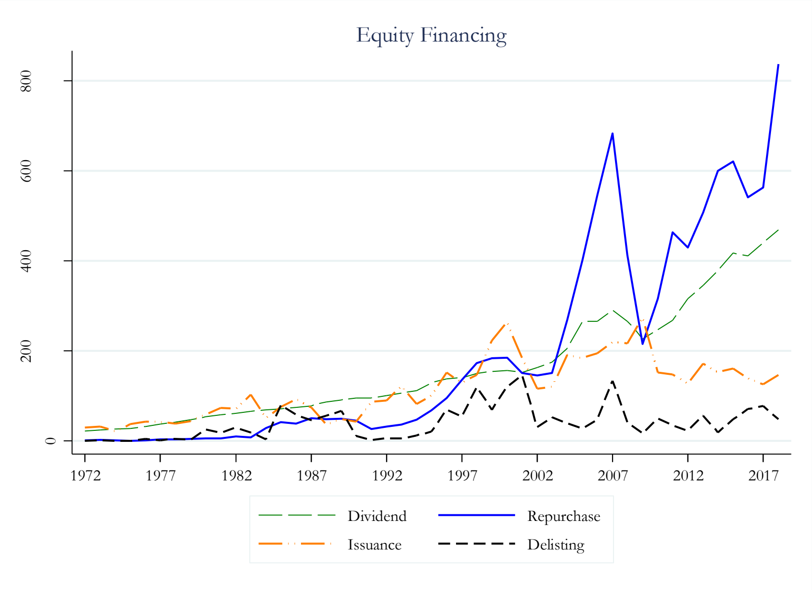

Figure 2: Weighted-average ROE

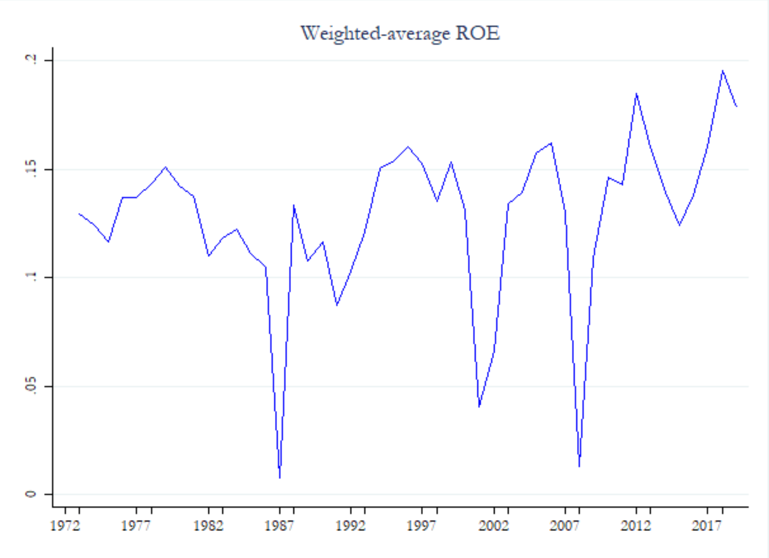

Table 1: Capital allocation and aggregate earnings

This table presents the decomposition of aggregate earnings and capital allocation efficiencies. Panel A displays the annual aggregate earnings and components in different periods. Dollar values are expressed in billions of real 2010 dollars using the Consumer Price Index (CPI). Panel B displays the cross-sectional allocation efficiency over different horizons in different periods. t-statistics are displayed in parentheses.

Panel A: Decomposition of annual aggregate earnings (for year t+1, in billions)

	Aggregate earnings	Capital in-place		Aggregate capital flows		Cross-sectional allocation	
		Amount	Percent	Amount	Percent	Amount	Percent
1972-1979	326.5	340.9	104.4%	-13.1	-4.0%	-1.3	-0.4%
1980-1989	297.9	324.9	109.1%	-18.3	-6.2%	-8.7	-3.0%
1990-1999	427.6	493.0	114.4%	-30.1	-6.7%	-35.4	-7.6%
2000-2009	558.5	673.2	161.2%	-47.1	-10.8%	-67.5	-50.4%
2010-2018	891.2	1105.0	124.1%	-118.4	-13.2%	-95.4	-10.9%
All	499.4	586.9	123.4%	-45.2	-8.2%	-42.2	-15.1%

Panel B: Efficiency of cross-sectional capital allocation based on the future ROE

	Efficiency based on ROE_{t+1}	Efficiency based on ROE_{t+2}	Efficiency based on ROE_{t+3}
1972-1979	-0.011	-0.010	-0.011
1980-1989	-0.035	-0.041	-0.048
1990-1999	-0.087	-0.095	-0.092
2000-2009	-0.103	-0.100	-0.090
2010-2018	-0.105	-0.096	-0.096
All	-0.070	-0.070	-0.068
	(-9.99)	(-10.46)	(-11.37)

Table 2: Further decomposition of capital allocation

This table presents the decomposition of capital allocation efficiency. Panel A decomposes capital allocation into inter- and intra-industry allocation, while Panel B decomposes the capital inflow and outflow. Columns (1) and (2) report dollar values in billions of real 2010 dollars using the Consumer Price Index (CPI). t-statistics are displayed in parentheses.

Panel A: Capital inflow and outflow

	Aggregate earnings due to inflow			Aggregate earnings due to outflow		
Year	Amount	Percent	Efficiency	Amount	Percent	Efficiency
1972-1979	0.1	0.0%	0.004	-1.3	-0.4%	-0.011
1980-1989	-1.2	-0.4%	-0.021	-7.5	-2.6%	-0.030
1990-1999	-17.5	-3.6%	-0.121	-20.6	-4.5%	-0.063
2000-2009	-18.7	-15.9%	-0.085	-52.3	-36.8%	-0.086
2010-2018	-21.1	-2.4%	-0.146	-80.2	-9.2%	-0.091
All	-12.0	-4.7%	-0.075	-32.7	-11.2%	-0.057
			(-6.08)			(10.07)

Panel B: Inter- and intra-industry allocation effects

	Aggregate earnings due to Inter-industry allocation			Aggregate earnings due to Intra-industry allocation		
Year	Amount	Percent	Efficiency	Amount	Percent	Efficiency
1972-1979	-0.2	-0.1%	-0.002	-1.0	-0.3%	-0.009
1980-1989	-2.9	-1.0%	-0.010	-5.8	-2.0%	-0.024
1990-1999	-5.3	-1.2%	-0.014	-30.1	-6.5%	-0.073
2000-2009	-15.9	-14.0%	-0.024	-51.6	-36.5%	-0.079
2010-2018	-14.0	-1.7%	-0.016	-81.3	-9.2%	-0.089
All	-7.8	-3.8%	-0.014	-34.4	-11.4%	-0.056
			(-5.29)			(-9.99)

Table 3: Cross-sectional correlation of net equity financing with future profitability

This table presents the results of the cross-sectional correlation between net equity financing and future profitability. Panel A presents the correlation between NEF/AT and various proxies for the future profitability for each period. t-statistics are displayed in parentheses. Panel B displays the Fama and MacBeth (1973) regression results relating future profitability to NEF/AT and various risk proxies. The profitability and risk proxies are measured in years t+1, t+2, and t+3 in columns (1) to (3), respectively. Variable definitions are provided in Appendix I. Newey-West (1987) adjusted t-statistics are displayed in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Panel A: Correlation of NEF (scaled by assets) with proxies for future profitability

Year	ROE_{t+1}	ROE_{t+2}	ROE_{t+3}
1972-1979	-0.109	-0.114	-0.100
1980-1989	-0.239	-0.217	-0.186
1990-1999	-0.269	-0.260	-0.232
2000-2009	-0.321	-0.310	-0.294
2010-2018	-0.482	-0.460	-0.431
All years	-0.287	-0.271	-0.243
	(-15.38)	(-15.69)	(-14.73)

Panel B: Multivariate regression based on profitability measured in year t+1

	Dependent Variables:		
	ROE_{t+1}	ROE_{t+2}	ROE_{t+3}
NEF_t	-0.496***	-0.379***	-0.327***
	(-8.98)	(-6.89)	(-6.41)
Future CAPM Beta	0.044***	0.042***	0.040***
	(7.41)	(6.94)	(6.39)
Future Return Vol	-0.421***	-0.390***	-0.374***
	(-9.00)	(-10.21)	(-10.51)
Future Earning Vol	-0.779***	-0.731***	-0.752***
	(-6.11)	(-7.21)	(-7.83)
Intercept	0.250***	0.237***	0.232***
	(18.95)	(21.98)	(22.51)
Obs.	181,839	173,424	160,099
Adj. R2	0.310	0.307	0.302

Table 4: Cross-sectional correlation between NEF and the future ROE for alternative measures

This table presents the results of the cross-sectional correlation between net equity financing and future profitability. Panel A reports the correlations between NEF/AT and alternative future profitability proxies, measured in years t+1 to t+3, respectively, in columns (1) to (3). Variable definitions are provided in Appendix I. Panel B reports the correlation between alternative measures of NEF/AT and the future ROE. The first row calculates net equity financing based on the clean-surplus relationship, and the ROE in year t+k as t+k earnings scaled by the t+k-1 book value of equity. The second row calculates net equity financing based on the change in market capitalization, and the ROE in year t+k as t+k earnings scaled by the t+k-1 book value of equity. Panel C calculates net equity financing based on the change in market capitalization, and the ROE in year t+k as t+k earnings scaled by the market capitalization at the beginning of year t+k. t-statistics are displayed in parentheses.

Panel A: Correlations between NEF and alternative future profitability measures

Profitability measure	$Profitability_{t+1}$	$Profitability_{t+2}$	$Profitability_{t+3}$
CROE	-0.289	-0.253	-0.221
	(-18.62)	(-16.69)	(-14.84)
ROA	-0.395	-0.360	-0.322
	(-18.25)	(-18.49)	(-17.25)
ROIC	-0.363	-0.323	-0.289
	(-17.47)	(-17.70)	(-16.64)
ROME	-0.144	-0.150	-0.143
	(-11.56)	(-13.10)	(-12.51)
R&D adjusted ROE	-0.220	-0.196	-0.177
	(-14.10)	(-14.67)	(-14.50)

Panel B: Correlations between alternative measures of NEF and the future ROE

NEF measure	ROE_{t+1}	ROE_{t+2}	ROE_{t+3}
Clean surplus based NEF	-0.303	-0.263	-0.238
$NEF_t=BV_t-BV_{t-1}-CI_t$	(-15.52)	(-14.93)	(-14.83)
Capital-market based NEF	-0.159	-0.143	-0.126
$NEF_t=CAPT_t-CAPT_{t-1}(1+R_t)$	(-12.77)	(-13.57)	(-12.33)

Panel C: Correlations between the capital-market based NEF and the future return on the market value of equity (ROME)

	$ROME_{t+1}$	$ROME_{t+2}$	$ROME_{t+3}$
Capital-market based NEF	-0.084	-0.091	-0.091
$NEF_t=CAPT_t-CAPT_{t-1}(1+R_t)$	(-10.66)	(-10.60)	(-9.78)

Table 5: Correlation between NEF and ROE over longer horizons

This table presents the results of the cross-sectional correlation between net equity financing and future profitability. Columns (1) to (7) report the correlation between net equity financing with future returns on equity, measured in years t+4 to t+10, respectively. Column (8) reports the correlation between net equity financing with the future market-to-book ratio, measured in year t+10. Variable definitions are provided in Appendix I. t-statistics are displayed in parentheses.

	ROE							MTB
	t+4	t+5	t+6	t+7	t+8	t+9	t+10	t+10
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1972-1979	-0.095	-0.050	-0.049	-0.045	-0.054	-0.052	-0.055	-0.022
1980-1989	-0.146	-0.095	-0.071	-0.074	-0.079	-0.081	-0.072	-0.015
1990-1999	-0.204	-0.097	-0.094	-0.092	-0.087	-0.084	-0.080	-0.004
2000-2009	-0.272	-0.141	-0.133	-0.117	-0.113	-0.115	-0.107	-0.015
2010-2018	-0.392	-0.205	-0.174	-0.171	-0.164	-0.147		
All	-0.212	-0.111	-0.097	-0.090	-0.089	-0.086	-0.080	-0.014
	(-13.79)	(-12.66)	(-11.99)	(-13.34)	(-15.08)	(-14.75)	(-14.95)	(-2.86)

Table 6： Marginal returns to net equity financing

This table presents the results of the cross-sectional correlation between net equity financing and marginal returns to equity financing. The marginal return to equity financing is defined as $(E_{k,t+1} - BVBE_{k,t} * ROE_{k,t})/NEF_{k,t}$. Columns (1) and (2) restrict the sample to firm-years, with the absolute value of NEF (2010 constant $) being greater than $1 million and $5 million, respectively. Variable definitions are provided in Appendix I. t-statistics are displayed in parentheses.

	Sample with |NEF|>$1 million	Sample with |NEF|>$5 million
	(1)	(2)
1972-1979	-0.002	0.008
1980-1989	-0.041	-0.063
1990-1999	-0.029	-0.044
2000-2009	-0.021	-0.036
2010-2018	-0.030	-0.060
All	-0.025	-0.041
	(-7.21)	(-6.74)

Table 7: How does the market allocate equity capital?

This table presents the results of the cross-sectional correlation between net equity financing and past firm performance. Panel A presents the correlation between net equity financing and various proxies for past firm performance, measured in year t+1 for each period. t-statistics are displayed in parentheses. Panel B presents the correlation between the future ROE and various proxies for past firm performance, measured in year t+1 for each period. t-statistics are displayed in parentheses. Panel C displays the Fama and MacBeth (1973) regression results relating past firm performance to net equity financing in column (1), and to the future ROE, measured in years t+1 to t+3 in columns (2) to (4). Variable definitions are provided in Appendix I. Newey-West (1987) adjusted t-statistics are displayed in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Panel A: Correlation of NEF (scaled by assets) with proxies for past profitability and growth

Year	ROE	Sales growth	EBIT/EV	Tobin's Q	FCF/CAPX
1972-1979	-0.149	0.151	-0.202	0.052	-0.116
1980-1989	-0.133	0.193	-0.231	0.418	-0.174
1990-1999	-0.117	0.194	-0.255	0.423	-0.250
2000-2009	-0.290	0.196	-0.263	0.352	-0.335
2010-2018	-0.334	0.204	-0.408	0.363	-0.380
All	-0.204	0.189	-0.272	0.332	-0.254
	(-13.11)	(30.29)	(-19.22)	(15.59)	(-16.41)

Panel B: Correlation of the future ROE with proxies for past profitability and growth

	ROE	Sales growth	EBIT/EV	Tobin's Q	FCF/CAPX
1972-1979	0.267	0.103	0.095	0.167	0.053
1980-1989	0.292	-0.098	0.239	-0.204	0.135
1990-1999	0.247	-0.122	0.274	-0.200	0.240
2000-2009	0.334	-0.108	0.256	-0.181	0.309
2010-2018	0.399	-0.138	0.370	-0.202	0.303
All (ROE_{t+1})	0.308	-0.079	0.251	-0.135	0.213
	(28.02)	(-5.73)	(16.49)	(-6.44)	(13.83)
All (ROE_{t+2})	0.232	-0.079	0.208	-0.119	0.188
	(22.35)	(-7.96)	(14.07)	(-6.62)	(12.75)
All (ROE_{t+3})	0.198	-0.077	0.178	-0.101	0.167
	(20.93)	(-8.15)	(13.08)	(-5.97)	(11.84)

Panel C: Multivariate regressions of NEF and the future ROE on proxies for past profitability and growth

	$NEF_t \times 100$	ROE_{t+1}	ROE_{t+2}	ROE_{t+3}
ROE_{t-1}	-5.267***	0.243***	0.149***	0.125***
	(-10.00)	(12.18)	(10.15)	(8.87)
Sale Growth $_{t-1}$	2.045***	-0.038***	-0.034***	-0.036***
	(9.17)	(-4.31)	(-5.64)	(-5.42)
EBIT/EV $_{t-1}$	-7.542***	0.287***	0.239***	0.181***
	(-5.26)	(6.92)	(6.64)	(6.67)
Tobin's Q $_{t-1}$	1.930***	-0.011**	-0.007	-0.005
	(7.51)	(-2.18)	(-1.66)	(-1.24)
FCF/CAPX $_{t-1}$	-0.095***	0.003***	0.002***	0.002***
	(-7.07)	(6.59)	(7.09)	(6.42)
Intercept	-2.347***	0.012*	0.015**	0.019***
	(-8.34)	(2.00)	(2.23)	(3.13)
Obs.	158,782	158,791	156,550	154,287
Adj. R2	0.226	0.157	0.103	0.082

Table 8: What drives the negative association between future profitability and net equity financing?

This table presents the results of the Fama and MacBeth (1973) regression relating future profitability to net equity financing. The dependent variable is the future ROE. The ROE and risk proxies are measured in years t+1, t+2, and t+3 in columns (1) and (2), columns (3) and (4), and columns (5) and (6), respectively. Variable definitions are provided in Appendix I. Newey-West (1987) adjusted t-statistics are displayed in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Profitability =	ROE_{t+1}		ROE_{t+2}		ROE_{t+3}	
	(1)	(2)	(3)	(4)	(5)	(6)
NEF_t	-0.566***	-0.399***	-0.459***	-0.365***	-0.418***	-0.350***
	(-7.81)	(-7.18)	(-7.53)	(-8.01)	(-7.60)	(-8.86)
Future CAPM Beta	0.046***	0.037***	0.041***	0.036***	0.039***	0.036***
	(7.05)	(5.72)	(6.08)	(5.33)	(5.49)	(5.19)
Future Return Vol	-0.415***	-0.353***	-0.380***	-0.349***	-0.359***	-0.338***
	(-9.18)	(-9.09)	(-10.20)	(-10.56)	(-10.53)	(-11.04)
Future Earning Vol	-0.833***	-0.733***	-0.770***	-0.721***	-0.802***	-0.776***
	(-6.33)	(-5.81)	(-7.43)	(-6.64)	(-7.97)	(-7.03)
ROE_{t-1}		0.152***				0.042***
		(10.49)		(6.37)		(4.28)
Sale Growth $_{t-1}$		-0.004		-0.007*		-0.014**
		(-0.68)		(-1.79)		(-2.56)
EBIT/EV $_{t-1}$		0.099***		0.092***		0.064***
		(3.81)		(4.14)		(3.25)
Tobin's Q $_{t-1}$		0.008**		0.011***		0.012***
		(2.60)		(3.65)		(3.64)
FCF/CAPX $_{t-1}$		0.002***		0.002***		0.001***
		(7.03)		(7.21)		(6.02)
Intercept	0.252***	0.197***	0.238***	0.198***	0.232***	0.199***
	(19.36)	(13.11)	(20.99)	(17.65)	(21.25)	(21.03)
Obs.	144,303	144,303	131,121	131,121	119,173	119,173
Adj. R2	0.301	0.338	0.290	0.308	0.285	0.300

Table 9: Time-series determinants of cross-sectional capital allocation efficiency

This table investigates the time-series determinants of capital allocation efficiency. Panel A presents the OLS regression relating capital allocation efficiency (based on the t+1 ROE) to different factors. Panel B presents the regression results of net equity financing on firm characteristics. The dependent variable is NEF/AT multiplied by 100. Columns (1) and (2) partition the sample period based on the price informativeness, columns (3) and (4) partition the sample period based on the investor sentiment, and columns (5) and (6) partition the sample based on the investor horizon. Variable definitions are provided in Appendix I. Newey-West (1987) adjusted t-statistics are displayed in parentheses. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Panel A: Time-series determinants and cross-sectional capital allocation efficiency

	Efficiency (t+1)	Efficiency (t+2)	Efficiency (t+3)	Efficiency (t+1)	Efficiency (t+2)	Efficiency (t+3)
	(1)	(2)	(3)	(4)	(5)	(6)
Price informative	1.838***	2.298***	2.186***	2.032***	2.399***	2.163***
	(5.29)	(6.85)	(9.65)	(11.40)	(5.83)	(9.62)
Investor sentiment	-0.014***	-0.019***	-0.017**	-0.008**	-0.016***	-0.018***
	(-4.88)	(-6.78)	(-2.51)	(-2.22)	(-2.81)	(-2.67)
Investor horizon	0.734***	0.460***	0.237*	1.700***	1.030***	0.096
	(8.25)	(5.41)	(1.80)	(11.15)	(3.01)	(0.44)
Intercept Included	Yes	Yes	Yes	Yes	Yes	Yes
Time Trend Included	No	No	No	Yes	Yes	Yes
Obs.	37	36	35	37	36	35
Adj. R2	0.644	0.674	0.680	0.691	0.693	0.682

Panel B: Subsample period analysis on the determinants of net equity financing

	$NEF_t \times 100$					
Partitioning variable	Price informativeness		Investor sentiment		Investor horizon	
	High	low	High	Low	Long	Short
	(1)	(2)	(3)	(4)	(5)	(6)
ROE_{t-1}	-4.420***	-6.151***	-5.766***	-4.897***	-4.691***	-6.361***
	(-8.31)	(-8.78)	(-8.20)	(-7.04)	(-6.23)	(-8.84)
Sale Growth $_{t-1}$	2.057***	2.032***	1.622***	2.358***	1.745***	1.993***
	(7.21)	(6.11)	(5.37)	(9.59)	(6.80)	(4.61)
EBIT/EV $_{t-1}$	-4.178***	-11.052***	-7.503***	-7.571***	-5.376***	-11.318***
	(-6.93)	(-4.84)	(-6.12)	(-3.16)	(-6.76)	(-4.24)
Tobin's Q $_{t-1}$	1.460***	2.420***	2.407***	1.577***	2.698***	1.987***
	(3.52)	(13.37)	(10.60)	(4.26)	(15.50)	(14.03)
FCF/CAPX $_{t-1}$	-0.072***	-0.119***	-0.128***	-0.071***	-0.100***	-0.113***
	(-7.00)	(-5.15)	(-6.35)	(-5.85)	(-8.50)	(-4.41)
Intercept	-1.897***	-2.816***	-2.493***	-2.238***	-2.997***	-2.641***
	(-4.11)	(-12.23)	(-8.83)	(-4.91)	(-14.49)	(-11.19)
Obs.	80,077	78,705	76,998	81,784	66,954	64,878
Adj. R2	0.171	0.284	0.246	0.212	0.228	0.276