Modeling Managers As EPS Maximizers*

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Abstract

Textbook corporate-finance theory assumes that managers maximize the net present value (NPV) of expected future cash flows. But when you ask them, the people running large public companies typically say that they are maximizing something else entirely: earnings per share (EPS). Perhaps they have good reasons. Or maybe they are just making a mistake. Either way, we take managers at their word and show that EPS maximization provides a unified explanation for the corporate policies we observe. Our simple max EPS model accounts for firm leverage, share repurchases, cash accumulation, and M&A payment method. It also predicts that companies with earnings yields above and below the riskfree rate will maximize EPS in qualitatively different ways. This model-implied threshold sheds new light on the difference between value and growth stocks, and we exploit this nonlinearity for identification purposes in our empirical analysis.

Keywords: Earnings Per Share, Corporate Policies, Earnings Yield, Value vs. Growth, Leverage, Equity Issuance, Share Repurchases, Cash Holdings, Capital Budgeting, M&A Payment Method, Accretion, Dilution

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1 Introduction

Textbook corporate-finance theory assumes that managers maximize the net present value (NPV) of expected future cash flows. In standard models, corporate executives look for positive NPV projects and try to avoid the ones with negative NPVs. Researchers see this as "the golden rule of financial decision-making. (Berk and DeMarzo, 2007)"

Yet, while researchers find it perfectly natural to think in present-value terms, this approach has a serious drawback. If managers are NPV maximizers, then many important real-world decisions will be completely irrelevant in simple models. In fact, much of the modern corporate-finance literature is organized around one particular irrelevance result.

Modigliani and Miller (1958) proved there is no unique NPV-maximizing choice of leverage in the absence of frictions, information asymmetries, and/or pricing errors. Guided by this result, researchers have spent the last seventy years trying to explain patterns in the data by introducing one realistic complication after another. The literature is now a fragmented collection of one-shot deviations from a benchmark that predicts nothing on its own. While "many individual fixes have been made, it is still not clear what it all adds up to. (Graham and Leary, 2011)"

Why are researchers so fixated on NPV maximization? Even if it is the theoretically correct thing to do, recognizing this fact has not helped us explain the data. Moreover, the people in charge of large public corporations typically say they are trying to maximize something else entirely: earnings per share (EPS). Real-world managers have "an almost singular focus on EPS growth. (Christensen, Kaufman, and Shih, 2008)" They "view earnings, especially EPS, as the key metric for an external audience. (Graham, Harvey, and Rajgopal, 2005)"

EPS growth might be a second-best proxy for value creation, or maybe it is just a mistake. Either way, the people running large public companies are EPS maximizers. Managers "need a simple metric of performance... [and] the market has selected EPS to fulfill this role. (Almeida, 2019)" In this paper, we acknowledge this reality and model managers as EPS maximizers. By doing so, we are able to produce a simple unified explanation for the observed data.

We study a static model where there are no frictions, information asymmetries, or pricing errors. If the manager in our model were maximizing NPV, it would explain nothing. However, by replacing max NPV with max EPS, we are able to account for real-world patterns in firm leverage, share repurchases, cash holdings, and M&A method of payment. All of our predictions stem from applying the same variational arguments to the same simple max EPS model. There is no need to introduce ad hoc ingredients on a case-by-case basis.

Our model's predictions also have a unique diagnostic property, which helps us identify the effects of max EPS in our empirical analysis. The internal logic of EPS maximization draws a dividing line between companies with earnings yields above and below the riskfree rate. According to our theory, companies on either side of this threshold should pursue the same goal, max EPS, in qualitatively different ways. Consistent with this prediction, the data show that companies with an earnings yield above the riskfree rate adopt one set of corporate policies (value stocks; low P/E ratios) while those with an earnings yield below the riskfree rate adopt another (growth stocks; high P/E ratios).

The people running large public corporations say they are maximizing EPS, and a simple max EPS model provides a unified explanation for many of the decisions they make. Going forward, when researchers want to predict how a manager will actually behave (and not how she ought to behave), they should model her as an EPS maximizer (and not an NPV maximizer). That should be the starting point of the theory. This is the central premise of our paper.

In Section 2 we begin by showing that corporate executives consistently describe themselves as EPS maximizers. To a first approximation, this is what they claim to be doing. EPS growth shows up over and over again in academic surveys. Graham and Harvey (2002) laments that "despite the efforts of academics to demonstrate that EPS dilution should be irrelevant... [this] was the most cited reason for companies' reluctance to issue equity."

Managers could be saying one thing while doing another. But why? What does a manager have to gain by outwardly pretending to maximize EPS while secretly maximizing NPV in the privacy of her own corner office? Moreover, if EPS maximization is all an act, managers seem very committed to remaining in character. They do not just tell researchers that they are trying to increase EPS. They say the same thing to shareholders and regulators as well.

We are not claiming that managers never maximize NPV under any conditions. We are not claiming that they only ever consider EPS growth. But, at the end of the day, managers talk about EPS growth so often that it makes sense to ask: What if they are actually doing what they claim? What would the world look like if managers were EPS maximizers? Our theoretical analysis in the next two sections aims to answer these questions.

In Section 3, we study firms' capital structure. The manager in our model must choose how much leverage to use, $\ell \in [0, 1)$, when buying assets to form a company. She borrows $\text{LoanAmt}(\ell)$ and finances the rest of the purchase by issuing $\#\text{Shares}(\ell)$, taking the interest rate schedule $i(\ell)$ and her share price as given. The manager expects her company to produce a net operating income of $\mathbb{E}[\text{NOI}]$ over the next year. She plans to collect these cash flows and then immediately sell the assets at the end of the upcoming year.

We have pared down our model to the bare essentials. It is static. There are no frictions, information asymmetries, or price distortions. All Modigliani and Miller (1958) assumptions hold, so there is no single NPV-maximizing choice of leverage. Nevertheless, we prove there is still a unique choice that maximizes

$$\text{EPS}(\ell) \overset{\text{def}}{=} \underbrace{\big(\mathbb{E}[\text{NOI}] - i(\ell) \cdot \text{LoanAmt}(\ell)\big)}_{\mathbb{E}[\text{Earnings}(\ell)]} \,/\, \#\text{Shares}(\ell) \tag{1}$$

To see why, suppose the EPS-maximizing manager in our model initially intended to use leverage, $\ell = \ell_0$. Then, you suggest that she should change her leverage a tiny bit. We show that the manager will decide whether this is a good idea by comparing her current earnings yield, $\text{EY}(\ell) \overset{\text{def}}{=} \frac{\mathbb{E}[\text{Earnings}(\ell)]}{\text{MarketCap}(\ell)}$, to the extra interest she would have to pay if she were to borrow \$1 more, $i(\ell) \cdot [1 + \delta(\ell)]$ with $\delta(\ell) = \ell \cdot [i'(\ell)/i(\ell)]$ representing the elasticity of interest

$$\text{EY}(\ell_0) > i(\ell_0) \cdot [1 + \delta(\ell_0)] \quad \Rightarrow \quad \text{increase leverage, equity is expensive} \tag{2a}$$

$$\text{EY}(\ell_0) < i(\ell_0) \cdot [1 + \delta(\ell_0)] \quad \Rightarrow \quad \text{decrease leverage, debt is expensive} \tag{2b}$$

An EPS-maximizing manager takes her share price and marginal interest rate as given and then asks: Which is cheaper? If the manager's current earnings yield is higher (Equation 2a), she will see equity as expensive. She would prefer to issue one less share and borrow \$1 more. If her marginal interest rate is higher (Equation 2b), the manager will view debt as expensive and try to borrow less. By repeatedly making this sort of adjustment, we show that she will arrive at a unique EPS-maximizing leverage level.

What's more, in a world populated by EPS-maximizing managers, our model implies that there will be two distinct groups of firms that finance themselves in radically different ways. The definition of EPS itself is smooth and continuous. The bifurcation occurs because it is not possible to borrow at less than the riskfree rate. EPS-maximizing managers on either side of the $\text{ExcessEY} \overset{\text{def}}{=} \text{EY} - r_f = 0\%$ threshold will use very different amounts of leverage.

Think about two firms that both start out unlevered, $\ell_0 = 0$. These two companies are otherwise identical except for a slight difference in their earnings yields. The first firm has an unlevered earnings yield just below the riskfree rate, $\text{EY}(0) < r_f$. As a result, this firm's EPS-maximizing manager will prefer to remain unlevered. She will not find it attractive to borrow even a single \$1 at the best possible terms her lender can offer. A firm with a low earnings yield has a high price-to-earnings (P/E) ratio, so we call this company a "growth stock".

The second firm also starts out unlevered, $\ell_0 = 0$, but its unlevered earnings yield is just above the riskfree rate, $\text{EY}(0) > r_f$. We call this second kind of company a "value stock", and the EPS-maximizing manager of this firm will not choose to remain unlevered. Since $\text{EY}(0) > i(0) \cdot [1 + \delta(0)] = r_f$, she would like to swap her last share of equity for a riskfree \$1 of debt. But notice that, once she makes this change, it will become even more attractive for her to swap another share of equity for a second \$1 of riskfree debt. With one less share in circulation, the same $r_f \cdot \$1$ interest payment will now buy a proportionally larger reduction in her share count. We show that this positive feedback loop will continue until the manager uses up all her riskfree borrowing capacity.

Researchers have been adding one feature after another to the same max NPV framework since Dwight D. Eisenhower was in the Oval Office. Many of these frictions, information asymmetries, and price distortions are still important to an EPS-maximizing manager. However, unlike a simple max NPV model, our simple max EPS model can make testable predictions even without them. We have deliberately omitted these ingredients as a way of emphasizing this fact.

NPV maximization is stone soup. EPS maximization has a flavor all its own. It has wide-ranging implications even before layering on any extra ingredients. For instance, in addition to explaining leverage, our simple max EPS model also accounts for share repurchases. In our baseline analysis, the manager's initial leverage level ℓ_0 was a hypothetical plan for how much she would borrow. But all the same arguments still apply after the manager has acted on this plan.

As an added benefit, the simplicity of our model helps us to differentiate max NPV from max EPS. By stripping out all superfluous details, we are able to show that there are just three possible reasons why EPS and NPV maximization might lead to different leverage decisions. An EPS-maximizing manager (a) fails to risk adjust her expected earnings and (b) disregards changes in the long-term value. She also (c) ignores the value of her default option. Any gap between the max NPV and max EPS must stem from these three factors.

Removing complications also makes it easier to see several surprising properties of EPS maximization. For example, we find that EPS-maximizing managers behave like "cross-market arbitrageurs (Ma, 2019)" even though there are no arbitrage opportunities in our setup. The outcome would not be so surprising if our model included realistic price distortions (Stein, 1996; Baker and Wurgler, 2000, 2002; Baker, Stein, and Wurgler, 2003; Shleifer and Vishny, 2003).

In Section 4, we demonstrate that our simple max EPS model can account for real-investment decisions. The manager in our model learns about a costly new project after creating her firm at time $t = 0$. The project would increase her firm's expected cash flows next year by a fraction of its initial cost, $\mathbb{E}[\Delta\text{NOI}] = y \cdot \text{CostOfProject}$. We show that, when making capital-budgeting decisions, an EPS-maximizing manager will compare this short-term cash-flow yield, $y > 0\%$, to her cheapest source of financing. We prove that, to be accretive, a project's cash-flow yield must cover its own short-term financing, which will depend on the source of capital rather than the project's characteristics.

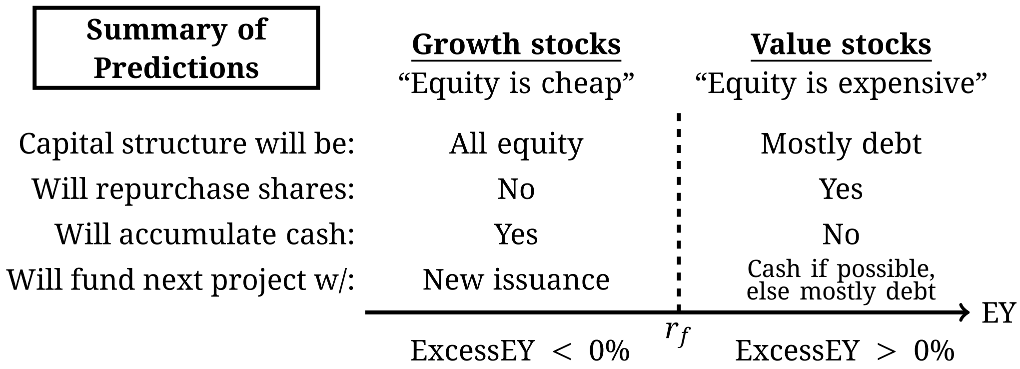


Figure 1. *Growth stocks (left) have negative excess earnings yields, ExcessEY =* $EY - r_f < 0\%$*, and view equity as the cheapest source of financing. Value stocks (right) have positive excess earnings yields, ExcessEY* $> 0\%$*, and see equity as relatively expensive. There will be a large qualitative difference between the behavior of these two kinds of firms on either side of the ExcessEY* $= 0\%$ *threshold.*

We summarize our model's key predictions in Figure 1. The EPS-maximizing manager of a growth stock (ExcessEY $< 0\%$) will view equity as the cheapest source of financing. These firms should use zero leverage, never repurchase shares, steadily accumulate cash, and pay for new projects with new issuance. By contrast, the EPS-maximizing manager of a value stock (ExcessEY $> 0\%$) will see equity as relatively expensive. These firms should be highly levered. When their excess earnings yield increases, they should repurchase shares. Value firms should see cash as the cheapest source of financing and so never accumulate much of it, mostly relying on debt financing for new projects.

In Section 5, we empirically verify each of our model's key predictions. We find that growth stocks (ExcessEY $< 0\%$) have 10.3%pt lower total debt-to-asset ratios than value stocks (ExcessEY $> 0\%$). Growth stocks are roughly half as likely to repurchase shares, and they accumulate cash at a 3.5%pt per year faster rate. In M&A deals, growth-stock acquirers are 23.3%pt more likely to pay target shareholders with equity.

The effects in Figure 2 are all economically large and statistically significant. Moreover, every panel displays our model's signature nonlinearity at ExcessEY $=$ 0%, which helps distinguish our predictions from alternative stories. Consistent with our model, we find that firms change their behavior immediately after

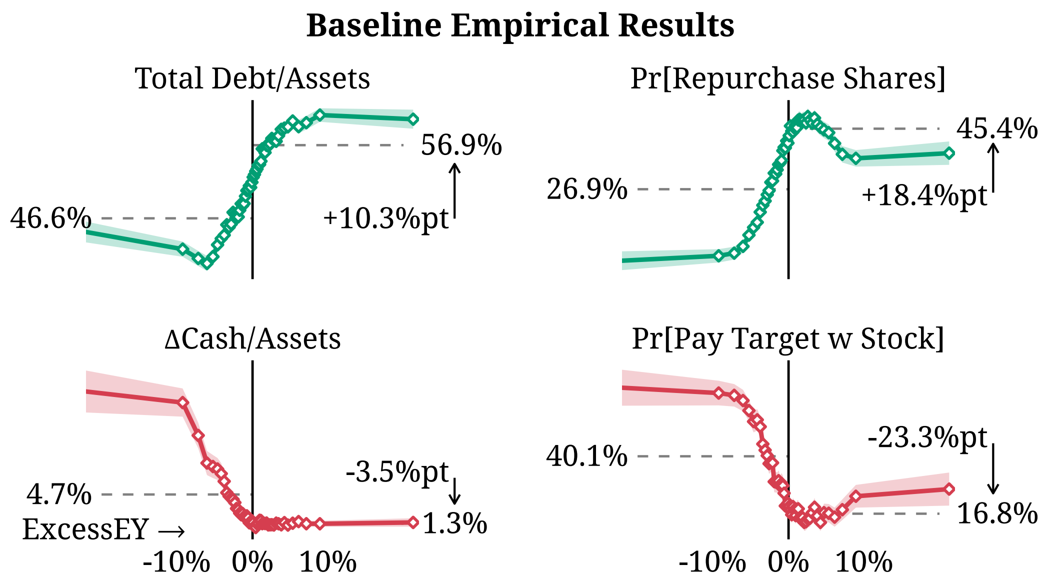


Figure 2. *Each panel is a separate binned scatterplot using firm-year observations from 1976 to 2023. Total Debt/Assets: Total liabilities as a percent of total assets in a given year. Pr[Repurchase Shares]: Percent of observations that repurchase $\geq$ 1% of current shares outstanding the following year. ΔCash/Assets: Increase in cash and cash equivalents next year as a percent of total assets in the current year. Pr[Pay Target w Stock]: Among all observations with $\geq$ 1 acquisition, what percent paid target shareholders primarily with equity? x-axis in every panel is excess earnings yield, ExcessEY = EY − r_f. Percentages on the left and right axes are averages for growth (ExcessEY $<$ 0%) and value stocks (ExcessEY $>$ 0%).*

they cross over this dividing line from one year to the next. On top of this, the threshold is always located at ExcessEY = 0% regardless of the prevailing riskfree rate at the time. When rates fall, more firms behave like value stocks. When they rise, equity looks cheaper and more firms behave like growth stocks.

The world is a complicated place. Corporate executives are smart people with a difficult job. EPS maximization does not account for every decision they make, but it is a much better starting point for corporate-finance theory. Managers say they maximize EPS (Section 2). By merely replacing max NPV with max EPS in a simple static model, we are able to generate a host of sharp testable predictions (Sections 3 and 4). The data strongly support these predictions and display clear evidence of our model's unique nonlinearity at ExcessEY = 0% (Section 5).

2 In Their Own Words

When you ask the people in charge of large public corporations how they make decisions, they do not usually talk about positive NPVs or discounted cash flows (DCFs). Instead, they focus on EPS growth. This is how CEOs respond in academic surveys. It is what CEOs tell their shareholders they are doing, and it is how they measure shareholder value in regulatory filings. In this section, we show that corporate executives talk about EPS growth so much that it makes sense to ask: What if they are actually doing what they claim? What would the world look like if publicly traded companies were run by EPS maximizers?

2.1 Survey Evidence

As far back as Lintner (1956), academic researchers have been using surveys to probe the motives behind managers' decisions. Collectively, this literature paints a clear picture: when given the opportunity to describe their goals, most managers point to EPS growth as their primary objective. For large public corporations, EPS is the main performance metric (Graham, Harvey, and Rajgopal, 2005; Dichev, Graham, Harvey, and Rajgopal, 2013).

Table 1 summarizes how financial executives describe their decision-making in 17 different survey-based papers over the past five decades. Different papers focus on different kinds of decisions, but there are many more check marks in column (2) than in column (1). Regardless of the decision, when you ask the manager of a large public corporation how they made it, she is more likely to talk about increasing EPS than about maximizing NPV or DCFs. For instance, Brav, Graham, Harvey, and Michaely (2005) specifically reports that many "managers favor repurchases…to increase earnings per share." One manager surveyed in Graham and Harvey (2001) explains that when "funds are obtained by issuing debt, the number of shares does not remain constant and so EPS can increase."

For the most part, when survey respondents talk about maximizing NPV, they also report following the principle of EPS maximization. There are only a couple of surveys that contain no evidence of EPS maximization. In these cases, survey respondents were simply not given the opportunity to talk about EPS (column 3).

Meta-Analysis Of The Survey Literature

	Are you making decisions based on…		
	NPV/DCF?	EPS?	
Participants in study…	say "Yes"	say "Yes"	not asked
	(1)	(2)	(3)
(a) Broad objectives			
Petty et al. (1975)		✓	
Graham et al. (2005)		✓	
Dichev et al. (2013)		✓	
(b) Capital structure			
Pinegar and Wilbricht (1989)		✓	
Graham and Harvey (2001)	✓	✓	
Bancel and Mittoo (2004)	✓	✓	
Brounen et al. (2006)	✓		⊗
(c) Repurchases/issuance			
Baker et al. (1981)		✓	
Tsetsekos et al. (1991)		✓	
Badrinath et al. (2000)		✓	
Graham and Harvey (2001)		✓	
Brav et al. (2005)		✓	
Brounen et al. (2006)		✓	
Caster et al. (2006)		✓	
(d) Cash holdings			
Lins et al. (2010)	✓		⊗
(e) Capital budgeting			
Schall et al. (1978)	✓	✓	
Gitman and Maxwell (1987)	✓	✓	
Graham and Harvey (2001)	✓	✓	
Mukherjee et al. (2004)	✓	✓	
Baker et al. (2011)	✓	✓	

Table 1. *Column (1): Managers reported using either NPV and/or DCF reasoning. Column (2): Managers said they maximized EPS. Column (3): Managers were not given the opportunity to talk about EPS maximization. Panel (a): Papers about managers' broad objectives. Panel (b): Papers about how managers choose their capital structure. Panel (c): Papers about share repurchases and new issuance. Panel (d): Papers about cash holdings. Panel (e): Papers about capital budgeting.*

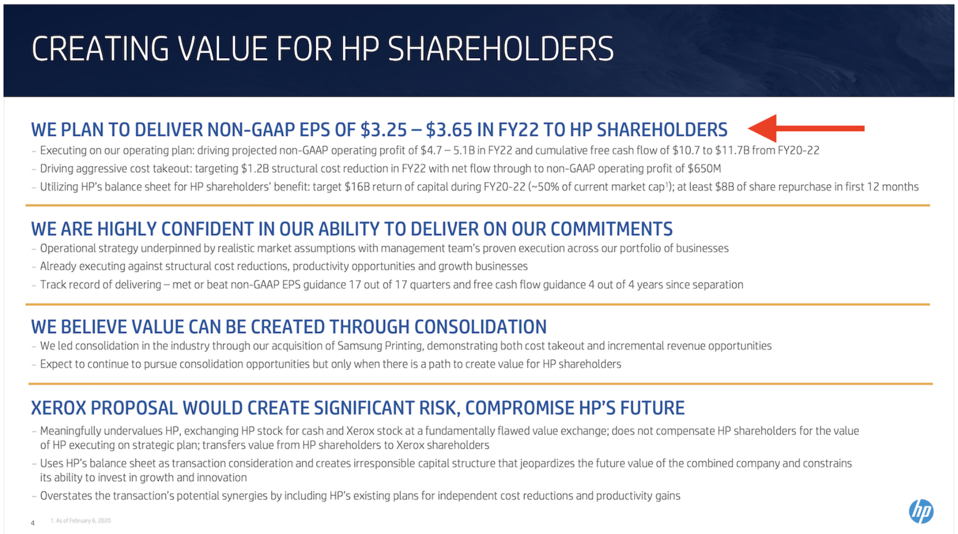


Figure 3. *First slide from a February 2020 presentation made by HP's CEO to the company's shareholders in opposition to Xerox's proposed takeover.* [link]

The fact that many academic researchers have a strong bias against EPS maximization makes managers' survey responses all the more surprising. There is a huge experimenter demand effect working in the opposite direction (Schwarz, 1999). Put yourself in the shoes of a corporate executive in one of these studies. Your favorite business school professor has just called to interview you about how you make decisions. This has to be flattering. It would be rude to tell him that all his in-class NPV calculations are irrelevant to your day-to-day decision-making. Yet, survey respondents still report maximizing EPS.

2.2 Shareholder Communications

The managers of large public corporations do not hide the fact that they are EPS maximizers. They explicitly tell their shareholders what they are trying to do. The situation is not like the one modeled in papers like Stein (1989), Stein (1996), and Aghion and Stein (2008). CEOs are not secretly maximizing EPS even though shareholders would like them to focus on long-term fundamentals. CEOs often have explicit EPS targets built into their pay packages (Healy, 1985; Murphy, 1999; Bergstresser and Philippon, 2006; Bennett, Bettis, Gopalan, and Milbourn, 2017).

If you are a card-carrying financial economist, then you might suspect that market participants only use EPS growth as a quick-and-easy proxy for value creation. It would be convenient for researchers' worldview if this were true. But the fact that managers continue to focus on EPS growth even in high-stakes situations suggests otherwise.

For example, in early 2020 Xerox announced a plan to acquire Hewlett-Packard Co. Figure 3 shows the first slide from a presentation made by HP's CEO aimed at convincing his shareholders to refuse Xerox's offer. The title is "Creating Value for HP Shareholders", and the first bullet point is "We plan to deliver non-GAAP EPS of $3.25-$3.65 in FY22 to HP shareholders." With his job on the line, HP's CEO talked a lot about the company's future operating profits, but he never once mentioned the net present value of these cash flows.

2.3 Earnings-Call Transcripts

We find a similar pattern in other kinds of manager-investor interactions. For example, we analyze the transcripts of quarterly earnings calls using data from Capital IQ. Table 2 describes what managers say to interested market participants during these calls. Capital IQ's transcript data starts in 2004. The point estimates in this table reflect the 2,243 public firms which could be matched to CRSP, were traded on a major exchange, and had a share price above $5.

We start with a sanity check. We are analyzing the transcripts of quarterly earnings calls, so it had better be the case that managers talk about earnings. The first row of Table 2 confirms that this is indeed the case. 97.0% of transcripts talk about "earnings", "EBIT", "EBITDA", or "net income". We do not estimate a perfect 100.0% value because Capital IQ only records the first 200 characters each time a new speaker chimes in on the call.

There are lots of ways to keep track of a firm's earnings. People do not have to think about a firm's earnings as evenly split up across shares any more than they have to think about a calendar as evenly split up into 52 weeks. These are both arbitrary conventions. But they are conventions nonetheless.

The people running large public corporations use specific technical jargon to make it easier to reason about EPS maximization. A project is called "dilutive"

Transcripts Of Quarterly Earnings Calls

Concept	Search Query	% of firms
Earnings	"Earnings" or "EBIT(DA)" or "Net Income"	97.0%
Dilutive/Accretive	"Diluti(ve | on)" or "Accreti(ve | on)"	76.2%
Net Present Value	"(Net) Present Value" or "PV"	15.3%
Discount Rate	"(Discount | Hurdle) Rate" or "Cost Of Capital" or "WACC" or "OCC"	34.8%
NPV or Discount Rate		40.4%

Table 2. *Column (2) reports the query we used to search for the concept in column (1). Column (3) shows the percent of all* 2,243 *firms in our sample that had at least one transcript satisfying this query. Sample: 2004 to 2023.*

if it will lower a firm's EPS. Conversely, an "accretive" project will boost the firm's EPS. People use these terms when talking about how a specific corporate policy will affect a firm's EPS. And Table 2 shows that 76.2% of firms use this precise language when discussing their company's status with shareholders.

By contrast, our analysis shows that 84.7% of firms have never used the term "present value" in a quarterly earnings call since 2004. Only 34.8% of firms have talked about a "discount rate" or any related term during this time. We are being as inclusive as possible when counting mentions of these two terms. Still, 3 out of 5 firms have never mentioned either term during a conference call at any point over the past two decades.

When managers talk about EPS, they get deep into the weeds. They explain how a specific action will be accretive or dilutive to shareholder value. When managers mention NPV, they often use it as a buzzword. They rarely bother to discuss inputs to the model, and their investors do not see any need to press them on their omission. This analysis is consistent with the results in Gormsen and Huber (2024), which show that most S&P 500 firms have never given a specific numeric value for the company's discount rate in a conference call.

Language Used In Regulatory Filings

	#	% that mention… EPS	NPV/DCF
	(1)	(2)	(3)
2001–2022	1,694,415	21.2%	1.8%
2001–2005	358,385	18.9%	1.3%
2006–2010	463,869	20.9%	1.5%
2011–2015	377,502	22.2%	2.0%
2016–2020	349,907	22.8%	2.4%
2021–2022	144,752	21.0%	1.8%

Table 3. *Summary of the language used in 8-K filings for all publicly listed firms over the period from January 1st 2001 through December 31st 2022. Data come from EDGAR. Column (1): Total number of 8-K filings. Column (2): Percent of 8-K filings that included either "Earnings Per" or "EPS". Column (3): Percent of 8-Ks that included at least one of the following strings: "NPV", "(Present|Discounted) Value", "DCF", "Discounted Cash Flows", "Economic Value added".*

2.4 Regulatory Filings

Suppose a public company has a shareholder vote, its CEO leaves, or the firm takes out a large loan. In these sorts of situations, the Securities and Exchange Commission (SEC) requires the company to file a Current Report on Form 8-K within four business days. 8-Ks are meant to help investors update their beliefs about previously filed 10-Q and 10-K reports. Earlier research has shown that EPS is the standard metric that companies use when evaluating the economic impact of corporate events in 8-K filings (Amel-Zadeh and Meeks, 2019).

We perform our own analysis and find that companies are 12× more likely to talk about EPS than both NPV and discounted cash flows combined. Table 3 summarizes the content of 1,694,415 filings from 2001 to 2022. Column (1) reports the total number of 8-K filings in EDGAR during the sample period. The first row of column (2) then shows that 21.2% of all filings include either "Earnings Per" or "EPS". We do not require "Share" because in some cases the earnings are reported using slightly different jargon, such as "earnings per partnership unit". Requiring "Share" reduces the value in the first row of column

(2) to 18.9%. Column (3) gives the percentage of all 8-K filings that include at least one of the following strings: “NPV”, “(Present|Discounted) Value”, “DCF”, “Discounted Cash Flows”, “Economic Value added”. Economic value added (EVA) is an alternative to EPS promoted by Stern, Stewart, and Chew (1995).

When leading a quarterly earnings call, managers are trying to focus on what they see as the most important items affecting their shareholders. By contrast, when deciding whether to file an 8-K, lawyers are trying to be as thorough as possible to avoid future litigation. For example, many 8-K filings are the result of minor amendments to the company’s ByLaws, which explains why only around 1/5th of all 8-Ks mention EPS. The context is different in each case. The nature of the difference makes it all the more surprising that only 1.8% of all 8-K filings talk about NPVs or discounted cash flows.

It is noteworthy that 49 out of 50 8-K filings do not talk about NPV in any capacity. To academic researchers, NPV maximization is “the golden rule of financial decision-making. (Berk and DeMarzo, 2007)” To corporate lawyers, the concept does not even warrant the inclusion of some boilerplate legalese. Every mutual-fund advertisement ends with a disclaimer stating that “past performance does not guarantee future results.” The absence of similar language here is telling.

The fact that corporate executives talk so much about EPS growth in academic surveys, shareholder communications, and regulatory filings does not conclusively prove that they are maximizing this quantity. But it does beg the question: What if this is what managers are actually doing? What would a world populated by EPS-maximizing managers look like?

3 Capital Structure

How do the managers of large public corporations decide how much to borrow? The textbook approach assumes that they try to maximize the net present value of their future equity payouts. This objective renders leverage irrelevant in simple frictionless models (Modigliani and Miller, 1958). So to explain why managers might prefer one leverage ratio over another, a researcher has to introduce some market friction or information asymmetry.

However, we have just seen that real-world managers mainly focus on EPS growth. Regardless of whether this is a good idea or why they do it, in this section we take managers at their word and try to understand the consequences of maximizing this objective. We show that, by replacing max NPV with max EPS in an otherwise-standard model, it is possible to generate sharp testable predictions about firms' capital-structure decisions.

3.1 Economic Framework

We study a manager who is buying the assets needed to form a company in year $t = 0$. In year $t = 1$, she will collect the net operating income that her company produces and then sell its assets at the prevailing market price. Our goal is to predict how much leverage she will use when creating the firm at time $t = 0$. For this purpose, we work with a classic binomial model with only one period of uncertainty as found in Dixit and Pindyck (1994).

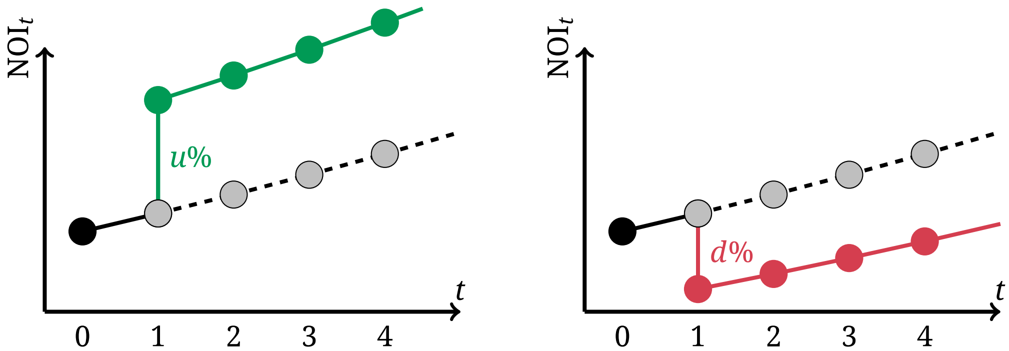
Cash Flows. Let NOI_t denote the net operating income that the firm realizes in year t. The expected cash flows of the manager's firm will grow at an average rate of $g \geq 0\%$ per year in all future periods

$$\mathbb{E}[\mathrm{NOI}_{t+h}] = (1+g)^h \cdot \mathrm{NOI}_t \qquad \text{for } h = 1, 2, \ldots \tag{3}$$

However, as shown in Figure 4, there is uncertainty about the conditional expectation of these cash flows in year $t = 1$. Let p_u and $p_d = 1 - p_u$ denote the probabilities of the up and down state in year $t = 1$.

When the manager buys the assets needed to create her firm, she expects to earn $\mathbb{E}[\mathrm{NOI}_1] = (1+g) \cdot \mathrm{NOI}_0$ on average in year $t = 1$. But, she also knows that, if the up state is realized in year $t = 1$, her expected cash flows will be $u > 0\%$ higher than the unconditional average. Whereas, if the down state occurs, her expected cash flows will be $d \in (0\%, 100\%)$ lower

$$\mathrm{NOI}_1 = (1+g) \cdot \mathrm{NOI}_0 \times \begin{cases} (1+u) & \text{in the up state} \\ (1-d) & \text{in the down state} \end{cases} \tag{4}$$



(a) Up state

(b) Down state

Figure 4. *Left panel: Cash flows if up state is realized in year $t = 1$. Right panel: Cash flows if down state is realized.* ***(Black dots)*** *NOI_0 in year $t = 0$ prior to purchase; same in both panels.* ***(Gray dots)*** *Unconditional average cash flows $\mathbb{E}[NOI_t]$ in years $t = 1, 2, 3, 4$; same in both panels.* ***(Green dots)*** *Conditional expectation of NOI_t in years $t = 1, 2, 3, 4$ following a positive shock, $NOI_{\boldsymbol{u}} = (1 + \boldsymbol{u}) \cdot \mathbb{E}[NOI_1]$.* ***(Red dots)*** *Conditional expectation of NOI_t in years $t = 1, 2, 3, 4$ following negative shock, $NOI_{\boldsymbol{d}} = (1 - \boldsymbol{d}) \cdot \mathbb{E}[NOI_1]$.*

We use $\text{NOI}_u \stackrel{\text{def}}{=} (1 + u) \times \mathbb{E}[\text{NOI}_1]$ and $\text{NOI}_d \stackrel{\text{def}}{=} (1 - d) \times \mathbb{E}[\text{NOI}_1]$ as shorthand for the conditional expectation of NOI_1 in each future state of the world next year at time $t = 1$. We do not need the firm's cash flows to literally grow at a deterministic rate from time $t = 2$ onward. We are just collapsing this part of the tree for analytical convenience. Because the firm's expected cash flows grow at a rate of g per year in all future years, including in year $t = 1$, the unconditional expectation in year $t = 1$ must satisfy $\mathbb{E}[\text{NOI}_1] = p_u \cdot \text{NOI}_u + p_d \cdot \text{NOI}_d$.

Firm Value. The manager in our model buys assets to create her firm at time $t = 0$. She pays $\text{CostOfAssets} = \text{ValueOfAssets}_0$ for these assets. The previous owners get to keep, NOI_0, which represents the cash flows produced by the firm's assets in year $t = 0$. In year $t = 1$, the manager collects NOI_1 and then sells the firm's assets for ValueOfAssets_1.

The total value that the manager gets from owning the firm in year $t = 1$ is given by $\text{ValueOfFirm}_1 \stackrel{\text{def}}{=} \text{NOI}_1 + \text{ValueOfAssets}_1$. We use $\text{ValueOfFirm}_1 \in \{\text{ValueOfFirm}_u, \text{ValueOfFirm}_d\}$ to denote the two possible realizations in each state of the world.

Given the setup so far, we can compute the value of the firm's assets at each point in time

$$\text{ValueOfAssets}_t = \frac{\mathbb{E}_t[\text{NOI}_{t+1}]}{r - g} \tag{5}$$

where $r > g$ denotes the discount rate on the firm's cash flows. When the manager sells her assets at time $t = 1$, her assets will be worth $\text{ValueOfAssets}_1 = \mathbb{E}_1[\text{NOI}_2]/(r - g)$. Because year $t = 1$ cash flows are unknown at time $t = 0$, the future value of the firm's assets is a random variable, $\text{ValueOfAssets}_1 \in \{\text{ValueOfAssets}_u, \text{ValueOfAssets}_d\}$.

State Prices. Investors correctly price all future payouts in our model. We use q_u to denote the price in year $t = 0$ of an asset pays out \$1 in year $t = 1$ if the up state is realized. Similarly, we use q_d to denote the analogous down-state price. Let $r_f > 0\%$ denote the prevailing riskfree rate. While $p_u + p_d = 1$, the price of a \$1 riskfree bond is given by $q_u + q_d = \frac{1}{1+r_f} < 1$.

Our binomial setup allows us to solve for these state prices in closed form

$$q_u = \frac{1}{1 + r_f} \cdot \left\{ \frac{(1 + r_f) \cdot \text{CostOfAssets} - \text{ValueOfFirm}_d}{\text{ValueOfFirm}_u - \text{ValueOfFirm}_d} \right\} \tag{6a}$$

$$q_d = \frac{1}{1 + r_f} \cdot \left\{ \frac{\text{ValueOfFirm}_u - (1 + r_f) \cdot \text{CostOfAssets}}{\text{ValueOfFirm}_u - \text{ValueOfFirm}_d} \right\} \tag{6b}$$

Let $X \in \{X_u, X_d\}$ denote an arbitrary random variable defined over the two future states of the world next year. We use $\mathbb{PV}[X] \overset{\text{def}}{=} q_u \cdot X_u + q_d \cdot X_d$ to denote its present discounted value (i.e., the risk-neutral expectation). By contrast, we use $\mathbb{E}[X] \overset{\text{def}}{=} p_u \cdot X_u + p_d \cdot X_d$ to denote the expectation of the same random variable under the physical density.

Interest Rate. Let $\ell \in [0, 1)$ denote the manager's leverage as a fraction of the total purchase price of her assets, $\text{LoanAmt}(\ell) = \ell \cdot \text{CostOfAssets}$. Let $i(\ell) \geq r_f$ denote the fair interest rate on the manager's debt at this leverage level. We will assume the manager takes out a single loan, but you will be able to think about any small changes in leverage as coming from junior liens if you would prefer. It makes no difference in our simple model.

In exchange for getting LoanAmt at time $t = 0$, the manager must promise to repay principal plus interest, $(1 + i) \cdot \text{LoanAmt}$, at time $t = 1$. The present value of this promised debt repayment is given by

$$\begin{aligned}\mathbb{PV}[\text{DebtPayouts}] = q_u \cdot \{(1 + i) \cdot \text{LoanAmt}\} \\ + q_d \cdot \min\{(1 + i) \cdot \text{LoanAmt}, \text{ValueOfFirm}_d\}\end{aligned} \tag{7}$$

If the up state gets realized in year $t = 1$, the manager will make her promised payment, $(1 + i) \cdot \text{LoanAmt}$. However, if the down state gets realized in year $t = 1$, the manager will choose to default and receive \$0 whenever her promised payment exceeds the value of her firm, $(1 + i) \cdot \text{LoanAmt} > \text{ValueOfFirm}_d$.

The manager has a finite riskfree borrowing capacity. Suppose she takes out a \$1 loan in year $t = 0$. Given how little she borrowed, the value of her firm at time $t = 1$ is guaranteed to be higher than her promised payment, $\text{ValueOfFirm}_d > (1 + r_f) \cdot \$1$. Hence, there is no chance that she will default in the down state. The same logic holds for any leverage ratio up to

$$\ell_{\max r_f} = \frac{1}{1 + r_f} \cdot \left(\frac{\text{ValueOfFirm}_d}{\text{CostOfAssets}}\right) \tag{8}$$

But if the manager takes out a sufficiently large loan, her promised payment will exceed her firm's value in the down state, $\text{ValueOfFirm}_d < (1+i) \cdot \text{LoanAmt}$. In that case, she would prefer to receive nothing than to pay her lender more than the firm is worth. The lender anticipates a default in the down state of the world when $\ell > \ell_{\max r_f}$ and quotes the manager a higher interest rate

$$i(\ell) = \frac{(1 - q_u) \cdot \text{LoanAmt}(\ell) - q_d \cdot \text{ValueOfFirm}_d}{q_u \cdot \text{LoanAmt}(\ell)} > r_f \tag{9}$$

We use $\text{DefaultSavings}_1 \in \{\text{DefaultSavings}_u, \text{DefaultSavings}_d\}$ to denote the amount of money the manager would save by defaulting at time $t = 1$. Since the manager never defaults in the up state, we have $\text{DefaultSavings}_u = \$0$. Whereas, the default savings in the down state depends on the size of the loan

$$\text{DefaultSavings}_d = \max\{(1 + i) \cdot \text{LoanAmt} - \text{ValueOfFirm}_d, \$0\} \tag{10}$$

Share Price. After borrowing LoanAmt at time $t = 0$, the manager finances the rest of the purchase price of her assets by issuing #Shares

$$\begin{aligned} \text{MarketCap} &= \text{CostOfAssets} - \text{LoanAmt} \\ &= \#\text{Shares} \cdot \text{PricePerShare} \end{aligned} \tag{11}$$

We use MarketCap to denote the total amount of capital raised by the manager via public equity markets at time $t = 0$.

At time $t = 1$, shareholders get any remaining firm value left over after paying off the debt. The present value of these future equity payouts is given by

$$\begin{aligned} \mathbb{PV}[\text{EquityPayouts}] = q_u \cdot \{&\text{ValueOfFirm}_u - (1+i) \cdot \text{LoanAmt}\} \\ &+ q_d \cdot \max\{\text{ValueOfFirm}_d - (1+i) \cdot \text{LoanAmt}, \$0\} \end{aligned} \tag{12}$$

The owner of each share is entitled to 1/#Shares of the time $t = 1$ equity payout. Just like the lender, we assume that shareholders price these future payouts correctly at time $t = 0$.

Without loss of generality, we will normalize things so that PricePerShare = \$1. Once the market has set PricePerShare, the manager takes this value as given. In our model, investors price all assets correctly, including the company's equity. However, even if this were not the case, managers would not be able to increase their EPS by changing the size of each share. Following a reverse split, companies are required to retroactively update their previously reported EPS values to reflect the new share count. See Appendix C.2 for more details.

3.2 NPV Maximization

We have just seen how investors determine the correct price of each asset. Given these prices, how should a manager choose her firm's leverage level so as to maximize shareholder value? The answer depends on how the manager thinks about "shareholder value".

Textbook corporate-finance models have a particular way of looking at the world. These models assume that corporate executives think about shareholder value in present-value terms. According to this framework, managers are trying to increase the present value of future equity payouts relative to the cost investors had to pay for these shares

$$\text{NPV} \overset{\text{def}}{=} \mathbb{PV}[\text{EquityPayouts}] - \text{MarketCap} \tag{13}$$

If this is how the manager in our simple model think, then Modigliani and Miller (1958) tells us that there will be no optimal choice of leverage.

Proposition 3.2 (Modigliani and Miller, 1958)**.** *Assume that (a) the cash-flow distribution is fixed and (b) there are no frictions, information asymmetries, or price distortions. In this idealized benchmark, the present value of future equity payouts is equal to the upfront cost of purchasing these claims no matter what leverage level the manager chooses*

$$\mathbb{PV}[\mathit{EquityPayouts}(\ell)] = \mathit{MarketCap}(\ell) \qquad \text{for any } \ell \in [0,1) \tag{14}$$

Much of modern corporate finance is organized in response to this capital-structure irrelevance theorem. To explain the data in an NPV-maximizing world, researchers have to introduce at least two missing ingredients to make the manager's problem well-posed. The first ingredient needs to cause managers to deviate from the idealized benchmark. The second ingredient is there to ensure that the resulting deviation is not infinitely large. For example, trade-off theory (Taggart, 1977) argues that NPV-maximizing managers lever up to exploit an interest tax shield but are limited by bankruptcy costs. It is a similar workflow to using the limits-to-arbitrage paradigm in behavioral finance (Shleifer and Vishny, 1997). Both paradigms say to introduce pairs of ad hoc features.

3.3 EPS Maximization

Now let's explore what happens if managers have a different conception of "shareholder value". Suppose that, instead of maximizing NPV, they maximize EPS. This is what the managers of large public corporations say that they are doing. We show that, by replacing max NPV with max EPS in our simple model, it is possible to generate a large number of sharp testable predictions without needing to introduce any further complications.

How NPV Differs From EPS. Suppose that the manager chooses the leverage ratio that results in the highest EPS. How is this objective different? To answer this question, it will be helpful to look at

$$\text{NPVratio} \overset{\text{def}}{=} \frac{\mathbb{PV}[\text{EquityPayouts}]}{\text{MarketCap}} \tag{15}$$

rather than NPV = $\mathbb{PV}$[EquityPayouts] − MarketCap. The economic content is the same. However, it is more natural to compare EPS to a ratio.

Proposition 3.3a (How NPV Differs From EPS)**.** *There are three reasons why NPV and EPS maximization can lead to different capital-structures decisions*

$$\begin{aligned} \mathit{NPVratio} - \mathit{EPS} \propto (\mathbb{PV} - \mathbb{E})[\mathit{NOI} - i \cdot \mathit{LoanAmt}] \\ + \mathbb{PV}[\mathit{ValueOfAssets} - \mathit{LoanAmt}] \\ + \mathbb{PV}[\mathit{DefaultSavings}] \end{aligned} \tag{16}$$

Since all Modigliani and Miller (1958) assumptions hold in our model, any choice of leverage is just as good as every other. EPS maximization is merely a selection criterion. However, in a more realistic model, there will be situations where max EPS and max NPV lead to different capital-structure decisions. Proposition 3.3a tells us that there are three possible reasons for this:

(a) EPS-maximizing managers do not risk-adjust their firms' expected cash flows next year. This is the first term, $(\mathbb{PV} - \mathbb{E})[\text{NOI} - i \cdot \text{LoanAmt}]$.

(b) EPS-maximizing managers do not account for long-term changes in firm value. This is the second term, $\mathbb{PV}$[ValueOfAssets − LoanAmt], and it explains why people worry about EPS maximization leading to short-term thinking (Dimon and Buffett, 2018; Almeida, 2019; Terry, 2023).

(c) The third term in Equation (16), $\mathbb{PV}$[DefaultSavings], is not as widely appreciated. Even if the manager knows she will default in the down state, GAAP accounting standards say her expected earnings must reflect her promised debt payment. An EPS-maximizing manager will treat promised interest payments as a known expense rather than a random variable.

How Managers Think. We now characterize how an EPS-maximizing manager will choose her leverage level. Imagine that the manager is initially planning on using leverage ratio $\ell_0 \in [0, 1)$. Then she asks herself: "What would happen to my EPS if I were to change my initial plan a little bit?" To be concrete, suppose that the manager is considering borrowing \$1 more, which amounts to a tiny $\$1/\text{CostOfAssets} = \epsilon > 0$ increase in her firm's leverage.

On one hand, if the manager borrows an additional \$1, then she will have to pay interest on that dollar. If her debt was already risky, $\ell_0 > \ell_{\max r_f}$, her interest rate would also increase a little bit. We write the additional interest the manager would have to pay if she were to borrow an additional dollar as

$$i(\ell_0) \cdot [1 + \delta(\ell_0)] = \lim_{\epsilon \searrow 0} \left\{ \tfrac{(\ell_0+\epsilon)\cdot\text{LoanAmt}(\ell_0+\epsilon) - \ell_0\cdot\text{LoanAmt}(\ell_0)}{\epsilon} \right\} \tag{17}$$

where $\delta(\ell) = \ell \cdot [i'(\ell)/i(\ell)]$ is the elasticity of interest.

On the other hand, borrowing \$1 more would allow the manager to issue one less share, meaning that she could divide her remaining earnings across a slightly smaller base. Let $\text{EY}(\ell_0)$ denote the earnings yield that each of the manager's shareholders would require in a world where she followed through on her initial plan to use leverage ℓ_0. For any arbitrary choice of $\ell \in [0, 1)$, her firm's earnings yield is given by

$$\text{EY}(\ell) = \frac{\mathbb{E}[\text{Earnings}(\ell)]}{\text{MarketCap}(\ell)} \tag{18}$$

We show that, when deciding whether she is happy with her current choice of leverage, an EPS-maximizing manager compares her current earnings yield to the additional interest she would have to pay if she borrowed an additional \$1. If the interest payment is lower, $\text{EY}(\ell_0) > i(\ell_0) \cdot [1+\delta(\ell_0)]$, the manager will view equity as relatively expensive and try to lever up, $\text{EPS}'(\ell_0) > 0$. She will think that equity investors are undervaluing her firm. Whereas, if her current earnings yield is lower, $\text{EY}(\ell_0) < i(\ell_0) \cdot [1 + \delta(\ell_0)]$, the manager will think debt markets are undervaluing her firm and try to reduce her leverage, $\text{EPS}'(\ell_0) < 0$. We summarize this economic logic in the proposition below.

Proposition 3.3b (How Managers Think)**.** *Suppose an EPS-maximizing manager was initially planning on using leverage level ℓ_0. If the manager were to borrow an additional* \$1 *and issue one less share, then her EPS would change by*

$$EPS'(\ell_0) \propto EY(\ell_0) - i(\ell_0) \cdot [1 + \delta(\ell_0)] \tag{19}$$

Proposition 3.3b explains why managers often talk about their earnings yield like it is a cost of capital (Graham and Harvey, 2001). They are constantly thinking to themselves: "A higher earnings yield means equity is more expensive than debt. A higher earnings yield means equity is more expensive than debt. [...] A higher earnings yield means equity is more expensive than debt." Recite this mantra enough times, and you too might start thinking in similar terms.

In essence, the principle of EPS maximization suggests that corporate executives will behave like "cross-market arbitrageurs (Ma, 2019)." This is surprising in the context of our model because there are no arbitrage opportunities. All future payouts are priced correctly using the state prices in Equations (6a) and (6b). But because an EPS-maximizing manager is not thinking about shareholder value in the same way that her lender prices her promised debt payments, in her eyes she can still create value for her shareholders by adjusting her leverage.

What's more, an EPS-maximizing manager does not need to know why her earnings yield is higher or lower than her marginal interest rate. Whatever the reason, the recipe for increasing her EPS is the same. By contrast, the existing behavioral-finance literature requires managers to have a sophisticated understanding of how their shares should be priced (Stein, 1996; Baker and Wurgler, 2000, 2002; Baker, Stein, and Wurgler, 2003; Shleifer and Vishny, 2003); to exploit a pricing error, a manager must first know the correct price.

Unique EPS-Maximizing Choice. When the manager's earnings yield is higher than her marginal interest rate, she levers up a bit. When her earnings yield is lower, she tries to reduce her leverage. Given any initial leverage level, $\ell_0 \in [0, 1)$, the following proposition shows that iterating on this process will lead her to a single EPS-maximizing leverage level even in a world where all Modigliani and Miller (1958) assumptions hold.

Proposition 3.3c (Unique EPS-Maximizing Choice)**.** *Either* $EPS(\ell)$ *is maximized at* $\ell_\star = 0$ *with* $EPS'(0) < 0$*, or there is a single interior* $\ell_\star \in (0, 1)$ *such that*

$$EPS'(\ell_\star) = 0 \tag{20}$$

Either way, given any initial starting point $\ell_0 \in [0, 1)$*, the logic outlined in Proposition 3.3b produces a unique EPS-maximizing leverage ratio,* $\ell_\star$*.*

Right now, corporate-finance textbooks start by assuming that CEOs think about shareholder value in the same way that debt markets price corporate bonds (Berk and DeMarzo, 2007; Tirole, 2010; Ross, Westerfield, and Jordan, 2017; Brealey, Myers, and Marcus, 2023). When everyone measures their slices in the same way, it is not possible to create value by dividing up the pie differently. For one person to get a bigger portion, someone must get a smaller one. But this logic no longer applies if all stakeholders do not value the firm in the same way.

"Modigliani and Miller (1958)'s theory is exceptionally difficult to test directly. (Myers, 2001)" It could be that, even though managers are EPS maximizers, this fact results in a model that is just as empirically vacuous. Proposition 3.3c tells us that it is not so. EPS maximization makes a sharp testable leverage prediction even in a setting where it is well-known that NPV maximization makes no prediction whatsoever.

We are not interested in debating why managers are maximizing EPS or whether this is a good idea. Financial economists have been trying to convince managers to abandon EPS for decades now (May, 1968; Stern, 1974). Maybe one day they will succeed. But, right now, even researchers who think it is "time to get rid of EPS (Almeida, 2019)" also acknowledge that managers "need a simple metric of performance…[and] the market has selected EPS to fulfill this role."

We also do not believe that EPS growth is the only thing that matters. This is not why our model contains no frictions, information asymmetries, or pricing errors. Modigliani and Miller (1958) also chose to omit these things. Their goal was to show that an NPV-maximizing model can explain nothing in the absence of such realistic complications. We omitted these same ingredients to emphasize that, even in their absence, an EPS-maximizing model can still explain a lot.

3.4 Value vs. Growth

EPS maximization does not just explain leverage decisions. It should also leave a unique empirical signature in the data. In a world populated by EPS-maximizing managers, there should be two types of firms that finance themselves in completely different ways. The sharp qualitative change in behavior is not baked into the model. It stems from the fact that the manager cannot borrow at less than the riskfree rate, $i(\ell) \geq r_f$.

We will exploit this diagnostic property for identification purposes in our empirical analysis. Moreover, the specific dividing line that emerges from our model is economically interesting in its own right. It suggests a new way of thinking about the difference between value and growth stocks.

We define a firm's excess cap rate as the difference between its unlevered earnings yield and the riskfree rate, $\mathrm{ExcessCapRate} \overset{\mathrm{def}}{=} \mathrm{EY}(0) - r_f = r - g - r_f$. The name comes from the fact that earnings are the same as expected cash flows in the absence of debt. So, in this setting, Gordon-growth logic would apply

$$\frac{1}{\mathrm{EY}(0)} = \frac{\mathrm{MarketCap}(0)}{\mathbb{E}[\mathrm{Earnings}(0)]} = \frac{\mathrm{CostOfAssets}}{\mathbb{E}[\mathrm{NOI}]} = \frac{1}{r - g} \tag{21}$$

$r - g$ is often called the cash-flow capitalization rate (a.k.a., the "cap rate").

Think about an EPS-maximizing manager who is initially planning on buying her firm's assets using no debt whatsoever, $\ell_0 = 0$. Suppose you suggest that she should instead borrow \$1 riskfree and issue one less share. Will she adopt your proposed change? If the manager's unlevered earnings yield is below the riskfree rate, $\mathrm{EY}(0) = r - g < r_f$, then Proposition 3.3b tells us she would like to reduce her leverage. But $\ell_0 = 0$ is as low as she can go. So she will do the next best thing and stick with her initial all-equity plan, $\ell_\star = 0$. A low earnings yield implies a high price-to-earnings (P/E) ratio, so we call any company where $\mathrm{ExcessCapRate} < 0\%$ a "growth stock".

But what if the exact same manager had created a different kind of company that had a higher cap rate, $\mathrm{EY}(0) = r - g > r_f$? We call this kind of company a "value stock" and show that, in this new scenario, she would no longer stick to her initial equity-only plan. Proposition 3.3b tells us that the manager could now increase her EPS by borrowing at least \$1 riskfree. She will view the first \$1 of debt borrowed as less expensive than the last share of equity she was initially planning on issuing. This much we already knew. Proposition 3.4 tells us that, due to convexity, the EPS-maximizing manager of this value stock will never stop at just \$1 of riskfree debt.

Proposition 3.4 (Value vs. Growth)**.** *There will be a large qualitative change in the EPS-maximizing choice of leverage at the threshold, $EY(0) = r_f$*

$$\ell_\star \begin{cases} = 0 & \text{if } EY(0) < r_f \quad \text{growth stocks} \\ \geq \ell_{\max r_f} & \text{if } EY(0) > r_f \quad \text{value stocks} \end{cases} \tag{22}$$

Growth stocks use no debt. Value stocks exhaust their riskfree borrowing capacity.

Again, consider a value stock, $\mathrm{EY}(0) > r_f$, that initially starts out unlevered, $\ell_0 = 0$. If the manager of this company were to increase her leverage by a tiny amount $\epsilon > 0$, her earnings yield would go up, $\mathrm{EY}(\epsilon) > \mathrm{EY}(0)$, but her cost of debt would remain the same, $r_f = i(\epsilon) \cdot [1 + \delta(\epsilon)]$. Moreover, since she has a finite riskfree borrowing capacity, this will be true for any $\ell \in [0, \ell_{\max r_f}]$. Hence, if it makes sense for her to borrow one riskfree dollar, $\mathrm{EY}(0) > r_f$, it will make even more sense for her to borrow a second riskfree dollar, $\mathrm{EY}(\epsilon) > \mathrm{EY}(0) > r_f$. This positive feedback loop will continue until the manager has exhausted all her riskfree borrowing capacity, $\ell_\star \geq \ell_{\max r_f}$.

Figure 5 illustrates the intuition behind this result with a numerical simulation. Each line shows $\mathrm{EPS}(\ell)$ over the full range of leverage ratios $\ell \in [0, 1)$ when using a different riskfree rate, $r_f \in \{2\%, 4\%, 6\%\}$. Everything else is the same for all three lines: $\mathbb{E}[\mathrm{NOI}] = \$5.00$, $u = 27\%$, $d = 18\%$, $r = 10\%$, $g = 5\%$, and $p_u = 40\%$. When $r_f = 6\%$, the firm is a growth stock, ExcessCapRate = −1%. In this scenario, the highest point on the blue line is indicated by the diamond all the way on the left-hand side of the figure. The manager maximizes her EPS by using no leverage, $\ell_\star = 0.00$. By contrast, when $r_f = 2\%$ and 4%, the firm is a value stock. In both cases, the firm's excess cap rate is positive, ExcessCapRate = 3% and 5% respectively. So the manager maximizes EPS by borrowing a lot. Her optimal leverage in these two scenarios is $\ell_\star = 0.88$ and $\ell_\star = 0.86$.

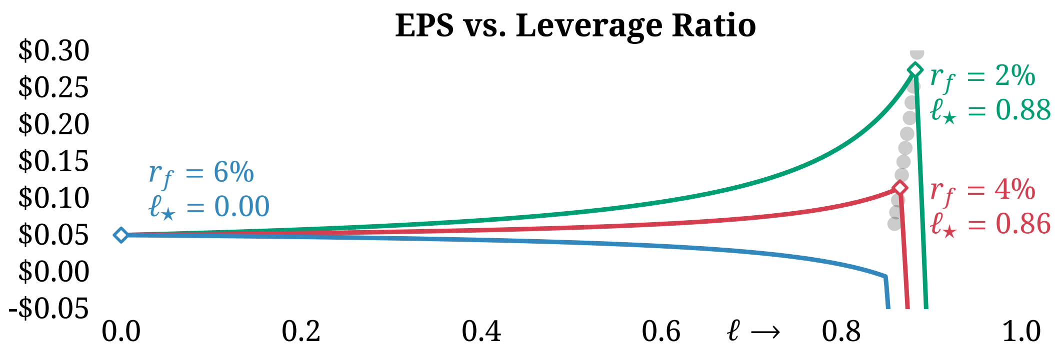


Figure 5. *x-axis: Candidate leverage ratio, $\ell \in [0, 1)$. y-axis: Earnings per share, EPS(ℓ). Each line reports results for a different riskfree rate, $r_f \in \{2\%, 4\%, 6\%\}$. All other parameters are the same for all three lines: $\mathbb{E}[NOI] = \$5.00$, $u = 27\%$, $d = 18\%$, $r = 10\%$, $g = 5\%$, and $p_u = 40\%$. White diamonds show the EPS-maximizing leverage for a particular r_f. Gray dots show EPS-maximizing leverages associated with other riskfree rates less than 5% at 25bps increments.*

3.5 Mapping To Observables

Our empirical analysis will use excess earnings yield to distinguish between growth and value stocks

$$\text{ExcessEY} \overset{\text{def}}{=} \text{EY}(\ell_\star) - r_f \tag{23}$$

We do this because equity analysts forecast each company's earnings yield given the manager's choice of leverage, $\text{EY}(\ell_\star)$. They do not usually submit a separate unlevered cap-rate forecast, $\text{EY}(0) = r - g$. Our model allows us to precisely characterize how this change in variables will affect our measurements.

Proposition 3.5 (Mapping To Observables)**.** *A growth stock will have a negative excess earnings yield equal to its excess cap rate, ExcessEY = ExcessCapRate < 0%. A value stock will have a positive excess earnings yield that is strictly larger than its excess cap rate, ExcessEY > ExcessCapRate > 0%. We can summarize the relationship as follows*

$$\mathit{ExcessEY} - \mathit{ExcessCapRate} \begin{cases} = 0\% & \text{if } EY(0) < r_f \\ > 0\% & \text{if } EY(0) > r_f \end{cases} \tag{24}$$

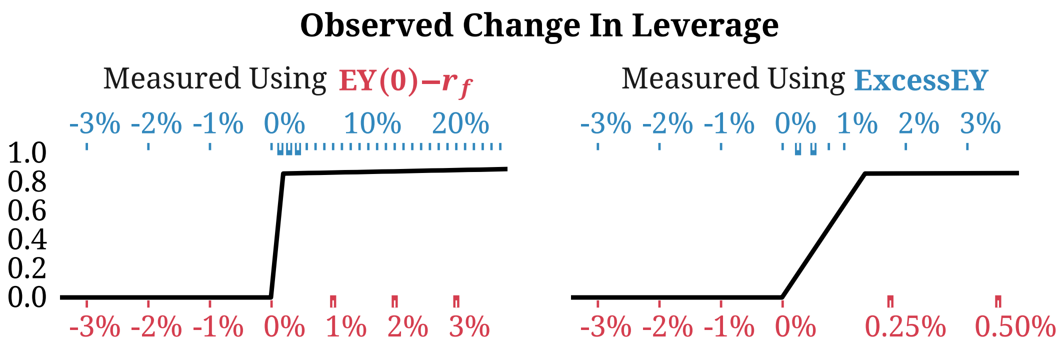


Figure 6. *The thick black lines show the same firm's EPS-maximizing leverage, $\ell_\star$, as it transitions from being a growth stock to a value stock. Simulation parameters are $\mathbb{E}[NOI] = \$5.00$, $u = 27\%$, $d = 18\%$, $r = 10\%$, $g = 5\%$, and $p_u = 40\%$. Top x-axis shows the firm's observed excess earnings yield,* **ExcessEY = EY($\ell_\star$) − r_f**. *The bottom x-axis shows the firm's excess cap rate,* **EY(0) − r_f**. (Left Panel) *How the change in EPS-maximizing leverage looks when using* **EY(0) − r_f** *to measure distance from the value-vs-growth dividing line. Tick marks on the bottom x-axis remain equally spaced, but the top x-axis gets compressed for value stocks.* (Right Panel) *How the exact same data look when using* **ExcessEY**. *Now, the top x-axis remains constant while the bottom x-axis gets stretched out for value stocks.*

Proposition 3.5 tells us that there is no difference between using ExcessEY and ExcessCapRate for growth stocks. But what does it mean for value stocks to have ExcessEY $>$ ExcessCapRate? First, it tells us that using data on a firm's excess earnings yields will not cause us to incorrectly classify it. If a company would be a growth stock when using ExcessCapRate, then it will also be a growth stock when using ExcessEY. The same goes for value stocks.

But because ExcessEY $>$ ExcessCapRate for value stocks, using ExcessEY will tend to stretch out the sharp change in firm behavior at ExcessCapRate $= 0\%$. The moment a firm's unlevered earnings yield exceeds the riskfree rate, an EPS-maximizing manager will lever up. And when she does this, it will further increase her firm's earnings yield, $\text{EY}(\ell_\star) > \text{EY}(0)$. Hence, when we measure things using ExcessEY, it will make value stocks seem even farther above the growth-vs-value dividing line than they actually are, as shown in Figure 6. Both panels in this figure show the same data. The only difference between the two panels is whether the data are measured using ExcessCapRate or ExcessEY.

3.6 Share Repurchases

Our simple max EPS model can account for more than just leverage decisions. We conclude this section by showing how it helps explain the decision to repurchase existing shares as well. Nothing new needs to be added to the model. We can apply the same variational arguments. All that changes is the framing of the problem.

Previously, ℓ_0 represented the manager's hypothetical plan for how much leverage to use when she eventually bought the assets needed to create her firm at time $t = 0$. Now, suppose that she has already acted on this plan. The manager has created her firm by taking out a loan worth $\mathrm{LoanAmt}(\ell_\star) = \ell_\star \cdot \mathrm{CostOfAssets}$, which was the EPS-maximizing choice at the time. But, when the manager woke up this morning, she saw that market conditions had changed. How will she adjust her leverage in response?

Proposition 3.6 (Share Repurchases)**.** *Let ℓ_0 denote the EPS-maximizing choice of leverage when the manager created her firm prior to the change in market conditions. $EY(\ell_0)$ is her firm's new earnings yield after market conditions have changed, and $i(\ell_0) \cdot [1 + \delta(\ell_0)]$ is the new marginal interest rate her lender is quoting. If the manager were to borrow an additional* \$1 *and issue one less share under the new market conditions, then her EPS would change by*

$$EPS'(\ell_0) \propto EY(\ell_0) - i(\ell_0) \cdot [1 + \delta(\ell_0)] \tag{25}$$

If the manager borrows an additional \$1 now that market conditions have changed, she will be able to repurchase a share. But she will also have to pay interest on this \$1 next year. These two effects work in opposite directions. Fewer shares outstanding $\Rightarrow$ higher EPS. Higher interest expense $\Rightarrow$ lower EPS. Share repurchases are EPS accretive when the first effect dominates. We want to emphasize that this logic is the same as the logic in Proposition 3.3b.

Stock buybacks boomed during the decade following the global financial crisis in 2008. There has been a lot of debate among academics and policymakers about how best to explain this pattern and the phenomenon of debt-financed share repurchases more generally (Dittmar, 2000; Grullon and Michaely, 2004;

Jenter, 2005; Hribar, Jenkins, and Johnson, 2006; Skinner, 2008; Babenko, 2009; Almeida, Fos, and Kronlund, 2016; Gutierrez and Philippon, 2017; Kahle and Stulz, 2021; Farre-Mensa, Michaely, and Schmalz, 2024). But Proposition 3.6 shows there is not much to explain if managers are EPS maximizers.

Market participants clearly understand that a firm's EPS can benefit from share repurchases. A 2020 Washington Post article explains how "corporate chief executives are playing a game that doesn't involve just showing high and ever-rising earnings. It involves showing high and ever-rising earnings per share—which isn't necessarily the same thing... When a company has, say, 2 million shares and earns a $10 million profit, its per-share earnings are $5... Now suppose the company buys back lots of its own stock, earns only $6 million but has just 1 million shares. That would give it earnings of $6 per share."[1]

But what about the costs? Why don't all managers engage in share repurchase programs? Our model predicts when an EPS-maximizing manager will see buybacks as accretive. The manager in this example can repurchase 1m shares by taking out a loan with a \$4m interest payment next year. If she can borrow an additional \$4m at $i \cdot [1 + \delta] = 5\%$, then she will see repurchases as accretive at any share price below \$80. This price point would give her existing shareholders an earnings yield of $\text{EY} = \frac{\$4\text{sh}}{\$80/\text{sh}} = 5\%$.

Now think about how things would change if the manager's firm was priced at \$200 per share, giving the company an earnings yield of just $\text{EY} = \frac{\$4\text{sh}}{\$200/\text{sh}} = 2\%$. If her lender was still quoting her a $i \cdot [1 + \delta] = 5\%$ marginal interest rate, then tapping into debt markets would dilute her firm's EPS. In this second scenario, the manager is running a growth stock. Equity investors are willing to pay her a lot more for each \$1 of earnings. Moreover, this would still be true if interest rates fell slightly and her new marginal interest rate was 4%. Hence, our model predicts that growth stocks should be much less likely to repurchase shares following small changes in market conditions.

To an EPS maximizer, equity issuance is just the flip side of the repurchase decision. When you ask managers why they do not issue more shares, they often

[1] Allan Sloan "The real reason US airlines and Boeing went for a combined $73.7 billion in buybacks." *The Washington Post.* Apr 15, 2020.

express concerns about diluting their EPS (e.g., see Graham and Harvey, 2001). All else equal, when the stock market assigns a higher price to the manager's shares, Proposition 3.6 tells us that she will find it more attractive to issue shares. In the example above, debt markets are only willing to lend the manager \$80 in exchange for each \$4 in annual earnings she gives up, \$80 = \$4/5%. So, if the manager can issue new equity at a price of \$81/sh or higher, then she is better off doing that.

This discussion has a similar flavor to the market-timing story for equity issuance in Baker and Wurgler (2000, 2002). More generally, there is an entire strand of the behavioral corporate-finance literature showing that rational managers take advantage of irrational markets. Think about papers like (Stein, 1996), Baker, Stein, and Wurgler (2003), and Shleifer and Vishny (2003) in which firm managers make decisions with an eye towards exploiting the way that the stock market is valuing their shares.

Our two mechanisms are not mutually exclusive. Both are likely at work in real-world asset markets. But it is important to recognize that these are two separate mechanisms. To drive this point home, notice that EPS maximization does not require the company's stock to actually be mispriced. There are no arbitrage opportunities in our model. Even if her company's shares are priced correctly, an EPS-maximizing manager will still want to repurchase some of them if her earnings yield is higher than her marginal interest rate. If investors are also underpricing the manager's shares, then the two effects would reinforce one another. But our mechanism does not require this sort of mispricing.

This is a distinction that makes a difference. It means that an EPS-maximizing manager does not need to know why her earnings yield is higher or lower than her marginal interest rate. She simply takes these prices as given and adjusts her capital accordingly. Whatever the reason, the recipe for increasing her EPS is the same. By contrast, the existing behavioral corporate-finance literature requires corporate executives to have a sophisticated understanding of asset prices. To exploit a pricing error, a manager must first know what the correct price is. This is not out of the question. But it is a much stronger claim about what managers are capable of.

4 Real Investment

So far, we have exclusively studied capital-structure decisions. We now show that it is possible to shed light on real-investment decisions by applying the same variational arguments to our simple max EPS model. We find that, rather than searching for positive-NPV projects, an EPS-maximizing manager will look for high-yield projects. For a project to be EPS accretive, its cash-flow yield over the next year must cover its own short-term financing, which will depend on where the capital comes from rather than project characteristics.

4.1 Project Description

Consider the same EPS-maximizing manager as before. In the previous section, the manager could choose how much to borrow, $\mathrm{LoanAmt}(\ell)$, and how many shares to issue, $\#\mathrm{Shares}(\ell)$. But her decisions did not alter the underlying future value of her firm. We had $\mathrm{CostOfAssets} = \mathrm{ValueOfAssets}_0$ no matter how the manager paid for these assets. While the future value of her firm was a random variable, $\mathrm{ValueOfFirm}_1 \in \{\mathrm{ValueOfFirm}_u, \mathrm{ValueOfFirm}_d\}$, the distribution was unaffected by the manager's choice of leverage.

We will now consider a real-investment decision. The manager purchases the assets needed to create her company at time $t = 0$ using the EPS-maximizing leverage ratio at the time, $\ell = \ell_\star$. Then, immediately after she completes this purchase, she suddenly realizes there is a new project her firm could undertake. Think about the project as starting a new product line, building a new production facility, or acquiring a competitor.

The project costs a small fraction, $\epsilon > 0$, of the initial value of the firm

$$\mathrm{CostOfProject} \overset{\text{def}}{=} \epsilon \cdot \mathrm{CostOfAssets} \tag{26}$$

This cost must be paid immediately in year $t = 0$. If the manager chooses to pay this cost, then her expected cash flows next year will go up by $\mathbb{E}[\Delta\mathrm{NOI}] = y \cdot \mathrm{CostOfProject}$ where $y \in (0, \infty)$ is the project's cash-flow yield

$$y \overset{\text{def}}{=} \frac{\mathbb{E}[\Delta\mathrm{NOI}]}{\mathrm{CostOfProject}} \tag{27}$$

It represents the share of the project's cost that will be repaid next year in the form of higher expected net operating income. The project has a payback period of $1/y$ years, $(1/y) \cdot \mathbb{E}[\Delta\text{NOI}] = \text{CostOfProject}$.

$\ell_\star \in [0, 1)$ is the EPS-maximizing choice of leverage in period $t = 0$ when the manager creates her firm. At that point in time, the manager is not aware of the project. Immediately after this transaction is complete, she then learns about a new project that her firm could undertake, which would increase her expected net operating income next year by $\mathbb{E}[\Delta\text{NOI}] = y \cdot \text{CostOfProject}$ at a cost of $\text{CostOfProject} = \epsilon \cdot \text{CostOfAssets}$ today. The discovery is an "eye-opener" for her (Tirole, 2009). But it does not change her share price. When she calls up her lender to ask for new loan terms, he continues to quote her the same interest-rate schedule based on $\text{ValueOfFirm}_1 \in \{\text{ValueOfFirm}_u, \text{ValueOfFirm}_d\}$.

4.2 Capital Budgeting

Under what conditions will an EPS-maximizing manager pay for a costly new project? We show that, for a project to be EPS accretive, its expected cash-flow yield over the next year needs to cover its own financing. Just like before, we find that this one underlying principle will cause growth ($\text{ExcessEY} < 0\%$) and value ($\text{ExcessEY} > 0\%$) stocks to behave in sharply different ways. If a manager's firm switches from being a value stock to being a growth stock or vice versa, she will suddenly choose to green-light a different set of projects and pay for them in different ways.

Proposition 4.2 (Capital Budgeting). *An EPS-maximizing manager will undertake a project if its expected cash-flow yield over the next year is high enough to cover its own financing, $y > f$, which is determined by the source of capital*

$$f = \min\left\{ \underbrace{EY(\ell_\star)}_{\text{Issue shares}} \; , \; \underbrace{i(\ell_\star) \cdot [1 + \delta(\ell_\star)]}_{\text{Take out a larger loan}} \right\} \tag{28}$$

Growth stocks ($\text{ExcessEY} < 0\%$) will require new projects to have cash-flow yields higher than their earnings yield, $y > EY(0)$, and finance the cost by issuing new shares. Value stocks ($\text{ExcessEY} > 0\%$) will require a strictly higher cash-flow yield, $y > EY(\ell_\star) = i(\ell_\star) \cdot [1 + \delta(\ell_\star)]$, and finance the cost mostly with debt.

The EPS-maximizing manager of a growth stock is willing to pay ϵ of her firm's purchase price so long as the project will boost her expected NOIs by at least $\mathbb{E}[\Delta\text{NOI}] > \text{EY}(0) \cdot \text{CostOfProject}$ next year. Why? Because she wants the project's cash flows to pay for its own financing. And, for a growth stock, $\text{ExcessEY} < 0\%$, equity markets are the cheapest source of financing, $\text{EY}(0) < r_f$.

The EPS-maximizing manager of a value stock, $\text{ExcessEY} > 0\%$, will also look for projects that can cover their own financing. But this same underlying principle causes her to act in a very different way. To see why, think back to Proposition 3.4, which tells us that value stocks will use up all their riskfree borrowing capacity, $\ell_\star \geq \ell_{\max r_f}$, at time $t = 0$ prior to learning about the project. So, if the manager of a value stock takes out an even larger loan to pay for the new project, she will have to pay a risk premium, $i(\ell_\star) \cdot [1 + \delta(\ell_\star)] > r_f$. Hence, for a project to be EPS accretive in the eyes of a value-stock manager, it must make up for her more expensive financing options.

Notice how the behavior of value stocks is consistent with pecking-order theory (Myers, 1984), which predicts that "when outside funds are necessary, firms prefer debt to equity because of lower information costs associated with debt issues. Equity is rarely issued. (Frank and Goyal, 2003)" But there is no adverse selection in our model. Managers are simply maximizing EPS. This one underlying principle not only explains why value stocks behave in a manner that is consistent with pecking-order theory but growth stocks do not.

4.3 Cash Accumulation

Up until now, we have assumed that the manager can only pay for a new project by issuing new shares or taking out a larger loan. However, many managers have access to a third source of financing: cash. In fact, public companies hold more cash than ever before. Bates, Kahle, and Stulz (2009) documents that "the average cash-to-assets ratio for US industrial firms more than [doubled] from 1980 to 2006." And this upward trend has continued in the decade since (Faulkender, Hankins, and Petersen, 2019).

Why don't firms use the cash on their balance sheets to pay for new projects? How could this not be the cheapest financing option? To explain this pattern in the data using an NPV-maximizing framework, you must introduce new ingredients, such as a borrowing constraint or a tax differential. See papers like Almeida, Campello, and Weisbach (2004), Moyen (2004), Faulkender and Wang (2006), Harford, Mansi, and Maxwell (2008), Denis and Sibilkov (2010), Farre-Mensa and Ljungqvist (2016), and Begenau and Palazzo (2021).

By contrast, our simple max EPS model naturally explains why some firms hold cash and others do not. An EPS-maximizing manager will think about cash as negative debt (Acharya, Almeida, and Campello, 2007). Each dollar of cash on her balance sheet will increase her expected earnings by $r_f \cdot \$1$ next year. Were the manager to spend this \$1 of cash on a new project, she would lose out on this riskfree interest payment. Hence, using cash reserves to pay for a project is equivalent to retiring a riskfree loan.

On one hand, we can immediately see that growth stocks will not see cash as an attractive financing option. By definition, $\mathrm{EY}(0) < r_f$, it is cheaper for these firms to issue new equity than to borrow at the riskfree rate. In a world populated by EPS-maximizing managers, this kind of company should accumulate cash quickly. Any cash that shows up on their balance sheet will stay there.

On the other hand, value stocks would love to be able to borrow at the riskfree rate. Proposition 3.4 tells us that this group of firms will exhaust their riskfree borrowing capacity even before any new projects arrive, $\ell_\star \geq \ell_{\max r_f}$. So when the manager of a value stock calls up her lender to ask about a slightly larger loan to pay for a new project, he will quote her a marginal interest rate that includes a risk premium, $i(\ell_\star) \cdot [1 + \delta(\ell_\star)] > r_f$. If cash ever shows up on the balance sheet of a value stock, an EPS-maximizing manager will see this line item as her cheapest source of financing.

EPS-maximizing managers always follow the same general rule. They only invest in projects that have a cash-flow yield high enough to pay for their own financing. And, in the presence of cash, the expression for a firm's cheapest source of financing in Proposition 4.2 becomes

$$f_{\text{w/Cash}} = \min\left\{ \underset{\text{Issue shares}}{\mathrm{EY}(\ell_\star)} \;,\; \underset{\text{Take out a larger loan}}{i(\ell_\star) \cdot [1 + \delta(\ell_\star)]} \;,\; \underset{\text{Cash}}{r_f} \right\} \tag{29}$$

Proposition 4.3 (Cash Accumulation). *The EPS-maximizing manager of a growth stock (ExcessEY $< 0\%$), will never use cash holders to pay for a new project. As a result, the cash holdings of such a firm will increase rapidly.*

If the same manager were running a value stock (ExcessEY $> 0\%$), she would see cash as the cheapest source of financing and use it to pay for projects whenever possible. Her cash holdings should hover around zero in the steady state.

Our simple max EPS model suggests that the presence of cash will dramatically alter the project selection of value stocks but not growth stocks. Growth stock will be unlevered, $\ell_\star = 0$, and have an earnings yield below the riskfree rate, $\mathrm{EY}(0) < r_f$. For these firms, the financing can be written as $f_{\text{w/Cash}} = \min\{\mathrm{EY}(0), r_f, r_f\}$. The addition of cash to a growth stock's balance sheet has no effect on project selection. The second r_f is redundant. If it is not accretive to borrow \$1 riskfree, it will not be accretive to spend a \$1 of cash.

Things are different for value stocks. Our model says that these firms will exhaust all their riskfree borrowing capacity, $\ell_\star \geq \ell_{\max r_f}$. Their marginal interest rate will include a risk premium even if their current interest rate does not, $\mathrm{EY}(\ell_\star) = i(\ell_\star) \cdot [1+\delta(\ell_\star)] > r_f$. So the r_f in $f_{\text{w/Cash}} = \min\{\mathrm{EY}(\ell_\star), i(\ell_\star) \cdot [1+\delta(\ell_\star)], r_f\}$ now makes a meaningful difference. Without cash, these firms will be stingy. With cash, they will suddenly become extravagant, freely dispensing money on low-yield projects until their cash reserves run dry.

The logic outlined above suggests that a composition effect might be able to resolve a tension at the heart of the investment-cash flow sensitivity literature. Proposition 4.3 says that value stocks should have higher investment-cash flow sensitivities than growth stocks. Value stocks also tend to be more financially constrained in the ways that researchers usually measure (Farre-Mensa and Ljungqvist, 2016). Hence, it makes sense why Fazzari, Hubbard, and Petersen (1988) would find that constrained firms tended to have higher investment-cash flow sensitivities when using data from the late 1970s and early 1980s when most firms were value stocks. However, as stock-market valuations rose in the 1990s, more and more companies became growth stocks. If financial-constraint measures were slow to update, then it could explain why Kaplan and Zingales (1997) found conflicting results when including the more recent data points.

Proposition 4.3 points out that, because the EPS-maximizing manager of a value stock will see cash as her cheapest source of financing, it would be surprising if she ever accumulated much of it. But there is also another reason worth highlighting. A manager can use cash to pay down risky debt.

Suppose the EPS-maximizing manager of a value stock has used up all her riskfree borrowing capacity and then some. When she took out the loans, she was perfectly happy with her decision to borrow at a rate higher than r_f. But her smile will vanish the moment cash shows up on her balance sheet. Cash is like negative riskfree debt, and it makes no sense for her to lend at the riskfree rate while paying a risk premium on another loan. Hence, if she does not have a new project in mind, the manager will do a cash-financed debt repurchase. It is the same as the motivation behind debt-financed share repurchases, which we discussed in Section 3.6.

4.4 M&A Method Of Payment

Our analysis of the manager's capital-budgeting decision in Proposition 4.2 can be applied to any costly new project. It is a general result. However, in our empirical analysis, we will apply this idea to the specific case of M&A deals. Growth stocks have extremely low earnings yields, ExcessEY $< 0\%$, which means that equity investors are willing to pay the firm a lot for each \$1 of its earnings. Thus, when a growth stock acquires another firm, the manager should see new issuance as the cheapest way to pay target shareholders.

Proposition 4.4 (M&A Method Of Payment)**.** *In a world populated by EPS-maximizing managers, growth-stock acquirers (ExcessEY $< 0\%$) should pay target shareholders with equity. When the acquirer is a value stock, ExcessEY $> 0\%$, target shareholders should mainly be compensated with cash, either from existing reserves or by way of new debt issuance.*

Proposition 4.2 also has implications for the kinds of mergers that will take place. For example, it explains why value stocks are more likely to acquire following a large influx of cash (Harford, 1999). However, in our empirical analysis, we focus exclusively on the method of payment.

When an M&A deal takes place, we cannot directly observe the cash-flow yield that the acquiring CEO expects to realize. Researchers could quite reasonably disagree on how best to estimate this quantity (Moeller, Schlingemann, and Stulz, 2004; Harford, 2005; Malmendier and Tate, 2008; Baker, Pan, and Wurgler, 2012). By comparison, there can be no disagreement about how target shareholders were compensated. Did they receive cash or shares of the acquirer's own stock? We can observe the answer to this question in our data.

It is important to understand how acquirers decide on a method of payment. This is a worthwhile objective in its own right (Martin, 1996; DeMarzo, Kremer, and Skrzypacz, 2005; Faccio and Masulis, 2005; Gorbenko and Malenko, 2018). Like before, this decision rule naturally falls out of our simple max EPS model. We do not need to introduce any additional ingredients.

4.5 Reaching For Yield

The manager in our model is an EPS maximizer. She cares about whether a project will increase her expected cash flows next year, $\mathbb{E}[\Delta\mathrm{NOI}] = y \cdot \mathrm{CostOfProject}$. By contrast, if the manager were an NPV maximizer, then she would equate the project's cost with the present value of the resulting increase in equity payouts, $\mathbb{PV}[\Delta\mathrm{EquityPayouts}]$. We now characterize the four possible ways that this difference in objectives can affect project selection.

To do this, we first need to describe how an NPV-maximizing manager would think about the project's benefits. In principle, the benefits might not be the same in both states of the world at time $t = 1$. This is a distinction that does not make a difference to an EPS maximizer. But it does matter when computing $\mathbb{PV}[\Delta\mathrm{EquityPayouts}]$. Let $\{y_u, y_d\}$ denote the project's cash-flow yield in each future state

$$\Delta\mathrm{NOI}_u = y_u \cdot \mathrm{CostOfProject} \tag{30a}$$

$$\Delta\mathrm{NOI}_d = y_d \cdot \mathrm{CostOfProject} \tag{30b}$$

What's more, an NPV maximizer will appreciate that a change in the firm's cash flows at time $t = 1$ will get compounded into the resale value of the firm's assets, $\Delta\text{ValueOfAssets}_1 = \Delta\text{NOI}_1 \times \left(\frac{1+g}{r-g}\right)$. Shareholders get whatever is left of $\text{ValueOfFirm}_1 = \text{NOI}_1 + \text{ValueOfAssets}_1$ after paying off the existing debt

$$\Delta\text{EquityPayout}_u = \Delta\text{ValueOfFirm}_u \tag{31a}$$
$$\Delta\text{EquityPayout}_d = \max\{\,\Delta\text{ValueOfFirm}_d - \text{DefaultSavings}_d, \$0\,\} \tag{31b}$$

An NPV-maximizing manager with a risky loan will appreciate that she has to pay the entirety of CostOfProject upfront but will not receive all the benefits at time $t = 1$. Some of the increase in firm value will go to her lender. The manager has to pay a risk premium because the lender knows she will default on her initial loan in the down state, $\text{DefaultSavings}_d = \max\{(1+i)\cdot\text{LoanAmt} - \text{ValueOfFirm}_d, \$0\}$. So the first dollars generated by the project at time $t = 1$ will go toward eliminating this default savings

$$\text{DebtOverhang}_d \overset{\text{def}}{=} \min\{\,\Delta\text{ValueOfFirm}_d, \text{DefaultSavings}_d\,\} \tag{32}$$

This is known as "debt overhang" (Myers, 1977).

Proposition 4.5 (Reaching For Yield). *All else equal, a project with a higher expected cash flow next year,* $\mathbb{E}[\Delta NOI] \gg \$0$, *will be more attractive to both EPS- and NPV-maximizing managers. There are four possible ways that all else might not be equal, causing these managers to disagree about whether to start a project*

$$\begin{aligned}\left\{\frac{\mathbb{PV}[\Delta EquityPayouts]}{CostOfProject} - 1\right\} - \left\{\,y - f\,\right\} \propto &-(\mathbb{E}-\mathbb{PV})[\Delta NOI] \\ &+ \mathbb{PV}[\Delta ValueOfAssets] \\ &- \mathbb{PV}[DebtOverhang] \\ &- (1-f)\cdot CostOfProject\end{aligned} \tag{33}$$

An NPV-maximizing manager is more likely to invest in a project if the left-hand side of Equation (33) is positive. A positive NPV project should increase the present value of shareholders' future payouts by more than its cost today, $\frac{\mathbb{PV}[\Delta\text{EquityPayouts}]}{\text{CostOfProject}} > 1$. An EPS-maximizing manager will see a project as accretive if its expected cash-flow yield can cover its own short-term financing, $y > f$.

On the right-hand side of Equation (33), terms with a positive sign imply that an NPV maximizer is more likely to invest. Notice that there is only one of these: $+\mathbb{PV}[\Delta\text{ValueOfAssets}]$. An EPS-maximizing manager does not consider the present discounted value of any long-term project benefits when making capital-budgeting decisions.

This omission will bias her toward choosing projects with large short-term benefits. But it does not imply that an EPS-maximizing manager will always underinvest. The $-(1-f)\cdot\text{CostOfProject}$ term in Proposition 4.5 reflects the fact that an EPS-maximizing manager only cares about how much she has to pay to finance the project over the upcoming year. Unlike an NPV-maximizing manager, she does not consider the project's full cost.

The $-(\mathbb{E}-\mathbb{PV})[\Delta\text{NOI}]$ term captures the fact that, while both kinds of managers like projects with high short-term cash flows, only NPV maximizers discount those cash flows. This will make a project appear more attractive to an EPS maximizers because, even in the absence of risk, a sure-fire \$1 next year is only worth $\mathbb{PV}[\$1 \text{ a year from now}] = \$1/(1+r_f)$ today.

The $-\mathbb{PV}[\text{DebtOverhang}]$ term indicates that an EPS-maximizing manager does not suffer from debt overhang. Proposition 3.3a shows that, when making capital-structure decisions, an EPS-maximizing manager does not consider the present discounted value of the money her shareholders would save by defaulting in the down state. This might be a bad thing. But every dark cloud has a silver lining. Since she does not consider it to begin with, an EPS-maximizing manager will not worry about losing out on $\mathbb{PV}[\text{DefaultSavings}]$ when choosing whether to green-light a new project.

Proposition 4.5 implies that debt-overhang arguments do not apply to EPS maximizers. Highly levered firms may invest less in the data. But if these firms are run by EPS-maximizing managers, then the observed empirical relationship cannot be due to debt overhang. There must be some other cause.

In our simple model, an EPS-maximizing manager would never invest in a project with no short-term cash flows, $y = 0\%$, regardless of the long-term benefits. Obviously, in the real world, public companies do sometimes invest in projects with only long-term payouts. For example, it can take over a decade to bring a new drug to market. Why would pharmaceutical companies invest in such a project if they were maximizing EPS?

We are not claiming that EPS maximization can account for every decision that corporate executives make. Our point is that a simple max EPS model can explain surprising amount. As it turns out, it can also explain a large chunk of R&D expenditures—not all, but a lot. EPS-maximizing managers still do R&D. They simply do a different kind of R&D.

For example, "much of big pharma's R&D is directed at extending the franchises of existing drugs through line extensions... For example, Bristol-Myers spent a large part of its 2018-19 R&D dollars for line extensions for existing blockbusters Opdivo and Yervoy, and Sanofi testified in the Senate that only 33 of its 81 R&D projects were for new chemical entities. (Frank and Hannik, 2022)" This is to be expected in a world populated by EPS-maximizing managers.

For a long-term project to get an EPS maximizer's approval, it must also generate sufficient short-term cash flows. There is actually a catchy name for this idea: "the whiskey and gin approach."[2] EPS-maximizing managers are willing to invest in projects that need to be barrel-aged for 10+ years (the whiskey) if there is something else to be done with the stills in the meantime (the gin).

5 Empirical Evidence

The people running large public corporations say they are EPS maximizers. When we model them as such, we get a wide range of testable predictions (see Figure 1). The EPS-maximizing manager of a growth stock (ExcessEY $< 0\%$) should view equity as the cheapest source of financing and use very little leverage, never repurchase shares, steadily accumulate cash, and pay for new projects with new issuance. Put the same manager in charge of a value stock, and she will suddenly lean toward debt financing, repurchase any time her earnings yield increases, and quickly spend any cash on her balance sheet. These predictions come from swapping out max NPV for max EPS in an otherwise standard model with no added frictions, information asymmetries, or price distortions. We now document strong empirical support for each of them.

[2] Paul Mumma "The 'Whisky And Gin' Approach To R&D." *Forbes Technology.* Mar 19, 2020.

5.1 Data Description

We create an annual dataset of firm characteristics by merging variables from WRDS' Ratios Suite onto annual Compustat data. We use daily price data from CRSP. To be included in our sample, a public company must be traded on one of the three major US exchanges (NYSE, Nasdaq, or AmEx), have a share code of 10 or 11, and have a share price over $5. We exclude firms below the 30th percentile of the NYSE market capitalization distribution 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). All variables are winsorized at the 1st and 99th percentiles within each year.

We use data from the IBES unadjusted summary file to calculate each firm's earnings yield and EPS. For a firm to be included in our analysis for year t, an analyst must have 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 (year $t+1$).

We also retrieve data from several other sources. Our riskfree rate is Moody's seasoned Aaa corporate-bond yield, which can be downloaded from the St Louis Federal Reserve's website (https://fred.stlouisfed.org/series/AAA). We use the SDC's New Issues dataset to identify firms that will issue new debt and/or equity in the upcoming year. We use the SDC's M&A dataset to identify acquirers and the subset of acquiring firms that paid target shareholders with stock. We download simulated pre-interest marginal tax rates from John Graham's website (https://people.duke.edu/~jgraham/taxform.html).

Our final dataset contains 44,636 firm-year observations over the period from 1976 to 2023. Since we use the PERMNO of a company's primary issuance as a unique identifier for that firm, we will talk about "firm" and "PERMNO" interchangeably. We report summary statistics at the firm-year level in Table 4. We double-cluster our regression standard errors by firm and year.

To illustrate, IBM's 2005 fiscal year ended in December 2005. Our model predicts that IBM's excess earnings yield (ExcessEY) on this date should be correlated with its current capital structure (end of FY2005) and its corporate policies over the next twelve months (FY2006). We calculate IBM's earnings

Summary Statistics

	#	Avg	Sd	Min	Max
	(1)	(2)	(3)	(4)	(5)
ExcessEY	44,625	0.0%	4.1%	−24.4%	23.5%
ExcessEY > 0%	44,625	50.0%			
Total Debt/Assets	44,503	51.7%	21.7%	3.2%	153.3%
Financial Leverage > 0%	44,636	91.6%			
Will Repurchase Shares	39,988	36.3%			
Will Issue Debt	44,636	14.4%			
Will Issue Equity	44,636	4.9%			
ΔCash/Assets	39,943	3.0%	15.1%	−36.6%	334.6%
Will Pay Target w Stock	7,628	29.6%			
$\log_2$(Market Cap)	44,636	31.0	2.2	25.8	38.5
Profitability	44,610	14.9%	10.6%	−54.9%	57.4%
Book To Market (B/M)	43,527	48.3%	35.5%	1.0%	298.5%
Tangibility	44,610	29.9%	22.8%	0.2%	93.2%
Marginal Tax Rate	27,738	33.8%	8.9%	0.0%	46.0%

Table 4. *Sample: Firm-year observations from 1976 to 2023. ExcessEY: Next-twelve-month earnings yield minus Moody's seasoned Aaa corporate-bond yield. Total Debt/Assets: Total liabilities as a percent of total assets. Financial Leverage >0%: Percent of firm-year observations that have any long-term financial debt. Will Repurchase Shares: Percent of observations where the firm repurchases* ≥ 1% *of its current market cap over the next year. Will Issue Debt: Percent of observations where the firm issues new debt in the next year. Will Issue Equity: Percent of observations where the firm issues new equity during the next year. ΔCash/Assets: Change in cash and cash equivalents over the next year as a percent of total assets in the current year. Will Pay Target w Stock: Among firm-year observations that made an acquisition during the following year, what percent delivered more than half of all value to target shareholders via stock?* $\log_2$*(Market Cap): Base-2 log of market cap. Profitability: Operating income before depreciation as a percent of total assets. Book To Market: Book value of equity as a percent of market capitalization. Tangibility: Net PP&E spending as a percent of total assets. Marginal Tax Rate: Pre-interest marginal tax rate from Graham (1996).*

yield by dividing analysts' consensus next-twelve-month EPS forecast for IBM in December 2005 by the company's price in December 2005. To get to IBM's excess earnings yield, we subtract off Moody's seasoned Aaa corporate-bond yield in December 2005. We measure variables related to IBM's capital structure (e.g., Total Debt/Assets) as of the end of FY2005 in December 2005. Whereas, we measure changes in corporate policies (e.g., Will Repurchase Shares, ΔCash/Assets, and Will Pay Target w Stock) using data from FY2006 (January to December 2006). Appendix B gives detailed instructions for constructing each variable.

5.2 Baseline Results

We now present regression results to support the four baseline empirical results shown in Figure 2. From the figure, we can see that there are large qualitative differences between the choices made by growth and value stocks. Our goal in this first part of our empirical analysis is to quantify the size of the gap and show that it cannot be explained by any obvious confounds. Then, once this is out of the way, we will turn our attention to identifying EPS maximization as the root cause of these differences.

Leverage Ratio. Proposition 3.4 predicts that there should be a large difference between the amount of leverage used by growth and value stocks. Growth firms should finance themselves using mostly equity. The EPS-maximizing manager of a value stock should, at the very least, use up all her riskfree borrowing capacity. We assess how big the predicted difference is in the data by running regressions of the form below

$$\text{Total Debt/Assets}_{n,t} = \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots + \hat{\varepsilon}_{n,t} \tag{34}$$

Total Debt/Assets$_{n,t}$ is the nth firm's total liabilities as a percent of its total asset value in year t, and Is Value Stock$_{n,t} \overset{\text{def}}{=} 1_{\{\text{ExcessEY}_{n,t} > 0\%\}}$ indicates whether the firm had a positive excess earnings yield.

Column (1) in Table 5 reveals that the typical value stock has 10.26%pt higher leverage than the typical growth stock. In column (2), we add year fixed effects to Equation (34), and the effect size hardly changes. Since all firms face

Dep Variable:	Total Debt/Assets				
	(1)	(2)	(3)	(4)	(5)
Is Value Stock ExcessEY > 0%	10.26*** (0.81)	10.34*** (0.68)	3.77*** (0.66)	12.17*** (0.64)	11.04*** (0.68)
$\log_2$(Mkt Cap)				1.87*** (0.19)	2.03*** (0.20)
Profitability				−0.35*** (0.07)	−0.73*** (0.06)
Book to Market				−0.04** (0.02)	−0.07*** (0.02)
Tangibility				0.18*** (0.01)	0.17*** (0.01)
Marg Tax Rate					0.30*** (0.06)
Year FE	*N*	*Y*	*N*	*Y*	*Y*
Firm FE	*N*	*N*	*Y*	*N*	*N*
# Obs	44,492	44,492	43,640	43,409	27,177
Adj. R^2	5.6%	7.7%	65.4%	16.1%	20.2%

Table 5. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. Total Debt/Assets: Total liabilities as a percent of a firm's total assets in the current year. Is Value Stock: One if firm-year observation has a positive excess earnings yield. Numbers in parentheses are standard errors double-clustered by firm and year.* *, **, *and* *** *denote statistical significance at the* 10%, 5%, *and* 1% *levels.*

the same riskfree rate each year, the identical point estimates in columns (1) and (2) tell us that our results are not driven by changing interest-rate regimes.

Companies do not usually change their capital structure very much from year to year (Leary and Roberts, 2005; Lemmon, Roberts, and Zender, 2008; DeAngelo and Roll, 2015). For the most part, growth stocks tend to remain growth stocks. A value stock in 1994 is likely to be a value stock in 1995. Hence, it is not surprising that, when we include firm fixed effects in column (3), the effect size drops to $\hat{\beta} = 3.77$%pt. This is not a knock on our theory. It is exactly what our model would predict in a world where leverage is persistent. In the next subsection, we will focus on the firms that switch between value and growth and examine other sources of identification.

However, in the meantime, what would be a serious problem for our theory given the current specification? If the 10.26%pt effect in column (1) could be attributed to some known difference between our growth and value stocks. In columns (5) and (6), we show that this is not the case. These columns control for a firm's size, its profitability, its book-to-market ratio, the tangibility of the firm's assets, and the firm's marginal tax rate. Many of these variables have statistically significant coefficients. But their effect sizes are economically tiny, and controlling for these variables does not affect the magnitude of $\hat{\beta}$. We control for marginal tax rates in a separate column because this variable meaningfully reduces our sample size.

Strebulaev and Yang (2013) found that roughly 14% of all US stocks have zero financial leverage. This is a puzzle when assuming that managers are aiming to maximize NPV. However, it makes perfect sense when viewed through the lens of our EPS-maximization framework. Our model predicts that growth stocks should be unlevered. Column (1) in Table 6 shows that growth stocks are 7.68%pt more likely to have zero financial leverage, more than half the effect.

Of course, firms can lever up without issuing corporate bonds (Welch, 2011). Only half of total leverage is due to long-term "financial" debt. The distinction between financial leverage and total leverage is important. So, in columns (3)-(6) of Table 6, we show that value stocks are more likely to issue debt and less likely to issue new equity, exactly as predicted by our model.

Share Repurchases. Proposition 3.6 predicts that growth stocks should be relatively insensitive to small changes in market conditions. Value stocks should be much more likely to engage in debt-financed share repurchases. We quantitatively assess how much more likely using regressions of the form

$$\text{Will Repurchase Shares}_{n,t} = \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots + \hat{\varepsilon}_{n,t} \tag{35}$$

Will Repurchase Shares$_{n,t}$ is an indicator variable that is 100 if the nth firm repurchases $\geq$ 1% of its current market cap in year t over the next twelve months in year $(t+1)$. We use a 0/100 indicator rather than a 0/1 indicator so that $\hat{\beta}$ can be interpreted as a percentage point change.

Dep Variable:	Financial Debt > 0%		Will Issue Debt		Will Issue Equity	
	(1)	(2)	(3)	(4)	(5)	(6)
Is Value Stock ExcessEY > 0%	7.68*** (0.89)	9.27*** (0.99)	8.06*** (1.10)	7.41*** (0.59)	−4.60*** (0.57)	−1.94*** (0.42)
$\log_2$(Mkt Cap)		1.94*** (0.20)		6.05*** (0.35)		−0.80*** (0.09)
Profitability		−0.32*** (0.05)		−0.13*** (0.03)		−0.39*** (0.04)
Book To Market		0.04*** (0.01)		0.06*** (0.01)		−0.07*** (0.01)
Tangibility		0.19*** (0.02)		0.16*** (0.02)		0.09*** (0.01)
Year FE	*N*	*Y*	*N*	*Y*	*N*	*Y*
# Obs	44,625	43,516	44,625	43,516	44,625	43,516
Adj. R^2	1.9%	10.0%	1.3%	13.6%	1.1%	5.4%

Table 6. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. Financial Leverage >0%: 100 if firm-year observation has long-term debt. Will Issue Debt: 100 in year t if firm will issue new debt in year* $(t+1)$. *Will Issue Equity: 100 in year t if firm will issue new equity in year* $(t+1)$. *Is Value Stock: 1 if firm-year observation has a positive excess earnings yield. Numbers in parentheses are standard errors double-clustered by firm and year.* *, **, *and* *** *denote significance at the* 10%, 5%, *and* 1% *levels.*

Column (1) in Table 7 shows that, among all stocks in year t, the ones with positive excess earnings yield are $\hat{\beta} = 18.43\%$pt more likely to repurchase shares over the next twelve months. Column (2) shows that the result is not attenuated by including year fixed effects. Moreover, since repurchases are a change in the firm's capital structure over the next year rather than a steady-state outcome, we see little drop in $\hat{\beta}$ when including firm fixed effects in column (3).

In column (4), we include year fixed effects as well as controls for firm size, profitability, book-to-market, and asset tangibility. Adding these variables to the right-hand side of our regression reduces $\hat{\beta}$ by about 1/3, from 18.43%pt to 11.38%pt. The sample average is 36.3%. So, while slightly smaller, this is still an economically large effect. Adding each firm's marginal tax rate as a control in column (5) does not change this fact.

Dep Variable:	Will Repurchase Shares				
	(1)	(2)	(3)	(4)	(5)
Is Value Stock ExcessEY > 0%	18.43***	15.12***	16.40***	11.38***	9.18***
	(2.51)	(1.94)	(1.94)	(1.39)	(1.47)
$\log_2$(Mkt Cap)				3.71***	3.60***
				(0.37)	(0.39)
Profitability				0.94***	0.92***
				(0.05)	(0.08)
Book to Market				0.06***	0.05**
				(0.02)	(0.02)
Tangibility				−0.23***	−0.22***
				(0.03)	(0.03)
Marg Tax Rate					0.25***
					(0.06)
Year FE	*N*	*Y*	*N*	*Y*	*Y*
Firm FE	*N*	*N*	*Y*	*N*	*N*
# Obs	39,979	39,979	39,414	39,077	25,434
Adj. R^2	3.7%	11.0%	23.4%	16.6%	16.5%

Table 7. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. Will Repurchase Shares: 100 if a firm repurchases* $\geq 1\%$ *of its current market cap over the next year. Is Value Stock: 1 if firm-year observation has a positive excess earnings yield. Numbers in parentheses are standard errors double-clustered by firm and year.* *, **, *and* *** *denote statistical significance at* 10%, 5%, *and* 1% *levels.*

Cash Accumulation. Proposition 4.3 says that growth stocks should accumulate cash at a much faster rate than value stocks. The EPS-maximizing manager of a growth stock should always view equity as the cheapest source of financing. Any cash that gets added to her balance sheet should stay there as long as her firm has a negative excess earnings yield.

By contrast, if a value stock happens to have cash reserves, its EPS-maximizing manager will see this money as her cheapest source of financing. Cash will also lower her standards for what constitutes a project worth investing in. Without cash, the EPS-maximizing manager of a value stock will require a minimum cash-flow yield of $y > f = \text{EY}(\ell_\star) = i(\ell_\star) \cdot [1 + \delta(\ell_\star)] > r_f$. With cash, a project must only beat out the prevailing riskfree rate at the time, $y > f = r_f$.

Dep Variable:	ΔCash/Assets				
	(1)	(2)	(3)	(4)	(5)
Is Value Stock ExcessEY > 0%	−3.45⋆⋆⋆ (0.78)	−3.63⋆⋆⋆ (0.64)	−1.41⋆⋆⋆ (0.33)	−1.27⋆⋆⋆ (0.35)	−0.82⋆⋆⋆ (0.25)
$\log_2$(Mkt Cap)				1.87⋆⋆⋆ (0.06)	−0.42⋆⋆⋆ (0.05)
Profitability				−0.07⋆⋆⋆ (0.02)	−0.05⋆ (0.03)
Book to Market				−0.06⋆⋆⋆ (0.01)	−0.04⋆⋆⋆ (0.01)
Tangibility				−0.01 (0.01)	−0.02⋆⋆ (0.01)
Marg Tax Rate					−0.19⋆⋆⋆ (0.04)
Year FE	*N*	*Y*	*N*	*Y*	*Y*
Firm FE	*N*	*N*	*Y*	*N*	*N*
# Obs	39,934	39,934	39,369	39,038	25,403
Adj. R^2	1.3%	4.3%	14.0%	7.2%	5.3%

Table 8. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. ΔCash/Assets: Change in cash and cash equivalents over the next year as a percent of total assets in the current year. Is Value Stock: 1 if firm-year observation has a positive excess earnings yield. Numbers in parentheses are standard errors double-clustered by firm and year.* ⋆, ⋆⋆, *and* ⋆⋆⋆ *denote statistical significance at* 10%, 5%, *and* 1% *levels.*

We quantitatively assess the difference in each kind of company's cash-accumulation rate using regressions of the form

$$\Delta\text{Cash/Assets}_{n,t} = \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots + \hat{\varepsilon}_{n,t} \tag{36}$$

ΔCash/Assets$_{n,t}$ is the change in nth stock's cash and cash equivalents over the next twelve months as a percent of its total assets in year t.

Column (1) in Table 8 shows that, among all stocks in year t, the ones with positive excess earnings yield reduce their cash reserves by $\hat{\beta} = 3.45\%$ of their total assets each year. Column (2) shows that the effect is not driven by year-specific considerations. In column (3), we see that about 2/3 of the effect can be soaked up by firm fixed effects. Again, this is exactly what one would expect if growth- and value-stock labels were persistent. In columns (4) and (5), we include year fixed effects as well as controls for firm size, profitability, book-to-market, asset tangibility, and marginal tax rates. Adding these controls to our regression reduces the estimate of $\hat{\beta}$ slightly, but the effect remains highly significant. It is also economically large. The sample average is 3.0% per year.

M&A Method Of Payment. Proposition 4.4 predicts that when acquiring another firm, a growth stock should be much more likely to pay the target shareholders with its own shares. We estimate how much more likely using the regression specification below

$$\text{Will Pay Target w Stock}_{n,t} = \hat{\alpha} + \hat{\beta} \cdot \text{Is Value Stock}_{n,t} + \cdots + \hat{\varepsilon}_{n,t} \tag{37}$$

Will Pay Target w Stock$_{n,t}$ is a 0/100 indicator for acquirers that used their own equity to deliver more than half of all payments to target shareholders. We again use a 0/100 indicator rather than a 0/1 indicator so that $\hat{\beta}$ can be interpreted as a percentage point change.

Column (1) in Table 9 shows that, among all acquirers in year t, the ones with a positive excess earnings yield were $\hat{\beta}$ = 23.26%pt less likely to pay target shareholders with their own stock. We note that this table uses data on a restricted sample. It only includes firm-year observations in which the firm made at least one acquisition in year $(t + 1)$. Columns (2) and (3) show that the effect is not primarily driven by year- or firm-specific considerations. 967 firms only make one acquisition during our sample. When we include firm fixed effects in column (3), these firm-year observations get dropped.

In columns (4) and (5), we add controls for firm size, profitability, book to market, asset tangibility, and marginal tax rates. These additional right-hand-side variables cut down our estimate to 10.20%pt. But the result remains highly significant and economically large. 29.6% of the acquirers in our sample make most of their payments with equity, making the 10.20%pt change equivalent to roughly 1/3 of the average.

Dep Variable:	Will Pay Target w Stock				
	(1)	(2)	(3)	(4)	(5)
Is Value Stock ExcessEY > 0%	$-23.26^{\star\star\star}$ (2.43)	$-15.00^{\star\star\star}$ (1.83)	$-16.64^{\star\star\star}$ (1.65)	$-10.20^{\star\star\star}$ (1.62)	$-11.49^{\star\star\star}$ (1.78)
$\log_2$(Mkt Cap)				$-0.97^{\star\star\star}$ (0.36)	$-1.20^{\star\star\star}$ (0.41)
Profitability				$-0.49^{\star\star\star}$ (0.10)	-0.14 (0.08)
Book to Market				$-0.16^{\star\star\star}$ (0.04)	$-0.16^{\star\star\star}$ (0.04)
Tangibility				0.06 (0.04)	0.01 (0.04)
Marg Tax Rate					$-0.45^{\star\star\star}$ (0.09)
Year FE	*N*	*Y*	*N*	*Y*	*Y*
Firm FE	*N*	*N*	*Y*	*N*	*N*
# Obs	7,627	7,625	6,660	7,519	4,866
Adj. R^2	9.2%	17.8%	23.9%	19.6%	17.6%

Table 9. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. Will Pay Target w Stock: 100 if a firm uses its own equity to deliver more than half of all payments to target shareholders next year. Is Value Stock: 1 if firm-year observation has a positive excess earnings yield. Numbers in parentheses are standard errors double-clustered by firm and year.* *, **, *and* *** *denote significance at* 10%, 5%, *and* 1% *levels.*

5.3 Unique Signature

Researchers have spent the past seventy years compiling a long list of other considerations and frictions that affect firm behavior. Many of these ingredients will still matter in a world populated by EPS-maximizing managers. Nevertheless, we chose to omit all of these things from our model to better understand the core economic differences between max NPV and max EPS.

If anything, the simplicity of our model should make it harder for us to fit the data. But, even though we find strong empirical support, we still have to worry about omitted variables. Sure, the people running large public corporations say that they are maximizing EPS. But how do we really know that this is the reason why value and growth stocks make such different choices?

To address this concern, we rely on a key feature of our model. The principle of EPS maximization suggests that firms on either side of the ExcessEY = 0% dividing line should maximize EPS in qualitatively different ways. There should be a nonlinear change in firm behavior at this precise cutoff. We exploit this model-implied threshold for identification purposes in two ways.

Classification Changes. Our simple max EPS model is static. All that matters is whether a firm's excess earnings yield is above or below zero. An EPS-maximizing manager should abruptly change her behavior the moment her firm switches from being a growth stock (ExcessEY $<$ 0%) to being a value stock (ExcessEY $>$ 0%) or vice versa. Our model does not consider real-world complications that affect the speed of adjustment.

Obviously, in the real world, it takes time to completely change how a large company finances itself (Hennessy and Whited, 2005; Flannery and Rangan, 2006; Strebulaev, 2007; Huang and Ritter, 2009). It would be unreasonable to expect a newly minted value stock to fully assimilate the very first year it has a positive excess earnings yield. We are not modeling these dynamics. If they are essential to explaining the patterns we observe in the data, then we are going to have a hard time explaining these patterns.

We do not. Table 10 shows that there are meaningful changes in firm behavior the very first year after it crosses the ExcessEY = 0% threshold. Each column shows a separate regression of the following form

$$\begin{aligned}\text{Outcome}_{n,t} = \hat{\alpha} + \hat{\gamma} \cdot \{&\text{Was Value}_{n,t-1} \rightarrow \text{Is Growth}_{n,t}\} \\ + \hat{\delta} \cdot \{&\text{Was Growth}_{n,t-1} \rightarrow \text{Is Value}_{n,t}\} \\ + \hat{\beta} \cdot &\text{Was Value Stock}_{n,t-1} \\ + \cdots &+ \hat{\varepsilon}_{n,t}\end{aligned} \tag{38}$$

$\text{Outcome}_{n,t}$ is a placeholder for one of the four dependent variables we have examined thus far. $\text{Was Value Stock}_{n,t-1} \overset{\text{def}}{=} 1_{\{\text{ExcessEY}_{n,t-1} > 0\%\}}$ is an indicator that flags firms-year observations that had a positive excess earnings yield in the previous year. The coefficient on this variable is similar to the $\hat{\beta}$ reported in column (1) of Tables 5, 7, 8, and 9.

Dependent Variable:	$\frac{\text{Total Debt}}{\text{Assets}}$ (1)	Will Reprch Shares (2)	$\frac{\Delta\text{Cash}}{\text{Assets}}$ (3)	Will Pay Tgt w Stock (4)
Was Value → Is Growth	$-5.51^{\star\star\star}$	$-10.75^{\star\star\star}$	$0.73^{\star\star\star}$	$6.83^{\star\star\star}$
$\text{ExcessEY}_{t-1} > 0\%$ $\text{ExcessEY}_t < 0\%$	(0.52)	(1.76)	(0.23)	(1.96)
Was Growth → Is Value	$6.13^{\star\star\star}$	$8.21^{\star\star\star}$	$-1.96^{\star\star\star}$	$-11.15^{\star\star\star}$
$\text{ExcessEY}_{t-1} < 0\%$ $\text{ExcessEY}_t > 0\%$	(0.74)	(1.71)	(0.35)	(1.92)
Was Value Stock	$11.99^{\star\star\star}$	$15.49^{\star\star\star}$	$-2.86^{\star\star\star}$	$-14.57^{\star\star\star}$
$\text{ExcessEY}_{t-1} > 0\%$	(0.74)	(2.25)	(0.40)	(1.59)
$\Delta \log_2$(Mkt Cap)	$-4.14^{\star\star\star}$	$-6.09^{\star\star\star}$	$2.65^{\star\star\star}$	$7.01^{\star\star\star}$
	(0.54)	(1.12)	(0.59)	(2.01)
ΔProfitability	0.04	$0.47^{\star\star\star}$	0.05	−0.04
	(0.04)	(0.08)	(0.03)	(0.07)
ΔBook To Market	$-0.15^{\star\star\star}$	$-0.18^{\star\star\star}$	$0.03^{\star\star}$	$0.15^{\star\star\star}$
	(0.01)	(0.04)	(0.01)	(0.04)
ΔTangibility	$-0.18^{\star\star\star}$	$-0.34^{\star\star\star}$	$0.16^{\star\star\star}$	$0.30^{\star\star\star}$
	(0.03)	(0.06)	(0.03)	(0.10)
Year FE	*Y*	*Y*	*Y*	*Y*
# Obs	38,678	35,189	35,155	6,636
Adj. R^2	10.2%	11.6%	4.4%	16.9%

Table 10. *Each column reports results for a separate regression. We omit estimates for the intercept and any fixed effects. Total Debt/Assets: Total liabilities as a percent of a firm's total assets in the current year. Will Repurchase Shares: 100 if a firm repurchases ≥ 1% of its current market cap over the next year. ΔCash/Assets: Change in cash and cash equivalents over the next year as a percent of total assets in the current year. Will Pay Target w Stock: 100 if a firm uses its own equity to deliver more than half of all payments to target shareholders next year. Was Value → Is Growth: 1 if a firm transitioned from being a value stock last year to being a growth stock this year. Was Growth → Is Value: 1 if a firm is a value stock in the current year but was a growth stock in the previous year. Was Value Stock: 1 if a firm had a positive excess earnings yield last year. ΔControl Variable: Realization in the current year minus the realization in the previous year. Numbers in parentheses are standard errors double-clustered by firm and year.* *, **, *and* *** *denote statistical significance at* 10%, 5%, *and* 1% *levels.*

What we really care about is the coefficients on the two transition variables. $\{\text{Was Value}_{n,t-1} \to \text{Is Growth}_{n,t}\}$ flags newly minted growth stocks. These firms have a negative excess earnings yield in the current year but a positive value in the previous year. The coefficient on this variable tells us that, in the very first year after exiting the fraternity of value stocks, a newly minted growth stock is already halfway to looking like a prototypical growth stock. We also see that the opposite is true for newly minted value stocks, which used to be a growth stock in the previous year, $\{\text{Was Growth}_{n,t-1} \to \text{Is Value}_{n,t}\}$.

These are extreme changes. Moreover, they cannot be explained by simultaneous changes in a firm's market capitalization, profitability, book-to-market, or asset tangibility. Every column in Table 10 also includes year fixed effects, so the observed changes cannot be explained by market-wide fluctuations.

In summary, it is easy to think of reasons why stocks on the "value" end of the spectrum might have higher leverage and repurchase shares at a higher rate. We can all think of reasons why stocks that typically get classified as "growth" might accumulate cash more quickly and pay for acquisitions with equity. But we know of no other theory that predicts a sudden nonlinear change behavior the moment they cross over the ExcessEY = 0% dividing line.

Time-Series Variation. We pursue this identification strategy even further. We are using a different definition of "growth" and "value", which allows the share of value stocks to vary over time. In the past, researchers have labeled the 30% of companies with the highest book-to-market ratios (B/M) as "value stocks". This definition implies that value stocks always represent 30% of the market. By contrast, our model says any company with ExcessEY $>$ 0% is a "value stock". All remaining companies are "growth stocks".

Figure 7 shows that the value/growth composition of the market has varied widely over the past fifty years. The solid black line shows the percent of all firms in a given year that are value stocks according to our model, $\Pr[\text{ExcessEY} > 0\%]$. The dashed red line shows the value-weighted book-to-market ratio of all firms in a given year, $\text{VW}[\text{Book To Market}]$. These two lines are very different from one another. For example, book equity has been less than half of total market capitalization since the late 1980s. By this measure, the stock market should

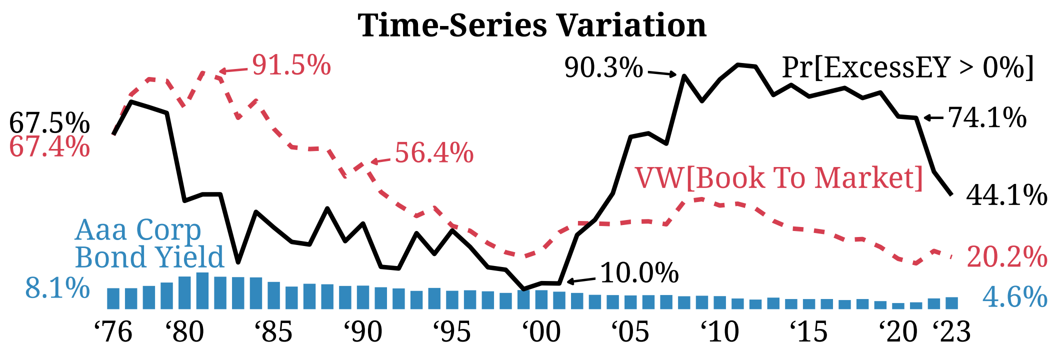


Figure 7. *Aaa Corp Bond Yield: Moody's seasoned Aaa corporate-bond yield. Pr[ExcessEY > 0%]: Percent of firms with a positive excess earnings yield. Avg[Book To Market]: Value-weighted average book-to-market ratio for firms in a given year. Percentages on the left are 1976 values. Those on the right are 2023 values.*

have looked very "growthy". But, our approach says that 9 out of 10 companies were value stocks following the financial crisis due to falling interest rates.

This time-series variation has clear implications for monetary policy. When interest rates rose in 2022, it discouraged EPS-maximizing managers from borrowing, and the effect was compounded by high inflation at the time. "'Companies always gravitate towards the place where capital is cheapest, and for years public equity markets were not a good place to source capital,' said Citi's chief global equity strategist. [...] For the first time in over two decades, it's cheaper for blue-chip companies in the US to sell shares than to borrow."[3]

On top of this, Figure 8 shows that the nonlinear change in firm behavior always occurs at ExcessEY = EY − r_f = 0% regardless of the prevailing riskfree rate at the time. Each panel reports results for a separate outcome panel. A single dot represents the average value for firms in a particular 1% excess earnings yield bin (y-axis) in a particular year (x-axis). Red dots denote high average values; blue dots denote low average values; and, the white line separates growth stocks (below) from value stocks (above). Think about all the ways that markets have changed since 1976. In spite of all these changes, managers nearly always switch their behavior at ExcessEY = 0%.

[3] Sujata Rao and Bailey Lipschultz "Debt-Addicted Companies Look to Equity as Interest Costs Skyrocket." *Bloomberg News.* Feb 26, 2024.

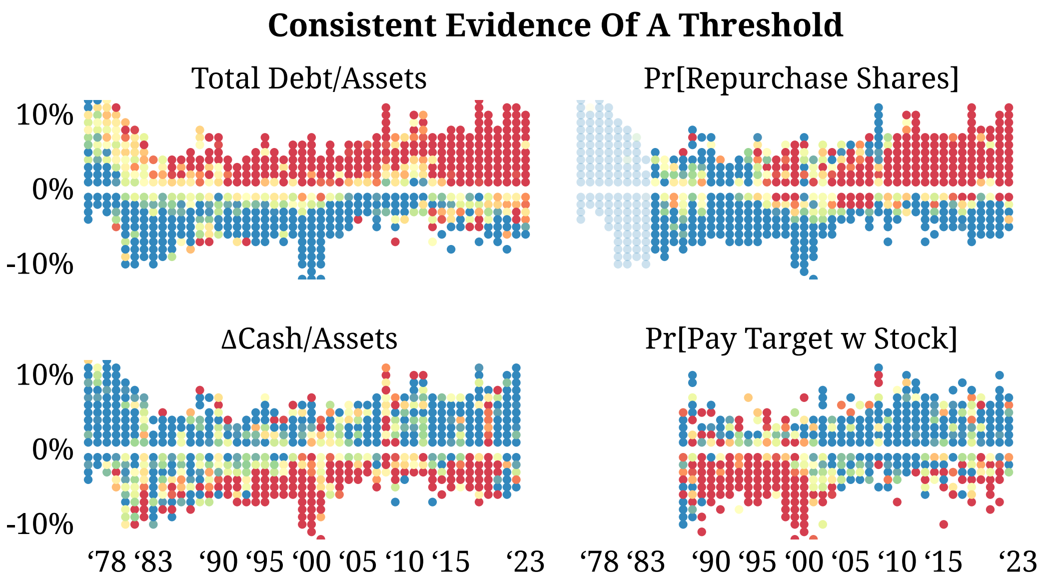


Figure 8. *The dots represent averages across firms in a* 1% *ExcessEY bin (y-axis) during a given year (x-axis). Bins with high average values are colored red. Those with low average values are colored blue. The white horizontal line in the middle of each panel separates growth stocks (below; ExcessEY* $<$ 0%*) from value stocks (above; ExcessEY* $>$ 0%*). Each panel shows ExcessEY bin-year averages for a different outcome variable. Shaded dots in the upper right panel indicate a time period when share repurchases were treated as insider trading.*

We highlight the main place where our model does not match the data with shaded circles in the top right panel. Prior to 1983, stock repurchases were considered illegal stock manipulation. We should not expect any firms to engage in this activity. Thus, the vertical strips of solid blue prior to 1983 in the upper-right panel of Figure 8 are an example of a positive control—i.e., a null result in a special circumstance where we should find nothing.

While this paper is mainly aimed at corporate-finance researchers, we note that this stylized fact likely has important implications for asset-pricing researchers. There is a large and active literature studying why value and growth firms often appear to be priced differently. Our analysis neatly explains the findings in Lettau, Ludvigson, and Manoel (2018), which show that growth funds have disappeared in recent years.

5.4 Unified Explanation

In the past, researchers have tried to explain firm decisions by adding ad hoc features to an NPV-maximizing framework. As a result, the corporate-finance literature is a collection of largely unrelated models. We show that many important managerial decisions can be explained by asking: What would EPS-maximizing managers do? Our simple max EPS model is meant to be a starting point that other researchers can add to going forward.

It is noteworthy that we can organize all our predictions on a single number line as shown in Figure 1. This is a step forward. Moreover, when we take these predictions to the data in Figure 2, the top two panels are mirror images of the bottom two. This is not a coincidence. All our model's predictions must have this same shape up to a scalar transformation.

We illustrate this point in the left panel of Figure 9. The solid and dashed green lines correspond to the curves for Total Debt/Assets and Pr[Repurchase Shares] exactly as shown in Figure 2. The min and max values for each curve have merely been set to zero and one, respectively. By contrast, the solid and dashed red lines are transformed versions of the curves for ΔCash/Assets and Pr[Pay Target w Stock] in Figure 2. In addition to rescaling the y-axis for these best-fit lines, we have also inverted the y-axis relative to the original chart. Our theory says that, after this transformation, all four lines should sit right on top of one another. That is exactly what we see in the data to a good approximation.

The right panel of Figure 9 shows what happens if we apply the same transformations to binned scatterplots when using book-to-market on the x-axis. Rather than seeing similar curves, the result is a mess of overlapping lines. Taken together, all these sources of identification point to one conclusion: managers are doing what they claim to be doing (maximizing EPS), and this is why we observe the patterns that we do in the data.

The fact that EPS maximization leads to a sharp change in firm behavior at ExcessEY = 0% also helps explain why "corporate motives have remained largely a mystery (Welch, 2004)" in the past. When modeling the wrong managerial objective function, it will seem like firms are capriciously switching back and forth between corporate policies.

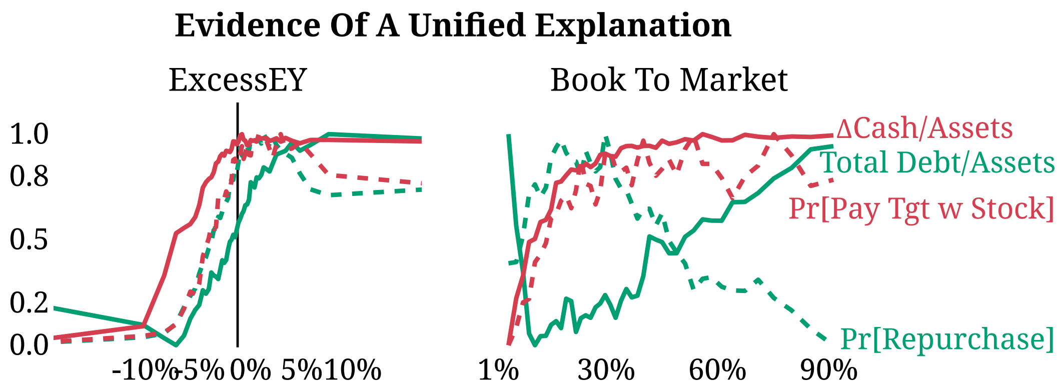


Figure 9. (Left Panel) *This panel shows rescaled versions of the best-fit curves shown in Figure 2. The x-axis denotes excess earnings yield. The solid and dashed green lines are the curves for Total Debt/Assets and Pr[Repurchase Shares] exactly as shown in the original figure. The min and max values for each curve have been set to zero and one, respectively. The solid and dashed red lines show the curves for ΔCash/Assets and Pr[Pay Target w Stock]. In addition to rescaling the y-axis for these best-fit lines, we have also inverted the y-axis relative to the original chart.* (Right Panel) *This panel shows the results of an analogous exercise, only this time with Book To Market rather than ExcessEY on the x-axis.*

Our simple max EPS model has the potential to resolve several long-standing debates in the literature. Why was there a boom in repurchases following the Global Financial Crisis? Under what conditions will financially constrained firms have higher investment-cash flow sensitivities? Why do only some firms behave in accordance with pecking-order theory? We did not develop our model with these questions in mind. Nevertheless, we have found that it naturally answers them without any additional fine-tuning.

6 Conclusion

Academic researchers have spent decades trying to convince the people running large public corporations to stop focusing on EPS growth (May, 1968; Stern, 1974). Stewart Stern even created an entire consulting company to popularize an alternative to EPS called "economic value added (EVA)" (Stern, Stewart, and Chew, 1995). And yet "firms [still] view earnings, especially EPS, as the key metric for an external audience. (Graham, Harvey, and Rajgopal, 2005)"

Corporate executives could have good reasons for maximizing EPS. Or maybe it is a mistake. Either way, the fact of the matter remains: managers are EPS maximizers. This paper shows that EPS maximization provides a simple unified explanation for a wide range of corporate decisions. Going forward, when researchers want to explain the choices that a manager will actually make, they should model her as an EPS maximizer. Our simple max EPS model does not explain everything, but it can explain a lot. It is a much better starting point for corporate-finance theory than the textbook max NPV approach.

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A Proofs And Derivations

Proof. **(Equations 6a and 6b)** *The no-arbitrage state prices, q_u and q_d, come from solving the following system of two equations and two unknowns*

$$\$1/(1+r_f) = q_u \cdot 1 + q_d \cdot 1 \tag{39a}$$
$$\mathit{CostOfAssets} = q_u \cdot \mathit{ValueOfFirm}_u + q_d \cdot \mathit{ValueOfFirm}_d \tag{39b}$$

Equation (39a) *demands that a riskfree bond is priced correctly. Equation* (39b) *demands that the company's assets are priced correctly.* □

Proof. **(Equation 8)** *For a loan to be riskfree, it must be preferable to make the promised loan payment in the down state at the riskfree rate*

$$\mathit{ValueOfFirm}_d \geq (1+r_f) \times \mathit{LoanAmt}(\ell) \tag{40a}$$
$$= (1+r_f) \times \ell \cdot \mathit{CostOfAssets} \tag{40b}$$

Solving for ℓ yields an expression for the maximum riskfree leverage level. □

Proof. **(Equation 9)** *If the manager exceeds her riskfree borrowing capacity, $\ell > \ell_{\max r_f}$, then her lender correctly anticipates that she will default in the down state at time $t = 1$. Hence, the lender must charge a higher interest rate to compensate for the fact that he will only get the value of the firm when $\ell > \ell_{\max r_f}$ and not the entire promised payment in the down state*

$$\mathit{LoanAmt}(\ell) = q_u \times (1+i) \cdot \mathit{LoanAmt}(\ell) + q_d \times \mathit{ValueOfFirm}_d \tag{41}$$

Solving for i yields the desired expression. □

Proof. **(Proposition 3.2)** *The fair interest rate $i(\ell)$ equates the present value of the manager's debt payments in year $t = 1$ to the initial loan amount*

$$\mathbb{PV}[\mathit{DebtPayouts}(\ell)] = \mathit{LoanAmt}(\ell) \qquad \text{for all } \ell \in [0,1) \tag{42}$$

The manager finances the remainder of the purchase price of her company's assets, $\mathit{MarketCap}(\ell) = \mathit{CostOfAssets} - \mathit{LoanAmt}(\ell)$, by issuing #Shares each worth PricePerShare = \$1. These equity holders get all remaining firm value in year $t = 1$ after paying off the debt. Hence we have

$$\mathbb{PV}[\mathit{EquityPayouts}(\ell)] = \mathit{MarketCap}(\ell) \qquad \text{for all } \ell \in [0,1) \tag{43}$$

This classic result hinges on the assumption that the manager thinks about shareholder value in the same way that debt markets price her bonds. □

Proof. **(Proposition 3.3a)** *Under the normalization that PricePerShare* = \$1*, we have MarketCap* = *#Shares* · \$1 *and thus*

$$
\begin{aligned}
NPVratio - EPS &= \frac{\mathbb{PV}[EquityPayouts]}{MarketCap} - \frac{\mathbb{E}[Earnings]}{\#Shares} && \text{(44a)} \\
&\propto \mathbb{PV}[EquityPayouts] - \mathbb{E}[Earnings] && \text{(44b)}
\end{aligned}
$$

Equation (12) *gives* $\mathbb{PV}[EquityPayouts]$ *as a risk-neutral expectation. We can write out* $\mathbb{E}[Earnings]$ *as a physical expectation*

$$
\begin{aligned}
\mathbb{E}[Earnings] = {} & p_u \cdot (NOI_u - i \cdot LoanAmt) \\
& + p_d \cdot (NOI_d - i \cdot LoanAmt)
\end{aligned} \tag{45}
$$

The difference between $\mathbb{PV}[EquityPayouts]$ *and* $\mathbb{E}[Earnings]$ *is given by*

$$
\begin{aligned}
\mathbb{PV}[EquityPayouts] - \mathbb{E}[Earnings] & \\
= {} & (q_u - p_u) \cdot (NOI_u - i \cdot LoanAmt) \\
& + (q_d - p_d) \cdot (NOI_d - i \cdot LoanAmt) \\
& + q_u \cdot (ValueOfAssets_u - LoanAmt) \\
& + q_d \cdot (ValueOfAssets_d - LoanAmt) \\
& - q_d \cdot DefaultSavings_d
\end{aligned} \tag{46}
$$

where $DefaultSavings_d = \max\{(1+i) \cdot LoanAmt - ValueOfFirm_d, \$0\}$ *is the manager's savings from being able to default in the down state. To get the final expression, recall that* $\mathbb{PV}[X] = q_u \cdot X_u + q_d \cdot X_d$ *and* $\mathbb{E}[X] = p_u \cdot X_u + p_d \cdot X_d$. □

Proof. **(Proposition 3.3b)** *If the manager borrows a bit more* $\ell_0 \longrightarrow \ell_\epsilon = (\ell_0 + \epsilon)$ *and issues* $\epsilon \cdot CostOfAssets$ *fewer shares, her new EPS would be*

$$
\begin{aligned}
EPS(\ell_\epsilon) &= \frac{\mathbb{E}[Earnings(\ell_\epsilon)]}{\#Shares(\ell_\epsilon)} && \text{(47a)} \\
&= \frac{\mathbb{E}[NOI] - i(\ell_\epsilon) \cdot LoanAmt(\ell_\epsilon)}{\mathbb{PV}[EquityPayouts(\ell_\epsilon)]/(\$1/sh)} && \text{(47b)} \\
&\propto \frac{\mathbb{E}[NOI] - i(\ell_0 + \epsilon) \cdot [(\ell_0 + \epsilon) \cdot CostOfAssets]}{\mathbb{PV}[EquityPayouts(\ell_0)] - \epsilon \cdot CostOfAssets} && \text{(47c)} \\
&\approx \frac{\mathbb{E}[NOI] - [i(\ell_0) + i'(\ell_0) \cdot \epsilon] \cdot [(\ell_0 + \epsilon) \cdot CostOfAssets]}{\mathbb{PV}[EquityPayouts(\ell_0)] - \epsilon \cdot CostOfAssets} && \text{(47d)} \\
&\approx \frac{\mathbb{E}[Earnings] - i(\ell_0) \cdot [1 + \delta(\ell_0)] \cdot CostOfAssets \times \epsilon}{\mathbb{PV}[EquityPayouts(\ell_0)] - CostOfAssets \times \epsilon} && \text{(47e)}
\end{aligned}
$$

Equation (47c) *takes out the* \$1/*sh proportionality constant. Equation* (47d) *uses the Taylor approximation* $i(\ell_\epsilon) \approx i(\ell_0) + i'(\ell_0) \cdot \epsilon$. *Equation* (47e) *omits the* ϵ^2 *terms and uses* $\delta(\ell) = \ell \cdot [i'(\ell)/i(\ell)]$ *as the elasticity of interest rates to leverage. Taking the derivative* $\frac{\mathrm{d}}{\mathrm{d}\epsilon}\big[EPS(\ell_0+\epsilon)\big]_{\epsilon=0}$ *then yields*

$$
\begin{aligned}
EPS'(\ell_0) &= \frac{\mathbb{E}[Earnings(\ell_0)] \cdot CostOfAssets}{\mathbb{PV}[EquityPayouts(\ell_0)]^2} \\
&\qquad - \frac{[i'(\ell_0)\cdot \ell_0 + i(\ell_0)] \cdot CostOfAssets}{\mathbb{PV}[EquityPayouts(\ell_0)]} && \text{(48a)} \\
&= \frac{1}{1-\ell_0} \cdot \Bigg(\frac{\mathbb{E}[Earnings(\ell_0)] \cdot \mathbb{PV}[EquityPayouts(\ell_0)]}{\mathbb{PV}[EquityPayouts(\ell_0)]^2} \\
&\qquad - \frac{i(\ell_0)\cdot[1+\delta(\ell_0)] \cdot \mathbb{PV}[EquityPayouts(\ell_0)]^2}{\mathbb{PV}[EquityPayouts(\ell_0)]^2} \Bigg) && \text{(48b)} \\
&= \frac{1}{1-\ell_0} \cdot \left(\frac{\mathbb{E}[Earnings(\ell_0)]}{\mathbb{PV}[EquityPayouts(\ell_0)]} - i(\ell_0)\cdot[1+\delta(\ell_0)] \right) && \text{(48c)} \\
&= \frac{1}{1-\ell_0} \cdot \big\{ EY(\ell_0) - i(\ell_0)\cdot[1+\delta(\ell_0)] \big\} && \text{(48d)}
\end{aligned}
$$

The final expression can be written as a proportional relationship involving just the terms in the curly brackets since $1/(1-\ell_0) > 0$ *for all* $\ell_0 \in [0,1)$. □

Proof. **(Proposition 3.3c)** (Case #1) *Suppose the manager is buying assets to create a company where* $EY(0) < r_f$. *In this case, the first-order condition in Equation* (19) *is negative,* $EPS'(0) < 0$, *meaning that the firm's EPS will peak at* $\ell_\star = 0$. (Case #2) *Suppose the manager is buying assets to create a company where,* $EY(0) > r_f$. *Now, the first-order condition in Equation* (19) *will change sign exactly once, being positive when leverage is low and negative when it is high*

$$
EPS'(\ell) \begin{cases} > 0 & \text{if } \ell < \frac{1}{1+r_f} \cdot \left(\frac{ValueOfFirm_d}{CostOfAssets}\right) \\ < 0 & \text{if } \ell > \frac{1}{1+r_f} \cdot \left(\frac{ValueOfFirm_d}{CostOfAssets}\right) \end{cases} \tag{49}
$$

Hence, there will be a single interior $\ell_\star \in (0,1)$ *that maximizes EPS.* □

Proof. **(Proposition 3.4)** (Case #1) *Suppose the manager is buying assets to create a growth stock with* $EY(0) << r_f$. *In this case, the proof of Proposition 3.3c implies that the firm's EPS will be maximized at* $\ell_\star = 0$. (Case #2) *Now suppose the manager is buying assets to create a value stock with* $EY(0) > r_f$. *In this case, the proof of Proposition 3.3c implies that the firm's EPS will be maximized at* $\ell_\star = \frac{1}{1+r_f} \cdot (\frac{ValueOfFirm_d}{CostOfAssets})$. *If* $ValueOfFirm_d > \$0$, *then the manager's riskfree* *borrowing capacity will be strictly positive. Hence, there will be a non-zero gap between the EPS-maximizing leverage of Case #1 and that of Case #2.* □

Proof. **(Proposition 3.5)** *We can calculate the difference between a company's excess earnings yield and its excess cap rate as*

$$\begin{aligned} \mathit{ExcessEY} - \mathit{ExcessCapRate} &= [EY(\ell_\star) - r_f] - [EY(0) - r_f] && \text{(50a)} \\ &= EY(\ell_\star) - EY(0) && \text{(50b)} \end{aligned}$$

(Case #1) *If the manager is buying assets to create a growth stock with $EY(0) < r_f$, then $\ell_\star = 0$ and $EY(\ell_\star) = EY(0)$.* (Case #2) *If the manager is buying assets to create a value stock with $EY(0) > r_f$, then $\ell_\star \geq \ell_{\max r_f}$ and $EY(\ell_{\max r_f}) = i(\ell_{\max r_f}) \cdot [1 + \delta(\ell_{\max r_f})] > EY(0)$. The final inequality is strict because the manager is comparing her current earnings yield to the interest payment she would have to make on the next* \$1 *borrowed, which will be risky at $\ell_{\max r_f}$.* □

Proof. **(Proposition 3.6)** *The proof of Proposition 3.3b still applies if the initial leverage ℓ_0 represents the EPS-maximizing leverage level at the time the manager purchased the assets to create her firm.* □

Proof. **(Proposition 4.2)** *Let $\ell_\star$ denote the manager's EPS-maximizing choice of leverage prior to learning about the project. Suppose she pays for the project by issuing $\Delta\#\mathit{Shares} = \mathit{CostOfProject}/\$1$ new shares. Her new EPS would be*

$$\begin{aligned} \mathit{EPS}_{\text{new}} &= \frac{\mathbb{E}[\mathit{Earnings}] + \mathbb{E}[\Delta \mathit{NOI}]}{\#\mathit{Shares} + \Delta\#\mathit{Shares}} && \text{(51a)} \\ &= \frac{\mathbb{E}[\mathit{Earnings}] + y \times \mathit{CostOfProject}}{\mathbb{PV}[\mathit{EquityPayouts}]/(\$1/sh) + \mathit{CostOfProject}/(\$1/sh)} && \text{(51b)} \\ &\propto \frac{\mathbb{E}[\mathit{Earnings}] + y \cdot \mathit{CostOfProject}}{\mathbb{PV}[\mathit{EquityPayouts}] + \mathit{CostOfProject}} && \text{(51c)} \end{aligned}$$

Taking the derivative $\mathrm{d}\mathit{EPS}_{\text{new}}/\mathrm{d}\mathit{CostOfProject}$ as $\mathit{CostOfProject} \to \$0$ then yields

$$\begin{aligned} \left.\frac{\mathrm{d}\mathit{EPS}_{\text{new}}}{\mathrm{d}\mathit{CostOfProject}}\right|_0 &= \frac{y}{\mathbb{PV}[\mathit{EquityPayouts}]} - \frac{\mathbb{E}[\mathit{Earnings}]}{\mathbb{PV}[\mathit{EquityPayouts}]^2} && \text{(52a)} \\ &= \frac{1}{\mathbb{PV}[\mathit{EquityPayouts}]} \times \left\{ y - \frac{\mathbb{E}[\mathit{Earnings}]}{\mathbb{PV}[\mathit{EquityPayouts}]} \right\} && \text{(52b)} \\ &\propto y - EY(\ell_\star) && \text{(52c)} \end{aligned}$$

Hence, if an EPS-maximizing manager only has access to equity financing, she will green-light projects with expected cash-flow yields higher than her earnings yield.

Now suppose the manager pays for the project by borrowing CostOfProject = $\epsilon \cdot$ CostOfAssets, which would increase her leverage by ϵ. If the manager relies on debt financing, her new EPS would be

$$EPS_{\text{new}} = \frac{\mathbb{E}[NOI] + \mathbb{E}[\Delta NOI] - i(\ell_\star + \epsilon) \cdot LoanAmt(\ell_\star + \epsilon)}{\#Shares} \tag{53a}$$

$$\approx \frac{\mathbb{E}[NOI] + \mathbb{E}[\Delta NOI] - [i(\ell_\star) + i'(\ell_\star) \cdot \epsilon] \times LoanAmt(\ell_\star + \epsilon)}{\#Shares} \tag{53b}$$

$$\approx \frac{\mathbb{E}[Earnings] + \mathbb{E}[\Delta NOI] - i(\ell_\star) \cdot [1 + \delta(\ell_\star)] \times CostOfProject}{\#Shares} \tag{53c}$$

The first approximation comes from assuming $i(\ell_\star + \epsilon) = i(\ell_\star) + i'(\ell_\star) \cdot \epsilon$. The second approximation comes from ignoring the ϵ^2 term. Hence, the change in EPS will be proportional to

$$\Delta EPS_{\text{new}} \propto \mathbb{E}[\Delta NOI] - i(\ell_\star) \cdot [1 + \delta(\ell_\star)] \times CostOfProject \tag{54a}$$

$$= y \cdot CostOfProject - i(\ell_\star) \cdot [1 + \delta(\ell_\star)] \times CostOfProject \tag{54b}$$

$$= \{\, y - i(\ell_\star) \cdot [1 + \delta(\ell_\star)] \,\} \times CostOfProject \tag{54c}$$

If the manager only has access to debt financing, she will invest in projects that have expected cash-flow yields higher than her marginal interest rate. □

Proof. **(Proposition 4.3)** *Let $\ell_\star$ denote the manager's EPS-maximizing choice of leverage prior to simultaneously learning about the project and discovering a briefcase full of cash. With this newly discovered cash on her balance sheet, the manager's EPS becomes*

$$EPS_{w/Cash} = \frac{\mathbb{E}[Earnings] + r_f \cdot Cash}{\#Shares} \tag{55}$$

If the manager uses this cash to pay for the new project, her EPS would be

$$\frac{\mathbb{E}[Earnings] + y \cdot CostOfProject + r_f \cdot (Cash - CostOfProject)}{\#Shares} \tag{56}$$

The resulting change in her EPS would be proportional to

$$\Delta EPS_{w/Cash} \propto y \cdot CostOfProject - r_f \cdot CostOfProject \tag{57a}$$

$$= \left\{\, y - r_f \,\right\} \times CostOfProject \tag{57b}$$

Hence, if an EPS-maximizing manager only has access to cash, she will green-light projects with expected cash-flow yields higher than the riskfree rate. □

Proof. **(Proposition 4.4)** *The acquisition of another company is a specific kind of project that a manager might undertake. Hence, the implications of Propositions 4.2 and 4.3 directly apply.* □

Proof. **(Proposition 4.5)** *If the manager undertakes the costly new project, then it will increase the present value of the future equity payouts to her shareholders will increase by*

$$\mathbb{PV}[\Delta \mathit{EquityPayouts}] = \mathbb{PV}[\Delta \mathit{ValueOfFirm}] - \mathbb{PV}[\mathit{DebtOverhang}] \tag{58a}$$

$$\begin{aligned} &= \mathbb{PV}[\Delta \mathit{NOI}] \\ &\quad + \mathbb{PV}[\Delta \mathit{ValueOfAssets}] \\ &\qquad - \mathbb{PV}[\mathit{DebtOverhang}] \end{aligned} \tag{58b}$$

Her expected cash flows will go up next year, $\mathbb{PV}[\Delta \mathit{NOI}]$*, and she will be able to sell the firm's assets for more money,* $\mathbb{PV}[\Delta \mathit{ValueOfAssets}]$*. However, if the manager has taken out risky debt, then her lender will capture some of this increase in future firm value,* $\mathbb{PV}[\mathit{DebtOverhang}]$*. If we subtract off the project's expected cash flows we get*

$$\begin{aligned} \mathbb{PV}[\Delta \mathit{EquityPayouts}] - \mathbb{E}[\Delta \mathit{NOI}] = &- (\mathbb{E} - \mathbb{PV})[\Delta \mathit{NOI}] \\ &+ \mathbb{PV}[\Delta \mathit{ValueOfAssets}] \\ &- \mathbb{PV}[\mathit{DebtOverhang}] \end{aligned} \tag{59}$$

Finally, note that

$$\begin{aligned} &\left\{ \tfrac{\mathbb{PV}[\Delta \mathit{EquityPayouts}]}{\mathit{CostOfProject}} - 1 \right\} - \left\{ y - f \right\} \\ &\qquad = \frac{\mathbb{PV}[\Delta \mathit{EquityPayouts}] - \mathit{CostOfProject}}{\mathit{CostOfProject}} \\ &\qquad\qquad - \frac{\mathbb{E}[\Delta \mathit{NOI}] - f \cdot \mathit{CostOfProject}}{\mathit{CostOfProject}} \end{aligned} \tag{60}$$

which is proportional to the desired expression since $\mathit{CostOfProject} > \$0$. □

B Data Construction

We construct our sample based on Compustat data (annual frequency) and data from the WRDS Ratios Suite, matched via their linking algorithm. “PERMNO” is the main identifier for firms.

We include firms that are traded on one of the three major US exchanges (NYSE, Nasdaq, AmEx), have a share code of 10 or 11, and have a share price over $5 in CRSP. We exclude firms below the 30th percentile of the NYSE market cap distribution in the month of their fiscal year-end based on the BE/ME breakpoints provided in Ken French’s data library (https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). Following the existing corporate-finance literature, we exclude firms in the financial and utility industries (SIC codes 4900-4999 and 6000-6999). To be included in our analysis for the current year $t = 1$, a firm must have a next-twelve-month EPS forecast in the IBES monthly unadjusted summary file between 11 and 13 months before the $t = 1$ fiscal year-end (we opt for the earliest estimate available).

We supplement the main dataset with information retrieved from several other datasets. We use the SDC’s New Issues dataset for data on debt and equity issuances, and we use their M&A dataset for data on acquisitions. We download data on simulated pre-interest marginal tax rate data from John Graham’s website (Duke University; https://people.duke.edu/~jgraham/taxform.html).

Overall, our dataset contains 74,636 firm-year observations, between 1976 and 2023. All variables have been winsorized at the 1st and 99th percentiles, within a calendar year. Below we describe how we construct each variable used in our analysis:

- Excess earnings yield (ExcessEY): The median one-year EPS forecast taken from the IBES unadjusted EPS summary file, divided by the share price on the same date as in IBES, minus Moody’s seasoned Aaa corporate-bond yield (St Louis Fed’s FRED; https://fred.stlouisfed.org/series/AAA).
- Is Value Stock: A (0/1) indicator variable that is one for firm-year observations where ExcessEY $> 0\%$ and zero otherwise.
- Was Value $\rightarrow$ Is Growth: A (0/1) indicator variable that is one if a firm transitioned from being a value stock in the previous year ($\text{ExcessEY}_{n,t-1} > 0\%$) to being a growth stock in the current year ($\text{ExcessEY}_{n,t} < 0\%$).
- Was Growth $\rightarrow$ Is Value: A (0/1) indicator variable that is one if a firm transitioned from being a growth stock in the previous year ($\text{ExcessEY}_{n,t-1} < 0\%$) to being a value stock in the current year ($\text{ExcessEY}_{n,t} > 0\%$).
- Total Debt/Assets: “DEBT_ASSETS” from WRDS Ratios Suite, defined as total debt (‘LT’) divided by total assets (‘AT’).

- Financial Leverage >0%: Following Strebulaev and Yang (2013), a firm-year is considered to have non-zero financial leverage if ‘DEBT_AT’ from the WRDS Ratios Suite is greater than 0%. We allow firms that have either ‘DLTT’ or ‘DLC’ missing to be included.
- Will Issue Debt: A firm will issue debt in the following year if (#1) the field ‘SECURITY’ in the SDC New Issues dataset for the year after the current fiscal year-end contains any of the following ‘BD’, ‘BKD’, ‘BOND’, ‘BUYOUT’, ‘CD’, ‘COUPON’, ‘CP’, ‘CRT’, ‘DBS’, ‘DEB’, ‘DEBT’, ‘FL’, ‘FIX’, ‘FRN’, ‘FX’, ‘LEAS’, ‘LOAN’, ‘LYON’, ‘MORTGAGE’, ‘MT’, ‘NOTE’, ‘NT’, ‘OBL’, ‘REV’, ‘SENIOR’, ‘SR’, ‘SUB’, ‘TERM’, ‘ZERO’, and (#2) is not classified as convertible debt (‘CNV’, ‘CONV’, ‘CV’, ‘CVT’, ‘DECS’), preferred shares (‘PERPET’, ‘PF’, ‘PFD’, ‘PREF’, ‘PRFD’, ‘PS’, ‘TRUPS’), or structured products (‘ABS’, ‘CDO’, ‘CLO’, ‘DERIV’, ‘ETF’, ‘ETN’, ‘GTD’, ‘MBS’, ‘PACS’, ‘PASS’, ‘PERL’, ‘PERQ’, ‘SABRE’, ‘SPV’, ‘STEER’, ‘STEP’, ‘STP’, ‘STRY’, ‘SYNT’).
- Will Issue Equity: A firm will issue equity in the following year if (#1) the field ‘SECURITY’ in the SDC New Issues dataset for the year after the current fiscal year-end contains any of the following ‘ADS’, ‘ADR’, ‘CLASS’, ‘CL’, ‘COMMON’, ‘EQUITY’, ‘OPTION’, ‘ORD PART’, ‘PAR VAL’, ‘RIGHT’, ‘SHARES’, ‘SHS’, ‘STK’, ‘STOCK’, ‘UNIT’, ‘WT’ and (#2) is not classified as debt, convertible debt, preferred shares, or structured products.
- Will Repurchase Shares: Following Kahle and Stulz (2021), repurchases during the fiscal year $t = 1$ are defined as the purchase of common and preferred stock (‘PRSTKC’) minus any reduction in the value of preferred stock (calculated as redemption ‘PSTKRV’, liquidating ‘PSTKL’, or par value ‘PSTK’, whichever is available, in this order), all in $t = 1$. A firm-year is considered to have repurchased shares in the upcoming year if the amount repurchased in the following fiscal year is greater than 1% of its market capitalization at the end of the current fiscal year ($t = 0$).
- ΔCash/Assets: Change in cash and short-term investments (‘CHE’) from year $t = 0$ to year $t = 1$ divided by total assets (‘AT’) at $t = 0$.
- Will Pay Target w Stock: For each acquirer-year in SDC M&A, we compute the fraction of all payments made to target shareholders that were paid in stock. To be included in this calculation, SDC M&A needs to specify at least one of the variables measuring the percentage of payment made in stock or cash: ‘PCT_STK’ or ‘PCT_CASH’.
- $\log_2$(Market Cap): The base-2 log of a company’s market capitalization at fiscal year-end ($t = 0$) calculated using CRSP, as the number of shares (‘SHROUT’ $\times 10^3$) times the absolute value of the share price (‘abs(PRC)’).

- Profitability: Profitability is calculated using Compustat data as the operating income before depreciation (‘OIBDP’) divided by total assets (‘AT’).
- Book To Market: BM in the WRDS Ratios Suite. This variable represents book equity divided by market equity. Book equity is computed as the sum of stockholders’ equity of the parent company (‘SEQ’), deferred taxes and investment tax credit (‘TXDITC’, or the sum of deferred taxes ‘TXDB’ and investment tax credit ‘ITCB’), minus preferred shares (calculated as the first available among ‘PSTKRV’, ‘PSTKL’, and ‘PSTK’). Market equity is computed as Compustat items ‘PRCC_F’ $\times$ ‘CSHO’ or CRSP items ‘abs(PRC)’ $\times$ ‘SHROUT’/10^3.
- Return On Assets (ROA): ROA from WRDS Ratios Suite. It is calculated as operating income before depreciation (‘OIBDP’) divided by the average of the beginning-of-year and end-of-year total assets (‘AT’). If ‘OIBDP’ is missing, then sales minus operating expenses (‘SALE’ minus ‘XOPR’), or total revenue minus operating expenses (‘REVT’ minus ‘XOPR’) are used, in this order.
- Tangibility: Tangibility is computed using Compustat data. It is defined as net Property, Plant and Equipment (‘PPENT’) divided by total assets (‘AT’). Missing ‘PPENT’ values are set to zero.
- Marginal Tax Rate: Simulated pre-interest marginal tax rates, originally used in Graham (1996).

C Two Case Studies

This appendix contains two short case studies, which provide additional context showing how market participants use EPS. In the first case study, we look at an 8-K filing from Humana Inc that announced a change in its expected membership growth. Even though it would be easy to plug this change in growth rates into a DCF model, the company chose to interpret the effects using EPS instead. In the second case study, we describe how market participants handled General Electric's reverse split in 2021. The company was required to restate its past EPS figures to avoid biasing this key performance metric.

C.1 Humana Inc

We have looked at examples of 8-Ks that do mention NPV or discounted cash flows. These terms typically show up in 8-Ks related to a specific security. For example, when a firm awards its CEO new stock options, it must file an 8-K. It is not uncommon for these sorts of reports to talk about the "present value" of the CEO's newly awarded options. This is where the bulk of "NPV" and "DCF" mentions in 8-K filings come from. It is rare to see an 8-K apply take a present-value approach to pricing the whole firm.

Humana Inc's January 9th 2023 8-K is representative of the broader pattern (Humana Inc, 2023). The company had to make this filing because it increased its expected membership growth. If there were ever a time for a firm to use NPV logic, it is here. An increase in expected membership growth directly translates into one of the key parameters in the standard Gordon-growth DCF model.

Yet the 8-K filing contains no discussion of future cash flows or how Humana planned on discounting them. Here is how the company interpreted the effects of this increase:

> "The Company intends to reiterate its commitment to grow 2023 Adjusted earnings per common share ("Adjusted EPS") within its targeted long-term range of 11–15 percent from its expected 2022 Adjusted EPS of approximately $25.00. As communicated on the Company's third quarter 2022 earnings call on November 2, 2022, it expects the consensus estimate of approximately $27.90 to be in line with its initial Adjusted EPS guidance."

When submitting this official legally-binding form to the SEC, Humana chose to focus almost exclusively on EPS.

C.2 General Electric

We have provided a substantial amount of evidence suggesting that the managers of large public corporations are laser-focused on increasing their

EPS. Moreover, the evidence that we have presented so far is just the tip of the iceberg (e.g., see Malenko, Grundfest, and Shen, 2023). As far as we can tell, academic researchers seem to be the only group of people who believe that managers are not mainly interested in increasing their firm's EPS.

Many researchers have a sense that it would be easy for a manager to manipulate her EPS numbers. For example, suppose a firm has $\mathbb{E}[\text{Earnings}_1] =$ \$100 and #Shares = 100 to begin with, giving it an EPS = \$1. Following a 1-for-2 reverse split, the company would have #Shares = 50 and an EPS = \$2. We have spoken to several researchers who saw this hypothetical scenario as proof that managers could not be EPS maximizers.

But there is a simple reason why EPS-maximizing managers are not clamoring for reverse splits in the real world. People have thought about this loophole and closed it. After a reverse split, a firm has to retroactively update its previously reported EPS values. In the above example, when the manager announced the new \$2 EPS, her shareholders would be wholly unimpressed given that she would also have to tell them that her previous EPS was \$2, too.

When GE did a 1-for-8 reverse stock split on July 30, 2021, it posted answers to shareholder FAQs (General Electric Co, 2021), one of which was: "How did the reverse stock split affect the FY'20, 1Q'21, and 2Q'21 EPS and the FY'21 Outlook and how will it impact the future calculation of net earnings or loss per share?"

> "We have adjusted our net earnings or loss per share for FY'20, 1Q'21, and 2Q'21 to reflect the reverse stock split. We have also updated our EPS from March '21 Outlook to reflect the change in share count. This adjustment simply reflects the reduced share count from the reverse stock split and does not otherwise change our previous Outlook.
>
> Additionally, in financial statements issued after the reverse stock split becomes effective, per share net earnings or loss and other per share of common stock amounts for periods ending before the effective date of the reverse stock split will be adjusted to give retroactive effect to the reverse stock split."

This is why EPS-maximizing managers are not in charge of companies whose entire market cap is packed into a single equity share. EPS is not a manipulation-proof measure. But it is not as easy to manipulate as many academic researchers seem to think. There are regulations in place to address obvious shortcomings, such as how to deal with reverse splits. The fact that these policies are needed is further evidence that managers are trying to boost their EPS.