COVID-19 One Year Later

Impact on Cost of Capital and Related Valuation Issues

May 20, 2021

Presented by:
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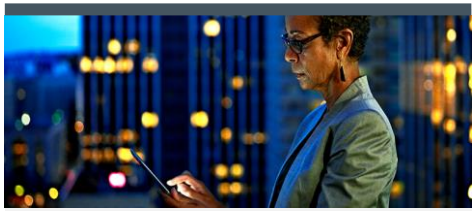
Our service areas



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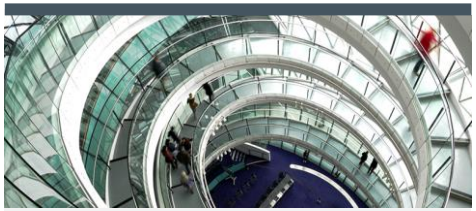

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- Corporate Actions
- Class Action

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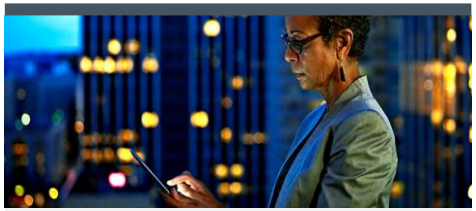

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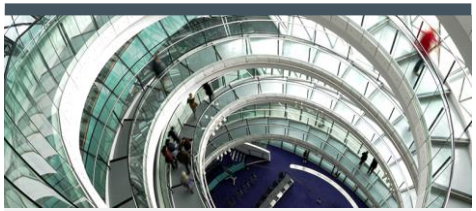

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- Carla Nunes is a Managing Director in the Office of Professional Practice of Duff & Phelps, A Kroll Business. She has over 25 years of experience. In that role, Carla provides firm-wide technical guidance on a variety of valuation, financial reporting and tax issues. She also co-authors Duff & Phelps' annual U.S. and European Goodwill Impairment Studies. In addition, Carla is the Global Leader of Duff & Phelps' Valuation Digital Solutions group, which produces cost of capital thought leadership content and data housed in the Cost of Capital Navigator.
- In 2011, Carla completed a one-year rotation in Duff & Phelps' London office, where she promoted the firm's IFRS education efforts and marketing initiatives, as well dealing with IFRS implementation issues.
- Prior to this role, Carla was part of the Valuation Advisory Services business unit, performing engagements primarily for financial reporting and tax purposes at Duff & Phelps and its predecessor firms, PricewaterhouseCoopers and Standard & Poor's.
- Carla has conducted numerous business and asset valuations for a variety of purposes, including purchase price allocations, goodwill impairment testing, M&A, corporate tax restructuring and debt analysis. She has been involved in multiple valuation assignments for a wide range of industries, including pharma & biotech, healthcare, vitamin retail, specialty chemicals, industrial manufacturing and gaming & hospitality. Carla has substantial experience with cross-border valuations, working with multinational corporations to address complex tax, international cost of capital and foreign exchange issues.
- Carla is one of Duff & Phelps' experts addressing valuation issues related to cost of capital. She is a co-author of the "Valuation Handbook" series and is a co-creator of the Duff & Phelps Cost of Capital Navigator. Carla is a frequent speaker in webinars and conferences on the topics of cost of capital, goodwill impairment and valuation in general.
- Carla is Kroll Institute Fellow and a member of the Education Committee of the International Institute of Business Valuers (iiBV).
- Carla received her M.B.A. in finance from the University of Rochester's Simon School, an honors degree is busines administration from Lisbon's School of Economics and Management (ISEG Lisbon) and completed coursework for a Masters of Taxation from Villanova University School of Law. Additionally, she holds a Chartered Financial Analyst (CFA) designation and has passed the exam and fulfilled all the requirements for the Certified in Entity and Intangibles Valuations (CEIV) credential.

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Director – Valuation Digital Solutions

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James P. Harrington is a Director at Duff & Phelps, A Kroll Company (“D&P/Kroll”). James is a member of the D&P/Kroll Valuation Digital Solutions group, which produces cost of capital thought leadership content and data housed in the Cost of Capital Navigator at **dpcostofcapital.com**.

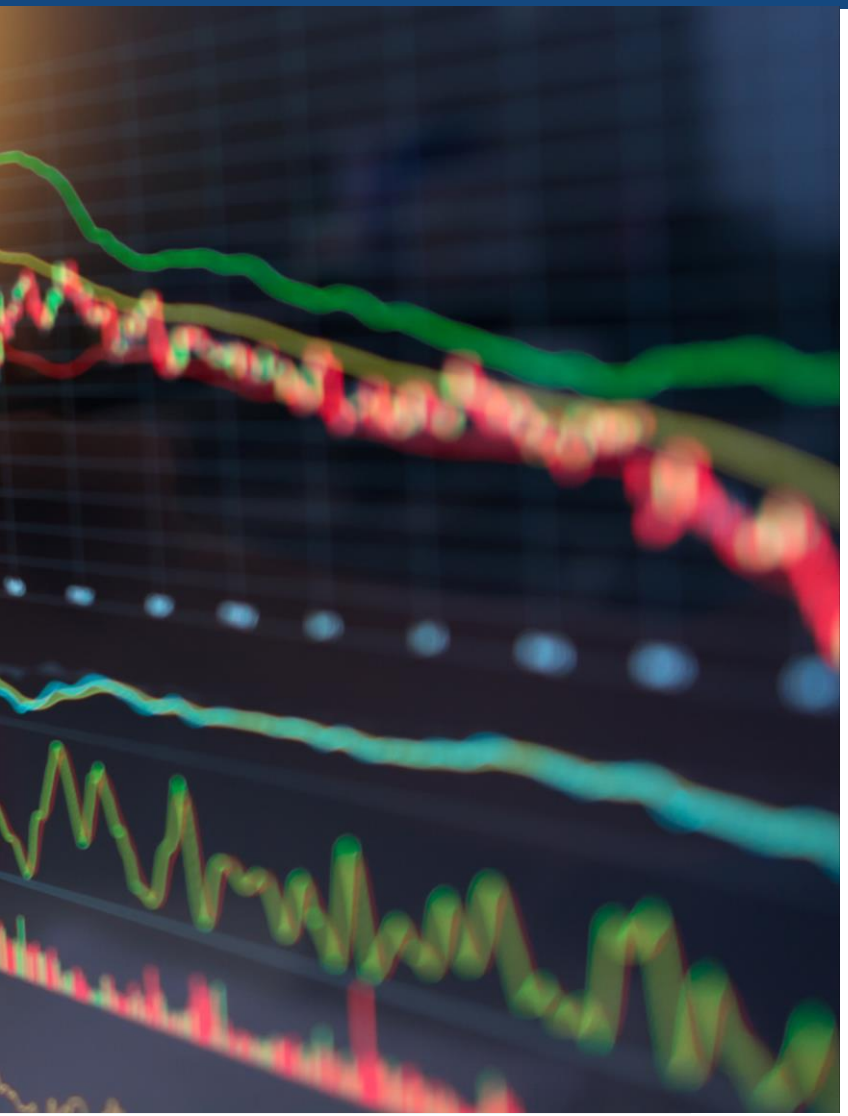
James also provides technical support on client engagements involving cost of capital and business valuation matters and is a leading contributor to Duff & Phelps’ efforts in the development of studies, surveys, online content and tools, and firm-wide valuation models.

Previously, James was director of valuation research in Morningstar's Financial Communications Business where he led the group that produced the *Stocks, Bonds, Bills, and Inflation® (SBBI®) Valuation Yearbook*, *Stocks, Bonds, Bills, and Inflation® (SBBI®) Classic Yearbook*, *Cost of Capital Yearbook*, various international cost of capital reports, and created a website dedicated to cost of capital issues.

James is co-author of the Duff & Phelps “Valuation Handbook” series with colleagues Carla Nunes and Roger Grabowski. The four Valuation Handbooks were published as physical books starting in 2014; as of 2021 the information and data previously published in the Valuation Handbooks has been transitioned over to the Duff & Phelps Cost of Capital Navigator at **dpcostofcapital.com**.

James is co-author of the *Stocks, Bonds, Bills, and Inflation® (SBBI®) 2021 Summary Edition* with Roger Ibbotson (Professor in the Practice Emeritus of Finance at Yale School of Management). The *(SBBI®) 2021 Summary Edition* is produced in a partnership of D&P/Kroll, the CFA Institute Research Foundation, and Morningstar, Inc. James is a contributing author to *Cost of Capital: Applications and Examples*, 5th edition, by Shannon P. Pratt and Roger J. Grabowski (John Wiley & Sons, Inc., 2014). James is a contributing author to the upcoming *Shannon Pratt’s Valuing a Business – The Analysis and Appraisal of Closely Held Companies*, Sixth ed. (McGraw-Hill, expected publication date 2021).

Today’s Presentation



01	PROJECTED ECONOMIC GROWTH
02	FINANCIAL MARKET PERFORMANCE
03	RISK-FREE RATE ANALYSIS
04	U.S. EQUITY RISK PREMIUM
05	EUROZONE EQUITY RISK PREMIUM
06	INDUSTRY BETAS
07	COUNTRY RISK

01 Projected Economic Growth

Where We Stand: The Status of the Global Economy

> The pandemic is yet to be defeated and virus cases are accelerating in many countries. **Recoveries are also diverging dangerously** across and within countries, as economies with slower vaccine rollout, more limited policy support, and more reliance on tourism do less well.

– “Managing Divergent Recoveries”, IMF Blog, April 6, 2021
by Gita Gopinath, IMF Economic Counsellor and Director of Research

Real GDP Growth – Sources of Estimates

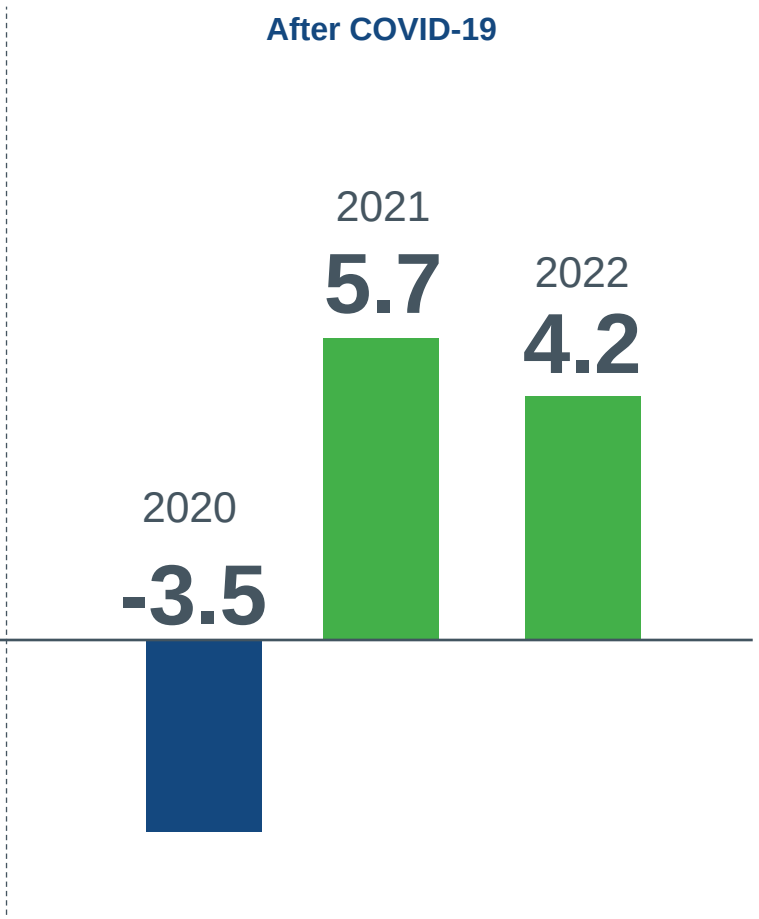
We reviewed multiple sources of Real GDP Growth forecasts:

1. International Monetary Fund (IMF)
2. Organisation for Economic Co-operation and Development (OECD)
3. World Bank
4. Blue Chips Economic Indicators
5. Consensus Economics
6. Economist Intelligence Unit (EIU)
7. Fitch Ratings
8. IHS Markit
9. Moody's Analytics
10. Oxford Economics
11. Standard & Poor's

Real GDP Growth (%) Estimates by Region: World

Data as of May 18, 2021

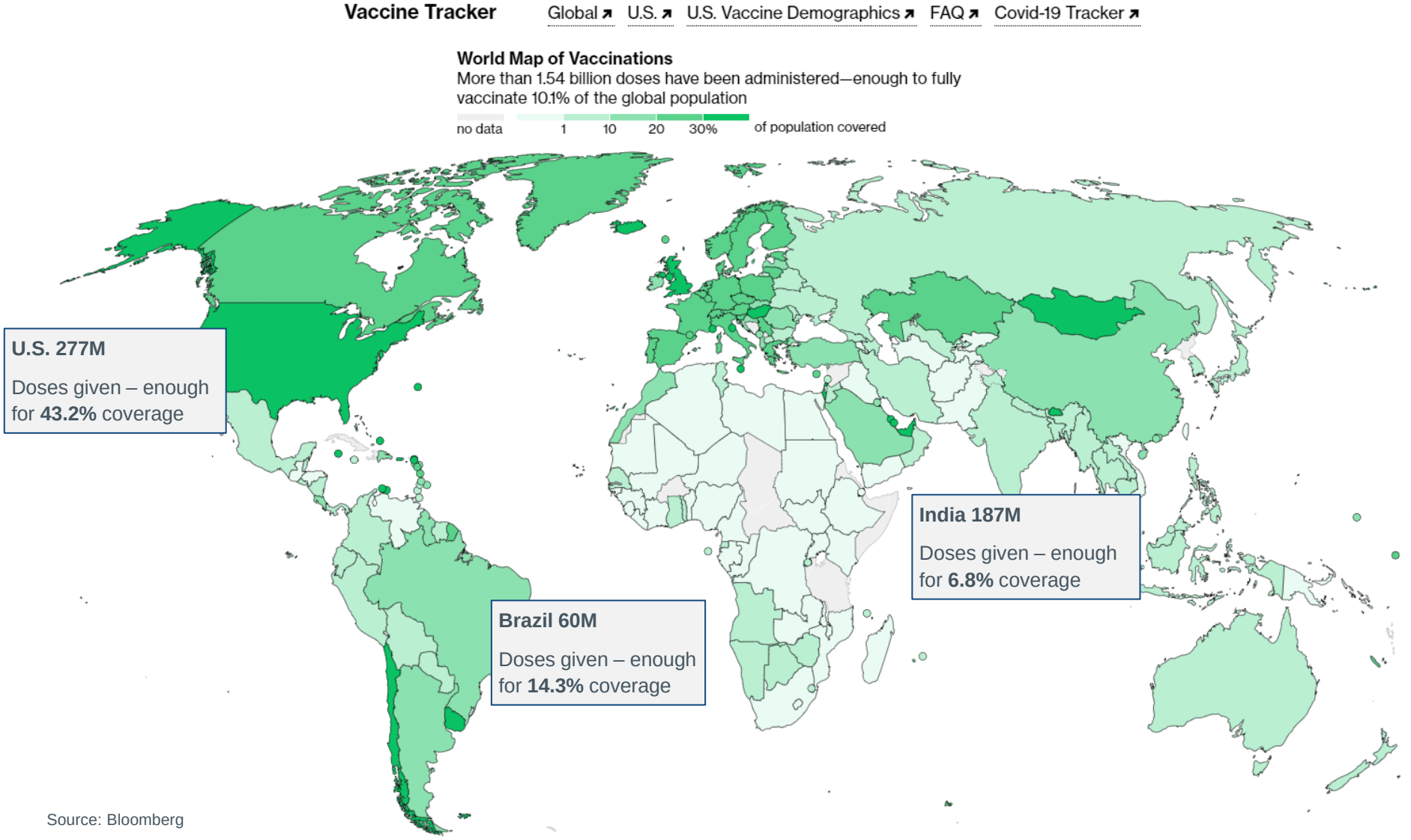
	Cumulative Growth (%) 2020–2021	Compound Annual Growth Rates (%) 2020 to 2021
Before COVID-19	5.3	2.6
After COVID-19	2.0	1.0



Before COVID-19 median estimates based on data released in December 2019 and early January of 2020. After COVID-19 median estimates 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 versus what the expectations are currently (After COVID-19).

COVID-19 Vaccine Tracker

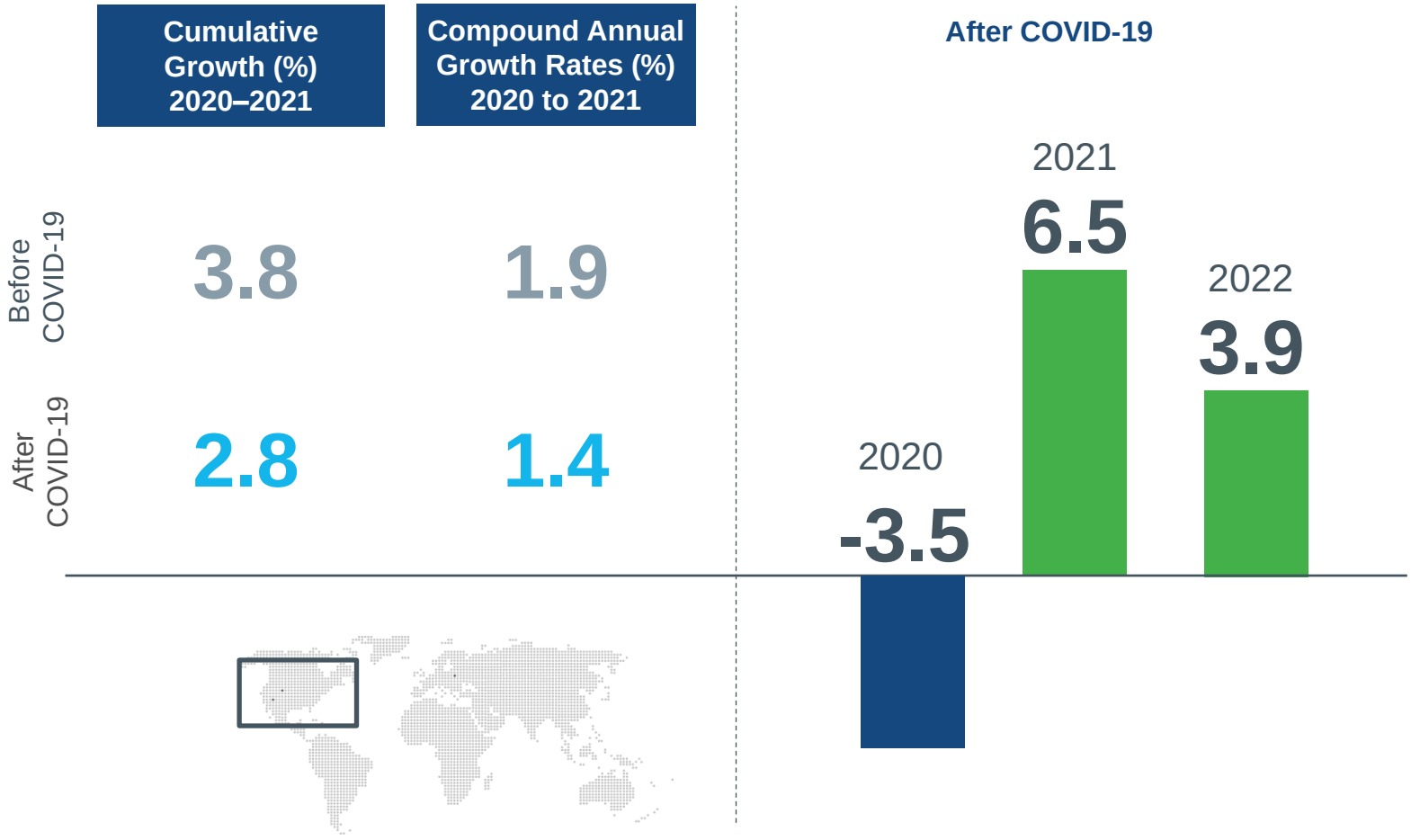


Source: Bloomberg

Real GDP Growth (%) Estimates by Region: United States

Data as of May 18, 2021

	Cumulative Growth (%) 2020–2021	Compound Annual Growth Rates (%) 2020 to 2021
Before COVID-19	3.8	1.9
After COVID-19	2.8	1.4



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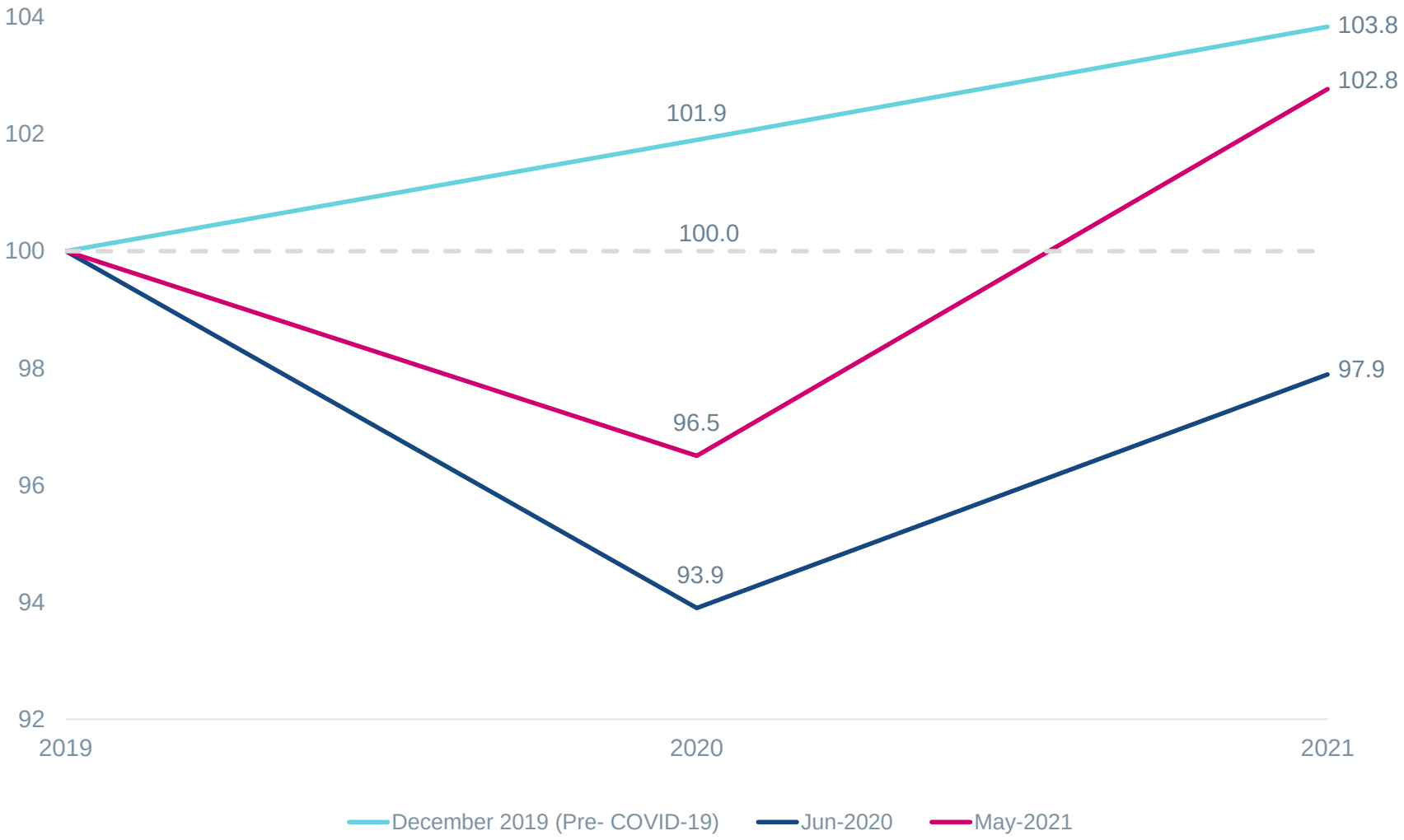
Real GDP Growth Before & After COVID-19: United States

Data as of May 18, 2021

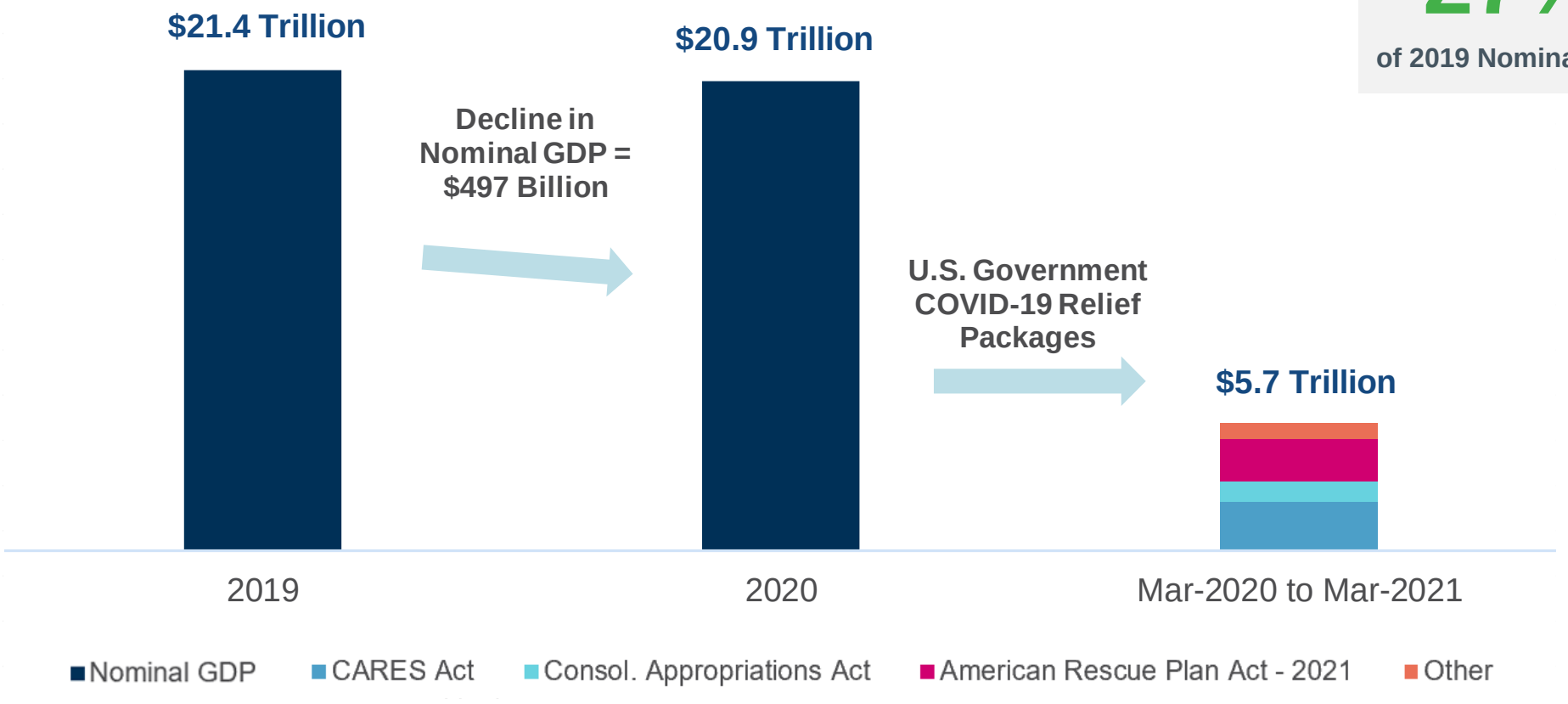


U.S. Fiscal Policy Response to COVID-19 as a Proportion of Nominal GDP

Size of Combined COVID-19 Fiscal Stimulus Packages:

27%

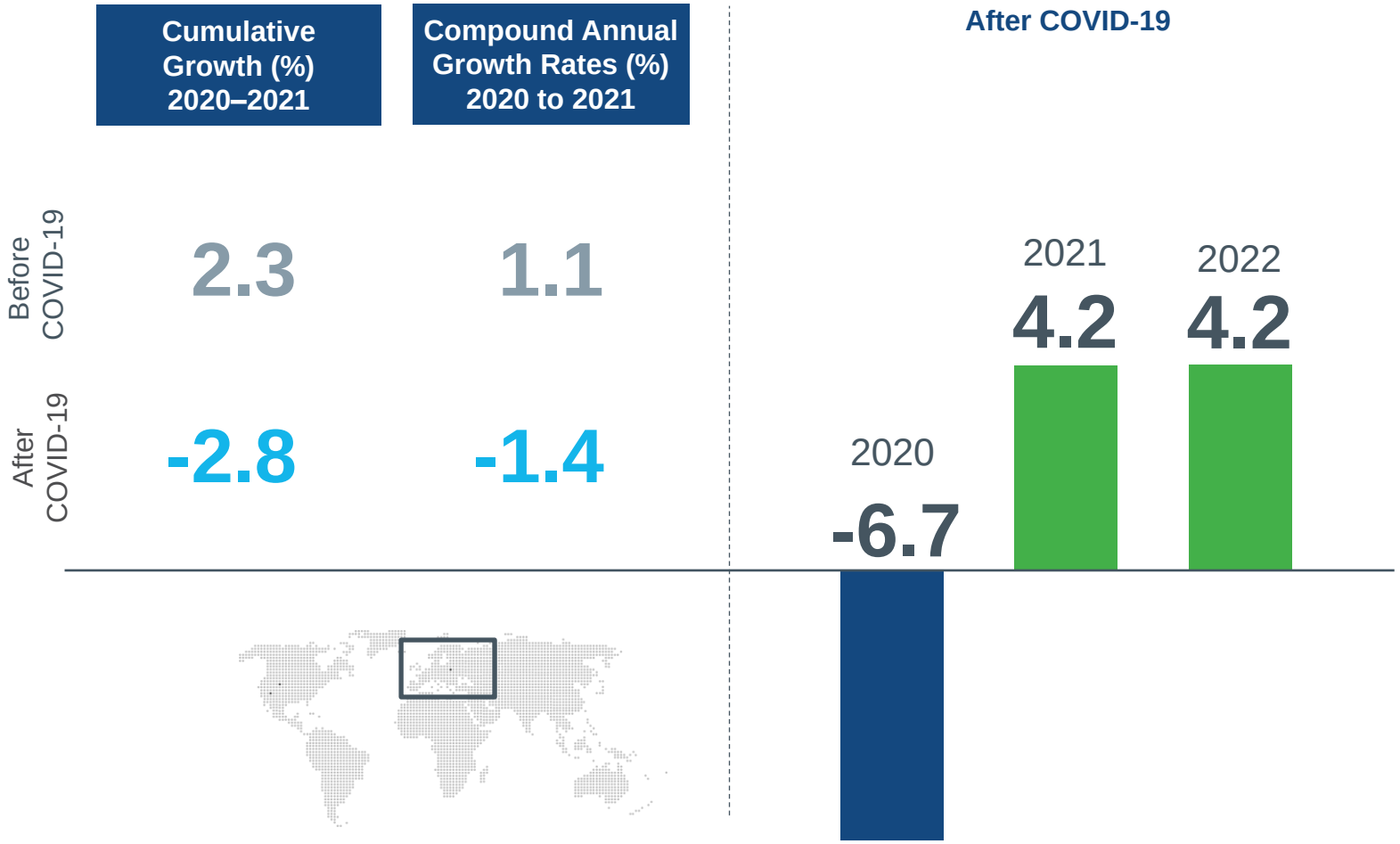
of 2019 Nominal GDP



Real GDP Growth (%) Estimates by Region: Eurozone

Data as of May 18, 2021

	Cumulative Growth (%) 2020–2021	Compound Annual Growth Rates (%) 2020 to 2021
Before COVID-19	2.3	1.1
After COVID-19	-2.8	-1.4



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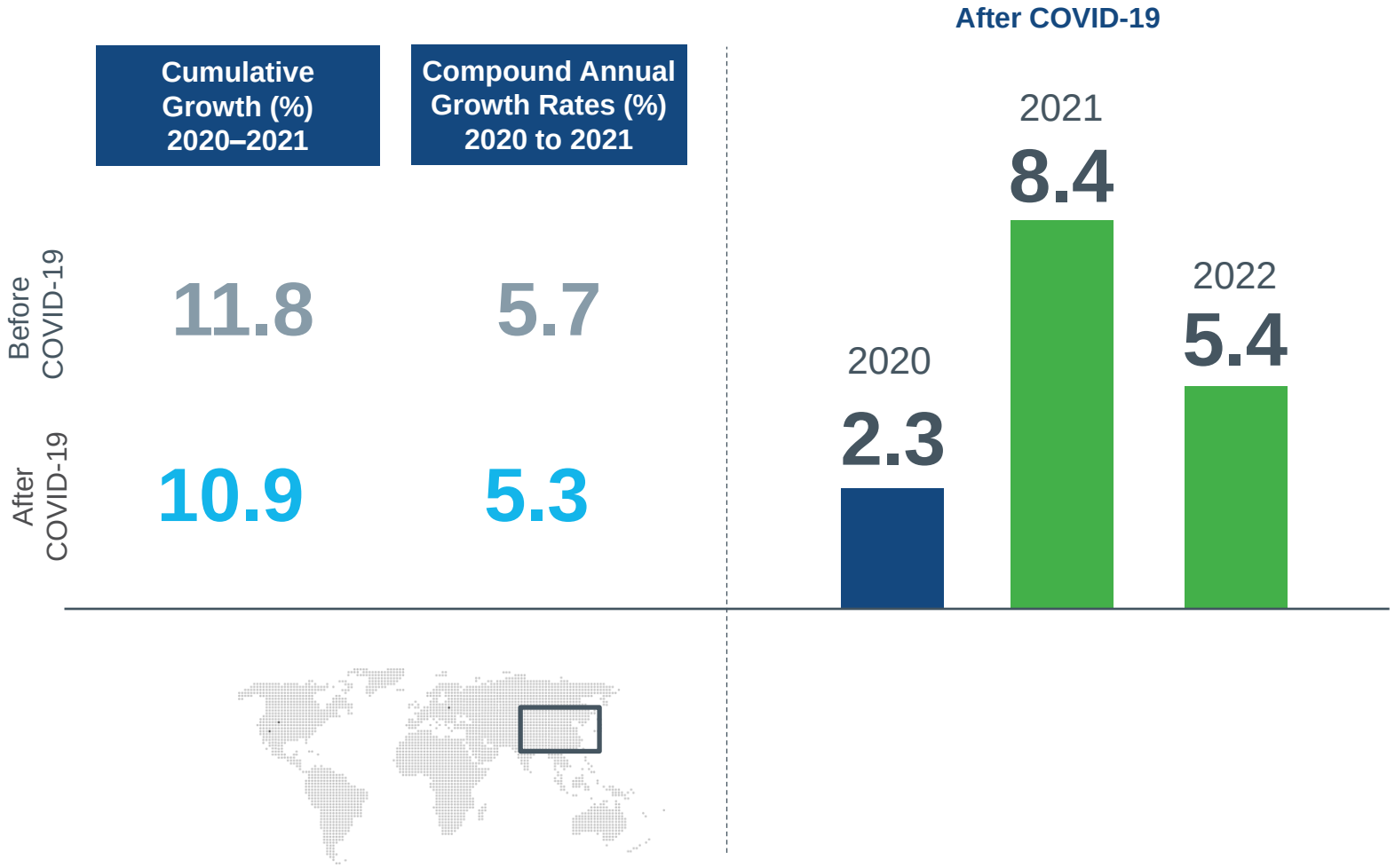
Real GDP Growth (%) Estimates by Region: China

Data as of May 18, 2021

	Cumulative Growth (%) 2020–2021	Compound Annual Growth Rates (%) 2020 to 2021
Before COVID-19	11.8	5.7
After COVID-19	10.9	5.3



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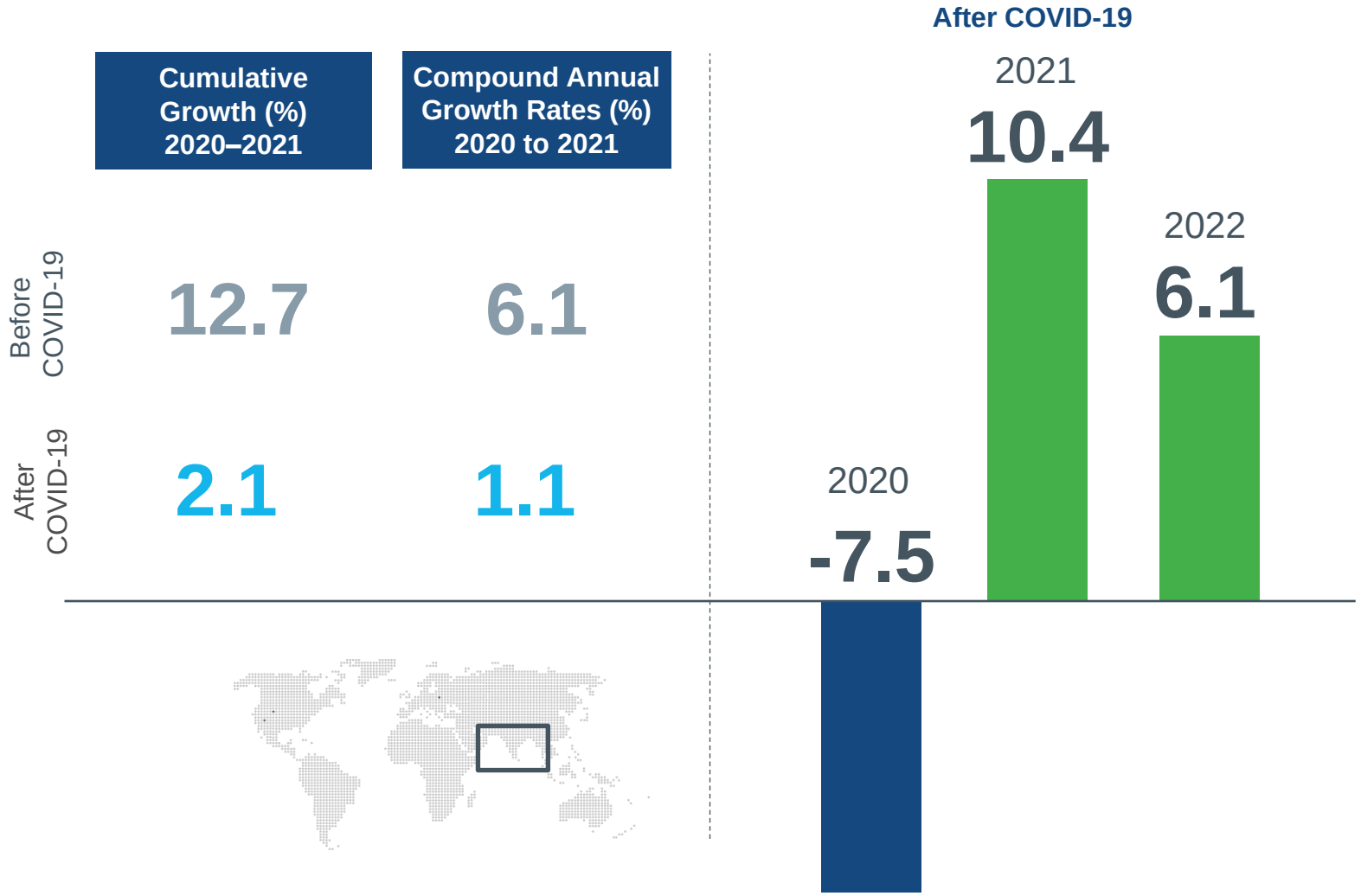
Real GDP Growth (%) Estimates by Region: India

Data as of May 18, 2021

	Cumulative Growth (%) 2020–2021	Compound Annual Growth Rates (%) 2020 to 2021
Before COVID-19	12.7	6.1
After COVID-19	2.1	1.1



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02 Financial Market Performance

MSCI Developed, Emerging, and Frontier Markets

Market Performance During the COVID-19 Pandemic

Developed Markets

	Year End 2019 – March 2020	April 2020 – April 2021
Australia	-33.2%	77.0%
Austria	Worst -42.9%	Best 93.7%
Belgium	-32.5%	42.8%
Canada	-27.4%	67.7%
Denmark	Best -7.7%	62.6%
Finland	-18.9%	59.1%
France	-27.5%	60.3%
Germany	-27.0%	66.1%
Hong Kong	-17.3%	41.5%
Ireland	-25.5%	65.1%
Israel	-18.0%	48.9%
Italy	-29.2%	54.8%
Japan	-16.6%	38.0%
Netherlands	-20.6%	83.5%
New Zealand	-16.3%	33.5%
Norway	-33.3%	71.6%
Portugal	-13.1%	Worst 29.7%
Singapore	-28.2%	44.9%
Spain	-29.7%	44.7%
Sweden	-21.4%	84.1%
Switzerland	-11.1%	30.5%
United Kingdon	-28.8%	39.4%
United States	-19.6%	68.0%
Average	**-23.7%**	**56.9%**
Median	**-25.5%**	**59.1%**

Emerging Markets

	Year End 2019 – March 2020	April 2020 – April 2021
Argentina	-39.3%	87.8%
Brazil	Worst -50.2%	56.2%
Chile	-33.4%	53.1%
China	Best -10.2%	45.8%
Colombia	-49.7%	24.6%
Czech Republic	-38.5%	76.4%
Egypt	-27.1%	Worst 3.0%
Greece	-45.1%	45.4%
Hungary	-39.0%	47.4%
India	-31.1%	75.4%
Indonesia	-39.4%	41.3%
Korea	-22.4%	96.2%
Kuwait	-26.8%	39.0%
Malaysia	-19.2%	25.0%
Mexico	-35.4%	63.4%
Pakistan	-39.6%	35.5%
Peru	-35.8%	24.1%
Philippines	-32.0%	27.7%
Poland	-36.5%	41.2%
Qatar	-17.3%	24.7%
Russia	-36.3%	45.5%
Saudi Arabia	-23.1%	67.6%
South Africa	-40.3%	81.3%
Taiwan	-19.0%	Best 109.6%
Thailand	-33.7%	38.1%
Turkey	-30.0%	5.9%
United Arab Emirates	-27.1%	58.9%
Average	**-32.5%**	**49.6%**
Median	**-33.7%**	**45.5%**

Frontier Markets

	Year End 2019 – March 2020	April 2020 – April 2021
Bahrain	-22.2%	16.8%
Bangladesh	-17.9%	39.6%
Croatia	-18.5%	34.3%
Estonia	-31.1%	35.9%
Jordan	-9.9%	Worst -41.0%
Kenya	-24.8%	41.0%
Kazakhstan	-23.6%	Best 117.2%
Lithuania	-22.9%	53.6%
Mauritius	Worst -37.9%	1.6%
Morocco	-26.0%	41.7%
Nigeria	-33.0%	83.4%
Oman	-11.1%	39.8%
Romania	-30.8%	61.9%
Serbia	-27.5%	35.8%
Slovenia	-22.7%	77.7%
Sri Lanka	-34.5%	24.7%
Tunisia	Best -6.4%	20.7%
Vietnam	-31.0%	88.3%
Average	**-24.0%**	**43.0%**
Median	**-24.2%**	**39.7%**

MSCI Developed, Emerging, and Frontier Markets

Market Performance During the COVID-19 Pandemic

Value of $1 invested at midnight on March 31, 2020 and held through April 30, 2021

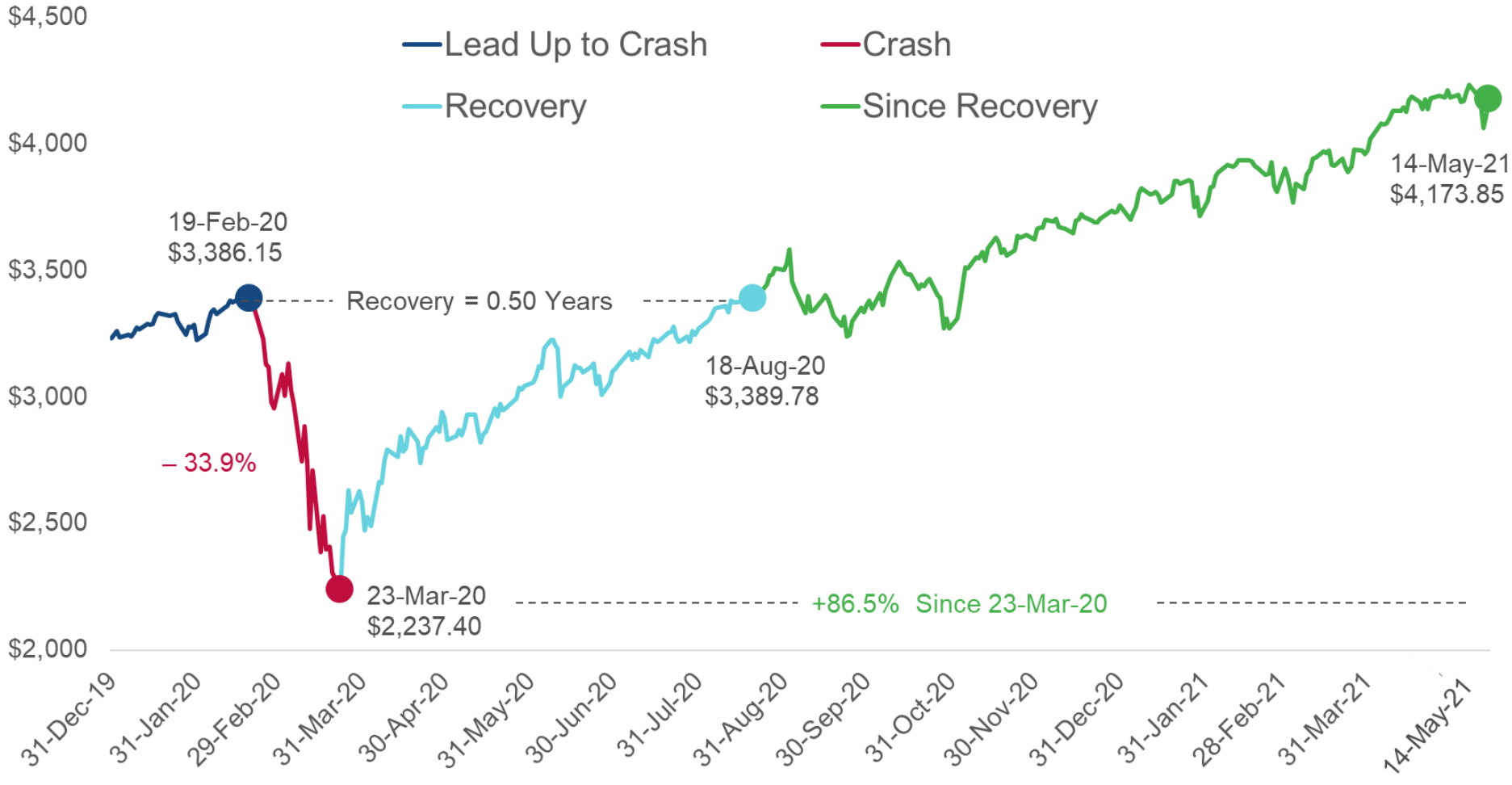
	Developed Markets	Emerging Markets	Frontier Markets
April 2020 – April 2021	**$1.57**	**$1.50**	**$1.43**

Value of $1 invested at midnight on December 31, 2019* and held through April 30, 2021

	Developed Markets	Emerging Markets	Frontier Markets
Year End 2019 – April 2021	**$1.19**	**$1.01**	**$1.08**

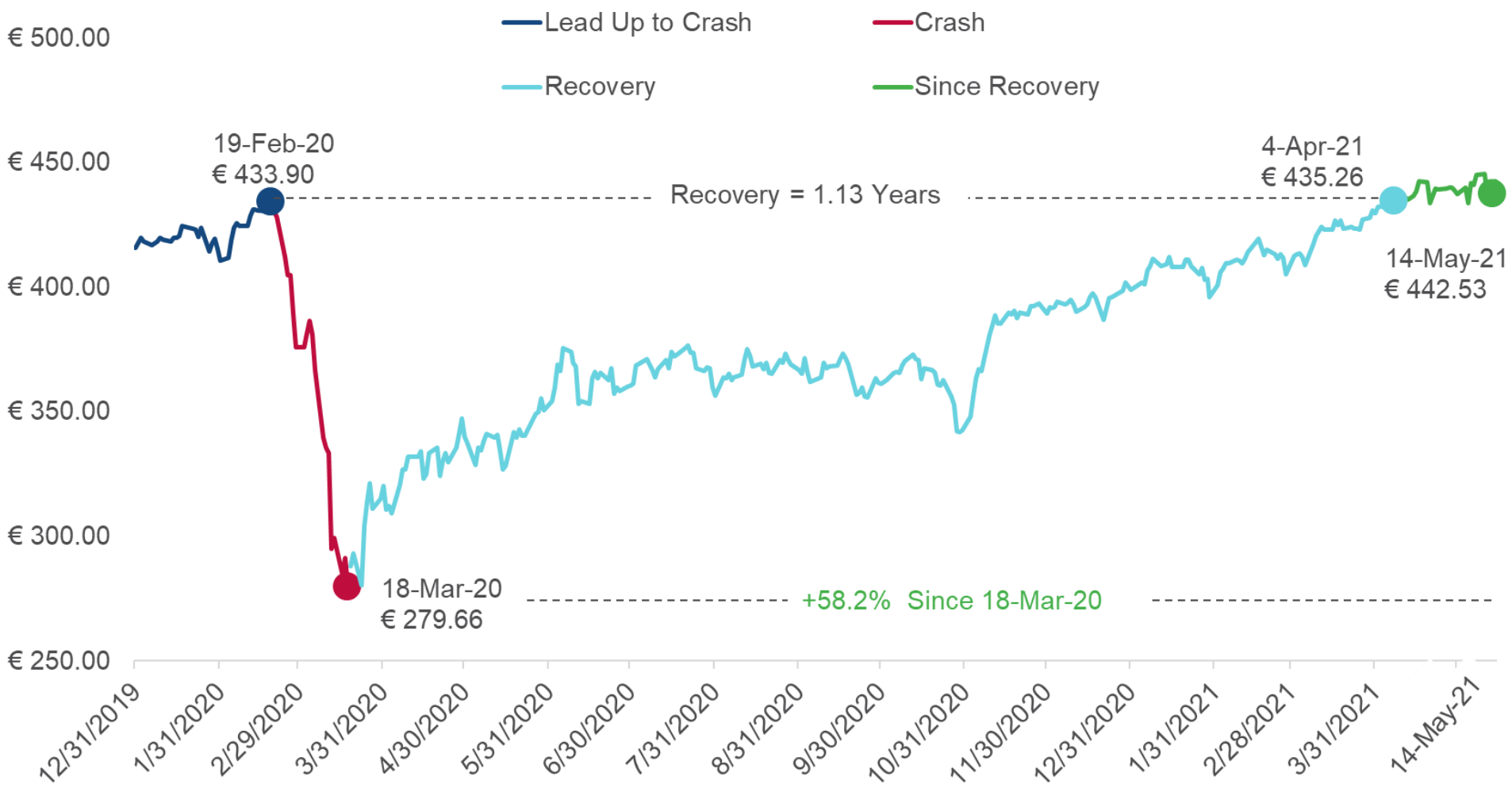
S&P 500 (Price) Index

December 31, 2019 – May 14, 2021



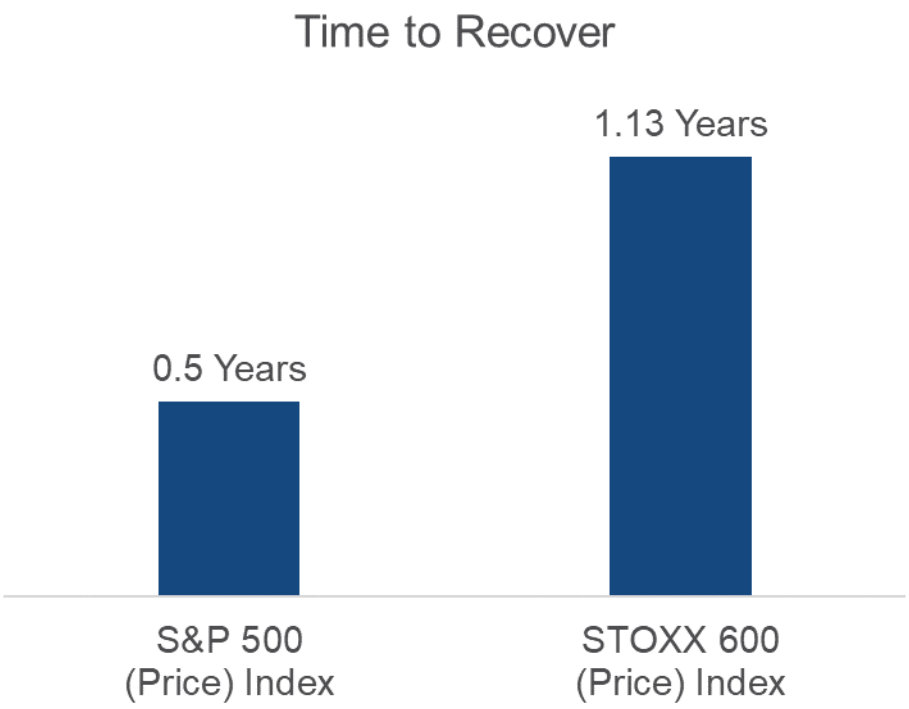
STOXX 600 (Price) Index

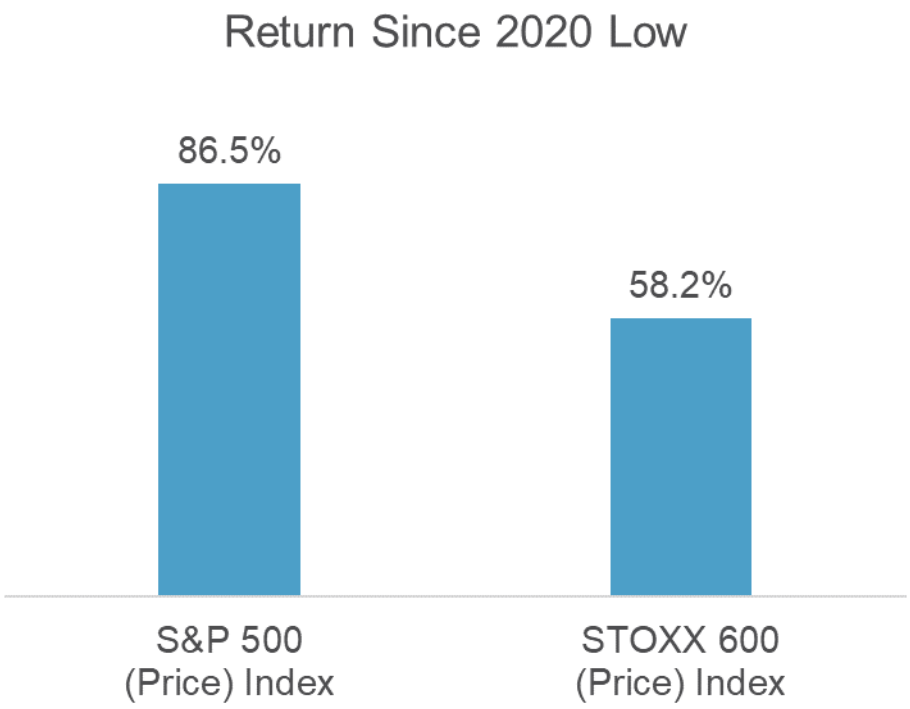
December 31, 2019 – May 14, 2021



S&P 500 (Price) Index and STOXX 600 (Price) Index

December 31, 2019 – May 14, 2021; Time to Recover and Return Since 2020 Low





U.S. Market Crashes, Using S&P 500 Price Index As The Benchmark

Length of Decline and Average Years to Recover

1929 Crash

Start Date of the Decline	16-Sep-29
S&P 500	31.86
End date of the Decline	29-Oct-29
S&P 500	20.43
Decline	**-35.9%**
Recovery Date	22-Sep-54
S&P 500	32.00
Years to Recover	**25.02**

1987 Crash

Start Date of the Decline	25-Aug-87
S&P 500	336.77
End date of the Decline	19-Oct-87
S&P 500	224.84
Decline	**-33.2%**
Recovery Date	26-Jul-89
S&P 500	338.05
Years to Recover	**1.92**

Dotcom Crash

Start Date of the Decline	24-Mar-00
S&P 500	1,527.46
End date of the Decline	9-Oct-02
S&P 500	776.76
Decline	**-49.1%**
Recovery Date	30-May-07
S&P 500	1,530.23
Years to Recover	**7.18**

2008 Crash

Start Date of the Decline	9-Oct-07
S&P 500	1,565.15
End date of the Decline	9-Mar-09
S&P 500	676.53
Decline	**-56.8%**
Recovery Date	28-Mar-13
S&P 500	1,569.19
Years to Recover	**5.47**

COVID-19 Crash

Start Date of the Decline	19-Feb-20
S&P 500	3,386.15
End date of the Decline	23-Mar-20
S&P 500	2,237.40
Decline	**-33.9%**
Recovery Date	18-Aug-20
S&P 500	3,389.78
Years to Recover	**0.50**

U.S. Market Crashes, Using S&P 500 Price Index As The Benchmark

Length of Decline and Average Years to Recover

DECLINE	0 - 6 MONTHS	7 - 12 MONTHS	13 - 18 MONTHS	19 - 24 MONTHS	25 - 30 MONTHS	31 - 36 MONTHS
>-80% and <= -90%	-	-	-	21.19	21.72	24.47
>-70% and <= -80%	-	4.7	5.48	15.54	21.04	19.73
>-60% and <= -70%	-	4.03	4.66	-	-	-
>-50% and <= -60%	0.71	2.75	4.9	5.48	5.38	-
>-40% and <= -50%	0.78	3.22	4.14	7.01	5.62	4.67
>-30% and <= -40%	1.13	1.69	2.48	2.62	3.33	3.86
>-20% and <= -30%	0.89	1.5	1.67	2.11	2.22	3.76
>-10% and <= -20%	0.56	1.04	1.56	2.12	2.37	2.8
> 0% and <= -10%	0.17	0.79	1.35	1.72	2.32	2.76

There were seven declines from this analysis that took **2 months or less** and were less than -30% and greater than or equal to -40%. The average recovery time of these seven declines was 0.53 years.

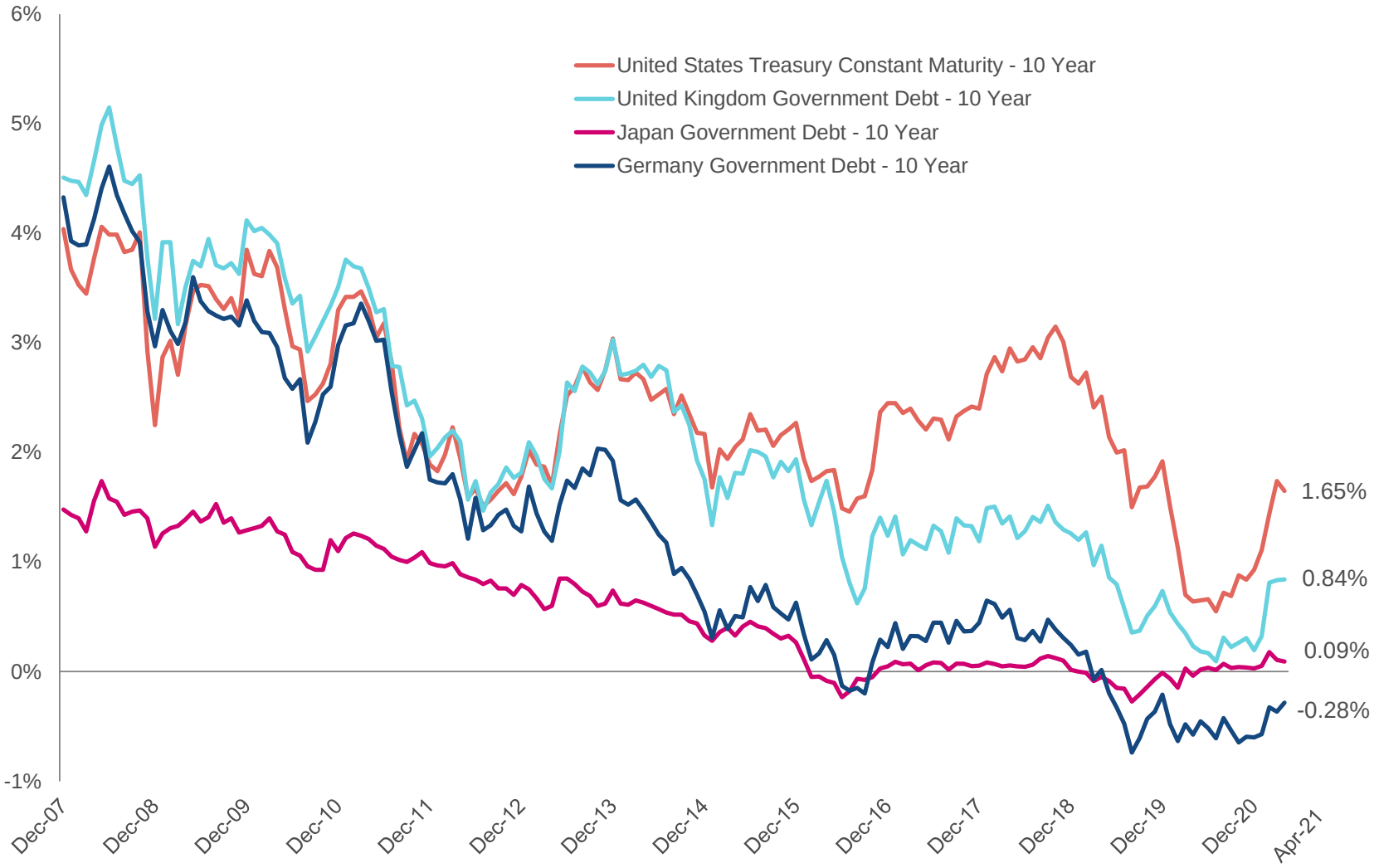
The actual time it took the S&P 500 to recover was 0.5 years.

Analysis performed over the time horizon December 31, 1927 through April 14, 2020 (daily).

03 Risk-free Rate Analysis

10-Year Yields for U.S., Germany, U.K., Japan

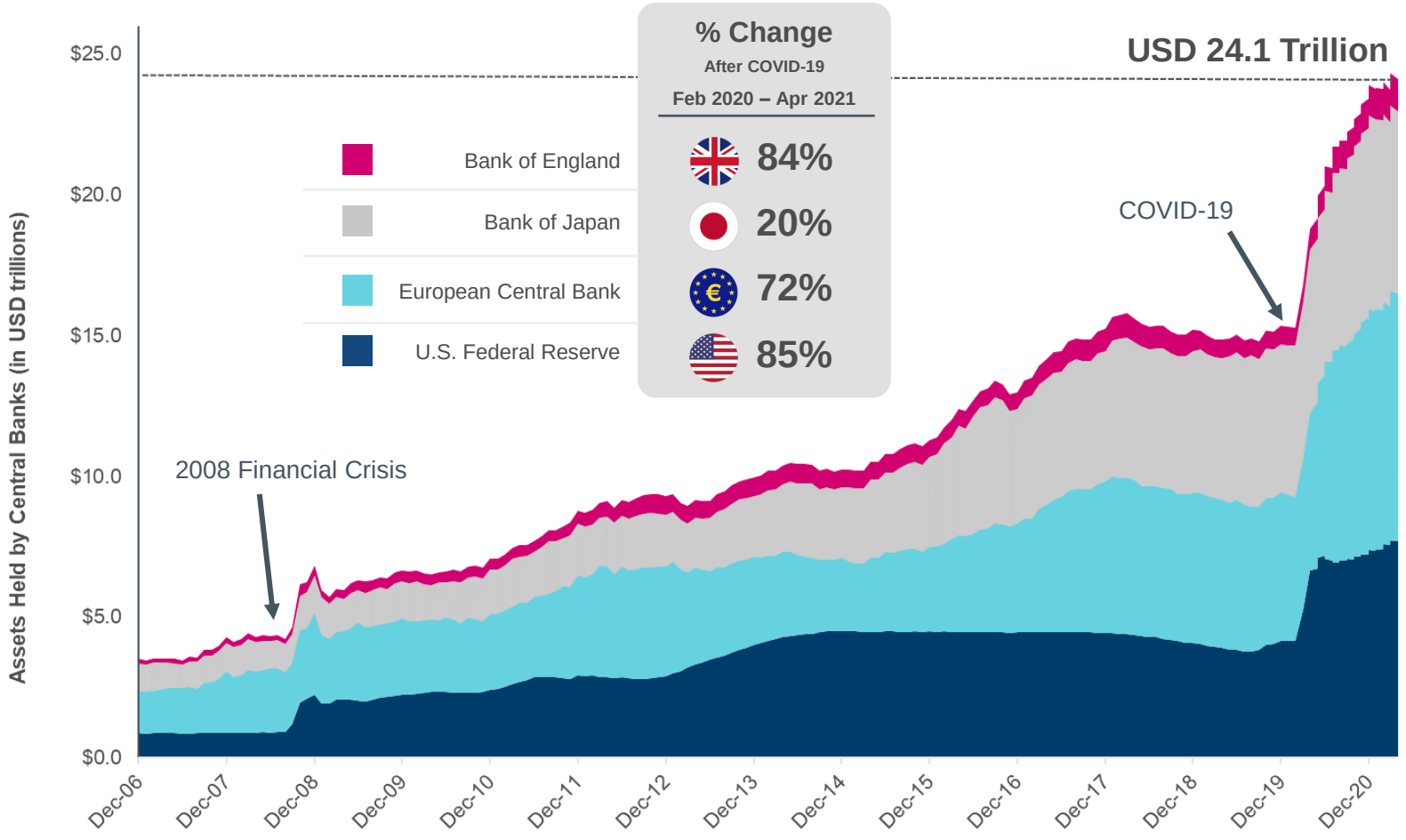
December 31, 2007 – April 30, 2021



Source: S&P Capital IQ

Combined Major Central Banks Balance Sheets: Fed, ECB, BOE, BOJ

February 2020 – April 2021



Source: Federal Reserve Bank of St. Louis Economic Research and the Bank of England

The Risk-free Rate (R_f) – Spot Rate or "Normalized" Rate?

During periods in which risk-free rates appear to be **abnormally low** due to flights to quality or massive monetary policy interventions (i.e., QE or quantitative easing)
Duff & Phelps recommends normalizing the risk-free rate:

Abnormally Low R_f

Use Normalized Risk-free Rate

The Risk-free Rate (R_f) – Spot Rate or Normalized Rate or "Normalized" Rate?

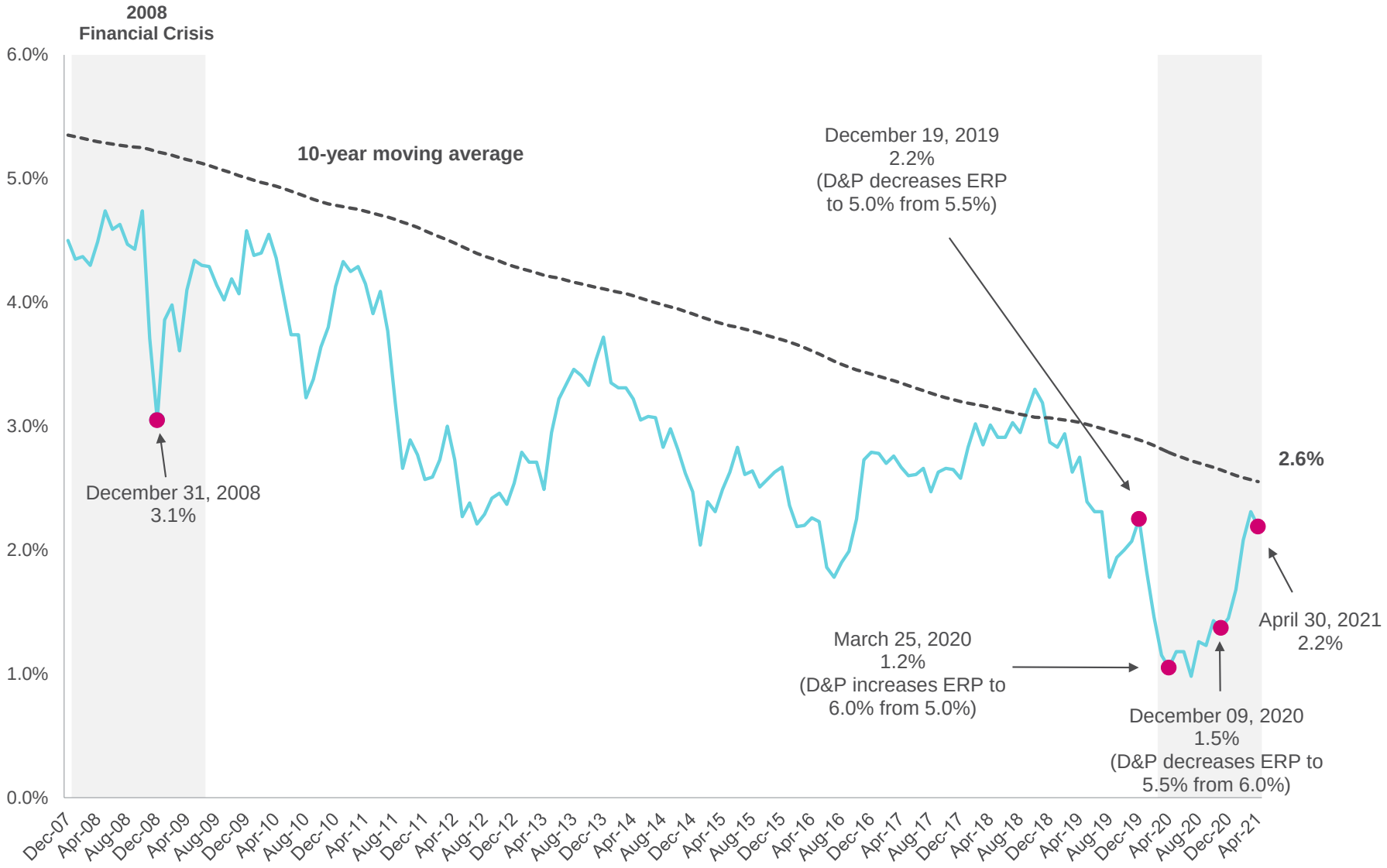
Normalization can be accomplished in several ways, including:

1. **Simple averaging**

2. **Various "buildup" methods**

U.S. 20-Year Treasury Yield, Including Trailing Average

December 31, 2007 – April 30, 2021



Source: 20-year U.S. government bond series. Board of Governors of the Federal Reserve System

Risk-free Rate Normalization – by Build Up "Fisher Equation"

Conceptually, the risk-free rate can be (loosely) illustrated as the return on the following two components:*

* This is a simplified version of the "Fisher equation", named after Irving Fisher. Fisher's "The Theory of Interest" was first published by Macmillan (New York), in 1930. The Fisher equation is formally expressed as (1 + Nominal Rate) = (1 + Real Rate) x (1 + Expected Inflation). When rates are low, there is very little difference between the simple form and the Fisher equation. Various academic research papers show that the decomposition of the nominal rate into a real rate and expected inflation should include an additional component excluded from the Fisher equation: the inflation risk premium. This premium reflects the risk that actual inflation may vary significantly from expected inflation, and it can be positive or negative, with some academic estimates at close to 0%.

Real Rate Estimates

United States

Several academic studies have suggested the long-term real risk-free rate to be somewhere in the range of -1.1% to 2.0% based on the study of inflation swap rates, yields on long-term U.S. Treasury Inflation-Protected Securities (TIPS), OLG, DSGE and other econometric models *

* Based on academic studies issued between 2015 and 2021. In academic literature, this is also sometimes called the natural rate of interest, the neutral rate, or the equilibrium rate.

OLG = Overlapping Generational Model

DGSE = Dynamic Stochastic General Equilibrium Model

Long-Term Inflation Expectations

Estimates as of April 2021 (approximately)

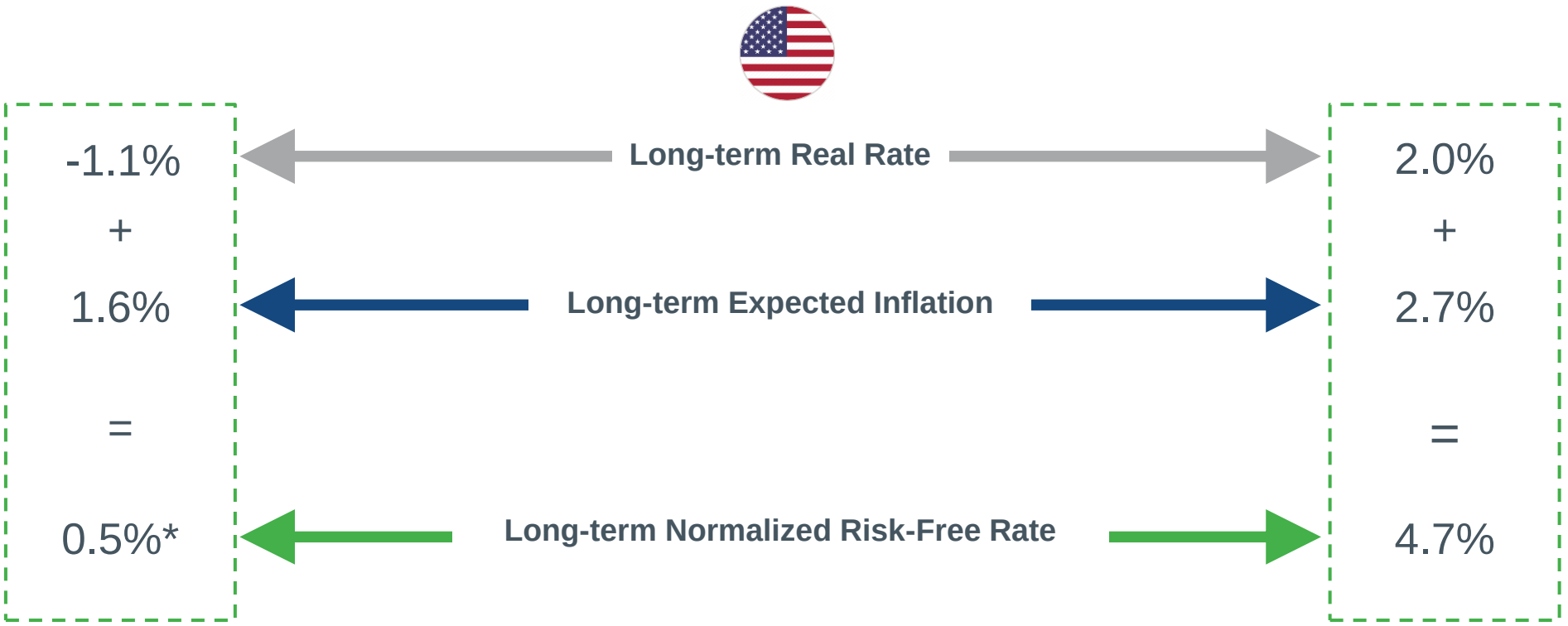
SOURCES	Long-Term Average (%)
Aruoba Term Structure of Inflation Expectations	2.3
Blue Chip Economic Indicators	2.3
Blue Chip Financial Forecasts	2.2
Consensus Economics	2.4
Federal Reserve Bank of Cleveland	1.6
Livingston Survey (Federal Reserve Bank of Philadelphia)	2.2
Survey of Professional Forecasters (Federal Reserve Bank of Philadelphia)	2.2
University of Michigan Survey 5-10 Year Ahead Inflation Expectations	2.7
Range of Inflation Estimates	**1.6% – 2.7%**

Median

2.2%

Risk-Free Rate Normalization – United States

As of April 30, 2021



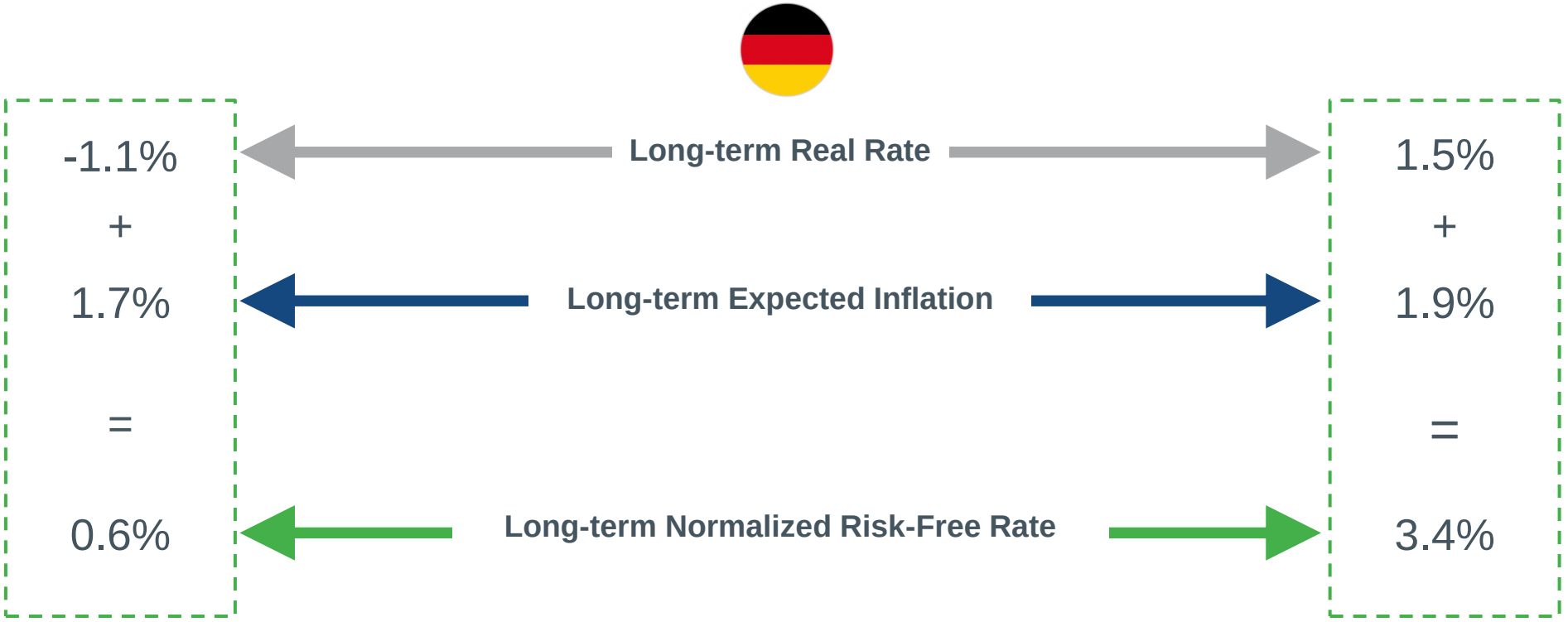
- **Fisher Equation:** Midpoint = 2.6% / Median = 2.8%
- **LT Average:** 10-Year Trailing Average of 20-Year U.S. Treasury Yield = 2.6%

Concluded Normalized R_f = 2.5%

* Differences due to rounding.

Risk-Free Rate Normalization – Germany

As of April 30, 2021



- **Fisher Equation:** Midpoint = 2.0% / Median = 2.7%
- **LT Average:** 10-Year Trailing Average of *15-Year Bund Yield* = 1.1%

Concluded Normalized R_f = 2.0%

04 U.S. Equity Risk Premium

The Duff & Phelps Recommended ERP is a Two-Step Process

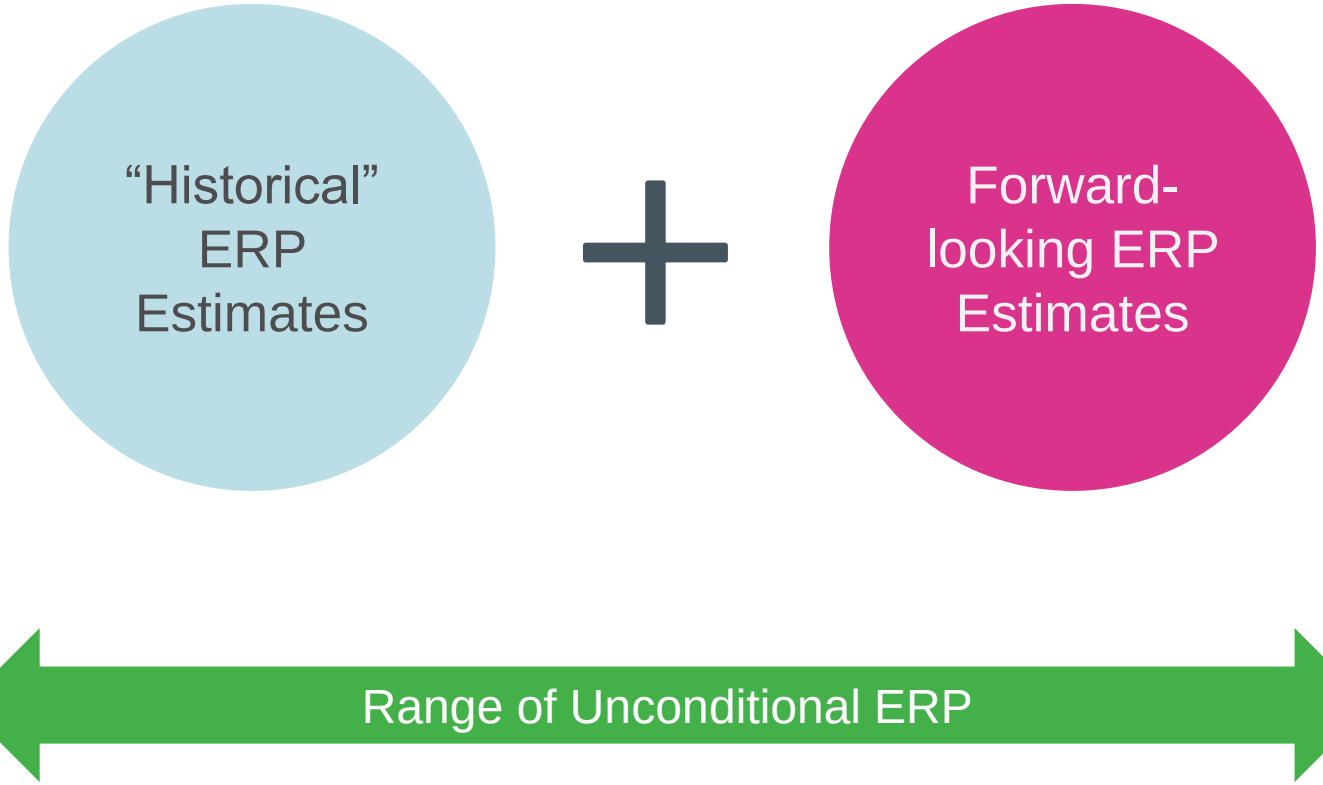
STEP 1: What is a reasonable range of unconditional ERP that can be expected over an entire business cycle?

"What is the range?"

STEP 2: Research has shown that ERP is cyclical during the business cycle. We use the term conditional ERP to mean the ERP that reflects current market conditions.

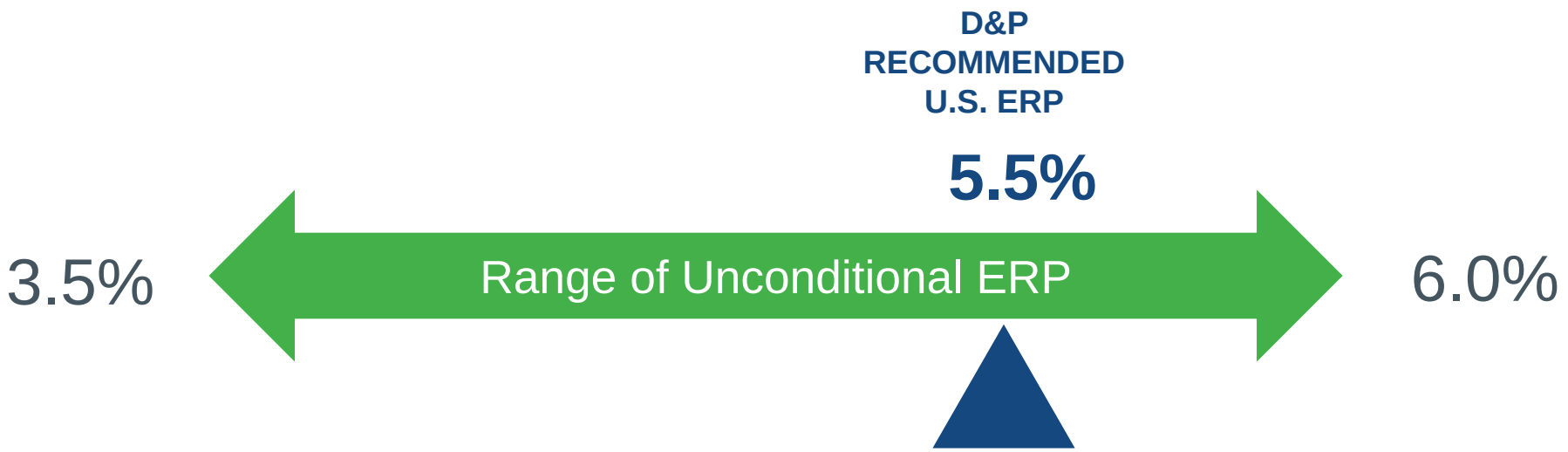
"Where are we in the range?"

Duff & Phelps Considers Multiple Models to Estimate U.S. ERP



Duff & Phelps Recommended U.S. Equity Risk Premium (ERP)

For discount rates developed as of December 9, 2020 (and thereafter)



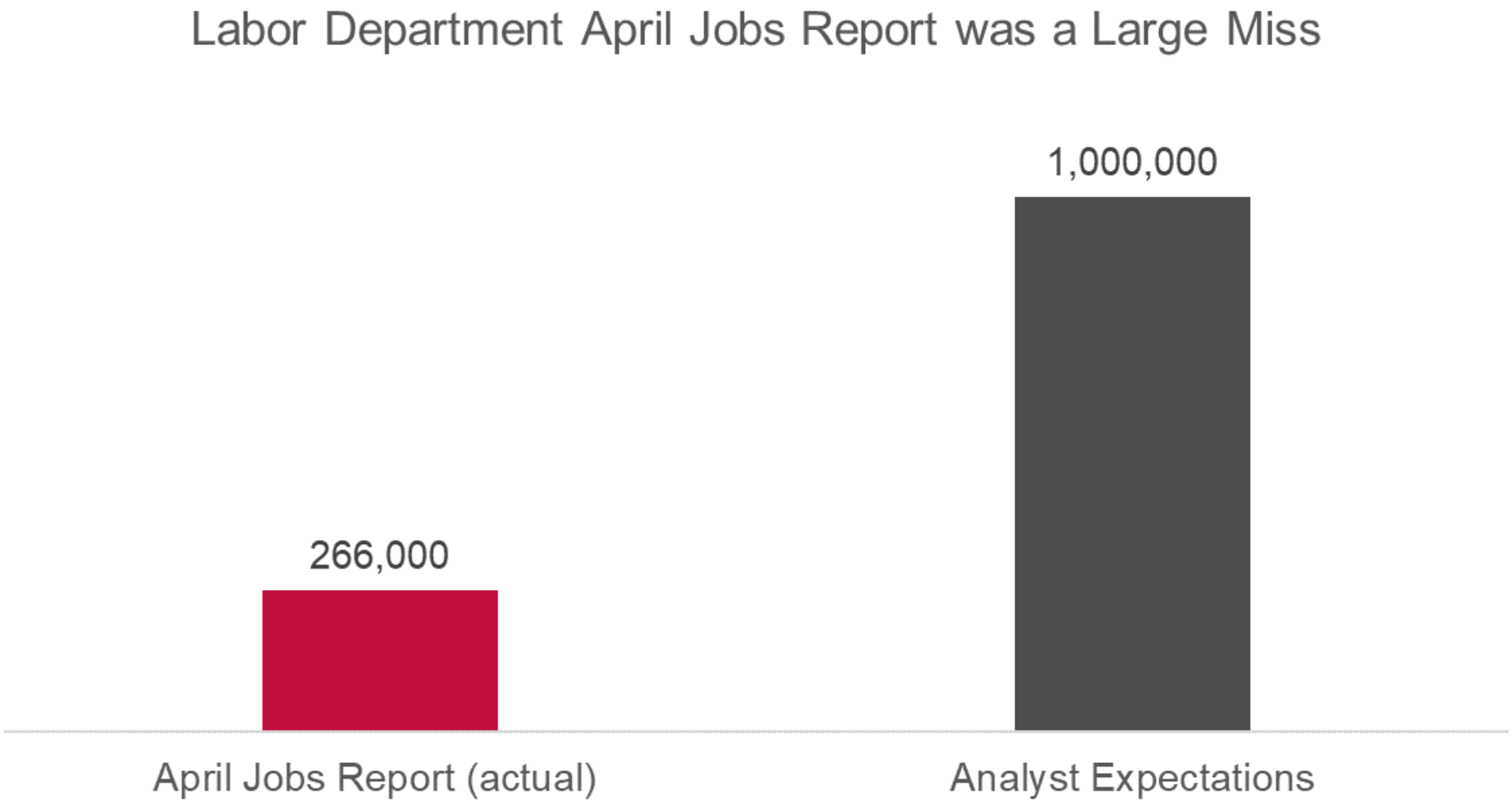
Factors Considered in ERP Recommendation – Summary Table

Changes from December 9, 2020 to April 30, 2021

	Factor	Change	Effect on ERP
Financial Markets	U.S. Equity Markets	▲	▼
	Implied Equity Market Volatility	▼	▼
	Corporate Credit Spreads	▼	▼
	Damodaran Implied ERP Model	◀▶	◀▶
	Default Spread Model	◀▶	◀▶
	U.S. Equity Market Uncertainty Index	▼	▼
Economic Indicators	Historical & Projected Real GDP Growth	▲	▼
	Unemployment	◀▶	◀▶
	Consumer Sentiment	▲	▼
	Business Confidence	▲	▼
	Sovereign Credit Ratings	◀▶	◀▶
	Economic Policy Uncertainty (EPU) Index	▼	▼

Labor Department's April Jobs Report was a Large Miss

And the Unemployment Rate Rose 0.1% to 6.1%

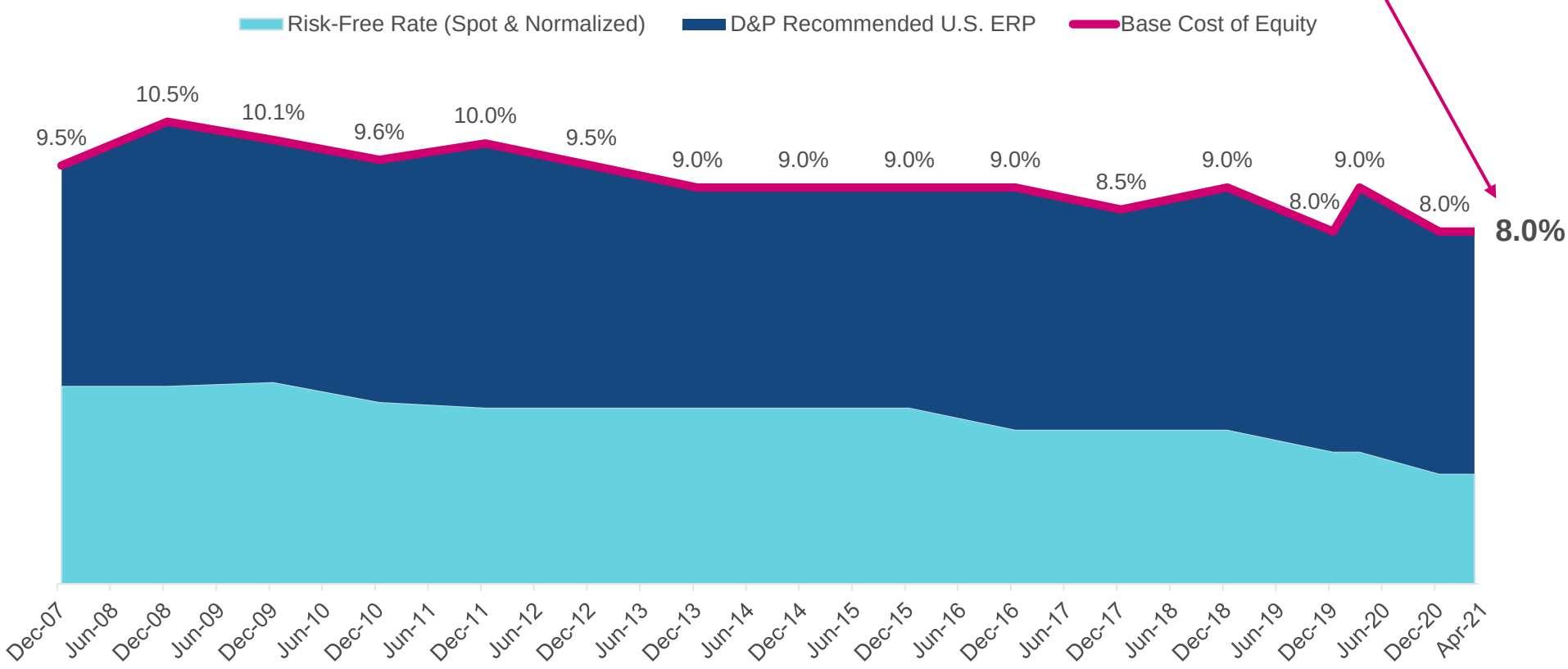


Source: Bureau of Labor Statistics

Current U.S. Normalized Risk-free Rate and ERP Recommendations

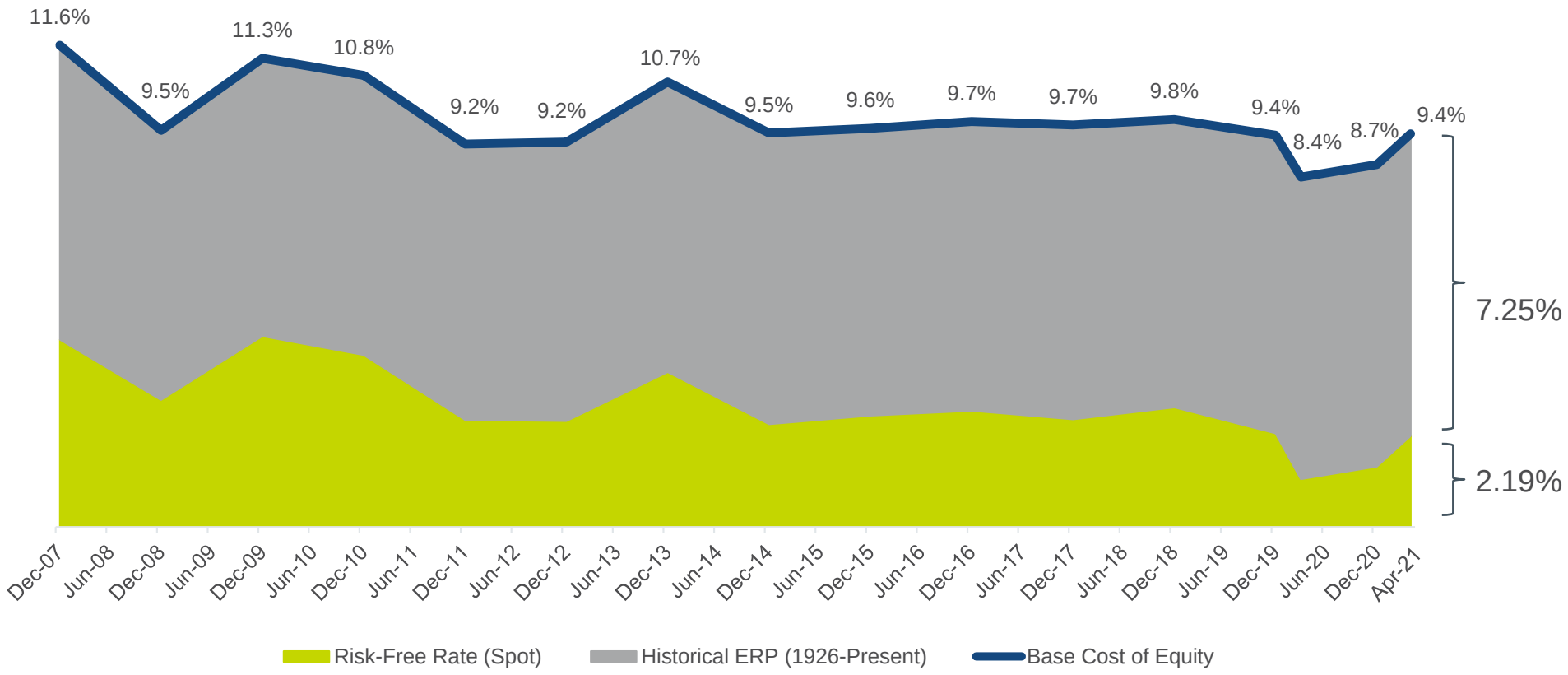
As of April 30, 2021

2.5% + 5.5% = 8.0%



Spot 20-Year U.S. Government Yield in Conjunction with Unadjusted "Historical" Equity Risk Premium *

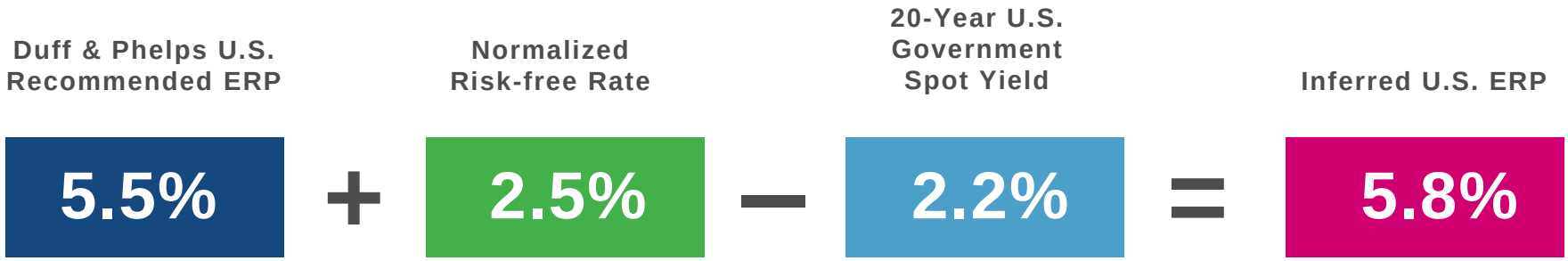
December 31, 2007 – April 30, 2020



* The Historical Equity Risk Premium is defined as the ERP over the years 1926–Present as of the date of the analysis. For example, the Historical Equity Risk Premium for December 2019 spans the years 1926–2019 while the Historical ERP for 2020 spans the years 1926–2020.

Inferred ERP: Using the D&P U.S. Recommended ERP Against A Spot Risk-free Rate

As of April 30, 2021



05 Eurozone Equity Risk Premium

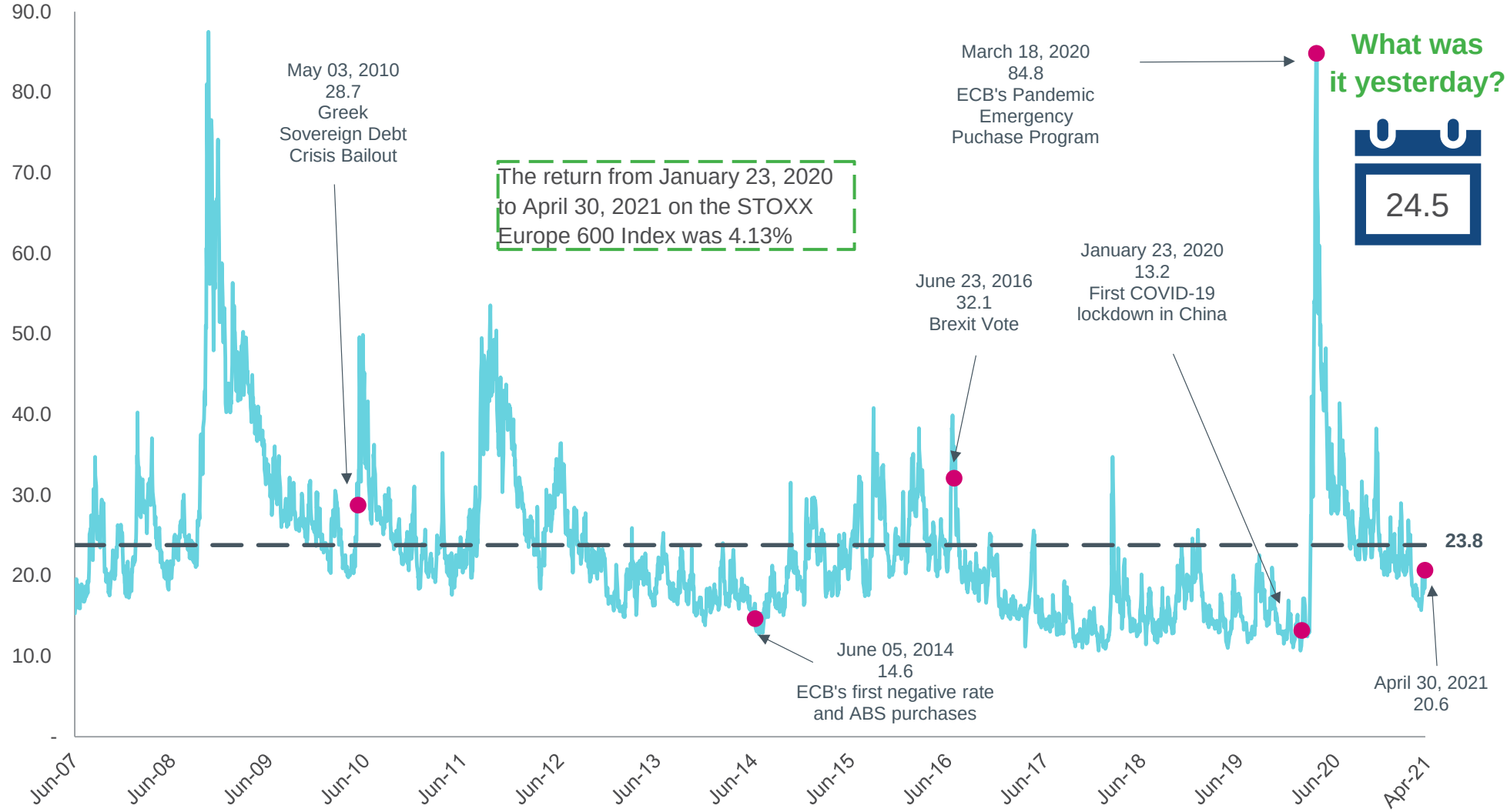
Summary Table of Factors – Eurozone

Changes from December 31, 2019 to April 30, 2021

	Factor	Change	Effect on ERP
Financial Markets	European Equity Markets	◀▶	◀▶
	Implied Equity Market Volatility	▲	▲
	Corporate Credit Spreads	▼	▼
	Dividend Discount Model Implied ERP	▲	▲
	Default Spread Model	◀▶	◀▶
Economic Indicators	Historical & Projected Real GDP Growth	▼	▲
	Unemployment	▲	▲
	Consumer Sentiment	▼	▲
	Business Confidence	▲	▼
	Sovereign Credit Ratings	◀▶	◀▶
	Economic Policy Uncertainty (EPU) Index	◀▶	◀▶

EURO STOXX 50 Volatility Index

June 1, 2007 – April 30, 2021



Source: S&P Capital IQ

Conditional ERP – Quantitative Models

December 2019, March 2020, April 2021

MODELS	December 2019	March 2020	April 2021
Default Spread Model *	4.4%	5.5%	4.4%
Dividend Discount Model (DDM) – Bottom-Up **	4.6%	6.8%	5.6%
Dividend Discount Model (DDM) – Top Down (Median)	5.5%	6.9%	6.0%

* The Default Spread Model is based on the premise that the long-term average ERP (the unconditional ERP) is constant and deviations from that average over an economic cycle can be measured by reference to deviations from the long-term average of the default spread between corporate bonds rated in the Baa category by Moody's versus those in the Aaa rating category. For more details see: Jagannathan, Ravi, and Wang, Zhenyu," The Conditional CAPM and the Cross -Section of Expected Returns," The Journal of Finance, Volume 51, Issue 1, March 1996: 3–53.

** Bottom-Up Dividend Discount Model is based on the methodology outlined in: Pástor, Ľuboš, Meenakshi Sinha, and Bhaskaran Swaminathan. "Estimating the intertemporal risk–return tradeoff using the implied cost of capital." The Journal of Finance 63, no. 6 (2008): 2859-2897.

Dividend Discount Model (DDM) – Top Down

Defining the Models: Variation of Models Inputs

MODELS	Projected EPS – Year 1	Payout Ratio – Year 1	Payout Ratio – Other Years
1	Next 12 Months	Last 12 months	Interpolated to $\left(1 - \frac{LTG}{ROE(12m)}\right)$
2	Next 12 Months	Last 12 months	Constant
3	Next 12 Months	10-year historical average	Constant
4	Next 12 Months	10-year historical average	Interpolated to $\left(1 - \frac{LTG}{ROE(10\text{–year avg.})}\right)$
5	Historical Inflation Adjusted EPS (10 years)	10-year historical average	Constant

ROE = Return on Equity

LTG= Long Term Growth Rate=$(1 + \ Long\ Term\ Real\ GDP\ Growth\ Forecast) \times (1 + Long\ Term\ Inflation\ Forecast)$ - 1

Sources of data:

- Earnings projections based on Refinitiv I/B/E/S Estimates
- Payout Ratios and ROE are calculated based on data obtained from Refinitiv DataStream

Long-term Projected Real GDP Growth

Estimates as of April 2021

SOURCE	Long-Term Average (%)	Last Year in the Forecast (%)
Consensus Forecast	1.5	0.9
Economist Intelligence Unit	NMF	1.8
IHS Markit	1.8	1.2
IMF World Economic Outlook	2.1	1.1
Oxford Economics	1.6	0.7
PwC	1.9	1.4
Median ▶ 1.8%	1.5% – 2.1%	0.7% – 1.8% ◀ 1.1% Median
	Range of Real GDP Growth Estimates	Range of Real GDP Growth Estimates

Long-term Inflation Expectations

Estimates as of April 2021

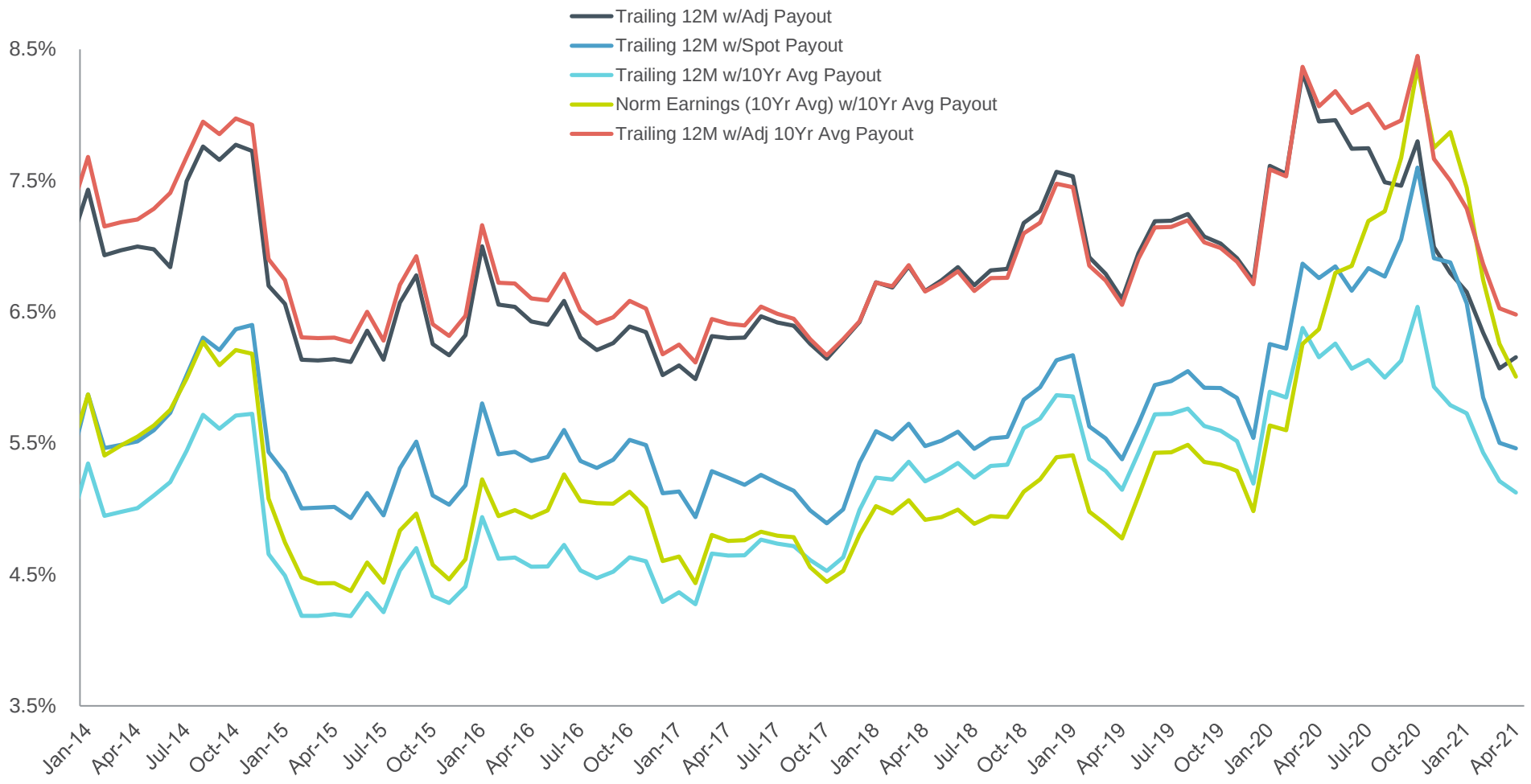
SOURCE	Long-Term Average (%)
Consensus Forecast	1.8
Economist Intelligence Unit	1.7
IHS Markit	1.9
IMF World Economic Outlook	1.7
Oxford Economics	1.9
PwC	1.8
Range of Inflation Estimates	**1.7% – 1.9%**

1.8% ◀ **Median**

Long Term Growth Rate (Median) = $(1 + \ Long\ Term\ Real\ GDP\ Growth\ Forecast) \times (1 + Long\ Term\ Inflation\ Forecast)$ - 1
= (1 + 1.1%) x (1 + 1.8%) – 1 = 2.9%

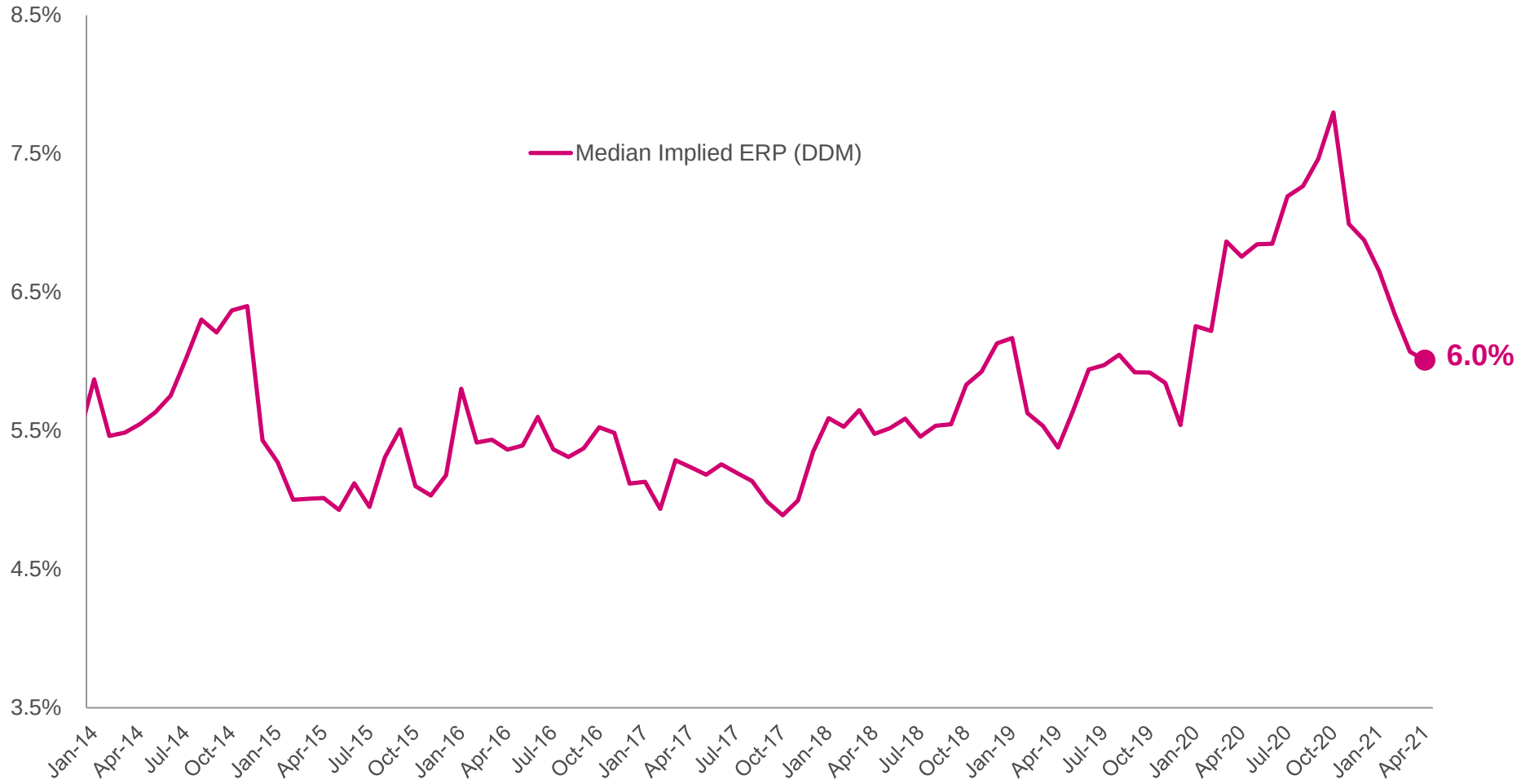
Top Down DDM Implied ERP – All Model Specifications

January 2014 – April 2021



Top Down DDM Implied ERP – Median

January 2014 – April 2021



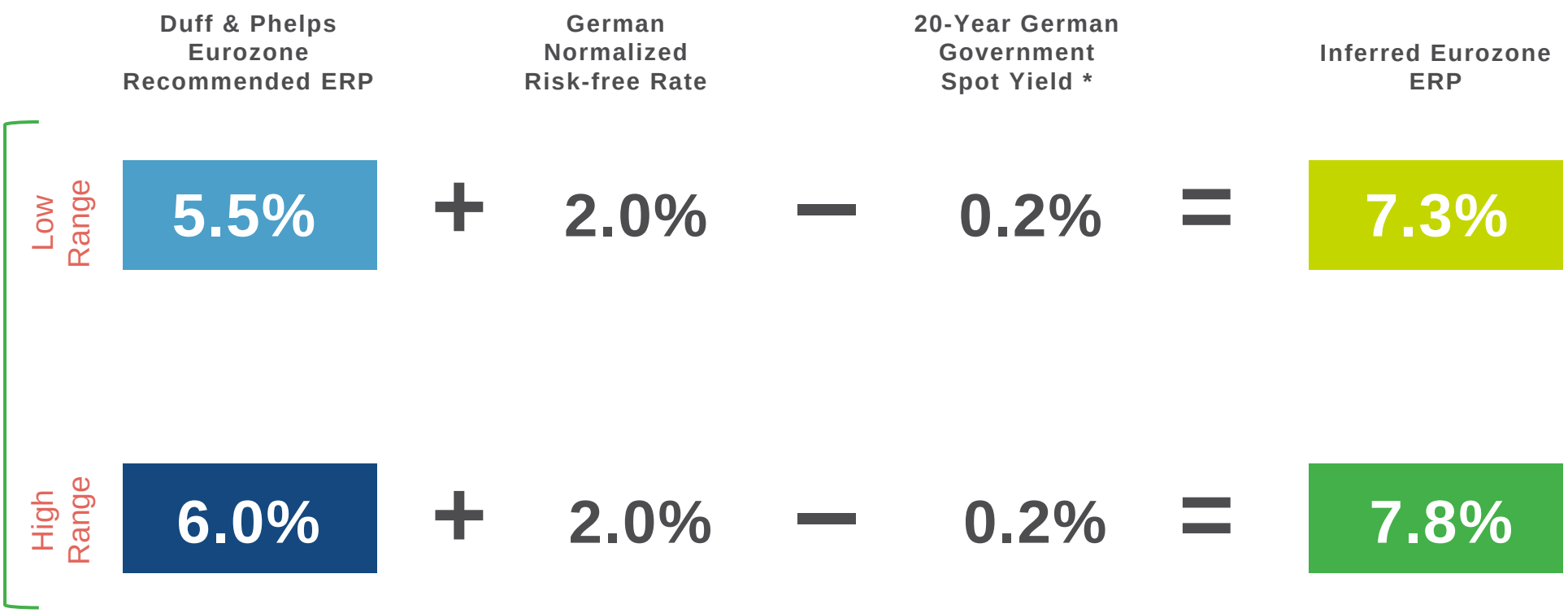
Duff & Phelps' Recommended Eurozone Equity Risk Premium
– German Investor Perspective applied to EUR-Denominated Projections *

	December 2019	March 2020	April 2021
Normalized Risk-Free Rate – Germany	2.0%	2.0%	2.0%
Eurozone Equity Risk Premium Recommendation	4.5% to 5.0%	5.5% to 6.0%	5.5% to 6.0%
Base Cost of Equity	6.5% to 7.0%	7.5% to 8.0%	7.5% to 8.0%

* Some countries may have regulations or guidelines that preclude the use of normalized risk-free rates. The Duff & Phelps' approach does not supersede such local guidance. In Germany, for instance, the IDW (Institute of German Chartered Accountants) created a committee (FAUB) whose function is to issue guidance regarding (company) valuation topics. Under FAUB guidance, when estimating cost of capital using CAPM, a spot risk-free rate (Svensson method) should be used, while the ERP will change over time to reflect changes in the risk aversion.

Inferred ERP: Using the D&P Eurozone Recommended ERP Against A Spot German Risk-free Rate

As of April 30, 2021



* Source: Deutsche Bundesbank

06 Industry Betas

COVID-19 Impact on Industry Betas

OLS Betas by Industry Before and During COVID-19 Recovery

Industry	Pre COVID-19 Beta As of 12/31/19	COVID-19 Beta As of 12/31/20	Difference
Telecommunications	0.99	0.66	**-0.33**
Pharmaceuticals	1.12	0.95	-0.16
Software	1.05	1.00	-0.04
Food, Beverage, and Tobacco	0.72	0.75	0.04
Insurance	0.71	0.81	0.11
Banks	0.86	0.99	0.13
Automobiles	1.45	1.78	0.33
Energy	1.27	1.67	0.40
Retail	0.83	1.56	**0.73**

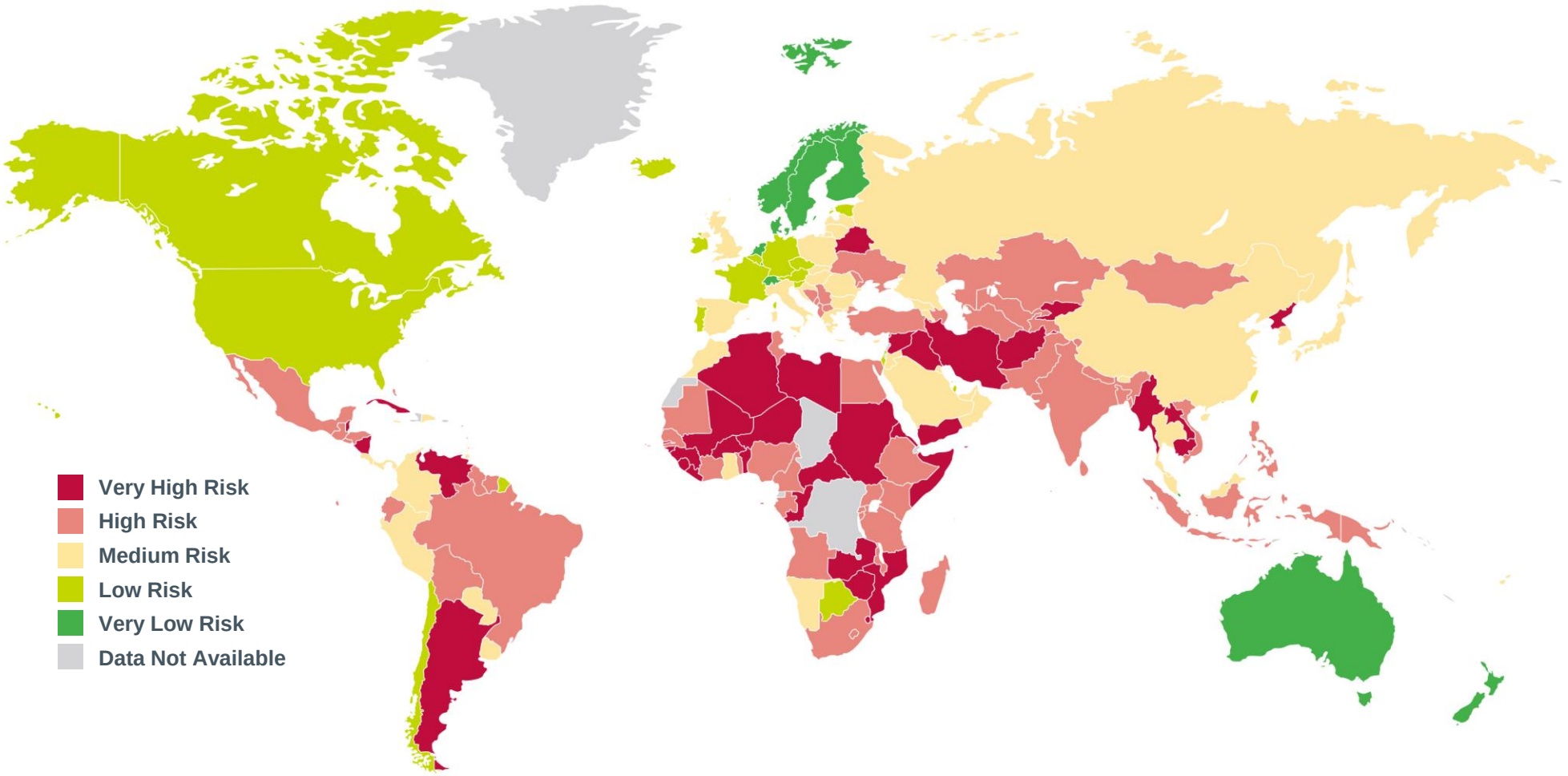
Source: Based on the median OLS (raw) betas by industry from the Cost of Capital Navigator's U.S. Industry Benchmarking Module. The summary above is based on USD-denominated returns of companies in United States as of December 31, 2019 and December 31, 2020.

07 Country Risk

Global Risk – Country Heat Map

International Cost of Capital Module

Data as of December 31, 2020



International Cost of Capital Module | dpcostofcapital.com/international-cost-of-capital

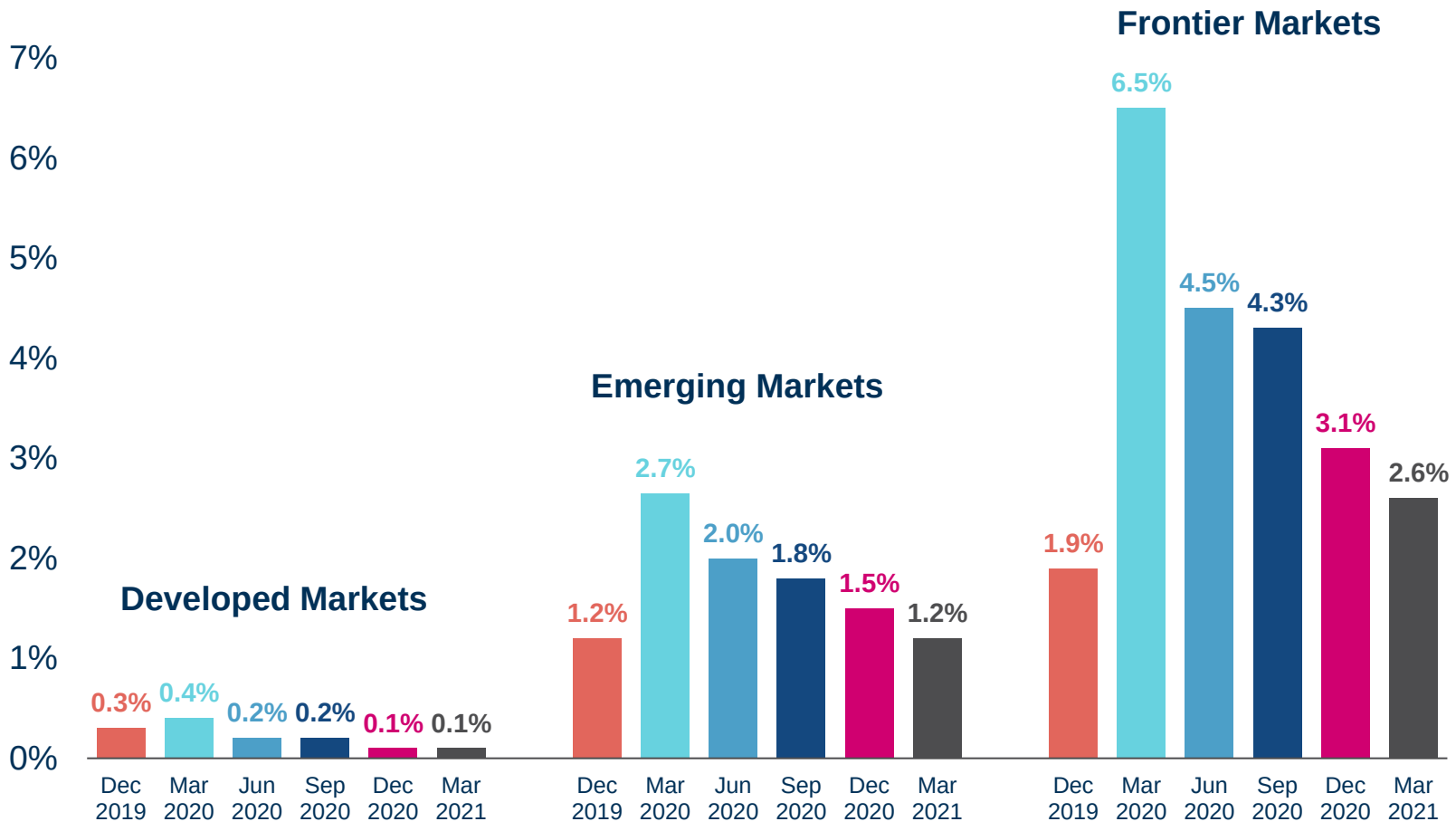
Get insights like these and more in the Cost of Capital Navigator.

Country Risk Premia Pre-and Post COVID-19

Developed, Emerging and Frontier Markets

Country Yield Spread Model from a United States (USD) investor perspective*

* Based on the median country risk premia of countries classified by MSCI as developed, emerging, and frontier markets. MSCI only classifies 71 countries under these three categories.



International Cost of Capital Module | dpcostofcapital.com/international-cost-of-capital

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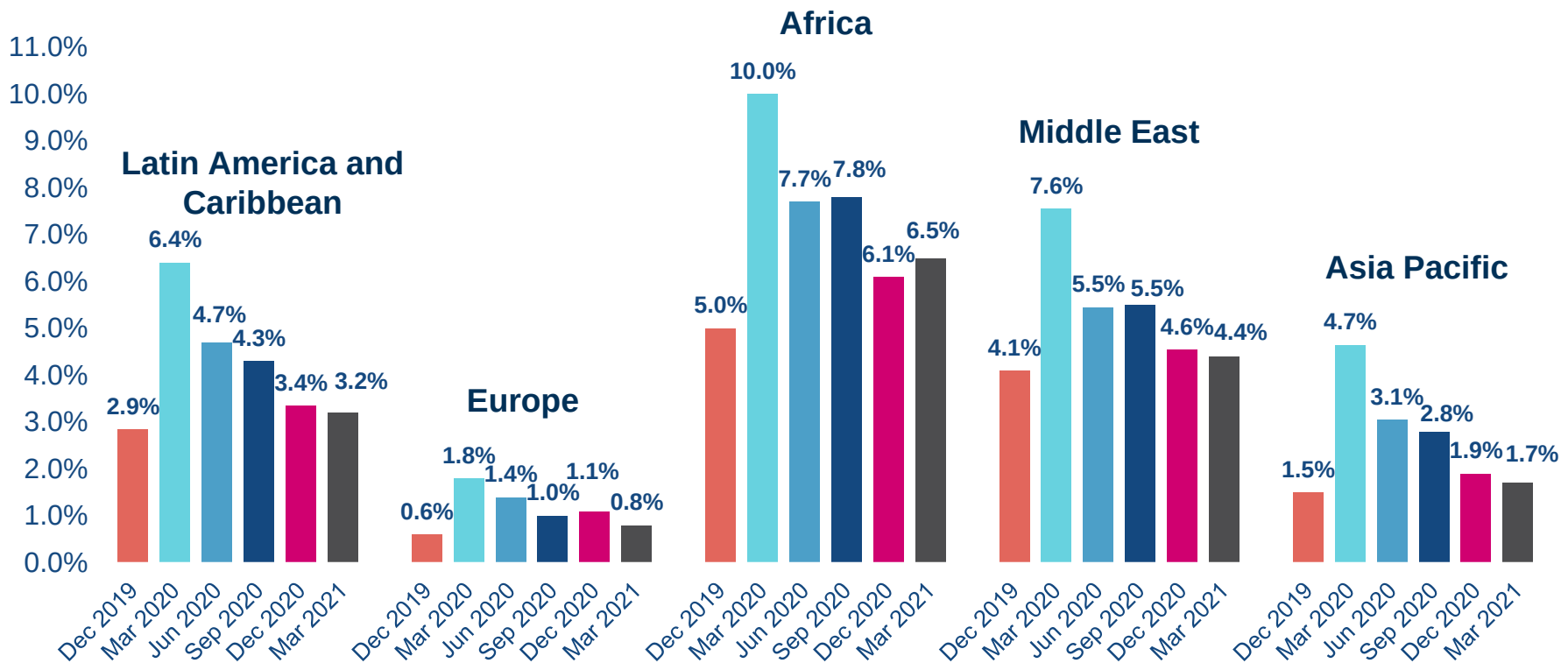
Country Risk Premia Pre-and Post COVID-19

by Geographic Region

Country Yield Spread Model from a United States (USD) investor perspective*

* Based on the median country risk premia within each geographic region as classified by Euromoney. In total, it captures 175+ countries.



International Cost of Capital Module | dpcostofcapital.com/international-cost-of-capital

Get insights like these and more in the Cost of Capital Navigator.

Takeaways of Today's Presentation

COVID-19 profoundly changed key value drivers:

- Projected Growth Rates
- Discount Rates

Need to adjust cash flow projections for information known as of the valuation date:

- Use multiple sources of data, particularly when there is a heighted level of uncertainty
- Scenario Analyses will likely be a better way to capture some of that uncertainty.
- Discount rates cannot solve all the issues

Interest rates of safe-haven countries are likely to stay historically low in the medium term, due to Central Banks actions (despite recent increases due to some inflationary pressures)

Equity Risk Premium is cyclical

- Historical measures are countercyclical and used without further adjustments may lead to the wrong conclusion

Betas for certain industries may be distorted

Country Risk changes over time to reflect current economic and market conditions

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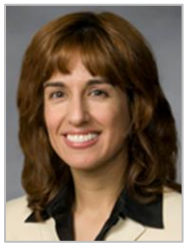
For more information, please contact:



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08 Extra Resources

Coronavirus Relief Packages

Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020

- Signed into law on March 6, 2020
- Size = $8.3 billion

Families First Coronavirus Response Act

- Signed into law on March 18, 2020
- Size = approximately $200 billion

Coronavirus Aid, Relief, and Economic Security (CARES) Act

- Signed into law on March 27, 2020
- Size = $2.2 trillion

Paycheck Protection Program and Health Care Enhancement Act

- Signed into law on April 24, 2020
- Size = $484 billion

Consolidated Appropriations Act, 2021

- Signed into law on December 27, 2020
- Size = approximately $900 billion (the portion related to COVID-19 relief)

American Rescue Plan Act of 2021

- Signed into law on March 11, 2021
- Size = $1.9 trillion

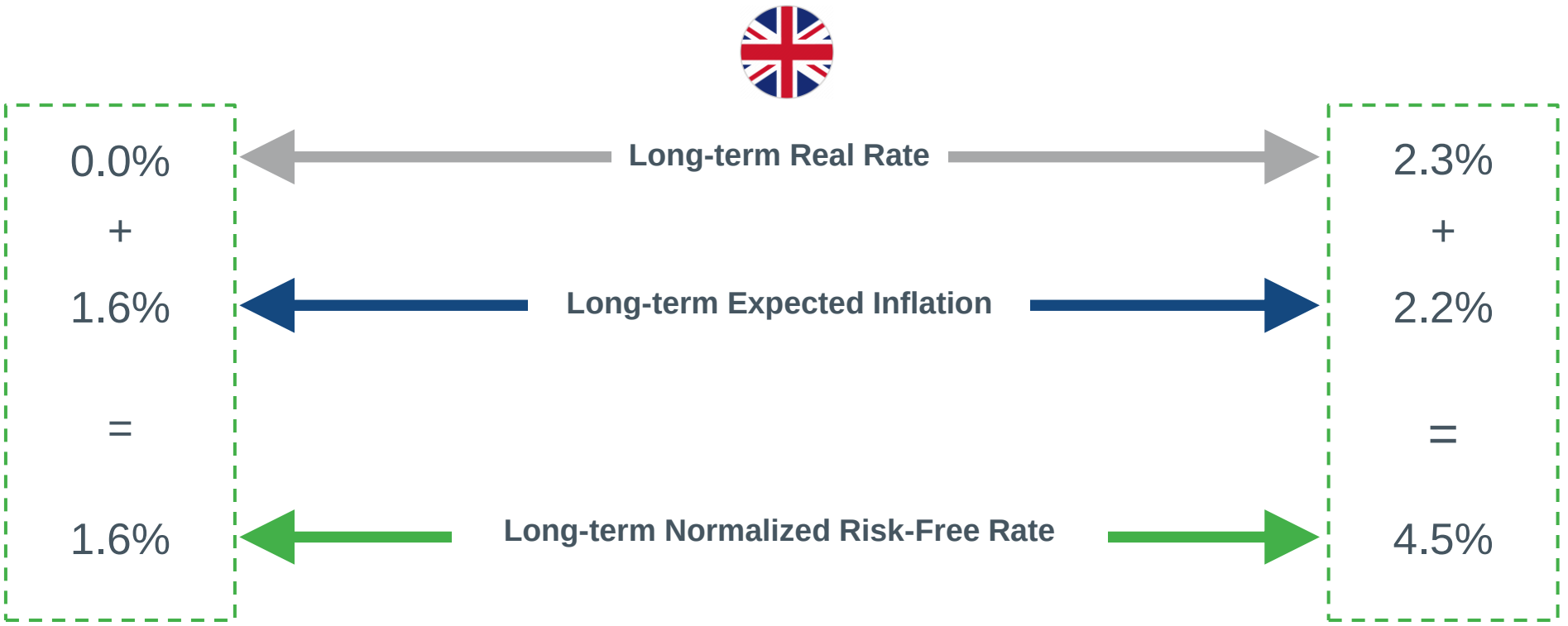
Sources:

https://www.ama-assn.org/delivering-care/public-health/summary-paycheck-protection-program-and-health-care-enhancement-act

https://www.usatoday.com/in-depth/news/2021/03/11/covid-19-stimulus-how-much-do-coronavirus-relief-bills-cost/4602942001/

Risk-Free Rate Normalization – United Kingdom

As of April 30, 2021

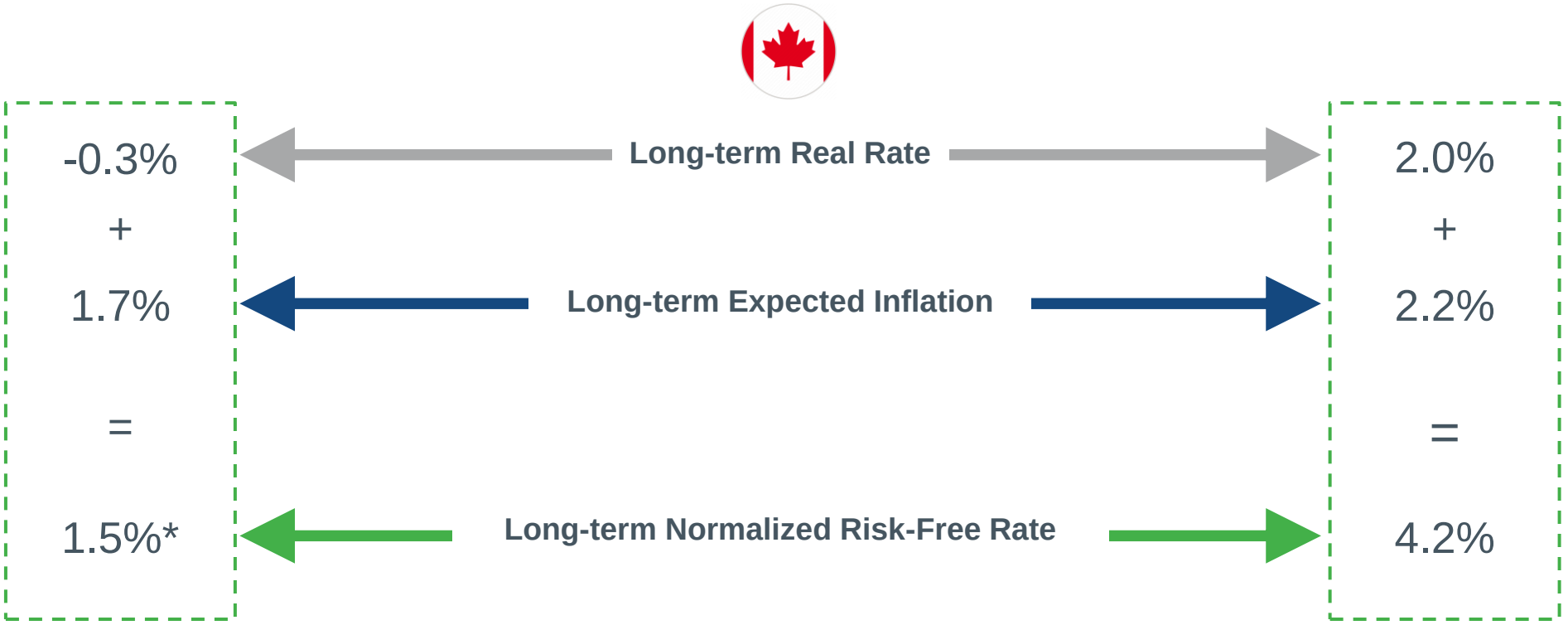


- **Fisher Equation:** Midpoint = 3.1% / Median = 3.1%
- **LT Average:** 10-Year Trailing Average of *20-Year U.K. Government Yield* = 2.2%

Concluded Normalized R_f = 2.5%

Risk-Free Rate Normalization – Canada

As of April 30, 2021



- **Fisher Equation:** Midpoint = 2.8% / Median = 3.0%
- **LT Average:** 10-Year Trailing Average of *Canada Benchmark Bond Yields- Long Term* = 2.2%

Concluded Normalized R_f = 2.5%

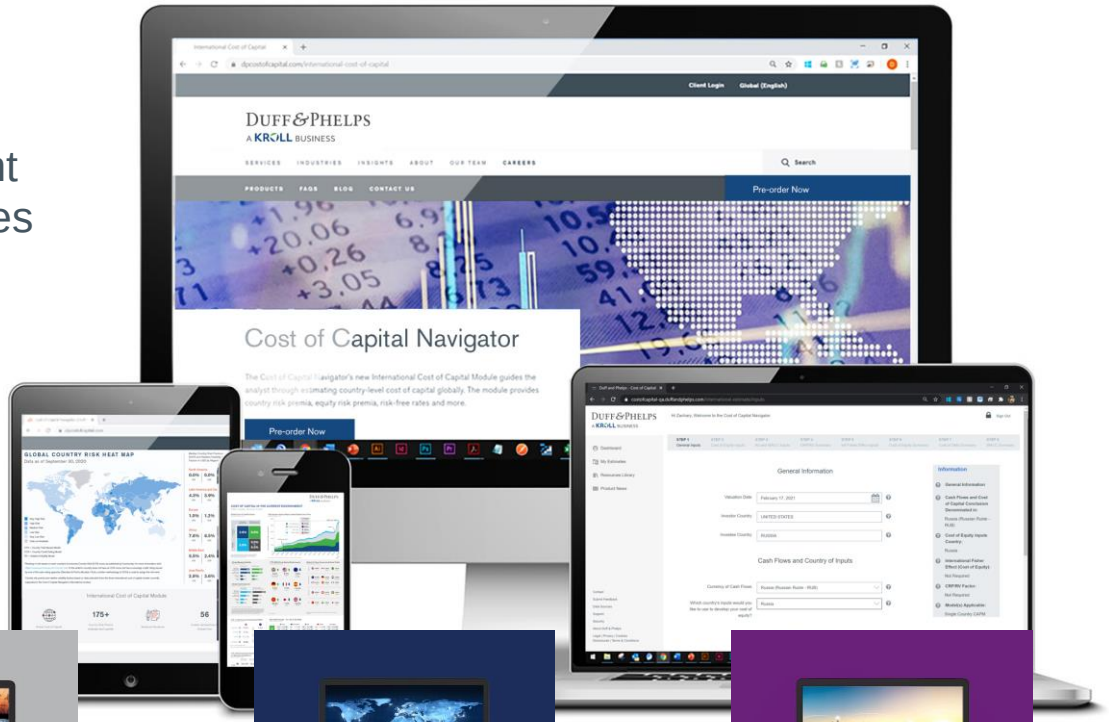
* Differences due to rounding.

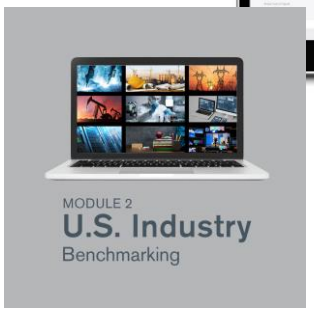
Cost of Capital Navigator

ABOUT THE COST OF CAPITAL NAVIGATOR

The Cost of Capital Navigator
is an online platform that guides you through the process of developing global cost of capital estimates, a key component of any valuation analysis. The four Modules are available for 1-year subscriptions.

- U.S. Cost of Capital
- U.S. Industry Benchmarking
- International Cost of Capital
- International Industry Benchmarking





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AVAILABLE MODULES

U.S. COST OF CAPITAL

Provides size premia, risk premia, equity risk premia, risk-free rates, betas and industry risk premia that can be used to estimate U.S. cost of capital.

Released in 2018

U.S. INDUSTRY BENCHMARKING

Provides U.S. industry-level inputs needed to estimate cost of capital and industry-level benchmarks that can be used to augment and support custom analyses.

Released in 2019

INTERNATIONAL COST OF CAPITAL

Provides country risk premia, relative volatility factors, equity risk premia and international industry betas that can be used to estimate cost of capital globally.

Released in 2020

INTERNATIONAL INDUSTRY BENCHMARKING

Provides global industry-level inputs needed to estimate cost of capital and global industry-level benchmarks that can be used to augment and support custom analyses.

Released in 2021