EPS-Maximizing Payout Policy

Itzhak Ben-David* and Alex Chinco†

February 8, 2026
[Click here for the latest version]

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 cash 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 accretive projects to make up for the higher cost. Dividends and repurchases both deliver the same value to shareholders, but only repurchases can be accretive. Hence, EPS-maximizing CEOs prefer to distribute cash via repurchases. Some firms pay dividends for reasons outside our model. Such departures should concentrate among marginal value stocks (EY $=$ rf $+ \epsilon$) where the accretive pull of repurchases is weakest. Empirically, this logic explains which firms return cash, how they distribute the money, and important time-series trends.

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

*The Ohio State University and NBER. ben-david.1@osu.edu
†Michigan State University. alexchinco@gmail.com

Introduction

Investment, financing, 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 categories: "#1) where to invest funds that the business has raised, either internally or externally; #2) where and how to raise funds to finance these investments; and, #3) how much and in what form to return funds back to the owners."

In practice, real-world corporate executives make all three decisions with a keen eye on accretion and dilution. Large public companies are run by EPS (earnings per share) maximizers. Ben-David and Chinco (2025a) 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 expense. Ben-David and Chinco (2025b) explores how EPS maximizers choose their capital structure. The least dilutive financing option is the one that commits the least earnings next year.

This paper characterizes the max EPS payout policy. We model a CEO who has just realized a cash windfall. She can either invest the money or return the cash 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? And, in those cases, what is the most accretive way for her to distribute the money?

In Section 1, we start by answering the first question: when is it accretive to return cash? On the one hand, a CEO can collect some extra income next year by keeping the cash windfall on balance sheet and investing the money. 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, $\text{IY} > \text{rf}$, then her blended cash yield will be

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

This average yield represents the benefit of keeping cash on balance sheet.

On the other hand, the CEO can also use cash to buy back shares from existing shareholders. By paying the market price for a single share, the CEO can conserve a single share's worth of expected earnings, $\mathbb{E}[\text{EPS}]$. Afterwards, there will be more expected earnings for each of her remaining shareholders. Hence, the opportunity cost of cash retention is the company's earnings yield

$$\text{EY} \;=\; \frac{\mathbb{E}[\text{EPS}]}{\text{Price}} \tag{2}$$

We prove that an EPS-maximizing CEO will decide whether to retain or return cash by comparing these two yields

$$\text{CY} \;>\; \text{EY} \qquad \text{keep cash on balance sheet} \tag{3a}$$

$$\underset{\substack{\text{Income per}\\ \$1 \text{ invested}}}{\text{CY}} \;<\; \underset{\substack{\text{Savings per}\\ \$1 \text{ repurchased}}}{\text{EY}} \qquad \text{return cash to shareholders} \tag{3b}$$

It is accretive to retain cash when investing offers the higher yield, CY $>$ EY. If repurchases offer the higher yield, CY $<$ EY, then the CEO will return cash.

Equation (3) captures the fundamental trade-off at the heart of the max EPS payout policy. However, this one simple rule manifests in two qualitatively different ways. Why? Because the max EPS paradigm does not just dictate payout-policy decisions. It also governs investment and financing choices. When a company's earnings yield drops, the opportunity cost of cash retention falls. But, if EY drops far enough, it can become cheaper to fund projects by issuing equity rather than spending cash, causing CY to fall as well.

This is exactly what happens with growth stocks, EY $<$ rf. These firms view cash as cheap enough to retain but too expensive to spend on projects, preferring instead to pay for acquisitions and new ventures by issuing equity, $\theta = 0$. A growth stock's only option is to invest cash in safe low-yield Treasuries, CY = rf. Nevertheless, because growth stocks have access to such cheap equity financing, riskfree interest income is more than enough to make retention accretive. Lending at rf = 4% is a good deal when you can borrow at EY = 3%.

Value stocks have higher earnings yields, EY $>$ rf, which is why these firms see equity financing as expensive and fund projects out of internal cash reserves

whenever possible, $\theta > 0$ and $\text{CY} > \text{rf}$. Unfortunately, a value stock's higher cost of equity capital also raises its hurdle for cash retention. When equity markets want $\text{EY} = 5\%$, you can no longer lend all your cash at $\text{rf} = 4\%$.

Value stocks retain cash if they can spend enough of it on high-yield projects to make up for their higher cost of retention, $\text{CY} - \text{rf} = \theta \cdot \{\text{IY} - \text{rf}\} > \text{EY} - \text{rf}$. Otherwise, an EPS-maximizing value stock can get a bigger accretive pop from repurchases, $\text{EY} > \text{CY}$. The logic creates an interesting tension. Companies that get more benefit from funding projects out of internal cash reserves, $\text{EY} \gg \text{rf}$, must also do more work to justify cash retention, $\text{EY} - \text{rf} \gg 0\%\text{pt}$.

In Section 2, 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.

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 more likely to tilt the scales. Dividend payers will be marginal value stocks with earnings yields just above the value/growth boundary, $\text{EY} = \text{rf} + \epsilon$, since these firms get the least benefit from following the max EPS payout policy.

Importantly, repurchases and dividends both deliver the same shareholder value. Suppose the CEO of a value stock gets a cash windfall. The CEO could mail a dividend check to each shareholder. But, if she is going to distribute cash, the CEO would rather boost her EPS forecast by using the money to repurchase shares. Yet, even though buy backs are accretive, they create no extra value for shareholders. From an investor's perspective, both move the same amount of cash off balance sheet. Thus, the fact that real-world corporate executives prefer buy backs tells us something about their objective.

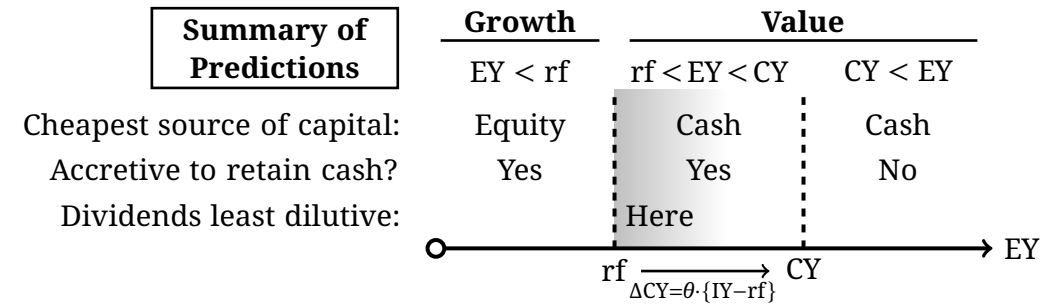


Figure 1. Growth stocks have earnings yields below the riskfree rate, EY $<$ rf. These firms find it accretive to retain cash. Value stocks have higher earnings yields, EY $>$ rf, and return cash even though it is their cheapest source of capital. CEOs should prefer to repurchase shares. Dividend payments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

Figure 1 summarizes our main predictions. Here is how they played out in the case of Microsoft (MSFT). During the 1990s, the company had unique access to one of the most lucrative investment opportunities on the planet. Microsoft'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, $\frac{\$5.5B}{\$3B} \approx 180\%$. So why did Microsoft park \$7B of cash in Treasuries for the following year when 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$\times$ price-to-earnings (PE) ratio. Microsoft had such a low cost of equity capital, EY $= \left(\frac{1}{31\times}\right) \approx 3.2\%$, that it could afford to lend at rf $= 6.2\%$. Shareholders could have collected $6.2\% \times \$7B \approx \$440M$ 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, $\$440M \times 31 \approx \$13B > \$7B$.

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

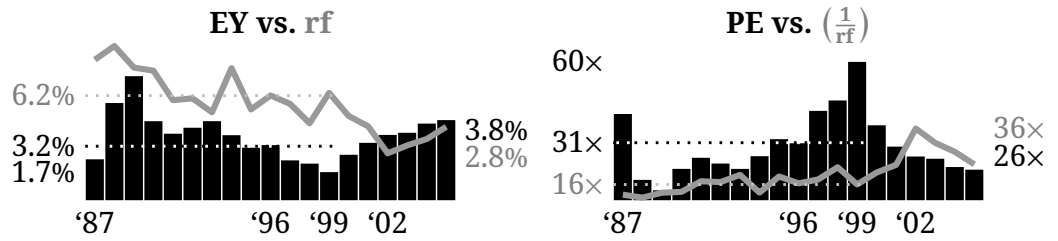


Figure 2. BLACK BARS show Microsoft's earnings yield (left) and PE ratio (right) at the time of its annual shareholder meeting each year. GRAY LINES show the 10-year Treasury yield (left) and the implied Treasury multiple (right). Dotted lines denote sample averages during the period from 1987 through 1999.

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 rf = 2.8%. Together, these two facts meant that Microsoft was a value stock in the summer of 2002. It was EY−rf = $\left(\frac{1}{26\times}\right)-2.8\%$ = +100bps 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% × $39B ≈ $1.1B in riskfree interest income. But, with a 26× multiple, this riskfree interest income would only have been valued at $1.1B × 26 ≈ $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 = $\left(\frac{1}{26\times}\right)$ ≈ 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.

In effect, EPS maximizers engage in a form of catering. However, the mechanism is different from Baker and Wurgler (2004a,b). An EPS-maximizing CEO chooses a payout policy based on the firm's current cost of equity capital, not

anticipated future price growth. Microsoft returned cash in 2003 because the resulting interest income was being priced at a low multiple, not because Steve Ballmer expected his remaining assets to be repriced at a higher multiple.

That being said, the two catering mechanisms are not mutually exclusive. EPS maximizers take their earnings yield and PE ratio as given. So, while there is no multiples expansion in our model, it does not matter how markets determine a firm's current share price. All our results hold if prices are "correct". They are equally valid if prices reflect sentiment and/or a taste for dividends.

In Section 3, we run a simulation exercise to further cement the key takeaways from our model. Growth stocks (EY $<$ rf) keep cash on balance sheet because they can cover the opportunity cost of retention by investing cash in Treasuries. Value stocks (EY $>$ rf) face a higher cost of equity capital, which makes cash their cheapest funding option but also raises the opportunity cost of retention. Value stocks return cash if they cannot fund enough accretive projects to overcome the higher cost. Finally, EPS maximizers prefer buy backs to dividends. Some EPS-maximizing CEOs choose to pay dividends for reasons outside our model. Such departures should concentrate among marginal value stocks (EY = rf + ϵ) where the accretive pull of repurchases is weakest.

In Section 4, we verify that these predictions line up with real-world data. 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 and +15.5%pt more likely to return cash. Growth stocks (EY $<$ rf) are far less likely to distribute cash, consistent with their lower retention hurdle. Moreover, value stocks distribute 40% more of their available cash via repurchases.

In addition, the max EPS paradigm explains key time-series trends. Why did payouts disappear in the 1990s (Fama and French, 2001)? Because high PE ratios gave the entire 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, which shifted the average public company toward value, EY $>$ rf.

Related Work. 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?"

Miller and Modigliani (1961) proved that the timing of dividend payments has no effect on shareholder value in a frictionless present-value model. There are several ways to break this classic irrelevance result. First, there could be frictions. Second, M&M assume that a firm has already distributed all its free cash flows (DeAngelo and DeAngelo, 2006). If this is not the case, then payout timing matters. Third, corporate executives might not be maximizing shareholder value. This is why payout timing matters in our paper.

We are adding to a large literature on the determinants of corporate cash holdings. Up until now, 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 practical considerations. Our goal is not to refute these findings. In the same way that real-world frictions are not evidence against Miller and Modigliani (1961), there is no inherent tension with our work.

Previous researchers have proposed (and tested) a number of alternative payout-policy theories. Fama and French (2002) finds some evidence consistent with pecking-order theory. Taxes likely play a role in corporate-payout decisions (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 a large dividend-signaling literature (Benartzi, Michaely, and Thaler, 1997; DeAngelo, DeAngelo, and Skinner, 2000; Baker, Mendel, and Wurgler, 2016). The max EPS paradigm is able to reproduce many of the same predictions, but through a different channel.

Our paper contributes to a vast behavioral corporate-finance literature (Baker, Ruback, and Wurgler, 2007), which all began with the insight that in-

vestors 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).

Because EPS maximizers take their PE ratio as given, all of our results hold in a world where prices reflect these sorts of behavioral factors. We even include a reduced-form "demand for dividends" variable in our model to demonstrate as much. It is striking how much the max EPS paradigm can explain on its own before adding in these other important considerations.

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. If she retains cash, the CEO can use some of the money to fund high-yield projects. The rest will generate riskfree interest income. In subsection 1.1, we show that it is accretive for the CEO to retain cash if the income yield on the average $1 is higher than her earnings yield. Otherwise, it is more accretive to return cash to shareholders by repurchasing shares. Initially, we take the fraction of cash used for project funding as given. In subsection 1.2, we then require the CEO to make max EPS capital-budgeting decisions. This internal consistency causes the max EPS payout policy to manifest in two different ways: one for growth stocks; another for value stocks. In subsection 1.3, we describe how our static max EPS model predicts time-series trends in aggregate corporate payouts.

1.1 Fundamental Trade-Off

Consider the EPS-maximizing CEO of a large public company. The firm's assets in place are expected to generate $\mathbb{E}[\text{NOI}]$ dollars of net operating income (NOI) over the next twelve months. Let $\bar{\imath} \times \text{Debt}$ denote the firm's promised

interest payment next year. The current 10-year Treasury yield is $\text{rf} > 0\%$, and the company's existing loans/bonds have an average interest rate of $\bar{\imath} \geq \text{rf}$.

At the start of the year, the CEO realizes an unexpected cash windfall. Her company's invested capital has generated far more income than she originally planned for, and she cannot reinvest all the extra money in the existing business. The CEO must decide how to deploy this money during the upcoming year. Should she keep the cash on balance sheet and spend her time investing the money? Or should she prioritize returning cash to shareholders?

The instant before realizing the cash windfall, the CEO's company had an EPS (earnings per share) forecast of

$$\begin{aligned} \mathbb{E}[\text{Non-Cash EPS}] &= \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\#\text{Shares}} && \text{(4a)} \\ &= \{\overline{\text{IY}} - \ell \cdot \bar{\imath}\} \times \left(\frac{\text{Assets}}{\#\text{Shares}}\right) && \text{(4b)} \end{aligned}$$

$\overline{\text{IY}} = \frac{\mathbb{E}[\text{NOI}]}{\text{Assets}}$ denotes the income yield on the average \$1 of the firm's asset base, and $\ell = \frac{\text{Debt}}{\text{Assets}}$ is the leverage used to finance this invested capital.

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. The CEO is free to collect riskfree interest income by parking all her cash in Treasuries. In that case, her cash windfall would add $\text{rf} \times \text{Cash}$ to her firm's expected earnings next year. She can also use a fraction $\theta \in [0, 1)$ to fund projects with an income yield of

$$\text{IY} = \frac{\Delta\mathbb{E}[\text{NOI}]}{\text{Cost}} > \text{rf} \qquad (5)$$

Collectively, these projects have $\text{Cost} = \theta \cdot \text{Cash}$ and will raise the CEO's expected earnings next year by $\Delta\mathbb{E}[\text{NOI}] > \$0$. In other words, the CEO has access to investment opportunities with an expected payback period of $\left(\frac{1}{\text{IY}}\right)$ years.

The CEO's blended cash yield has two components

$$\begin{aligned} \text{CY} &= (1-\theta) \cdot \text{rf} + \theta \cdot \text{IY} && \text{(1)} \\ &= \text{rf} + \underbrace{\theta \cdot \{\text{IY} - \text{rf}\}}_{\Delta\text{CY}} && \text{(1}'\text{)} \end{aligned}$$

If the CEO leaves all her cash in Treasuries, then her average cash yield would be CY = rf. By using some of her windfall to fund accretive projects, IY > rf, the CEO can increase her average cash yield by ΔCY = CY$-$rf = $\theta \cdot \{$IY$-$rf$\}$.

The CEO can also return her cash windfall to shareholders by spending the money on repurchases. Given the company's current stock price, the CEO can buy back $\left(\frac{\text{Cash}}{\text{Price}}\right)$ shares. Afterwards, the CEO would no longer have to promise any expected earnings to the previous owners. Thus, each \$1 of cash spent on buy backs will shave EY $\times$ \$1 off of the CEO's earnings commitments

$$\text{EY} \;=\; \frac{\mathbb{E}[\text{EPS}]}{\text{Price}} \tag{2}$$

Since shareholders get any residual expected earnings not used for financing purposes, the opportunity cost of cash retention is the company's earnings yield.

Proposition 1.1. *Suppose a CEO initially planned on retaining her cash windfall, using a fraction $\theta \in [0, 1)$ of the money to fund high-yield projects, and investing the rest in Treasuries. If she instead returned the entire cash windfall to shareholders via repurchases, her company's EPS forecast would change by*

$$\underset{\text{Return cash}}{\mathbb{E}[\text{EPS}]} \;-\; \underset{\text{Retain cash}}{\mathbb{E}[\text{EPS}]} \;=\; \{\text{EY} - \text{CY}\} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{7}$$

An EPS-maximizing CEO will retain cash if investing offers the higher yield, EY < CY*. The CEO will return cash if buy backs offer the higher yield,* EY > CY*.*

Proposition 1.1 captures the fundamental trade-off at the heart of the max EPS payout policy. An EPS-maximizing CEO keeps cash on balance sheet if she can get a high enough yield by investing the money, CY > EY. Otherwise, it is more accretive to return cash to shareholders. What matters is the yield spread next year, not the present-value of all expected future cash flows.

EPS maximizers do not use a special ad hoc rule for cash. To be accretive, an asset must generate enough income next year to pay for its own short-term funding requirements (Ben-David and Chinco, 2025a). This statement is true when the asset is a new production facility. It is true when the assets are acquired in an M&A deal. It remains true when the asset is cash.

Equation (4) says that EPS maximizers view their companies as yield-spread machines. They generate non-cash EPS by capturing a levered yield spread on the firm's invested-capital base. Equation (7) shows that the benefits of cash retention 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.

At the moment, researchers assume that corporate executives think in present value terms. They take it for granted that CEOs have an objective like

$$\text{Shareholder Value} = \frac{\mathbb{E}[\text{Div}_1] + \mathbb{E}[\text{Price}_1]}{1+\text{r}} \quad \begin{array}{l}\texttt{for } t = 1, 2, 3, \ldots: \\ \texttt{replace } \mathbb{E}[\text{Price}_t] \\ \texttt{with } \frac{\mathbb{E}[\text{Div}_{t+1}] + \mathbb{E}[\text{Price}_{t+1}]}{1+\text{r}}\end{array} \tag{8a}$$

$$= \frac{\mathbb{E}[\text{Div}_1]}{1+\text{r}} + \sum_{t=2}^{\infty} \frac{\mathbb{E}[\text{Div}_t]}{(1+\text{r})^t} \tag{8b}$$

$\mathbb{E}[\text{EPS}_1]$ differs from Equation (8) in a number of ways. To start with, earnings are not dividends. In addition, EPS maximizers have no analog to $\sum_{t=2}^{\infty} \frac{\mathbb{E}[\text{Div}_t]}{(1+\text{r})^t}$. While our model focuses on next year's EPS forecast, some firms have a multi-year target in mind. But the difference between $\max \mathbb{E}[\text{EPS}_1]$ and $\max \mathbb{E}[\text{EPS}_2]$ is relatively unimportant. What matters is the absence of a terminal multiple, which reflects the present value of expected earnings from year 3 onward. The max EPS paradigm focuses on annuities, not perpetuities and coupon bonds.

EPS maximizers also do not divide by $(1+\text{r})$. Discount rates are not central to their thinking. Their earnings yield is the cost of equity capital, $\text{EY} = \frac{\mathbb{E}[\text{EPS}]}{\text{Price}}$. Moreover, EPS-maximizing CEOs do not immediately update the numerator to reflect the effects of their policy choices. The r in Equation (8) is a property of the firm's expected future dividend stream. By contrast, EPS maximizers treat EY as a characteristic of their firm, taking the current value as given.

Miller and Modigliani (1961) gives conditions under which dividend payments have no effect on shareholder value in a frictionless present-value model. However, even if these conditions are not perfectly satisfied, payout timing will remain relatively unimportant in a world where increases in $\mathbb{E}[\text{Div}_1]$ are largely offset by declines in $\mathbb{E}[\text{Price}_1]$. Had Steve Ballmer been applying present-value logic in December 2002, he never would have chosen to distribute roughly $70B of cash to MSFT shareholders over the next 24 months.

1.2 Accretive Investment Policy

The max EPS paradigm does not just dictate payout-policy decisions. It also governs investment and financing decisions. The max EPS investment rule tells a CEO to start accretive projects that will generate enough income next year to cover their own short-term funding and to pay for them using the firm's cheapest source of capital.

To raise \$1 of equity, a CEO must promise the buyer EY $\times$ \$1 of expected earnings next year. The opportunity cost of spending an unused \$1 of cash is the forgone riskfree interest income it could have generated, rf $\times$ \$1. When deciding whether or not to keep cash on balance sheet, a CEO cares about the average cash yield, CY $\geq$ rf. But, when choosing where to get the next \$1 of funding from, the marginal yield is what matters. An EPS-maximizing CEO would not pull \$1 of funding from a high-yield project while she still has cash sitting in Treasuries, CY $\geq$ rf. To an EPS maximizer, the cost of issuing \$1 of bonds is the promised interest payment next year, i $\times$ \$1.

Lemma 1.2 (Ben-David and Chinco, 2025a)**.** *An EPS-maximizing manager will fund accretive projects,* IY $>$ FY*, using her firm's cheapest source of capital*

$$\text{FY} \;=\; \min\left[\underset{\substack{\text{Issue}\\\text{equity}}}{\text{EY}}\;,\;\underset{\substack{\text{Use}\\\text{cash}}}{\text{rf}}\;,\;\underset{\substack{\text{Sell}\\\text{bonds}}}{\text{i}}\right] \tag{9}$$

$\text{EY} = \frac{\mathbb{E}[\text{EPS}]}{\text{Price}}$ *denotes her firm's earnings yield,* rf $>$ 0% *is the prevailing riskfree rate, and* i $\geq$ rf *is the marginal interest rate on the company's next* \$1 *of debt.*

An EPS-maximizing CEO might not always see cash as her cheapest capital source. A CEO that can sacrifice less earnings by funding high-yield projects with equity will have a cash-usage rate of $\theta = 0$. This internal consistency causes the max EPS payout policy to manifest in two different ways. Growth and value stocks each hike a different route up to the summit of Mount EPS

$$\text{EY} < \text{rf} \quad \rightsquigarrow \quad \text{Growth Stock, PE} > \left(\tfrac{1}{\text{rf}}\right) \tag{10a}$$

$$\text{EY} > \text{rf} \quad \rightsquigarrow \quad \text{Value Stock, PE} < \left(\tfrac{1}{\text{rf}}\right) \tag{10b}$$

Growth stocks (EY $<$ rf) see equity financing as cheap compared to cash. The max EPS paradigm says that the inflection point in Baker, Stein, and Wurgler (2003) is governed by the sign of a firm's excess earnings yield. Suppose a growth stock has lots of high-yield projects that it could have funded with cash, $\theta \cdot \{\text{IY–rf}\} \gg 0\%\text{pt}$. An EPS maximizer would have already funded these projects by issuing shares. Growth stocks get such cheap equity financing that spending cash is expensive.

If the EPS-maximizing CEO of a growth stock keeps her cash windfall on balance sheet, then she has only one thing to do with the money: invest it in Treasuries, $\theta = 0$. At the same time, a growth stock's low earnings yield also implies that the resulting riskfree interest income is enough to justify cash retention, rf $>$ EY. Lending to the US government at rf $= 4\%$ is a great deal if you can borrow from equity markets at EY $= 3\%$.

Value stocks (EY $>$ rf) face a higher cost of equity capital, which is why they view internal cash reserves as their cheapest source of capital. When an EPS-maximizing value-stock CEO gets a cash windfall, she would like to switch to funding projects with cash. By replacing \$1 of equity financing with \$1 of cash, she can shave $\{\text{EY}-\text{rf}\} \times \$1 > \$0$ off her financing expenses.

But notice how a value stock's higher earnings yield also raises the opportunity cost of cash retention. If EY $>$ rf, then an EPS-maximizing CEO cannot just park her cash windfall in Treasuries. By using the money to repurchase shares, the CEO could have added $\{\text{EY}-\text{rf}\} \times \text{Cash} > \$0/\text{sh}$ to her EPS forecast. To make retention accretive, a value-stock CEO must be able to generate at least this much extra income by funding high-yield projects. Thus, companies that would get the most benefit from funding high-yield projects with cash, EY $\gg$ rf, must also do the most work to justify cash retention, EY$-$rf $\gg 0\%\text{pt}$.

Proposition 1.2. *The* max EPS *payout policy manifests in two different ways:*

- *Growth Stocks* (EY $<$ rf) *retain cash and invest in Treasuries,* $\theta = 0$ *and* CY $=$ rf.
- *Value Stocks* (EY $>$ rf) *only retain cash if they can generate a large enough yield boost by using the money to fund high-yield projects*

$$\Delta\text{CY} \;=\; \theta \cdot \{\text{IY}-\text{rf}\} \;>\; \text{EY}-\text{rf} \tag{11}$$

In late 1996, Microsoft had a 31× PE ratio and an earnings yield of EY = $\left(\frac{1}{31\times}\right) \approx 3.2\%$. With Treasury yields at rf $\approx 6.2\%$, the company was a growth stock. As such, any project that would have been accretive to fund out of internal cash reserves was even more accretive to fund with equity, $\{\text{IY} - 3.2\%\} > \{\text{IY} - 6.2\%\}$. That is why Microsoft relied on equity financing for the majority of its $425M acquisition of WebTV in early 1997.[1]

During FY1997, Microsoft collected riskfree interest income of just $6.2\% \times \$7\text{B} \approx \$440\text{M}$ on the $7B of cash that it reported in June 1996. The firm's 31× multiple meant that Microsoft's best use of cash was lending it to the US government at rf = 6.2%. Microsoft's sky-high PE ratio also meant that 6.2% was good enough to warrant retention. It is attractive to lend at 6.2% when you can borrow from equity markets at EY = $\left(\frac{1}{31\times}\right) \approx 3.2\%$.

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.

Bill Gates did not have to do anything special with his $7B of cash. He created +$6B of value by parking the money in Treasuries

$$\underbrace{\overbrace{(\,\text{rf} \cdot \text{Cash}\,)}^{\text{Interest income}\ 6.2\%\cdot\$7\text{B}\approx\$440\text{M}} \times \overbrace{\text{PE}}^{31}}_{\text{Market valuation}} \approx \$13\text{B} \tag{12}$$

Sure, if Microsoft had returned the $7B to shareholders, then they could have invested this cash in Treasuries themselves. But markets would not have priced the resulting riskfree interest income at a $\left(\frac{\$13\text{B}-\$7\text{B}}{\$7\text{B}}\right) \approx 85\%$ premium.

In June 2004, Microsoft had $61B of cash, which amounted to $5.61/sh given the firm's 10.8B shares outstanding. Microsoft's PE ratio in the summer of 2004 was around 22×, putting the firm's cost of equity capital at EY = $\left(\frac{1}{22\times}\right) \approx 4.5\%$. Treasury yields fell following the DotCom crash, and in June 2004 they sat at rf $\approx 3.5\%$, making Microsoft a value stock.

[1] John Markoff. "Microsoft to Buy WebTV." *The New York Times.* Apr 7th 1997.

Microsoft's new CEO, Steve Ballmer, did not necessarily have to return all $61B just because the company was a value stock. But, to justify holding so much cash, Ballmer did need to find accretive uses for some of it. Had he left all $61B in Treasuries, the decision would have lowered the firm's EPS forecast by

$$\underset{-1\%\text{pt}}{\{\overset{3.5\%}{\text{rf}} - \overset{4.5\%}{\text{EY}}\}} \times \underset{\$5.61/\text{sh}}{\left(\frac{\text{Cash}}{\#\text{Shares}}\right)} \approx -\$0.06/\text{sh} \tag{13}$$

Microsoft added a lot of assets in the late 1990s, going from $3B in June 1996 to $31B in June 2004. And each $1 of invested capital was slightly less productive than the last. By the early 2000s, the average $1 of Microsoft's assets only produced around $0.40 of net operating income each year. Suppose Microsoft could have invested cash in projects with a slightly lower average income yield of, say, IY = 25%. The break-even usage rate from Equation (11) tells us how much cash Ballmer needed to spend on such projects.

Corollary 1.2a. *An EPS-maximizing value stock* (EY > rf) *must have a cash usage rate above the following threshold in order to justify cash retention*

$$\theta_{\text{min}} = \frac{\text{EY} - \text{rf}}{\text{IY} - \text{rf}} \tag{14}$$

Ballmer would have needed to deploy $\theta_{\text{min}} = \frac{4.5\%-3.5\%}{25\%-3.5\%} \approx 4\%$ of the company's cash reserves. $\theta_{\text{min}} = 4\%$ of $61B is $4\% \times \$61\text{B} \approx \$2.5\text{B}$, and Microsoft was only able to add $1.25B to its invested-capital base in 2003. Ballmer might have been able to retain cash if he only had $20B or $10B on balance sheet. But $61B was just too much cash. So in July 2004 Microsoft announced a $32B special dividend and $30B of buy backs.

In surveys, corporate executives often say that they "make repurchase decisions after investment decisions" (Brav, Graham, Harvey, and Michaely, 2005). This ordering makes perfect sense once you realize that EPS maximization also guides investment and financing choices. EPS maximizers select projects in order of accretiveness. An EPS-maximizing value stock, EY > rf, will only use cash to buy back shares if that is the firm's highest-yield use of cash.

Corollary 1.2b. *Consider an EPS-maximizing value stock* $(\text{EY} > \text{rf})$ *that has just realized a cash windfall. For retention to be accretive,* $\text{CY} > \text{EY}$*, the income yield on cash-funded projects must be higher than the firm's earnings yield,* $\text{IY} > \text{EY}$*.*

To justify keeping cash on balance sheet, an EPS-maximizing value-stock CEO must make up for her firm's higher earnings yield by funding high-yield projects, $\Delta\text{CY} = \theta \cdot \{\text{IY} - \text{rf}\} > \text{EY} - \text{rf}$. For this plan to work, the average project must have an income yield above her earnings yield

$$\underset{\substack{\text{To increase cash yield by enough} \\ \text{to make cash retention accretive}}}{\theta \cdot \{\text{IY} - \text{rf}\} > \text{EY} - \text{rf}} \quad \rightsquigarrow \quad \underset{\substack{\text{Projects need a higher} \\ \text{yield than repurchases}}}{\text{IY} > \text{EY}} \tag{15}$$

Thus, it would be natural for an EPS-maximizing value-stock CEO to first look for these sorts of projects before making her final decision to repurchase shares.

Notice how this logic is implicit in the definition of "free cash flow" (FCF)—operating cash flows net of both interest payments and capital expenditures. While interest payments are mandatory, real investment is discretionary. This entire paper is premised on the idea that a CEO gets to decide whether to invest or distribute a cash windfall. So why would this money only be considered "free" to distribute after deducting the cost of investment?

The typical justification is that investment is necessary to maintain the firm's productive capacity. While this is true, it is also beside the point. The definition of free cash flow does not differentiate between maintenance expenditures and investment for growth. This response also says nothing about why investment should take precedence over repurchases.

The max EPS paradigm changes the framing of FCF, from "cash available after necessary investment" to "cash that failed the accretive investment test". Cap Ex represents the θ share of cash used to fund high-yield projects, $\text{IY} > \text{EY}$. The residual "free cash flow" is the $(1-\theta)$ share that a firm invests in Treasuries because it lacks better options. The definition of FCF, in this view, is not an arbitrary accounting convention but an emergent property of how EPS-maximizing CEOs allocate capital. It is one coherent framework.

1.3 Aggregate Corporate Payouts

Microsoft famously started returning cash to shareholders in the early 2000s. The company's decision was part of a broader trend. In the early 1980s, most public companies paid a regular dividend. In the 1990s, payouts seemed to disappear (Fama and French, 2001). Then, after a decade-long hiatus, payouts made a comeback starting in 2001 (Kahle and Stulz, 2021).

Even though it is static, our max EPS model naturally accounts for these time-series trends. High PE ratios during the DotCom boom gave the entire market a growth tilt, $\text{EY} = \left(\frac{1}{\text{PE}}\right) < \text{rf}$, and growth stocks are less likely to distribute cash. Following the crash, PE ratios and Treasury yields both fell, converting many companies into value stocks, $\text{EY} > \text{rf}$, and value stocks tend to return cash.

Proposition 1.3. *Suppose $N \geq 1$ EPS-maximizing CEOs receive a cash windfall. The aggregate corporate payout will be proportional to the total cash windfall of all value stocks*

$$\mathbb{E}[\text{Aggregate Payout}] \;\propto\; \sum_{n=1}^{N} \text{Cash}_n \times 1[\text{EY}_n > \text{rf}] \tag{16}$$

The total amount of money returned to shareholders each year should be proportional to the amount of cash held by value stocks at the start of the year. Cash held by growth stocks, $\sum_n \text{Cash}_n \times 1[\text{EY}_n < \text{rf}]$, does not matter. The higher the PE ratio, the lower the earnings cost of equity, making it more attractive to rely on equity financing and keep unused cash on balance sheet.

Our theory does not explain why the nth company is trading at a specific PE ratio. But this is not a bad thing. Economics is about trade-offs. The same is true of economic models. The Capital Asset-Pricing Model (CAPM; Sharpe, 1964) does not explain why the nth company has a particular value of β_n, either. The model tells you what sort of return to expect given the firm's observed value

$$\mathbb{E}[\text{Ret}_n] \;=\; \text{rf} \;+\; \beta_n \times \{\mathbb{E}[\text{Mkt}] - \text{rf}\} \tag{17}$$

The EPS-maximizing CEO in our model views her PE ratio in a similar light.

2 Dividends vs. Buy Backs

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. In subsection 2.3, we demonstrate that dividends and repurchases both deliver the same amount of value to shareholders. Thus, CEOs' observed preference for repurchases strongly suggests that accretion is their goal.

2.1 Dividends Are Dominated

Our model studies an EPS-maximizing CEO who has just received a cash windfall. Before the cash showed up, her company's EPS forecast was $\mathbb{E}[\text{Non-Cash EPS}]$. If the firm is a growth stock, EY $<$ rf, then the CEO will retain cash and invest the money in Treasuries, giving her a new EPS forecast of

$$\underset{\text{Treasuries}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} \;+\; \text{rf} \times \text{Cash}}{\#\text{Shares}} \tag{18a}$$

$$= \mathbb{E}[\text{Non-Cash EPS}] \;+\; \text{rf} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{18b}$$

If the CEO is in charge of a value stock, EY $>$ rf, then she might still choose to keep her cash windfall on balance sheet. But, in this scenario, she would need to spend enough of the money on high-yield projects to overcome her higher earnings yield, CY $>$ EY and ΔCY $>$ EY$-$rf. An EPS-maximizing value-stock CEO that chooses to retain cash would have a new EPS forecast of

$$\underset{\text{Fund Proj}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} \;+\; \text{CY} \times \text{Cash}}{\#\text{Shares}} \tag{19a}$$

$$= \mathbb{E}[\text{Non-Cash EPS}] \;+\; \text{CY} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{19b}$$

When in charge of a value stock, EY $>$ rf, an EPS-maximizing CEO might also choose to return her cash windfall to shareholders. If she used the money to repurchase $\left(\frac{\text{Cash}}{\text{Price}}\right)$ shares at the current market price, then her share count would shrink

$$\underset{\text{Buy Backs}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt}}{\#\text{Shares} - \left(\frac{\text{Cash}}{\text{Price}}\right)} \tag{20a}$$

$$\approx \mathbb{E}[\text{Non-Cash EPS}] + \text{EY} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{20b}$$

The specific rules for calculating EPS are detailed in ASC 260, Earnings per Share. The denominator must reflect a company's weighted-average share count over the course of the fiscal year. After the CEO uses her cash windfall to repurchase shares, the firm's original non-cash earnings will get split across a smaller base, leading to a $+\text{EY} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right)$ accretive pop.

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

$$\text{Cash} = \overbrace{\underbrace{\left(\frac{\text{Cash}}{\#\text{Shares}}\right)}_{\substack{\text{Amount}\\\text{mailed}}} \times \underbrace{\#\text{Shares}}_{\substack{\text{to every}\\\text{shareholder}}}}^{\text{Pay dividend}} = \overbrace{\underbrace{\text{Price}}_{\substack{\text{Amount}\\\text{received}}} \times \underbrace{\left(\frac{\text{Cash}}{\text{Price}}\right)}_{\substack{\text{by those}\\\text{who sell}}}}^{\text{Buy back shares}} \tag{21}$$

Both methods could have similar EPS impacts. They do not. Dividends transfer existing shareholder equity from inside to outside the firm.

Again, 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

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} + 0\% \times \text{Cash}}{\#\text{Shares} - 0} \tag{22a}$$

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

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, by trying to walk this fine line, the guidelines have made it so that dividends are never the most accretive payout policy.

Proposition 2.1. *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* $\left(\frac{\text{Cash}}{\text{\#Shares}}\right)$. *The change in her EPS forecast would be*

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

$\left(\frac{\text{Cash}}{\text{\#Shares}}\right)$ is the size of the dividend payment. The more money mailed to the owner of each share, the larger the effect on that share's slice of the firm's expected earnings. The interesting term is $\max[\text{EY}, \text{CY}] \geq \text{rf}$. For a growth stock, $\text{EY} < \text{rf}$, the most accretive policy is to retain cash and invest the money in Treasuries. Collecting riskfree interest income is a growth stock CEO's highest-yield use of her cash windfall, $\text{CY} = \text{rf}$ and $\max[\text{EY}, \text{CY}] = \text{rf}$. However, an EPS-maximizing value stock would never lend its entire cash windfall to the US government while borrowing from equity markets at a higher rate, $\text{EY} > \text{rf}$. The CEO of such a company would either use her cash to buy back shares or spend some of the money funding higher-yield projects. $\max[\text{EY}, \text{CY}] > \text{rf}$.

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.

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, CY > EY, finds it accretive to retain cash. Dividends are only on the table for value stocks that would otherwise repurchase, EY > CY. Among these firms, the CEO opts for dividends when the outside benefit exceeds the accretive pop from buy backs

$$\text{Pay Dividend} \;=\; 1[\,\text{D4D} > \text{EY} \mid \text{EY} > \text{CY}\,] \tag{24}$$

By repurchasing \$1 of shares, the CEO boosts her EPS forecast by EY × \$1. 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 2.2. *If dividend demand is independent of earnings yield among value stocks at the repurchase margin,* $\text{D4D} \perp \text{EY} \mid \{\text{EY} > \text{CY}\}$*, then value stocks with higher earnings yields are less likely to pay dividends.*

Only value stocks at the repurchase margin consider paying dividends. Among these firms, a higher earnings yield means a higher hurdle: a CEO with EY = 10% only pays a dividend if D4D > 10%, whereas a CEO with EY = 5% requires only D4D > 5%. If dividend demand does not shift up with EY among repurchasers, fewer high-EY firms clear the hurdle. Hence, 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.

Brav et al. (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.

2.3 Accretion, Not Value Creation

Repurchases and dividends deliver identical value to shareholders. Both are transfers, not value-generating activities. A CEO focused on shareholder value would be indifferent between the two. Yet, since 1983—when regulatory constraints on repurchases were relaxed (Grullon and Michaely, 2002)—corporate executives have overwhelmingly preferred buy backs. This revealed preference is evidence that CEOs care about EPS growth for its own sake (cf. Chinco, Hartzmark, and Sussman, 2022).

Consider two firms that both start out with 100M shares and \$500M of expected earnings, $\mathbb{E}[\text{Non-Cash EPS}] = \frac{\$500\text{M}}{100\text{M}} = \$5/\text{sh}$. The only difference between the two companies is their share price:

	Growth	**Value**
Price	\$165/sh	\$100/sh
$\text{PE} = \frac{\text{Price}}{\$5/\text{sh}}$	33×	20×
$\text{EY} = 1/\text{PE}$	3%	5%

Imagine that each firm receives a \$100M cash windfall, or \$1/sh of cash. Both companies can distribute their cash windfall by mailing a \$1 check to the owner of each share. After the dividend, the firm no longer holds the cash, so it earns no interest income—the \$1/sh bypasses the income statement entirely. But shareholders now have an extra \$1 of cash, which they can invest themselves. If they park the \$1 in Treasuries at $\text{rf} = 4\%$, then they will collect $4\% \times \$1 = \$0.04$ of riskfree interest income next year. The income would just show up in their retail brokerage account instead of the firm's income statement.

It turns out that repurchases always deliver exactly \$1 of shareholder value per \$1 of cash, regardless of the impact on next year's EPS forecast. If the growth

stock spends its cash windfall buying back $\left(\frac{\$100\text{M}}{\$165/\text{sh}}\right) \approx 606\text{k}$ shares, then the company's new EPS forecast would be +\$0.03/sh higher

$$\underset{\substack{\text{Buy Backs}\\ \$165/\text{sh}}}{\mathbb{E}[\text{EPS}]} = \frac{\$500\text{M}}{100\text{M} - \left(\frac{\$100\text{M}}{\$165/\text{sh}}\right)} \approx \$5.03/\text{sh} \tag{25}$$

Given the company's PE = 33×, using \$1/sh of cash to buy back shares boosts the share price by $(\$5.03/\text{sh} - \$5.00/\text{sh}) \times 33 = \$1/\text{sh}$.

The value stock's lower share price (\$100/sh vs. \$165/sh) means that its CEO can buy back more shares with the same amount of cash (1M vs. 606k), resulting in a larger accretive pop (+\$0.05/sh vs. +\$0.03/sh)

$$\underset{\substack{\text{Buy Backs}\\ \$100/\text{sh}}}{\mathbb{E}[\text{EPS}]} = \frac{\$500\text{M}}{100\text{M} - \left(\frac{\$100\text{M}}{\$100/\text{sh}}\right)} \approx \$5.05/\text{sh} \tag{26}$$

But the value stock also has a lower PE ratio (20× vs. 33×). So its larger EPS gain still only adds $(\$5.05/\text{sh} - \$5.00/\text{sh}) \times 20 = +\$1/\text{sh}$ to the firm's share price.

Buy backs vs. dividends has a big impact on a firm's EPS forecast, but not on shareholder value. What matters for shareholder value is the retain vs. return decision. Suppose the growth stock holds onto the \$100M cash windfall and invests the money in Treasuries. The resulting riskfree interest income would add +\$0.04/sh to the firm's EPS forecast

$$\underset{\text{Treasuries}}{\mathbb{E}[\text{EPS}]} = \$5.00/\text{sh} + \underset{4\%}{\text{rf}} \times \left(\frac{\text{Cash}}{\underset{\$1/\text{sh}}{\#\text{Shares}}}\right) = \$5.04/\text{sh} \tag{27}$$

However, because equity markets are pricing the firm's earnings at a premium multiple, this extra +\$0.04/sh would add $(\$5.04/\text{sh} - \$5.00/\text{sh}) \times 33 = \$1.32/\text{sh}$ to the share price, creating +\$0.32/sh of value.

The value stock can also lend \$100M to the US government. But, given the company's lower share price, the resulting +\$0.04/sh bump in earnings would only add $(\$5.04/\text{sh} - \$5.00/\text{sh}) \times 20 = \$0.80/\text{sh}$ to the value stock's price, costing the firm's shareholders $\$1.00/\text{sh} - \$0.80/\text{sh} = -\$0.20/\text{sh}$.

a) $\Delta\mathbb{E}$[EPS]	3%, 33× Growth Stock	5%, 20× Value Stock
Hold Treasuries	+$0.04	+$0.04
Pay Dividend	+$0.00	+$0.00
Buy Back Shares	+$0.03	+$0.05
b) ΔShareholder Value	**Growth Stock**	**Value Stock**
Hold Treasuries	+$1.32	+$0.80
Pay Dividend	+$1.00	+$1.00
Buy Back Shares	+$1.00	+$1.00

Table 1. (Panel a) Income generated by a $1/sh cash windfall under different payout policies. **(Panel b)** Market value of this income. Retention creates or destroys value depending on whether EY $\lesseqgtr$ rf. Dividends and repurchases both deliver exactly $1—no value created, no value destroyed. Yet repurchases are accretive for the value stock, making them the preferred distribution channel.

Table 1 summarizes. Panel (a) shows the income each policy generates. Panel (b) shows how markets value that income. Dividends and repurchases both deliver exactly $1 of value per $1 of cash. The only policy that creates or destroys value is retention, and it depends on whether EY $\lesseqgtr$ rf. But while dividends and repurchases are equivalent from a shareholder-value perspective, they have very different effects on EPS. Repurchases are the most accretive option for the value stock; the growth stock gets the largest EPS gain from holding Treasuries. If a CEO is judged on EPS growth, buy backs will dominate.

This is a key piece of evidence that CEOs are EPS maximizers. A value-maximizing CEO would be indifferent between repurchases and dividends—both deliver $1 of value per $1 of cash. An EPS-maximizing CEO strictly prefers repurchases because they boost her EPS forecast. The revealed preference for buy backs from 1984 onward tells us which objective is operative.

One might think that longer-term shareholders would correct these distortions. Not so. We have already seen why present-value logic is unhelpful for understanding the choice between repurchases and dividends. Both deliver identical value, so long-term shareholders have no reason to push back on a CEO's preference for buy backs.

But what about the retain-vs-return decision? Here, longer-term considerations can actually reinforce EPS-maximizing behavior. In 1996, Microsoft was trading at 31×, giving the firm an earnings yield well below Treasuries, $\text{rf} = 6.2\%$. Equity markets were pricing the riskfree interest income on the company's \$7B of cash at $(6.2\% \times \$7\text{B}) \times 31 \approx \$13\text{B}$, which is a +\$6B premium over face value. A short-term EPS maximizer would retain cash because $\text{rf} > \text{EY}$. But long-term shareholders wanted the same thing: they would collect +\$6B of extra value every year cash stays on balance sheet.

3 Simulation Exercise

This section describes a simulation that illustrates our model's key predictions. In subsection 3.1, we describe the nuts and bolts of how the simulation works. Next, in subsection 3.2, we signpost our model's main predictions. Finally, in subsection 3.3, we highlight how our simulation exercise matches important time-series trends in aggregate payouts.

3.1 Numerical Details

We simulate the payout decision of $N = 1{,}000{,}000$ different EPS-maximizing firms. Each firm is defined by just 5 input parameters: its PE ratio, PE_n; the riskfree rate, rf; the average income yield on the projects a firm could fund with cash, IY_n; the share of cash that a firm can devote to such projects, θ_n; and, the benefit of paying a dividend for reasons outside our model, D4D_n.

Each stock's PE ratio is drawn $\text{PE}_n \overset{\text{IID}}{\sim} \text{LogNormal}(\log \overline{\text{PE}}, 40\%)$. A standard deviation of 40% implies that realized PE ratios will typically be somewhere in the range $60\% \times \overline{\text{PE}} < \text{PE}_n < 140\% \times \overline{\text{PE}}$. The average PE ratio and the riskfree rate take values that reflect $i = 1, \ldots, 7$ different market regimes. See Table 2. The DotCom boom lasted 4 years, or $4/40 = 10\%$ of the sample period. So, we have $10\% \times 1\text{M} = 100\text{k}$ firms that face a Treasury yield of $\text{rf} = 6\%$ and have PE ratios drawn from a log-normal distribution with mean $\log(29\times) \approx 3.7$.

i	Regime	Length		Input Params rf	Input Params $\overline{\text{PE}}$	Sample Avg EY−rf	Sample Avg Value
1	Volcker Era	1980-‘84	5	12%	9×	−0.9%	38%
2	Late 80s	1985-‘90	6	9%	14×	−1.3%	28%
3	Mid 90s	1991-‘96	6	7%	19×	−1.3%	24%
4	DotCom Boom	1997-‘00	4	6%	29×	−2.3%	8%
5	Mid 00s	2003-‘07	5	5%	20×	+0.4%	50%
6	Post-GFC ZIRP	2010-‘19	10	2%	20×	+3.4%	98%
7	Current	2022-‘25	4	4%	25×	+0.3%	50%

Table 2. Description of $i = 1, \ldots, 7$ different market regimes over the period from 1980 to 2025. The columns marked “Input Params” show representative values of the 10-year Treasury yield, rf, and the average PE ratio, $\overline{\text{PE}}$, during a given regime. The columns marked “Sample Avg” show the average excess earnings yield, Excess EY = EY−rf, for data points in that regime as well as the fraction of data points that correspond to value stocks, Is Value Stock$_n = 1[\text{EY}_n > \text{rf}]$.

Every firm can collect riskfree interest income next year by investing cash in Treasuries. This option is universal. Companies can also use some of their cash to fund higher-yield projects. The average income yield on a firm’s investment opportunities is drawn IID from a uniform distribution, $\text{IY}_n \overset{\text{IID}}{\sim} \text{Unif}(0\%, 40\%)$. A firm can spend up to 80% of its available cash on higher-yield projects, $\theta_n \overset{\text{IID}}{\sim} \text{Unif}(0\%, 80\%)$. It is important to emphasize that this θ_n is an upper bound. Growth stocks and the subset of value stocks that return cash to shareholders will use none of their cash for project funding.

$\text{D4D}_n \overset{\text{IID}}{\sim} \text{Beta}(1, 4) \times 10\%$ represents the benefit that a firm might get from paying a dividend. The Beta distribution has support $[0, 1]$; the trailing factor of 10% implies that $0\% \leq \text{D4D}_n \leq 10\%$. The choices of $\alpha = 1$ and $\beta = 4$ give a right-skewed density function with a mean of $\mathbb{E}[\text{D4D}_n] = \left(\frac{1}{1+4}\right) \times 10\% = 2\%$.

Algorithm 1 shows the full simulation procedure. It fits on a single page because there is no complicated belief-formation feedback loop to worry about. We are not using any parameters related to how the CEO expects her payout policy to impact the company’s future share price. There is a reason for this: these variables do not affect an EPS maximizer’s decision-making.

An EPS-maximizing CEO takes her firm’s current PE ratio as given. She uses the PE_n drawn at the start of the loop to calculate her earnings cost of equity

Algorithm 1: Simulation Procedure

Input: Firms $n = 1, \ldots, 10^6$; Regimes $i = 1, \ldots, 7$;

for each firm n **do**

```
// Firm primitives
  PE_n ~ LogNormal(log PE-bar[i], 40%); // Price-to-earnings ratio
  IY_n ~ Unif(0%, 40%);                 // Income yield on projects
   θ_n ~ Unif(0%, 80%);                 // Potential cash usage rate
D4D_n ~ Beta(1, 4) × 10%;               // Demand for dividends

// Cost of equity
 EY_n ← 1/PE_n;                         // Earnings yield

// Payout policy
if EY_n < rf[i] then
    // Growth stocks
     Retain Cash;                       // Leave cash in Treasuries
else
    // Value stocks
     CY_n ← rf[i] + θ_n·{IY_n − rf[i]}; // Do more with the money
    if CY_n > EY_n then
        Retain Cash;
    else
        if D4D_n > EY_n then
            Pay Dividend;
        else
            Repurchase;
```

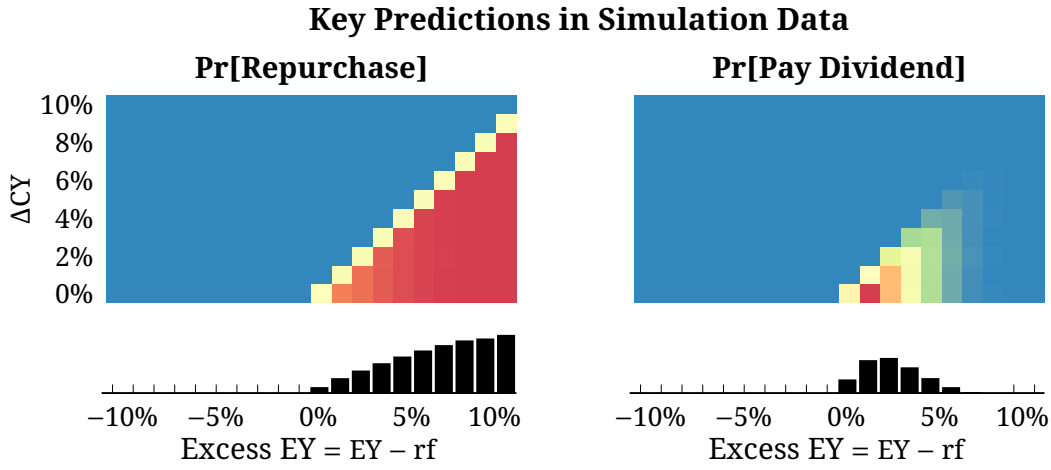


Figure 3. The x-axis is excess earnings yield, EY−rf, in [1%pt] bins. **(Left)** Share of simulated firms that found it accretive to return cash, EY > CY. **(Right)** Share that paid a dividend, 1[D4D > EY | EY > CY]. **(Top)** Heatmaps showing the average outcome for simulated firms in [1%pt × 1%pt] bins when sorting on excess earnings yield (x-axis) and yield boost, ΔCY = CY−rf (y-axis). Colors go from HIGH TO MEDIUM TO LOW. **(Bottom)** BLACK BARS show the average outcome for all firms with the same excess earnings yield.

capital, $\text{EY}_n = \left(\frac{1}{\text{PE}_n}\right)$. She then chooses the payout policy that leads to the highest EPS forecast for next year. However, an EPS-maximizing CEO evaluates all her options using the same initial PE_n. There is no anticipated future repricing.

Of course, a company's PE ratio will not remain the same forever. The people who run large public companies know this. But when corporate executives evaluate payout decisions, they typically use current market prices rather than forecasting how today's choices will affect future valuations. Our framework captures this practical reality: managers compare $\text{EY}_n = \left(\frac{1}{\text{PE}_n}\right)$ to the riskfree rate using today's stock price.

3.2 Key Predictions

Figure 3 summarizes the results of our simulation exercise in a way that showcases each of our max EPS model's main predictions. The figure contains four panels. The left two describe the share of firms that found it accretive

to return cash to shareholders by repurchasing shares. The right two panels describe the share that chose to pay a dividend. All panels have the same x-axis, which shows a simulated firm's excess earnings yield, Excess EY = EY−rf. We assign observations to [1%pt] bins.

The max EPS paradigm says that an EPS-maximizing CEO will adopt a very different payout policy, depending on whether she is running a growth stock or a value stock. This divergence is clearly evident in Figure 3 where none of the panels displays bilateral symmetry. Growth stocks are on the left side of each panel, $\text{EY} < \text{rf} \rightsquigarrow \text{Excess EY} < 0\%\text{pt}$. Value stocks are to the right of zero, $\text{EY} > \text{rf} \rightsquigarrow \text{Excess EY} > 0\%\text{pt}$.

Will a company find it accretive to return cash to shareholders? The answer to this question depends on the firm's excess earnings yield, Excess EY = EY−rf, as well as its investment opportunity set, ΔCY = CY−rf. The top left panel uses a heatmap to depict how. The left side is all blue because growth stocks always retain cash. These firms fund high-yield projects by issuing equity. The right side shows a red triangle because EPS-maximizing value stocks return cash to shareholders whenever CY < EY.

This same pattern appears in the bottom left panel. This univariate histogram shows how the likelihood of accretive buy backs varies solely with excess earnings yield, Excess EY. The height of each black bar matches the weighted average color of the column of boxes directly above it. Growth stocks have no visible bar because they always retain cash. Value stocks with higher excess earnings yields are more likely to return cash. We do not see a perfectly straight 45° line in the histogram because the [1%pt × 1%pt] squares in the top-left panel do not have the same number of observations.

Value stocks have earnings yields above the riskfree rate, EY > rf, which implies that deep value stocks on the far right of each panel will have low PE ratios, $\text{PE} = \left(\frac{1}{\text{EY}}\right) < \left(\frac{1}{\text{rf}}\right)$. You might think that low PE companies tend to return cash to shareholders because these firms have worse investment opportunities. This is not how our model works. We sample every firm's IY_n and θ_n from the exact same distribution. Deep value stocks, EY ≫ rf, are more likely to return cash because they face a higher opportunity cost of retention.

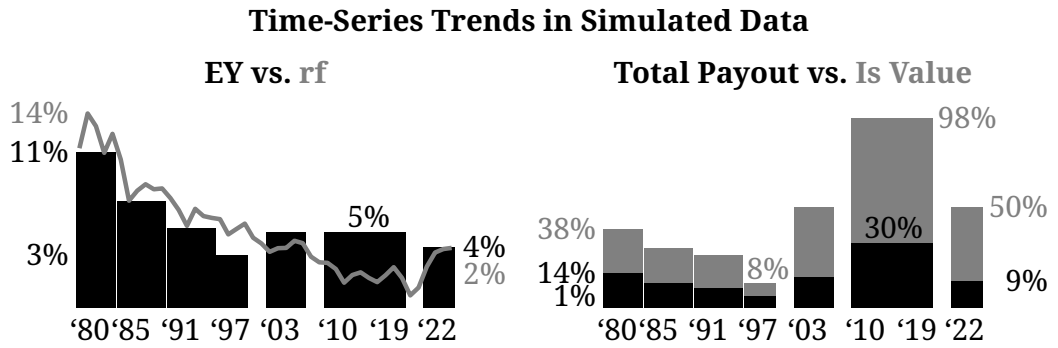


Figure 4. (Left) GRAY LINE is the 10-year Treasury yield from 1980 to 2025. BLACK BARS show the average earnings yield for simulated data points in each of 7 different market regimes over this time period. **(Right)** GRAY BARS show the share of simulated data points in each regime that are value stocks, EY $>$ rf. BLACK BARS show the share that found it accretive to return cash, EY $>$ CY.

The upper right panel shows a heatmap describing the likelihood of paying a dividend as a function of Excess EY (x-axis) and ΔCY (y-axis). An EPS maximizer might choose to pay a dividend for a variety of reasons that are outside our model. Value stocks select this option when the firm's demand for dividends exceeds the accretive pop from repurchases, D4D $>$ EY.

Among value stocks, dividends are least painful when Excess EY $\approx$ 0%pt. We call these firms "marginal value stocks". Both panels on the right show that they are more likely to pay dividends. In the top-right panel, the yellow boxes for value stocks are clustered to the right of Excess EY = 0%pt. In the bottom-right panel, value stocks have black bars that get smaller as Excess EY increases.

3.3 Time-Series Trends

We designed our simulation to illustrate our model's cross-sectional predictions. Which companies will find it accretive to return cash? Which ones are most likely to pay dividends? It was never intended to be interpreted as a quantitative calibration. We did not choose parameter values and/or functional forms with this goal in mind. Thus, it is noteworthy that the simulated data is able to match salient time-series trends. Figure 4 shows a decline of corporate

payouts during the 1990s. Payouts then reemerge in the 2000s and really take off in the 2010s.

Our max EPS model generates these patterns almost for free. They reflect a composition effect. It is only accretive for value stocks to return cash to shareholders. At the start of the 1980s, PE ratios were low and Treasury yields were high. The next two decades saw PE ratios soar and Treasury yields fall. By the end of the 1990s, equity multiples averaged 29× and the riskfree rate was in the neighborhood of rf = 6%. Corporate payouts disappeared because 9 out of 10 companies were growth stocks.

The DotCom era ended with a pop. PE ratios fell. Treasury yields did likewise. These two forces combined to turn 9 out of 10 companies into value stocks. At the start of the 2010s, the riskfree rate hovered below rf $\approx$ 2% while the average company had an earnings yield of around 5%. With so many value stocks in the market, it was natural that corporate payouts would rise.

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 + ϵ). 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 3. 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.

4.2 Who Distributes Cash?

Proposition 1.2 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 5 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

	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 3. 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 $(t+1)$.

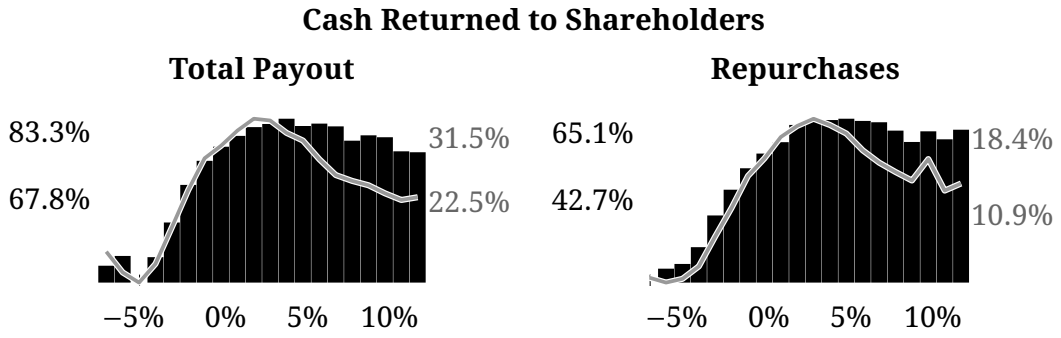


Figure 5. The x-axis is excess earnings yield, Excess EY = EY−rf, in [1%pt] bins. Growth stocks (EY < rf) are left of zero. Value stocks (EY > rf) are to the right. BLACK BARS show the probability that a company returns cash in year $(t+1)$. GRAY LINE represents the percent of available cash returned 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.

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 maximizer's preference.

Table 4 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

$$100 \times \text{Return Cash}_{n,t+1} \overset{\text{OLS}}{\sim} \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots \tag{28}$$

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.

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 4. 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.

Panel (b) of Table 4 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?

$$\text{Total Payout Rate}_{n,t+1} \overset{\text{OLS}}{\sim} \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots \tag{29}$$

The baseline coefficient is $\hat{\beta} = 9.0\%\text{pt}$, 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 2.1 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 5 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 repurchasing jumps. Panel (b) shows that value stocks also repurchase at a higher rate, returning 7.5%pt more of their available cash via buy backs.

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 6 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.

a) Dependent Variable: 100 × Repurchase

	(1)	(2)	(3)	(4)	(5)
Is Value Stock	22.4***	18.8***	11.5***	24.7***	17.0***
	(2.0)	(1.5)	(1.2)	(2.3)	(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***	6.5***	4.7***	8.1***	5.7***
	(0.8)	(0.7)	(0.6)	(1.0)	(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 5. 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.

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 6. 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 $\log_2(\text{MCap})$, ROA, B/M, and Tangibility. We do not report the intercept, fixed-effect coefficients, or coefficients on control variables.

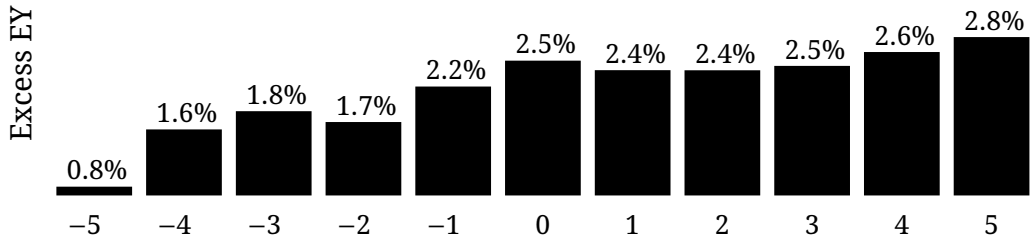


Figure 6. Firm-year observations from 1984 to 2023. x-axis shows years relative to dividend initiation, which takes place at event time 0. Negative values are prior to initiation. Positive values are post initiation. BLACK BARS report average excess earnings yield, Excess EY = EY − rf, among firms that are the same number of years away from initiation.

4.3 Who Pays a Dividend?

Proposition 2.2 predicts that dividend payers should be marginal value stocks with earnings yields just above the riskfree rate, EY = rf + ϵ. 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 6 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 7 tests our prediction by splitting the population of value stocks into two groups: marginal value stocks, 0%pt < Excess EY < 5%pt, and deep value stocks, Excess EY > 5%pt. The omitted category is growth stocks, Excess EY < 0%pt. With the selection effect from Figure 6 in mind, we include PE fixed effects. Thus, our results come from comparing firm-years with the same PE ratio but different excess earnings yields.

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 7. 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.

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 4, and the remaining columns in Table 7 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 buy backs. While marginal value stocks also repurchase more than growth stocks (23.5%pt), the difference is

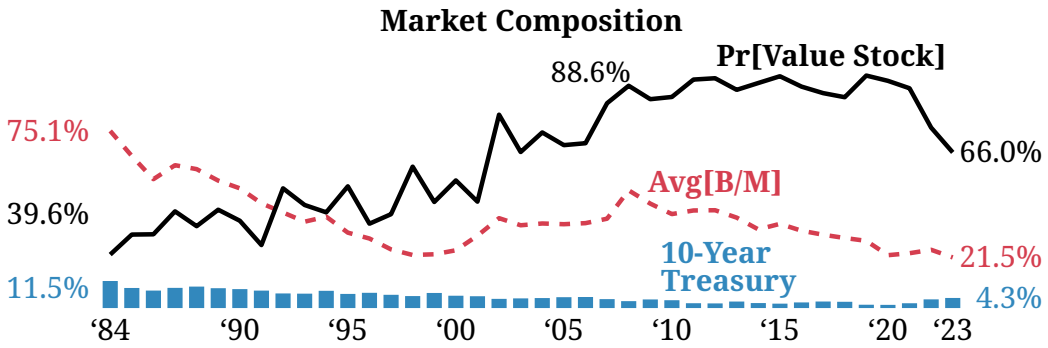


Figure 7. Annual data from 1984 to 2023. **10-Year Treasury** shows average 10-year Treasury yield for firms in year t. **Pr[Value Stock]** is percent of firms with a positive excess earnings yield in year t, Excess EY $> 0\%$. **Avg[B/M]** depicts the value-weighted average book-to-market ratio for firms in year t.

smaller than for deep value. This is exactly what Proposition 2.2 predicts: the 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 7 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 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 8 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 buy backs.

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 8 during the late 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

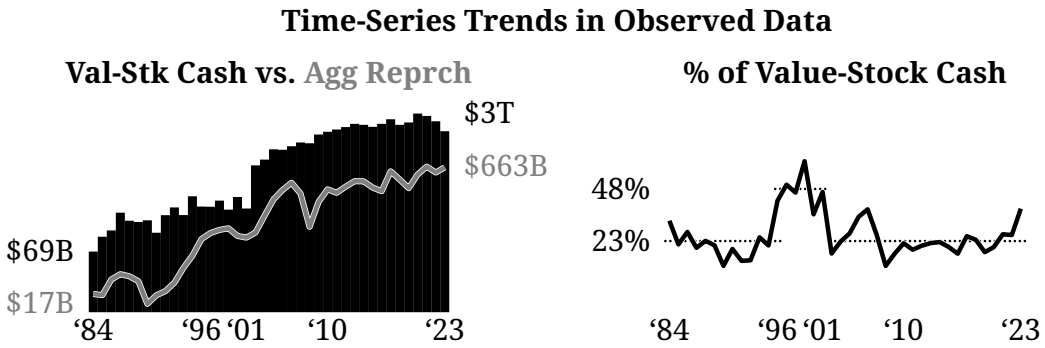


Figure 8. Annual data from 1984 to 2023. **(Left)** y-axis is on a log scale. BLACK BARS show the total amount of cash available to value stocks each year. GRAY LINE reports the dollar value of repurchases by all firms. **(Right)** **BLACK LINE** shows aggregate repurchases by all firms as a percent of cash available to value stocks each year. Dotted lines denote sample averages.

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 = 4% is enough to cover a EY = 3% 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.

EPS maximizers consider investment opportunities in order of accretiveness. A value stock will first fund projects that yield more than EY, then turn to repurchases. This sequencing is implicit in the definition of free cash flow—operating cash flows net of interest payments and capital expenditures. Why deduct CapEx before calling cash "free to distribute"? Because accretive investment takes precedence over accretive repurchases.

Accounting standards 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—clientele effects, signaling motives, etc.

Our "dominated dividends" result is more useful than a classic irrelevance theorem. In Miller and Modigliani (1961), 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 buy backs. 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.

Accounting standards also explain key facts from the survey literature, such as why CEOs describe dividends as long-term commitments. A repurchase delivers an immediate accretive pop. A dividend has no impact on next year's income statement. So, if a CEO is going to forgo the accretive benefits of buy backs, the benefit must be longer-term in nature. Otherwise, why would an EPS maximizer ever pay one?

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 buy backs 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.

References

Allen, F., A. Bernardo, and I. Welch (2000). A theory of dividends based on tax clienteles. Journal of Finance 55(6), 2499–2536.

Baker, M., B. Mendel, and J. Wurgler (2016). Dividends as reference points: A behavioral signaling approach. Review of Financial Studies 29(3), 697–738.

Baker, M., R. Ruback, and J. Wurgler (2007). Behavioral corporate finance. In Handbook of Empirical Corporate Finance, pp. 145–186.

Baker, M., J. Stein, and J. Wurgler (2003). When does the market matter? stock prices and the investment of equity-dependent firms. Quarterly Journal of Economics 118(3), 969–1005.

Baker, M. and J. Wurgler (2004a). A catering theory of dividends. Journal of Finance 59(3), 1125–1165.

Baker, M. and J. Wurgler (2004b). Appearing and disappearing dividends: The link to catering incentives. Journal of Financial Economics 73(2), 271–288.

Becker, B., Z. Ivković, and S. Weisbenner (2011). Local dividend clienteles. Journal of Finance 66(2), 655–683.

Ben-David, I. and A. Chinco (2025a). Capital budgeting for EPS maximizers. Working paper.

Ben-David, I. and A. Chinco (2025b). EPS-maximizing capital structure. Working paper.

Ben-David, I. and A. Chinco (2025c). Expected EPS × Trailing PE: Pricing without discounting. Working paper.

Benartzi, S., R. Michaely, and R. Thaler (1997). Do changes in dividends signal the future or the past? Journal of Finance 52(3), 1007–1034.

Brav, A., J. Graham, C. Harvey, and R. Michaely (2005). Payout policy in the 21st century. Journal of Financial Economics 77(3), 483–527.

Brav, A., J. Graham, C. Harvey, and R. Michaely (2008). Managerial response to the May 2003 dividend tax cut. Financial Management 37(4), 611–624.

Chetty, R. and E. Saez (2005). Dividend taxes and corporate behavior: Evidence from the 2003 dividend tax cut. Quarterly Journal of Economics 120(3), 791–833.

Chinco, A., S. Hartzmark, and A. Sussman (2022). A new test of risk factor relevance. Journal of Finance 77(4), 2183–2238.

Damodaran, A. (2014). Applied corporate finance (4 ed.). John Wiley & Sons.

DeAngelo, H. and L. DeAngelo (2006). The irrelevance of the MM dividend-irrelevance theorem. Journal of Financial Economics 79(2), 293–315.

DeAngelo, H., L. DeAngelo, and D. Skinner (2000). Special dividends and the evolution of dividend signaling. Journal of Financial Economics 57(3), 309–354.

DeAngelo, H., L. DeAngelo, and R. Stulz (2006). Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory. Journal of Financial Economics 81(2), 227–254.

Fama, E. and K. French (1993). Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33(1), 3–56.

Fama, E. and K. French (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay? Journal of Financial Economics 60(1), 3–43.

Fama, E. and K. French (2002). Testing trade-off and pecking order predictions about dividends and debt. Review of Financial Studies 15(1), 1–33.

Graham, J. and A. Kumar (2006). Do dividend clienteles exist? Evidence on dividend preferences of retail investors. Journal of Finance 61(3), 1305–1336.

Grinstein, Y. and R. Michaely (2005). Institutional holdings and payout policy. Journal of Finance 60(3), 1389–1426.

Grullon, G. and R. Michaely (2002). Dividends, share repurchases, and the substitution hypothesis. Journal of Finance 57(4), 1649–1684.

Grullon, G., R. Michaely, and B. Swaminathan (2002). Are dividend changes a sign of firm maturity? Journal of Business 75(3), 387–424.

Hartzmark, S. and D. Solomon (2013). The dividend month premium. Journal of Financial Economics 109(3), 640–660.

Hartzmark, S. and D. Solomon (2015). Juicing the dividend yield: Mutual funds and the demand for dividends. Journal of Financial Economics 116(3), 433–451.

Hartzmark, S. and D. Solomon (2019). The dividend disconnect. Journal of Finance 74(5), 2153–2199.

Kahle, K. and R. Stulz (2021). Why are corporate payouts so high in the 2000s? Journal of Financial Economics 142(3), 1359–1380.

Miller, M. and F. Modigliani (1961). Dividend policy, growth, and the valuation of shares. Journal of Business 34(4), 411–433.

Nikolov, B. and T. Whited (2014). Agency conflicts and cash: Estimates from a dynamic model. Journal of Finance 69(5), 1883–1921.

Opler, T., L. Pinkowitz, R. Stulz, and R. Williamson (1999). The determinants and implications of corporate cash holdings. Journal of Financial Economics 52(1), 3–46.

Riddick, L. and T. Whited (2009). The corporate propensity to save. Journal of Finance 64(4), 1729–1766.

Sharpe, W. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. Journal of Finance 19(3), 425–442.

Shefrin, H. and M. Statman (1984). Explaining investor preference for cash dividends. Journal of Financial Economics 13(2), 253–282.

Sialm, C. (2009). Tax changes and asset pricing. American Economic Review 99(4), 1356–1383.

Sialm, C. and L. Starks (2012). Mutual fund tax clienteles. Journal of Finance 67(4), 1397–1422.

Thaler, R. (1999). Mental accounting matters. Journal of Behavioral Decision Making 12(3), 183–206.

Warren Buffett (1984). Letter to shareholders of Berkshire Hathaway Inc. Annual report, Berkshire Hathaway.

A Technical Appendix

Proof. **(Proposition 1.1)**

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

$$\mathrm{f}(\epsilon) = \frac{\mathbb{E}[\text{NOI}] - \bar{\imath} \times \text{Debt} + \text{rf} \times \{\text{Cash} - \epsilon\}}{\#\text{Shares} - \left(\frac{\epsilon}{\text{Price}}\right)} \tag{A.1a}$$

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

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

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

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

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

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

$$\mathrm{f}'(0) = \frac{\mathbb{E}[\text{Earnings}] - \text{rf} \times \#\text{Shares} \cdot \text{Price}}{\#\text{Shares}^2 \cdot \text{Price}} \tag{A.3a}$$

$$= \underbrace{\left(\frac{\mathbb{E}[\text{Earnings}]}{\#\text{Shares} \cdot \text{Price}}\right)}_{=\text{EY}} \times \left(\frac{1}{\#\text{Shares}}\right) - \left(\frac{\text{rf}}{\#\text{Shares}}\right) \tag{A.3b}$$

We can use a Taylor approximation to write a company's EPS forecast after using all its cash to repurchase shares as

$$\mathrm{f}(\text{Cash}) \approx \mathrm{f}(0) + \{\mathrm{f}'(0)\} \times \text{Cash} \tag{A.4a}$$

$$= \mathbb{E}[\text{EPS}] + \left\{ \text{EY} \times \left(\frac{1}{\#\text{Shares}}\right) - \left(\frac{\text{rf}}{\#\text{Shares}}\right) \right\} \times \text{Cash} \tag{A.4b}$$

$$= \underbrace{\left\{ \mathbb{E}[\text{EPS}] \; - \; \left(\frac{\text{rf} \times \text{Cash}}{\#\text{Shares}}\right) \right\}}_{=\mathbb{E}[\text{Non-Cash EPS}]} \; + \; \text{EY} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{A.4c}$$

Suppose a CEO retains cash and uses the money to generate an income yield of $\text{CY} \geq \text{rf}$. *In that case, her company's EPS forecast will be given by*

$$\underset{\text{Retain}}{\mathbb{E}[\text{EPS}]} = \frac{\mathbb{E}[\text{NOI}] - \bar{\text{i}} \times \text{Debt} \quad + \quad \text{CY} \times \text{Cash}}{\#\text{Shares}} \tag{A.5a}$$

$$= \mathbb{E}[\text{Non-Cash EPS}] + \text{CY} \times \left(\frac{\text{Cash}}{\#\text{Shares}} \right) \tag{A.5b}$$

This result follows from subtracting Equation (A.5b) *from Equation* (A.4c). *The expected non-cash EPS in each expression cancel each other out. All that remains is* $\{\text{EY} - \text{CY}\} \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right)$. □

Proof. **(Proposition 1.2)**

By Lemma 1.2, an EPS-maximizing manager funds accretive projects using her cheapest source of capital, $\text{FY} = \min[\text{EY}, \text{rf}, \text{i}]$. *Since we assume* $\text{i} \geq \text{rf}$, *we have* $\text{FY} = \min[\text{EY}, \text{rf}]$.

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

By Proposition 1.1, retaining cash is accretive if $\text{CY} > \text{EY}$. *Since* $\text{CY} = \text{rf}$ *and* $\text{EY} < \text{rf}$ *by assumption, we have* $\text{CY} = \text{rf} > \text{EY}$. *Thus growth stocks always find it accretive to retain cash.*

Part #2: Value Stocks ($\text{EY} > \text{rf}$*). When* $\text{EY} > \text{rf}$, *cash is the cheapest source of capital,* $\text{FY} = \text{rf}$. *An EPS-maximizing CEO will fund accretive projects using internal cash reserves whenever possible,* $\theta > 0$. *Her blended cash yield is*

$$\text{CY} \quad = \quad (1-\theta) \cdot \text{rf} \quad + \quad \theta \cdot \text{IY} \quad = \quad \text{rf} + \theta \cdot \{\text{IY} - \text{rf}\} \tag{A.6}$$

By Proposition 1.1, retaining cash is accretive if $\text{CY} > \text{EY}$. *Substituting the expression for* CY, *this requires*

$$\text{rf} + \theta \cdot \{\text{IY} - \text{rf}\} \quad > \quad \text{EY} \tag{A.7}$$

Rearranging yields

$$\Delta\text{CY} \quad = \quad \theta \cdot \{\text{IY} - \text{rf}\} \quad > \quad \text{EY} - \text{rf} \tag{A.8}$$

If this inequality holds, the value stock retains cash. Otherwise, it returns cash to shareholders by repurchasing shares. □

Proof. **(Corollary 1.2a)**

By Proposition 1.2, an EPS-maximizing value stock ($\mathrm{EY} > \mathrm{rf}$*) retains cash if and only if*

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

The break-even condition is thus

$$\theta\cdot\{\mathrm{IY}-\mathrm{rf}\} \;=\; \mathrm{EY}-\mathrm{rf} \tag{A.10}$$

Solving for the minimum usage rate that makes cash retention accretive gives

$$\theta_{\min} \;=\; \frac{\mathrm{EY}-\mathrm{rf}}{\mathrm{IY}-\mathrm{rf}} \tag{A.11}$$

For cash retention to be accretive, the value stock must have $\theta > \theta_{\min}$*. Note that* $\theta_{\min} > 0$ *for all value stocks* $\mathrm{EY} > \mathrm{rf}$ *(value stock) and* $\mathrm{IY} > \mathrm{rf}$ *(projects are high-yield by assumption). A company can have* $\theta_{\min} > 1$*, implying that retention is never accretive, no matter how much cash it deploys in projects.* □

Proof. **(Corollary 1.2b)**

Consider an EPS-maximizing value stock with $\mathrm{EY} > \mathrm{rf}$*. Suppose the firm finds it accretive to retain cash, i.e.,* $\mathrm{CY} > \mathrm{EY}$*. By Proposition 1.2, this requires*

$$\Delta\mathrm{CY} \;=\; \theta\cdot\{\mathrm{IY}-\mathrm{rf}\} \;>\; \mathrm{EY}-\mathrm{rf} \;>\; 0 \tag{A.12}$$

where the second inequality follows from $\mathrm{EY} > \mathrm{rf}$*.*

Since $\theta \in [0, 1)$*, we have* $\theta\cdot\{\mathrm{IY}-\mathrm{rf}\} < \mathrm{IY}-\mathrm{rf}$*. When we combine this fact with the inequality above, we get*

$$\mathrm{IY}-\mathrm{rf} \;>\; \theta\cdot\{\mathrm{IY}-\mathrm{rf}\} \;>\; \mathrm{EY}-\mathrm{rf} \tag{A.13}$$

Adding rf *to all terms yields* $\mathrm{IY} > \mathrm{EY}$*.*

Thus, for cash retention to be accretive for a value stock, the income yield on cash-funded projects must exceed the firm's earnings yield. Equivalently, project funding must offer a higher yield than share repurchases. □

Proof. **(Proposition 1.3)**

We have to consider the usual two cases: growth and value.

Growth stocks, $\mathrm{EY} < \mathrm{rf}$*. By Proposition 1.2, growth stocks always retain cash.*

These firms contribute \$0 *to aggregate payouts.*

Value stocks, $\text{EY} > \text{rf}$. *If the nth company is a value stock, its EPS-maximizing CEO will return cash if* $\text{EY}_n > \text{CY}_n$. *Let* π_n *denote the probability of this outcome for the nth stock*

$$\pi_n \;=\; \Pr[\,\theta_n \cdot \{\text{IY}_n - \text{rf}\} < \text{Excess EY}_n \,|\, \text{rf}\,] \;>\; 0 \tag{A.14}$$

Let $\bar{\pi}$ *denote the probability that a randomly selected value stock will return cash. This is just a weighted average*

$$\bar{\pi} \;=\; \sum_{n=1}^{N} \left(\frac{\text{Cash}_n \times 1[\text{EY}_n > \text{rf}]}{\sum_{n'=1}^{N} \text{Cash}_{n'} \times 1[\text{EY}_{n'} > \text{rf}]} \right) \times \pi_n \tag{A.15}$$

If we assume that there is always at least 1 *value stock that returns cash and* 1 *value stock that retains cash, then this weighted average will be bounded away from zero and one,* $0 < \bar{\pi} < 1$.

By summing across all firms, we can thus write the expected amount of cash that all firms collectively return to shareholders as

$$\mathbb{E}[\text{Aggregate Payout}] \;=\; \sum_{n=1}^{N} \text{Cash}_n \times 1[\text{EY}_n > \text{rf}] \times \pi_n \tag{A.16a}$$

$$\propto \; \sum_{n=1}^{N} \text{Cash}_n \times 1[\text{EY}_n > \text{rf}] \tag{A.16b}$$

where $\bar{\pi}$ *denotes the constant of proportionality.* □

Proof. **(Proposition 2.1)**

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 (22)*, paying a dividend yields*

$$\underset{\text{Dividend}}{\mathbb{E}[\text{EPS}]} \;=\; \mathbb{E}[\text{Non-Cash EPS}] \tag{A.17}$$

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* (18) *and* (20)

$$\underset{\text{Optimal}}{\mathbb{E}}[\text{EPS}] \;=\; \mathbb{E}[\text{Non-Cash EPS}] \;+\; \max[\text{EY}, \text{CY}] \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{A.18}$$

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

$$\underset{\text{Dividend}}{\Delta\mathbb{E}}[\text{EPS}] \;=\; \underset{\text{Dividend}}{\mathbb{E}}[\text{EPS}] \;-\; \underset{\text{Optimal}}{\mathbb{E}}[\text{EPS}] \tag{A.19}$$

$$=\; -\max[\text{EY}, \text{CY}] \times \left(\frac{\text{Cash}}{\#\text{Shares}}\right) \tag{A.20}$$

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 2.2)**

By Equation (24)*, a value stock at the repurchase margin (*$\text{EY} > \text{CY}$*) pays a dividend if* $\text{D4D} > \text{EY}$. *The probability of paying a dividend among such firms is*

$$\Pr[\text{Pay Dividend} \mid \text{EY} > \text{CY}] \;=\; \Pr[\text{D4D} > \text{EY} \mid \text{EY} > \text{CY}] \tag{A.21}$$

If $\text{D4D} \perp \text{EY} \mid \{\text{EY} > \text{CY}\}$*, then the conditional distribution of* D4D *does not vary with* EY *among repurchasers. The probability of paying a dividend is thus*

$$\Pr[\text{D4D} > \text{EY} \mid \text{EY} > \text{CY}] \;=\; 1 - \text{CDF}(\text{EY}) \tag{A.22}$$

where $\text{CDF}(\cdot)$ *is the CDF of* D4D *among value stocks at the repurchase margin. Since* $\text{CDF}(\cdot)$ *is increasing, this probability is decreasing in* EY. □

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

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

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).