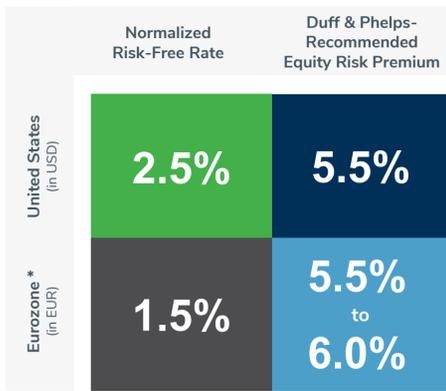DUFF&PHELPS
A KROLL BUSINESS

# Cost of Capital in the Current Environment
## COVID-19 Update – December 2021

## Global Cost of Capital Inputs
Data as of November 30, 2021

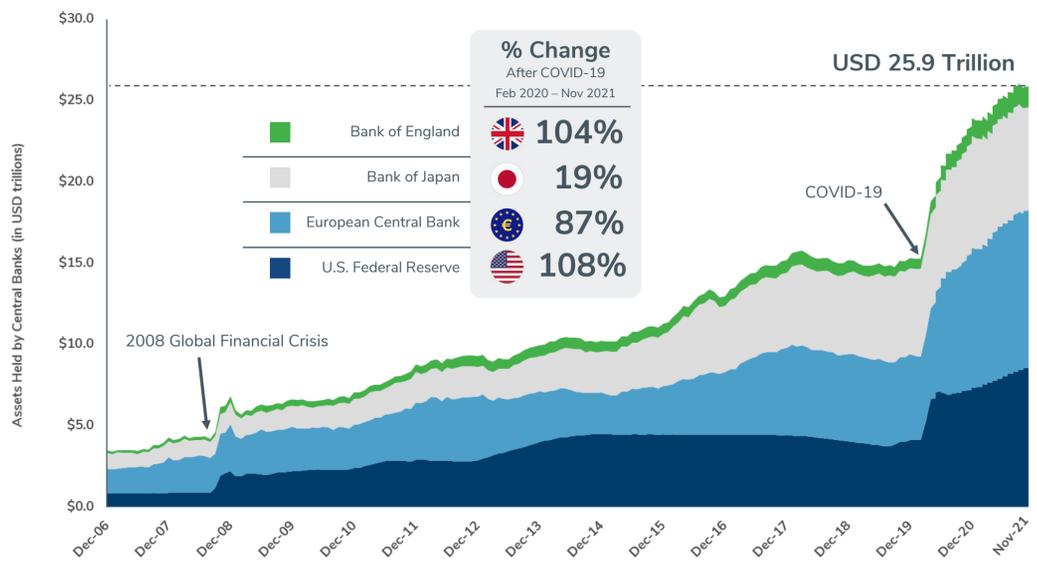|  | Normalized Risk-Free Rate | Duff & Phelps-Recommended Equity Risk Premium |
|---|---|---|
| United States (in USD) | 2.5% | 5.5% |
| Eurozone * (in EUR) | 1.5% | 5.5% to 6.0% |

\* German normalized risk-free rate and Eurozone equity risk premium (ERP) for use in EUR-denominated discount rates from a German investor perspective. Additional country risk adjustments may be warranted when estimating discount rates for other countries in the Eurozone.

For more information, visit: https://www.duffandphelps.com/costofcapital

## Total Assets Held by Major Central Banks Over Time
Data as of November 30, 2021

USD 25.9 Trillion

### % Change
After COVID-19
Feb 2020 – Nov 2021

| Bank of England | 🇬🇧 | 104% |
| Bank of Japan | ⚫ | 19% |
| European Central Bank | € | 87% |
| U.S. Federal Reserve | 🇺🇸 | 108% |

Assets Held by Central Banks (in USD trillions)

2008 Global Financial Crisis

COVID-19

$30.0 / $25.0 / $20.0 / $15.0 / $10.0 / $5.0 / $0.0

Dec-06 ... Dec-07 ... Dec-08 ... Dec-09 ... Dec-10 ... Dec-11 ... Dec-12 ... Dec-13 ... Dec-14 ... Dec-15 ... Dec-16 ... Dec-17 ... Dec-18 ... Dec-19 ... Dec-20 ... Nov-21
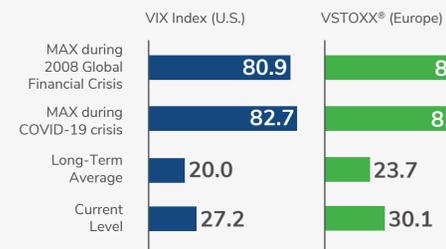
Sources: Capital IQ, FRED® Economic Data, Bank of England, Bank of Japan, European Central Bank

## Global Market Volatility
Data as of November 30, 2021

### VIX Index (U.S.)
| MAX during 2008 Global Financial Crisis | 80.9 |
| MAX during COVID-19 crisis | 82.7 |
| Long-Term Average | 20.0 |
| Current Level | 27.2 |

### VSTOXX® (Europe)
| MAX during 2008 Global Financial Crisis | 87.5 |
| MAX during COVID-19 crisis | 85.6 |
| Long-Term Average | 23.7 |
| Current Level | 30.1 |

## Global Credit Spreads
Data as of November 30, 2021

### U.S. Corporate Credit Spreads
| MAX during 2008 Global Financial Crisis | 14.9% |
| MAX during COVID-19 crisis | 6.7% |
| Long-Term Average | 3.8% |
| Current Level | 2.8% |

### Euro-Denominated Corporate Credit Spreads
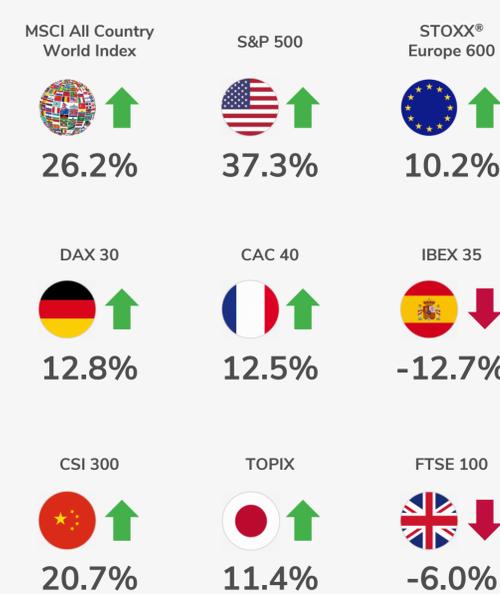| MAX during 2008 Global Financial Crisis | 18.8% |
| MAX during COVID-19 crisis | 7.7% |
| Long-Term Average | 5.2% |
| Current Level | 3.1% |
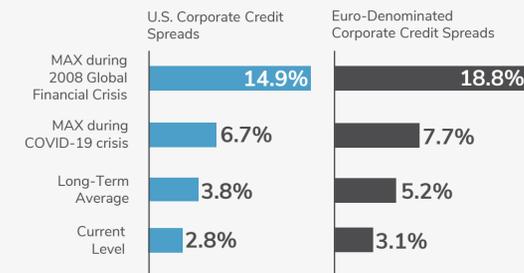
Sources: Capital IQ, FRED® Economic Data, Morningstar Direct

U.S. Corporate Credit Spreads are based on the difference in effective yields between the ICE BofA U.S. High Yield Index and the ICE BofA US Corporate Index. Euro-Denominated Corporate Credit Spreads based on the difference in effective yields between the Bloomberg Barclays Pan-European High Yield Index (EUR) and the Bloomberg Barclays Euro Aggregate Corporate Bond Index. Long-term averages based on 1995 to present for VIX daily series, 1999 to present for VSTOXX daily series, 1996 to present for U.S. credit spread daily series, and 1998 to present for EUR-denominated credit spread monthly series.

## Stock Market Performance Since the Wuhan Lockdown*
Data as of November 30, 2021

| MSCI All Country World Index | S&P 500 | STOXX® Europe 600 |
|---|---|---|
| 26.2% ↑ | 37.3% ↑ | 10.2% ↑ |

| DAX 30 | CAC 40 | IBEX 35 |
|---|---|---|
| 12.8% ↑ | 12.5% ↑ | -12.7% ↓ |

| CSI 300 | TOPIX | FTSE 100 |
|---|---|---|
| 20.7% ↑ | 11.4% ↑ | -6.0% ↓ |

Source: Capital IQ

*The first lockdown due to COVID-19 began on January 23, 2020, in Wuhan, China.

## Global 10-Year Government Bond Yields
Data as of November 30, 2021

### Americas
| U.S. | Canada | Brazil |
|---|---|---|
| 1.43% | 1.67% | 11.29% |

### Eurozone
| Eurozone | Germany | Netherlands |
|---|---|---|
| -0.35% | -0.50% | -0.14% |
| France | Spain | Italy |
| -0.06% | 0.40% | 0.96% |

### Europe – Other
| UK | Switzerland | Sweden |
|---|---|---|
| 0.84% | -0.24% | 0.18% |

### Asia
| China | India | Japan |
|---|---|---|
| 2.83% | 6.33% | 0.07% |

Sources: Bloomberg (Brazil, India), European Central Bank (Eurozone aggregate yield), Capital IQ (other countries)

## U.S. and Eurozone Consumer Sentiment vs. Business Confidence
Data as of November 30, 2021

|  | Pre-COVID-19 (February 2020) | Post-COVID-19 (November 2021) | Long-Term Avg. |
|---|---|---|---|
| Consumer Sentiment 🇺🇸 | 101.0 ↓ | 67.4 | 86.4 (1952–2021) |
| Consumer Sentiment 🇪🇺 | 107.1 ↓ | 106.3 | 100.0 (1985–2021) |
| Business Confidence 🇺🇸 | 99.0 ↑ | 101.7 | 100.0 (1950–2021) |
| Business Confidence 🇪🇺 | 99.4 ↑ | 118.1 | 100.0 (1985–2021) |

Sources: Michigan University's Index of Consumer Sentiment, OECD's Business Confidence Index, European Commission business and consumer surveys [The same methodology that the European Commission uses to standardize its Economic Sentiment Indicator (ESI) was applied to the Eurozone Consumer Confidence and Business Climate Indicator series.]

## Real GDP Growth – Q1, Q2 and Q3 2021
Data as of November 30, 2021

| | 🇺🇸 U.S. | 🇪🇺 Eurozone | 🇬🇧 UK | 🇨🇳 China | ⚫ Japan |
|---|---|---|---|---|---|
| QUARTER-ON-QUARTER GROWTH (%) | Q1: 1.5% ↑ | Q1: -0.3% ↓ | Q1: -1.4% ↓ | Q1: 0.2% ↑ | Q1: -1.1% ↓ |
| | Q2: 1.6% ↑ | Q2: 2.1% ↑ | Q2: 5.5% ↑ | Q2: 1.2% ↑ | Q2: 0.4% ↑ |
| | Q3: 0.5% ↑ | Q3: 2.2% ↑ | Q3: 1.3% ↑ | Q3: 0.2% ↑ | Q3: -0.8% ↓ |
| ANNUALIZED QUARTER-ON-QUARTER GROWTH (%) | Q1: 6.3% ↑ | Q1: -1.2% ↓ | Q1: -5.3% ↓ | Q1: 0.8% ↑ | Q1: -4.1% ↓ |
| | Q2: 6.7% ↑ | Q2: 8.7% ↑ | Q2: 23.9% ↑ | Q2: 4.9% ↑ | Q2: 1.5% ↑ |
| | Q3: 2.1% ↑ | Q3: 9.3% ↑ | Q3: 5.1% ↑ | Q3: 0.8% ↑ | Q3: -3.0% ↓ |

Sources: FRED® Economic Data (Eurozone, Japan, U.S.), National Bureau of Statistics of China, UK's Office for National Statistics

Quarter-on-quarter growth based on the growth rate from Q4 2020 to Q1 2021, Q1 2021 to Q2 2021, and Q2 2021 to Q3 2021. This rate is annualized by computing the compounded growth rate for four quarters as follows: (1 + Real GDP Q/Q Growth)^4. The annualized rate shows what the quarterly change would be if it lasted a full year.

## U.S. vs. Eurozone Unemployment Rate
Data as of November 30, 2021

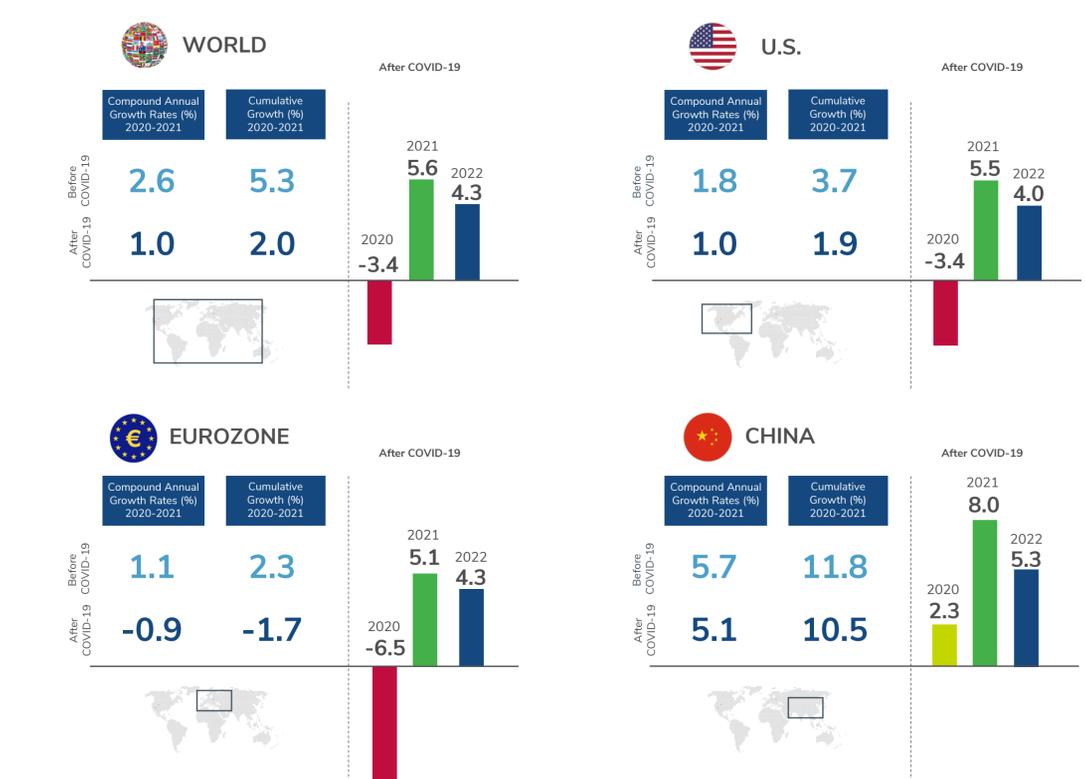|  | 🇺🇸 |  | 🇪🇺 |
|---|---|---|---|
| March 2020 | 4.4% | ○ | 7.1% |
| June 2020 | 11.1% | ○ | 8.0% |
| September 2020 | 7.8% | ○ | 8.7% |
| December 2020 | 6.7% | ○ | 8.1% |
| March 2021 | 6.0% | ○ | 8.1% |
| June 2021 | 5.9% | ○ | 7.8% |
| September 2021 | 4.8% | ○ | 7.4% |
| Latest Available* | 4.2% | ● | 7.3% |

Source: U.S. Bureau of Labor Statistics, Eurostat

* Data through November 2021 for the United States and October 2021 for the Eurozone.

## Real GDP Growth (%) Estimates (Median)
Data as of December 1, 2021

### 🌐 WORLD
After COVID-19

| | Compound Annual Growth Rates (%) 2020–2021 | Cumulative Growth (%) 2020–2021 |
|---|---|---|
| Before COVID-19 | 2.6 | 5.3 |
| After COVID-19 | 1.0 | 2.0 |

2020: -3.4 / 2021: 5.6 / 2022: 4.3

### 🇺🇸 U.S.
After COVID-19

| | Compound Annual Growth Rates (%) 2020–2021 | Cumulative Growth (%) 2020–2021 |
|---|---|---|
| Before COVID-19 | 1.8 | 3.7 |
| After COVID-19 | 1.0 | 1.9 |

2020: -3.4 / 2021: 5.5 / 2022: 4.0

### € EUROZONE
After COVID-19

| | Compound Annual Growth Rates (%) 2020–2021 | Cumulative Growth (%) 2020–2021 |
|---|---|---|
| Before COVID-19 | 1.1 | 2.3 |
| After COVID-19 | -0.9 | -1.7 |

2020: -6.5 / 2021: 5.1 / 2022: 4.3

### 🔴 CHINA
After COVID-19

| | Compound Annual Growth Rates (%) 2020–2021 | Cumulative Growth (%) 2020–2021 |
|---|---|---|
| Before COVID-19 | 5.7 | 11.8 |
| After COVID-19 | 5.1 | 10.5 |

2020: 2.3 / 2021: 8.0 / 2022: 5.3

Sources: OECD, International Monetary Fund, World Bank, Blue Chip Economic Indicators, Consensus Economics, Economic Intelligence Unit, Fitch Ratings, IHS Markit, Moody's Analytics, Oxford Economics, S&P Global Ratings

Before COVID-19 median estimates are based on data released in December 2019 and early January of 2020. After COVID-19 median estimates are based on data available as of the date noted above.

Compound annual growth rate (CAGR) is calculated as the annualized rate of return of median real GDP growth rate estimates from the end of 2019 through the end of 2021: [(1 + 2020 Real GDP Growth Rate) * ( 1 + 2021 Real GDP Growth Rate )] ^ (1/2) – 1. Cumulative growth is calculated as the total (cumulative) growth rates of median real GDP estimates from the end of 2019 through the end of 2021: (1 + 2020 Real GDP Growth Rate ) * ( 1 + 2021 Real GDP Growth Rate ) — 1. These metrics show the annualized and cumulative real GDP growth rates that were expected at the end of 2019 (Before COVID- 19) for the 2020–2021 period vs. what the expectations are currently (After COVID-19).

> Global economic recovery is continuing at a robust, but uneven pace. Global supply disruptions and regional labor shortages are creating significant inflationary pressures, which combined with a resurgence in COVID-19 cases are contributing to further downward revisions in real GDP growth. Financial market risk has risen recently due to a new COVID-19 variant, but the longer-term impact of Omicron is still a wild card.

**Carla S. Nunes, CFA – Managing Director, Kroll**