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Value & Cents

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Discount Rate Considerations in the Pandemic Era



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The income approach for valuation determines the value of a business or an asset by discounting its expected future economic benefits to a present value, using a discount rate that reflects both the time value of money and the riskiness of such economic benefits. All else being equal, the higher the discount rate, the lower the present value. Therefore, the discount rate is a critical input in valuation.

While the appropriate discount rate in a valuation exercise has always been a highly contested issue between valuation experts, significant changes in the macro-economy and the financial markets since the outbreak of the COVID-19 pandemic have added another layer of complexity to an already intricate matter. As of August 2022, over two years into the pandemic era, the global economy's path to recovery from COVID-19 remains uncertain. Central banks are raising interest rates to battle surging inflation, supply chain disruptions persist (due, in part, to the Russia-Ukraine war), recession concerns loom over consumer confidence, and stock markets are highly volatile as investors grapple with all the moving pieces. These evolving economic and financial factors have a significant impact on risk and the price of risk.

This article examines how certain components of the weighted average cost of capital (WACC) have changed in the pandemic era, and the related discount rate considerations for valuation experts and other bankruptcy and restructuring professionals. These changing factors can have a significant impact on valuation.

Overview of the WACC

In a discounted-cash-flow (DCF) valuation of a company, the applicable discount rate is typically

the WACC used to fund its operations that generate future cash flows. WACC represents the combined required rate of return on a company's debt and equity capital and thus the overall riskiness of the entire business. WACC is calculated as follows: $WACC = w_e * k_e + w_d * k_d * (1 - T)$. In this equation, w_e equals the weight of equity in capital structure using market-based values; w_d equals the weight of debt in capital structure using market-based values; k_e equals the cost of equity; k_d equals the pre-tax cost of debt; and T equals the income tax rate.

The cost of equity, under the Modified Capital Asset Pricing Model (Modified CAPM), can be expressed with the following formula: $k_e = R_f + \beta * ERP + RP_s$. In this equation, R_f equals risk-free rate; β equals Beta, which measures the asset's correlation with the broad market; ERP equals market equity risk premium; and RP_s equals other risk premiums, if applicable.

Over the course of the pandemic, certain components of WACC — including the risk-free rate, equity risk premium, beta, and cost of debt — have seen significant changes, introducing new complexities for valuation experts.

Risk-Free Rate

The risk-free rate has exhibited evolving patterns since the onset of the pandemic. The yield on U.S. 20-year Treasury bonds, a commonly used proxy for the risk-free rate, dropped from 2.19 percent as of Jan. 2, 2020, to 0.87 percent as of March 9, 2020. It largely remained below 1.5 percent for the rest of the year before increasing to around 2 percent during 2021. In the first half of 2022, however, the yield increased rapidly to above 3.5 percent (see Exhibit 1).

The changes in the risk-free rate are driven by the interplay of a number of economic and

¹ The views and opinions expressed in this article are strictly those of the author and do not necessarily represent the views or opinions of The Brattle Group or any of its other employees.

financial factors. These include, but are not limited to, concerns of an economic downturn, first in connection with COVID-19 and later in response to central bank actions; a flight to safety (shifting investments to safe assets such as Treasury bonds) in light of such risks; rising inflation; and central bank actions of cutting and raising interest rates.

The Federal Reserve cut the target federal funds rate by 50 and 100 basis points on March 3, 2020, and March 15, 2020, respectively, to address the downward pressure on the economy caused by COVID-19.² Starting March 16, 2022, the Fed changed course and started raising interest rates to combat inflation. Most recently, on July 27, 2022, the Fed raised its benchmark rate by 75 basis points for the second consecutive time to 2.25 percent to 2.5 percent, the biggest increase since 1994, with the expectation that the midpoint of the target rate range would reach 3.4 percent at year's end.³

The likely continuation of tightening central bank actions in the coming months is primarily driven by recent unfavorable inflation and consumer-sentiment readings.

However, as inflation eases and economic growth slows, the Fed might start cutting rates again. The appropriate risk-free rate to use in a discount rate calculation needs to reflect the prevailing market conditions and expectations as of the valuation date.

Equity Risk Premium

Equity risk premium (ERP) measures the return on equity as an asset class in excess of the risk-free rate, reflecting the price of risk for the overall equity market. The sum of ERP and the risk-free rate represents the total required return on publicly traded stocks.

There are multiple commonly used measures of ERP. Historical ERP is calculated from the actual returns on stocks in the past, while forward-looking ERP can be estimated from a survey of investors and/or executives, or derived from current equity market prices and expected future dividends or earnings.⁴ However, estimating ERP is far from a straightforward exercise. Even for historical ERP, nuances in processing historical data, such as the

² Federal Reserve Press Releases.

³ Federal Reserve Press Releases; FRED, FOMC Summary of Economic Projections for the Fed Funds Rate.

⁴ Some practitioners also use a variation of the ERP referred to as supply-side ERP, which seeks to remove the impact of changes in the P/E ratio from an ERP estimation on the basis that such changes are driven by investor sentiment and not the actual economic activity of companies.

Exhibit 1: 20-Year Treasury Bonds Yield (2019-Present)



Source: FRED, Federal Reserve Bank of St. Louis.

selection of the time frame, the choice of the risk-free rate, and the calculation of arithmetic versus geometric averages, can all affect the result. The survey approach and the implied approach inevitably rely on judgment and assumptions about the future.

In practice, valuation practitioners can obtain various versions of ERP from a number of sources, and those sources can differ enough to create substantial variations in the results derived. The actual and perceived riskiness of equity as an asset class, as well as investors' risk-aversion, change over time. In particular, in an era of shocks to the economy and swinging market sentiment, forward-looking ERP may fluctuate significantly. Historical ERP, by comparison, is less volatile because it relies on long-term averages. This is illustrated in a comparison between the observed spot risk-free rate and implied ERP calculated by Prof. Aswath Damodaran of NYU Stern on the one hand, and the normalized risk-free rate and historical ERP recommended by Duff & Phelps (rebranded as Kroll in 2021) on the other (see Exhibit 2).

Some may argue that historical ERP, while commonly used, is not representative of the current market conditions in abnormal times; others may insist that it is improper to use an abnormal discount rate to value an ongoing business whose value lies primarily in cash flows far into the future.

In the pandemic and the post-pandemic world, it is likely that disagreements between experts over the appropriate ERP will play a larger role in contested valuations and that these differences will translate to material differences in the opinions reached. While reasonable people can disagree on the correct ERP, a defensible valuation will likely be required to demonstrate an understanding of the data and an articulation of why the underlying assumptions of the selected approach are reasonable.

Now more than ever, valuation experts should be extra diligent in ensuring that various discount rate assumptions represent a cohesive and consistent view of the market and the subject company. Internal inconsistencies will be subject to attack.

Beta

Beta is the correlation between the returns on a stock and on the broad stock market, and measures the systematic risk of a company's stock. In intuitive terms, a beta of 1 indicates that the stock moves in line with the market, and a beta of greater (or less) than 1 indicates the stock is more (or less) volatile relative to the market.

Since beta is typically estimated using historical returns over a relatively short period, the new challenge in beta estimation induced by the COVID-19 pandemic is primarily the abnormal market volatility. It is worth noting that the impact of the pandemic across sectors and industries has been disproportional, resulting in some unusual movements in betas. While companies in the retail and airline industries saw significant increases in their betas in 2020 as the pandemic hit, companies in traditionally high-beta industries — such as pharmaceuticals and software — experienced the opposite impact.

For example, the two-year beta of Kohl's Corp. and American Airlines Group Inc. increased significantly during 2020. However, the beta of Moderna Inc. was 2.24 as of Dec. 31, 2019, and -0.25 as of March 31, 2020, respectively.⁵ Similarly, Dropbox Inc. saw its beta decrease from 1.61 as of Dec. 31, 2019, to 0.86 as of March 31, 2020.⁶ Their paths to recovery are also likely to be very different.

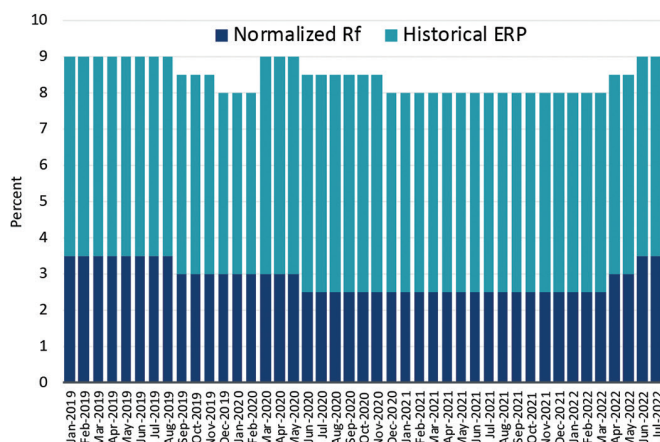
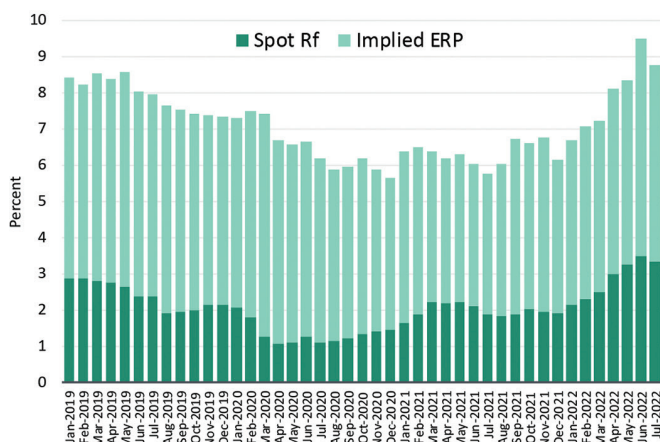
As of August 2022, investors' concerns of the market may be becoming less about COVID-19 and more about rising inflation and geopolitical conflicts. These macroeconomic factors will also have disproportional impacts on different sectors, industries and companies.

The appropriate method for estimating beta has always depended on the subject company and the specific circumstances of the valuation engagement, but careful consideration of beta is even more important in the current environment. Valuation experts may want to undertake analysis to distinguish short-term market dislocations from long-term shifts in risk profiles, and consider normalized and/or for-

⁵ S&P CapitalIQ.

⁶ S&P CapitalIQ.

Exhibit 2: Risk-Free Rate and ERP Comparison (2019-Present)



Source: FRED, monthly yield on U.S. 20-year Treasury bonds; Prof. Aswath Damodaran, Implied ERP by Month; Duff & Phelps (Kroll) normalized risk-free rate and recommended ERP.

ward-looking measures of volatility. As with the risk-free rate, an expert’s ability to make persuasive and credible arguments to support their analysis will be even more important than it was pre-pandemic.

Cost of Debt

In addition to equity, many companies also finance their operations with debt. For investors, a debt security is a claim on a specified stream of income. However, the promised income stream is not risk-free, as there is a chance a company may default on its obligation and the actual payments ultimately depend on the company’s financial conditions. Therefore, investors demand higher returns for riskier debts.

In simplified terms, the cost of debt can be thought of as the risk-free rate plus a risk premium — a credit spread that accounts for the credit risk of the debt. A credit spread is the difference in returns or yields between a debt security and an otherwise similar Treasury security. Similar to ERP, credit spreads measure the price of risk for investing in corporate debt.

At the beginning of the COVID-19 pandemic, credit spreads spiked to levels unseen since the 2008 financial cri-

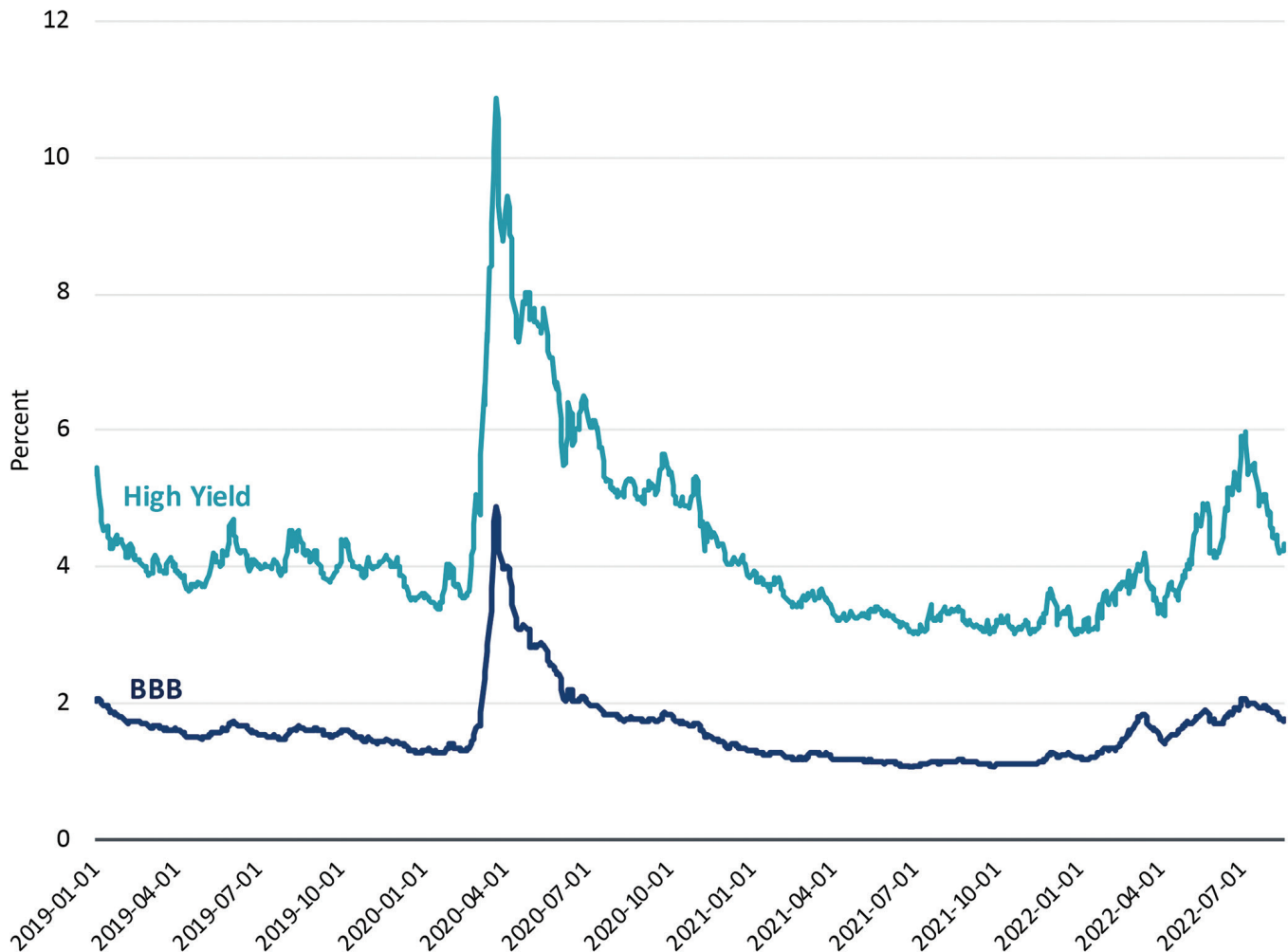
sis. High-yield bonds in particular have reacted strongly to the economic shock. Since then, credit spreads have dropped to much lower levels, with early signs of an uptick recently (see Exhibit 3).

For floating rate debts in particular, the increasing risk-free rate alone increases the cost of debt. In addition, companies that need to refinance with new floating rate debts face higher costs of borrowing because of both the increases in risk-free rate and the widening of credit spreads.

Credit spreads are generally impacted by overall economic conditions and outlook, investors’ appetite for risk, and liquidity in the market. In the past, during economic downturns and/or highly uncertain times, credit spreads have widened. As of this article, it is too soon to tell whether history will repeat itself.

However, what we do know is that the combined effects of supply-chain disruptions, declining demand, operational challenges and financial-market turmoil have caused many difficulties for a wide range of businesses. Among them, companies that rely heavily on foot traffic, traveling or gathering and those with high financial leverage have felt the most pain. Pandemic-induced distress and bankruptcies most

Exhibit 3: U.S. BBB and High-Yield Credit Spreads (2019-Present)



Source: ICE BofA BBB U.S. Corporate Index Option-Adjusted Spread and ICE BofA U.S. High-Yield Index Option-Adjusted Spread, retrieved from FRED, Federal Reserve Bank of St. Louis.

commonly occurred in companies with existing operational and/or financial issues, as those issues were exacerbated by COVID-19. From a valuation perspective, it may be appropriate to consider how the pandemic has changed a company's risk of failure and how to factor that into its forward-looking cost of debt.

Conclusion

Valuation is a forward-looking exercise as of a specific point in time and must rely on what is known or knowable at that time. In a time of heightened uncertainty and volatility, the outlook as of two potential valuation dates within a short period may be vastly different. Even with a well-defined, noncontroversial valuation date, looking forward can be challenging. Valuation experts need to use judgment and care to select the inputs and assumptions that best represent the prevailing market conditions and reasonable expectations contemporaneous with the valuation date. Internal consistency across assumptions and the ability to provide strong analytical support for the assumptions are critical to a valuation's credibility. Sensitivity analysis may also be a useful tool to address uncertainties.

This article focused on the components of the discount rate that have experienced visible changes since before the COVID-19 pandemic. Other inputs, including the capital structure, the income tax rate and any applicable discounts and premiums, are also integral to estimating the appropriate discount rate and warrant careful consideration.

In addition, a discount rate is one of many inputs and assumptions in a valuation exercise, and it needs to be evaluated in connection with other inputs and assumptions, such as projected free cash flows. It is important to consider how the pandemic and its fallout affect the subject company's earnings in the near term and the long term. A higher discount rate and lower free cash flows could be two measures of the same risks, therefore using both would lead to double-counting. Clearly articulating how the impact of the pandemic on the subject company is accounted for in the valuation can help a valuation expert maintain credibility. **abi**

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