max EPS Payout Policy

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March 2, 2026
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Abstract

Holding cash has a cost. For an EPS-maximizing CEO, that cost equals her firm's earnings yield. EPS maximizers retain cash when they can get an even higher yield by investing the money. Otherwise, they return cash to shareholders. This is the EPS-maximizing payout policy. Growth stocks (EY $<$ rf) never return cash because they can clear their low earnings-yield hurdle by investing in riskfree bonds. Value stocks (EY $>$ rf) face a higher hurdle, which makes cash their cheapest source of capital but also raises the opportunity cost of retention. Value stocks return cash when they cannot invest in enough high-yield projects to make up for the higher cost. Paradoxically, the firms that are most likely to distribute cash—deep value stocks (EY $\gg$ rf)—are also the ones for whom internal cash is cheapest relative to external financing. Dividends and buybacks both deliver the same value to shareholders, but only buybacks can be accretive. Hence, EPS-maximizing CEOs prefer to distribute via buybacks. Some firms pay dividends for reasons outside our model. Such departures should concentrate among marginal value stocks (EY = rf + ϵ) where the accretive pull of buybacks is weakest. Empirically, this logic explains which firms return cash, how they distribute the money, and time-series trends.

Keywords: Earnings per Share (EPS), Accretion, Dilution, Cash, Payout Policy, Repurchases, Dividends, Price-to-Earnings (PE) Ratio, Value vs. Growth

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Introduction

Capital structure, real investment, and payout policy—these are the three main topics in academic corporate finance. Damodaran (2014) explains how "all decisions made by any business" can be assigned to one of these three categories: #1) how to finance the firm's existing assets; #2) where to invest the funds that a business has raised; and, #3) how much and in what form to return the resulting profits back to the company's shareholders.

In practice, corporate executives make all three decisions by thinking about the short-term EPS (earnings per share) impact

$$\mathbb{E}[\text{EPS}] = \frac{\mathbb{E}[\text{Earnings}]}{\#\text{Shares}} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \cdot \text{Debt} + \text{rf} \cdot \text{Cash}}{\#\text{Shares}} \tag{1}$$

$\mathbb{E}[\text{NOI}]$ is the expected net operating income from the company's existing assets over the next twelve months. $\bar{\imath} \cdot \text{Debt}$ is the firm's promised interest expense. $\bar{\imath}$ is the average interest rate on outstanding bonds. In general, this historical average rate will differ from the firm's marginal interest rate, i, on the next $1 borrowed. $\text{rf} \cdot \text{Cash}$ is riskfree interest income from any unused cash.

A CEO who pursues this objective faces a surprisingly rich set of trade-offs. Ben-David and Chinco (2025a) explores how EPS maximizers choose their capital structure. The least dilutive financing option is the one that commits the least earnings next year. Ben-David and Chinco (2025b) describes how EPS-maximizing CEOs make real investments. To be accretive, a project must generate enough income next year to cover its own short-term financing cost.

This paper characterizes the max EPS payout policy. We model a CEO who has already optimized her capital structure but has not yet made her project-funding decisions. Initially, she has no internal cash reserves. Then her company realizes an unexpected cash windfall. The CEO can either keep the money on balance sheet. Or she can return the entire cash windfall to her shareholders. Our goal is to understand how an EPS maximizer weighs the costs and benefits of each option. When is returning cash to shareholders the CEO's most accretive option? In those cases, what is the best way to distribute the money?

Retain vs. Return. We start by answering the first question: when is it accretive to return the cash windfall to shareholders? Here's the trade-off. By keeping the cash windfall on balance sheet, a CEO can generate some extra income next year. If she parks all her cash in Treasuries, then each \$1 will generate $\text{rf} \times \$1$ of riskfree interest income. If the CEO uses a fraction $\theta \in [0, 1)$ of the windfall to fund projects with even higher income yields, $\overline{\text{IY}} > \text{rf}$, then her blended cash yield will be

$$\text{CY} = (1-\theta) \cdot \text{rf} + \theta \cdot \overline{\text{IY}} \tag{2}$$

By investing each \$1, the CEO can generate an extra $\text{CY} \times \$1$ in income. This is the benefit of keeping the cash windfall on balance sheet.

A CEO can also use the cash windfall to buy back shares. The CEO owes the owner of each existing share $\mathbb{E}[\text{EPS}]$. By repurchasing a single share, she can free up this expected earnings for her remaining shareholders. Hence, the opportunity cost of cash retention is the company's earnings yield

$$\text{EY} = \frac{\mathbb{E}[\text{EPS}]}{\text{Price}} \tag{3}$$

By spending \$1 of the cash windfall on buybacks, the CEO can lower her earnings cost of financing by $\text{EY} \times \$1$. This is the benefit of returning cash.

We prove that an EPS-maximizing CEO decides whether to retain or return her cash windfall by comparing these two yields

$$\text{CY} > \text{EY} \quad \text{keep cash on balance sheet} \tag{4a}$$

$$\underbrace{\text{CY}}_{\substack{\text{Income per} \\ \$1 \text{ invested}}} < \underbrace{\text{EY}}_{\substack{\text{Savings per} \\ \$1 \text{ repurchased}}} \quad \text{return cash to shareholders} \tag{4b}$$

It is accretive to retain the cash windfall when investing offers the higher yield, $\text{CY} > \text{EY}$. If buybacks have a higher yield, $\text{CY} < \text{EY}$, the CEO returns the money.

Suppose a company receives a \$100M cash windfall. The firm has 100M shares outstanding, so the windfall amounts to \$1/sh of cash. The company has access to two high-yield projects: a \$25M project with an income yield of $\text{IY} = 8\%$ and a \$50M project with $\text{IY} = 5\%$. If the CEO funds both projects and parks the remaining \$25M in Treasuries at rf = 3%, her blended cash yield is CY = $0.25 \cdot 3\% + 0.75 \cdot 6\% = 5.25\%$. The firm has an EPS forecast of $\mathbb{E}[\text{EPS}]$ = \$2/sh and trades at \$50/sh, giving it a price-to-earnings (PE) ratio of 25× and an earnings yield of EY = $\left(\frac{1}{25\times}\right)$ = 4%. Since CY = 5.25% exceeds EY = 4%, the CEO retains the windfall, boosting her EPS forecast by $\Delta\mathbb{E}[\text{EPS}]$ = CY × \$1/sh ≈ +\$0.05/sh.

How would things change if the company traded at \$20/sh instead? The EPS forecast and share count are the same, but now PE = 10× and EY = $\left(\frac{1}{10\times}\right)$ = 10%. The projects haven't changed, so the best the CEO can earn by retaining cash is still CY = 5.25%. But the yield on buybacks is now EY = 10%, well above CY. This CEO returns the windfall, repurchasing $\frac{\$100\text{M}}{\$20/\text{sh}}$ = 5M shares and lifting the company's EPS forecast by $\Delta\mathbb{E}[\text{EPS}]$ = EY × \$1/sh ≈ +\$0.10/sh.

Equation (4) captures the fundamental trade-off at the heart of the max EPS payout policy. However, this one simple rule manifests differently for growth stocks and value stocks. Why? Because the max EPS paradigm does not just dictate payout policy. It also governs leverage and investment decisions.

The 10× firm returned cash because buybacks offered a much higher yield than investing. Had the CEO retained her windfall, she would have sacrificed roughly {EY−CY} × \$100M = {10%−5.25%} × \$100M = \$4.75M of accretive EPS gains. For the 25× firm, forgoing buybacks was far less painful. The two projects generated enough extra income to offset the opportunity cost of retention, {CY−EY} × \$100M = {5.25%−4%} × \$100M = \$1.25M.

Now consider a 50× firm with EY = $\left(\frac{1}{50\times}\right)$ = 2%. We call this a growth stock since EY < rf. Equity financing is so cheap that the CEO would rather fund high-yield projects by issuing shares than by spending cash. Why give up rf = 3% in interest income when equity markets are only asking for EY = 2%? When this firm receives a \$100M cash windfall, the CEO parks it all in Treasuries, CY = rf, and funds her projects by issuing equity instead. The windfall earns rf × \$1/sh = +\$0.03/sh. The two equity-funded projects each add another +\$0.015/sh. So the EPS-maximizing CEO of the 50× growth stock would see her EPS forecast rise by \$0.03/sh + 2 × \$0.015/sh = +\$0.06/sh.

The 25× and 10× firms are value stocks, EY > rf. A value stock's higher earnings yield makes buybacks more accretive but also raises the hurdle for cash retention. The 25× firm retains because CY = 5.25% > EY = 4%. The 10× firm returns its cash windfall because CY = 5.25% falls well short of EY = 10%.

This creates an interesting tension. Growth stocks view cash as cheap enough to retain but too expensive to spend on projects. Lending at rf = 3% is a great deal when you can borrow from equity markets at EY = 2%. Value stocks are the opposite. Internal cash is their cheapest source of project financing. For the 10× company, spending $1 of cash is {EY–rf} × $1 = $0.07 cheaper than external financing. The 25× firm saves just {EY−rf} × $1 = $0.01. Yet it is the 25× firm that retains the cash windfall. The companies that would enjoy the biggest cost savings from using internal cash reserves for project funding, EY ≫ rf, must do the most work to justify cash retention, EY−rf ≫ 0%pt.

Dividends vs. Buybacks. We next look at how best to distribute the CEO's cash windfall when it is optimal to do so. So far, we have assumed that a CEO returns cash by repurchasing shares, but she could also pay a dividend to each shareholder. Accounting standards are designed to be neutral about dividends. If the CEO were to announce a dividend, then her EPS forecast would be the same as before the cash windfall. As a result, dividends are never the most accretive option.

The 50× growth stock can boost its EPS forecast by +$0.06/sh by lending $100M to Uncle Sam and funding high-yield projects by issuing equity. The 25× value stock can get +$0.05/sh by using the windfall to fund high-yield projects. The 10× value stock can get +$0.10/sh by using the $100M windfall to repurchase shares. Each firm has its own way of doing better than $0.00/sh.

When returning cash, EPS maximizers prefer accretive repurchases to milquetoast dividends. This "dominated dividends" result is more useful than a classic irrelevance theorem. Reality is more nuanced than our simple model. When an EPS-maximizing CEO pays dividends, the decision must be due to considerations outside our model. However, unlike in Miller and Modigliani (1961), we can predict where such considerations are likely to tilt the scales.

Dividend payers will be marginal value stocks with earnings yields just above the value/growth boundary, EY = rf + ϵ. These firms get the least benefit from following the max EPS payout policy. If the 25× value stock opted to pay a dividend rather than repurchase shares, it would be giving up \$0.05/sh of accretion. The 10× value stock would be sacrificing \$0.10/sh. There are many reasons why CEOs might prefer paying dividends: signaling, clientele effects, sentiment. Whatever force you have in mind, it is going to be much easier for that force to alter the decision-making of the 25× firm.

Shareholder Value. The classic Miller and Modigliani (1961) dividend-irrelevance result says that payout policy cannot affect shareholder value. For this result to work, investment policy must be fixed and shareholder value must be defined in present-value terms. An EPS-maximizing CEO satisfies neither condition. She chooses investment and payout jointly, and expected resale prices do not appear in Equation (1). So payout policy can have real effects on $\mathbb{E}[\text{EPS}]$, even in a frictionless world.

But this does not mean that EPS maximizers ignore shareholder value. If the CEO capitalizes the income from her cash windfall at her firm's current PE ratio—the same way she sees her current earnings yield as the cost of retention—then accretive policies become the main driver of value creation. The 50× growth stock's riskfree interest income gets priced at $(\text{rf} \cdot \$1/\text{sh}) \times 50 = \$1.50/\text{sh}$, creating +\$0.50/sh of value. The 10× value stock's interest income would be valued at just $(\text{rf} \cdot \$1/\text{sh}) \times 10 = \$0.30/\text{sh}$, destroying −\$0.70/sh. More generally, retention creates value whenever the cash yield exceeds the earnings yield.

This is a form of catering, but the mechanism differs from Baker and Wurgler (2004a,b). The CEO in our model returns cash because it is being priced at a low current multiple, not in anticipation of future multiples expansion. The two mechanisms are not mutually exclusive. EPS maximizers take their PE ratio as given. It does not matter how markets determine a firm's current share price. Our results hold if prices are "correct". They are equally valid in the presence of signaling, clientele effects, and/or sentiment.

But not every max EPS outcome can be seen as shareholder value in disguise. Repurchases and dividends both deliver exactly \$1 of value per \$1 of cash. A value-maximizing CEO would be indifferent between the two, even when using a fixed PE as the multiple. The fact that real-world CEOs overwhelmingly prefer buybacks is evidence that they care about EPS growth for its own sake.

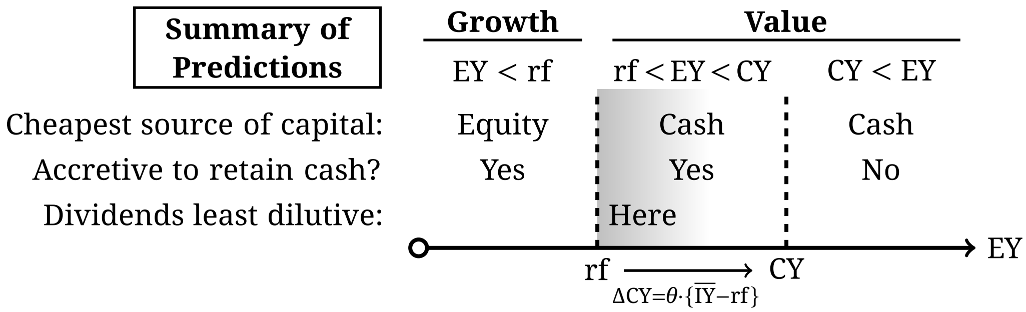


Figure 1. Growth stocks have earnings yields below the riskfree rate, EY < rf. These firms find it accretive to retain a cash windfall. Value stocks have higher earnings yields, EY > rf, and return the windfall even though cash is their cheapest source of capital. Dividend payments should be most common for marginal value stocks, EY = rf + ϵ, in the gray shaded region.

Empirical Evidence. The max EPS payout policy is consistent with a wide range of evidence. Our model accounts for well-known examples, such as Microsoft's abrupt change in behavior during the early 2000s. The data also line up with our model's cross-sectional predictions. Using firm-year observations from 1984 to 2024, we find that the average value stock (EY > rf) is +22.4%pt more likely to repurchase shares. Growth stocks (EY < rf) are far less likely to distribute cash, consistent with their lower retention hurdle.

The max EPS paradigm defines growth and value stocks differently. The existing literature says "value stocks" have lower PE ratios than most other stocks. By contrast, the max EPS paradigm calls any firm with PE $< \left(\frac{1}{\text{rf}}\right)$ a "value stock". This distinction has teeth. A rate hike can reclassify a company without changing its fundamentals. The 25× firm has EY $= \left(\frac{1}{25\times}\right) = 4\%$, so it was a value stock in our rf = 3% world. If the Treasury yield rose to rf = 5%, this same company would be a growth stock.

In addition, value stocks are not always 30% of the market. This allows the max EPS paradigm to speak to time-series trends. Why did payouts disappear in the 1990s (Fama and French, 2001)? Because high PE ratios gave the market a growth tilt, EY < rf. Why did firms start returning more cash in the 2000s (Kahle and Stulz, 2021)? Because PE ratios and Treasury yields both fell following the DotCom collapse, nudging the average company toward value, EY > rf.

Related Literature. EPS-maximizing CEOs view accretion and dilution as the main drivers of value creation, taking the firm's PE ratio as given. Many investors also think this way. Ben-David and Chinco (2025c) finds that analysts set target prices by multiplying their EPS forecast times a trailing PE. Instead of discounting expected future earnings, they ask: "How would the company have been priced if it had realized its forecasted earnings today?"

There are several ways to break the classic Miller and Modigliani (1961) dividend-irrelevance result. Frictions are the standard approach. DeAngelo and DeAngelo (2006) notes that M&M assumes all free cash flow has already been distributed. Our paper takes a different route: the CEO is not maximizing shareholder value in the present-value sense.

We add to a large literature on corporate cash holdings. Researchers have mainly focused on factors like precautionary savings, agency conflicts, and taxes (Opler, Pinkowitz, Stulz, and Williamson, 1999; Riddick and Whited, 2009; Nikolov and Whited, 2014). These are important considerations. Our goal is not to refute them. In the same way that frictions are not evidence against Miller and Modigliani (1961), there is no inherent tension with our work.

Previous research has proposed several payout-policy theories. Fama and French (2002) finds some evidence consistent with pecking-order theory. Taxes likely play a role (Allen, Bernardo, and Welch, 2000; Chetty and Saez, 2005; Brav, Graham, Harvey, and Michaely, 2008; Sialm, 2009). Life-cycle theory posits that mature firms pay dividends (Grullon, Michaely, and Swaminathan, 2002; DeAngelo, DeAngelo, and Stulz, 2006). There is also signaling (Benartzi, Michaely, and Thaler, 1997; DeAngelo, DeAngelo, and Skinner, 2000; Baker, Mendel, and Wurgler, 2016). Our max EPS model is consistent with many of these patterns.

Finally, our paper contributes to a vast behavioral corporate-finance literature (Baker, Ruback, and Wurgler, 2007), which all began with the insight that investors treat dividends differently (Shefrin and Statman, 1984; Thaler, 1999). Since then, researchers have pushed this one core idea in a variety of directions: catering (Baker and Wurgler, 2004a,b; Grinstein and Michaely, 2005), clientele effects (Graham and Kumar, 2006; Becker, Ivković, and Weisbenner, 2011; Sialm and Starks, 2012), price pressure (Hartzmark and Solomon, 2013, 2015, 2019).

1 Retain vs. Return

This section analyzes how an EPS-maximizing CEO decides whether to keep cash on balance sheet or return the money to her shareholders. Subsection 1.1 sets up the problem: a manager who has already optimized her capital structure realizes an unexpected cash windfall. Subsection 1.2 describes the investment opportunities available to the CEO if she keeps cash on balance sheet. Subsection 1.3 develops the other side of her decision: returning the cash to shareholders via repurchases. The max EPS payout policy says to pick whichever option offers the highest yield. Subsection 1.4 outlines how the consistent application of max EPS logic causes value and growth stocks to pursue divergent payout policies. The companies that see internal cash reserves as an especially cheap source of capital are precisely the ones that get forced to distribute the money.

1.1 Problem Setup

There are three classic topics in academic corporate finance: capital structure, real investment, and payout policy. Each problem builds on the last (Figure 2). Ben-David and Chinco (2025a) shows how an EPS maximizer optimizes her leverage in the absence of cash. We assume that the CEO has already done this. Then, immediately after she finishes, the CEO realizes an unexpected cash windfall of Windfall dollars.

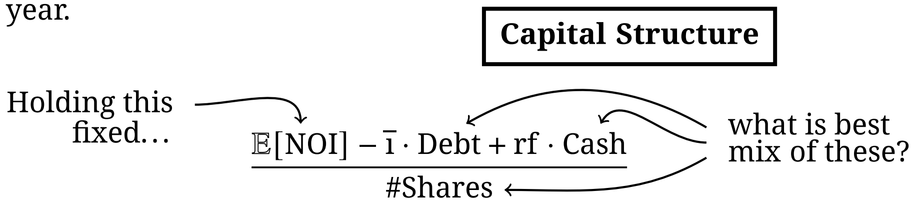
In Ben-David and Chinco (2025b), we studied a marginal investment decision: should the CEO fund one more project? Here, we roll the clock back. Instead of asking about the Nth project, we ask whether it is worth keeping the cash windfall on balance sheet in order to fund all N projects, leaving the remainder in Treasuries. The alternative is to return the entire amount to shareholders, and to begin with we will assume that the CEO does so by repurchasing shares.

With the CEO's capital structure already in place, her EPS forecast before the windfall arrives depends on two things: operating income and interest expense

$$\mathbb{E}[\text{Non-Cash EPS}] = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\#\text{Shares}} \tag{5}$$

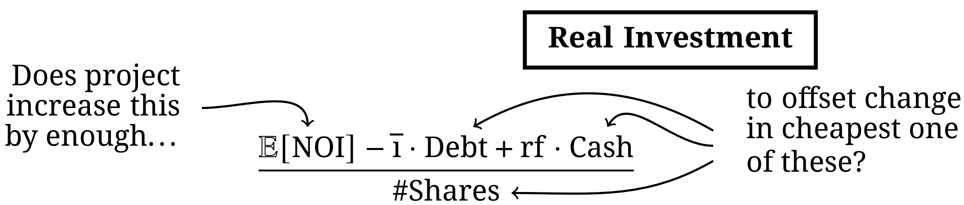
Figure 2. How the three classic problems in corporate finance look when viewed through max EPS-colored glasses.

The CEO's asset base is set in stone. She looks to finance these assets using the capital source (equity, debt, cash) that sacrifices the least expected earnings next year.



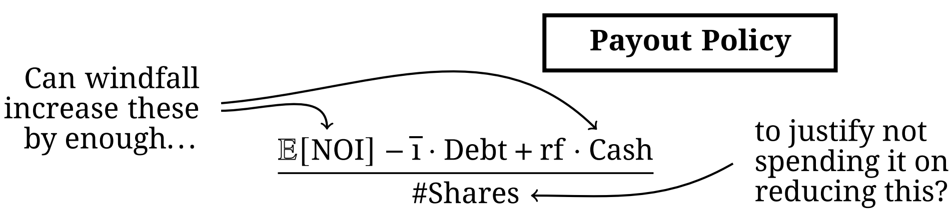
Ben-David and Chinco (2025a)

The CEO has already optimized her capital structure and funded all accretive projects that she was aware of. Then, one additional project unexpectedly becomes available. If she greenlights this final project, the added financing expense will cut into her expected earnings next year. But investing will still be accretive if the project is expected to generate even more income.



Ben-David and Chinco (2025b)

The CEO has already optimized her capital structure, but she has not yet funded any projects. She receives an unexpected cash windfall. Given her optimal investment rule, can the CEO generate enough extra income by investing the windfall to justify not using the money to buy back shares?



THE CURRENT PAPER

We label this forecast “non-cash EPS” because the firm starts out with no unused cash. Compared to the EPS definition in Equation (1), the $\mathrm{rf} \cdot \mathrm{Cash}$ term is absent from Equation (5). Otherwise, the two expressions are identical.

To compare cash retention against other uses of capital, it helps to express non-cash EPS as a yield spread. The company can be viewed as a yield-spread machine: its non-cash EPS forecast comes from capturing a levered yield spread on each shareholder’s portion of the existing asset base. $\mathrm{ROIC} = \frac{\mathbb{E}[\mathrm{NOI}]}{\mathrm{Assets}}$ is the firm’s return on invested capital. Despite the name, this is a yield, not a return. It represents the average income produced by each \$1 of the firm’s existing asset base. $\ell = \frac{\mathrm{Debt}}{\mathrm{Assets}}$ is the leverage ratio used to finance this invested capital. The firm’s promised interest payment next year is $\bar{\imath} \times \mathrm{Debt}$, where $\bar{\imath} \geq \mathrm{rf}$ is the average interest rate on the company’s existing loans and bonds.

Lemma 0. *A company’s non-cash EPS forecast can be written as a levered yield spread on the firm’s invested capital per share*

$$\mathbb{E}[\text{Non-Cash EPS}] \ = \ \{\mathrm{ROIC} - \ell \cdot \bar{\imath}\} \times \left(\frac{\mathrm{Assets}}{\#\mathrm{Shares}} \right) \tag{6}$$

Our running example isolates the role of the earnings yield by holding other fundamentals fixed. The example involves three firms that share the same expected earnings, $\mathbb{E}[\mathrm{Earnings}] = \$200\mathrm{M}$, EPS forecast, $\mathbb{E}[\text{Non-Cash EPS}] = \$2.00/\mathrm{sh}$, and share count, 100M. Each CEO also realizes the same \$100M cash windfall, or \$1.00/sh. The only difference across firms is the share price: the 10× firm trades at \$20/sh, the 25× firm at \$50/sh, and the 50× firm at \$100/sh.

1.2 Investment Opportunities

The EPS-maximizing CEO in our model has two options for what to do with her cash windfall. She can retain the cash, using a fraction θ of the windfall to fund $N \geq 1$ accretive projects and parking the remainder in Treasuries. Or she can return the entire amount to shareholders by repurchasing shares. First, suppose that the CEO keeps the cash on balance sheet, giving herself the opportunity to add to her non-cash EPS by investing the money.

A CEO can collect riskfree interest income by investing her cash windfall in Treasuries. This is the easiest thing to do, and the option is always available. If the CEO takes this route, her cash windfall would add an extra rf $\times$ Windfall to her firm's expected earnings next year

$$\underset{\text{Treasuries}}{\mathbb{E}[\text{EPS}]} \;=\; \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} \;+\; \text{rf} \times \text{Windfall}}{\#\text{Shares}} \tag{7}$$

In our running example, rf = 3%. So, if a CEO were to invest her entire \$100M windfall in Treasuries, then she would collect 3% $\times$ \$100M = \$3M in riskfree interest income over the next year. This extra income would add $\Delta\mathbb{E}[\text{EPS}] = \frac{\$3\text{M}}{100\text{M}} = +\$0.03/\text{sh}$ to her EPS forecast—equivalently, 3% $\times$ \$1/sh = +\$0.03/sh.

The CEO also has the option of using some of her cash windfall to fund higher-yield projects. Because the windfall arrives unexpectedly, the CEO is unlikely to have good projects lined up to absorb the entire amount. Suppose she can think of $N \geq 1$ projects, and the nth project has income yield

$$\text{IY}_n \;=\; \frac{\mathbb{E}[\Delta\text{NOI}_n]}{\text{Cost}_n} \;>\; \text{rf} \tag{8}$$

Collectively, these projects have a combined price tag of

$$\theta \cdot \text{Windfall} \;=\; \textstyle\sum_{n=1}^{N} \text{Cost}_n \tag{9}$$

$\theta \in [0, 1)$ denotes the CEO's potential cash-usage rate. This is the maximum share of the cash windfall that a CEO could allocate toward project funding.

In Ben-David and Chinco (2025b), we characterized the max EPS investment rule. There, we assumed that the CEO had already invested in all accretive projects that she knew about. Then, one more project became available. What mattered was the income yield on that last project. Here, the CEO has optimized her capital structure, but she has not yet funded any projects. So what matters is the average income yield on projects 1 through N

$$\overline{\text{IY}} \;=\; \frac{\mathbb{E}[\Delta\text{NOI}_1] \;+\cdots+\; \mathbb{E}[\Delta\text{NOI}_N]}{\text{Cost}_1 \;+\cdots+\; \text{Cost}_N} \tag{10}$$

We deliberately set up the running example so that every firm has access to the same investment opportunity set. Each CEO has $N = 2$ projects. The first costs $\text{Cost}_1 = \$25\text{M}$ and has an income yield of $\text{IY}_1 = 8\%$, generating \$2M in additional income next year. The second $\text{Cost}_2 = \$50\text{M}$ project has $\text{IY}_2 = 5\%$ and \$2.5M of expected income. Together, the two projects have a combined price tag of $\theta \cdot \text{Windfall} = \$25\text{M} + \$50\text{M} = \$75\text{M}$, giving a usage rate of $\theta = 0.75$. Since $8\% \times \$25\text{M} = \$2\text{M}$ and $5\% \times \$50\text{M} = \$2.5\text{M}$, we have an average income yield of $\overline{\text{IY}} = \left(\frac{\$2\text{M}+\$2.5\text{M}}{\$75\text{M}}\right) = 6\%$.

The CEO cannot allocate her entire cash windfall toward high-yield projects. Any money that does not get used for this purpose will collect riskfree interest income in Treasuries. Hence, the blended yield on her entire windfall is

$$\text{CY} = (1-\theta) \cdot \text{rf} + \theta \cdot \overline{\text{IY}} \tag{2}$$

$$= \text{rf} + \underbrace{\theta \cdot \{\overline{\text{IY}} - \text{rf}\}}_{\Delta\text{CY}} \tag{2$'$}$$

If the CEO left her entire windfall in Treasuries, her cash yield would be $\text{CY} = \text{rf}$. By using some of the money to fund projects, the CEO is able to increase her cash yield by $\Delta\text{CY} = \text{CY} - \text{rf} = \theta \cdot \{\overline{\text{IY}} - \text{rf}\}$. This ΔCY term reflects the excess yield on the CEO's cash windfall.

Combining Treasuries and projects, the CEO's EPS forecast becomes

$$\underset{\text{Invest}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} + \text{CY} \times \text{Windfall}}{\#\text{Shares}} \tag{12}$$

Compared to the Treasuries-only expression in Equation (7), the riskfree rate rf has been replaced by the blended cash yield CY.

Suppose one of the CEOs in our running example spent \$75M funding $\overline{\text{IY}} = 6\%$ projects and parked the remaining \$25M of her cash windfall in Treasuries. The CEO's blended cash yield would be $\text{CY} = (1-0.75) \times 3\% + 0.75 \times 6\% = 5.25\%$. She was able to increase her cash yield by $\Delta\text{CY} = 0.75 \times \{6\% - 3\%\} = 2.25\%\text{pt}$ relative to what she could have gotten by collecting riskfree interest income on the entire windfall, $\text{CY} = \text{rf} + \Delta\text{CY}$.

Lemma 1. *If the CEO in our model retains her cash windfall and invests the money, then her firm's EPS forecast will be*

$$\underset{\text{Invest}}{\mathbb{E}[\text{EPS}]} \;=\; \mathbb{E}[\text{Non-Cash EPS}] \;+\; \text{CY} \times \left(\frac{\text{Windfall}}{\text{\#Shares}}\right) \tag{13}$$

In our running example, if a CEO allocates the maximum amount of cash toward project funding, then the total income from her windfall would be CY × Windfall = 5.25% × \$100M = \$5.25M. Hence, by keeping the money on balance sheet, she can add 5.25% × \$1/sh ≈ \$0.05/sh to her EPS forecast.

1.3 Fundamental Trade-Off

A CEO can also return her cash windfall to shareholders by spending the money on repurchases. Given her company's current stock price, the CEO can buy back $(\frac{\text{Windfall}}{\text{Price}})$ shares with her cash on hand. Following a cash-financed repurchase, a company's new EPS forecast will be

$$\underset{\text{Repurchase}}{\mathbb{E}[\text{EPS}]} \;=\; \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\text{\#Shares} - (\frac{\text{Windfall}}{\text{Price}})} \tag{14}$$

Suppose the CEO of the 25× firm used her entire \$100M cash windfall to repurchase shares. Since her shares are trading at \$50/sh, the CEO can buy back $(\frac{\$100\text{M}}{\$50})$ = 2M shares, shrinking her share count from 100M to 98M. Her original non-cash earnings of \$200M would now be spread across fewer shares, giving the CEO a new EPS forecast of $\mathbb{E}[\text{EPS}] = \frac{\$200\text{M}}{98\text{M}} \approx \$2.04/\text{sh}$.

Now, think about what would happen if the CEO of the 10× firm did the same thing. With her firm's lower share price, \$20/sh, the same \$100M windfall can buy back $(\frac{\$100\text{M}}{\$20})$ = 5M shares, shrinking the count from 100M to 95M. The 10× firm will see its EPS forecast jump to $\mathbb{E}[\text{EPS}] = \frac{\$200\text{M}}{95\text{M}} \approx \$2.10/\text{sh}$. The 10× firm gets a bigger accretive pop because its lower share price allows the CEO to retire more shares with the same amount of cash.

By repurchasing shares, the CEO eliminates future earnings commitments to the previous owners of those shares. Each \$1 of cash spent on buybacks shaves EY × \$1 off of her earnings commitments, where $\text{EY} = \frac{\mathbb{E}[\text{EPS}]}{\text{Price}}$. Since shareholders get any residual expected earnings not used for financing purposes, the opportunity cost of cash retention is the company's earnings yield.

Notice that the 25× firm has an earnings yield of $\text{EY} = \left(\frac{1}{25}\right) = 4\%$, and buybacks increased its EPS forecast by 4% × \$1/sh = \$0.04/sh. Likewise, the 10× firm has an earnings yield of $\text{EY} = \left(\frac{1}{10}\right) = 10\%$, and buybacks increased its EPS forecast by 10% × \$1/sh = \$0.10/sh. This is a general pattern.

Lemma 2. *Following a cash-financed repurchase, a company's new EPS forecast will be*

$$\underset{\text{Repurchase}}{\mathbb{E}[\text{EPS}]} \approx \mathbb{E}[\text{Non-Cash EPS}] + \text{EY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) \tag{15}$$

Notice how Lemmas 1 and 2 have the same structure. Both express the CEO's EPS forecast as non-cash EPS plus a yield times the cash windfall per share. The only difference is the yield: CY if she retains the cash, EY if she returns it. Comparing these two yields is the crux of the max EPS payout policy.

Proposition 1. *Suppose a CEO initially planned on retaining her cash windfall and investing the money. If she instead returned the windfall to shareholders via buybacks, then the difference in her company's EPS forecast would be*

$$\underset{\text{Repurchase}}{\mathbb{E}[\text{EPS}]} - \underset{\text{Invest}}{\mathbb{E}[\text{EPS}]} = \{\text{EY} - \text{CY}\} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) \tag{16}$$

It is more accretive to retain cash if investing the money offers a higher yield, CY > EY. *Otherwise, if* EY > CY, *it is more accretive to return cash to shareholders.*

Here is what this max EPS logic implies for the 25× and 10× firms in our running example. Both firms can generate a blended yield of CY = 5.25% by investing their respective cash windfalls. The CEO of the 25× firm looks at this yield and sees that it is larger than her firm's earnings yield, EY = 4%. So she retains the cash, collecting \$5.25M of extra income and boosting her EPS forecast by $\Delta\mathbb{E}[\text{EPS}] = \text{CY} \times \$1/\text{sh} \approx +\$0.05/\text{sh}$. This is $\{\text{CY} - \text{EY}\} \times \$1/\text{sh} = 1.25\% \times \$1.00 \approx +\$0.01/\text{sh}$ more accretive than using the cash windfall to repurchase shares.

The $10\times$ firm's CEO faces the opposite arithmetic. She sees $\text{CY} = 5.25\%$ and realizes that it would fall well short of her firm's earnings yield, $\text{EY} = 10\%$. So the CEO uses her cash windfall to repurchase $\frac{\$100\text{M}}{\$20/\text{sh}} = 5\text{M}$ shares. Doing so lifts her company's EPS forecast by $\Delta\mathbb{E}[\text{EPS}] = \text{EY} \times \$1/\text{sh} \approx +\$0.10/\text{sh}$. If the CEO had invested her cash windfall, then she would have lost out on $\{\text{EY} - \text{CY}\} \times \$1/\text{sh} = 4.75\% \times \$1.00 \approx \$0.05/\text{sh}$ in EPS growth.

EPS maximizers do not use a special ad hoc rule for cash. Lemma 0 says that they view their companies as yield-spread machines, generating non-cash EPS by capturing a levered yield spread on the firm's invested-capital base. Proposition 1 shows that cash retention works the same way: the benefits come from capturing an analogous yield spread on the firm's cash per share. Cash is just another asset the firm can choose to hold.

Firms with better investment opportunities are more likely to retain cash. But there is so much more to the story. For one thing, the opportunity cost of retention also matters. Suppose we added +1%pt to $\overline{\text{IY}}$ for the $10\times$ firm. It would not change anything. Repurchases add $10\% \times \$1/\text{sh} = \$0.10/\text{sh}$ to her firm's EPS forecast. A marginal improvement in project quality barely dents this advantage. For retention to be worthwhile, she would need projects with income yields high enough to close the $\text{EY} - \text{rf} = 7\%\text{pt}$ gap between the yield on repurchases and that of Treasuries. The $25\times$ firm faces a much smaller gap, $\text{EY} - \text{rf} = 1\%\text{pt}$, so even modest projects can tip the balance.

1.4 Internal Consistency

Until now, we have taken the CEO's cash-usage rate as given. If she retains cash, she spends a fraction θ on projects and parks the rest in Treasuries. But if we require internal consistency—the CEO applies the same $\max \text{EPS}$ logic to financing, investment, and payout—then θ is no longer a free parameter. This pins down θ, and growth stocks and value stocks end up in very different places. The result is a paradox: the cheaper a firm's internal cash, the harder it is for the CEO to hold onto it.

Ben-David and Chinco (2025b) tells us that an EPS-maximizing CEO will fund accretive projects, which clear the following income-yield hurdle

$$\text{IY} \;>\; \min\Big[\underset{\substack{\text{Issue}\\\text{equity}}}{\text{EY}},\; \underset{\substack{\text{Use}\\\text{cash}}}{\text{rf}},\; \underset{\substack{\text{Sell}\\\text{bonds}}}{\text{i}}\Big] \tag{17}$$

using her firm's cheapest available source of capital. Ben-David and Chinco (2025a) tells us how EPS maximizers perceive the cost of capital. The earnings cost of issuing \$1 of equity is $\text{EY} \times \$1$. The earnings cost of borrowing an extra \$1 is $\text{i} \times \$1$. The earnings cost of spending \$1 of cash is the forgone riskfree interest income, $\text{rf} \times \$1$.

An EPS-maximizing CEO might not always see cash as her cheapest capital source. Consider the 50× firm in our running example. With an earnings yield of $\text{EY} = 2\%$, the CEO can sacrifice less earnings by funding projects with equity than by spending cash. She funds every accretive project by issuing shares and parks her entire cash windfall in Treasuries, $\theta = 0$. Her low earnings yield also implies that the resulting riskfree interest income is enough to justify cash retention, $\text{rf} = 3\% > \text{EY} = 2\%$. Lending to the US government at 3% is a great deal if you can borrow from equity markets at 2%.

The 25× and 10× firms face a higher cost of equity capital, $\text{EY} > \text{rf}$, which is why they view internal cash reserves as their cheapest source of capital. When the CEO of the 25× firm gets a cash windfall, she switches to funding projects with cash. By replacing \$1 of equity financing with \$1 of cash, she shaves $\{\text{EY}-\text{rf}\} \times \$1 = 1\% \times \$1$ off her financing expenses. But a higher earnings yield also raises the opportunity cost of cash retention. The 10× CEO cannot just park her windfall in Treasuries. By using the money to repurchase shares, she could have added $\{\text{EY}-\text{rf}\} \times \left(\frac{\text{Windfall}}{\text{\#Shares}}\right) = 7\% \times \$1/\text{sh} = +\$0.07/\text{sh}$ to her EPS forecast. To make retention accretive, she must generate at least this much extra income by funding high-yield projects. Companies that benefit the most from funding projects with cash, $\text{EY} \gg \text{rf}$, must also do the most work to justify cash retention, $\text{EY}-\text{rf} \gg 0\%\text{pt}$.

The sign of a firm's excess earnings yield, $\text{EY}-\text{rf}$, determines which regime a company falls into. In the language of Baker, Stein, and Wurgler (2003), this is the inflection point. We have standard names for these two groups

$$\text{EY} < \text{rf} \quad \rightsquigarrow \quad \text{Growth Stock, PE} > \left(\tfrac{1}{\text{rf}}\right) \tag{18a}$$

$$\text{EY} > \text{rf} \quad \rightsquigarrow \quad \text{Value Stock, PE} < \left(\tfrac{1}{\text{rf}}\right) \tag{18b}$$

The 50× firm is a growth stock, $\text{EY} = \left(\tfrac{1}{50}\right) = 2\% < 3\% = \text{rf}$. The 25× and 10× firms are both value stocks, $\left(\tfrac{1}{25}\right) = 4\% > 3\%$ and $\left(\tfrac{1}{10}\right) = 10\% > 3\%$.

Proposition 2. *If we require that the CEO apply the same* max EPS *logic to financing, investment, and payout, then her optimal usage rate is*

$$\theta_\star = \begin{cases} 0 & \text{if} \quad \text{EY} - \text{rf} < 0 \qquad \text{Growth} \\ \theta & \text{if} \quad 0 < \text{EY} - \text{rf} < \Delta\text{CY} \\ 0 & \text{if} \quad \Delta\text{CY} < \text{EY} - \text{rf} \end{cases} \quad \text{Value} \tag{19}$$

Growth stocks fund projects with equity and park cash in Treasuries. Value stocks fund projects with cash and retain the windfall only if CY > EY*.*

Consider how Proposition 2 applies to the three firms in our running example. The 50× firm is a growth stock, $\text{EY} = 2\% < \text{rf} = 3\%$. Any project that would have been accretive to fund out of internal cash reserves is even more accretive to fund with equity, $\{\overline{\text{IY}}-2\%\} > \{\overline{\text{IY}}-3\%\}$. So the 50× CEO funds both projects by issuing shares and parks her entire cash windfall in Treasuries, $\theta_\star = 0$. Riskfree interest income of $\text{rf} \times \$1/\text{sh} = +\$0.03/\text{sh}$ is enough to justify retention because the opportunity cost is only $\text{EY} = 2\%$. The 50× CEO retains her entire windfall.

The 25× firm is a value stock, $\text{EY} = 4\% > \text{rf} = 3\%$. Equity is no longer the cheapest source of capital, so she funds both projects out of her cash windfall, $\theta_\star = \theta = 0.75$. Her blended cash yield of $\text{CY} = 5.25\%$ exceeds her earnings yield, $\text{EY} = 4\%$, so she retains. But this is a close call: without the projects, $\text{CY} = \text{rf} = 3\% < \text{EY} = 4\%$, and the CEO would have returned the cash instead.

The 10× firm is a deep value stock, $\text{EY} = 10\% > \text{rf} = 3\%$. Even with both projects funded, $\Delta\text{CY} = 2.25\%\text{pt}$ falls well short of $\text{EY} - \text{rf} = 7\%\text{pt}$. The CEO returns her entire windfall via buybacks, $\theta_\star = 0$. This is the paradox: the 10× firm benefits the most from cheap internal capital, $\text{EY} - \text{rf} = 7\%\text{pt}$, yet it is the one that gets forced to distribute the money.

2 Dividends vs. Buybacks

EPS maximizers return cash to shareholders when repurchases offer a higher yield than investing cash. In principle, it could be even more accretive to return cash by paying a dividend. In subsection 2.1, we show that dividends are never a firm's most accretive option. However, not all firms see dividends as equally dilutive. In subsection 2.2, we characterize where it is easiest for real-world complications to tilt the scales in favor of dividends.

2.1 Dividends Are Dominated

An EPS-maximizing CEO could also distribute her cash windfall by mailing the owner of each share a check for $\left(\frac{\text{Windfall}}{\text{\#Shares}}\right)$ dollars

$$\text{Windfall} \;=\; \overbrace{\underbrace{\left(\frac{\text{Windfall}}{\text{\#Shares}}\right)}_{\substack{\text{Amount}\\\text{mailed}}} \times \underbrace{\text{\#Shares}}_{\substack{\text{to every}\\\text{shareholder}}}}^{\text{Pay dividend}} \;=\; \overbrace{\underbrace{\text{Price}}_{\substack{\text{Amount}\\\text{received}}} \times \underbrace{\left(\frac{\text{Windfall}}{\text{Price}}\right)}_{\substack{\text{by those}\\\text{who sell}}}}^{\text{Buy back shares}} \tag{20}$$

For the 25× firm, a dividend pays \$1/sh × 100M shares = \$100M. A repurchase buys back \$50/sh×2M shares = \$100M. Same dollars out the door, very different EPS consequences.

Dividends transfer existing shareholder equity from inside to outside the firm. The specific rules can be found in ASC 260, Earnings per Share. But the high-level takeaway is simple: dividends completely bypass next year's income statement. After announcing a dividend, a CEO can no longer invest her cash to generate extra income. So, because her share count also remains the same, her EPS forecast would not change either

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} \;=\; \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} \;+\; 0\% \times \text{Windfall}}{\text{\#Shares} - 0} \tag{21}$$

To match the earlier analysis, we formalize this point with a lemma.

Lemma 3. *If the CEO returns her cash windfall to shareholders as a dividend, the payout bypasses the income statement entirely. Her firm's EPS forecast is unchanged*

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} = \mathbb{E}[\text{Non-Cash EPS}] \tag{22}$$

This special accounting treatment is no accident. The accounting standards have been designed to treat dividend payments in a neutral way. They are meant to neither encourage nor discourage companies from distributing cash to their shareholders. But notice what neutrality means inside Lemma 0. A CEO who pays a dividend is left with the yield-spread machine and nothing else. Her EPS forecast reflects her firm's fundamentals, no window dressing. Unfortunately, by trying to walk this fine line, the guidelines have made it so that dividends are never the most accretive payout policy.

Proposition 3. *Suppose that, instead of following the next most accretive policy, an EPS-maximizing CEO chose to return her cash windfall to shareholders by paying each one a dividend of* $\left(\frac{\text{Windfall}}{\#\text{Shares}}\right)$*. The change in her EPS forecast would be*

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} - \underset{\text{Most Accr}}{\mathbb{E}[\text{EPS}]} = -\max[\text{EY}, \text{CY}] \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) < \$0/\text{sh} \tag{23}$$

Consider the 50× and 25× firms. The 50× CEO is a growth stock whose most accretive policy is to park cash in Treasuries at $\text{rf} = 3\%$. Paying a dividend instead costs her $\text{rf} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) = 3\% \times \$1 = \$0.03/\text{sh}$. The 25× CEO is a value stock. If she used her cash windfall to repurchase shares, she would get $\text{EY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) = 4\% \times \$1 = \$0.04/\text{sh}$. But she can do even better by investing the money, $\text{CY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) = 5.25\% \times \$1 \approx \$0.05/\text{sh}$. So that is what she does. Each firm does something different, but both do better than the \$0.00/sh gain from paying a \$1/sh dividend.

Brav, Graham, Harvey, and Michaely (2005) documents that corporate executives view dividends as long-term commitments, whereas they describe cash-financed repurchases as a short-term perk. Baker et al. (2016) formalize this intuition, showing that investors use past dividends as reference points when evaluating current payouts. This asymmetry is puzzling in a present-value framework—if shareholders compare expected discounted cash flows, the labeling should not matter. But the asymmetry makes sense once you recognize that EPS is an accounting variable. Repurchases deliver an immediate accretive pop by reducing the share count. Dividends bypass next year's income statement entirely, so any benefits must be longer-term in nature.

2.2 Most Likely to Pay Dividends

This "dominated dividends" theorem is more useful than a classic irrelevance result. Not every firm sacrifices the same amount by paying a dividend. A deep value stock gets a big accretive pop from repurchases. A marginal value stock gets less. When we observe an EPS-maximizing CEO paying dividends, we know the decision must reflect practical considerations outside our model. Unlike Miller and Modigliani (1961), we can predict where such considerations are most likely to tilt the scales.

The $10\times$ and $25\times$ firms illustrate the point. The $25\times$ CEO was not planning to repurchase shares. She was going to retain her \$100M windfall and invest the money to get $\text{CY} \times \big(\frac{\text{Windfall}}{\text{\#Shares}}\big) \approx \$0.05/\text{sh}$. Even if buybacks were her only option, she would have gotten $\text{EY} \times \big(\frac{\text{Windfall}}{\text{\#Shares}}\big) = 4\% \times \$1 = \$0.04/\text{sh}$. The $10\times$ CEO, by contrast, gains $10\% \times \$1 = \$0.10/\text{sh}$ from repurchases. Any way you look at it, it is going to be harder to convince the $10\times$ CEO to pay a dividend. She would have to give up so much more.

To fix ideas, imagine that a CEO faces an exogenous "demand for dividends," D4D, which reflects the combined benefit of paying a dividend for reasons outside our model—clientele effects, signaling motives, catering, board pressure, etc. Not every value stock considers paying a dividend. A value stock with sufficiently good investment opportunities, $\text{CY} > \text{EY}$, finds it accretive to retain cash. Either way, a value stock CEO opts for dividends only when the outside benefit exceeds the opportunity cost of her best alternative

$$\text{Pay Dividend} \;=\; 1\big(\,\text{D4D} > \max[\text{EY}, \text{CY}]\,\big) \tag{24}$$

By following her most accretive policy, the CEO boosts her EPS forecast by $\max[\text{EY}, \text{CY}] \times \$1$ per dollar of windfall. She will only forgo this benefit if dividend demand is high enough. Our goal is to predict which value stocks are most likely to pay dividends.

Proposition 4. *If dividend demand is independent of earnings yield among value stocks,* $\text{D4D} \perp \text{EY} \,|\, \{\text{EY} > \text{rf}\}$*, then value stocks with higher excess earnings yields* ($\textit{higher}\ \text{EY} - \text{rf}$) *are less likely to pay dividends.*

The 25× and 10× firms are both value stocks, but they face very different hurdles. The 25× CEO pays a dividend only if $\text{D4D} > \max[4\%\text{pt}, 5.25\%\text{pt}] = 5.25\%\text{pt}$. The 10× CEO requires $\text{D4D} > \max[10\%\text{pt}, 5.25\%\text{pt}] = 10\%\text{pt}$, roughly twice as strong. If dividend demand does not shift up with EY, fewer high-EY firms clear the hurdle. Dividend payers will be concentrated near the value/growth boundary, $\text{EY} = \text{rf} + \epsilon$. Evidence of dividend demand comes from Hartzmark and Solomon (2019), who show that investors treat dividends as separate from price changes, and Hartzmark and Solomon (2015), who document price pressure from dividend-seeking funds.

3 Shareholder Value

This section relates the max EPS payout policy to shareholder value. Subsection 3.1 shows how the classic Miller and Modigliani (1961) dividend-irrelevance result relies on two strong assumptions: the firm's investment policy is fixed, and the CEO maximizes a specific present-value notion of shareholder value. Neither assumption holds in the max EPS paradigm. Subsection 3.2 shows that EPS maximizers still care about shareholder value; they just see short-term EPS growth as the main driver. Taking this idea seriously leads to a novel form of catering based on a firm's current PE ratio, rather than anticipated future multiples expansion. Finally, subsection 3.3 shows that not all results can be interpreted through the lens of shareholder value. Buybacks and dividends both deliver exactly the same amount of value to shareholders. So the preference for buybacks over dividends is specific to EPS maximization.

3.1 Miller and Modigliani

Miller and Modigliani (1961) says that the timing of corporate payouts is irrelevant in the absence of frictions. However, this classic irrelevance theorem hinges on two key assumptions. First, as DeAngelo and DeAngelo (2006) emphasize, it assumes that the firm's investment policy has already been decided. In other words, if a CEO realizes an unexpected cash windfall, she would not change which projects the firm invested in or how she financed them. It should go without saying that this is a very strong assumption that does not reflect corporate reality.

To emphasize the point, think about our running example in which a company gets an unexpected \$100M cash windfall. The firm has access to two projects costing \$25M and \$50M. Miller and Modigliani (1961) assumes that, before the windfall arrives, the CEO has already committed to her project slate for the upcoming year. When the \$100M shows up, her hands are already tied. The only remaining question is how she should return the money to shareholders. No wonder payout policy is irrelevant.

This is not how things work in the max EPS paradigm. In our model, the CEO has already decided how best to finance her firm's existing assets. This part is fixed. But she has not yet made any project decisions when the unexpected \$100M windfall arrives. After the cash shows up, the CEO in our model jointly makes investment and payout decisions, just like CEOs do in the real world.

Second, the Miller and Modigliani (1961) dividend-irrelevance theorem assumes that the CEO maximizes a particular kind of shareholder value, which reflects expected discounted equity payouts

$$\text{Shareholder PV} = \frac{\mathbb{E}[\text{Div}_1]}{1+r} + \frac{\mathbb{E}[\text{Price}_1]}{1+r} \tag{25}$$

$\mathbb{E}[\text{Div}_1]$ is the company's expected dividend over the next twelve months, $\mathbb{E}[\text{Price}_1]$ is the expected ex-dividend resale price of each share, and $r > 0\%$ is the company's annual discount rate.

The critical feature of Equation (25) is the future resale price, $\mathbb{E}[\text{Price}_1]$. The S&P 500's dividend yield is roughly 2%, so the future resale price accounts for roughly 98% of Equation (25). The present-value framework stacks the deck against payout timing. Increases in $\mathbb{E}[\mathrm{Div}_1]$ will always be offset by some sort of decline in $\mathbb{E}[\mathrm{Price}_1]$. But next year's earnings do not include $\mathbb{E}[\mathrm{Price}_1]$, so the CEO's choice of payout policies can have real effects on her EPS forecast, even in a frictionless world. This is why Miller and Modigliani (1961) breaks down in the max EPS paradigm.

Proposition 5. *Fix the firm's investment policy and suppose its shares are always correctly priced using the same present-value formula as in Equation (25).*

(a) Shareholder PV *does not depend on payout policy.*

(b) *A company's EPS forecast does not include the expected ex-dividend resale price of each share, so the adding-up identity that drives the Miller and Modigliani (1961) invariance result does not apply to an EPS maximizer.*

We appreciate that the $\mathbb{E}[\mathrm{Price}_1]$ term in Equation (25) is a bit of a shapeshifter. It can show up in a variety of different guises

$$\text{Shareholder PV} = \frac{\mathbb{E}[\mathrm{Div}_1]}{1+\mathrm{r}} + \frac{\mathbb{E}[\mathrm{Price}_1]}{1+\mathrm{r}} \tag{25}$$

for $t = 1, 2, 3, \ldots$: replace $\mathbb{E}[\mathrm{Price}_t]$ with $\frac{\mathbb{E}[\mathrm{Div}_{t+1}]}{1+\mathrm{r}} + \frac{\mathbb{E}[\mathrm{Price}_{t+1}]}{1+\mathrm{r}}$

$$= \frac{\mathbb{E}[\mathrm{Div}_1]}{1+\mathrm{r}} + \sum_{t=2}^{\infty} \frac{\mathbb{E}[\mathrm{Div}_t]}{(1+\mathrm{r})^t} \tag{25$'$}$$

Assume $(1+\mathrm{g})^t = \frac{\mathbb{E}[\mathrm{Div}_{t+1}]}{\mathbb{E}[\mathrm{Div}_1]}$

$$= \frac{\mathbb{E}[\mathrm{Div}_1]}{1+\mathrm{r}} \times \left(\frac{1+\mathrm{r}}{\mathrm{r}-\mathrm{g}}\right) \tag{25$''$}$$

You can recursively substitute out the future price to arrive at the discounted dividend model (DDM) in Equation (25′). Under constant growth, this model collapses to the Gordon growth formula in Equation (25″). But, if CEOs are not computing some version of this function, Miller and Modigliani (1961)'s irrelevance theorem breaks down. No frictions needed.

3.2 Catering Theory

At the end of the day, a CEO needs some way of capitalizing the EPS effects of her policy choices. One way would be to multiply by $\left(\frac{1}{\mathrm{r}-\mathrm{g}}\right)$ as in the Gordon model

(Equation 25″). Another way would be to use the company's current PE ratio. This is how EPS-maximizing CEOs think about the cost of equity capital. They use the company's current EY. When you do that, you see that the retain-vs-return decision has a big impact on shareholder value.

Consider the 50× firm. If the CEO retains the \$1/sh cash windfall and invests it at rf = 3%, the resulting +\$0.03/sh bump in earnings would be worth

$$(\overset{3\%}{\mathrm{rf}} \cdot \$1/\mathrm{sh}) \times \overset{50\times}{\mathrm{PE}} = \$1.50/\mathrm{sh} \tag{27}$$

The CEO invested \$1/sh of cash and created +\$0.50/sh of shareholder value.

Now consider the 25× firm. If the CEO lets the money sit in Treasuries, then the +\$0.03/sh of interest income would only be worth \$0.75/sh, destroying −\$0.25/sh of shareholder value. But the 25× firm also has access to higher-yield projects. If the CEO used 75% of her cash windfall to fund these projects, then her blended cash yield would rise to CY = 5.25%. The resulting +\$0.05/sh of income would now be worth \$1.31/sh

$$(\overset{3\%}{\mathrm{rf}} \cdot \$1/\mathrm{sh}) \times \overset{25\times}{\mathrm{PE}} = \$0.75/\mathrm{sh} \tag{28a}$$

$$(\underset{5.25\%}{\mathrm{CY}} \cdot \$1/\mathrm{sh}) \times \mathrm{PE} = \$1.31/\mathrm{sh} \tag{28b}$$

Retention is not automatic for the 25× firm the way it is for the 50× firm. A higher earnings yield means a tougher hurdle. But, with good enough projects, the CEO can still clear it.

The 10× firm faces an impossible task. Even if the CEO used 75% of her cash windfall to fund high-yield projects, her blended yield of CY = 5.25% would still fall well short of the firm's EY = 10%

$$(\overset{3\%}{\mathrm{rf}} \cdot \$1/\mathrm{sh}) \times \overset{10\times}{\mathrm{PE}} = \$0.30/\mathrm{sh} \tag{29a}$$

$$(\underset{5.25\%}{\mathrm{CY}} \cdot \$1/\mathrm{sh}) \times \mathrm{PE} = \$0.53/\mathrm{sh} \tag{29b}$$

Investing \$100M in Treasuries would destroy −\$0.70/sh of value. The best available mix of projects and Treasuries would still destroy −\$0.47/sh. No matter how the CEO deploys the cash, each \$1/sh retained would be worth less than \$1/sh to shareholders. The CEO's only option is to return the money.

More generally, if the CEO retains the cash windfall and earns a composite yield of CY, the market values the resulting income at $(\text{CY} \cdot \$1/\text{sh}) \times \text{PE} = \left(\frac{\text{CY}}{\text{EY}}\right) \times \$1/\text{sh}$. Thus, retention creates value whenever $\text{CY} > \text{EY}$. This is exactly the same condition that is needed for retention to be accretive in Proposition 1. For the retain-vs-return decision, accretion and value creation go hand in hand. It is just not the same notion of "value" that researchers usually have in mind. An EPS maximizer takes her firm's PE ratio as given. It is a property of the firm, not of its expected future cash flows.

Proposition 6. *If it is accretive to retain a* \$1/sh *cash windfall, then the market value of the income it generates exceeds* \$1/sh

$$(\text{CY} \times \$1/\text{sh}) \times \text{PE} \;>\; \$1/\text{sh} \tag{30}$$

It is often said that a company should only hold onto cash if it has better investment opportunities than its shareholders. For example, in his 1984 shareholder letter, Warren Buffett wrote that cash "should be retained only when it produces incremental earnings equal to, or above, those generally available to investors." This is not how things work in the max EPS paradigm.

The 50× firm is not creating value by investing its cash particularly well. Treasuries are available to everyone. The firm is creating value because equity markets capitalize the resulting interest income at a premium multiple, $50\times > \left(\frac{1}{3\%}\right) \approx 33\times$. The same \$0.03/sh of interest income that is worth \$1.50/sh inside the growth stock would only be worth \$0.30/sh inside the deep value stock with a 10× PE. The value is created by the multiple, not the asset.

EPS maximizers are engaging in a form of catering, but the mechanism is different from Baker and Wurgler (2004a,b). In their framework, CEOs cater to investor demand for dividends in anticipation of future multiples expansion. In ours, the CEO's decision depends entirely on her firm's current PE ratio. A growth-stock CEO retains cash because a high multiple inflates the market value of the income it produces. A deep-value CEO returns cash because a low multiple deflates it. Neither CEO is betting on future repricing.

3.3 Specific to Accretion

But not everything an EPS-maximizing CEO does can be mapped onto shareholder value. Proposition 6 shows that accretive retention creates value, so the retain-vs-return decision has a clear shareholder-value interpretation. The same is not true of the choice between buybacks and dividends. A dividend mails \$1/sh directly to shareholders. A buyback retires shares, boosting EPS by EY $\times$ \$1/sh. But the market capitalizes that EPS gain at the firm's PE ratio.

Proposition 7. *Paying a* \$1/sh *dividend and spending* $\{\$1 \cdot \#\text{Shares}\}$ *on buybacks both deliver an identical amount of value to shareholders*

$$(\text{EY} \cdot \$1/\text{sh}) \times \text{PE} \;=\; \$1/\text{sh} \tag{31}$$

A dividend bypasses the income statement entirely: $\Delta\mathbb{E}[\text{EPS}] = \$0.00/\text{sh}$. A buyback retires shares, and the EPS gain scales with the firm's earnings yield: +\$0.02/sh for the 50× firm, +\$0.04/sh for the 25× firm, and +\$0.10/sh for the 10× firm. If any of them had to choose between dividends and buybacks, it would always be more accretive to buy back shares. Even the 50× growth stock would prefer buybacks to dividends if those were the only two options.

This is a key piece of evidence that CEOs are EPS maximizers. A value-maximizing CEO would be indifferent between repurchases and dividends, since both deliver \$1/sh of value. An EPS-maximizing CEO strictly prefers repurchases because they boost her EPS forecast. The revealed preference for buybacks since 1983, when regulatory constraints on repurchases were relaxed (Grullon and Michaely, 2002), tells us which objective is operative.

Long-term shareholders cannot correct the distortion. Both policies deliver identical value, so there is no reason for them to push back on a CEO's preference for buybacks. But what about the retain-vs-return decision? Here, longer-term considerations can actually reinforce EPS-maximizing behavior. The 50× growth stock retains cash because $\text{rf} = 3\% > \text{EY} = 2\%$. But long-term shareholders want the same thing. Each year the cash stays on the balance sheet, the market values \$0.03/sh of interest income at \$1.50/sh, creating +\$0.50/sh of value. Long-term shareholders would like to keep collecting that premium year after year. Short-term accretion and long-term value point in the same direction.

4 Empirical Evidence

This section provides empirical evidence to support our model. In subsection 4.1, we describe where our data comes from and how we construct important variables. The next three subsections contain our main empirical findings. In subsection 4.2, we document that value stocks (EY $>$ rf) tend to distribute more cash than growth stocks (EY $<$ rf). In subsection 4.3, we show that dividend payers tend to be marginal value stocks (EY $=$ rf $+ \epsilon$). Finally, in subsection 4.4, we show that our simple static max EPS model is able to account for key time-series patterns.

4.1 Data Description

We construct our sample by merging data from three WRDS sources: Compustat North America Annual (firm fundamentals), IBES (analyst EPS forecasts), and CRSP (stock prices). To be included in our sample, a company must be public and traded on NYSE, Nasdaq, or AmEx; have a share code of 10 or 11; and, have a share price over $5 at fiscal-year end. We exclude firms below the 30th percentile of the NYSE market capitalization in the month of their fiscal year-end. Following the existing literature, we also remove firms in the financial and utility industries (SIC codes 4900-4999 and 6000-6999).

Furthermore, each firm in year t has at least one analyst who made a next-twelve-month EPS forecast (end of year t+1) at some point during the period from 11 months to 13 months prior to the end of the next fiscal year. We also require observations to have a non-missing earnings yield and a PE ratio between 5× and 100×. We use the 10-year Treasury yield as our riskfree rate.

Our final dataset contains 38,135 firm-year observations over the period from 1984 to 2023. We report summary statistics at the firm-year level in Table 1. We double-cluster all standard errors by both firm and year. Appendix B provides complete details on variable construction. SEC Rule 10b-18 provided a safe harbor for open-market stock repurchases. The regulation took effect in 1983, which is why our sample begins in 1984.

	N	Avg	Sd	Min	q10	q50	q90	Max
EY	38,135	6.3	2.8	1.0	3.0	6.0	9.9	19.4
PE	38,135	20.1	12.4	5.2	10.1	16.8	33.1	99.8
rf	38,135	4.8	2.3	0.6	2.0	4.6	8.1	12.7
Excess EY	38,135	1.4	3.2	−7.0	−2.4	1.2	5.6	13.0
Is Value Stock	38,135	65.5						
Is Mgnl Value	38,135	52.5						
Is Deep Value	38,135	13.0						
Cash to Assets	38,135	20.0	17.0	0.0	5.2	14.1	44.4	146.1
Pay Dividend	38,135	57.7						
Repurchase	38,135	57.5						
Return Cash	38,135	78.0						
Dividend Rate	38,135	12.6	18.0	0.0	0.0	5.2	36.3	100.0
Repurchase Rate	38,135	15.8	23.8	0.0	0.0	2.8	52.0	100.0
Total Payout Rate	38,135	28.4	30.3	0.0	0.0	18.5	79.7	100.0
$\log_2(\text{MCap})$	38,135	11.3	2.1	3.8	8.7	11.1	14.2	21.5
B/M	37,327	0.5	0.4	0.0	0.1	0.4	0.9	15.7
ROA	38,130	6.8	8.9	−10.0	0.2	6.3	14.8	100.0
Tangibility	38,091	29.5	22.4	0.0	5.7	23.5	64.9	99.2
Cash Acquisition	38,135	40.3						
Issue Equity	38,135	19.5						
Retire Debt	38,135	24.4						

Table 1. Summary statistics for firm-year observations from 1984 to 2023. EY: forward earnings yield. PE: price-to-earnings ratio. rf: 10-year Treasury yield. Excess EY: earnings yield minus 10-year Treasury yield. Is Value Stock: one if 0%pt $<$ Excess EY. Is Mgnl Value: one if 0%pt $<$ Excess EY $\leq$ 5%pt. Is Deep Value: one if 5%pt $<$ Excess EY. Cash to Assets: available cash in year $(t+1)$ as a percent of total assets in year t. Pay Dividend: one if Dividend Rate $>$ 0.5%. Repurchase: one if Repurchase Rate $>$ 0.5%. Return Cash: one if firm pays a dividend and/or repurchases shares in year $(t+1)$. Dividend Rate: percent of available cash returned via dividend payments in year $(t+1)$. Repurchase Rate: percent of available cash returned via repurchases in year $(t+1)$. Total Payout Rate: sum of dividend and repurchase rates. $\log_2(\text{MCap})$: base-2 log of market cap. B/M: book value of equity divided by market value. ROA: net income over past twelve months divided by total assets. Tangibility: property, plant, and equipment divided by total assets. Cash Acquisition: one if firm spends $>$ 10% of available cash on acquisitions in year $(t+1)$. Issue Equity: one if issuance in year $(t+1)$ exceeds 10% of available cash. Retire Debt: one if net debt falls by more than 10% of available cash in year $(t+1)$.

Cash Returned to Shareholders

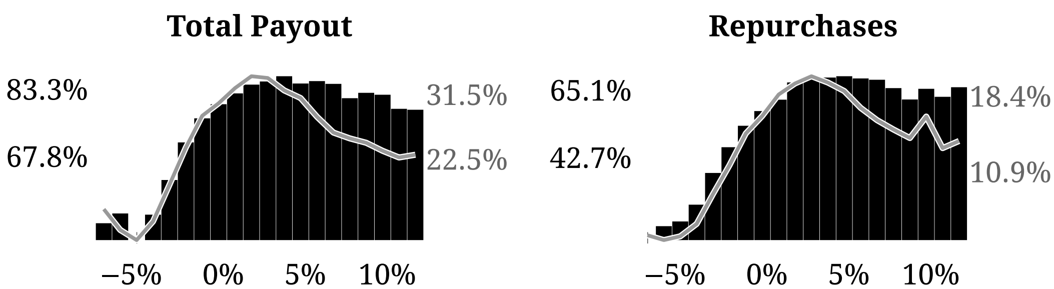


Figure 3. The x-axis is excess earnings yield, Excess EY = EY−rf, in [1%pt] bins. Growth stocks (EY < rf) are left of zero. Value stocks (EY > rf) are to the right. BLACK BARS show the probability that a company returns cash in year $(t+1)$. GRAY LINE represents the percent of available cash returned in year $(t+1)$; right y-axis. Left panel shows results for all distribution methods. Right panel shows results for repurchases. Left y-axis (black) reports average probabilities for growth and value. Right y-axis (gray) reports average payout rates.

4.2 Who Distributes Cash?

Proposition 2 predicts that value stocks (EY > rf) return cash to shareholders while growth stocks (EY < rf) retain it. Growth stocks face such a low cost of equity capital that they can profitably lend to the US government. Value stocks face a higher opportunity cost of retention: parking cash in Treasuries at rf while borrowing from equity markets at EY > rf is dilutive.

Figure 3 provides a first look at the data. The left panel shows total payouts; the right panel isolates repurchases. The x-axis is excess earnings yield, Excess EY = EY−rf, in [1%pt] bins. Growth stocks (Excess EY < 0%pt) appear to the left of zero; value stocks (Excess EY > 0%pt) to the right. Two patterns really stand out.

First, value stocks are substantially more likely to return cash. Among growth stocks, 67.8% return cash in year $(t+1)$ compared to 83.3% for value stocks—a difference of 15.5%pt. Second, value stocks distribute a larger fraction of their available cash. The average growth stock returns 22.5% of available cash; the average value stock returns 31.5%. These patterns are even more pronounced for repurchases, consistent with EPS maximizers' preference.

Table 2 presents regression evidence. Panel (a) regresses an indicator for returning cash in year $(t + 1)$ on an indicator for being a value stock in year t

$$100 \times \text{Return Cash}_{n,t+1} \overset{\text{OLS}}{\sim} \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots \tag{32}$$

The baseline specification in column (1) produces a coefficient of $\hat{\beta} = 15.5$%pt ($t = 8.2$). Value stocks are 15.5%pt more likely to return cash.

This result is robust to including a demanding set of controls. Column (2) adds firm fixed effects, which absorb any time-invariant firm characteristics that might drive both earnings yield and payout policy. The coefficient falls slightly to $\hat{\beta} = 10.0$%pt but remains highly significant. Column (3) instead adds year fixed effects to control for aggregate trends in payout behavior. Column (4) adds PE-ratio fixed effects to ensure we are not simply picking up a mechanical relationship between valuations and payouts. In all specifications, the coefficient on Is Value Stock is large, positive, and significant.

Panel (b) of Table 2 uses the payout rate as the dependent variable. Of the firm's available cash in year $(t+1)$, what percent did it distribute to shareholders?

$$\text{Total Payout Rate}_{n,t+1} \overset{\text{OLS}}{\sim} \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots \tag{33}$$

The baseline coefficient is $\hat{\beta} = 9.0$%pt, meaning value stocks return 9.0%pt more of their available cash than growth stocks. Again, the result survives firm fixed effects (7.1%pt), year fixed effects (9.4%pt), and PE-ratio fixed effects (6.1%pt). We can also include controls like size, book-to-market, etc.

Our model makes a sharper prediction about repurchases. Proposition 3 establishes that dividends are never the most accretive option. An EPS-maximizing CEO who decides to return cash should prefer repurchases because they shrink the share count and boost EPS.

Table 3 tests this prediction. Panel (a) shows that value stocks are 22.4%pt more likely to repurchase shares than growth stocks. This is a larger effect than the 15.5%pt difference for total payouts, consistent with repurchases being the margin of adjustment. The within-firm effect (column 2) is 18.8%pt: when the same firm switches from growth to value status, its probability of

a) Dependent Variable: 100 × Return Cash

	(1)	(2)	(3)	(4)	(5)
Is Value Stock	15.5***	10.0***	15.3***	9.3***	10.7***
	(1.9)	(1.0)	(1.3)	(2.3)	(1.9)
$\log_2$(MCap)					34.5***
					(0.4)
ROA					0.7***
					(0.1)
B/M					10.1***
					(2.1)
Tangibility					0.1
					(0.1)
Firm FE		✓			
Year FE			✓		
PE-ratio FE				✓	
# Obs	38,135	38,135	38,135	38,135	37,279
Adj. R^2	3.2%	42.0%	6.4%	5.6%	9.5%

b) Dependent Variable: Total Payout Rate

	(1)	(2)	(3)	(4)	(5)
Is Value Stock	9.0***	7.1***	9.4***	6.1***	5.8***
	(1.1)	(0.9)	(0.9)	(1.2)	(1.1)
$\log_2$(MCap)					3.6***
					(0.2)
ROA					0.6***
					(0.1)
B/M					−0.5
					(1.1)
Tangibility					0.1
					(0.1)
Firm FE		✓			
Year FE			✓		
PE-ratio FE				✓	
# Obs	38,135	38,135	38,135	38,135	37,279
Adj. R^2	2.0%	36.3%	4.3%	4.2%	11.2%

Table 2. Firm-year observations from 1984 to 2023. 100×Return Cash: indicator variable that is 100 if firm returns cash to shareholders in year $(t+1)$ and 0 otherwise. Total Payout Rate: amount of cash returned to shareholders in year $(t+1)$ as a percent of available cash. Is Value Stock: indicator variable that is one if a company has a positive excess EY in year t, Excess EY $>$ 0%pt. Numbers in parentheses are standard errors double-clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. We do not report the intercept or fixed-effect coefficients.

a) Dependent Variable: 100 × Repurchase

	(1)	(2)	(3)	(4)	(5)
Is Value Stock	22.4*** (2.0)	18.8*** (1.5)	11.5*** (1.2)	24.7*** (2.3)	17.0*** (1.4)
$\log_2$(MCap)					6.0*** (0.3)
ROA					0.7*** (0.1)
B/M					−1.5 (1.5)
Tangibility					−0.2*** (0.1)
Firm FE		✓			
Year FE			✓		
PE-ratio FE				✓	
# Obs	38,135	38,135	38,135	38,135	37,279
Adj. R^2	4.7%	27.8%	11.4%	5.5%	13.7%

b) Dependent Variable: Repurchase Rate

	(1)	(2)	(3)	(4)	(5)
Is Value Stock	7.5*** (0.8)	6.5*** (0.7)	4.7*** (0.6)	8.1*** (1.0)	5.7*** (0.6)
$\log_2$(MCap)					2.1*** (0.2)
ROA					0.4*** (0.1)
B/M					−2.5*** (0.7)
Tangibility					0.0 (0.1)
Firm FE		✓			
Year FE			✓		
PE-ratio FE				✓	
# Obs	38,135	38,135	38,135	38,135	37,279
Adj. R^2	2.3%	22.8%	6.6%	3.3%	9.0%

Table 3. Firm-year observations from 1984 to 2023. 100 × Repurchase: indicator variable that is 100 if firm repurchases shares in year $(t+1)$ and 0 otherwise. Repurchase Rate: amount of cash returned to shareholders via repurchases in year $(t+1)$ as a percent of available cash. Is Value Stock: indicator variable that is one if a company has a positive excess EY in year t, Excess EY $>$ 0%pt. Numbers in parentheses are standard errors double-clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. We do not report the intercept or fixed-effect coefficients.

repurchasing jumps. Panel (b) shows that value stocks also repurchase at a higher rate, returning 7.5%pt more of their available cash via buybacks.

One might worry that these patterns simply reflect value stocks having fewer investment opportunities. Our model offers a different interpretation: value stocks return cash because they face a higher opportunity cost of retention. To investigate, Table 4 examines what firms do with cash when they do not return it to shareholders. Among non-payers, value stocks are more likely to make cash acquisitions: the coefficient in panel (a) is 7.4%pt. Value stocks that retain cash are using it—they are just selective about which projects clear their higher earnings-yield hurdle. Panels (b) and (c) show that value stocks are less likely to issue equity (−14.5%pt) and more likely to have high-yield debt to retire (8.7%pt). These patterns reflect the cost-of-capital ranking: value stocks view cash as cheap and equity as expensive; growth stocks see the opposite.

4.3 Who Pays a Dividend?

Proposition 4 predicts that dividend payers should be marginal value stocks with earnings yields just above the riskfree rate, $\text{EY} = \text{rf} + \epsilon$. Deep value stocks get such a large accretive pop from repurchases that they are unlikely to forgo it. Marginal value stocks sacrifice less by choosing dividends, making them more susceptible to outside pressures such as clientele effects, signaling motives, or board preferences.

Figure 4 provides preliminary evidence by plotting average excess earnings yield around dividend initiations. Firms that initiate dividends have elevated excess earnings yields in the years prior to initiation, peaking at around +3%pt at event time 0. Importantly, initiators do not see multiples expansion after the event—their excess earnings yield remains stable post-initiation. This pattern suggests that firms select into paying dividends when they become value stocks.

Table 5 tests our prediction by splitting the population of value stocks into two groups: marginal value stocks, $0\%\text{pt} < \text{Excess EY} < 5\%\text{pt}$, and deep value stocks, $\text{Excess EY} > 5\%\text{pt}$. The omitted category is growth stocks, $\text{Excess EY} < 0\%\text{pt}$. With the selection effect from Figure 4 in mind, we include PE fixed

Dependent Variable:

a) 100×Cash Acquisition	(1)	(2)	(3)	(4)	(5)
Is Value Stock	7.4***	5.8***	6.5***	9.0***	7.4***
	(2.0)	(2.0)	(1.8)	(2.6)	(2.0)
Adj. R^2	0.5%	22.7%	3.1%	1.4%	2.7%

b) 100 × Issue Equity	(1)	(2)	(3)	(4)	(5)
Is Value Stock	−14.5***	−15.8***	−11.2***	−11.0***	−11.8***
	(2.2)	(2.3)	(2.2)	(2.8)	(2.3)
Adj. R^2	2.8%	8.7%	5.3%	3.6%	4.1%

c) 100 × Retire Debt	(1)	(2)	(3)	(4)	(5)
Is Value Stock	8.7***	2.0	9.1***	3.9**	6.9***
	(1.3)	(1.5)	(1.2)	(1.5)	(1.3)
Adj. R^2	1.1%	9.1%	2.6%	1.5%	3.8%
Firm FE		✓			
Year FE			✓		
PE-ratio FE				✓	
Controls					✓
# Obs	8,410	8,410	8,410	8,410	8,138

Table 4. Observations from 1984 to 2023 in which firm did not return cash to shareholders in year $(t+1)$. 100 × Cash Acquisition: indicator variable that is 100 if firm spent more than 10% of its available cash in year $(t+1)$ on acquisitions. 100 × Issue Equity: indicator variable that is 100 if firm issued equity worth $>$ 10% of its available cash in year $(t+1)$. 100 × Retire Debt: indicator variable that is 100 if firm's net debt fell by $>$ 10% of its available cash in year $(t+1)$. Is Value Stock: indicator variable that is one if a company has a positive excess EY in year t, Excess EY $>$ 0%pt. Numbers in parentheses are standard errors double-clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. Results in column (5) include controls for $\log_2$(MCap), ROA, B/M, and Tangibility. We do not report the intercept, fixed-effect coefficients, or coefficients on control variables.

Dividend Initiation Event Study

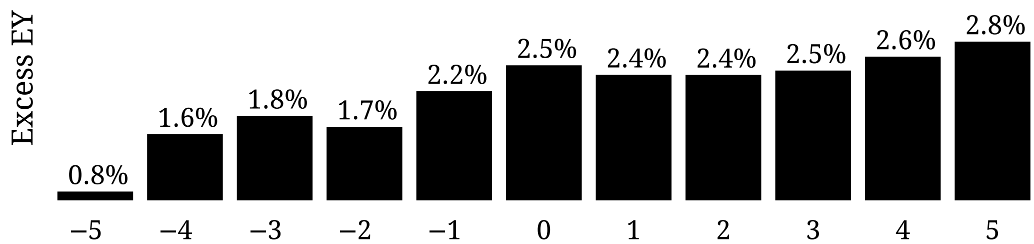


Figure 4. Firm-year observations from 1984 to 2023. x-axis shows years relative to dividend initiation, which takes place at event time 0. Negative values are prior to initiation. Positive values are post initiation. BLACK BARS report average excess earnings yield, Excess EY = EY − rf, among firms that are the same number of years away from initiation.

effects. Thus, our results come from comparing firm-years with the same PE ratio but different excess earnings yields.

Columns (1) and (2) seem to suggest that marginal and deep value stocks return cash at roughly the same rate. Both groups of value stocks are around 9.5%pt more likely to distribute cash in some form, and they both pay out around 5%pt more of their available cash each year. These numbers line up with the pooled results found in column (4) of Table 2, and the remaining columns in Table 5 show that they mask an important composition effect.

Columns (3) and (4) focus on dividend behavior. Deep value stocks are 11.5%pt less likely to pay dividends than growth stocks and they pay out 7.2%pt less of their available cash as dividends. Marginal value stocks are less averse to paying dividends. The coefficients in the top row are much smaller. The contrast is stark. Among value stocks, those closest to the growth/value boundary are more likely to pay dividends.

Columns (5) and (6) show that deep value stocks rely almost entirely on repurchases. They are 41.3%pt more likely to repurchase shares, and they pay out 11.2%pt more of their available cash via buybacks. While marginal value stocks also repurchase more than growth stocks (23.5%pt), the difference is smaller than for deep value. This is exactly what Proposition 4 predicts: the

Dep. Var:	Return Cash		Pay Dividend		Repurchase	
	Prob	Rate	Prob	Rate	Prob	Rate
	(1)	(2)	(3)	(4)	(5)	(6)
Is Mgnl Value	9.2***	6.2***	−3.3	−1.7**	23.5***	7.9***
	(2.2)	(1.2)	(2.5)	(0.8)	(2.2)	(0.9)
Is Deep Value	9.9**	4.0	−11.5**	−7.2***	41.3***	11.2***
	(3.7)	(2.4)	(4.6)	(1.5)	(4.1)	(2.0)
PE-ratio FE	✓	✓	✓	✓	✓	✓
# Obs	38,135	38,135	38,135	38,135	38,135	38,135
Adj. R^2	5.6%	4.3%	8.1%	4.1%	6.4%	3.4%

Table 5. Firm-year observations from 1984 to 2023. "Prob" columns show the probability that a firm returns cash in year $(t+1)$ in percent. "Rate" columns show the amount of cash returned in year $(t+1)$ as a percent of available cash. Is Mgnl Value is an indicator that is one when 0%pt < Excess EY < 5%pt. Is Deep Value is an indicator that is one when Excess EY > 5%pt. Numbers in parentheses are standard errors double-clustered by firm and year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels. We include but do not report an intercept as well as PE-ratio fixed effects.

accretive pull of repurchases intensifies with Excess EY = EY−rf, so deep value stocks rarely deviate toward dividends.

4.4 Aggregate Fluctuations

Our static max EPS model speaks to time-series trends in aggregate corporate payouts. The existing literature treats the data as containing two separate puzzles. First, why did payouts disappear during the 1990s (Fama and French, 2001)? Second, why did payouts come roaring back in the 2000s and 2010s (Kahle and Stulz, 2021)? The max EPS framework answers both questions.

The mechanism is a composition effect. Figure 5 documents the shifting makeup of the market over our sample period. The share of firms classified as value stocks (EY > rf) dropped from over 80% in the mid-1980s to below 40% at the peak of the DotCom bubble, then rebounded to over 90% by the mid-2010s. This swing was driven by two forces: PE ratios soared during the 1990s while Treasury yields remained elevated, pushing most firms into growth-stock

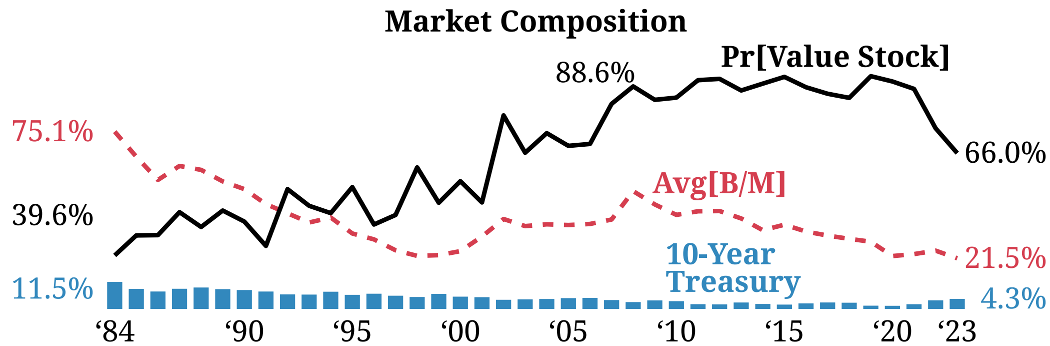


Figure 5. Annual data from 1984 to 2023. **10-Year Treasury** shows average 10-year Treasury yield for firms in year t. **Pr[Value Stock]** is percent of firms with a positive excess earnings yield in year t, Excess EY $> 0\%$. **Avg[B/M]** depicts the value-weighted average book-to-market ratio for firms in year t.

territory (EY $<$ rf). After the DotCom crash, PE ratios and Treasury yields both fell, converting most of the market back into value stocks (EY $>$ rf).

Figure 6 makes the connection to payouts explicit. The left panel shows aggregate cash available to value stocks (BLACK BARS) alongside aggregate repurchases by all firms (GRAY LINE). Both series rise in tandem. The right panel normalizes aggregate repurchases by the total amount of value-stock cash. Value stocks have consistently returned around 23% of available cash to shareholders each year via buybacks.

This is the key fact. Value stocks always distribute roughly the same fraction of their available cash. When more firms are value stocks, aggregate payouts rise. When fewer firms are value stocks, aggregate payouts fall. There is no need for two separate explanations. Payouts did not disappear in the 1990s because firms developed a lower propensity to pay. They disappeared because high PE ratios and elevated Treasury yields left very few value stocks in the market. Payouts did not reappear in the 2000s because of some new force pushing cash out the door. They reappeared because PE ratios and yields both cratered.

If anything, the max EPS paradigm inverts the traditional framing. The puzzling period is not the 1990s decline or the 2000s rebound—both follow mechanically from shifts in the value/growth composition of the market. The real puzzle is the spike visible in the right panel of Figure 6 during the late

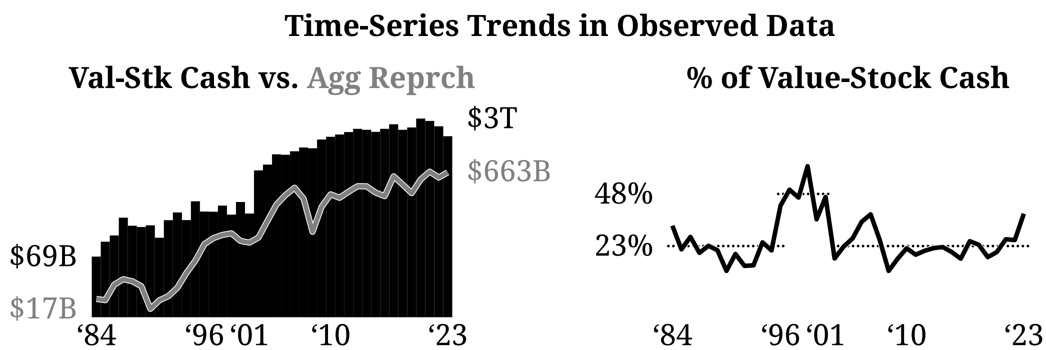


Figure 6. Annual data from 1984 to 2023. **(Left)** y-axis is on a log scale. BLACK BARS show the total amount of cash available to value stocks each year. GRAY LINE reports the dollar value of repurchases by all firms. **(Right)** BLACK LINE shows aggregate repurchases by all firms as a percent of cash available to value stocks each year. Dotted lines denote sample averages.

1990s. For a brief 5-year window from 1997 to 2001, aggregate repurchases surged well above the 23% baseline even though the market was dominated by growth stocks. Value stocks were not repurchasing more than usual. Growth stocks—firms with sky-high PE ratios—were the ones driving the excess.

This is the exact opposite of the usual "disappearing payouts" narrative. The standard question is: why did firms stop returning cash in the 1990s? Our question is: why were firms with 30× and 40× PE ratios willing to repurchase so many shares in 1999? In a max EPS world, these growth stocks should have been hoarding cash, not distributing it. We leave the resolution of this puzzle to future work, but note that it offers a sharply different starting point for understanding the time-series behavior of corporate payouts.

These time-series patterns are difficult to reconcile with alternative theories that emphasize agency conflicts or life-cycle considerations. Agency theories predict that payouts should rise when governance improves, but governance quality shows no obvious trend over this period. Life-cycle theories predict that payouts should rise as firms mature, but the average age of public firms actually fell during the 1990s. Neither framework naturally generates the composition effect that drives our results.

Conclusion

An EPS-maximizing CEO sees her earnings yield as the cost of cash. Each \$1 spent on repurchases conserves EY $\times$ \$1 of expected earnings for remaining shareholders. If the CEO can generate a higher yield by investing \$1 of cash, then retention is accretive. Otherwise, it would be more accretive to return the \$1 to shareholders. This is the EPS-maximizing payout policy.

The rule itself is simple. But internal consistency causes it to manifest in two qualitatively different ways. Growth stocks (EY $<$ rf) have earnings yields below the riskfree rate. They fund high-yield projects by issuing equity—not by spending cash—because their low earnings yields make equity the cheapest source of capital. Growth stocks can afford to retain cash and do very little with the money. Lending to the US government at rf $=$ 3% is enough to cover a EY $=$ 2% cost of retention.

Value stocks (EY $>$ rf) face a different calculus. Their higher earnings yields make cash the cheapest funding option. But the same high earnings yield also makes cash expensive to retain. Unless the CEO can deploy enough of her cash windfall on projects that beat her earnings-yield hurdle, it will be more accretive to return the money to shareholders. This creates a tension. It is precisely the companies that would get the most benefit from cheap internal financing, EY $\gg$ rf, that must do the most work to justify cash retention, EY$-$rf $\gg$ 0%pt.

In effect, EPS maximizers engage in a form of catering—but the mechanism differs from the one studied in Baker and Wurgler (2004a,b). There is no anticipated future price growth in our model. An EPS-maximizing CEO returns cash because her firm's current PE ratio is too low, not because she expects remaining assets to be repriced at a higher multiple.

Accounting standards go out of their way to treat dividend payments neutrally: no extra income, no change in share count. Dividends bypass next year's income statement entirely. As a result, dividends are never the most accretive payout policy. When we observe a firm paying dividends, we know the decision must reflect considerations outside our model, such as signaling, clientele effects, sentiment, etc.

Our “dominated dividends” result is more useful than a classic irrelevance theorem. In Miller and Modigliani (1961), once investment policy is fixed, the payout mix does not matter because both options deliver the same shareholder value. But the payout mix does matter for EPS. Unlike M&M, we can predict where such considerations are most likely to tilt the scales. Marginal value stocks (EY = rf + ϵ) get the smallest accretive pop from repurchases. For deep value stocks (EY $\gg$ rf), it is harder for outside considerations to overcome the accretive pull of buybacks. Yet both deliver the same value to shareholders. So a strong preference for repurchases cannot be explained by a model that focuses on shareholder value.

Last, but not least, the data line up with our model’s predictions. Value stocks are more likely to return cash to shareholders. Deep value stocks almost exclusively rely on repurchases, whereas marginal value stocks are more likely to pay dividends. This revealed preference for buybacks tells us that CEOs care specifically about EPS accretion. By taking market pricing as given, the max EPS paradigm explains time-series patterns in aggregate corporate payouts.

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A Technical Appendix

Proof. **(Lemma 0)**

Substitute $\mathbb{E}[\text{NOI}] = \text{ROIC} \times \text{Assets}$ *and* $\text{Debt} = \ell \times \text{Assets}$ *into Equation* (5)

$$\begin{aligned} \mathbb{E}[\text{Non-Cash EPS}] &= \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\#\text{Shares}} && \text{(A.1a)} \\ &= \frac{\text{ROIC} \times \text{Assets} - \bar{\imath} \times \ell \times \text{Assets}}{\#\text{Shares}} && \text{(A.1b)} \\ &= \{\text{ROIC} - \ell \cdot \bar{\imath}\} \times \left(\frac{\text{Assets}}{\#\text{Shares}}\right) && \text{(A.1c)} \end{aligned}$$

The final row comes from rearranging terms and simplifying. □

Proof. **(Lemma 1)**

Split the fraction in Equation (12)

$$\begin{aligned} \underset{\text{Invest}}{\mathbb{E}[\text{EPS}]} &= \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\#\text{Shares}} + \text{CY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) && \text{(A.2a)} \\ &= \mathbb{E}[\text{Non-Cash EPS}] + \text{CY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) && \text{(A.2b)} \end{aligned}$$

The first term follows from the definition of non-cash EPS in Equation (5). □

Proof. **(Lemma 2)**

Let $\text{f}(\epsilon)$ *denote a company's expected EPS if the CEO spends* ϵ *dollars of her cash windfall repurchasing shares at the current market price*

$$\begin{aligned} \text{f}(\epsilon) &= \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} + \text{rf} \times \{\text{Windfall} - \epsilon\}}{\#\text{Shares} - \left(\frac{\epsilon}{\text{Price}}\right)} && \text{(A.3a)} \\ &= \frac{\mathbb{E}[\text{Earnings}] - \text{rf} \cdot \epsilon}{\#\text{Shares} - \left(\frac{\epsilon}{\text{Price}}\right)} && \text{(A.3b)} \end{aligned}$$

If the CEO does not repurchase shares, then $\text{f}(0) = \mathbb{E}[\text{EPS}]$.

The change in the company's EPS forecast per \$1 repurchased is given by

$$\text{f}'(\epsilon) = \frac{\mathbb{E}[\text{Earnings}] - \text{rf} \times \#\text{Shares} \cdot \text{Price}}{\left[\#\text{Shares} - \left(\frac{\epsilon}{\text{Price}}\right)\right]^2 \cdot \text{Price}} \tag{A.4}$$

This formula includes ϵ. It depends on the amount of cash that has already been spent repurchasing shares.

$f'(0)$ *denotes the change in expected EPS in response to the first \$1 of cash spent on repurchases*

$$f'(0) = \frac{\mathbb{E}[\text{Earnings}] - \text{rf} \times \#\text{Shares} \cdot \text{Price}}{\#\text{Shares}^2 \cdot \text{Price}} \tag{A.5a}$$

$$= \underbrace{\left(\frac{\mathbb{E}[\text{Earnings}]}{\#\text{Shares} \cdot \text{Price}} \right)}_{=\text{EY}} \times \left(\frac{1}{\#\text{Shares}} \right) - \left(\frac{\text{rf}}{\#\text{Shares}} \right) \tag{A.5b}$$

We can use a Taylor approximation to write a company's EPS forecast after using her entire cash windfall to repurchase shares as

$$f(\text{Windfall}) \approx f(0) + \{f'(0)\} \times \text{Windfall} \tag{A.6a}$$

$$= \mathbb{E}[\text{EPS}] + \left\{ \text{EY} \times \left(\frac{1}{\#\text{Shares}} \right) - \left(\frac{\text{rf}}{\#\text{Shares}} \right) \right\} \times \text{Windfall} \tag{A.6b}$$

$$= \underbrace{\left\{ \mathbb{E}[\text{EPS}] \;-\; \left(\frac{\text{rf} \times \text{Windfall}}{\#\text{Shares}} \right) \right\}}_{=\mathbb{E}[\text{Non-Cash EPS}]} \;+\; \text{EY} \times \left(\frac{\text{Windfall}}{\#\text{Shares}} \right) \tag{A.6c}$$

The $= \mathbb{E}[\text{Non-Cash EPS}]$ *in the final row comes from Lemma 0.* □

Proof. **(Proposition 1)**

From Lemma 1, the CEO's EPS forecast after retaining cash is $\mathbb{E}[\text{Non-Cash EPS}] + \text{CY} \times (\frac{\text{Windfall}}{\#\text{Shares}})$*. From Lemma 2, her EPS forecast after repurchasing shares is approximately* $\mathbb{E}[\text{Non-Cash EPS}] + \text{EY} \times (\frac{\text{Windfall}}{\#\text{Shares}})$*. Subtracting the first from the second, the non-cash EPS terms cancel and all that remains is* $\{\text{EY}–\text{CY}\} \times (\frac{\text{Windfall}}{\#\text{Shares}})$. □

Proof. **(Proposition 2)**

An EPS-maximizing manager funds accretive projects using her cheapest source of capital, $\text{HR} = \min[\text{EY}, \text{rf}, \text{i}]$*. Since* $\text{i} \geq \text{rf}$*, we have* $\text{HR} = \min[\text{EY}, \text{rf}]$.

Part #1: Growth Stocks ($\text{EY} < \text{rf}$*). When* $\text{EY} < \text{rf}$*, the cheapest source of capital is equity,* $\text{HR} = \text{EY}$*. An EPS-maximizing CEO will fund all accretive projects by issuing equity rather than spending internal cash reserves. As a result,* $\theta_\star = 0$ *and* $\text{CY} = \text{rf}$.

Part #2: Value Stocks ($\text{EY} > \text{rf}$*). When* $\text{EY} > \text{rf}$*, cash is the cheapest source of capital,* $\text{HR} = \text{rf}$*. An EPS-maximizing CEO will fund accretive projects using internal cash reserves whenever possible. Her blended cash yield is*

$$\text{CY} \;=\; (1-\theta)\cdot\text{rf} \;+\; \theta\cdot\overline{\text{IY}} \;=\; \text{rf} + \theta\cdot\{\overline{\text{IY}}-\text{rf}\} \tag{A.7}$$

By Proposition 1, retaining cash is accretive if $\text{CY} > \text{EY}$*. Substituting the expression for* CY*, this requires*

$$\text{rf} + \theta\cdot\{\overline{\text{IY}}-\text{rf}\} \;>\; \text{EY} \tag{A.8}$$

Rearranging yields

$$\Delta\text{CY} \;=\; \theta\cdot\{\overline{\text{IY}}-\text{rf}\} \;>\; \text{EY}-\text{rf} \tag{A.9}$$

If this inequality holds, the CEO retains the windfall and $\theta_\star = \theta$*. Otherwise, she returns the cash via buybacks and* $\theta_\star = 0$*.* □

Proof. **(Lemma 3)**

A dividend of $\left(\frac{\text{Windfall}}{\text{\#Shares}}\right)$ *per share reduces both cash and shareholders' equity by* Windfall*, but dividends do not flow through the income statement. Expected earnings are unchanged, and the share count is unchanged, so* $\mathbb{E}[\text{EPS}] = \mathbb{E}[\text{Non-Cash EPS}]$. □

Proof. **(Proposition 3)**

We compare the EPS forecast under a dividend policy to the most accretive alternative. The most accretive policy depends on the firm's type:

- *Growth stocks* ($\text{EY} < \text{rf}$)*: Retain cash and invest in Treasuries* ($\text{CY} = \text{rf}$).
- *Value stocks* ($\text{EY} > \text{rf}$)*: Retain cash* ($\text{CY} > \text{EY}$) *or repurchase* ($\text{EY} > \text{CY}$).

Step 1: EPS under dividend policy. From Equation (21)*, paying a dividend yields*

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} \;=\; \mathbb{E}[\text{Non-Cash EPS}] \tag{A.10}$$

Dividends bypass the income statement entirely.

Step 2: EPS under optimal policy. The optimal policy generates a yield of $\max[\text{EY}, \text{CY}]$*. From Equations* (7) *and* (14)

$$\underset{\text{Optimal}}{\mathbb{E}[\text{EPS}]} \;=\; \mathbb{E}[\text{Non-Cash EPS}] \;+\; \max[\text{EY}, \text{CY}] \times \left(\frac{\text{Windfall}}{\text{\#Shares}}\right) \tag{A.11}$$

Step 3: Compute the difference. *The change in EPS from paying a dividend instead of following the optimal policy is*

$$\underset{\text{Dividend}}{\Delta\mathbb{E}[\text{EPS}]} = \underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} - \underset{\text{Most Accr}}{\mathbb{E}[\text{EPS}]} \tag{A.12}$$

$$= -\max[\text{EY},\text{CY}] \times \left(\frac{\text{Windfall}}{\#\text{Shares}}\right) \tag{A.13}$$

Step 4: Sign the difference. *For growth stocks,* $\text{CY} = \text{rf}$*, so* $\max[\text{EY},\text{CY}] = \text{rf} > 0$*. For value stocks,* $\max[\text{EY},\text{CY}] \geq \text{EY} > \text{rf} > 0$*. In both cases,* $\max[\text{EY},\text{CY}] > 0$*, so dividends are strictly dilutive.* □

Proof. **(Proposition 4)**

By Equation (24)*, a value stock pays a dividend if* $\text{D4D} > \max[\text{EY},\text{CY}]$*. The probability of paying a dividend among value stocks is*

$$\Pr[\text{ Pay Dividend} \mid \text{EY} > \text{rf} \,] = \Pr[\text{ D4D} > \max[\text{EY},\text{CY}] \mid \text{EY} > \text{rf} \,] \tag{A.14}$$

If $\text{D4D} \perp \text{EY} \mid \{\text{EY} > \text{rf}\}$*, then the conditional distribution of* D4D *does not vary with* EY *among value stocks. Since* $\max[\text{EY},\text{CY}]$ *is weakly increasing in* EY*, the probability of paying a dividend is*

$$\Pr[\text{ D4D} > \max[\text{EY},\text{CY}] \mid \text{EY} > \text{rf} \,] = 1 - \text{CDF}\big(\max[\text{EY},\text{CY}]\big) \tag{A.15}$$

where $\text{CDF}(\cdot)$ *is the CDF of* D4D *among value stocks. Since* $\text{CDF}(\cdot)$ *is increasing and* $\max[\text{EY},\text{CY}]$ *is weakly increasing in* EY*, this probability is decreasing in* EY*.* □

Proof. **(Proposition 5)**

The firm has a cash windfall. Under payout policy π*, the CEO distributes* $\text{Div}_1(\pi)$ *to shareholders over the next twelve months and retains* $\text{Windfall} - \text{Div}_1(\pi)$*. Let* $\mathbb{E}[\text{Price}_1(0)]$ *denote the firm's expected share price if it had not realized a cash windfall.*

If the company's shares are priced using the same present-value formula as Shareholder PV*, then retained cash adds dollar-for-dollar to the share price*

$$\mathbb{E}[\text{Price}_1(\pi)] = \mathbb{E}[\text{Price}_1(0)] + \big\{\text{Windfall} - \text{Div}_1(\pi)\big\} \tag{A.16}$$

Every \$1 *that gets distributed is* \$1 *that no longer supports the share price. Hence we can rearrange to get*

$$\mathrm{Div}_1(\pi) \;+\; \mathbb{E}[\mathrm{Price}_1(\pi)] \;=\; \mathbb{E}[\mathrm{Price}_1(0)] \;+\; \mathrm{Windfall} \;=\; K \tag{A.17}$$

where $K >$ \$0 *is just some positive constant.*

Part (a). The present-value form of shareholder value

$$\text{Shareholder PV} \;=\; \frac{\mathrm{Div}_1(\pi) + \mathbb{E}[\mathrm{Price}_1(\pi)]}{1+\mathrm{r}} \;=\; \frac{K}{1+\mathrm{r}} \tag{A.18}$$

does not depend on π.

Part (b). Consider two policies π *and* π' *with* $\mathrm{Div}_1(\pi) \neq \mathrm{Div}_1(\pi')$. *The adding-up identity implies*

$$\mathrm{Div}_1(\pi') - \mathrm{Div}_1(\pi) = -1 \times \{\, \mathbb{E}[\mathrm{Price}_1(\pi')] - \mathbb{E}[\mathrm{Price}_1(\pi)] \,\} \tag{A.19}$$

Every \$1 *of additional dividends is offset by a* \$1 *decline in the expected future share price. If the CEO's objective does not take* $\mathbb{E}[\mathrm{Price}_1]$ *as an argument, this offset is invisible. The EPS forecast is one such objective: it depends on income and share count but not on the expected ex-dividend share price.* □

Proof. **(Proposition 6)**

Retention is accretive when CY > EY. *The market value of the income generated by* \$1/sh *of retained cash is*

$$(\mathrm{CY} \cdot \$1/\mathrm{sh}) \times \mathrm{PE} = (\mathrm{CY} \cdot \$1/\mathrm{sh}) \times \left(\frac{1}{\mathrm{EY}}\right) \tag{A.20a}$$

$$= \left(\frac{\mathrm{CY}}{\mathrm{EY}}\right) \times \$1/\mathrm{sh} > \$1/\mathrm{sh} \tag{A.20b}$$

□

Proof. **(Proposition 7)**

A buyback boosts EPS by EY × \$1/sh. *When capitalized at the firm's PE ratio*

$$(\mathrm{EY} \cdot \$1/\mathrm{sh}) \times \mathrm{PE} = (\mathrm{EY} \cdot \$1/\mathrm{sh}) \times \left(\frac{1}{\mathrm{EY}}\right) \tag{A.21a}$$

$$= \left(\frac{\mathrm{EY}}{\mathrm{EY}}\right) \times \$1/\mathrm{sh} = \$1/\mathrm{sh} \tag{A.21b}$$

□

B Data Construction

We construct our sample by merging data from three WRDS sources: Compustat North America Annual (firm fundamentals), IBES (analyst EPS forecasts), and CRSP (stock prices). The key feature of our construction is that all data used to compute earnings yield are unadjusted for stock splits. We use the share prices and EPS forecasts that market participants would have seen at the time.

B.1 Sample Selection

We include firm-year observations that satisfy the following criteria:

1. Traded on NYSE, NASDAQ, or AMEX (CRSP exchange code $\in \{1,2,3\}$).
2. Common stock only (CRSP share code $\in \{10,11\}$).
3. Share price exceeds $5 at fiscal-year end.
4. Market capitalization exceeds the 30th percentile of the NYSE size distribution in the month of fiscal year-end, based on breakpoints from Ken French's data library.
5. Not in the utility (SIC 4900–4999) or financial (SIC 6000–6999) industries.
6. There is at least one forecast in IBES for next-twelve-month EPS.
7. Fiscal year $\geq$ 1984 (SEC Rule 10b-18 effective date).
8. Positive earnings yield, EY $>$ 0%.
9. PE ratio between 5$\times$ and 100$\times$.
10. Positive available cash in year $(t+1)$.

B.2 Earnings Yield

For each firm-year observation in Compustat with fiscal year-end date `datadate`, we:

1. Identify the earnings announcement date from the IBES actuals file (`ibes.actu_epsus`). For observations prior to 1990 where IBES announcement dates are frequently missing, we use `datadate` +60 days as a proxy.
2. Find the first IBES consensus next-twelve-month (NTM) EPS forecast computed after the announcement date (i.e., the first forecast that incorporates the newly released information). This comes from the IBES unadjusted summary file (`ibes.statsumu_epsus`) with forecast period indicator `fpi` = 1 (next fiscal year).
3. Pull the CRSP closing price on the same date as the IBES consensus (`statpers`).

Earnings yield is then computed as:

$$\text{EY}_{n,t} = \frac{\text{Median NTM EPS Forecast}_{n,t}}{\text{CRSP Price}_{n,t}} \tag{B.1}$$

Both the EPS forecast and stock price are unadjusted for splits and measured on the same date. Excess earnings yield is computed as:

$$\text{Excess EY}_{n,t} = \text{EY}_{n,t} - \text{rf}_t \tag{B.2}$$

rf_t is the 10-Year Treasury constant maturity rate from FRED on the price date.

B.3 Payout Variables

All payout variables are measured in fiscal year $(t+1)$ relative to the observation year t. This allows earnings yield at t to predict payouts at $(t+1)$.

Available Cash. We define available cash as the sum of beginning-of-year cash holdings and half of the year's operating cash flow

$$\text{Available Cash}_{n,t+1} = \text{CHE}_{n,t} + 0.5 \times \text{OANCF}_{n,t+1} \tag{B.3}$$

CHE is cash and short-term investments and OANCF is operating activities net cash flow from Compustat. For observations prior to 1988 (before cash flow statement reporting was required under FASB Statement 95), we impute operating cash flow as $\text{OANCF}_{n,t+1} = \text{IB}_{n,t+1} + \text{DP}_{n,t+1}$, where IB is income before extraordinary items and DP is depreciation.

Since $\text{OANCF}_{n,t+1}$ arrives throughout the year rather than in a lump sum on January 1st, we need to compute a "January 1st equivalent" for the CEO's CY vs. EY decision. This value represents the time-weighted average of the cash available to distribute during the upcoming fiscal year. The formula will take the form $\text{CHE}_{n,t} + \psi \times \text{OANCF}_{n,t+1}$ for some $\psi \in (0, 1)$.

We just need to solve for ψ. If cash flows arrive uniformly over the year, then each dollar that arrives at time $t < \tau \leq (t+1)$ can be deployed for $(1-\tau)$ of the year

$$\psi = \int_0^1 (1-\tau) \cdot \text{d}\tau = 0.5 \tag{B.4}$$

Alternatively, suppose a firm will generate \$120M in net cash flow from operating activities during year $(t+1)$, with \$10M arriving at the end of each month. The CEO would then be able to deploy January's \$10M for 11/12 of the year, February's \$10M for 10/12 of the year, ..., and December's \$10M for 0/12 of the year. Running the numbers gives a similar value for ψ as in the continuous case

$$\frac{\$10\text{M} \times \left(\frac{11}{12} + \frac{10}{12} + \frac{9}{12} + \cdots + \frac{1}{12} + \frac{0}{12}\right)}{\$120\text{M}} \;=\; \frac{\$55\text{M}}{\$120\text{M}} \;\approx\; 0.46 \tag{B.5}$$

Both calculations give $\psi \approx 1/2$, so we use this weight. $\text{CHE}_{n,t}$ has a weight of 1 because it is available on January 1st. Suppose $\text{CHE}_{n,t}$ = \$50M, $\text{OANCF}_{n,t+1}$ = \$120M, and that the firm's cash flows arrive uniformly during year $(t+1)$ at a rate of roughly \$10M per month. The total cash that could physically leave the building is \$50M + \$120M = \$170M. The effective cash for the CEO's CY vs. EY comparison is \$50M + 0.5 × \$120M = \$110M. She has \$110M of firepower for generating full-year returns.

Dividends. We measure common stock dividends using Compustat variable DVC (dividends—common).

Repurchases. Following Kahle and Stulz (2021), we define repurchases as the purchase of common and preferred stock (PRSTKC) minus any reduction in the value of preferred stock:

$$\text{Repurchases}_{n,t+1} \;=\; \max\Big[\,0\,,\,\text{PRSTKC}_{n,t+1} + \min\big\{\,0\,,\,\Delta\text{PrefStock}_{n,t+1}\,\big\}\,\Big] \tag{B.6}$$

$\text{PrefStock}_{n,t+1}$ is the first available among preferred stock redemption value (PSTKRV), liquidating value (PSTKL), or par value (PSTK).

Payout Rates. We express payouts as a fraction of available cash:

$$\text{Dividend Rate}_{n,t+1} \;=\; \frac{\text{DVC}_{n,t+1}}{\text{Available Cash}_{n,t+1}} \tag{B.7}$$

$$\text{Repurchase Rate}_{n,t+1} \;=\; \frac{\text{Repurchases}_{n,t+1}}{\text{Available Cash}_{n,t+1}} \tag{B.8}$$

$$\text{Total Payout Rate}_{n,t+1} \;=\; \text{Dividend Rate}_{n,t+1} + \text{Repurchase Rate}_{n,t+1} \tag{B.9}$$

Payouts are capped at available cash to ensure rates do not exceed 100%.

Payout Indicators. A firm is classified as paying dividends (repurchasing shares) in year $(t+1)$ if the payout rate exceeds 0.5% of available cash.

B.4 Dividend Initiation

A firm initiates dividends in year $(t+1)$ if:

1. It paid no dividends in years t, $(t-1)$, $(t-2)$, $(t-3)$, and $(t-4)$. Years $(t-3)$ and $(t-4)$ may be missing. The first three lags must be populated.
2. It pays dividends in year $(t+1)$.

We identify dividend payments using CRSP distribution data (`crsp.dsedist`), which provides ex-dividend dates and amounts for each distribution.

B.5 Cash Usage Variables

- Cash Acquisition: We get cash spent on acquisitions (AQC) from Compustat. A firm is classified as making a cash acquisition in year $(t+1)$ if $\text{AQC}_{t+1}/\text{Available Cash}_{t+1} > 10\%$.
- Issue Equity: We get data on sales of common and preferred stock (SSTK) from Compustat. A firm is classified as issuing equity in year $(t+1)$ if $\text{SSTK}_{t+1}/\text{Available Cash}_{t+1} > 10\%$.
- Retire Debt: We first compute net debt issuance as long-term debt issuance (DLTIS) minus long-term debt reduction (DLTR). A firm is classified as retiring debt in year $(t+1)$ if the net debt change is less than -10% of available cash.

B.6 Control Variables

- MCap: CRSP share count times CRSP price on the IBES consensus date.
- B/M: Book equity divided by market capitalization. Book equity is computed following Fama and French (1993) as stockholders' equity (SEQ) plus deferred taxes (TXDITC) minus preferred stock value.
- ROA: Net income (NI) divided by total assets (AT). Winsorized at $[-0.1, 1.0]$.
- Tangibility: Net PP&E (PPENT) divided by total assets (AT).

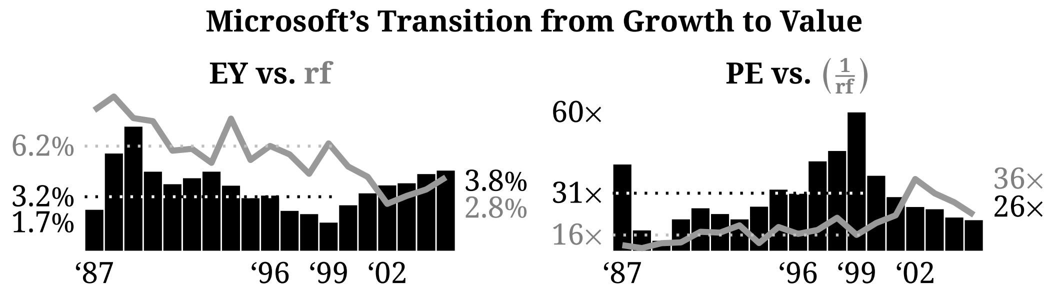

Figure C1. BLACK BARS show Microsoft's earnings yield (left) and PE ratio (right) at the time of its annual shareholder meeting each year. GRAY LINES show the 10-year Treasury yield (left) and the implied Treasury multiple (right). Dotted lines denote sample averages during the period from 1987 through 1999.

C Microsoft Case Study

During the 1990s, Microsoft (MSFT) had unique access to one of the most lucrative investment opportunities on the planet. The company's \$3B of invested capital in June 1996 generated \$5.5B of net operating income (NOI) over the next twelve months. Assets that helped sell more Windows products paid for themselves in under a year, $\frac{\$5.5\text{B}}{\$3\text{B}} \approx 180\%$. So why did Microsoft park \$7B of cash in Treasuries for the following year when $\text{rf} = 6.2\%$?

The answer comes from comparing Microsoft's earnings yield to the riskfree rate at the time. In June 1996, the company was valued at a 31× price-to-earnings (PE) ratio. Microsoft had such a low cost of equity capital, $\text{EY} = \left(\frac{1}{31\times}\right) \approx 3.2\%$, that it could afford to lend at $\text{rf} = 6.2\%$. Shareholders could have collected $6.2\% \times \$7\text{B} \approx \$440\text{M}$ by investing in Treasuries themselves if Bill Gates had distributed the money. But, in that case, the resulting riskfree interest income would not have been priced at a +\$6B premium, $\$440\text{M} \times 31 \approx \$13\text{B} > \$7\text{B}$.

Then, in the early 2000s, Microsoft abruptly changed its payout policy. Under new CEO, Steve Ballmer, the firm initiated a regular dividend in January 2003. A year and a half later, the company announced a \$32B special dividend as well as plans to buy back \$30B over the next three years.

Why the sudden switch? Microsoft's \$39B of cash in June 2002 was far more than it needed for organic growth. But the same could be said of its cash holdings every year during the past decade. While Microsoft's cash peaked at \$61B in June 2004, its \$7B in June 1996 was a larger share of total assets, 70% vs. 66%.

Again, the answer comes from comparing Microsoft's earnings yield to the prevailing riskfree rate. In June 2002, the company was trading at a 26× multiple and the 10-year Treasury yield had dropped to $\text{rf} = 2.8\%$. Together, these two facts meant that Microsoft was a value stock in the summer of 2002. It was

$EY - rf = \left(\frac{1}{26\times}\right) - 2.8\% = +100$bps more expensive for the company to issue \$1 of equity than to borrow \$1 riskfree.

If Microsoft had continued to invest \$39B in Treasuries, it would have been disastrous for shareholder value. The company could have collected $2.8\% \times$ \$39B $\approx$ \$1.1B in riskfree interest income. But, with a 26× multiple, this riskfree interest income would only have been valued at \$1.1B $\times$ 26 $\approx$ \$29B. Maintaining the status quo would have cost shareholders \$29B $-$ \$39B $= -$\$10B.

At the same time, it is not too surprising that Steve Ballmer found reasons to pay a dividend in 2003. Microsoft's earnings yield, $EY = \left(\frac{1}{26\times}\right) \approx 3.8\%$, was just +1.0%pt above the Treasury rate, $rf = 2.8\%$. Had the company been trading at 10×, Ballmer would have found the accretive pull of repurchases much harder to resist, $\left(\frac{1}{10\times}\right) - 2.8\% = +7.2\%$pt.