Fortuna Advisors LLC

May 2020

2020 Fortuna Advisors Buyback ROI Report

Getting in the Rhythm of Buy Low and Sell High

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SELECT HIGHLIGHTS:

- Spending on buybacks by the largest U.S. repurchasers reached an all-time high, at over $3 trillion, during the five-year period ending in 2019.
- We observed a significant increase in buyback spending relative to other uses of capital, including organic investment, cash acquisitions, and dividends.
- For the first time, more than half of the analyzed companies demonstrated good buyback timing; though nearly half bought back more stock at high prices.
- We launch the Fortuna "Buyback Fitness Test" to determine a company's overall suitability for buybacks.

ABOUT FORTUNA

Fortuna Advisors LLC is a NY-based strategy consulting firm that collaborates with corporate leaders to design and implement value-based analytics that improve strategic decisions and align organizational behaviors to deliver superior Total Shareholder Returns.

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A MESSAGE FROM OUR FOUNDER AND CEO

A New Focus on Buyback Timing and Fitness

Dear Reader,

Our mission at Fortuna Advisors is to help companies create more value and achieve higher total shareholder return (TSR) by developing new and innovative analytics. In 2011, we developed "Buyback ROI" to compare share repurchases to other capital uses, such as capital expenditures and acquisitions. It is a straightforward concept: when a company repurchases shares and its subsequent TSR is positive, its Buyback ROI is positive. In other words, the company has earned a return on its investment in its own shares by retiring them before the market cap increase, which is then concentrated in fewer shares.

In the 2020 Fortuna Advisors Buyback ROI Report, we show that, for the first time, most companies—58% to be precise—had Buyback ROI that exceeded their TSR. To achieve this, they tended to repurchase shares that were priced below the long-term trendline. This is good news for remaining shareholders—it means the company was able to retire more shares for its buyback dollars. We call the additional return (or loss) of this timing impact "Buyback Effectiveness."

Buyback ROI and Buyback Effectiveness are measures of a buyback program's success, and improving them should be the goal of every CEO, CFO, and Treasurer who oversees a repurchasing program. Management teams that achieve strong results in these metrics can be said to have demonstrated good stewardship of investor capital, and not just provided an artificial boost to EPS performance by reducing the share count.

To help achieve these two goals, Fortuna developed our VIBE (Value-Inspired Buyback Execution) methodology in 2019. The VIBE platform provides four objective signals designed to limit the human biases that lead many executives to believe their share prices are too low—biases that get in the way of better timing. VIBE helps companies reap more value from their buyback programs by enabling them to repurchase significantly more shares for the same amount, or to retire the same number of shares while spending less.

Buybacks have come under intense scrutiny in the past few years, which has reached a crescendo during the COVID-19 pandemic, as many companies have sought government relief. Why, critics have asked, did so many companies choose to increase their financial risk by returning capital, instead of keeping it on their balance sheets or using it to pay down debt?

With that said, far too many companies have repurchased shares—if not for the wrong reason (to boost EPS)—then at the wrong time: when analysis of a company's prospects against its history would have suggested that its stock was "fully valued." To help managers address this situation, we introduce in this report a new "Buyback Fitness Test" to help companies understand how buybacks should fit into their financial policies and strategies, if at all.

Last, and most important, we at Fortuna wish the very best and a speedy recovery to all whose health and well-being have been directly impacted by the COVID-19 virus. And as for the economy, we likewise hope for a quick and broad recovery.

Warm regards,

Gregory V. Milano

The State of the Buyback

In a 2018 interview with CNBC, Warren Buffett said:

> *Can you imagine somebody going out and saying, we're going to buy a business and we don't care what the price is? You know, we're going to spend $5 billion this year buying a business, we don't care what the price is. But that's what companies do when they don't attach some kind of a metric to what they're doing on their buybacks.*[1]

For nine years, Fortuna Advisors has advocated for a proactive, value-based approach to share buybacks, starting with the introduction of "Buyback ROI" in our 2011 study.[2] Since then, we have periodically published our Buyback ROI ranking for the S&P 500's largest share repurchasers.[3] The purpose of our Buyback ROI Reports has been twofold: (1) to show the staggering amounts of capital that have been deployed in repurchases; and (2) to demonstrate how value is created—or in far too many cases destroyed—through share repurchase programs.

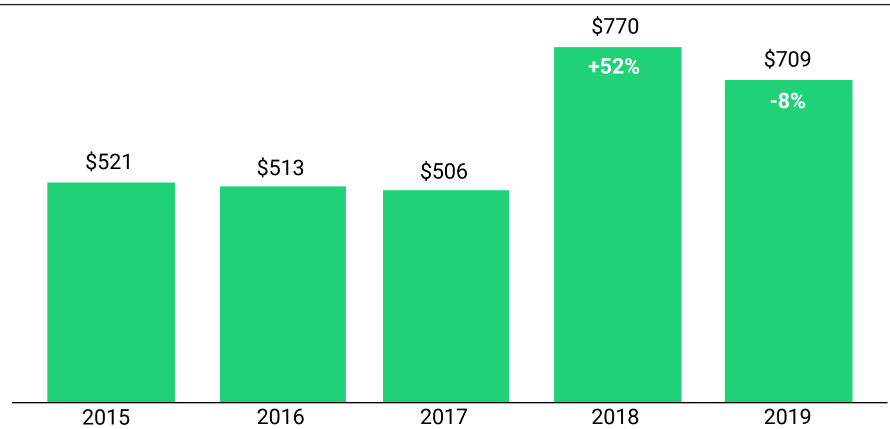
Corporate spending on buybacks by the 364 largest U.S. repurchasers reached an all-time high of over $3 trillion during the five-year period ending in 2019. This increase was generally considered to have been fueled by the 2017 Tax Cuts and Jobs Act, which sought to repatriate cash held by subsidiaries overseas. So while we expected buybacks to return to prior levels after 2018, this was not the case. In 2019, as shown in Figure 1, 364 of the S&P 500's largest repurchasers covered in this report spent $709 billion to buy back shares, down just 8% from the $770 billion in 2018.

Corporate spending on buybacks by the 364 largest U.S. repurchasers reached an all-time high of over

OVER $3 TRILLION

during the five-year period ending in 2019.

Figure 1
Have Buybacks Reached Excessive Levels?



Buyback Spending by S&P 500 2015-2019[4]

Fortuna Buyback Metrics Explained

Fortuna Advisors developed Buyback ROI and Buyback Effectiveness to enable comparison of a company's share repurchase activity to its other uses of capital. In general terms, when the value of an acquired asset increases, we say it has earned a positive return on investment. Our thinking behind buybacks is much the same – when the implied value of a company's repurchased shares increases over a period, we say it has earned a positive Buyback ROI.

Buyback ROI

Buyback ROI is calculated as an annualized internal rate of return (IRR)[5] that accounts for: (1) the cash outflows associated with share repurchases; (2) the estimated cash "inflows" of dividends "saved"; and (3) an estimated final "inflow" related to the final value of the accumulated shares repurchased.[6]

If a company's share price starts the year at $100, pays a dividend of $1 at the end of each quarter and has a year-end share price of $110, it would have an outflow of $100, $4 of quarterly "inflows" and a final "inflow" of $110 at the end of the year to produce a Buyback ROI of 14.2%.

	Time 0	Q1	Q2	Q3	Q4
Buyback	-$100.00				
Dividends		$1.00	$1.00	$1.00	$1.00
Ending Price					$110.00
Cash Flows	-$100.00	$1.00	$1.00	$1.00	$111.00
Annualized IRR = Buyback ROI					14.2%

While it is easier to achieve a positive Buyback ROI when a company's TSR is generally increasing, it can also be achieved through effective timing of repurchases.

Buyback Effectiveness

Buyback Effectiveness measures the value attributable to optimizing the timing of repurchases. It is calculated as the ratio of Buyback ROI to the company's TSR.[7] When Buyback ROI exceeds TSR, a company has executed buybacks when its stock was priced below the long-term trend, on average. When Buyback ROI trails TSR, a company has executed buybacks when its stock was above this long-term trend.

If the company had a 16% TSR while generating the 14.2% Buyback ROI described above, it would mean it had a negative Buyback Effectiveness (-1.5%) and was hurt by poor timing. Alternatively, if it had a 12% TSR with a 14.2% Buyback ROI, it would have benefitted from good timing on its buybacks and a positive Buyback Effectiveness (+2%).

One possible explanation is that many companies didn't spend all their announced buybacks in 2018, and at year-end were still holding cash that came back from overseas. Then as time wore on, they returned the cash to shareholders in 2019. But in aggregate, this does not seem to be the case since both total debt and net debt (net of cash) reached record levels in 2019, each growing by more than in 2018. Thus, at the margin, companies are borrowing to do buybacks, with net debt growing at a 25% compound annual rate since 2015 and with the net-debt-to-net-income ratio rising from 118% to 209% over the period, as shown in Figure 2.

What's more, buybacks have grown far more rapidly (at an annual rate in excess of 10%) than dividends, let alone organic and acquisitive investment in the business as shown in Figure 3.

With these rising buyback and debt levels in mind, we present our 2020 Fortuna Advisors Buyback ROI Report in the context of a larger debate over the efficacy and ethics of share buybacks.

Figure 2
Net Debt Increasing Rapidly

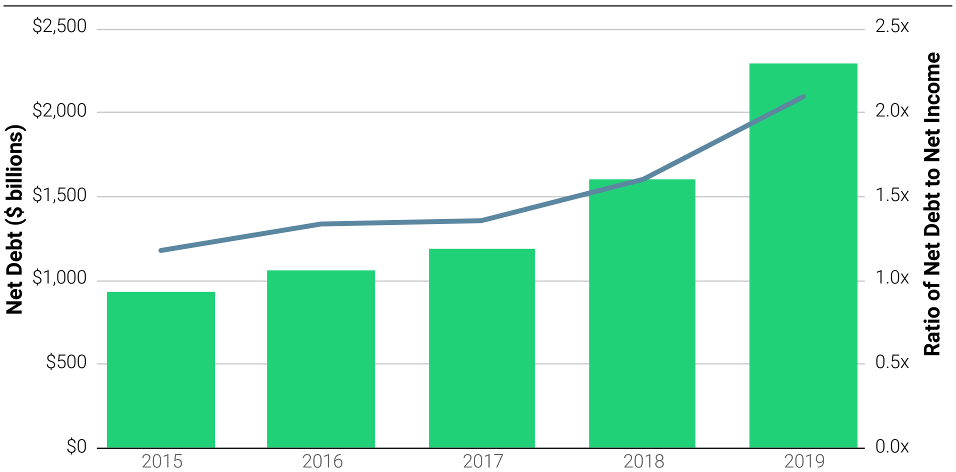
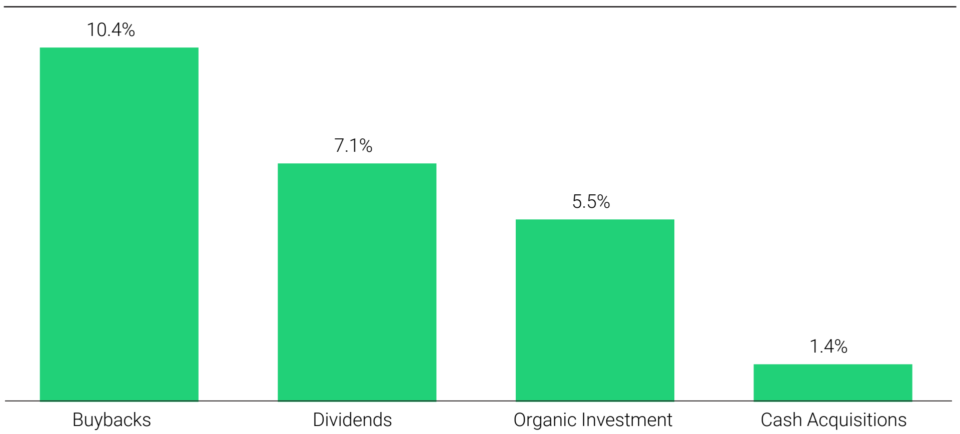


Figure 3
Capital Deployment Annualized Growth Rates since 2015



Sample includes 364 companies studied in this report

The Role of Buybacks

Critics claim buybacks have encouraged bad behavior and prevented meaningful reinvestment in long-term earnings and employee wages. These claims notwithstanding, we continue to believe it is important to acknowledge the role buybacks have and will hopefully continue to play in recycling capital from mature companies, with excess cash and limited investment prospects, to the next generation of cash-hungry Amazons and Apples. Buybacks play a vital role in funding up-and-coming investment opportunities by returning unneeded capital to investors, who are viewed by many as better capital allocators than many corporate leaders (especially when the capital needs to get to a different sector or industry).

As we argued in "Save the Buyback, Save Jobs,"[8] banning, limiting, or placing conditions on buybacks would do little to stem the problems described by critics, and would likely create unintended adverse effects. In the absence of buybacks, companies would continue to redistribute capital through dividends. Share repurchases simply represent another financial tool in the corporate tool box, which allows companies to benefit from (or be penalized by) future share price action when they believe their shares are undervalued. But undervalued or not, some companies may be better candidates for buybacks than others.

Our Buyback Fitness Test, discussed later, identifies three different kinds of companies, each of which should approach buybacks differently.

Amidst this criticism of buybacks, it's also clear that many companies could benefit substantially from improving their Buyback ROI and Buyback Effectiveness (timing). No longer will it be acceptable—from an investor, analyst, or a PR perspective—for companies to haphazardly buy back their stock. Buybacks must fit within a larger value creation story.

One common misconception is to view buybacks as an independent source of value creation that does not depend on leveraging, through reduced share count, an increase in the value of the operating business. The reality is that this misconception about buybacks can lead to heavier than ideal usage of buybacks, which can crowd out investment. And this has the potential to create a bigger drag on the stock price than any benefits from the buyback. As we will demonstrate below, the most important driver of Buyback ROI is actually effective operational performance, strategic management, and, paradoxically, the allocation of capital that is not spent on buybacks. Once the value of the operating business is expected to rise, buybacks can leverage the total shareholder return (TSR) higher.

Buybacks play a vital role in funding up-and-coming **INVESTMENT OPPORTUNITIES** by recycling unneeded capital to investors.

No longer will it be acceptable—from an investor, analyst, or a PR perspective—for companies to **HAPHAZARDLY BUY BACK** their stock.

The Philosophical Debate Over Buybacks

There is essentially a major philosophical disagreement between two sides of the buyback debate about who really "owns" the capital raised or earned by public companies. Both sides have the same ultimate goal: the socially optimal allocation of capital, and the benefits it brings not only to shareholders and employees but the broader economy and society at large. But the two sides have a different view of how that goal is most likely to be achieved.

Many in the anti-buyback camp believe the optimal allocation of capital, for the good of the company and all its stakeholders, is achieved by companies committed to strengthening their own balance sheets, increasing their employees' wages, and continually striving for growth. If all investors felt companies could do this effectively, the debate would be quickly settled in favor of leaving capital at the original company in perpetuity, to compound in value through effective reinvestment.

But buyback proponents believe professional investors tend to be better capital allocators than corporate executives, thanks both to their skill sets, and to the sharper edge of their results-oriented environment. So while the benefits may not materialize at the original company, which might have squandered those resources, recycling capital through buybacks can be argued to result in better overall allocation outcomes.

The question, then, is not really whether buybacks are "good" or "bad," but whether corporate managers are good or bad at allocating the capital entrusted to them by their investors, and whether and when they should return that capital. Of course, the answer to this question varies by industry and by management team, and also by who is passing the judgment. Indeed, a large part of Fortuna's practice is helping our corporate clients become better investors of their own capital.

For those with a strong view either way on this debate, we would like to understand your perspectives so please feel free to email us at info@fortuna-advisors.com to either share your views or suggest a call for a discussion.

The question is not whether buybacks are good or bad, but whether corporate managers are

GOOD OR BAD AT REINVESTING CAPITAL.

Better Buyback ROI Means Better Capital Productivity

The Fortuna Buyback ROI ranking this year is led by the same company that topped the ranking for the past three years. NVIDIA's management has created tremendous shareholder value through its effective operational performance, strategic management, and allocation of capital. In 2014, the company began entering attractive markets by building on its capabilities in graphics processing units (GPUs) for gaming. These new segments included data centers and autonomous vehicles, whose revenues grew at compound annual rates of 72% and 22%, respectively, from fiscal years 2016 to 2020. It has expanded margins while heavily investing in growth, including the acquisition of Mellanox Technologies for $7.3 billion in 2019, as well as numerous bolt-on acquisitions.

These efforts have helped NVIDIA generate over two and half times the revenue growth per dollar of new investment, as compared to revenue growth during the previous five years—a measure we call "Reinvestment Effectiveness." During the prior five years ending in 2014, NVIDIA's annualized TSR was only 7.3%, but with the benefit of very strong 18.4% Buyback Effectiveness (good timing), its Buyback ROI was a very respectable 27.0%. When we compare these results to the 61.8% TSR, -9.2% Buyback Effectiveness, and 46.9% Buyback ROI earned during the current five years, we see two very different ways to achieve a sizeable Buyback ROI. In the earlier period, its TSR was lower, but its buyback timing was excellent; in the more recent period, its TSR was stellar, but its buyback timing was poor.

NVIDIA's exceptional share price performance during the most recent period made its decision to repurchase shares a smart value-capture strategy. But to understand the value lost through poor timing, we prepared a simplified pro forma showing the results if NVIDIA had reduced buybacks when its share price was above the long-term trend and reallocated that money to increase buybacks when the share price was at or below the trend. By reallocating $1.25 billion (or 21%) of its buybacks in this manner, while adjusting the share price each period for changes in net debt and share count, NVIDIA would have been able to repurchase over 25 million more shares, or 34% more than it actually repurchased, for the same dollar amount. In this situation, Buyback ROI would have improved from 46.9% to 55.6%, Buyback Effectiveness from -9.2% to -4.6%, and TSR would be expected to have risen by 1.4% per year due to the reduction in share count.

So, although NVIDIA tops the Buyback ROI ranking, it had the opportunity to deliver substantially higher Buyback ROI. This speaks to the potential for many companies to harness significantly more value from their buyback programs. While 42% of our sample showed negative Buyback Effectiveness, NVIDIA was the only company in the top 10 of our ranking to have this distinction, as shown in Figure 4.

NVIDIA would have been able to repurchase over 25 million more shares during the last 5 years, or **34% MORE THAN IT ACTUALLY REPURCHASED,** for the same dollar amount with better Buyback Effectiveness

Figure 4
Top 10 Buyback ROI Companies

Rank	Company	Buybacks ($ millions)	Buyback ROI	TSR	Buyback Effectiveness
1	NVIDIA Corporation	6,185	46.9%	61.8%	-9.2%
2	Copart, Inc.	1,344	46.0%	37.9%	5.9%
3	ServiceNow, Inc.	1,060	42.6%	32.9%	7.3%
4	MSCI Inc.	2,868	41.7%	40.8%	0.7%
5	Fortinet, Inc.	1,249	40.1%	28.4%	9.1%
6	CDW Corporation	2,444	39.7%	33.9%	4.3%
7	Lam Research Corporation	8,686	35.6%	30.0%	4.3%
8	Edwards Lifesciences Corporation	2,765	35.5%	31.2%	3.3%
9	KLA Corporation	2,502	35.5%	24.5%	8.8%
10	Intuitive Surgical, Inc.	3,140	34.6%	27.4%	5.6%
Median of Top 10		**2,633**	**39.9%**	**32.0%**	**5.0%**
Median of All Ranked Companies		**3,316**	**12.0%**	**10.8%**	**0.6%**

Buyback Timing is Getting Better

Our last three Fortuna Buyback ROI Reports pointed to a fundamental lack of strategic timing in repurchases across most of the S&P 500—meaning most repurchases delivered Buyback ROI that was below the TSR delivered over the period (that is, they had negative Buyback Effectiveness). In our 2017 Fortuna Buyback ROI report, we noted a disappointing -4.3% median Buyback Effectiveness; and in 2018 and 2019, this improved to -2.5 and -1.3%, respectively, though remaining negative. The uptrend continues in this report to an all-time high of +0.6% Buyback Effectiveness. Figure 5 (see next page) shows the top 10 Buyback Effectiveness Companies.

These companies seem to have put into practice a "buy low, sell high" mentality, especially given that all but one, Fortinet, is not on the Top 10 for overall Buyback ROI. Indeed, Hess had negative TSR during the period, so its ability to buy shares when its price was below-trend and deliver a Buyback ROI of 10.7% is particularly remarkable, especially in energy.

When we step back and look at the overall positive Buyback Effectiveness, many companies may have benefitted from systemic market conditions at the tail-end of a bull market. *All the same, it's notable that this is the first time in seven years of evaluating buyback data that, in aggregate, companies appear to have created value for remaining shareholders through repurchases.* We believe this points to companies taking buyback timing more seriously.

Again, the one company that made the top 10 on Buyback ROI and Buyback Effectiveness is Fortinet, Inc. The cybersecurity company's repurchas-

Figure 5

Top 10 Buyback Effectiveness Companies

Rank	Company	Buybacks ($ millions)	Buyback ROI	TSR	Buyback Effectiveness
1	Lennar Corporation	893	25.1%	7.0%	16.9%
2	FMC Corporation	642	33.9%	15.3%	16.1%
3	Micron Technology, Inc.	3,895	24.9%	7.6%	16.1%
4	FleetCor Technologies, Inc.	2,244	32.9%	15.4%	15.2%
5	Chipotle Mexican Grill, Inc.	1,952	18.1%	4.2%	13.4%
6	Hess Corporation	1,642	10.7%	-2.0%	12.9%
7	Kansas City Southern	1,791	19.0%	5.6%	12.7%
8	Ball Corporation	2,050	28.2%	16.5%	10.0%
9	Apartment Investment and Management Company	394	22.8%	11.9%	9.8%
10	Fortinet, Inc.	1,249	40.1%	28.4%	9.1%
Median of Top 10		**1,717**	**25.0%**	**9.7%**	**13.2%**
Median of All Ranked Companies		**3,316**	**12.0%**	**10.8%**	**0.6%**

ing pattern shows how good timing can boost buyback success, even for companies with strong TSR. Figure 6 (see next page) shows that Fortinet concentrated 77% of its buybacks over the five-year period in quarters when its share price was below the average trend.

One last bit of good news concerns the companies with the largest buyback programs. Our capital market research, published in "Are Buyback the Best We Can Do?," found that companies directing more cash flow to buybacks had lower median TSR.[9] It's possible that the higher levels of buybacks prevented meaningful reinvestment in growth that might have fueled greater TSR. Of course, it's also possible that these companies opted for higher levels of buybacks since they felt they had few desirable investment opportunities (and thus the lagging TSR). Regardless of which direction the causality actually runs, our new report brings good news for these companies. As shown in Figure 7 (see page 12), nearly all of the Top 10 largest buyback program companies had double-digit Buyback ROI and positive Buyback Effectiveness.

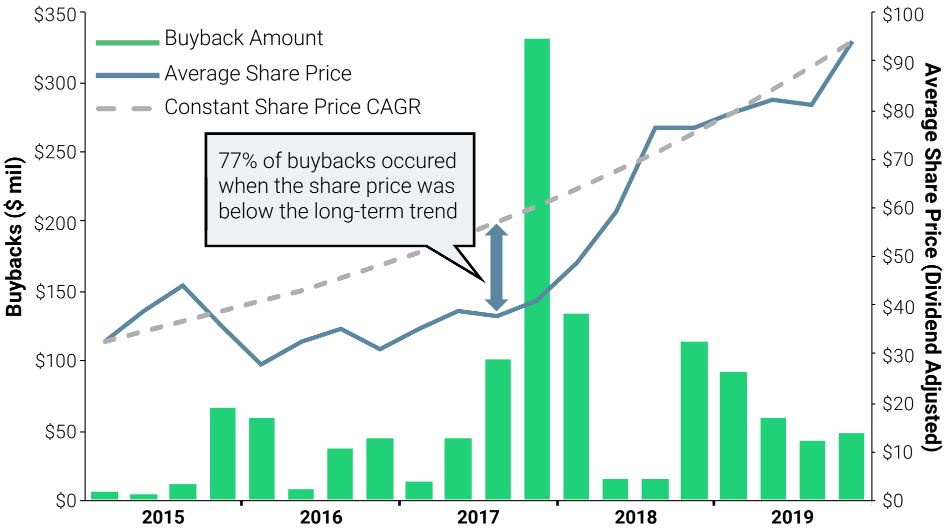
The "old" wisdom was that excess capital should be paid out whenever it accumulates, to prevent poor investment decisions (see the "Philosophical Debate" insert). In the past, as we've noted in our earlier reports, this has led to more companies buying stock at the peaks of cycles—when they're flush with cash—and far less at the bottoms, when they stand to benefit from it. But times have changed.

How much have they changed? As reported in Barron's in February 2020, activist investor Elliott Management recently suggested that the utility company Evergy would be better off reinvesting into the business funds

When we step back and look at the overall positive **BUYBACK EFFECTIVENESS,** many companies may have benefitted from systemic market conditions at the tail-end of a bull market.

Figure 6

How Fortinet, Inc. Achieved Strong Buyback Effectiveness



that it had earmarked for repurchases. It may be just one example, but it's telling all the same, especially as Elliott Management is generally recognized as a proponent of share repurchases. It would seem we no longer live in a "buyback-at-any-cost" world.

Recognizing this growing public and investor scrutiny of buyback programs, Fortuna has invested in developing an analytics-as-a-service platform called VIBE (Value Inspired Buyback Execution), which provides companies with a systematic approach to managing their repurchase programs. VIBE continuously analyzes four discrete value-driven signals to optimize the timing of buyback execution and improve Buyback ROI. More details on VIBE follow at the end of the report.

Figure 7

Top 10 Largest Buyback Programs

Rank	Company	Buybacks ($ millions)	Buyback ROI	TSR	Buyback Effectiveness
1	Apple Inc.	264,340	27.9%	20.8%	5.8%
2	Microsoft Corporation	77,549	34.4%	28.4%	4.7%
3	Oracle Corporation	77,431	10.8%	7.9%	2.7%
4	JPMorgan Chase & Co.	74,092	21.3%	19.4%	1.6%
5	Wells Fargo & Company	73,407	3.8%	2.9%	0.9%
6	Bank of America Corporation	68,538	17.8%	15.4%	2.1%
7	Citigroup Inc.	53,614	11.3%	8.4%	2.6%
8	Cisco Systems, Inc.	52,945	12.6%	16.1%	-3.0%
9	QUALCOMM Incorporated	40,997	15.7%	6.4%	8.7%
10	The Home Depot, Inc.	38,808	20.1%	21.1%	-0.8%
Median of Top 10		**70,973**	**16.8%**	**15.8%**	**2.3%**
Median of All Ranked Companies		**3,316**	**12.0%**	**10.8%**	**0.6%**

Scenario Analysis: COVID-19 Market Decline

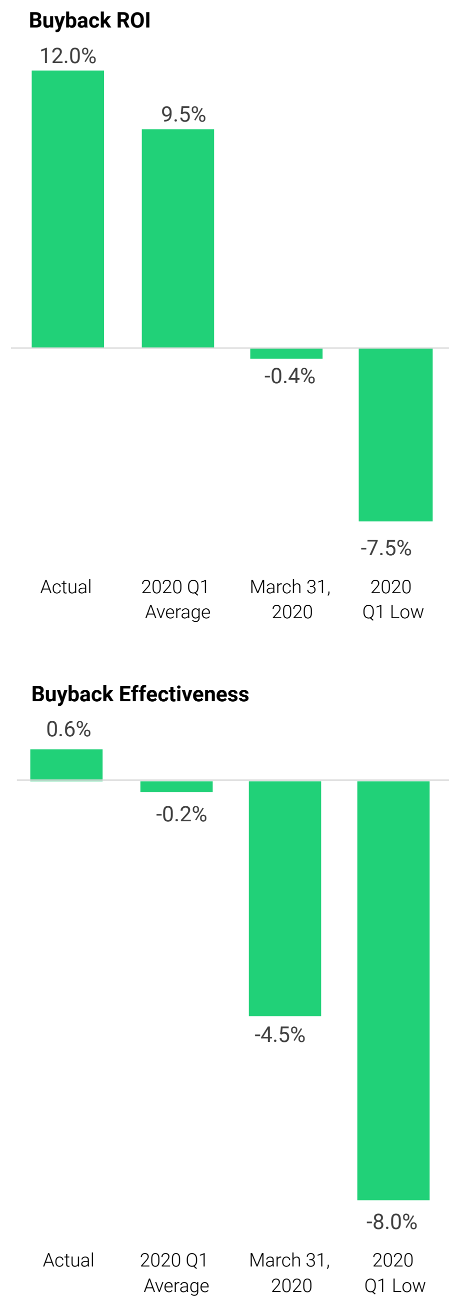
Our overall Buyback ROI and Buyback Effectiveness findings show marked improvement over previous periods examined. But, of course, this outcome would have been starkly different had the period captured ended with the pandemic-related downturn at the beginning of 2020. To illustrate, we measured Buyback ROI and Buyback Effectiveness as if the early 2020 market decline occurred at year-end 2019. We took a few cuts at this, as shown in Figure 8.

The first pro forma was constructed by replacing each company's ending 2019 Q4 share price with its average share price during Q1 of 2020. Next, we used the share prices at the end of Q1; and, finally, to demonstrate the most extreme case, we used company's Q1 share price low. Predictably, we see that both Buyback ROI and Buyback Effectiveness trend down significantly in these situations.

Although these cases are hypothetical, it's worth considering that repurchases generating high Buyback ROI and Buyback Effectiveness over the five-year rolling period may look worse to the extent those same repurchases are captured in the five-year rolling periods of future studies, should the market's valuation become less lofty. The important point is, evaluating buybacks while the market is richly valued can create a dangerous illusion of success. With a systematic and longer-term view, companies can avoid the biases that lead to repurchasing more shares at inopportune times.

Figure 8

Pro Forma Buyback ROI as if COVID-19 Pandemic Hit Earlier



Buyback ROI by Sector

There are many factors that influence the ability to deliver positive Buyback ROI, just as there are many keys to achieving an acceptable ROI with any use of capital. But when we compare sectors, the level of TSR has the biggest impact on Buyback ROI.

It is little surprise, then, that the information technology sector was the top sector in terms of Buyback ROI. Perhaps more surprising is the sector's median Buyback ROI of 20.4%, which is almost 2% above TSR, indicating good buyback timing and high ROI.

Taking second place on the Buyback ROI sector ranking, as shown in Figure 9 (see next page), is the utilities sector, which we did not expect. Admittedly, less than 1% of the buyback capital measured in this report was deployed by utilities. But they show impressive performance nonetheless, given that median TSR for these companies was more than 2% below that of the larger sample of companies. The utilities sector benefitted from good buyback timing, which led to Buyback Effectiveness of 4.4%, which was also second among sectors.

The order of the next three sectors—industrials, healthcare, and financials—follows their TSR ranking with small benefits in each sector from good timing. Other than energy, which suffered declining share prices and poor buyback timing, the next worst buyback timing was in communication services, which delivered TSR above that of financials and healthcare, though it fell below both on Buyback ROI. Rounding out the sectors are materials and real estate, with the latter delivering the best Buyback Effectiveness of all. Indeed, the median TSR of the real estate companies in this study was low, but thanks to good buyback timing their Buyback ROI was positive.

Figure 10 (see next page) lists the top three Buyback ROI companies in each sector, along with their Buyback ROI result. The lowest Buyback ROI by a sector leader is Valero Energy Corporation, with 15.2% in energy. Even in a tough industry, the company managed to deliver value through its buyback program. Admittedly, they have different commodity exposures from others in the industry, due to its heavy emphasis on petroleum refineries coupled with a chain of retail gas stations. Sometimes they benefit when the crude price drops, depending on price movements of finished products, such as gasoline and diesel.

Of course, there are many differences between the industries within each sector. So, there are likely to be companies that managed their buyback programs well, but didn't make this list, perhaps because they faced greater headwinds. Again, the largest driver of Buyback ROI is actually internal value creation. So we suspect some of these companies would benefit from a sharper look at strategic resource allocation choices, apart from any decisions to return capital.

It is little surprise, then, that the INFORMATION TECHNOLOGY SECTOR was the top sector in terms of Buyback ROI.

Figure 9

Median Buyback ROI by Sector

Rank	Sector	Buybacks ($ millions)	Buyback ROI	TSR	Buyback Effectiveness
1	Information Technology	846,834	20.4%	18.9%	1.8%
2	Utilities	7,629	15.5%	8.5%	4.4%
3	Industrials	329,330	14.4%	10.9%	1.4%
4	Health Care	367,101	10.8%	11.4%	0.4%
5	Financials	631,238	10.5%	10.3%	0.6%
6	Communication Services	171,224	9.7%	10.8%	-2.0%
7	Consumer Discretionary	332,833	8.7%	7.9%	0.7%
8	Consumer Staples	190,653	8.3%	10.1%	-0.6%
9	Materials	57,115	4.8%	4.7%	-0.1%
10	Real Estate	12,688	4.5%	0.7%	5.4%
11	Energy	73,483	-6.9%	-2.0%	-2.9%

Note: Medians affect the relationship of Buyback ROI, TSR and Buyback Effectiveness

Buyback Fitness Test: Who *Should* Be Buying Back?

When it comes to buybacks, not all companies are equal. Indeed, many shouldn't be doing buybacks at all, unless they have a surplus cash position that meaningfully exceeds their total debt. Otherwise, they risk compounding existing business risk with financial risk. Of course, all of this extra risk is magnified during extreme events like the COVID-19 pandemic. This places huge social and economic costs on society, as regulators scramble to fund safety nets and bailouts to limit job loss and cascading economic fallout. Though deemed black swan events by some, we've already seen two large crises in less than 15 years. And for what, to reduce share count and gain a few pennies of EPS per quarter? We believe executives and board directors should use a straightforward test to clarify when to consider buying back stock.

To make sense of all this, our Buyback Fitness Test classifies companies into three groups depending on whether they should pursue buybacks at all; and, if so, how aggressively. The first group is the Volatile Risk Group and

There are likely to be companies that **MANAGED THEIR BUYBACK PROGRAMS WELL,** but didn't make this list, perhaps because they faced greater headwinds.

Figure 10
Top Buyback ROI Companies by Sector

	Top Three Buyback ROI Companies in Each Sector					
	#1 in Sector		#2 in Sector		#3 in Sector	
	Company	**Buyback ROI**	**Company**	**Buyback ROI**	**Company**	**Buyback ROI**
Communication Services	Take-Two Interactive Software, Inc.	22.8%	Charter Communications, Inc.	18.9%	T-Mobile US, Inc.	16.2%
Consumer Discretionary	Dollar General Corporation	25.2%	Lennar Corporation	25.1%	NVR, Inc.	23.9%
Consumer Staples	The Estée Lauder Companies Inc.	25.7%	Costco Wholesale Corporation	24.1%	Walmart Inc.	20.8%
Energy	Valero Energy Corporation	15.2%	Phillips 66	13.4%	Hess Corporation	10.7%
Financials	MSCI Inc.	41.7%	S&P Global Inc.	29.0%	Moody's Corporation	24.3%
Health Care	Edwards Lifesciences Corporation	35.5%	Intuitive Surgical, Inc.	34.6%	Zoetis Inc.	32.0%
Industrials	Copart, Inc.	46.0%	Cintas Corporation	32.5%	Old Dominion Freight Line, Inc.	30.9%
Information Technology	NVIDIA Corporation	46.9%	ServiceNow, Inc.	42.6%	Fortinet, Inc.	40.1%
Materials	FMC Corporation	33.9%	Ball Corporation	28.2%	Avery Dennison Corporation	21.5%
Real Estate	American Tower Corporation (REIT)	28.4%	SBA Communications Corporation	24.7%	Apartment Investment and Management Company	22.8%
Utilities	The AES Corporation	17.2%	Evergy, Inc.	15.9%	NRG Energy, Inc.	15.1%

includes highly cyclical companies with fluctuating earnings that should avoid taking on leverage simply to return money to investors, only to struggle in the next downturn. For such companies, including oil & gas producers, buybacks should be off the table entirely—except when there is a surplus of cash in excess of total debt.

Almost as bad are companies that end up missing good investment opportunities because they lack the financial flexibility due to overfunding buybacks. We refer to this group as the Opportunistic Investor Group, which includes companies that aren't as cyclical, but have good investment prospects that sometimes come along unexpectedly. Companies that have limited their financial flexibility, by reducing liquidity and debt capacity just to buy back shares, might find themselves unable to seize discounted opportunities to consolidate market positions or invest in new growth. These companies, including many tech and life-sciences businesses, risk underinvesting in their long-term operations if they overprioritize buybacks. With that said, there may be times when the company is meaningfully undervalued and has excess cash or debt capacity, in which case share repurchases should be considered.

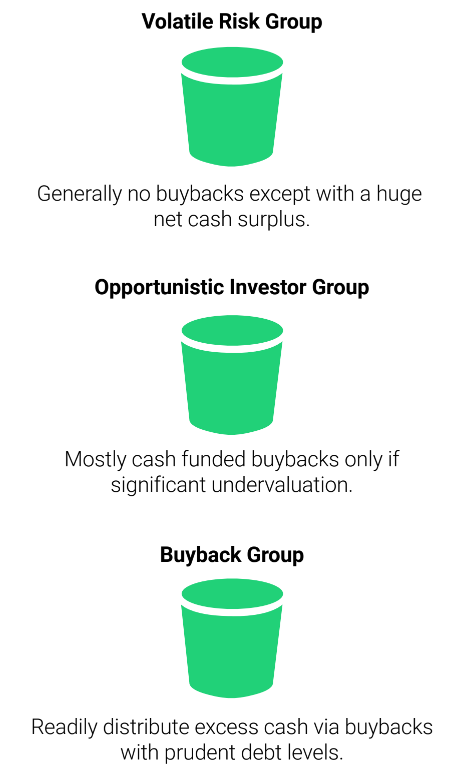
That leaves us with the final group: companies with stable cash flows and few unanticipated investment opportunities, which we refer to as the Buyback Group. These, often mature, companies are best poised to pursue buybacks, given the lack of profitable investments anywhere near their core skill-set, and low likelihood of a performance downturn. Railroads and many producers of consumer staples, for example, tend to have strong, stable cash flows and few meaningful reinvestment opportunities. Because of this, they're able to effectively stimulate broader economic growth by returning cash to investors that can be reinvested in promising young start-ups, some of which will become the star companies and employers of the future. These benefits may not materialize if the government were to restrict distributions, effectively trapping cash in aging companies. See Figure 11 on this.

Is your company in the Volatile Risk Group, the Opportunistic Investor Group, or the Buyback Group? Knowing this can be critical to your strategies, financial policies and performance; and typically requires a thorough analysis of business risks, cash flow variabilities, investment opportunities and financial policies. We've conducted some basic analytics here to provide guidance.

First, let's examine the characteristic of companies in the Volatile Risk Group. Although the ideal measure of volatility varies by industry, and we should also consider discreet industry or company risks, we applied the standard deviation of return on equity (ROE) as a percentage of average ROE from 2009 through 2019 as a proxy. To no surprise, every energy sector company in our ranking is above the overall median on this measure of volatility. Many reading this will think, "Of course oil & gas companies should finance conservatively and not sacrifice financial durability to buy back a few shares." But leaders of these companies face buyback pressures from investors and analysts every time they are in a bull market. And even when they are not.

As recently as the fourth quarter of 2019, many prominent brokerage analysts applauded the buyback

Figure 11
Buyback Fitness Test



announcements of oil & gas and oilfield services companies that, a few months later (in the wake of a COVID-19-driven energy demand drought), traded up to 80% below the price at which buybacks were suggested. If you are in a volatile business, we generally recommend avoiding buybacks altogether.

If that's not enough to dissuade managers of these volatile companies, they should also consider that Volatile Risk Group companies tend not to benefit as much from buybacks. The median Buyback ROI for companies in the top quartile of volatility had median Buyback ROI of 6.9%, which is just over half the median Buyback ROI for the other 75% of companies, as shown in Figure 12.

Identifying companies in the Opportunistic Investor Group is a bit more challenging. Conceptually, the Opportunistic Investor Group should include companies that are not volatile and have few unplanned investment opportunities. We cannot tell what was planned and what came up suddenly when we look back over time, so as a proxy we examined the average rate of reinvestment and the variability in that reinvestment rate to identify companies with high and variable investment needs.

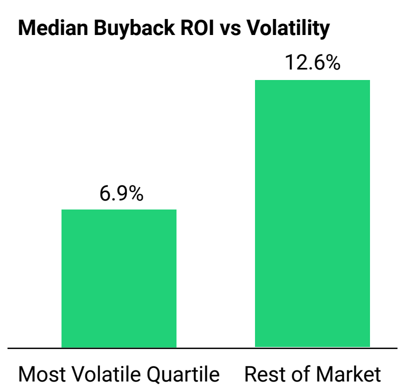
As a simple proxy for the reinvestment rate, we totaled the capital expenditures, cash acquisitions, and R&D investments; and divided this sum by the earnings before interest, taxes, depreciation, amortization, and R&D (EBITDAR). Note that we excluded financial spread businesses, like banks, since EBITDAR is effectively meaningless for them. Next, we calculated the average reinvestment rate and the standard deviation divided by the average, and this provided two dimensions to help us identify, at a high level, the companies that should be in the Opportunistic Investment Group, as shown in Figure 13 (see next page).

Companies that consume a large percentage of their EBITDAR reinvesting in the business, and also have a highly variable reinvestment rate, are more likely to miss a good investment opportunity if they lever up to do buybacks. As such, they should only consider debt-financed buybacks when there is a significant value gap. That is, when the buyback itself is expected to generate a nice NPV for the remaining shareholders, while exiting shareholders are taken out at generally low prices.

Unfortunately, normal human behavioral biases make such value gaps especially difficult for executives to identify within their own companies. Everyone thinks their own stock is cheap, at least most of the time; and inside some companies it is viewed as heresy to suggest that the share price might be fair or, heaven forbid, overpriced. The first step for overcoming this is for the CEO and CFO to stop viewing such comments as a personal criticism, and to start by implementing an objective framework for identifying when there is an opportunity to buy back undervalued shares. Of course, there are different ways to

Figure 12

Volatile Companies Tend to Deliver Worse Buyback ROI



As recently as the fourth quarter of 2019, many prominent **BROKERAGE ANALYSTS APPLAUDED THE BUYBACK ANNOUNCEMENTS** of oil & gas services companies.

go about this, but our VIBE framework is based on this type of systematic approach to buyback timing. Those interested in VIBE can find more detail at the end of the report.

A total of 76 companies in our sample have been above-median on both reinvestment rate and the variability of their reinvestment rate. But 20 of them have already been identified in the Volatile Risk Group. So, this leaves 56 companies in the Opportunistic Investment Group. After sorting the other two buckets, the remaining companies can be classified as members of the Buyback Group.

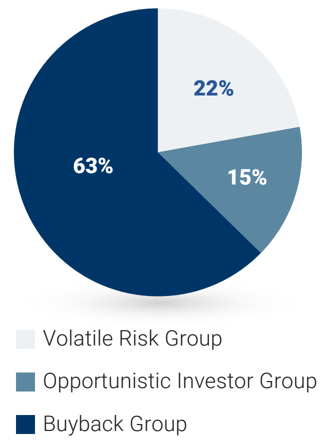
It's perhaps no surprise that over 70% of consumer staples and consumer discretionary companies are in this group, though it may surprise some that over 70% of industrial companies are included in it. However, a glance at the subindustries shows that the companies driving the industrials figures higher are mostly stable industries like railroads, and industrial conglomerates that often include volatile business units but benefit from internal diversification. This is not to say that industrial conglomerates are good stocks, but that they could consider buybacks an effective tool to create value. As we showed in "How Corporate Diversity and Size Influence Spinoffs and Other Breakups," specialized companies tend to deliver better TSR over time than their more diversified counterparts.[10]

Using this methodology, we summed the buybacks done over the five years covered by this report for each bucket; and the good news is, as shown in Figure 13 that 63% of buybacks are already being done by companies in the Buyback Group; however, the 22% being done by companies in the Volatile Risk Group is of potential concern.

As discussed earlier in the report in "The Role of Buybacks," there is an important and valid debate on the role of buybacks. All companies should consider the risk that their capital deployment strategies could face during cyclical downturns, as the past 20 years have proven these to be more common and severe than most models would suggest. Clear fitness tests and measures can help companies evaluate these risks, but clear public policy is also important in shaping a capital deployment strategy. Coming out of the pandemic, we don't believe the debate is best served by focusing on what companies should have done in the past. Instead, we believe the most effective policy response would be one that is forward-looking and focused on mitigating future risk appetite within the Volatile Risk Group. A policy that prevents bailouts for, or meaningfully penalizes, companies that bought back stock over previous years would have the benefit of reducing the Volatile Risk Group's incentive to overspend on buybacks during good times. At the same time, it would not constrain the release of excess capital inside stable, profitable companies that may face limits on the level of capital they can productively deploy.

Figure 13

Buyback Fitness Test: Dollars Allocated to Buybacks by Group



Note: based on our sample of the S&P 500's 364 largest repurchasers.

63% OF BUYBACKS
are already being done by companies in the Buyback Group; however, the
22% BEING DONE BY COMPANIES IN THE VOLATILE RISK GROUP
is of potential concern.

In Conclusion

We'd like to thank you for your time and interest in our analysis and commentary on this increasingly important subject. This report aims to help companies evaluate and make the most of their own buyback prospects and performance. We hope that, as attitudes about buybacks evolve, companies will continue to embrace careful and comprehensive planning for buybacks, as they would with any substantial capital outlay. Better-informed buyback programs can lead the way to more value creation for all stakeholders, and to a better overall allocation of resources across the economy.

Endnotes

1 https://www.cnbc.com/2018/08/31/warren-buffett-explains-the-enduring-power-of-stock-buybacks.html

2 Gregory V. Milano, "What's Your Return on Buybacks?," *CFO.com*, June 3, 2011.

3 Published in *Institutional Investor* (2012-2016) and *Fortune* magazine since 2017.

4 Buyback Spending by S&P 500 2015-2019.

5 Buyback ROI is expressed formulaically as

$$0=NPV=-(S*P_0)+\frac{(S*D)_1}{(1+BBROI)^1}+\frac{(S*D)_2}{(1+BBROI)^2}+\ldots+\frac{(S*P)_n}{(1+BBROI)^n},$$

where S = shares repurchased, P = share price, and D = dividend per share (had that share not been repurchased)

6 The Buyback ROI ranking is based on the most recent five years of buybacks (Q4 2014 – Q4 2019), although longer and shorter periods can also be used. All members of the S&P 500 are included that deployed at least $1 billion, or at least 4% of their recent market capitalization, to buy back shares over the period. Quarterly buybacks are assumed to be executed at the average closing price for each day the market is open during the quarter. For consistency, the final value of the cumulative repurchased shares is set based on the average closing price for the final quarter of the analysis (Q4 2019).

7 Buyback Effectiveness is expressed formulaically as

$$\text{"Buyback Effectiveness} = \left(\frac{1+\text{Buyback ROI}}{1+\text{TSR}}\right)-1$$

8 Gregory V. Milano and Michael Chew, "Save the Buyback, Save Jobs," *Journal of Applied Corporate Finance 31*, no. 1 (2019): 126-128.

9 Gregory V. Milano, "Are Buybacks the Best We Can Do?," *Buona Fortuna*, February 16, 2010.

10 Gregory V. Milano, "How Corporate Diversity and Size Influence Spinoffs and Other Breakups," *Journal of Applied Corporate Finance* 23, no. 2 (2011): 69–76.

Full List: 2020 Fortuna Buyback ROI Ranking

Rank	Company	Buybacks ($ millions)	Buyback ROI	Buyback Effectiveness
1	NVIDIA Corporation	6,185	46.9%	-9.2%
2	Copart, Inc.	1,344	46.0%	5.9%
3	ServiceNow, Inc.	1,060	42.6%	7.3%
4	MSCI Inc.	2,868	41.7%	0.7%
5	Fortinet, Inc.	1,249	40.1%	9.1%
6	CDW Corporation	2,444	39.7%	4.3%
7	Lam Research Corporation	8,686	35.6%	4.3%
8	Edwards Lifesciences Corporation	2,765	35.5%	3.3%
9	KLA Corporation	2,502	35.5%	8.8%
10	Intuitive Surgical, Inc.	3,140	34.6%	5.6%
11	Microsoft Corporation	77,549	34.4%	4.7%
12	Mastercard Incorporated	22,560	34.4%	4.2%
13	Cadence Design Systems, Inc.	2,238	34.3%	3.2%
14	FMC Corporation	642	33.9%	16.1%
15	Adobe Inc.	9,096	33.2%	0.0%
16	FleetCor Technologies, Inc.	2,244	32.9%	15.2%
17	Leidos Holdings, Inc.	1,071	32.6%	3.5%
18	Cintas Corporation	2,691	32.5%	1.1%
19	Zoetis Inc.	2,330	32.0%	4.8%
20	Global Payments Inc.	1,213	32.0%	-1.4%
21	IDEXX Laboratories, Inc.	1,689	31.8%	1.2%
22	Old Dominion Freight Line, Inc.	657	30.9%	9.0%
23	Synopsys, Inc.	1,910	30.2%	2.5%
24	ANSYS, Inc.	1,431	29.4%	4.0%
25	S&P Global Inc.	6,234	29.0%	2.7%
26	Intuit Inc.	4,585	28.9%	2.8%
27	American Tower Corporation (REIT)	1,019	28.4%	7.4%
28	Ball Corporation	2,050	28.2%	10.0%
29	Align Technology, Inc.	1,242	28.2%	-6.0%
30	Apple Inc.	264,340	27.9%	5.8%
31	Motorola Solutions, Inc.	4,953	27.6%	3.4%
32	Visa Inc.	34,852	27.6%	1.7%
33	Autodesk, Inc.	3,042	27.5%	3.8%
34	VeriSign, Inc.	3,348	27.2%	0.4%
35	Applied Materials, Inc.	12,803	27.0%	4.2%
36	The Boeing Company	35,465	27.0%	0.8%
37	Fiserv, Inc.	5,603	26.3%	-0.1%
38	The Estée Lauder Companies Inc.	4,934	25.7%	2.4%
39	Dollar General Corporation	5,078	25.2%	3.6%
40	Lennar Corporation	893	25.1%	16.9%
41	Micron Technology, Inc.	3,895	24.9%	16.1%
42	L3Harris Technologies, Inc.	1,589	24.8%	-1.1%
43	SBA Communications Corporation	3,113	24.7%	7.4%
44	Thermo Fisher Scientific Inc.	4,510	24.4%	3.3%
45	Moody's Corporation	3,522	24.3%	4.0%
46	Costco Wholesale Corporation	3,261	24.1%	3.5%
47	NVR, Inc.	2,853	23.9%	-0.9%
48	Broadcom Inc.	13,890	23.8%	-5.2%
49	Trane Technologies plc	3,167	23.5%	4.7%
50	IHS Markit Ltd.	3,562	23.3%	6.9%
51	Ross Stores, Inc.	4,898	23.2%	0.3%
52	Texas Instruments Incorporated	15,489	23.2%	0.4%
53	Verisk Analytics, Inc.	1,380	23.0%	3.3%
54	IQVIA Holdings Inc.	6,593	23.0%	1.9%
55	Starbucks Corporation	24,152	22.9%	3.3%
56	Apartment Investment and Management Company	394	22.8%	9.8%
57	Take-Two Interactive Software, Inc.	904	22.8%	-10.2%
58	Waste Management, Inc.	3,466	22.7%	1.3%
59	Best Buy Co., Inc.	6,265	22.7%	1.7%
60	Jacobs Engineering Group Inc.	1,497	22.1%	5.8%
61	PulteGroup, Inc.	2,551	22.1%	5.2%
62	Broadridge Financial Solutions, Inc.	1,422	21.8%	-2.6%
63	Allegion plc	468	21.8%	3.0%
64	Avery Dennison Corporation	1,321	21.5%	-2.2%
65	JPMorgan Chase & Co.	74,092	21.3%	1.6%
66	Fidelity National Information Services, Inc.	2,222	21.2%	1.4%
67	Analog Devices, Inc.	1,529	21.2%	1.0%
68	The Sherwin-Williams Company	2,427	21.1%	0.4%
69	O'Reilly Automotive, Inc.	7,961	20.9%	1.2%
70	Aon plc	8,284	20.9%	2.0%
71	Stryker Corporation	1,968	20.8%	0.6%
72	Walmart Inc.	33,833	20.8%	9.1%
73	Sysco Corporation	6,467	20.7%	1.6%
74	IDEX Corporation	564	20.7%	1.9%
75	Hilton Worldwide Holdings Inc.	4,267	20.5%	4.5%
76	Automatic Data Processing, Inc.	6,052	20.4%	2.1%
77	Xilinx, Inc.	2,772	20.3%	0.8%
78	The Home Depot, Inc.	38,808	20.1%	-0.8%
79	Target Corporation	11,982	20.1%	4.0%
80	Republic Services, Inc.	2,556	20.1%	0.0%
81	Northrop Grumman Corporation	7,710	20.0%	-2.2%
82	Dover Corporation	1,863	20.0%	5.0%
83	Accenture plc	13,096	20.0%	-0.7%
84	Celanese Corporation	2,646	19.9%	1.3%
85	Norfolk Southern Corporation	7,770	19.9%	5.2%
86	CSX Corporation	11,874	19.9%	2.2%
87	Darden Restaurants, Inc.	1,089	19.8%	-1.9%
88	The Procter & Gamble Company	25,719	19.8%	8.7%
89	Union Pacific Corporation	24,612	19.2%	7.6%
90	AMETEK, Inc.	1,159	19.2%	4.5%
91	Intercontinental Exchange, Inc.	4,649	19.2%	0.8%
92	Jack Henry & Associates, Inc.	511	19.1%	-1.7%
93	Kansas City Southern	1,791	19.0%	12.7%
94	NIKE, Inc.	18,303	18.9%	2.2%
95	Charter Communications, Inc.	24,587	18.9%	-2.0%
96	Mettler-Toledo International Inc.	2,645	18.9%	-2.0%
97	Deere & Company	4,703	18.9%	1.2%
98	Yum! Brands, Inc.	10,949	18.8%	1.6%
99	AutoZone, Inc.	7,543	18.6%	2.7%
100	Illumina, Inc.	1,751	18.5%	6.3%
101	Intel Corporation	34,418	18.5%	4.7%
102	McDonald's Corporation	32,140	18.4%	-0.9%
103	Qorvo, Inc.	2,936	18.4%	5.1%
104	Lockheed Martin Corporation	7,630	18.4%	-0.4%
105	Chipotle Mexican Grill, Inc.	1,952	18.1%	13.4%
106	Agilent Technologies, Inc.	2,206	18.0%	2.2%
107	HCA Healthcare, Inc.	9,760	17.9%	3.1%
108	Bank of America Corporation	68,538	17.8%	2.1%
109	Nasdaq, Inc.	1,533	17.8%	-2.3%
110	UnitedHealth Group Incorporated	13,980	17.7%	-5.4%
111	The TJX Companies, Inc.	9,192	17.7%	2.5%
112	Linde plc	3,625	17.4%	4.6%
113	Marsh & McLennan Companies, Inc.	4,253	17.4%	1.2%
114	The AES Corporation	289	17.2%	6.9%
115	Assurant, Inc.	1,956	17.0%	0.3%
116	Merck & Co., Inc.	25,505	17.0%	5.0%
117	T. Rowe Price Group, Inc.	3,993	16.9%	5.1%
118	Raytheon Company	4,408	16.7%	-1.0%
119	Honeywell International Inc.	15,252	16.6%	0.4%
120	American Express Company	19,748	16.6%	8.4%

Full List: 2020 Fortuna Buyback ROI Ranking *(continued)*

Rank	Company	Buybacks ($ millions)	Buyback ROI	Buyback Effectiveness
121	Aflac Incorporated	7,018	16.4%	1.1%
122	V.F. Corporation	3,706	16.4%	6.9%
123	Baxter International Inc.	3,154	16.3%	-1.3%
124	T-Mobile US, Inc.	2,243	16.2%	-5.7%
125	Brown-Forman Corporation	2,109	16.2%	1.6%
126	Ecolab Inc.	3,011	16.1%	2.8%
127	The Hershey Company	2,251	16.1%	4.1%
128	Church & Dwight Co., Inc.	1,613	16.0%	0.3%
129	Willis Towers Watson Public Limited Company	2,015	16.0%	2.3%
130	Illinois Tool Works Inc.	8,502	16.0%	0.1%
131	Cboe Global Markets, Inc.	556	16.0%	0.0%
132	CarMax, Inc.	3,720	16.0%	4.3%
133	Masco Corporation	2,185	15.9%	-2.2%
134	Evergy, Inc.	2,672	15.9%	1.2%
135	Martin Marietta Materials, Inc.	1,139	15.8%	-2.5%
136	QUALCOMM Incorporated	40,997	15.7%	8.7%
137	United Rentals, Inc.	3,060	15.6%	8.8%
138	Amphenol Corporation	2,730	15.5%	-0.3%
139	Anthem, Inc.	7,177	15.5%	-3.1%
140	Cummins Inc.	4,540	15.4%	7.2%
141	Alphabet Inc.	37,790	15.4%	-2.9%
142	Parker-Hannifin Corporation	2,830	15.3%	3.2%
143	Humana Inc.	6,017	15.2%	-3.3%
144	The Western Union Company	2,483	15.2%	2.7%
145	Valero Energy Corporation	8,379	15.2%	-2.8%
146	Lowe's Companies, Inc.	18,062	15.2%	-0.6%
147	Amgen Inc.	34,603	15.1%	4.7%
148	Globe Life Inc.	1,576	15.1%	0.6%
149	NRG Energy, Inc.	3,127	15.1%	7.2%
150	The PNC Financial Services Group, Inc.	13,116	14.9%	0.4%
151	The Allstate Corporation	9,678	14.8%	1.8%
152	FLIR Systems, Inc.	603	14.5%	1.9%
153	Caterpillar Inc.	9,871	14.4%	3.2%
154	Eaton Corporation plc	4,672	14.4%	4.1%
155	United Airlines Holdings, Inc.	8,571	14.2%	3.7%
156	Citrix Systems, Inc.	4,178	14.2%	-1.7%
157	Raymond James Financial, Inc.	1,131	14.2%	2.9%
158	Maxim Integrated Products, Inc.	1,710	14.1%	-3.6%
159	Eli Lilly and Company	10,200	14.0%	-0.2%
160	Tiffany & Co.	1,123	14.0%	7.9%
161	Regions Financial Corporation	4,776	13.9%	0.4%
162	Gartner, Inc.	1,069	13.7%	0.3%
163	Akamai Technologies, Inc.	2,420	13.7%	5.5%
164	Marriott International, Inc.	11,118	13.6%	-0.5%
165	Varian Medical Systems, Inc.	1,375	13.6%	2.2%
166	Tyson Foods, Inc.	4,019	13.6%	-3.7%
167	Seagate Technology plc	4,536	13.5%	8.9%
168	NetApp, Inc.	6,362	13.5%	3.6%
169	Phillips 66	10,439	13.4%	1.1%
170	W.W. Grainger, Inc.	3,992	13.1%	5.3%
171	Medtronic plc	12,930	13.0%	1.0%
172	Stanley Black & Decker, Inc.	1,607	12.8%	-0.3%
173	Huntington Ingalls Industries, Inc.	1,925	12.8%	-5.4%
174	Discover Financial Services	9,537	12.7%	5.0%
175	Rockwell Automation, Inc.	3,878	12.6%	-0.9%
176	Cisco Systems, Inc.	52,945	12.6%	-3.0%
177	Expeditors International of Washington, Inc.	2,493	12.4%	-0.8%
178	Everest Re Group, Ltd.	990	12.4%	0.5%
179	TE Connectivity Ltd.	6,378	12.4%	1.0%
180	Ameriprise Financial, Inc.	8,506	12.3%	5.1%
181	Comcast Corporation	23,361	12.2%	0.0%
182	PepsiCo, Inc.	15,492	12.2%	1.6%

Rank	Company	Buybacks ($ millions)	Buyback ROI	Buyback Effectiveness
183	Hologic, Inc.	1,291	11.9%	-1.9%
184	Aptiv PLC	3,296	11.7%	0.5%
185	Quanta Services, Inc.	2,178	11.4%	5.6%
186	United Technologies Corporation	14,183	11.4%	2.7%
187	Citigroup Inc.	53,614	11.3%	2.6%
188	The Walt Disney Company	25,236	11.2%	0.4%
189	Fifth Third Bancorp	6,332	11.2%	0.1%
190	J.B. Hunt Transport Services, Inc.	1,217	10.9%	2.0%
191	The Coca-Cola Company	13,347	10.9%	2.5%
192	Oracle Corporation	77,431	10.8%	2.7%
193	Waters Corporation	4,777	10.8%	-3.7%
194	Hess Corporation	1,642	10.7%	12.9%
195	Northern Trust Corporation	3,456	10.7%	-0.5%
196	Truist Financial Corporation	3,479	10.6%	-0.2%
197	The Hartford Financial Services Group, Inc.	3,570	10.5%	-0.3%
198	Mondelez International, Inc.	11,897	10.5%	0.4%
199	Hasbro, Inc.	827	10.5%	-4.7%
200	U.S. Bancorp	14,724	10.5%	1.6%
201	Facebook, Inc.	27,854	10.2%	-8.5%
202	Corning Incorporated	13,106	10.1%	0.2%
203	BlackRock, Inc.	8,149	10.0%	0.4%
204	Chubb Limited	4,133	9.8%	0.7%
205	Emerson Electric Co.	4,912	9.7%	3.3%
206	Synchrony Financial	7,459	9.7%	2.8%
207	Morgan Stanley	22,518	9.7%	1.4%
208	NortonLifeLock Inc.	4,092	9.7%	3.7%
209	Verizon Communications Inc.	5,134	9.7%	0.5%
210	Quest Diagnostics Incorporated	2,031	9.6%	-2.9%
211	Tractor Supply Company	1,887	9.6%	2.2%
212	Johnson Controls International plc	8,868	9.4%	6.4%
213	PPG Industries, Inc.	4,494	9.1%	3.2%
214	Duke Energy Corporation	1,541	9.0%	1.8%
215	Skyworks Solutions, Inc.	2,880	8.9%	-2.1%
216	The Clorox Company	1,917	8.9%	-2.1%
217	Citizens Financial Group, Inc.	4,049	8.9%	-2.8%
218	Capital One Financial Corporation	10,107	8.8%	3.2%
219	Xerox Holdings Corporation	2,186	8.7%	5.5%
220	Las Vegas Sands Corp.	2,239	8.7%	2.8%
221	Booking Holdings Inc.	20,087	8.7%	-2.7%
222	Delta Air Lines, Inc.	10,080	8.7%	0.6%
223	HollyFrontier Corporation	1,793	8.5%	-0.2%
224	AT&T Inc.	4,270	8.4%	0.5%
225	Kimberly-Clark Corporation	4,111	8.3%	0.8%
226	Universal Health Services, Inc.	2,095	8.2%	1.5%
227	Johnson & Johnson	33,319	7.8%	-0.2%
228	Royal Caribbean Cruises Ltd.	1,400	7.7%	-4.6%
229	Berkshire Hathaway Inc.	6,196	7.7%	-0.7%
230	The Travelers Companies, Inc.	10,005	7.7%	-0.9%
231	KeyCorp	3,335	7.3%	-2.6%
232	United Parcel Service, Inc.	9,208	7.0%	1.4%
233	eBay Inc.	15,701	6.9%	-2.9%
234	Huntington Bancshares Incorporated	1,979	6.9%	-3.9%
235	Zions Bancorporation, National Association	2,210	6.8%	-5.6%
236	Southwest Airlines Co.	8,530	6.8%	-2.3%
237	LyondellBasell Industries N.V.	14,066	6.5%	1.2%
238	General Dynamics Corporation	8,787	6.4%	-1.3%
239	Cerner Corporation	3,239	6.4%	4.0%
240	Genuine Parts Company	839	6.2%	2.2%
241	Loews Corporation	3,692	6.1%	1.7%
242	Marathon Petroleum Corporation	8,771	6.1%	-4.0%
243	Electronic Arts Inc.	4,788	6.0%	-11.0%
244	Fortune Brands Home & Security, Inc.	1,532	5.9%	-2.8%

Full List: 2020 Fortuna Buyback ROI Ranking *(continued)*

Rank	Company	Buybacks ($ millions)	Buyback ROI	Buyback Effectiveness
245	Principal Financial Group, Inc.	1,751	5.7%	1.1%
246	Monster Beverage Corporation	5,471	5.7%	-5.0%
247	MetLife, Inc.	11,506	5.6%	1.9%
248	General Motors Company	10,702	5.6%	-1.3%
249	Robert Half International Inc.	1,310	5.4%	2.1%
250	Cigna Corporation	5,864	5.4%	-6.9%
251	Laboratory Corporation of America Holdings	1,668	5.3%	-4.5%
252	Leggett & Platt, Incorporated	676	5.3%	-2.3%
253	The Charles Schwab Corporation	3,220	5.2%	-4.6%
254	HP Inc.	9,237	5.2%	-0.4%
255	Pfizer Inc.	37,223	5.2%	-2.9%
256	Prudential Financial, Inc.	9,033	4.7%	-0.2%
257	The Goldman Sachs Group, Inc.	30,828	4.7%	0.2%
258	Host Hotels & Resorts, Inc.	1,375	4.5%	5.4%
259	ConocoPhillips	9,625	4.3%	5.1%
260	Bristol-Myers Squibb Company	10,320	4.2%	1.1%
261	MGM Resorts International	3,214	4.2%	-3.5%
262	Lincoln National Corporation	3,954	3.8%	0.2%
263	Wells Fargo & Company	73,407	3.8%	0.9%
264	The Bank of New York Mellon Corporation	14,035	3.7%	-2.3%
265	Advance Auto Parts, Inc.	851	3.6%	1.7%
266	Omnicom Group Inc.	3,090	3.6%	-0.8%
267	M&T Bank Corporation	5,391	3.5%	-4.2%
268	F5 Networks, Inc.	2,558	3.5%	1.0%
269	Snap-on Incorporated	1,041	3.5%	-2.8%
270	C.H. Robinson Worldwide, Inc.	1,305	3.3%	-1.2%
271	Weyerhaeuser Company	2,870	3.3%	2.6%
272	The Interpublic Group of Companies, Inc.	1,137	3.3%	-2.6%
273	Amcor plc	1,059	3.0%	-0.4%
274	Henry Schein, Inc.	2,126	2.7%	-3.0%
275	Kohl's Corporation	2,854	2.7%	1.1%
276	Constellation Brands, Inc.	2,912	2.4%	-12.3%
277	Discovery, Inc.	3,618	2.4%	5.3%
278	Archer-Daniels-Midland Company	4,017	2.3%	2.4%
279	E*TRADE Financial Corporation	3,088	2.2%	-10.4%
280	DaVita Inc.	5,520	1.9%	4.6%
281	BorgWarner Inc.	988	1.9%	6.4%
282	Colgate-Palmolive Company	6,725	1.9%	-0.6%
283	Chevron Corporation	4,547	1.8%	-3.0%
284	State Street Corporation	6,877	1.5%	0.6%
285	Kellogg Company	2,213	1.5%	-1.9%
286	International Paper Company	2,050	1.3%	0.5%
287	Whirlpool Corporation	2,826	1.0%	0.9%
288	International Business Machines Corporation	17,879	1.0%	1.1%
289	Flowserve Corporation	358	0.9%	5.1%
290	Alaska Air Group, Inc.	898	0.9%	-5.8%
291	Ulta Beauty, Inc.	2,201	0.7%	-12.3%
292	Comerica Incorporated	3,847	0.6%	-8.8%
293	Biogen Inc.	17,586	0.5%	2.0%
294	Juniper Networks, Inc.	3,515	0.3%	-4.5%
295	Pentair plc	1,057	0.3%	-0.6%
296	Norwegian Cruise Line Holdings Ltd.	1,213	0.2%	-5.1%
297	Expedia Group, Inc.	2,581	0.1%	-7.0%
298	AmerisourceBergen Corporation	5,659	0.1%	-1.5%
299	General Mills, Inc.	3,054	-0.2%	-4.0%
300	DENTSPLY SIRONA Inc.	1,838	-0.2%	-2.6%
301	American International Group, Inc.	27,750	-0.4%	-2.2%
302	Wabtec Corporation	652	-0.6%	1.5%
303	CF Industries Holdings, Inc.	1,402	-0.7%	-1.5%
304	Ralph Lauren Corporation	1,927	-0.8%	7.3%
305	Eastman Chemical Company	1,338	-0.8%	-2.8%
306	Mohawk Industries, Inc.	420	-0.8%	0.3%
307	Campbell Soup Company	858	-1.0%	-5.3%
308	McKesson Corporation	8,972	-1.1%	5.5%
309	Exxon Mobil Corporation	6,984	-1.1%	1.1%
310	WestRock Company	718	-1.1%	0.1%
311	Cognizant Technology Solutions Corporation	6,369	-1.7%	-6.3%
312	Simon Property Group, Inc.	1,735	-1.7%	-2.4%
313	Nucor Corporation	1,395	-1.8%	-5.5%
314	Allergan plc	19,303	-2.4%	3.2%
315	The Kroger Co.	6,577	-2.8%	-2.7%
316	H&R Block, Inc.	2,797	-3.5%	-1.2%
317	Carnival Corporation & Plc	5,496	-3.5%	-7.9%
318	The J. M. Smucker Company	904	-3.6%	-6.8%
319	Sealed Air Corporation	2,906	-3.8%	-6.1%
320	FedEx Corporation	6,038	-4.1%	-3.3%
321	SL Green Realty Corp.	2,181	-4.2%	-1.4%
322	CVS Health Corporation	14,175	-4.7%	-2.6%
323	Harley-Davidson, Inc.	3,155	-5.5%	2.4%
324	Textron Inc.	2,757	-5.7%	-8.5%
325	Cardinal Health, Inc.	2,797	-5.8%	-0.2%
326	PVH Corp.	1,285	-5.8%	-1.5%
327	Gilead Sciences, Inc.	26,606	-6.2%	0.4%
328	Unum Group	1,981	-7.1%	-6.6%
329	Conagra Brands, Inc.	2,023	-7.2%	-10.5%
330	Newell Brands Inc.	1,894	-7.2%	1.7%
331	Altria Group, Inc.	7,019	-7.3%	-10.8%
332	Franklin Resources, Inc.	5,283	-7.5%	2.3%
333	Regeneron Pharmaceuticals, Inc.	1,261	-7.8%	-4.8%
334	Alexion Pharmaceuticals, Inc.	1,723	-8.5%	2.2%
335	CenturyLink, Inc.	858	-8.7%	3.8%
336	DuPont de Nemours, Inc.	9,091	-9.2%	-11.3%
337	Capri Holdings Limited	2,919	-9.4%	5.7%
338	American Airlines Group Inc.	11,895	-9.4%	-2.6%
339	ViacomCBS Inc.	6,355	-9.6%	-4.8%
340	Walgreens Boots Alliance, Inc.	16,959	-9.6%	-8.9%
341	Western Digital Corporation	2,171	-11.4%	-3.3%
342	Nordstrom, Inc.	2,618	-11.5%	-2.9%
343	Hanesbrands Inc.	1,263	-11.9%	-3.4%
344	Invesco Ltd.	1,711	-12.0%	-0.2%
345	Baker Hughes Company	3,213	-12.7%	-4.4%
346	DXC Technology Company	2,079	-13.3%	-20.7%
347	The Mosaic Company	942	-14.2%	-1.4%
348	The Gap, Inc.	2,078	-14.7%	-2.8%
349	National Oilwell Varco, Inc.	2,241	-14.8%	5.0%
350	Coty Inc.	950	-16.5%	-10.5%
351	Nielsen Holdings plc	1,296	-16.5%	-6.6%
352	Schlumberger Limited	4,088	-17.0%	-2.9%
353	Albemarle Corporation	790	-17.1%	-20.5%
354	Perrigo Company plc	1,092	-21.2%	-2.7%
355	Cabot Oil & Gas Corporation	1,548	-21.9%	-12.8%
356	Macy's, Inc.	2,319	-22.5%	-3.1%
357	Alliance Data Systems Corporation	3,723	-24.0%	-9.5%
358	General Electric Company	25,925	-24.4%	-12.5%
359	Occidental Petroleum Corporation	2,125	-25.1%	-17.2%
360	L Brands, Inc.	1,679	-30.3%	-11.7%
361	Devon Energy Corporation	4,963	-31.6%	-17.7%
362	Marathon Oil Corporation	1,092	-31.9%	-18.9%
363	Mylan N.V.	1,075	-32.0%	-15.9%
364	Diamondback Energy, Inc.	2,032	-32.2%	-35.9%
Average Full List		**8,297**	**10.6%**	**0.2%**
Median Full List		**3,316**	**12.0%**	**0.6%**

VIBE

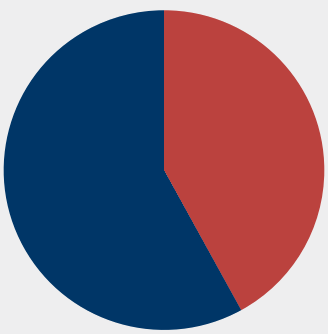
Value Inspired Buyback Execution

Managements know the key to creating value from buybacks is to concentrate repurchases when share prices are low. Unfortunately for all stakeholders, 42% of companies repurchased more shares when their prices were above the trend, from 2015-2019.

VIBE is a fact-based platform that provides managements with real-time signals to help override natural biases, limited information, and human error to better inform the timing of share repurchases.

Buyback programs can and should be sources of immense value for many companies. VIBE can help them harness it. Using the RCE-Implied premium signal alone, the average company would have saved $550 million.

Buyback Performance

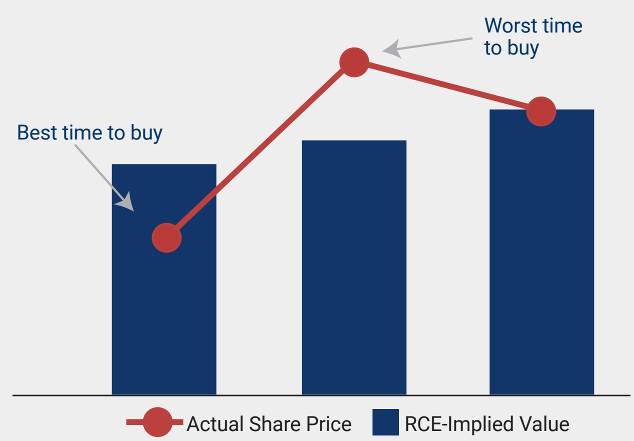


From 2015-2019,

42%

of S&P 500 repurchasers failed to create value from stock buybacks.

VIBE Improved Timing



VIBE signals include:

1. **PERFORMANCE & VALUATION**
Based on the company and its peers, indicates the likelihood of a desirable Buyback ROI.

2. **CONSENSUS VS. PRICE**
Based on the dividend yield and an expected share price CAGR, derived from consensus EPS growth.

3. **RCE-IMPLIED PREMIUM**
Based on Fortuna Advisors' Residual Cash Earnings (RCE) measure.

4. **VIBE SIMULATIONS**
Based on 1000+ simulations that incorporate growth, margins, and asset intensity.

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OR REACH OUT TO GREG MILANO (GREGORY.MILANO@FORTUNA-ADVISORS.COM)