

Capital allocation: paths to value





How much is one dollar worth?

It isn't a trick question. But it is a question that corporate managers must answer to try to generate the most shareholder value through the deployment of excess capital. Great capital allocators generate excess returns for their investors because they can identify opportunities to deploy cash from their existing businesses into investments and strategies that are ultimately worth more than the cash used. They understand that the market environment demands flexible and opportunistic approaches to investment opportunities. They have the discipline to retain or return excess capital when the market requires prudence, and they avoid expenditures on unproductive or risky projects that may destroy value. In essence, they can evaluate the value of a dollar spent on a variety of capital allocation alternatives.

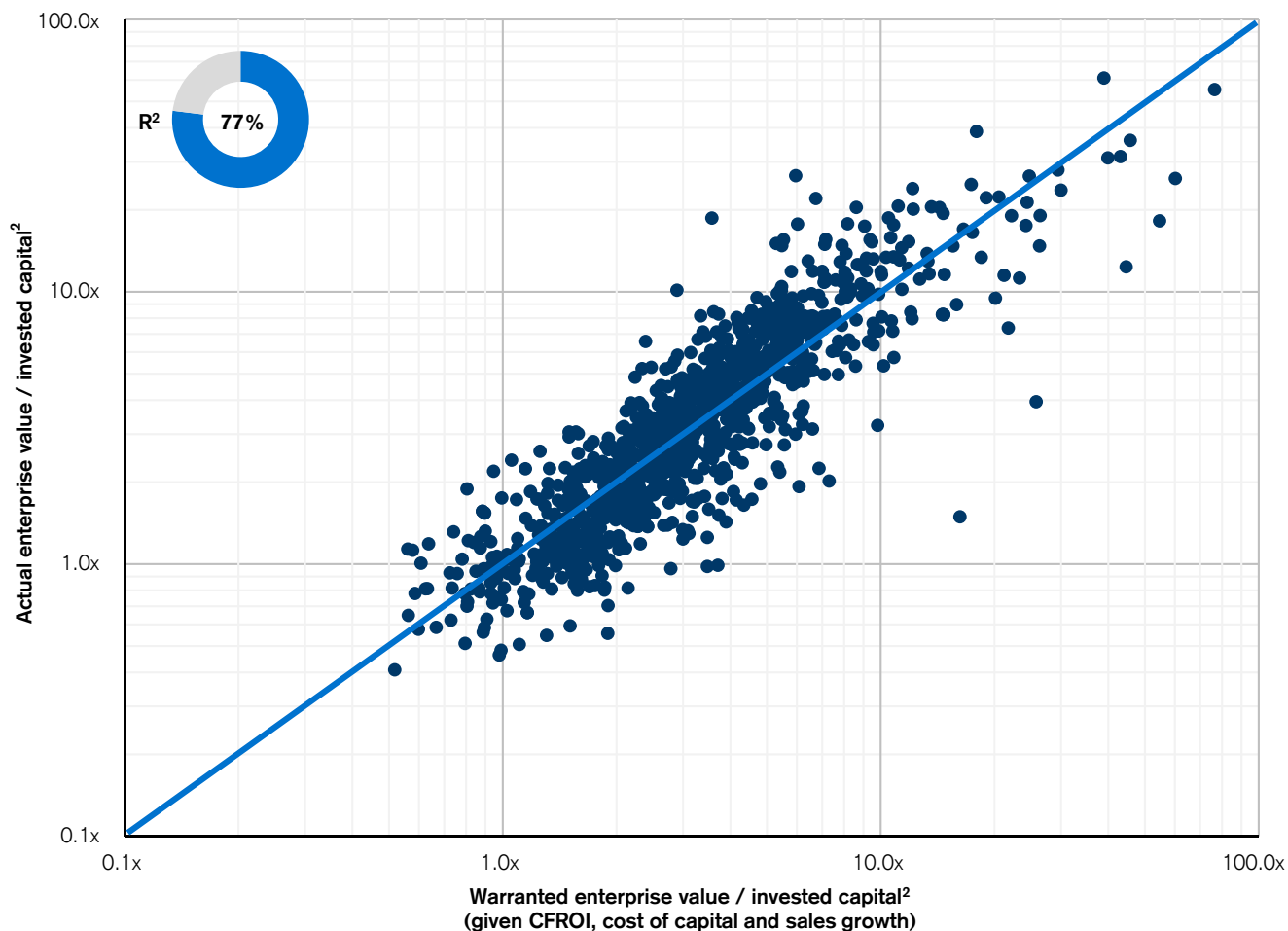
As Warren Buffett once famously put it, "The first law of capital allocation—whether the money is slated for acquisitions or share repurchases—is that what is smart at one price is dumb at another."¹ We must consider constantly fluctuating performance and market variables to try to maximize the value of companies' scarce capital. In this paper, we seek to arm our clients with insights to help them navigate these capital deployment challenges.

Over time, the ways in which a company deploys capital has an enormous impact on firm value because it is the most difficult aspect of company performance to project.

In practice, company valuation tends to revolve around an assessment of *existing* earnings and cash flows, how risky they are, and how they are expected to evolve in the short term, because these are the most observable components of most forecasts. But the most observable value drivers are, by their very nature, already baked into market valuations. A simple combination of returns on capital, expected steady state revenue growth, and cost of capital alone can explain current enterprise value / invested capital² ratios with 77% explanatory power across U.S. and European firms³ (Figure 1).

How much is one dollar worth?

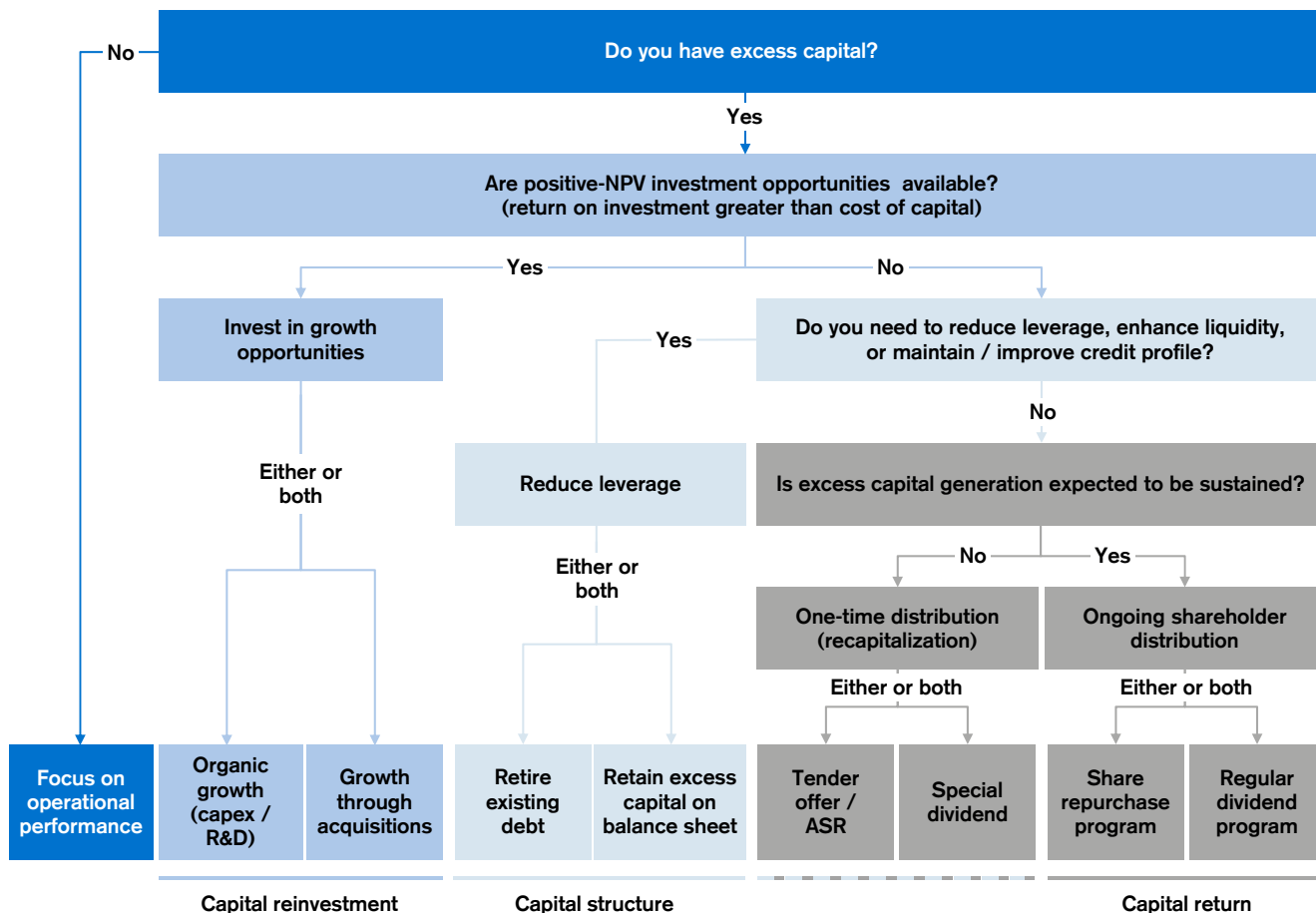
Figure 1: “Predicting” market multiples with only return on capital, near-term growth, and cost of capital



It is uncommon for companies to trade wildly out of sync with their observable performance. So, past results and foreseeable changes are less likely to be sources of incremental market performance and excess total shareholder return (“TSR”). The next three years of consensus earnings currently account for just 34% of aggregate enterprise valuations,

with the remainder being associated with future capital allocation decisions and outcomes. That leaves almost two-thirds of valuation dependent on the market’s view of the efficacy of capital deployment.

Figure 2: Generalized capital allocation decision-making



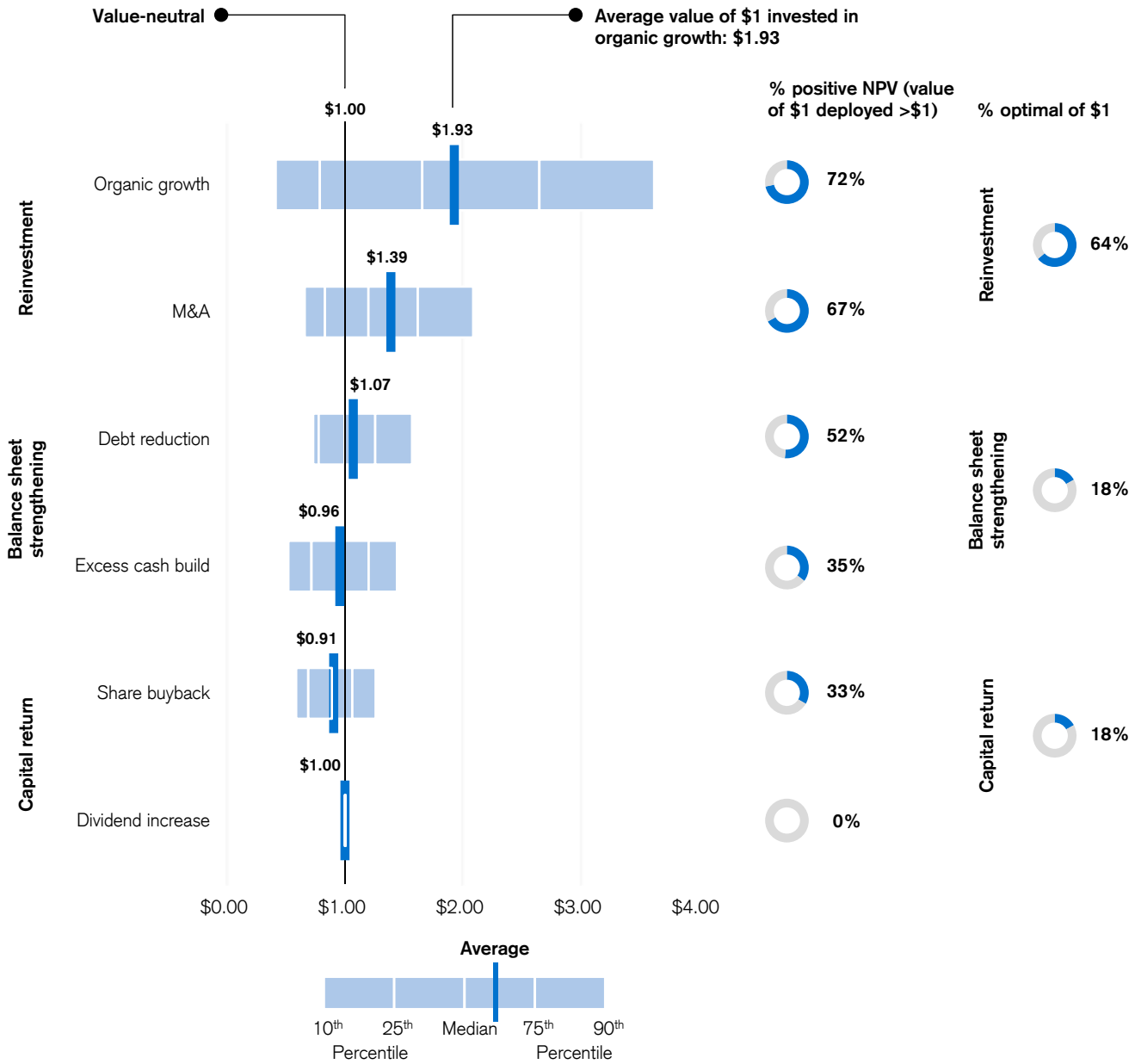
Capital allocation success requires maximizing the impact of each dollar of capital generated from the business, whether it be invested for growth, retained to strengthen the balance sheet, or, in the absence of value-additive uses, returned to shareholders. We often generalize our intuition about capital allocation with a flow chart like Figure 2, which provides a conceptual hierarchy for capital allocation priorities. However, such a crude hierarchy ignores the reality that any one of the options might produce the highest incremental net present value (“NPV”) at a given time.

So we need analytical approaches to facilitate finding the right answer.

In this issue of **Credit Suisse Corporate Insights**, we develop a set of distinct frameworks for evaluating the NPV of \$1 of capital deployed to the primary capital allocation alternatives.⁴ This paper explores the conceptual value drivers for each option in detail. But we also apply these methodologies to every firm in a broad market sample of about 1,400 public, large cap companies across the U.S. and Europe. This approach allows us to quantify and compare the values of \$1 across the options and validate the intuitive hierarchy for value creation (Figure 3).

How much is one dollar worth?

Figure 3: Value of \$1 deployed across primary capital allocation alternatives



Our results, on average, line up with the generic priorities for capital allocation that we introduced in Figure 2. But, with this type of analysis, we can now reveal so much more because we have a full set of rankings and priorities for each company. For example, one of the first things we noticed was that

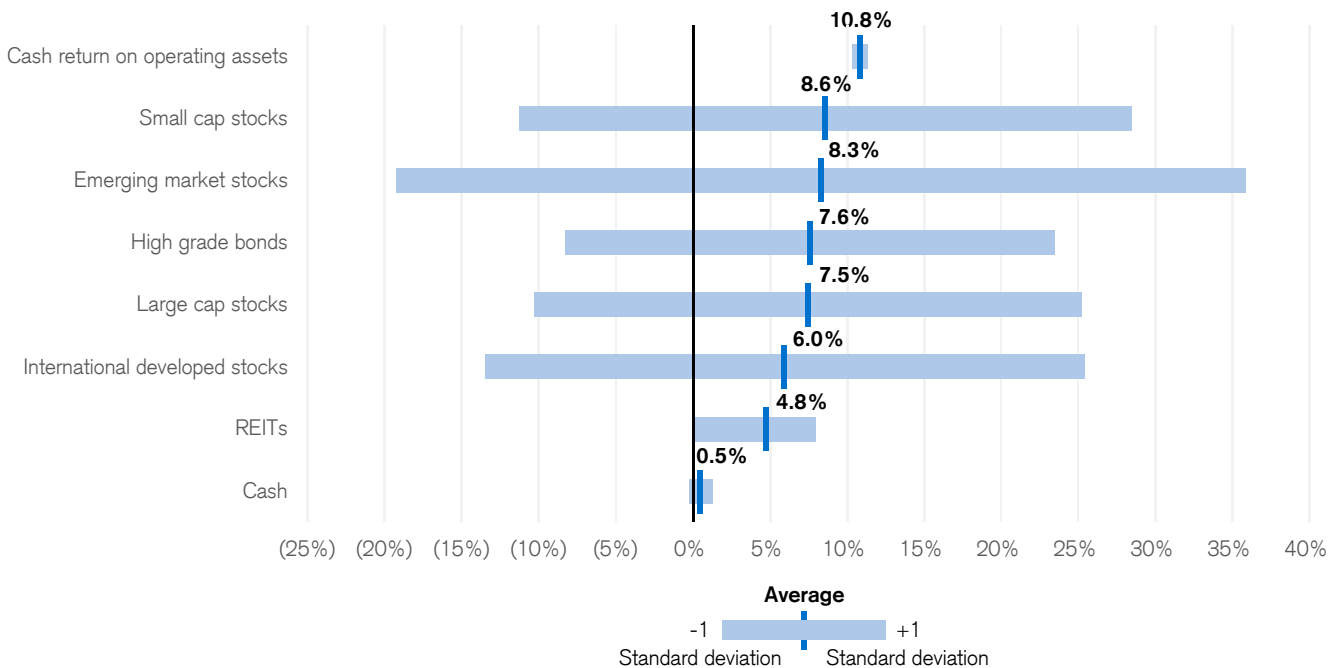
only 33% of individual companies in our sample conformed perfectly to the default rankings. For the bulk of the market, more careful consideration to capital allocation alternatives and tradeoffs is required to maximize their “bang for the buck”.

1. Investments in organic growth

Investments in organic growth include capital expenditures on fixed operating assets, but also other expenses that are meant to build and promote long-term value, like R&D and advertising expenses. Investment in existing operations is the only capital allocation option where we can expect to turn a dollar not just into a positive NPV, but into a multiple of the original \$1. Consider that the aggregate enterprise value / invested capital ratio across the U.S. and Europe today is 2.7x, meaning, that each dollar already invested is now worth about \$2.70 on average. Now, those multiples also embed expectations for future asset growth and return, so they are not perfect proxies for the marginal value of a dollar invested, but they do serve to level-set the potential value creation offered by organic investments.

And it's not difficult to understand why investments in organic growth sit at the top of the capital allocation hierarchy when you examine the returns companies have achieved on investments in operating assets. Over the last 20 years, large, public companies have earned an average cash return on operating assets of 11% per year⁵, beating out the average returns of investments in other attractive asset classes over the same time horizon (Figure 4).

Figure 4: Average annualized 20-year returns by asset class



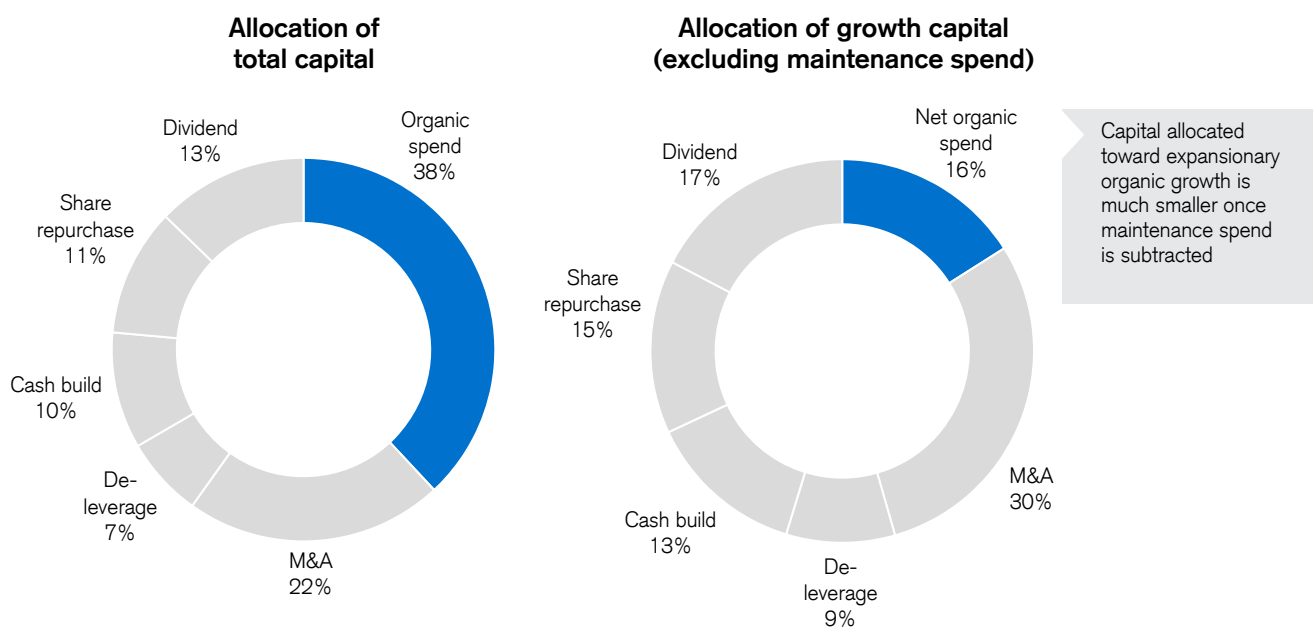
1. Investments in organic growth

So, companies have access to a productive and relatively stable asset class that is not available to most institutional and individual investors. However, investors are usually precluded from extracting the same economic advantage that the underlying companies are earning...except to the extent that these same companies retain and invest their cash profits. Organic investment spend thus permits investors to “buy”, at book value, portions of these businesses that current market multiples indicate are worth significantly more than book value. With interest rates remaining near all-time lows and lofty

asset values raising questions about the potential for future market returns, companies with the ability to invest their operating profit back into profitable growth opportunities should continue to attract significant demand and command premium valuations.

With the proven ability to generate lofty returns by investing capital, it stands to reason that companies would be plowing back as much cash flow as possible into additional operating assets.

Figure 5: Aggregate capital deployment for U.S. & Europe (last 20 years)



Indeed, organic growth expenditures do stand out as the largest use of capital by large, public companies over the last 20 years, representing 38% of all dollars deployed. But this data does not tell the full story because a large portion of the organic investment comprises required maintenance investments that companies must make in order to sustain their existing assets. Required maintenance expenditures are more like operating expenses in that they are an ongoing cost of running a business as a going concern – rather than growth – and we believe they should be excluded from our discussion of organic growth investment.

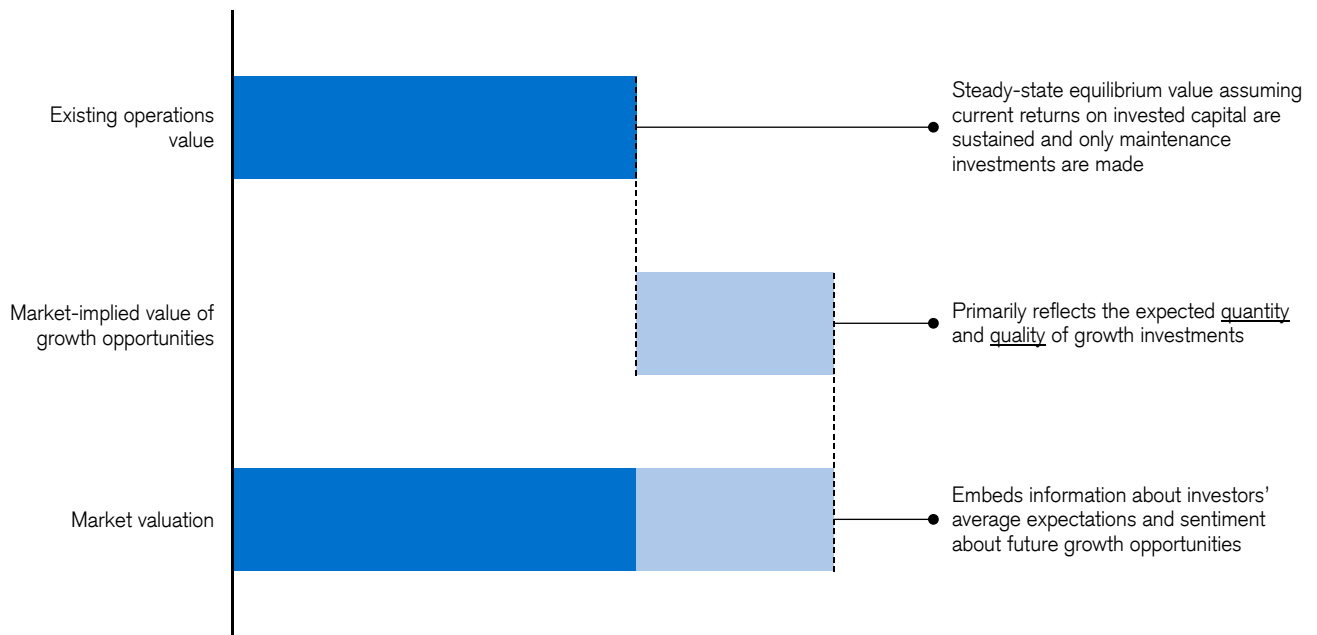
If we net our aggregation of prior capital spending to account for maintenance investments⁶, the perspective on capital allocation decision-making changes a bit.

Expansionary organic investment only comprised 16% of aggregate spending, potentially indicating a shortage of organic investment opportunities.

Estimating from arm's length how individual companies might drive value through organic investments is complicated by a lack of clarity on what their specific opportunity sets look like. Most companies have options for expansionary investment that range from relatively low-risk expansions of existing capacity to more speculative investments in new products or expansions into new segments or regions. The relative attractiveness of these opportunities will depend on their expected economic returns relative to the cost of the capital. In practice, estimating marginal returns on investment projects should involve consideration and projection of the expected future cash flows associated with the investment. We don't have this...neither will your investors.

But we do have the ability to observe market valuations, which can tell us a lot about what investors are pricing in for companies' marginal returns. In our prior work, we introduced a framework for isolating the market's valuation of growth opportunities – specifically, the additional market enterprise value above and beyond that justified by a steady-state intrinsic valuation of existing operations without expansionary investments or real growth. If we connect the market-implied value of growth opportunities with their expected cash flows, we can derive the market-implied marginal investment return (“MIMIR”) for each company.⁷

Figure 6: Isolating the value of growth opportunities

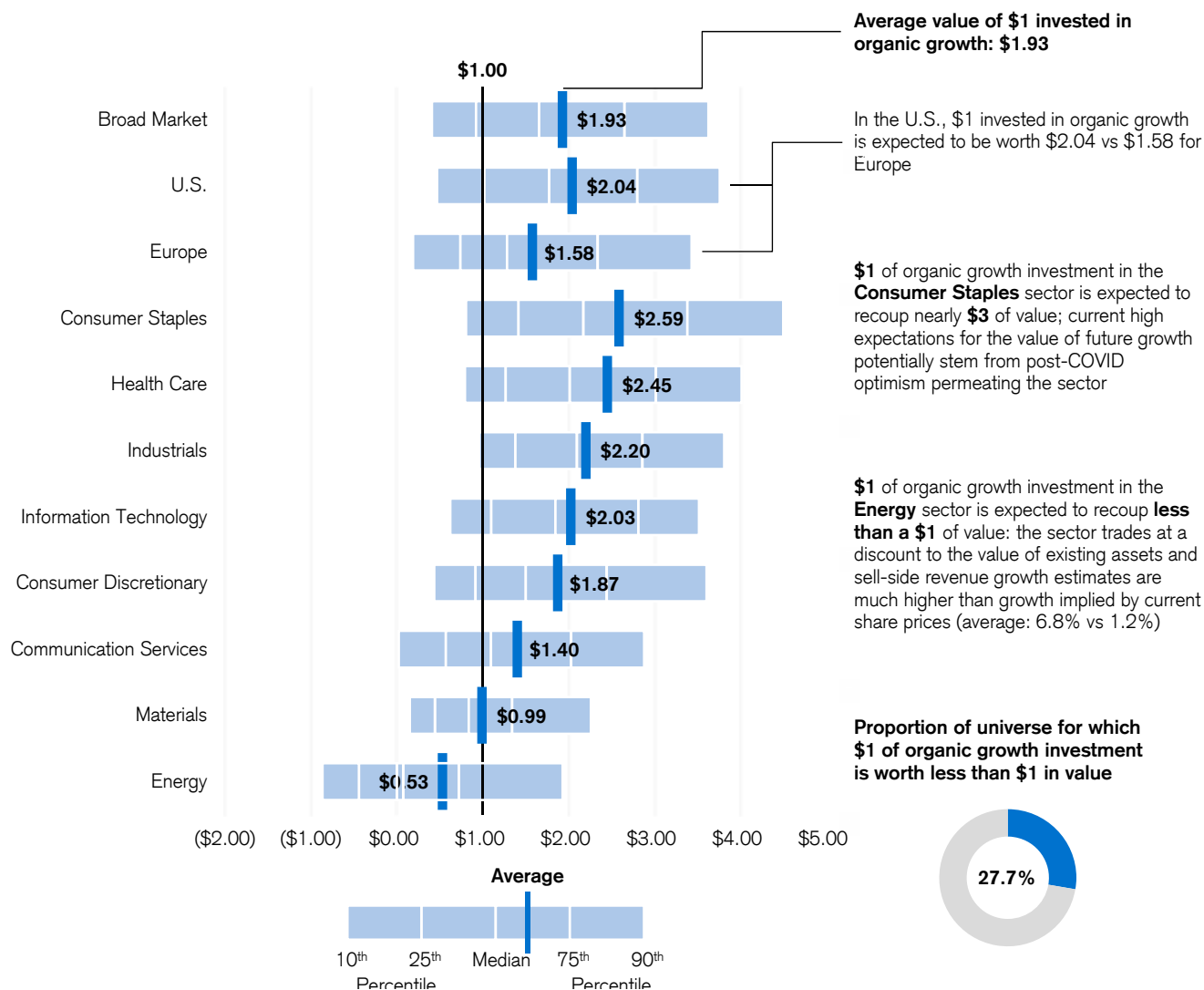


With this credible, market-derived assumption for incremental investment returns, we can estimate what \$1 invested organically is expected to earn in *economic profit*, i.e. returns on capital (or investment) in excess of the cost of capital.

To do this across the market, we assessed the NPV of an annuity representing a cash flow outlay of \$1 and incremental cash inflows equal to the marginal return less the cost of capital for years equal to the life of operating assets.

1. Investments in organic growth

Figure 7: Value of \$1 deployed towards investments in organic growth



After performing this exercise, we found three things:

1. Generally, the market's expectations of value creation by companies investing in themselves is enormous. On average, we estimate the value of \$1 of organic investment to be worth nearly twice that...\$1.93.

2. There is tremendous dispersion across sectors. The Health Care and Energy sectors sit at opposite ends of the spectrum. Health Care is a sector with high and growing importance to an aging population

in the U.S. and Europe, while investors in the Energy sector, mostly made up of fossil fuel companies, want these companies to avoid plowing more capital back into additional operating capacity.

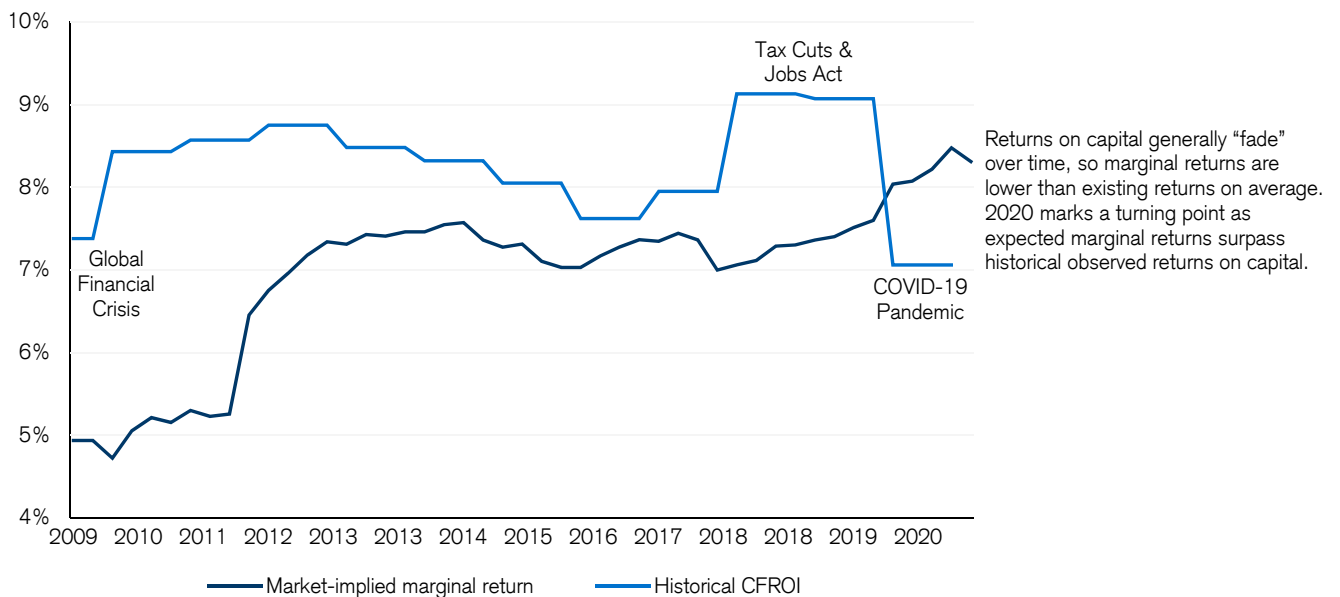
3. A substantial number of companies are actually not expected to recoup their initial investments (\$1 of organic growth spend returning less than \$1 of value), and this proportion is higher for Europe (39%) than for the US (24%).

Using our framework to profile different sectors highlights some interesting differences in how various classes of operating assets contribute value to their respective enterprises. For example, companies in the Tech space are generally expected to earn higher marginal returns on each \$1 of organic investment than, say, Industrials. However, the core operating assets utilized by Industrial companies tend to have economic useful lives of 10-15 years, whereas Tech companies must spend aggressively on research and development, the benefits of which tend to subside after 5-8 years. That difference narrows the gap between the respective values of each \$1 invested. If a hypothetical Tech company were fortunate enough to seize an R&D opportunity that offered steady cash flows for 13 years rather than 7, the effective value of each \$1 invested in the project would increase by \$1.08, giving \$3.23 in value in return for the original \$1 invested. But have companies

taken appropriate advantage of these high expected returns on organic growth spend?

Digging deeper reveals that organic investment rates have slightly declined across the U.S. and Europe since the Global Financial Crisis, while the market's expectations for future growth have risen. Organic reinvestment rates in the U.S. have declined from 66% in 2009 to 50% in 2020; Europe has seen a more drastic decline of 56% to 33% over the same period. Conversely, market expectations for the value of future growth have risen: future growth accounted for 13% of U.S. enterprise values in 2009, and that number stands at 31% today (the European story is similar: 12% and 24%, over the same period). Our MIMIR framework corroborates that current marginal returns are indeed priced at their highest levels in a decade for our sample, in aggregate.

Figure 8: Market-implied marginal return on investment vs. existing asset returns (CFROI)



Assuming the consensus reinvestment rates are accurate, Figure 8 suggests the market currently expects outsized returns on growth opportunities. The market will ultimately reward or punish those companies that surprise, so we think it is vital that companies understand the marginal returns they are

expected to earn and the levels of growth they are expected to achieve...and to ensure sufficient, productive investment in the business to meet and exceed those market expectations

2. Inorganic growth investments via M&A

We have addressed M&A a number of times in this series⁸ and made the point that the market is more receptive of M&A than many companies seem to believe. Our new work on capital deployment – and the value of an M&A dollar – underscores this idea. Some companies have high growth expectations but do not have an indefinite pipeline of organic projects in which to invest. For them, M&A provides a bridge between the growth that is expected by the market and what their actual organic growth opportunity set may be. For other companies, M&A may present paths of growth into new areas, more rapid and more certain than greenfield spend. These companies often need to embrace strategic shifts to offset the natural lifecycle of companies' return pressures as they mature⁹, and M&A offers a much more expedient and often lower-risk route than can be accomplished organically.

So, how much is \$1 of capital deployed to M&A investments worth? Likely less than the value of organic growth spend, since assets acquired through M&A are purchased at a market, rather than at a book, value. It's like organic investors get to purchase wholesale from the manufacturer, while acquirers must pay retail prices. Additionally, negotiated M&A transactions typically involve a premium paid to the seller above the market value of its shares, which can further dilute economic returns to the acquirer. However, in M&A transactions, acquirers usually offset premiums through capturing synergies which translate into additional cash flows, as new markets are able to be tapped or operating redundancies are reduced.

The intrinsic value generated via M&A transactions is a function of the present value of expected synergies, the intrinsic value transferred between buyer and seller...and nothing else. Potential acquirers are often very focused on the "optics" of M&A, such as EPS accretion or changes to returns on capital. But this focus fails to account for the fact that these considerations do not have a material impact on the shareholder value created by M&A.¹⁰ We don't suggest that these factors are not value-drivers generally – of course, the level and growth of EPS and expected profitability do impact valuations – but in the context of M&A, these expectations should already be baked in to the market price the acquirer needs to pay to purchase the seller.

An “accretive” target that has higher returns, earnings yield, or growth prospects will likely command a commensurately higher valuation and takeover price.

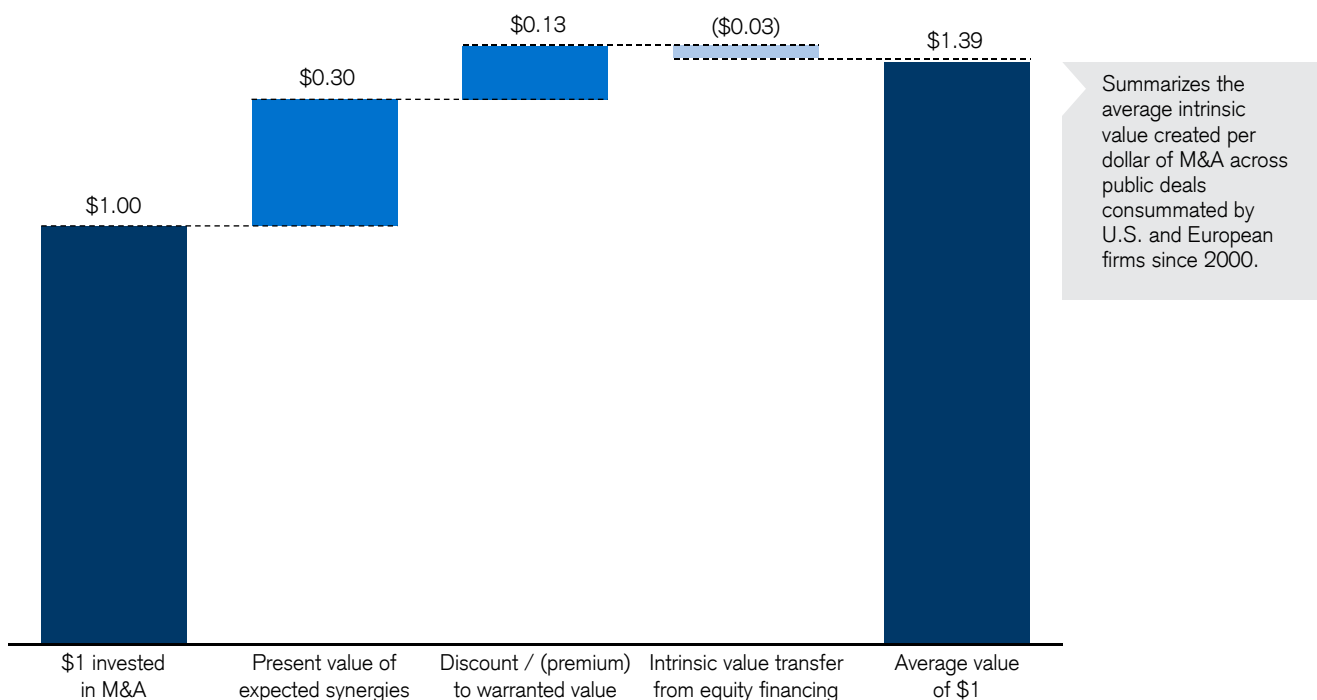
M&A deals create value for acquirers if they get more in the form of realized synergies than they pay for in terms of premium. We can better understand the expected value of \$1 deployed to M&A by analyzing some 5,000 M&A transactions in the U.S. and Europe since 2000 where a public acquirer purchased another public target.¹¹ If we assume that the expected synergies disclosed by companies when announcing M&A transactions are generally accurate, then their present values can be estimated in a fairly straightforward manner given assumptions around tax and discount rates.¹²

Conventional analysis of M&A compares synergies to the price paid as a premium to the seller’s market price. This is appropriate if the seller’s market price accurately reflects the present value of its future cash flows. To consider the true value of completed M&A deals, we estimated premiums relative to the then-current intrinsic values of sellers, rather than using their market prices.¹³ Through our approach, acquirers that purchased “undervalued” assets would see their traditional premium estimates fall, while those that acquired “overvalued” targets would be charged a higher premium. We found that most M&A transactions involved target assets that seemed to have intrinsic upside as of deal announcement, suggesting that **acquirers were, on average, investing in “cheap” targets.**

Our analysis accounts for the impact of deal financing (cash, equity, or a mix), and the consequent acquirer’s intrinsic downside offloading / upside leakage for those deals with an equity component. Of the acquirers that were valued at a *premium* to their market share prices, 62% of them used equity as a component of their financing, which is an NPV-positive decision. However, for the acquirers that were trading at a discount to their equity values, 56% used equity as a component of their financing...an NPV-negative decision. We found that – overall – the value of a dollar of M&A including financing mix effects is \$1.39 (Figure 9).

2. Inorganic growth investments via M&A

Figure 9: Average value of \$1 invested in M&A across U.S. & Europe (last 20 years)



Our work shows that capital allocated toward M&A in the U.S. and Europe has been extremely value-enhancing overall. Moreover, our calculations indicate that **67% of all historical deals were value-additive for the acquirer**. Ignoring the negative-NPV deals, the average estimated value per dollar for “good” M&A averaged about \$1.71 just shy of the \$1.93 we currently see as the average value of incremental organic growth investment.¹⁴

Let’s compare our intrinsic value estimates to the market’s reaction to announced M&A deals, as captured by **total deal value added**¹⁶, which is the total combined change in market value of the acquirer and its target upon announcement of the deal.

Is there evidence that this is how the market actually does evaluate M&A decisions and that these estimates are aligned with the market’s pricing of M&A? In our prior work¹⁵, we showed that more acquisitive companies tend to outperform over time. But is that driven by their M&A activity or other factors?

Figure 10: Empirical assessment of M&A in the market

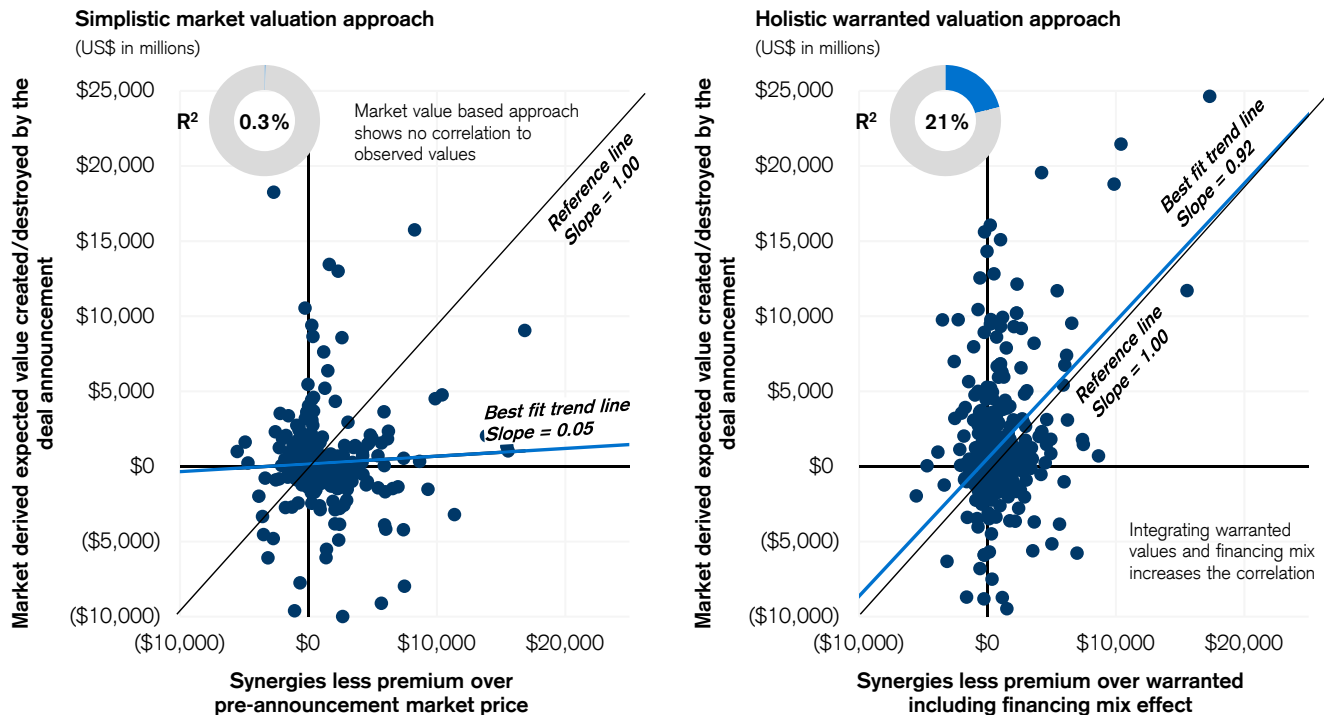


Figure 10 demonstrates the relationship between our fundamental valuations of M&A and the market's pricing of those same deals. Conventional estimates of deal value are not correlated with market reactions. However, after incorporating the intrinsic valuation of the target, and the intrinsic valuation of the acquirer, we see a huge improvement in explanatory power. These results reinforce the notion that a disciplined, fundamentals-based approach to M&A can lead to significant value creation.

While we estimated the value of \$1 deployed to organic growth for individual companies, we assessed the value of \$1 invested in M&A over a sample of historical deals rather than companies. Given the substantial value we see associated with past M&A deals, we believe that M&A can be a productive component of almost any company's capital budget.

But we think M&A is most beneficial to those companies for whom the market is pricing in significant future growth value that may be difficult to achieve organically. We've identified about 11% of the market with an obvious gap between market-implied and sell-side forecasted growth rates that may reveal a strategic need for M&A. In other words, these companies, with market-implied growth rates which eclipse sell-side growth forecasts, have a valuation imperative to find ways to generate that incrementally higher growth or risk missing market expectations and seeing their valuations fall as a result.

3. Proactive debt reduction

As we've seen, most firms should try to prioritize growth, either organically or opportunistically via M&A, because it offers the potential to earn a substantial NPV on each \$1 deployed on the margin. Other options for deploying that \$1 generally are worth about \$1 for the average company. But the averages could potentially be misleading, especially for the option of debt reduction, since many companies have little to no debt and would not consider it a viable capital allocation option. But by our estimation, the roughly 50% of companies that currently have too much debt would earn an average NPV of \$0.36 for \$1 of proactive debt reduction. In other words, the average value of a dollar spent to de-lever these companies is \$1.36.

Let's walk through how we think about this.

We evaluate the value of capital deployed towards proactive debt reduction from an optimal capital structure perspective. "Capital structure optimization" is about balancing the long-term costs and benefits of permanent debt leverage to create additional shareholder value. It quantifies the tax benefit of interest deductions against the perceived risks of financial leverage to identify a point that maximizes intrinsic value, thereby minimizing the cost of capital. All else equal, capital structure optimization provides a long-term target for how companies should seek to finance their overall operations given their riskiness.

In recent years, we've told many of our clients that their optimal leverage is at a lower debt balance than currently...largely because recent exogenous changes like reduced corporate tax rates in the U.S. and heightened global macroeconomic

uncertainty related to COVID-19 have limited the intrinsic value of levered capital structures. But our observations do not reflect an *anti-debt* sentiment; it's much more of an *anti-financial engineering* sentiment. We recognize that optimal target leverage and optimal actual use of debt are two distinct things. In fact, one of the primary risks of permanent debt that our optimal capital structure framework aims to mitigate is the potential for fixed debt charges to limit financial flexibility, crowd out investment spend, and stifle future growth, so there is a direct and explicit accounting of the need for and value of tactical debt use for growing firms. This value exists, because choosing the cheapest source of funds on the margin is the preferred way to fund capital projects. In practice, this means that growth initiatives that can't be covered by cash flow and liquidity tend to be financed with new debt rather than new equity, which will pull growing companies' leverage above their theoretical targets over time.

This bias is fine – in fact, while rates remain at historic lows, it is value-maximizing – as long as managing the balance sheet remains a competency and capital allocation priority.

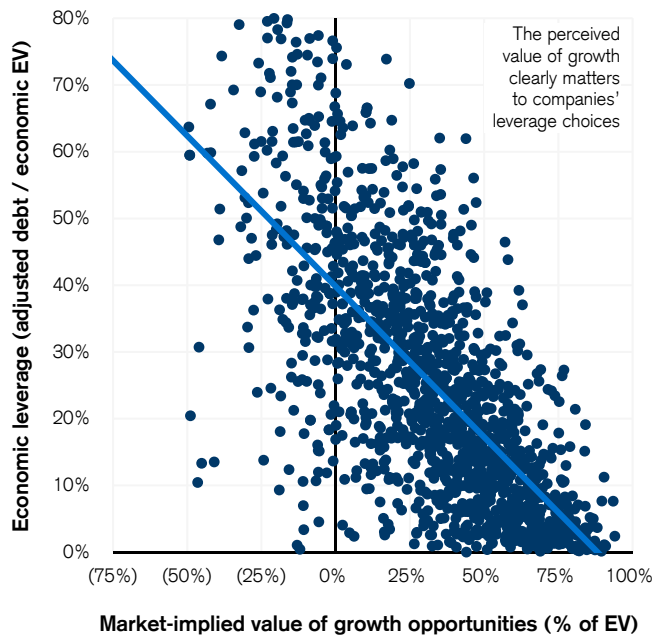
So the value of growth opportunities, capital structure policy, and optimal capital allocation are intricately linked. As growing companies become more levered in the pursuit of growth, the implied value of proactive de-leverage also increases as those companies drift further from a theoretically optimal debt financing level. Eventually, the need to strengthen the balance sheet and de-lever towards the long-term optimal leverage leads to a situation where proactive de-leverage spend can outperform other uses.

This feedback loop between the value of growth and of target leverage is not well-understood, because most conventional approaches to

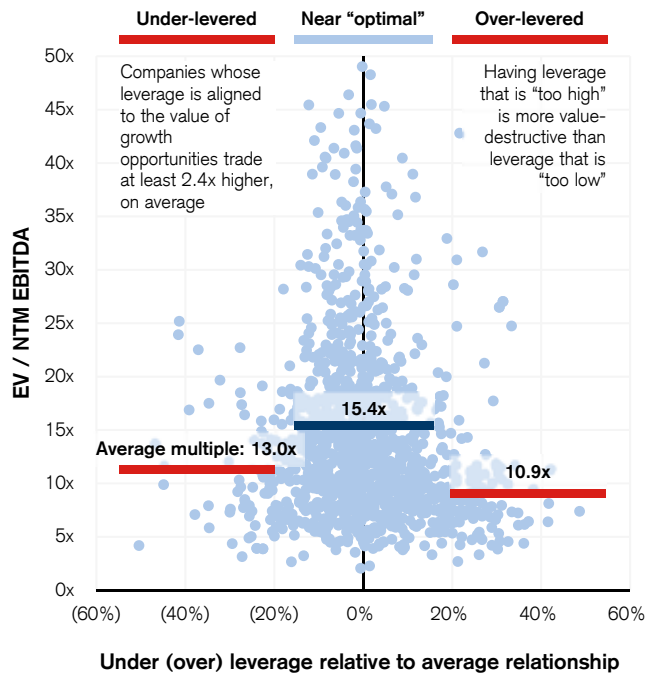
estimating optimal capital structure fail to take it into account. By valuing the potential loss of financial flexibility and its impact on realizing value from future growth, our approach generally favors conservative financial targets for permanent leverage that ensures market capacity and dry powder to fund profitable growth when the opportunities arise. Again, it's an acknowledgement that the use of new debt to fund growth can offer significant potential to drive higher shareholder value than financial engineering. And we can observe this in practice.

Figure 11: Leverage and the market-implied value of growth opportunities vs. valuation multiples

Value of growth opportunities vs. leverage



Deviations from “optimal” leverage vs. valuation



3. Proactive debt reduction

Figure 11, which uses the same methodology we've discussed for parsing out future growth, demonstrates a distinct correlation between expected future growth value and capital structure. Companies whose valuations depend most on expected future growth maintain the lowest leverage ratios, on average. More importantly, deviations from this relationship are priced by investors. When we plot valuation multiples vs. under- and over-leverage relative to the line of best fit, a clear pattern emerges: dots closest to zero (companies whose leverage best aligns with their growth opportunities) have higher average multiples than their counterparts that seem to have too much or too little debt financing. As expected, in a world where the value of permanent leverage is reduced by low taxes and high volatility, the valuation penalty for being over-levered is about 2.5 turns higher than that for being similarly under-levered.

So, the market's perception of growth opportunities not only drives the value of organic and inorganic growth investment, but, perhaps counterintuitively, of de-leverage spend as well. In practice, it is rare to see companies plowing significant capital back into growth initiatives at the same time they are deploying capital to debt reduction. High NPV opportunities, particularly via M&A, can be lumpy and sporadic, but companies with significant future value expectations can usually be confident that growth opportunities will present themselves eventually. For these companies, balance sheet fortification is a perfect way to extract value through capital allocation by optimizing the capital structure for additional financial flexibility and dry powder to take opportunistic advantage of growth initiatives when they do arise.

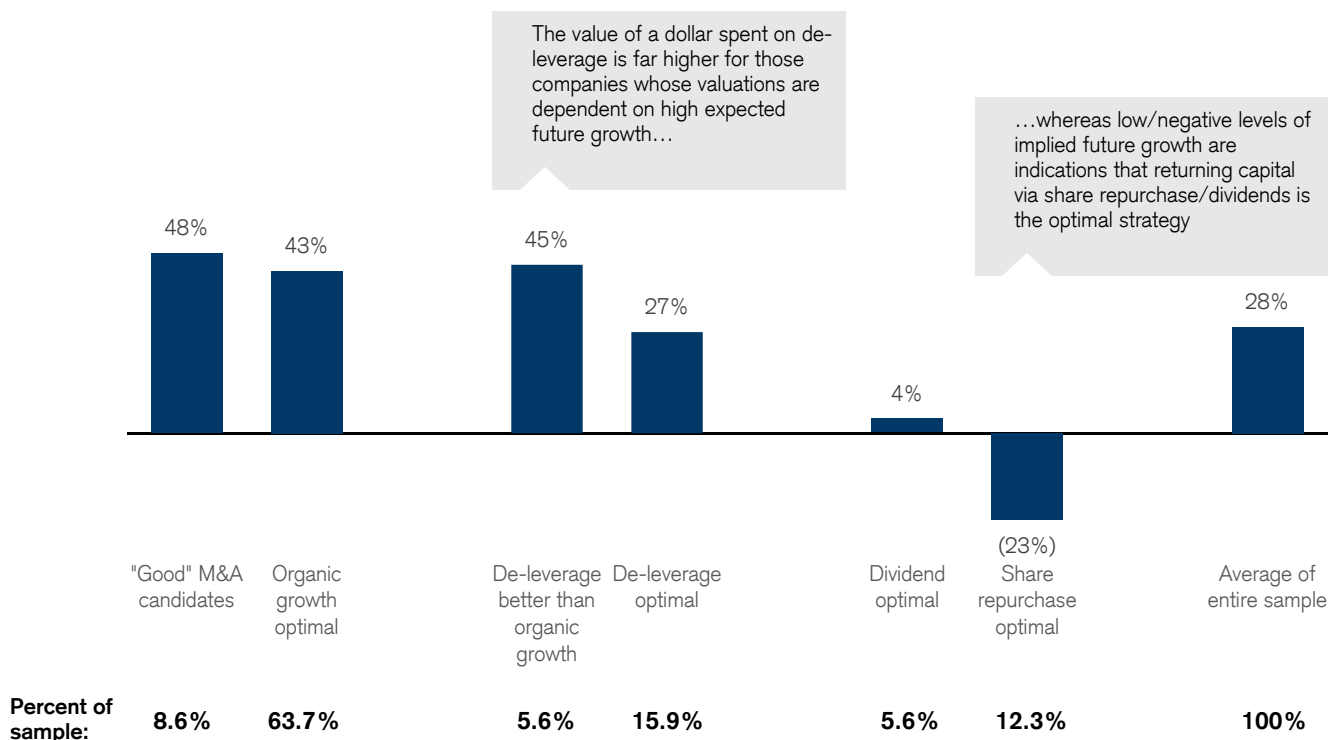
In order to estimate which companies have an opportunity to benefit from proactive de-leverage spend and by how much, we applied our proprietary capital structure intrinsic valuation framework to each and every company in our broad U.S. and European sample and evaluated the marginal theoretical impact of reducing debt by \$1. The interpretation of these valuations is more than merely paying down \$1 of existing debt using operating cash flow, but also making a permanent, credible commitment to maintain future leverage targets at the lower level. So, the impact of de-

leverage spend that we've estimated for each company relates to a presumed, permanent change to their ongoing financial strategy.

For many companies, changing target leverage is not a major needle-mover. Indeed, the median firm in our sample has an insignificant NPV for reducing permanent leverage by \$1. And the NPV of \$1 deployed is similarly immaterial or negative for over 60% of the sample, many of which already maintain low or negative net debt. That being said, debt reduction appears to be the *best* capital allocation alternative for about 16% of the market. For this specific cohort of companies, \$1 deployed to debt reduction is worth an average of \$1.35! For some of these firms, de-leverage spend is optimal simply because their current ability to drive growth is limited. However, for many others, protecting their ongoing ability to funnel capital towards growth is, in fact, the reason that de-leverage spend is valuable. To that point, companies in this sample which we estimate to also have positive expected NPV to growth investment average a market implied value of growth opportunities equal to 45% of their enterprise valuations. As can be seen in Figure 12, this is well above the market average and about equal to that of those companies for whom growth investment looks to be the best use of the marginal \$1. The data also shows that this interaction between the value of investing in growth and the value of strengthening the balance sheet is unique to de-leverage spend – for the options of returning capital via buybacks or dividends, their value propositions are more related to the absence of opportunities for profitable growth investments.

Of course, companies can find their balance sheets overextended for a number of reasons not related to optimal use of debt to fund growth investments and M&A. Even companies that had made optimal financing decisions in the past could currently find themselves in an over-levered position due to outside influences like the reduction in statutory corporate tax rates or a cap on interest deductions (like in the U.S.), or operating headwinds introduced by unforeseen global pandemics that resulted in exogenous credit deterioration. And then there are those firms that were pushed to the brink of distress during 2020 due to imprudent balance sheet management during the tail end of the bull market. While the risks of levered capital distributions are

Figure 12: Market-implied value of growth opportunities by optimal capital allocation



often obscured during speculative, "risk-on" market rallies, ultimately, levered companies are left to pay the proverbial piper (even if their short-term investors are able to get out) when market sentiment takes a downturn.

We saw this in March 2020, where the COVID-19-related market selloff had a disproportionate impact on companies with weak balance sheets. Companies with stronger balance sheets outperformed by almost 40% TSR over the first three quarters of the year.¹⁷

Other than companies looking to build flexibility and capacity for growth investment, who should be considering de-leverage as a primary capital allocation priority in the near term? We looked more closely into some of the salient characteristics of the cohort to identify those most likely to benefit from debt reduction.

Obviously, a pre-requisite to needing to de-lever is having a considerable debt load, and indeed, these

companies are way more leveraged, on average, than the typical company in our universe. These companies are also way more risky, with much higher equity betas and implied stock volatilities. We also saw that implied operating risk¹⁸ and observed cash flow volatility are trademarks of companies that can usually benefit from de-leverage. Cash flow uncertainty reduces the expected value of the debt tax shield because it increases the likelihood of experiencing insufficient operating profits to take full advantage of the interest tax deduction, but it also increases sensitivity to perceived financial risk because of the increased probability of adverse changes to the credit profile. Said differently, for two companies with the same financial leverage profile, the one with higher operating risk is likely to have a lower credit rating and higher cost of capital.

4. Build excess cash on balance sheet

From an optimal capital structure perspective, adding \$1 of permanent excess cash to the balance sheet looks a lot like reducing debt by \$1. The drivers are conceptually the same – trading off the increases in the present value of taxes payable on interest income against the impact that incremental cash liquidity has on credit profile, financial flexibility, and the perceived risks of (net) financial leverage. Therefore, the outputs are reasonably similar as well, including the profile of companies most likely to benefit.

However, because cash interest income rates are generally lower than corporate debt all-in costs, the tax implications are reduced, meaning that adding a dollar of cash on the balance sheet is a somewhat more tax-efficient way to strengthen the balance sheet than reducing debt balance by the same dollar. At the same time, both the markets and the credit rating agencies tend to view cash balances as significantly more ephemeral than debt balances – after all, companies have the discretion to spend all of their cash on hand on any given day. So cash positions tend to get heavily discounted or even ignored from the valuation of liquidity benefits and the analysis of credit risk. Because of this, optimizing the capital structure through debt reduction is a more credible capital allocation choice and therefore generally commands higher NPVs on the margin than building excess cash. Our own analysis validates that for companies positioned to generate positive NPV from de-leverage, the average value of \$1 deployed to debt reduction was \$1.36 vs. just \$1.06 for the same dollar that gets stockpiled on balance sheet. Through the capital

structure lens, we see building cash as the optimal use of the next dollar for less than 1% of the market, and even for those companies, the expected value of that dollar averages only about \$1.23.

However, as the COVID-19 market shock showed us, optimizing capital structure is not the primary rationale for which most companies might consider building cash on the balance sheet. Outside of significant market dislocations and extreme levels of market volatility, most academic research considers excess cash to be a value inhibitor. A bloated cash position leaks cash taxes, exposes companies to a cost of carry (vs. higher-returning debt or equity capital that can be retired using excess cash), and could invite the unwanted attention of activist investors.¹⁹

A wide array of academic research seeking to quantify the value of \$1 of cash held on balance sheet reveals limited consensus. These experts value one dollar on the balance sheet in a range from \$0.30 at the low end to \$1.63 at the high, averaging \$0.96 and corroborating the position that holding excess cash is value-negative on average.²⁰ We decided to come at this from a different angle and attempted to quantify investor sentiment around corporate cash by looking at market reactions to company announcements reflecting reductions in cash, i.e. the payment of large special dividends. Looking at 852 special dividends (where the cash distribution represented 5% or more of market cap) over the last 20 years, we've found that these companies' stock prices increased by an average of 5.8% on the day of announcement.²¹ Such a result defies theoretical rationales, unless investors value the cash in their pockets at a higher level than if held by the company. Adjusting these announcement effects by the actual sizes of the

associated special dividends implies a 30% haircut on the valuation of undistributed excess capital. In other words, a dollar of free cash flow left on balance sheet may only be worth \$0.70, all else equal.

Our assessment of this data dictates that, outside of major market meltdowns or idiosyncratic liquidity crises where the value of incremental cash is generally immediately obvious, most companies should be targeting a lean balance sheet. But there is one cohort where extra cash liquidity is usually beneficial: companies with high future growth value. Once again, the value of growth proves its all-encompassing importance as cash on hand can provide the "dry powder" to take advantage of profitable growth opportunities.

5. Opportunistic share buybacks

If a company still has excess capital after exhausting its profitable investment opportunities and optimizing its capital structure, it should generally be thinking about returning the residual cash flow to shareholders via some combination of dividends and buybacks.

Theoretically, returning capital is a value-neutral pass through of operating profits to their beneficial owners, and in a hypothetical world of rational investors, no taxes, and perfect information, dividends and buybacks are economically equivalent. In the real world, other practical factors intrude, like the tax position of investors, free float %, shareholder ownership stakes, or the intrinsic value of the shares. This last factor, the intrinsic value of shares being bought back, is key to our discussion of opportunistic buybacks, which we'd define as incremental share repurchase spend specifically aimed at taking advantage of perceived undervaluation of the stock and earning an excess return for shareholders. The truth is, many cash generative companies must continually buy back shares in the open market simply to avoid a ballooning balance sheet – they generate way too much cash flow to be reasonably plowed back into business growth every period and deploy capital to open market repurchases each and every reporting period without concern for valuation or any attempt to time the market.

But many other companies consider buybacks to be a value-creation tool, and deploy capital towards them opportunistically in an effort to meet performance goals. While opportunistic share repurchases can be an effective tool, they are also one of the most misunderstood tools in all of corporate finance.

Therefore, before considering the value of \$1 deployed to share repurchases for our analysis, let's

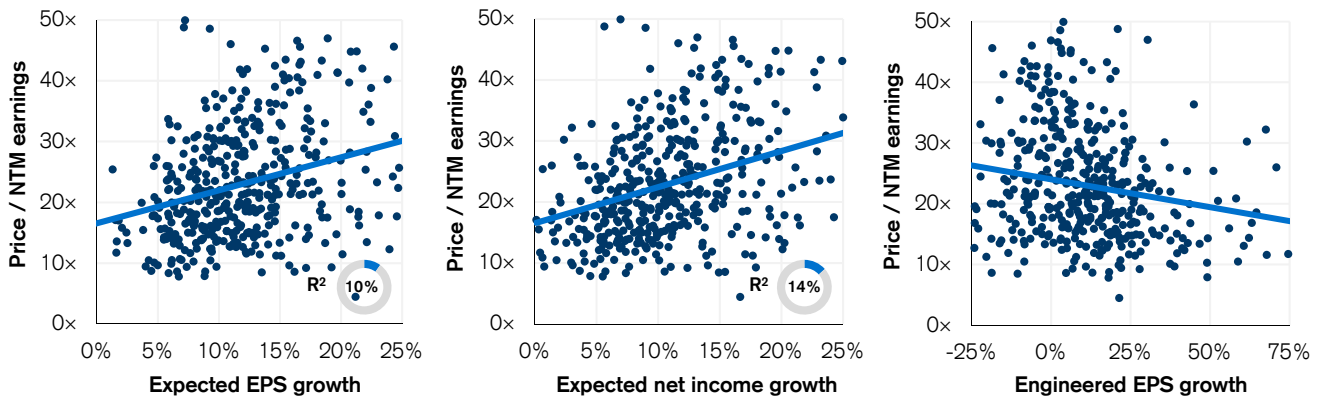
clear up some of the most common myths about buybacks.

Fallacy: Share repurchases create value by enhancing EPS

Reality: While most buybacks are EPS accretive, engineered EPS growth is not a source of fundamental value because the P/E multiple contracts by an offsetting amount to keep expected share price constant. This is easiest to see if one considers the price / earnings ratio on an aggregate, rather than a per share basis as market cap / net income. The expenditure of capital on a share repurchase reduces market capitalization by the amount of cash deployed, with no corresponding impact on net income (ignoring the negligible interest income foregone).

This may be counterintuitive because we see that EPS growth is positively correlated to valuation multiples across the market. However, net income growth has a stronger correlation, indicating that the market actually values true earnings growth, and the engineered component of EPS growth from expected buybacks is actually priced negatively, on average (Figure 13). Share buybacks can create value only to the extent that they help optimize the capital structure, and that impact is generally limited.

Figure 13: Price / earnings vs. expected growth



Fallacy: Levered buybacks directly boost TSR

Reality: Debt-financed shareholder distributions have no theoretical effect on TSR. TSR is driven by business operations earning returns on capital that exceed the cost of that capital. Strong profitability enables companies to return capital, so payouts are the vehicle by which operating performance can be shared (dollar for dollar) with their beneficial owners. Issuing new debt to finance capital distributions is not a form of business return, but a form of capital structure rebalancing, which is accompanied by the theoretical valuation sensitivities to increasing leverage.

Fallacy: Buying back undervalued shares creates value

Reality: Returning capital “creates” nothing. It is a financing decision that *splits* up the metaphorical capital pie in a different way. Only investing in business assets *grows* the pie and has the potential to truly create shareholder value. Buying back undervalued shares can transfer intrinsic value from the sellers in a repurchase program to the company’s remaining shareholders. In other words, buying back undervalued shares leaves the company’s remaining shareholders in the position to benefit, if and when the intrinsic value gap closes, in the form of excess TSR. Warren Buffett has said, “When companies ... find their shares selling far below intrinsic value in the marketplace, no alternative action can benefit shareholders as surely

as repurchases.”²² Although he is right, estimating intrinsic value is difficult for many management teams who tend to believe their shares are consistently undervalued. For these companies, buying back shares always looks productive, so they tend to deploy most capital towards buybacks when they generate their highest cash flows...which tends to coincide with peak valuations.

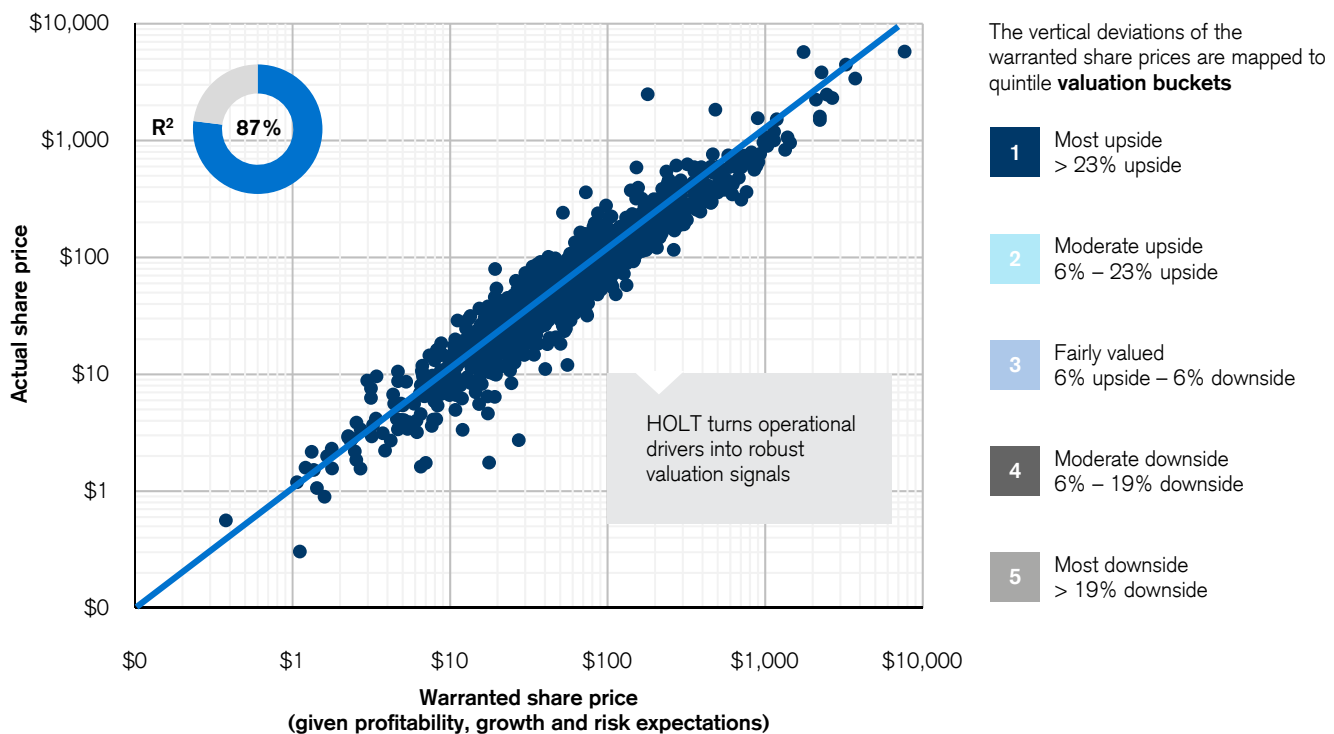
5. Opportunistic share buybacks

What's actually needed to get opportunistic buyback activity "right" is a conservative and robust intrinsic valuation approach, a credible belief or narrative about why the market mispricing is likely to close, and the discipline and processes to stick to a valuation rules-based strategy.

In order to quantify the expected value of \$1 deployed to opportunistic buybacks for U.S. and European companies today, we need to first answer the question "do valuation gaps eventually erode?"

Leveraging intrinsic share price estimates derived from profitability, growth, and risk forecasts, we bucketed companies into five equal samples representing misvaluation quintiles in Figure 14. For instance, the middle quintile contains companies that were roughly fairly valued, with intrinsic value estimates within +/- 6% of actual share prices. The most undervalued companies across our universe over the last 20 years that we evaluated, by contrast, had indicated upside of 23% or more.

Figure 14: Warranted share prices vs. actual share prices



What we were most interested in was the valuation change for companies in these various buckets after measuring relative intrinsic value. We measured "persistence" as the frequency with which

companies that were valued in each of the buckets at a given point in time were distributed across the buckets 3 months later.

Figure 15: Valuation state transition matrix

An intuitive approach to testing valuation "persistence"

Valuation state transition matrix
(average quarterly migration since 2001)

		Valuation bucket 3 months later					
		1	2	3	4	5	
Starting valuation bucket	Upside ^	1	63%	24%	8%	3%	2%
	2	19%	44%	26%	9%	3%	
	3	6%	24%	41%	24%	6%	
	4	2%	8%	26%	46%	18%	
	Downside v	5	2%	3%	6%	25%	64%

For instance, in Figure 15, the higher frequencies across the diagonal indicate that valuation is persistent – companies are more likely to stay in their bucket than transition to another – but also variable, indicating that there is a chance they could mean revert towards 0%, or fair valuation. And, lo and behold, that is exactly what the average valuation gap does over time, regardless of what its initial value gap was observed to be. The most

undervalued companies are measured to have less and less upside over time, while the opposite was true for the companies that appeared the most overvalued.

5. Opportunistic share buybacks

Figure 16: Intrinsic value gaps erode over time on average

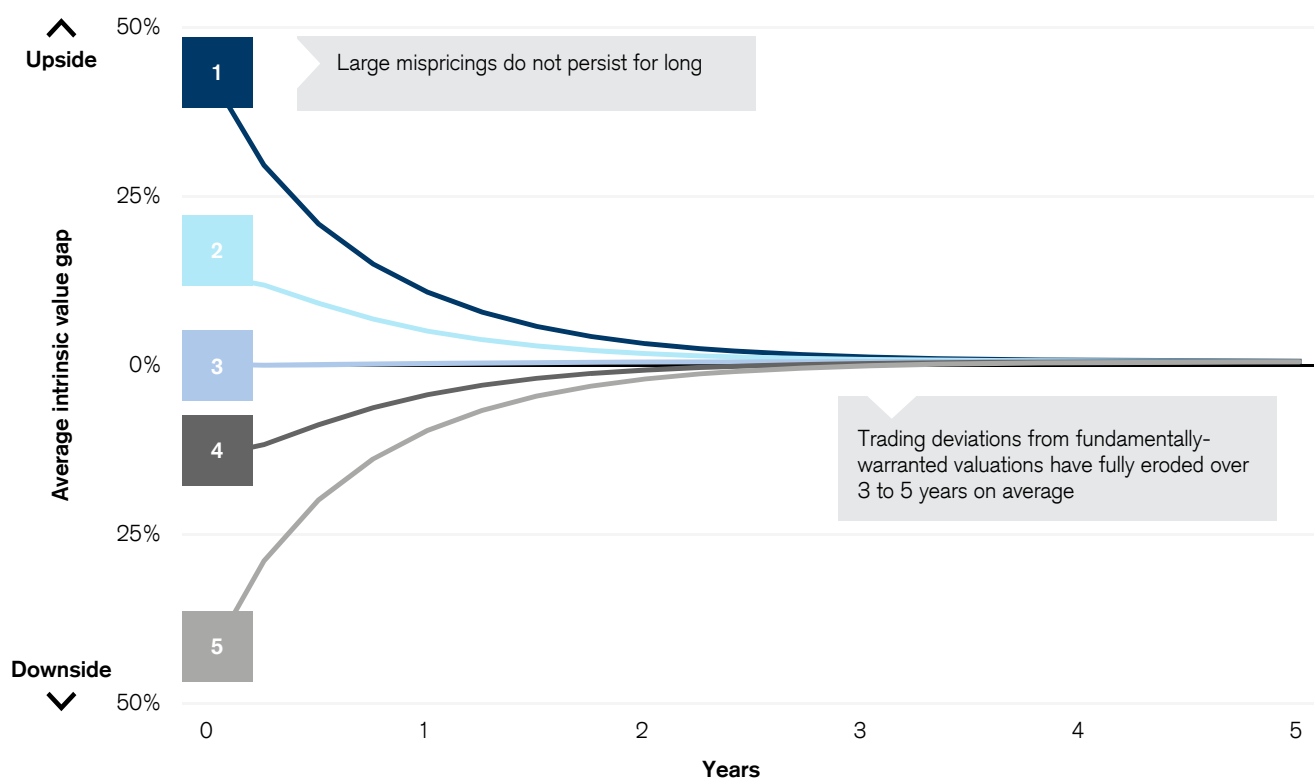
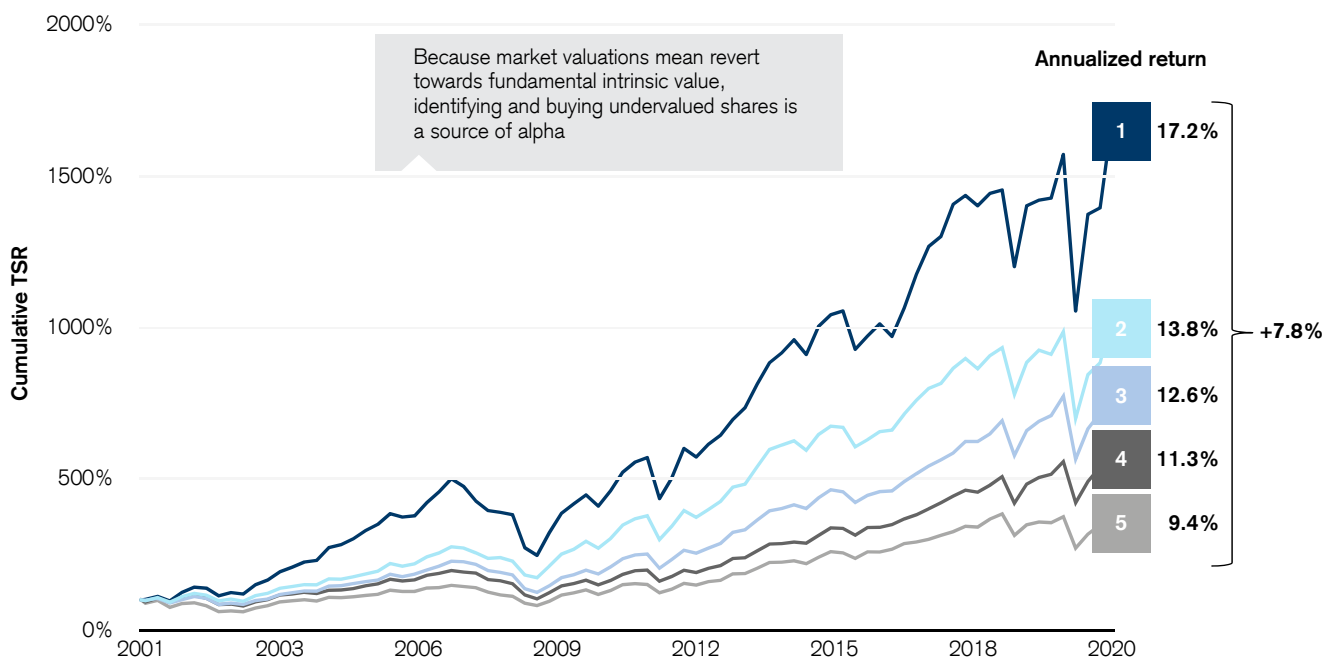


Figure 16 makes it clear that large valuation gaps do not persist for long, falling by over half, on average, over the ensuing one year. And, by three to five years from observing misvaluation, all valuation cohorts average about 0% upside/downside.

So market price deviations from fundamentally-warranted valuations erode over time. But that does not yet prove anything about repurchasing undervalued shares, because we haven't tested

whether share prices converge towards fundamental intrinsic values, thereby producing excess returns, or if share prices are a leading indicator of where market expectations were headed. To test this, we constructed portfolios of companies in each of the valuation quintiles and back-tested their relative TSRs, rebalancing quarterly.

Figure 17: Investing in undervalued shares has generated excess returns



Sure enough, Figure 17 shows that buying shares of companies identified as being undervalued produced excess returns vs. the performance of those the framework indicated as having downside. To put the relative TSRs into context, the annualized spread of buying the most undervalued shares vs. the most overvalued of +7.8% was 3.5x higher than the annualized risk free rate of return over the same horizon of 2.2%, indicating true value-creating information. It's the most significant value gaps that maximize the likelihood of realizing the benefit from repurchasing undervalued shares opportunistically.

Given that buying shares based on credible valuation signals from a robust intrinsic valuation framework is empirically value-creating, how should you think about the potential NPV of buying back shares in the face of undervaluation? If your shares are trading \$1 below intrinsic value, and you buy one back, is your NPV \$1? Seems like a reasonable logic, but time value effects, idiosyncratic risks, and the real option value of discretion are all considerations that can further impact the value of an opportunistic buyback. Let's walk through the components of our framework for valuing

opportunistic buybacks and their intuition and impact, before examining the value of \$1 deployed for each company in our universe.

Value of the decision: As mentioned, if a stock is trading at a price below its intrinsic value, it stands to reason that the per share difference between price and value accrues to the company. This value is the actual NPV assuming that the stock price moves immediately to the expected intrinsic value, realizing the excess return.

Time value effects: In practice, it takes time to execute a share repurchase program in the open market, over which time the stock price is expected to "drift" upward, increasing the average market execution price and limiting the average intrinsic value capture. Ultimately, the value of the buyback is only "monetized" when the intrinsic value gap closes fully in the future, which we've seen tends to take 3 to 5 years, on average. This can reduce the expected economics marginally, but assuming the company's cost of equity is used as the discount rate, opportunistic repurchases of undervalued shares will always have positive NPV.

5. Opportunistic share buybacks

Risk adjustment (for uncertainty around realizing NPV): Because most companies are left with a binary option to buy, or not to buy, their own equity, the subsequent performance of buyback “investments” is exposed to much more idiosyncratic risk. Moreover, the expected horizon for earning the benefit of value gap mean reversion is at least 3 years, but the decision to buy back shares may be called into question well before that, especially if there is some share price weakness in the interim. Therefore, we value expected share price appreciation towards intrinsic value at a hurdle rate that includes an enhanced premium for these extra risks by stripping out the implied diversification benefit, and rebuilding a cost of equity from the bottom up using idiosyncratic volatility only, rather than beta. Across our sample, the risk adjustment is responsible for a \$0.15 average reduction in the NPV of \$1 deployed.

Real option value of discretion: Opportunistic buyback spend is, by definition, discretionary, and companies can scale up or scale down their deployment of capital to buybacks based on real time valuation signals. Implementing a rules-based execution paradigm for opportunistic buybacks can

allow companies to increase outlays when market price drops well below expected intrinsic value and get less aggressive when the shares look more fully valued.

Across our sample of U.S. and European companies, we currently see an average of 6% share price upside. But because of the time dilution and the risks around being able to fully realize the upside, the value of \$1 used to buy back shares averages less than \$1 at \$0.91. If we limit our view to only those companies that see upside to their shares (why would companies with downside be entertaining opportunistic buybacks?), the average value increases to \$1.07. Still, opportunistic buybacks looks like the top capital allocation option on the margin for about 1/8 of all firms in our sample. We believe that the best candidates for opportunistic buybacks have lower volatility, lower levels of top-line growth, and trade at lower multiples.

6. Increase dividends

Distributing excess capital to shareholders via dividend payments is value-neutral. It's hard to argue that taking excess cash out of a company's bank account and putting it into an investor's has any effect whatsoever on the company's future cash flows. But the funny thing about dividend payments, at least regular dividends in the U.S., is that they are "sticky". Once a company announces a plan to initiate or increase a regular dividend, the market tends to view it as a permanent commitment, almost like a fixed coupon payment. Because of this, the *announcement* of changes to dividend policy can be interpreted by the market to contain information about the company's future prospects.

Probably most obviously, dividend reductions, omissions, and suspensions are usually viewed as leading indicators of financial distress and are met with significant negative stock price reactions in general. But declarations of dividends increases can also have signaling effects, as investors re-calibrate their expectations for profitability and growth in light of new information they perceive embedded in the dividend commitments. So, while the payment of dividends is not value-relevant, the decision to pay dividends can have a marginal impact when it is announced to the market.

If all else fails – all other capital allocation decisions produce negative NPV – companies have at their disposal a value-neutral way to return capital to shareholders dollar for dollar. The companies for whom this is the only non-value-destructive decision to make generally have significantly lower cash flow return on investment, lower market implied value of growth opportunities, and much lower levels of total shareholder returns.

Conclusions

There are many insights that can be gained from examining the value of \$1 invested at the macro and sector level, but in order to truly benefit managers, these analyses should be undertaken on an individual basis. While the evidence is clear that profitable growth investment is the primary pathway to value via capital allocation for most companies, it is also true that no profitable company can find opportunities to reinvest all of its operating cash

flow indefinitely. Corporate managers need the analytical tools to make smart, value-maximizing decisions on the margin and balance their pursuit of business growth with a diversified and flexible approach to capital budgeting that also focuses on strengthening the balance sheet and returning cash to owners when appropriate.

Endnotes

- 1 Buffett, Warren. *Berkshire Hathaway Letter to Shareholders*, Berkshire Hathaway, 25 Feb. 2012, <https://www.berkshirehathaway.com/letters/2011ltr>.
- 2 Enterprise value/invested capital defined as (market value of equity + HOLT debt) / inflation adjusted net assets, including capitalized operating leases and R&D. Return on capital defined as HOLT CFROI. Sales growth defined as sell-side consensus FY3/FY2 revenue growth. Cost of capital defined as HOLT discount rate.
- 3 S&P 1500 and EuroStoxx 600 (excluding financials, real estate, and utilities). This universe was used throughout the paper.
- 4 For this paper we standardized everything to USD, however, these insights apply to other currency equivalents.
- 5 Defined as $(EBIT \times (1 - \text{statutory tax rate}) + \text{depreciation \& amortization expense} + \text{rent expense} + \text{R\&D expense}) / (\text{Total assets} + \text{accumulated depreciation} + \text{rent expense} \times 8 + \text{R\&D expense} \times 5 - \text{non-interest bearing current liabilities} - \text{intangible assets \& goodwill} - \text{equity method investments})$.
- 6 Assumes depreciation and trailing 5-year average R&D expense as proxies for maintenance investment spend.
- 7 See *Credit Suisse Corporate Insights - The Roots of Growth: Strategies for Optimal Capital Deployment*, "Reverse engineering the value chain to create a decision framework." To calculate MIMIR, we first derive a value for existing assets and subtract that value from observed firm value to arrive at the expected value for future growth opportunities. MIMIR then represents the internal rate of return of the value of future growth and a cash flow stream composed of incremental operating cash flows above those associated with current assets (i.e. cash flow growth) and incremental investment outlays beyond maintenance expenditures (i.e. expansionary spending).
- 8 See *Credit Suisse Corporate Insights - Tying the Knot: M&A as a Path to Value Creation and Behind the Numbers: Mastering M&A*.
- 9 See *Credit Suisse Corporate Insights - Fighting the fade: Strategies for sustaining competitive advantage*.
- 10 See *Credit Suisse Corporate Insights - Behind the Numbers: Mastering M&A*.
- 11 The transaction universe of ~5,000 was ultimately distilled into a data set of 741 transactions (those for which both synergy and premium data was available).
- 12 Analysis assumes that present value of synergies are estimated as a perpetuity taxed at the acquirer's statutory rate at the time of the acquisition, and discounted at the acquirer's cost of equity.
- 13 There is a high degree of correlation (87% r-square) when regressing observed share prices to warranted share prices. Warranted share prices are estimated using a combination of HOLT warranted share prices and sell-side target prices.
- 14 The "good" M&A cohort is defined as companies within the sample for whom organic growth value is negative and market-implied growth (growth required to support the current share price) is 5% or higher than sell-side consensus growth forecasts (127 companies).
- 15 See *Credit Suisse Corporate Insights - Tying the Knot: M&A as a Path to Value Creation*.
- 16 Deal Value Added defined by McKinsey as combined (acquirer and target) change in market capitalization, adjusted for market movements, from 2 days prior to 2 days after announcement, as a percentage of transaction value. To ensure that we are isolating only the market's idiosyncratic sentiment around the deal, we made further adjustments to market- and risk-adjust these market reactions for the market index's return over the same horizon and the parties' respective equity betas as a measure of the riskiness of their returns.
- 17 "Strong" and "weak" balance sheet indexes were constructed from the S&P 500 based on the 50 companies with the best and worst Altman's Z-scores respectively.
- 18 Derived for each company using the Merton model given assigned ratings and actual financial leverage.
- 19 See *Credit Suisse Corporate Insights - Shareholder Activism: An Evolving Challenge and Credit Suisse Corporate Insights - The Activism Agenda: What are Activist Investors Looking For?*
- 20 Sampled literature: Bates, Thomas W., Ching-Hung Chang, and Jianxin Daniel Chi, "Why Has the Value of Cash Increased Over Time?" January 2017.
Dittmar, Amy, and Jan Mahrt-Smith, "Corporate Governance and the Value of Cash Holdings." May 2005.
Faulkender, Michael, and Rong Wang, "Corporate Financial Policy and the Value of Cash." July 2004.
Guimarães, Miguel Fernando Taveira, "What is a Euro Worth? The Market Value of Cash of Eurozone Firms." 2018.
Keefe, Michael O'Connor, and Robert Kieschnick, "Why does the Marginal Value of Cash to Shareholders Vary over Time?" December 2013.
Opler, Tim, Lee Pinkowitz, René Stulz, and Rohan Williamson, "The Determinants and Implications of Corporate Cash Holdings." October 1997.
Ozkan, Aydin, and Neslihan Ozkan, "Corporate Cash Holdings: An Empirical Investigation of UK Companies." 2004.
Pinkowitz, Lee, and Rohan Williamson, "What is a Dollar Worth? The Market Value of Cash Holdings?" October 2002.
Tong, Zhenxu, "Firm Diversification and the Value of Corporate Cash Holdings." February 2008.
- 21 Share price returns are market and risk adjusted.
- 22 Buffett, Warren. *Berkshire Hathaway Letter to Shareholders*, Berkshire Hathaway, 25 Feb. 1984, <https://www.berkshirehathaway.com/letters/1984.html>.



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