



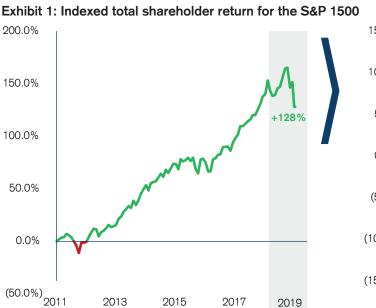
Building Resiliency



Introduction

The financial crisis of 2008 is now more than a decade behind us. The past ten years witnessed rising equity valuations and stock prices as well as increasing business confidence and mergers and acquisitions (M&A) activity. This improvement in Keynes' "animal spirits" has happened during the

economic backdrop of a low interest rate environment further stimulated in the U.S. by the Tax Cut and Jobs Act announced in 2017, which has supported multiple expansion. In hindsight, we have seen a highly constructive business and capital markets environment (see Exhibit 1 below)¹.



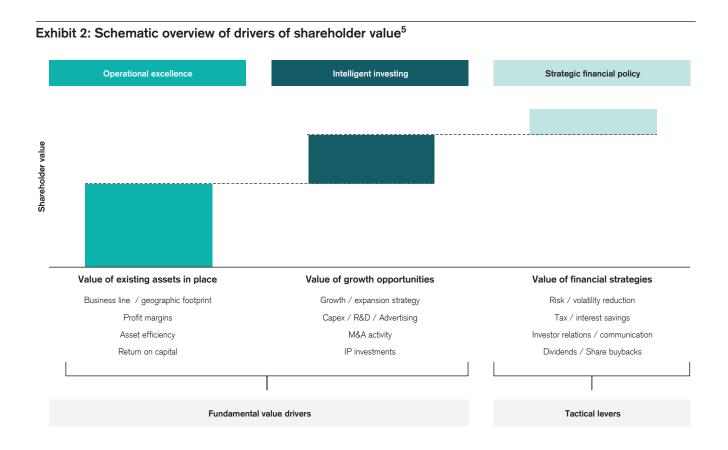


Still, the market volatility and declines that occurred during the last few months of 2018 have resurrected worries about the next downturn. Inevitably, as expansions sustain, we all begin to wonder when it ends and when the next recession is coming. In this context, it is worth noting that economic recoveries and expansions do not die of old age, they require adverse conditions or shocks. Admittedly, these shocks can come from a variety of different dimensions, but they are not inevitable²; Australia has not experienced an economic contraction since 1991³. Also, recent experience can often taint our perspectives ... even with the extreme volatility of the final quarter of 2018, markets finished down just 4.4% for the year⁴. All to say that worries about a pending downturn may be excessive but admittedly may never be far from the minds of astute and thoughtful managers of businesses.

This paper, the twelfth in our ongoing series of **Credit Suisse Corporate Insights**, does not seek to predict or forecast the next downturn. Instead, we thought it prudent to take this opportunity to evaluate the kinds of steps companies can take to successfully navigate any economic headwinds – even in times when investors do not focus on a company's operations.

Successful valuations are a function of successful operations and financial policy

In any economic climate, companies should maintain focus on improving their businesses and their opportunities in order to drive shareholder value. In previous issues of this series, we have discussed topics such as profitability, growth, and M&A as fundamental drivers of shareholder wealth creation – and a focus on these fundamentals should remain top priority for management.



Especially in times of high volatility, companies should consider financial policy and non-operational levers as ways to build resiliency in their valuation in the face of possible headwinds. In these times, a disconnect arises between operating performance and trading values resulting in higher intra-portfolio correlations (IPC) and obscuring the buy-side's ability to distinguish "good" stocks from "bad". Especially in these volatile markets, human nature leads investors to re-evaluate their positions based on sentiment, and less on fundamental valuation techniques, as fears of losses are prevalent and losses are generally far more "unpleasant" for investors than gains are enjoyable⁶. Additionally, frequent changes in forecasts decrease investor reliance on operating cash flow expectations from both company guidance and sell-side analysts. As a result, valuing a firm's expected operating performance becomes less precise, and the market or trading price of a company may deviate from its intrinsic, warranted value. Given this phenomenon, we believe that firms more than ever have to signal their relatively stronger fundamentals and adaptability to varying market environments through

various tactical levers. Proper signals to the market through capital distributions, operating guidance, and prudent capital structure can help keep a company's name at the top of the list in investor portfolios.

In this context, the key question is: What can companies do to maximize their chances for success beyond the core operations of their businesses?

Let's therefore evaluate how dividend policy, share buybacks, earnings guidance, interest rates and debt mix can all provide opportunities to drive and stabilize valuation multiples ... including in times of market dislocation. Under what circumstances can companies effectively leverage these tactical tools? How should these objectives be communicated to the market in a way that will drive value creation? In addition to optimizing operating performance, these tactical levers represent "extra credit" that can help companies excel.

Developing a dividend strategy

Fundamentally, a public company's valuation is a function of the cash flows it generates and the multiple investors are willing to ascribe to those cash flows. That multiple is driven in part by operating performance – returns on capital and growth – but also by peripheral factors such as barriers to entry, industry dynamics and management skill which all influence investor risk sentiment. We have previously shown that dividends aren't a driver of total shareholder returns (TSR), but one of the components of TSR together with capital gains⁷. But even though dividends do not drive value per se, they can play a role in how the market perceives the financial health of the business, and thus can influence the trading multiple of a company.

Regular cash dividends are considered a commitment by the company to make a fixed payment of cash to investors over the long-term. Thus, dividend policy can be a tool to communicate to the market that the firm is expecting to earn healthy cash flows to fund future growth and still generate excess cash. Under what circumstances is a consistent dividend policy most likely to help companies receive a higher multiple or drive shareholder returns? A signal through a consistent dividend is particularly important to companies that operate in cyclical and capital intensive industries with volatile return profiles or in environments of low growth where investors are seeking the cash distributions to reinvest.

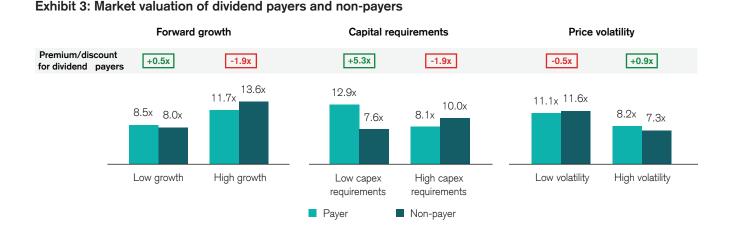


Exhibit 3 examines the typical EV / EBITDA multiple difference for dividend payers and non-payers in contrasting buckets of high vs. low growth, capital requirements, and share price volatility⁸. For firms with low growth and low capex needs, investors will expect a dividend as free cash flow is readily available for distribution rather than reinvestment needs. Conversely, shareholders will forego a dividend if cash is reinvested in profitable opportunities. Lastly, firms with low volatility in share price trade at a clear premium to stocks with high volatility. In fact, investors do not particularly reward companies that pay dividends in low volatility environments. However, in high volatility settings, non-payers are heavily punished, as non-payers with high price volatility have a low EV / EBITDA of 7.3x. This leads us to the conclusion that in such environments, the market prefers investing in dividend payers as dividends demonstrate stability.

Dividends don't drive TSR as they don't change the free cash flow generation of the firm, but we do observe that the market rewards companies that signal their stability and strength via dividends⁹. We looked at more than 3,000 companies over the last

12 years and found that the variable that consistently outperformed is the year-over-year change in top line growth – not necessarily the actual level of growth¹⁰.

Exhibit 4: Year over year total shareholder return for dividend payers and non-payers based on year over year change in growth rate

Change in year over year growth rate	Total shareholder return per bucket of grow	Premium for th dividend payers	Legend
> 10.0%	6.0% 6.2 ⁴	(1) (2) (2)	■ Payer ■ Non-payer
7.5% to 10.0%		5% 8% (0.2%)	
10.0%	5.8% 5.5%	+0.3%	
2.5% to 5.0%	2.7% 3.3%	(0.6%)	
0.0% to 2.5%	1.9%	+1.0%	
(2.5%) to 0.0%	(0.2%)	+0.7%	
(5.0%) to (2.5%)	(2.2%)	+3.4%	
(5.0%) to (2.5%) (7.5%) to (5.0%)	(2.4%)	+2.9%	
(10.0%) to (7.5%)	(2.5%)	+3.2%	
< (10.0%) (1	(4.6%)	+6.2%	

Insight: When growth is accelerating, dividend payers generate similar returns to non-payers. In contracting growth environments however, dividend payers appear to be more resilient to severely negative TSRs.

The impact of dividend policy on the TSR performance of companies that improved growth is negligible as investors don't seek to receive cash returns from companies that are better off reinvesting in growth. We can conclude by observing the very tight delta for TSR performance for payers and non-payers in the top half of the above chart. Yet in the bottom half, the dividend impact on TSR performance for companies with declining growth is quite pronounced and becomes more prominent as year-over-year top line growth declines further. Of course, the differences in TSR cannot conclusively be linked to dividend policy alone, but, should the prospects of growth slow down, it is fair to say divided policy could be a possible defense mechanism to offer share price downside protection.

Company Key Insight:

The ability to afford and sustain dividends, particularly in high-volatility or low-growth environments, is a signal that can support a company's valuation multiple

Using share buybacks as a tactical tool

The Tax Cuts and Jobs Act of 2017 led to a material rise to the level of deployable cash – with over \$600 billion of deployable cash being used by S&P 500 companies for share buybacks throughout the first three quarters of 2018. This represents an increase of well over 10% compared to the first three quarters of 2017¹¹. A buyback is often perceived positively by the market as it is a flexible mechanism for distributing capital and is considered a signal by the management team that they believe the company's shares are undervalued. How effective are buybacks as a tool for value creation?

Buyback programs are among the few levers available to return excess cash to shareholders and manage leverage and financial profiles, but the way buybacks impact value isn't as straightforward as commonly perceived. In fact, the term "buyback" is a bit of a misnomer – as described below – and it would likely be perceived and managed differently if called a "selective dividend".

In December 2018, given the market correction in the latter half of 2018, the Wall Street Journal called into question companies' decisions to devote much of their tax savings to buybacks in the first nine months of 2018¹². However, a company buying back its own shares is not technically making an investment - despite the increase of treasury stock on the balance sheet - but it is rather merely returning cash to shareholders. It is a residual cash decision that should be largely unaffected by whether it is carried out at the peak of the market or in the midst of a cyclical downturn. The absolute gains or losses investors receive due to general market movements will remain the same, regardless if a company executes a share buyback or not.

Nevertheless, there is an opportunity for companies to generate additional returns for the remaining shareholders through a buyback if shares of that specific company are undervalued at that time and that value gap subsequently closes. If management truly believes that the market is incorrectly pricing its future performance regardless of current investor risk sentiment, the buyback may lead to further share price appreciation and create a positive net present value (NPV) for the remaining shareholders as they are left holding a "bigger piece of the pie". The fundamental undervaluation of the stock at the time of the buyback now gets shared with fewer shareholders, resulting in a higher share price.

Therefore, the total firm enterprise value is not influenced by a share buyback, but the result of the share buyback is a higher share price and higher investor returns. There can be benefits from initiating a buyback program at lower prices after a downward run in the market - the firm can buy back a higher amount of shares which could lead to higher share price appreciation if the market agrees with the company about its undervaluation. Furthermore, as intra-portfolio correlations rise in volatile markets, these mispricing opportunities are more likely to exist. However, it should not be the objective of the company to time the market when implementing a buyback program in order to pursue investment returns from rising markets.

This is why a share buyback decision should be treated differently from and subordinate to a potential investment in M&A, which does have an influence on total enterprise value. For example, if a firm had capital to invest in either an acquisition of another company that would yield a positive NPV of 10% return for shareholders or a buyback of the same amount with a positive NPV return of 20%, which path should the firm choose? It is true that the share price will in theory be higher under the buyback program, but if the goal of the firm is to maximize enterprise value, it should pursue M&A.

How successful have companies been at executing buybacks and what have been the

returns of the remaining shareholders? We analyzed this question with empirical data going back five years, and defined the upside / downside to the stock as the present value of consensus broker target price relative to trading price prior to the buyback¹³.

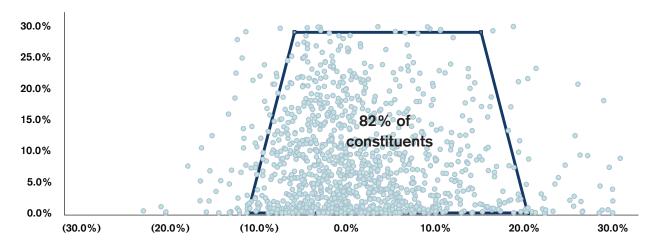
Exhibit 5: Exemplary share buyback calculations and observed excess returns

Theoretical schedule: shareholder excess return based on valuation and buyback levels

		(30.0%)	(25.0%)	(20.0%)	(15.0%)	(10.0%)	(5.0%)	0.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%
of market cap	30.0%	(12.9%)	(10.7%)	(8.6%)	(6.4%)	(4.3%)	(2.1%)	0.0%	2.1%	4.3%	6.4%	8.6%	10.7%	12.9%
	27.5%	(11.4%)	(9.5%)	(7.6%)	(5.7%)	(3.8%)	(1.9%)	0.0%	1.9%	3.8%	57%	7.6%	9.5%	11.4%
	25.0%	(10.0%)	(8.3%)	(6.7%)	(5.0%)	(3.3%)	(1.7%)	0.0%	1.7%	3.3%	5.0%	6.7%	8.3%	10.0%
	22.5%	(8.7%)	(7.3%)	(5.8%)	(4.4%)	(2.9%)	(1.5%)	0.0%	1.5%	2.9%	4.4%	5.8%	7.3%	8.7%
	20.0%	(7.5%)	(6.3%)	(5.0%)	(3.8%)	(2.5%)	(1.3%)	0.0%	1.3%	2.5%	3.7%	5.0%	6.3%	7.5%
	17.5%	(6.4%)	(5.3%)	(4.2%)	(3.2%)	(2.1%)	(1.1%)	0.0%	1.1%	2.1%	3.2%	4.2%	5.3%	6.4%
%	15.0%	(5.3%)	(4.4%)	(3.5%)	(2.6%)	(1.8%)	(0.9%)	0.0%	0.9%	1.8%	2.6%	3.5%	4.4%	5.3%
s S	12.5%	(4.3%)	(3.6%)	(2.9%)	(2.1%)	(1.4%)	(0.7%)	0.0%	0.7%	1.4%	2.1%	2.9%	3.6%	4.3%
ik as	10.0%	(3.3%)	(2.8%)	(2.2%)	(1.7%)	(1,1%)	(0.6%)	0.0%	0.6%	1.1%	1.7%	2.2%	2.8%	3.3%
Buyback	7.5%	(2.4%)	(2.0%)	(1.6%)	(1.2%)	(0.8%)	(0.4%)	0.0%	0.4%	0.8%	1.2%	1.6%	2.0%	2.4%
	5.0%	(1.6%)	(1.3%)	(1.1%)	(0.8%)	(0.5%)	(0.3%)	0.0%	0.3%	0.5%	0.8%	1.1%	1.3%	1.6%
	2.5%	(0.8%)	(0.6%)	(0.5%)	(0.4%)	0.3%)	(0.1%)	0.0%	0.1%	0.3%	0.4%	0.5%	0.6%	0.8%
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	00%	0.0%	0.0%

Upside / downside in stock price at time of share repurchase

Empirical distribution: valuation vs. buyback levels



Note: Both graphics contain the same x and y axis.

The data shows that at least 80% of all buybacks led to a -2% to 5% excess return attributed to the buyback, or an average of 0.3%. Because we also assume the value gap closes immediately after the buyback without execution costs or a higher tender premium associated with larger buybacks, this represents the maximal possible return. In reality, it is impossible to retrospectively calculate the true relative return on a buyback. A company would have to set a well-defined end-date to a share buyback program, and management must define the success of the buyback decision in terms of the stock's return relative to the market or an index of peers. Buybacks present a tactical tool for companies to lever the return for remaining shareholders – who believe in the upside potential of the stock – but the total impact of a share buyback is a one-time event. This is why buybacks cannot be considered an investment or compared to an equivalent return to organic growth or M&A. However, buybacks are an effective way to distribute excess cash to shareholders, maintain financial flexibility and signal confidence to the market.

Company Key Insight:

Buybacks can be a tool to transfer additional value to remaining shareholders, but should typically not compete for capital with investments in organic growth or M&A

Managing market expectations through guidance

The key inputs used in any valuation technique are future financial metrics such as sales, EBITDA, and net income. For public companies, sell-side equity research analysts periodically publish a set of estimates for the companies they follow. These estimates not only flow into discounted cash flow models or leveraged buy-out models, but are also used when valuation multiples are being calculated. Therefore, these sell-side estimates play an integral role not only in investment banking valuation models but also in investor perception and valuation of companies. Consequently, managers should pay attention to their most recent estimates when trying to understand market valuations. Which metrics actually matter the most, in terms of the market's perception of a company's equity story or value proposition? In our analysis, we focused on three of the most common: sales, EBITDA, and net income. These metrics provide different insights to investors but are of major importance across industries and geographies when assessing a company's financial performance on a standalone basis and compared to peers. Investors commonly focus on **sales** estimates to get an understanding of a company's growth dynamics and market share development. **EBITDA** is typically viewed as a proxy for operating performance and cash flow generation. Being an after-interest payment and after-tax metric, **net income** serves as a measure of profitability to shareholders.

To empirically answer the question of which metric or combination of metrics are most important to investors, we analyzed the impact of material quarterly equity research estimate misses for sales, EBITDA and net income for over 3,000 companies since Q1 2007¹⁴.

Exhibit 6: Share price reaction to equity research estimates beats and misses



Intuitively, our findings show that investors have historically reacted most strongly to beats or misses of <u>all</u> equity research estimates, but EBITDA beats or misses lead to the most impactful reactions. The importance of EBITDA is further underlined by the fact that the top four strongest positive and negative reactions all involve EBITDA beats or misses. Taking into consideration that out of the three variables EBITDA is the closest proxy for cash-flow generation, the findings support the hypothesis that investors primarily focus on cash flows. Ultimately, the findings suggest that all equity research estimates are of importance as beats and misses lead to share price reactions, but managers should primarily focus on their EBITDA estimates. Effective <u>guidance</u> on EBITDA or similar metrics can potentially be an effective tool to "manage" equity research's estimates. However, when looking at the same set of companies and years as in our previous analysis, we found that only a small portion of all guidance that companies give to the market includes EBITDA (see Exhibit 7)¹⁵. Out of all guidance that companies gave to investors for the subsequent quarters, only a little over 10% included EBITDA guidance. Managers appear to prefer guiding on sales and EPS or only one of the two.

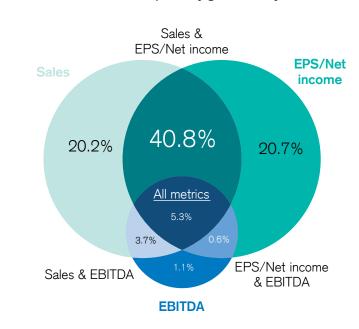
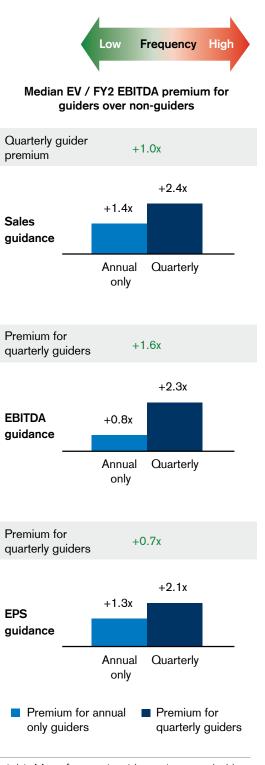


Exhibit 7: Distribution of quarterly guidance by metrics

Insight: Out of the companies that actively give guidance to the market – and consequently also to equity research analysts – only a small fraction provides EBITDA guidance. This is not to say that companies should provide as much guidance as possible in all cases, especially given the fact that forecasting future financial performance can be very time- and cost-consuming. Certain company characteristics and market environments might not warrant the effort and management attention to generate detailed forecasts. This being said, we identified share price volatility as one of the most influential factors that management should take into consideration when deciding on whether or not to provide guidance (see Exhibit 8)¹⁶.



Insight: Guiders are generally valued at a premium to nonguiders, which increases with rising volatility.



Insight: More frequent guidance is rewarded by the market through premium valuations.

As a general trend, multiples are declining with increasing volatility in share prices independent of companies being classified as guiders or nonguiders, with guiders appearing to consistently trade at higher valuation multiples than non-guiders. The "premium" for guiders on any metric compared to non-guiders seems to be especially high in very volatile environments. Specifically when it comes to cash-flow generation, i.e. EBITDA, the data indicates that investors have a preference for guiders over non-guiders in high volatility environments. Furthermore, our analysis revealed that companies which issue only annual guidance tend to trade at lower multiples compared to quarterly guiders. All of these findings suggest that investors seek both stability in the form of low volatility and predictability in the form of guidance. Particularly in high volatility environments, management teams should consider guidance as an important tool to satisfy investors' needs for predictability.

Company Key Insight:

Frequent and meaningful guidance on cash flow generation can help support valuations, particularly in volatile environments

Achieving the optimal fixed-floating debt mix

The optimal mix of fixed to floating rate debt is different for every company, but we believe there is an opportunity for many firms to drive further shareholder wealth by taking a fresh perspective on the trade-off between those two forms of financing in terms of cost savings and earnings volatility. How much floating-rate debt firms can take on needs to be managed from the perspective of the enterprise as a whole instead of siloed decisions around interest expense volatility alone. In fact, what we will show is that floating rate debt might even generate higher interest saving than commonly perceived and the impact of interest rate fluctuations on operational profitability is probably overstated. To see how this works, we start with the concept of a <u>term premium</u> - the premium investors demand for locking up their money for longer periods of time. Fixed-rate debt financing will allow a borrower to lock in a certain rate over the duration of the loan, which removes uncertainty around the level of interest payments. But exactly how often are savings generated through fixed-rate financing versus floating rate?

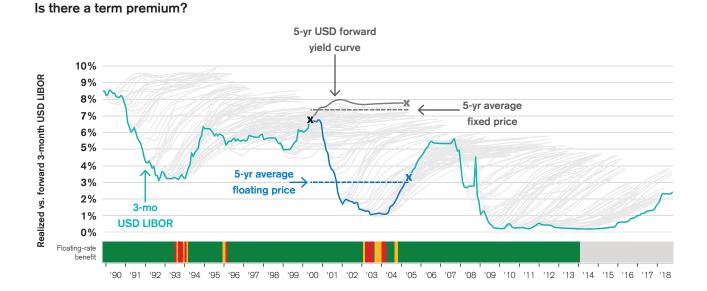
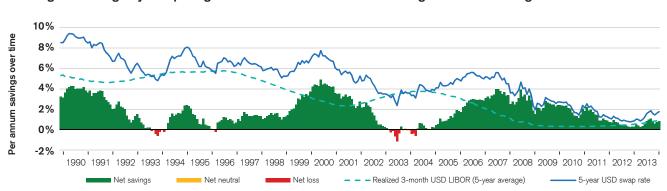


Exhibit 9: Historical cost analysis of floating- vs. fixed-rate debt



Deriving net savings by comparing historical fixed-rate costs to average realized floating-rate costs

In comparing the 5-year USD swap rate to the realized 3-month USD LIBOR 5-year average, we find that floating-rate financing has generated net savings around 90% of the time historically¹⁷. 5-year fixed rates tend to only outperform at the trough of a period leading up to contractionary monetary policy. On a 10-year basis, fixed rate contracts have never outperformed floating rates.

The majority of corporate borrowing today is still fixed, as the widespread convention tied to a fixed interest expense strategy is that it also has the advantage of predictability and muted volatility. Fixed rates make financial planning easier to execute and investors rooted in fundamental analysis prefer ownership in corporations that have stable and steady cash flows. However, given the potential for floating rate debt to generate substantial interest savings, how should firms think about weighing that against the negative impact on earnings volatility? Here are the key inputs firm should consider:

The amount of cash in the current capital structure: Cash – in the form of short-term investments – sits in accounts that earn interest tied closely with floating money market yields. The interest income on cash creates volatility to which floating-rate financing can create a natural hedge, so in its simplest of forms companies should hold at least as much floating rate debt to offset the amount of excess cash they hold.

Impact of interest expense on total firm cash flow volatility: Firms must first perform a selfassessment of the volatility of operational cash flows of the total firm and how they get impacted by floating rate interest costs from a bottom line perspective. The bottom line impact of interest rate volatility to firms that already have high levels of operational volatility is often trivial, or at the very least less impactful than often assumed because of diversification effects. The other obvious factor is the total leverage of the firm – as leverage increases proportional floating-rate exposure will have a bigger impact on firm cash flows. <u>Cyclicality of the business</u>: Depending on the cyclicality of earnings of the firm, floating-rate payments may even reduce the volatility of the firm. In an economic backdrop of periods of higher growth, the Federal Reserve pumps the brakes and targets a desired inflation rate by increasing the cost of borrowing money. In this environment – as well as an environment of slowing growth – interest payments offset increases or decreases in operational earnings, which will actually reduce total volatility.

Though we suspect that the majority of the opportunities to create value through optimizing the fixed-to-floating mix for companies lies with increasing the floating portion to generate interest savings, we also recognize that this opportunity won't exist for every company. Specifically, companies with material amounts of leverage may not have the cushion to absorb the impact of rising rates. Companies must continuously monitor their potential for interest savings, volatility, cyclicality of operations and the cash cushion its leverage profile provides.

Company Key Insight:

Floating-rate debt is often cheaper and less risky than commonly perceived – finding the optimal mix can likely lead to generating additional savings regardless of the economic cycle

Conclusion

The timing and severity of shocks to the economy and, thus, to business operations are nearly impossible to predict. Recent political uncertainty, trade disputes, uncertainty about near-term monetary policies and an increase in market price volatility have all raised the specter of a looming contraction. Whether or not one is imminent, we believe it important for our clients to add a focus on resiliency to their toolkits.

A focus on operational excellence – peer- or market-leading returns on capital and growth – remain the first priority for a firm to create value for its shareholders. Operating in any market condition – expansion or contraction or in between – always means operating in an unpredictable and shifting environment. In such environments, even though the market may be ultimately right, it may miss subtleties about a strong operator's equity story. Recognizing this, investors will seek additional signals to gauge the merits of a firm's financial stability and its potential to create value. Optimizing these signals and pulling these levers are vital to sustaining a company's valuation this month, this guarter, this year and beyond.

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Endnotes

- 1 Source: FactSet. Sample equals a stable cohort of current S&P 1500 constituents.
- 2 Source: Krugman, Paul. "A Smorgasbord Recession?" *NY Times*. The New York Times Company. September 18, 2018.
- 3 Source: Heath, Michael. "This Is Why Australia Hasn't Had a Recession in Over 25 Years", *Bloomberg*. March 30, 2017.
- 4 See endnote 1.
- 5 Credit Suisse Corporate Insights Group Schematic overview of drivers of shareholder value.
- 6 Source: Kahneman, D. & Tversky, A. (1979). "Prospect Theory: An Analysis of Decision under Risk". Econometrica. 47: pgs. 263–291.
- 7 Corporate Insights Dividends: When they matter and when they don't (third quarter 2017).
- 8 Source: HOLT global database and FactSet. Dividend payers are companies who have paid at least 5% of its annual earnings (adjusted for one-time items) to shareholders in the form of dividends for at least 80% of years since 2006 (1,267 companies). Non-payers are companies who have not paid dividends since 2006 (882 companies). Low and high growth, capex requirement, and volatility buckets represent the bottom and top volatility quintile of the respective metrics.
- 9 See endnote 7.
- 10 Source: HOLT global database and FactSet. Dividend payers are defined as companies that pay out at least 5% of their net income adjusted for special items in dividends. Non-payers are defined as companies that do not pay dividends at all.
- 11 Based on FactSet, S&P 500 companies have bought back shares in an aggregate value of ~\$605bn throughout the first three quarters of 2018.
- 12 Source: Rapaport, Michael & Francis, Theo. "Buybacks Come Back to Bite Firms". *Wall Street Journal*. December 28, 2018.
- 13 Source: Bloomberg. Constituents include S&P 1500 and exclude financial companies. Upside / downside in stock price at time of share repurchase is defined as target price / current stock price at time of share repurchase. Buyback as a % of market cap is defined as 5 year aggregate cash spent on share repurchase / current market capitalization.
- 14 Source: FactSet. Only quarterly estimate beats and misses of more than 10% are analyzed.
- 15 Source: FactSet.
- 16 Source: FactSet. The universe of companies is divided into guiders and non-guiders based on whether companies provided quarterly guidance for at least two fiscal quarters in 2018 for the respective metrics shown below. Low and high volatility buckets represent the bottom and top volatility quintile, respectively.
- 17 Source: Bloomberg. Each grey "hair" represents the forward curve for 3-month LIBOR for 5 years. Annual net savings represents the per annum average reduction (increase) in interest cost of having swapped a 5-year fixed rate bond to floating with 3-month LIBOR resets. Dates represent swap initiation timing. Neutral observations are defined as those resulting in net savings between -10bps and 10bps. Annual net savings represents the per annum average reduction (increase) in interest cost of having swapped a 5-year fixed rate bond to floating with 3-month LIBOR resets. Dates represent swap and 10bps. Annual net savings represents the per annum average reduction (increase) in interest cost of having swapped a 5-year fixed rate bond to floating with 3-month LIBOR resets. Dates represent swap initiation timing. Neutral observations are defined as those resulting in net savings between -10bps and 10bps. Histogram represents the distribution of net annual savings results and reflect all daily observations since November 1989.

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