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Higher-for-Longer Rates in Europe? Impact on Cost of Capital

Presented by:

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Carla S. Nunes, CFA, ABV is a Managing Director in the Office of Professional Practice of Kroll (previously Duff & Phelps). 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 Kroll's annual U.S. and European Goodwill Impairment Studies. In addition, Carla is the Global Leader of Kroll's 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 Kroll's 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 Kroll's predecessor firms, PricewaterhouseCoopers, Standard & Poor's, and Duff & Phelps.
- 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 Kroll's experts addressing valuation issues related to cost of capital. She authored a chapter titled "Cost of Capital for Divisions and Reporting Units" included in the 4th and 5th editions of the textbook *Cost of Capital: Applications and Examples* (2014), by Shannon Pratt and Roger Grabowski. She was also a contributing author to the chapter "Risk-free Rate" in the 5th edition. In addition, she is a co-author of the Duff & Phelps Valuation Handbook series (published annually between 2014 and 2019), now available exclusively online in the Kroll Cost of Capital Navigator, which she also co-created. Carla is a co-author of the 2021, 2022 and 2023 updates of the *Valuation Handbook – International Guide to Cost of Capital: Summary Edition* published by the CFA Institute Research Foundation. She also co-authored a chapter for The Art of Valuation, published by The Appraisal Foundation. Carla is a frequent speaker in webinars, conferences, and top business schools on the topics of cost of capital, the economy, ESG, goodwill impairment, and valuation in general.
- Carla was a co-author of the Kroll's "ESG and Global Investor Returns Study" (2023) which examined the relationship between historical returns of over 13,000 publicly traded companies across a variety of geographies and industries and their ESG ratings to determine the correlation of ESG ratings to company performance.
- Carla has recently completed her term as Practitioner Director in the Board of the Financial Management Association (FMA) International and she is a member of the Education Committee of the International Institute of Business Valuers (iiBV), the Financial Reporting Committee (FRC) at the Institute of Management Accountants (IMA) and the ESG Working Group at the IVSC Standards Review Boards. Carla is also a board member of the Simon Women's Alliance, and she was a Fellow of the (defunct) Kroll Institute.
- Carla received her MBA in finance from the University of Rochester's Simon School, an honors degree in business administration from Lisbon's School of Economics and Management (ISEG Lisbon) and completed coursework (50%) for a Masters of Taxation from Villanova University School of Law. Additionally, she holds a Chartered Financial Analyst (CFA) designation, an Accredited in Business Valuation (ABV) credential, and passed the exam and fulfilled all the requirements for the Certified in Entity and Intangibles Valuations (CEIV) credential (now-discontinued). Carla also holds an ESG Executive Certificate for Financial Professionals Program awarded by The Wharton School, University of Pennsylvania.

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Elena Moisei is a Managing Director in the Luxembourg office of Kroll, and part of the Portfolio Valuation service line within the Alternative Asset Advisory business unit. She has an extensive background of over 12 years of experience in different corporate finance and valuation advisory roles in Romania and Luxembourg.

Elena's focus is serving Alternative Investment Fund Managers (AIFMs) clients, including private equity and private debt fund managers, infrastructure fund managers and real estate debt fund managers, etc. Her work is focused in assisting fund managers to demonstrate top tier valuation governance in accordance with the AIFM Law of 12 of July 2013, Article 17 ("AIFM Law") to all involved stakeholders, including most importantly: limited partners and financial regulators. She performs valuation engagements for financial reporting, mergers and acquisitions, tax planning, financing, and contributions in kind from different jurisdictions to Luxembourg. Elena also assists clients in matters related to valuation policies and governance that meet investor and regulator standards of top tier governance and independence.

Elena is a member of the Business Valuation Board of the International Valuation Standards Council (IVSC), the global standard setter for valuation. She is also a founding committee member and board member of Luxembourg Valuation Professionals Association (LVPA). Additionally, she is currently acting as trainer for Private Equity – Private Debt Valuation as well as Advanced Real Estate Valuation courses at House of Training, Chamber of Commerce Luxembourg. Elena published various articles on valuation topics including valuation governance, inflation impact on valuation, ESG criteria in valuation, etc.

Prior to joining Kroll, her latest role was Senior Manager at EY Luxembourg, Strategy and Transactions, Valuation team where she was leading various valuation engagements for financial reporting, transactions and tax purposes.

She holds an MBA from IAE Nantes, France in association with ESFAM Bulgaria; She received her bachelor's degrees from Academy of Economic Studies in Moldova specialized in International Economic Relations and a second bachelor's degree from IAE Orleans. Elena has the Financial Modeling and Valuation Analyst (FMVA) from Corporate Finance Institute (CFI).

Apart from her native Romanian language, Elena speaks fluently French, English and Russian.

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Projected Economic Growth

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Real GDP Growth – Source of Estimates

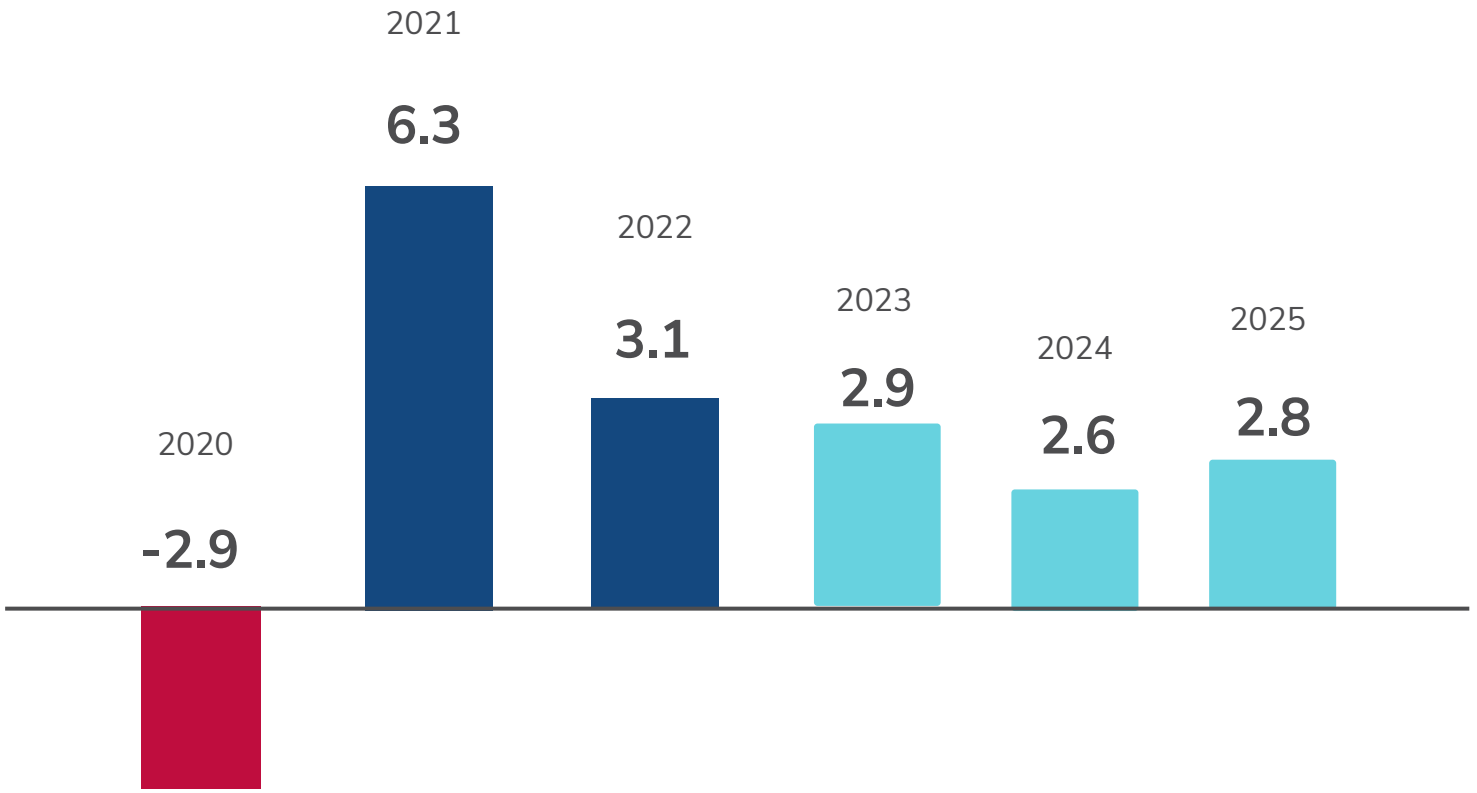
We review multiple sources of Real GDP Growth forecasts:*

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

* Not all sources are available for all countries/regions.

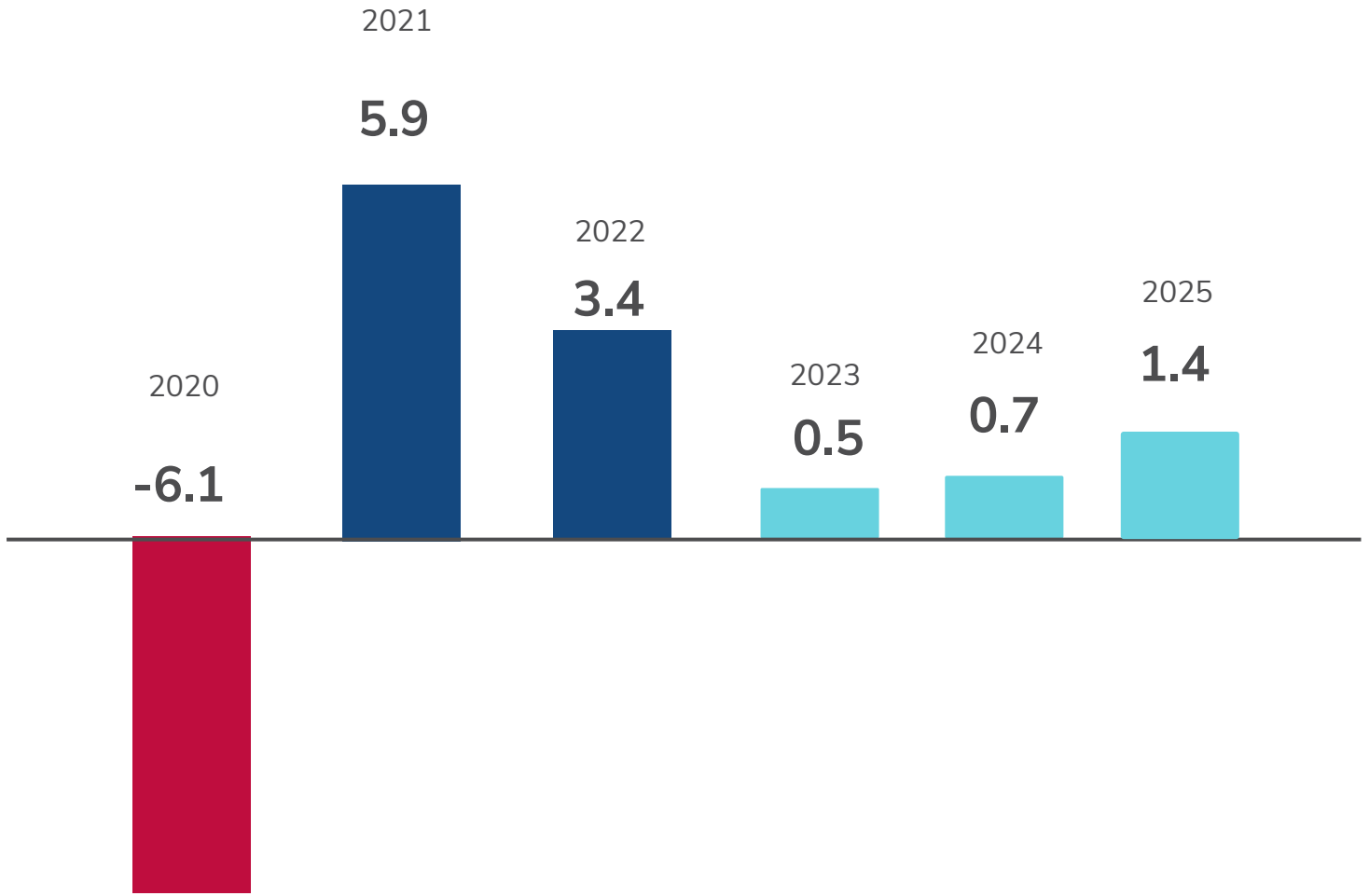
Real GDP Growth (%) Estimates by Region: World

Data as of May 8, 2024



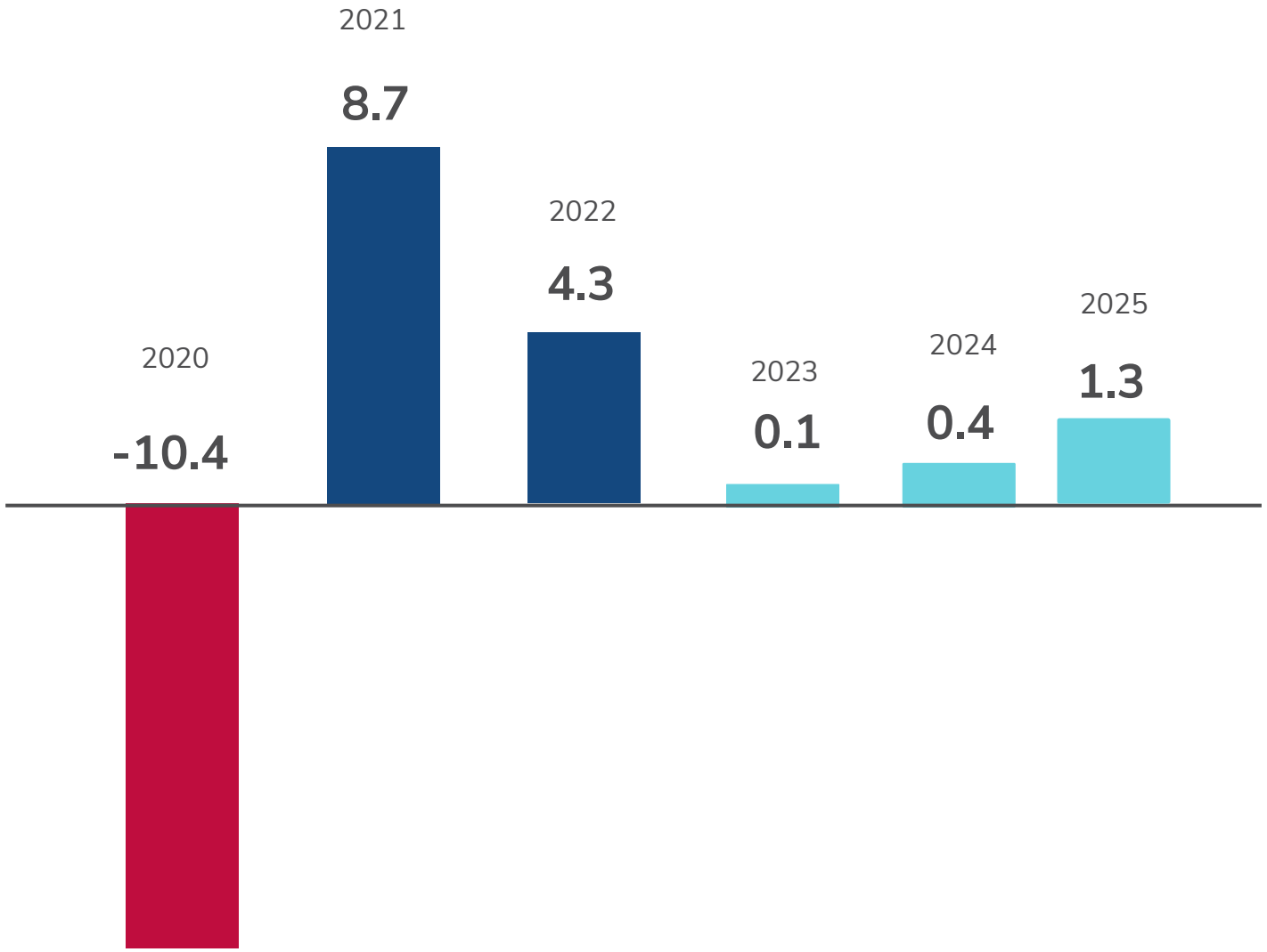
Real GDP Growth (%) Estimates by Region: Eurozone

Data as of May 8, 2024



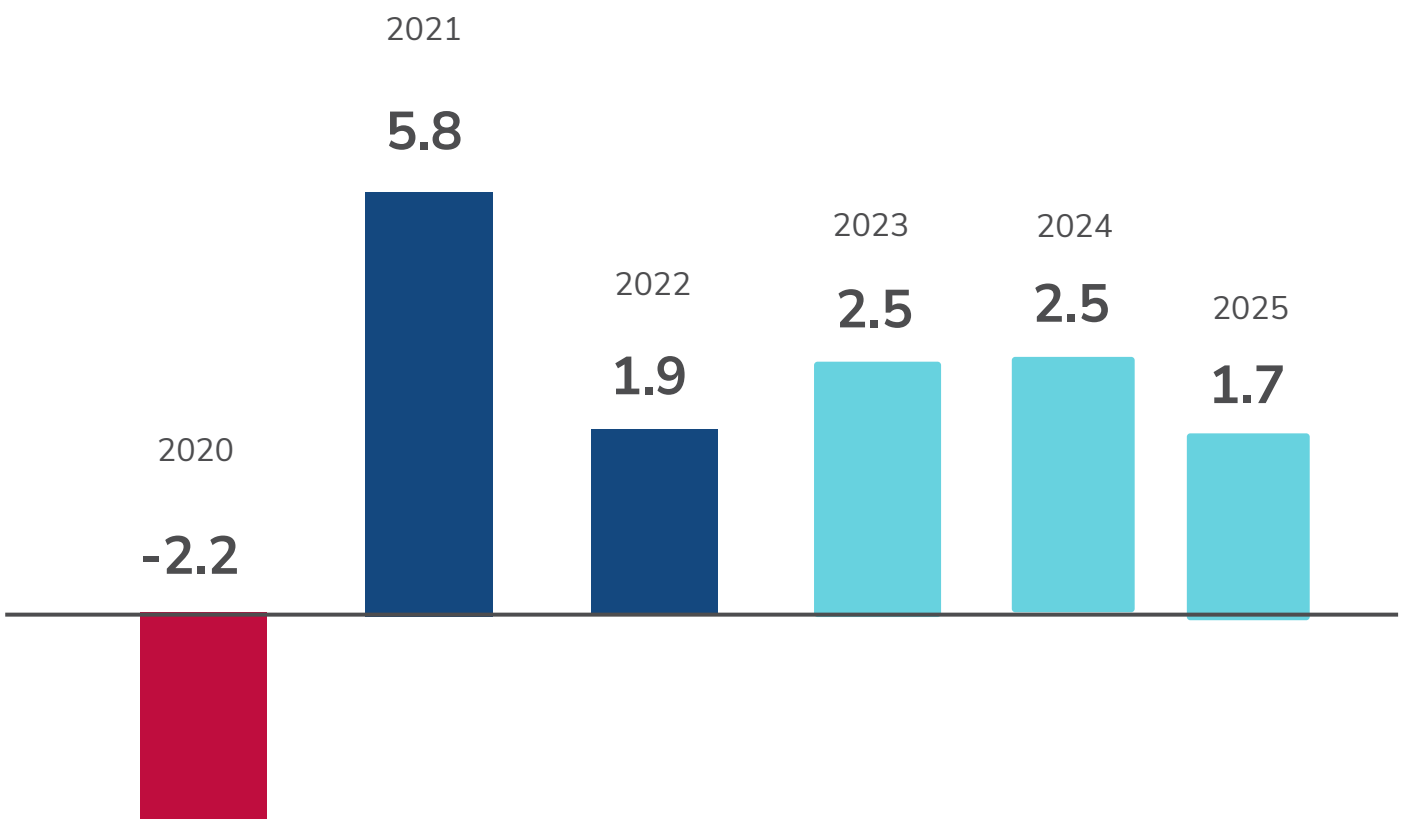
Real GDP Growth (%) Estimates by Region: United Kingdom

Data as of May 8, 2024



Real GDP Growth (%) Estimates by Region: U.S.

Data as of April 30, 2024



Risk-free Rate Analysis

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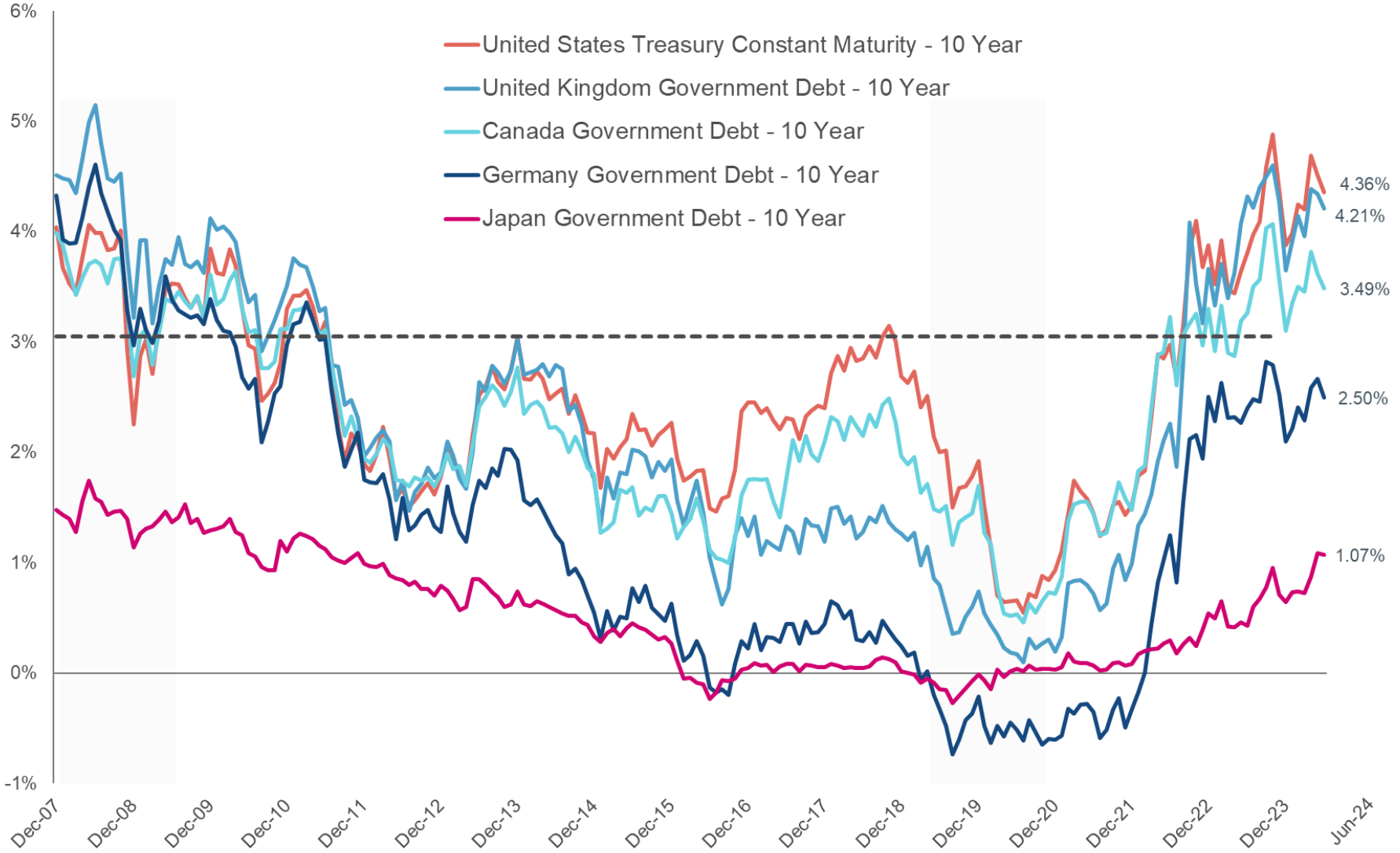
10-Year Yields for U.S., U.K., Canada, Germany, and Japan

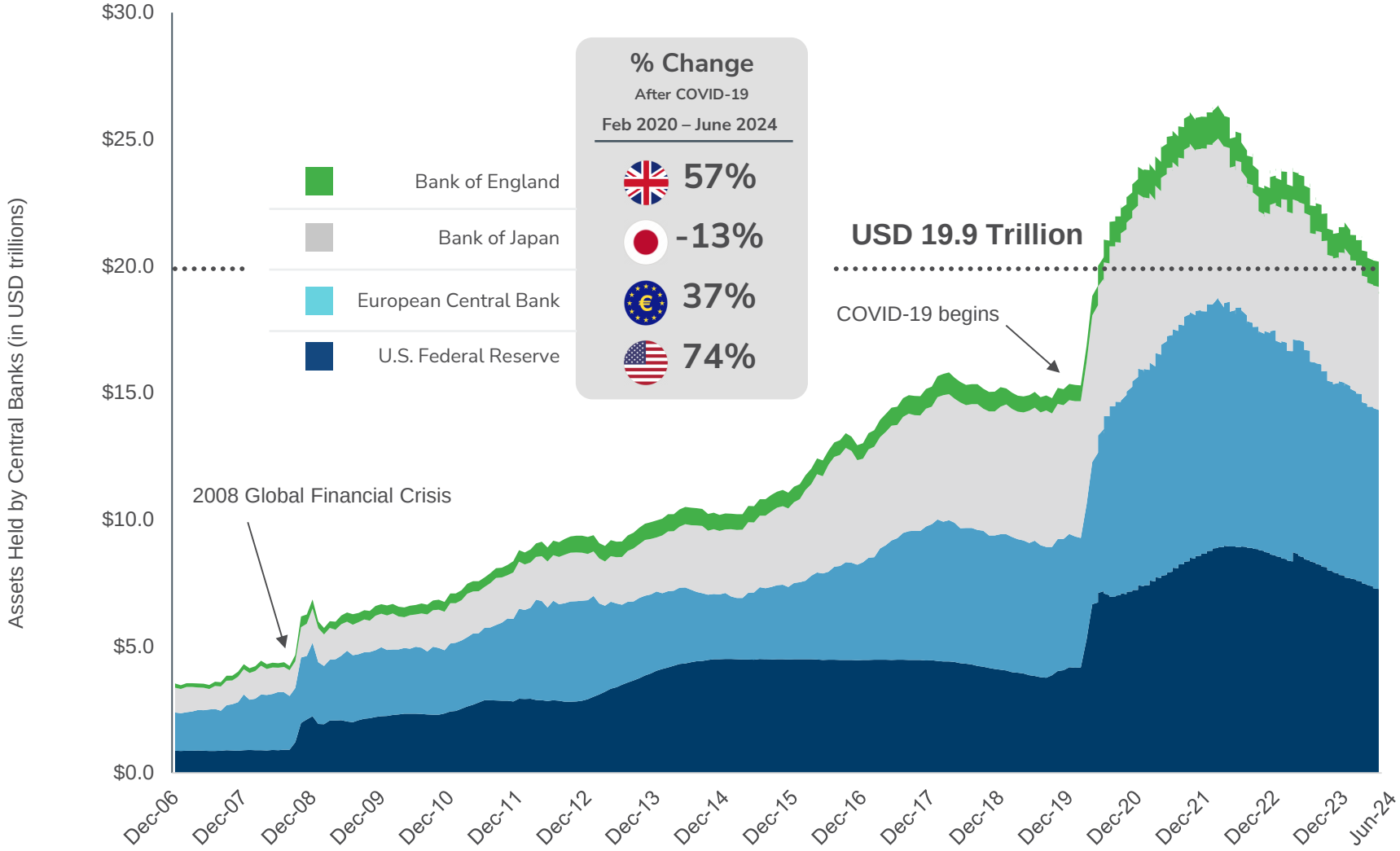
December 31, 2007 – June 30, 2024



Source: S&P Capital IQ

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

February 2020 – June 30, 2024



ECB % Change
Jun 2023 – Jun 2024

-11%

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

12-Month Percentage Change (%) in Consumer Price Inflation (CPI) Index (YOY)

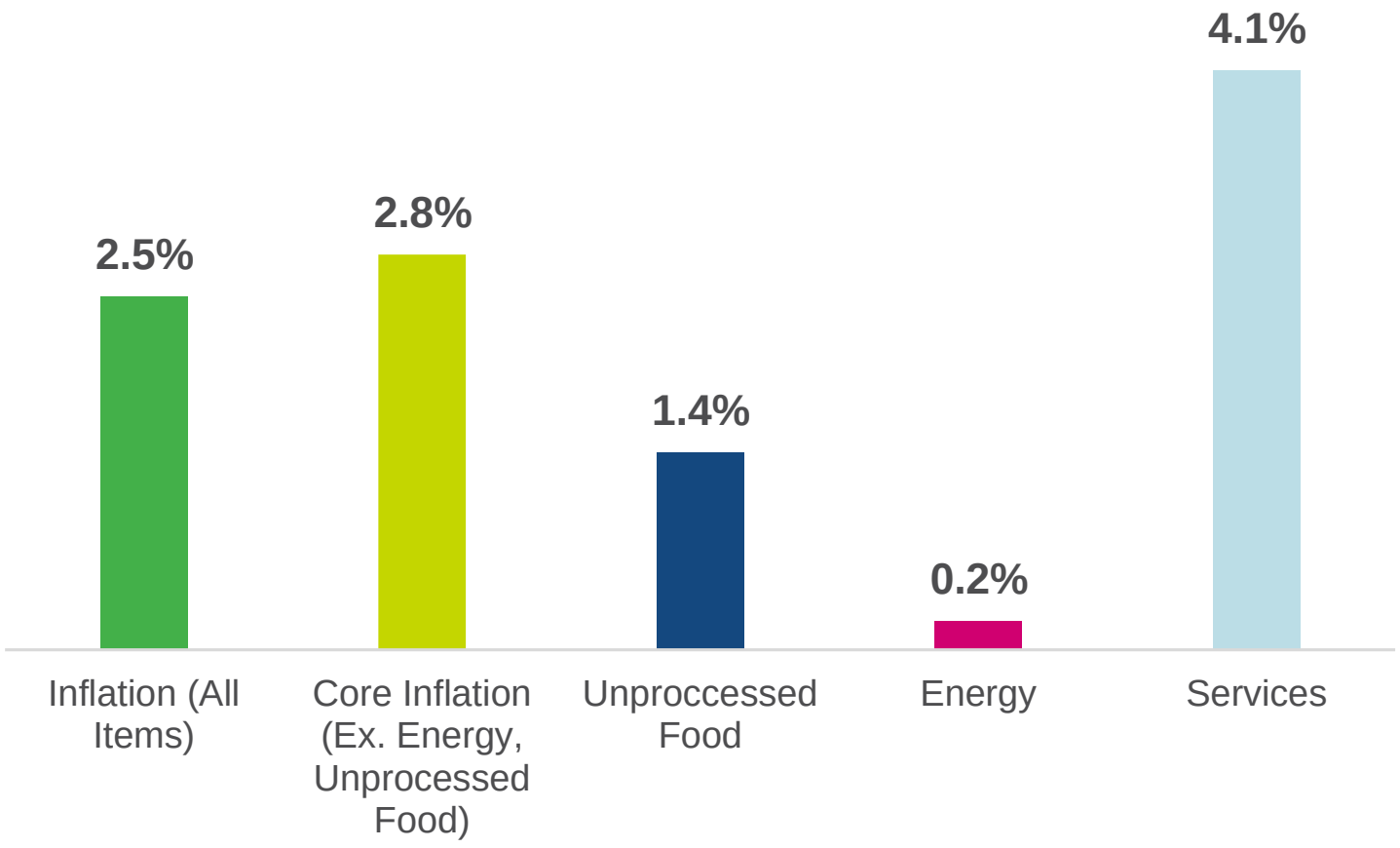
	Cycle High	May 2024	Comments
United States	Jun-22: 9.1%	3.3%	**Decrease** from 3.4% in April 2024, a second consecutive monthly decrease. Still above the 3.1% registered in January 2024.
United Kingdom	Oct-22: 11.1%	2.0%	Fourth consecutive **decrease** and down from 2.3% in April. Surprising decline to the lowest since July 2021.
Luxembourg	Jun-22: 10.3%	3.2%	**Increase** from 3.0% in April 2024. Preliminary June 2024 down substantially to 2.8%.
Germany*	Oct-22 and Nov-22: 8.8%	2.8%	Up from a 2.4% in April and 2.3% in March 2024. However, preliminary June 2024 saw a slight decrease to 2.5%.
Eurozone	Oct-22: 10.6%	2.6%	First increase since December 2023. Preliminary June 2024 decreased slightly to 2.5%.

Source: U.S. Bureau of Labor Statistics,, U.K. Office for National Statistics, Eurostat.

*Non-harmonized value for Germany was 2.4% in May 2024 and 2.2% for the preliminary June 2024.
Source: Germany's Destatis Statistisches Bundesamt

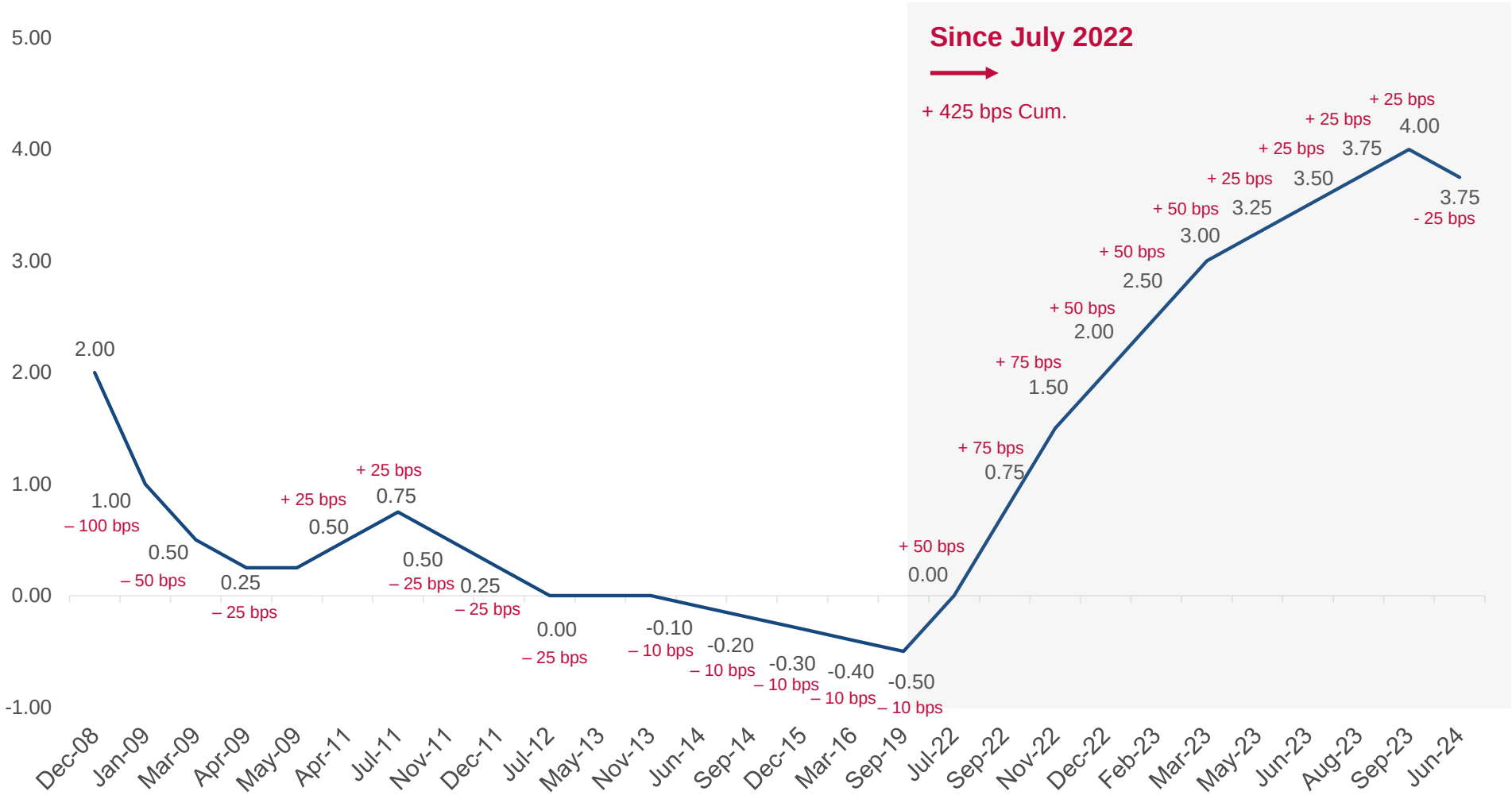
12-Month Percentage Change, Harmonized (HICP) Inflation by Major Categories in the Eurozone (%)

Preliminary as of June 2024



Source: Eurostat, "Flash Estimate – June 2024: Euro area annual inflation down to 2.5%", 2 July 2024.

European Central Bank Policy Rate (Dec 2008 – June 2024)



Date the European Central Bank Announced the Change to the Policy Rate

Source: European Central Bank

The Risk-free Rate (R_f) OR 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)

Kroll recommends normalizing the risk-free rate:

Abnormally Low R_f

Use Normalized Risk-free Rate
(or adjust your ERP accordingly)

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

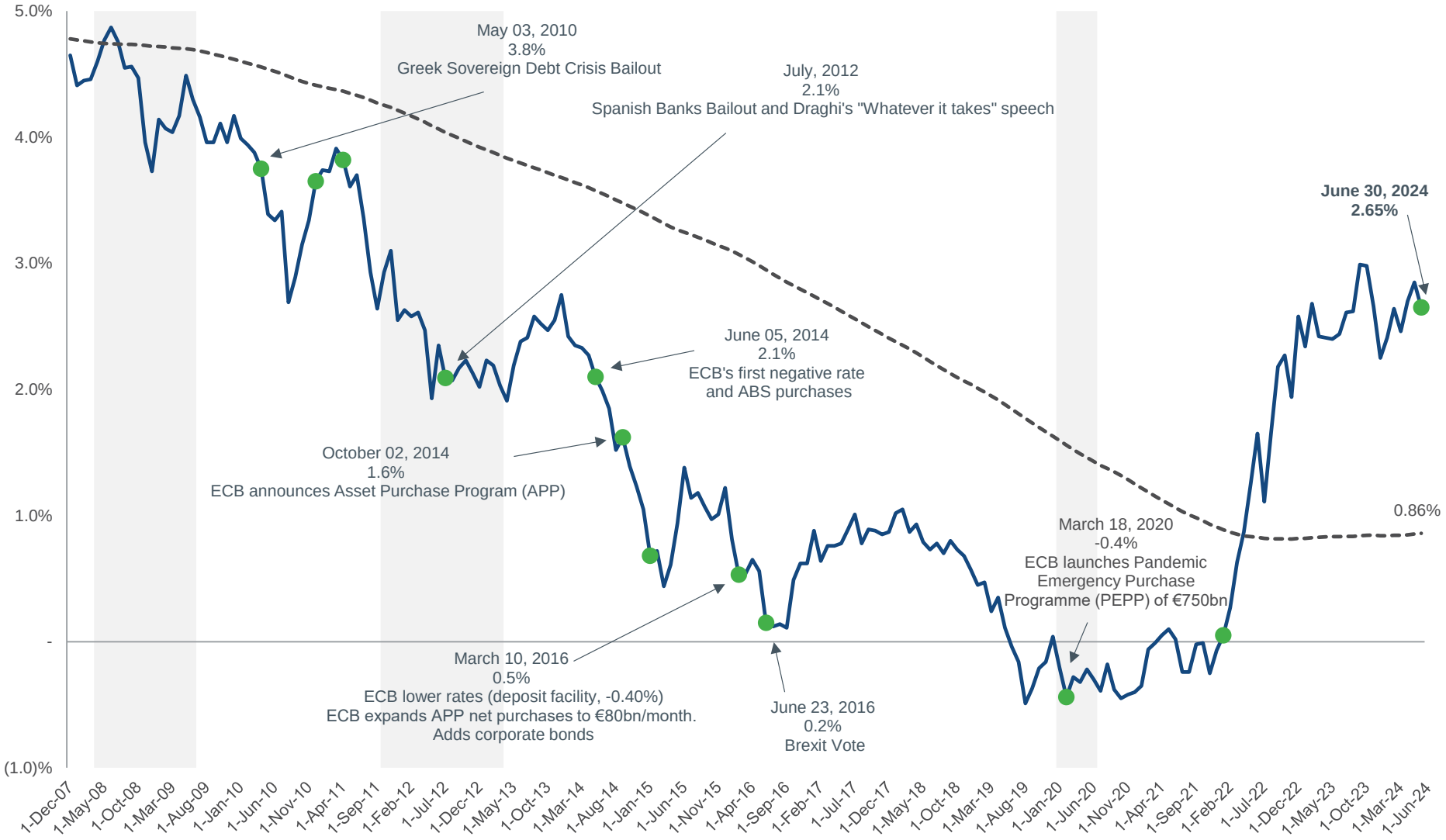
Normalization can be accomplished in several ways, including:

1. Simple averaging

2. Various “buildup” methods

German 15-Year Yield, Including Trailing Average

December 31, 2007 – June 30, 2024



What is it as of 8 July 2024?

2.74%

Source: 15-year German government bond series. Bundesbank.

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%.

Neutral Rate

The Wall Street Journal

"Why the Era of Historically Low Interest Rates Could Be Over", August 20, 2023

"With inflation now falling but activity still firm, estimates of the neutral rate could take on greater importance in coming months. If neutral has gone up, that could call for higher short-term interest rates, or delay interest-rate cuts as inflation falls. It could also keep long-term bond yields, which determine rates on mortgages and corporate debt, higher for longer."

Neutral Rate = Natural Rate of Interest = Equilibrium Rate of Interest

Real Rate Estimates

Germany

Several academic studies have suggested the long-term real risk-free rate to be somewhere in the range of -1.2% to 1.5% for the 2015-2024 period. The studies are based on the study of inflation swap rates, yields on long-term German and European government bonds, OLG, DSGE and other econometric models *

-1.2 % ← **Long-term Real Rate** → **1.5%**

* Based on academic studies issued between 2015 and 2024. In academic literature, this is also sometimes called the natural rate of interest, the neutral rate, or the equilibrium rate of interest.

OLG = Overlapping Generational Model

DGSE = Dynamic Stochastic General Equilibrium Model

Long-term Inflation Expectations

Estimates as of June 2024 (approximately)

SOURCE	Long-Term Average (%)
Consensus Forecasts	2.2
Economist Intelligence Unit	2.1
S&P Global Market Intelligence (formerly IHS Markit)	2.2
International Monetary Fund (IMF)	2.1
Oxford Economics	1.8
PwC	2.1
Range of Inflation Estimates	**1.8% – 2.2%**

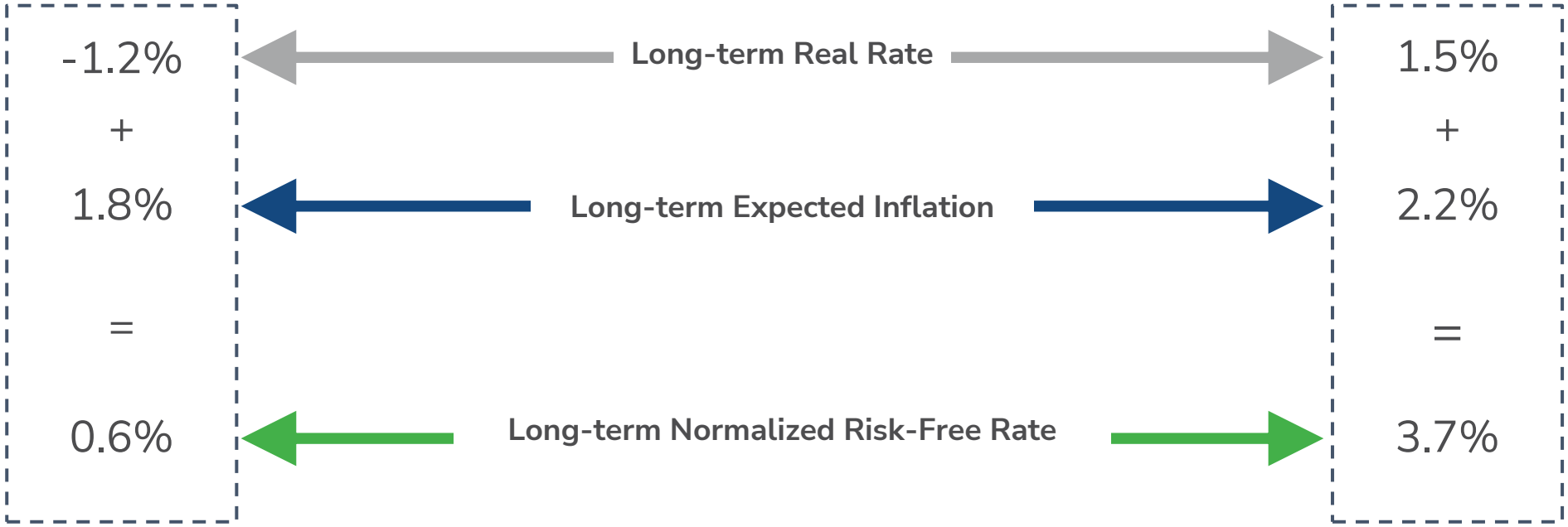
2.1% ◀ Median

Median LT Inflation as of Jan 2023

2.8%

Risk-Free Rate Normalization – Germany

As of June 2024 (approximately)



What is the spot 15-year yield as of 8 July 2024?

2.74%

- **Fisher Equation:** Midpoint = 2.1% / Median = 2.6%
- **LT Average:** 10-Year Trailing Average of *15-Year Bund Yield* = 0.9%

Concluded Normalized R_f = 2.5%

Guidance: Use the higher of the Spot Rate or the Normalized Risk-free Rate.

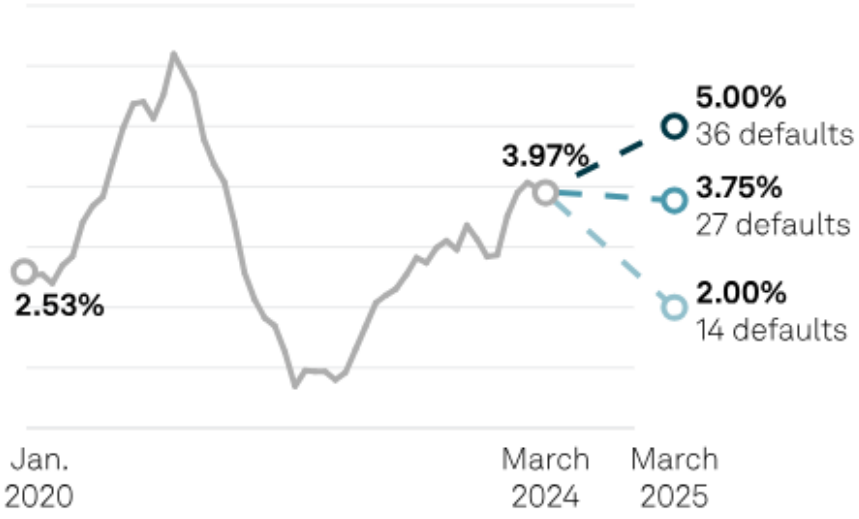
Cost of Debt

S&P Global Ratings Expects Corporate Defaults on European High-Yield Debt to Stay High, But Stabilize

The European speculative-grade corporate default rate should level out at 3.75% by March 2025

3.75%

European speculative-grade corporate defaults
March 2025 baseline forecast



As of March 2024, S&P Global Ratings rates 715 European speculative-grade corporate issuers

Pessimistic scenario: Economic growth slows below baseline forecasts and interest rates remain high. This combination could be exacerbated if market sentiment sours and distressed exchanges continue to rise in acceptance.

Base scenario: Expectations for 2024 economic growth are for a slow pickup from last year. The ECB is expected to cut rates from next month, but the path of rate cuts should be slow. Persistently higher market rates make it more difficult for weaker issuers to service their debt.

Optimistic scenario: The default rate falls if economic resilience expanded beyond our base case, and market pricing was supportive of a stronger resumption of 'CCC'/'C'-rated debt issuance.

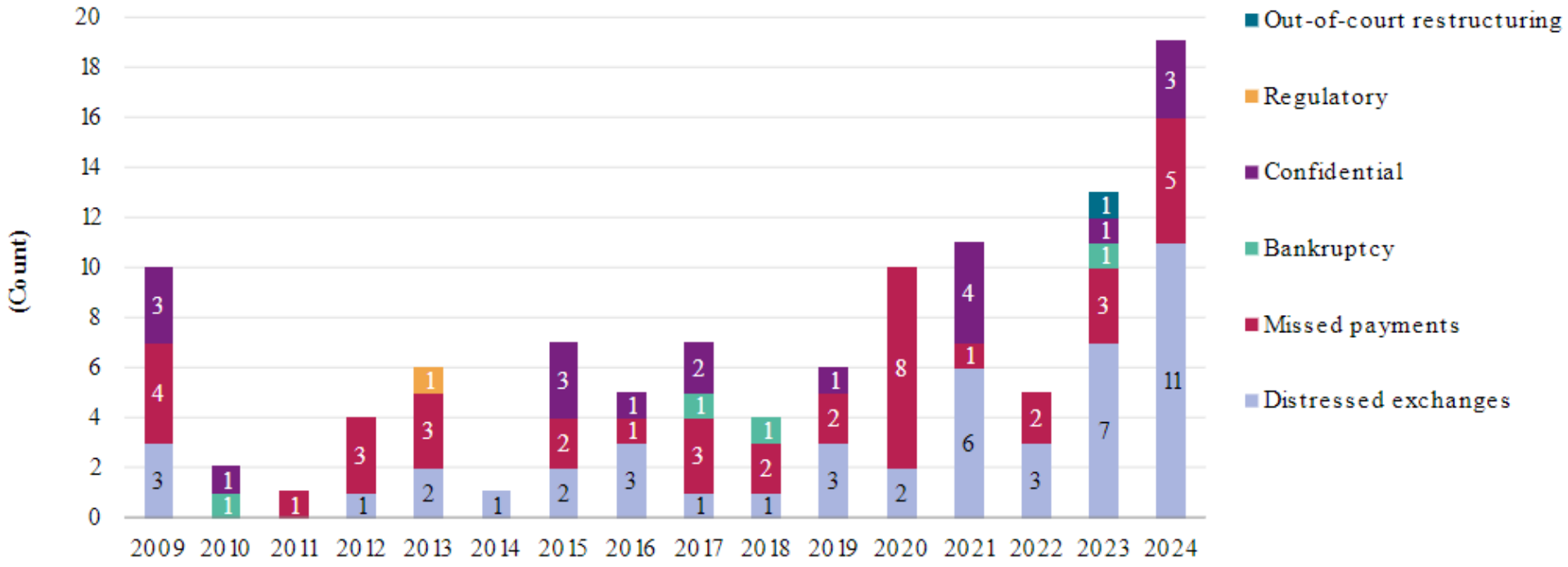
Data as of March 31, 2024.
Source: S&P Global Ratings Credit Research & Insights, S&P Global Market Intelligence's CreditPro®.

Source: S&P Global Ratings, "Default, Transition, and Recovery: The European Speculative-Grade Default Rate Should Level Out At 3.75% By March 2025", May 22, 2024

Distressed Exchanges are Driving European Defaults in 2024

Distressed exchanges are driving defaults in Europe

Year-to-date distressed exchanges in Europe

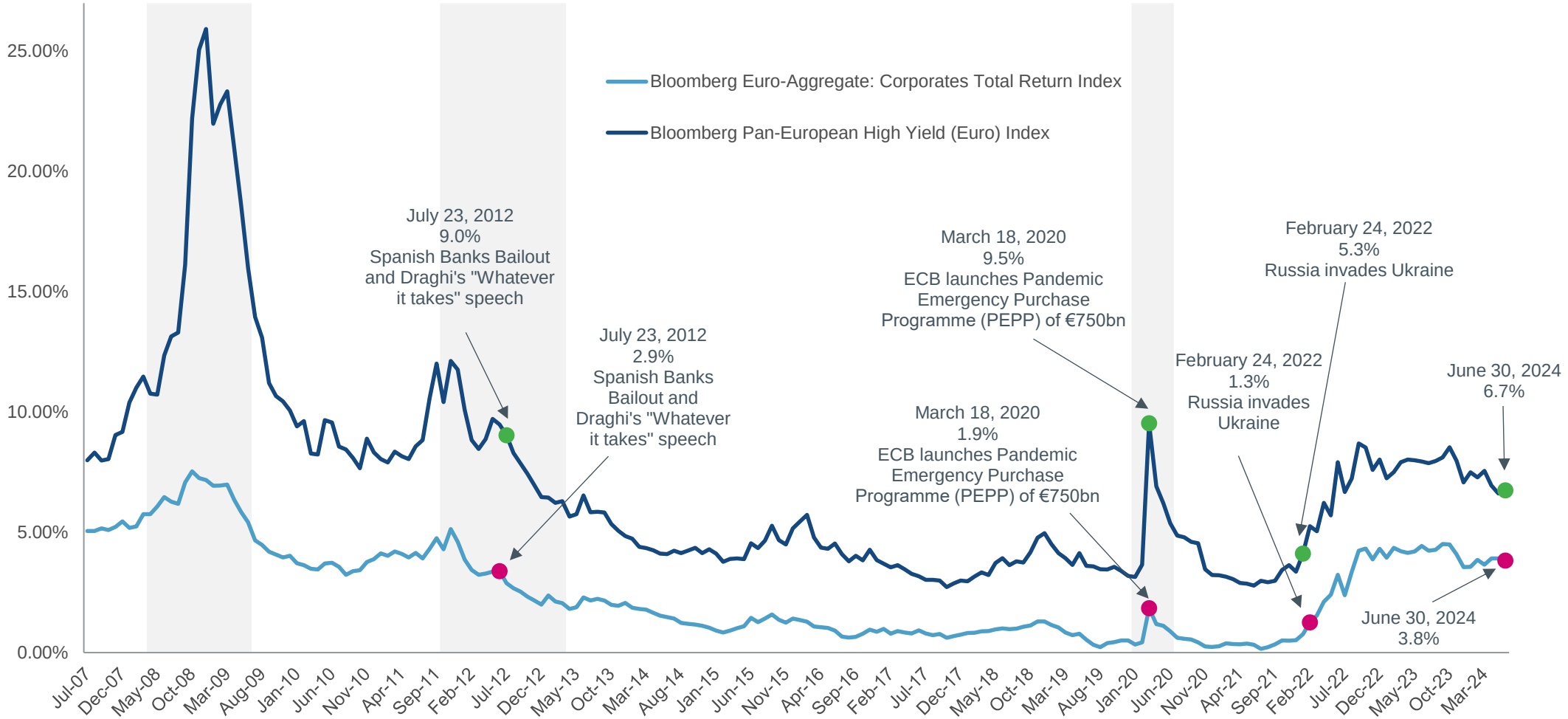


Data as of May 31, 2024. Data has been updated to reflect confidential issuers. Source: S&P Global Ratings Credit Research & Insights.

Source: S&P Global Ratings, "Default, Transition, and Recovery: An Increase In Distressed Exchanges Drives Defaults In Europe", June 12, 2024

Eurozone High-Yield and Investment-Grade Corporate Bond Yields

December 2007 – June 30, 2024



Source: Bloomberg. Based on the effective yields between of the Bloomberg Euro-Aggregate: Corporates Total Return Index and the Bloomberg Pan-European High Yield (Euro) Index.

Methods to Estimate Equity Risk Premium

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Because No Single ERP Estimation Model is Perfect…

Use Multiple Models

There is no single universally accepted method for estimating the equity risk premium (ERP).

- Each ERP model has strengths / weaknesses
- None of the ERP models can stand alone
- Multiple ERP models should be considered

GOAL:
To estimate the "true" *expected* ERP as of the valuation date.

Note:
Equity Risk Premium (ERP) =
= Market Risk Premium (MRP) =
= Equity Market Risk Premium (EMRP)

Estimating the Equity Risk Premium (ERP)

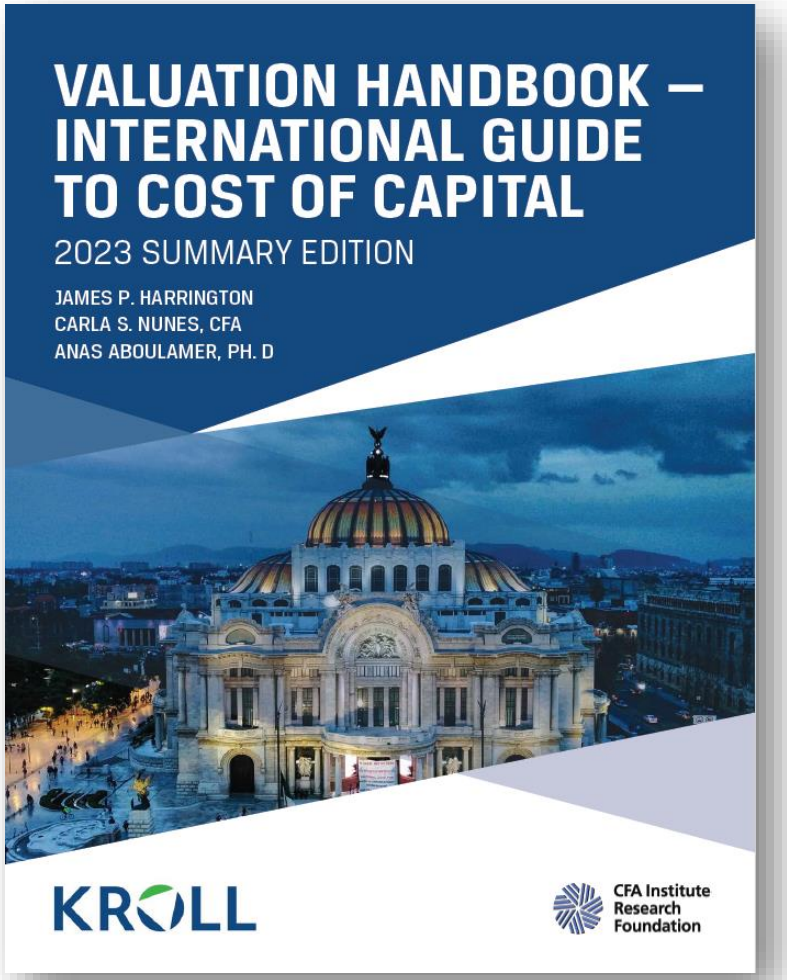
Estimation Methods

There are two broad approaches to ERP estimation:

Historical (ex post) approaches	Forward-looking (ex-ante) approaches
• Realized Risk Premium	• Bottom-Up • Top-Down • Surveys

Valuation Handbook – International Guide to Cost of Capital

2023 Summary Edition



- Discusses various models to estimate international cost of capital, and analyzes their strengths and weaknesses

- Provides an overview of international equity risk premia sources:
  - Includes in-depth analysis on ERP and related concepts for:
    - Canada
    - Australia

- Describes the methodology for three models to adjust for country risk, along with examples on to apply these models

- Discusses the European Size Study commissioned from Prof. Erik Peek

Historical Equity Risk Premiums — International

The *Kroll Cost of Capital Navigator* includes historical equity risk premia (ERPs) estimates for 16 world economies, through December 2023:

- *Long-horizon* historical ERPs are calculated in terms of each country's "local" currency.
- The time horizon over which each of the covered country's ERPs is calculated is dependent on data availability, but for most countries analyzed herein the time horizon is 1970–2023.

Germany Long-Horizon Equity Risk Premia

in Local Currency (Euro – EUR)

in Percent

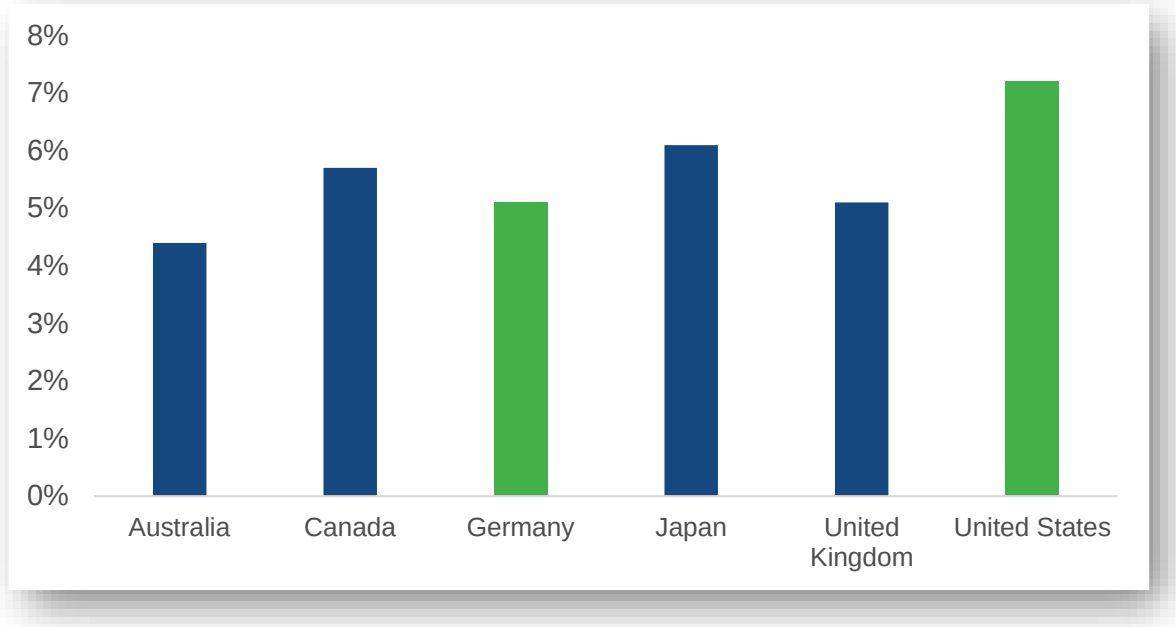
	Start Date **A**				**B**		
End Date	**1970** ←	1971	1972	1973	**1974** ←	1975	1976
1970	-31.7						
1971	-14.2	3.4					
1972	-6.7	5.8	8.2				
1973	-12.1	-5.5	-10.0	-28.2			
1974	-10.8	-5.5	-8.5	-16.8	-5.4		
1975	-3.6	2.1	1.7	-0.4	13.5	32.4	
1976	-4.8	-0.3	-1.0	-3.3	5.0	10.2	-12.0
1977	-3.5	0.5	0.1	-1.5	5.1	8.6	-3.3
1978	-2.8	0.8	0.4	-0.9	4.6	7.1	-1.3
1979	-4.1	-1.1	-1.6	-3.0	1.2	2.5	-5.0
1980	-4.3	-1.6	-2.1	-3.4	0.1	1.0	-5.3
1981	-4.5	-2.0	-2.6	-3.8	-0.7	-0.1	-5.5
1982	-3.6	-1.3	-1.7	-2.7	0.2	0.9	-3.6
1983	-0.9	1.5	1.3	0.7	3.6	4.6	1.1
1984	-0.8	1.5	1.3	0.7	3.4	4.2	1.1
1985	4.2	6.5	6.8	6.7	9.6	10.9	8.8
1986	4.0	6.2	6.4	6.3	8.9	10.1	8.1
1987	1.3	3.2	3.2	2.9	5.1	5.9	3.7
1988	2.8	4.7	4.8	4.6	6.8	7.6	5.7
//							
2016	5.1	5.9	6.0	5.9	6.7	7.0	6.4
2017	5.3	6.0	6.1	6.0	6.8	7.1	6.5
2018	4.8	5.5	5.6	5.5	6.3	6.5	5.9
2019	5.2	5.9	6.0	5.9	6.7	6.9	6.4
2020	5.1	5.9	5.9	5.9	6.6	6.9	6.3
2021	5.3	6.0	6.1	6.0	6.8	7.0	6.5
2022	4.9	5.6	5.6	5.6	6.3	6.5	6.0
2023	5.2 ←	5.9	6.0	5.9	6.7 ←	6.9	6.4

Historical Equity Risk Premiums — International

Kroll Cost of Capital Navigator (International Module)

Historical Long Horizon ERPs: Countries Covered, and Time Periods

COUNTRY	LOCAL CURRENCY	CURRENCY CODE	LONG-HORIZON START DATE
Australia	Australian Dollar	AUD	1970
Canada	Canadian Dollar	CAD	1919
Germany	Euro	EUR	1970
Japan	Yen	JPY	1970
United Kingdom	British Pound	GBP	1900
United States	U.S. Dollar	USD	1926



- The time horizon over which each of the covered country's ERPs is calculated is dependent on data availability, but for most countries analyzed herein the time horizon is 1970–2023.

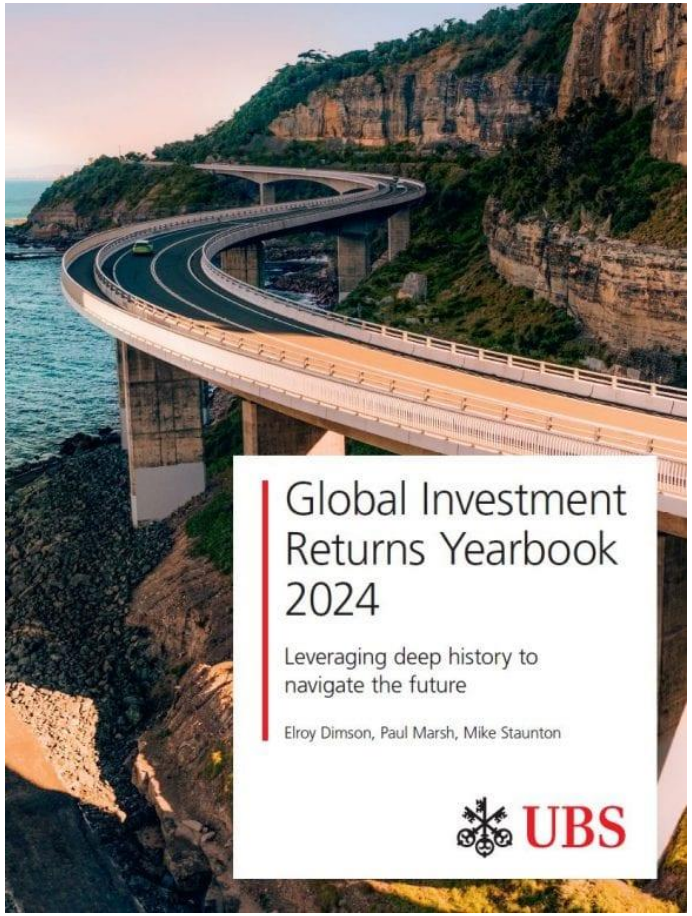
Historical Equity Risk Premiums — International

Dimson, Marsh, and Staunton

- "*Global Evidence on the Equity Risk Premium,*" *The Journal of Applied Corporate Finance (Summer, 2003)*

- *"The Worldwide Equity Premium: A Smaller Puzzle," Handbook of the Equity Risk Premium, Rajnish Mehra, editor (Elsevier, 2008), Chapter* 11, pp 467-514

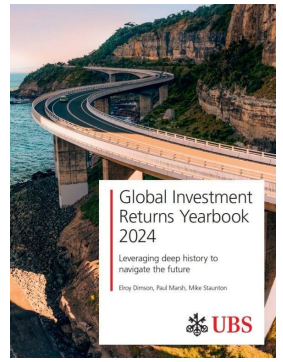
- ***UBS Global Investment Returns Yearbook 2024*** (UBS/London Business School, 2024)

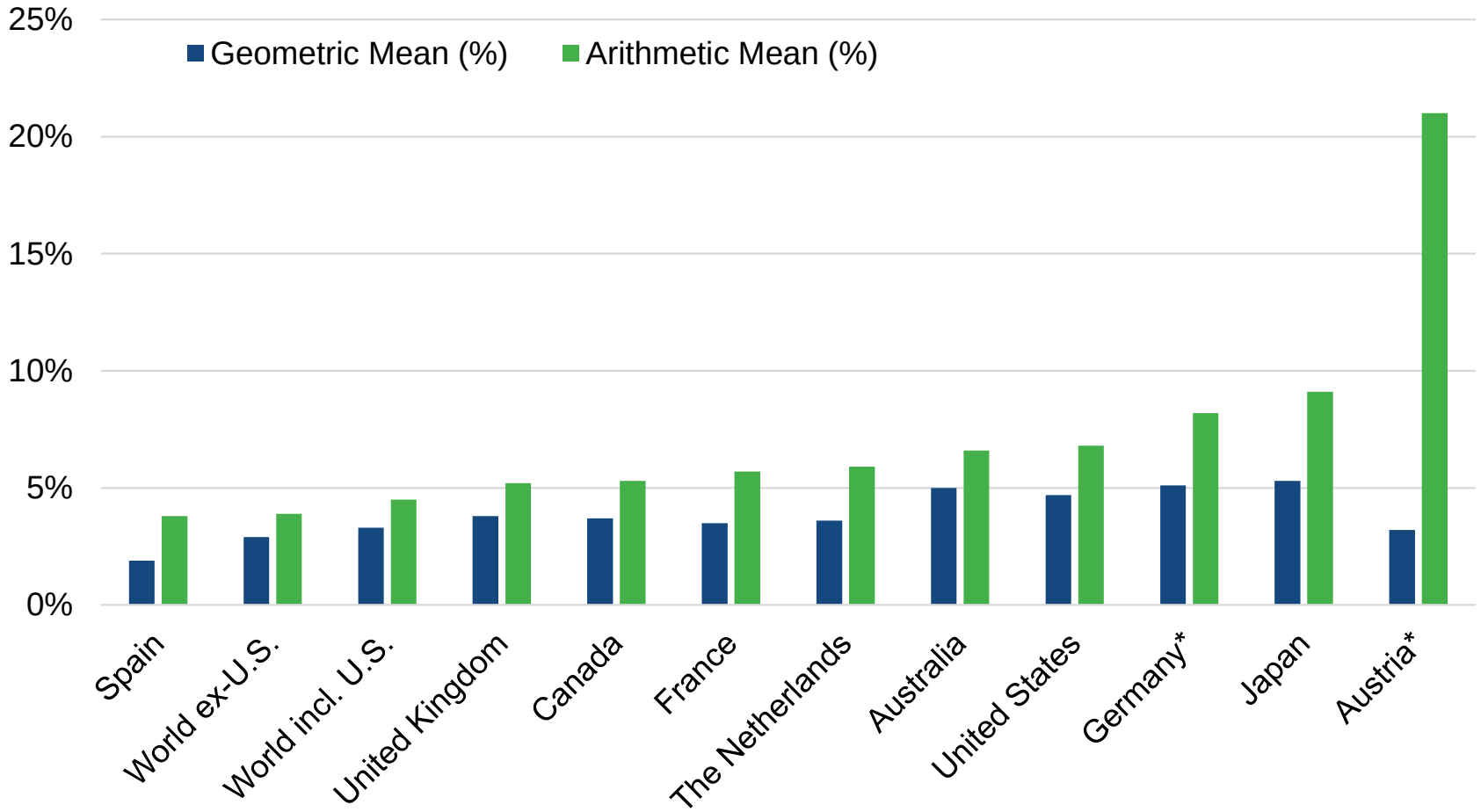


Historical Equity Risk Premiums — International

Unconditional ERP, NOT adjusted for non-recurring items!

1900 - 2023





Source: Dimson, Marsh, and Staunton, *Global Investment Returns Yearbook, UBS, 2024* (UBS/London Business School, 2024), Table 11, "Worldwide equity risk premiums relative to bonds, 1900–2023", page 70.
1. For Austria and Germany, statistics are based on 122 years, excluding 1921–1922 for Austria and 1922–1923 for Germany.

Estimating the equity risk premium (ERP)

Forward-Looking Estimation Methods

A second way of estimating the ERP is to look at forward-looking estimates at the time of the analysis.

Forward-looking (ex-ante) approaches
• Bottom-Up: Analyst Estimates • Top-Down: Implied ERP (e.g., Damodaran) • Surveys (e.g., Fernandez)

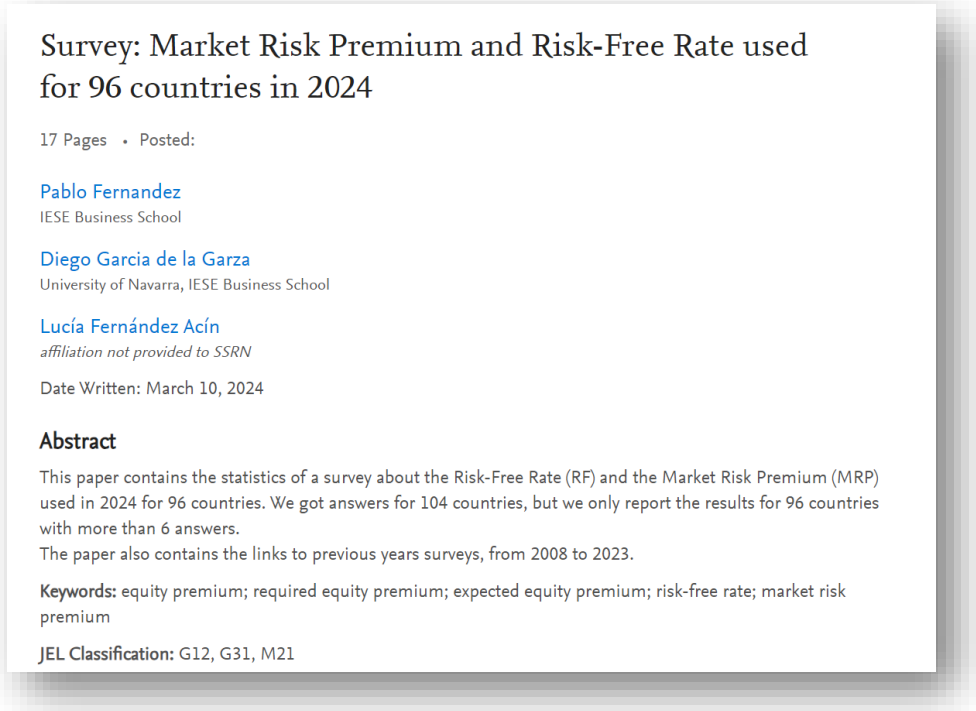
Survey-based Equity Risk Premiums — International

"Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024", March 2024

Pablo Fernandez, Diego Garcia de la Garza, and Lucia Fernandez Acin

Survey conducted by asking:

- Professors
- Analysts
- Managers of companies



Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024

17 Pages • Posted:

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Date Written: March 10, 2024

Abstract

This paper contains the statistics of a survey about the Risk-Free Rate (RF) and the Market Risk Premium (MRP) used in 2024 for 96 countries. We got answers for 104 countries, but we only report the results for 96 countries with more than 6 answers.
The paper also contains the links to previous years surveys, from 2008 to 2023.

Keywords: equity premium; required equity premium; expected equity premium; risk-free rate; market risk premium

JEL Classification: G12, G31, M21

Survey-based Equity Risk Premiums

Prof. Pablo Fernandez

	AVERAGE (%)	MEDIAN (%)	Min (%)	Max (%)
Australia	5.5	5.4	2.0	10.0
Austria	5.9	5.9	3.0	10.2
Brazil	7.6	8.3	3.5	11.1
Canada	5.2	5.5	0.5	7.5
China	6.6	6.0	2.0	13.0
France	5.6	5.6	3.0	8.0
Germany	5.6	5.6	2.0	8.5
India	8.4	8.0	4.0	16.0
Italy	6.2	6.0	3.0	12.0
Japan	5.5	6.0	3.0	7.5
Luxembourg	5.5	5.5	3.0	8.0
United Kingdom	5.7	5.6	4.0	8.0
United States	5.5	5.5	3.0	16.0

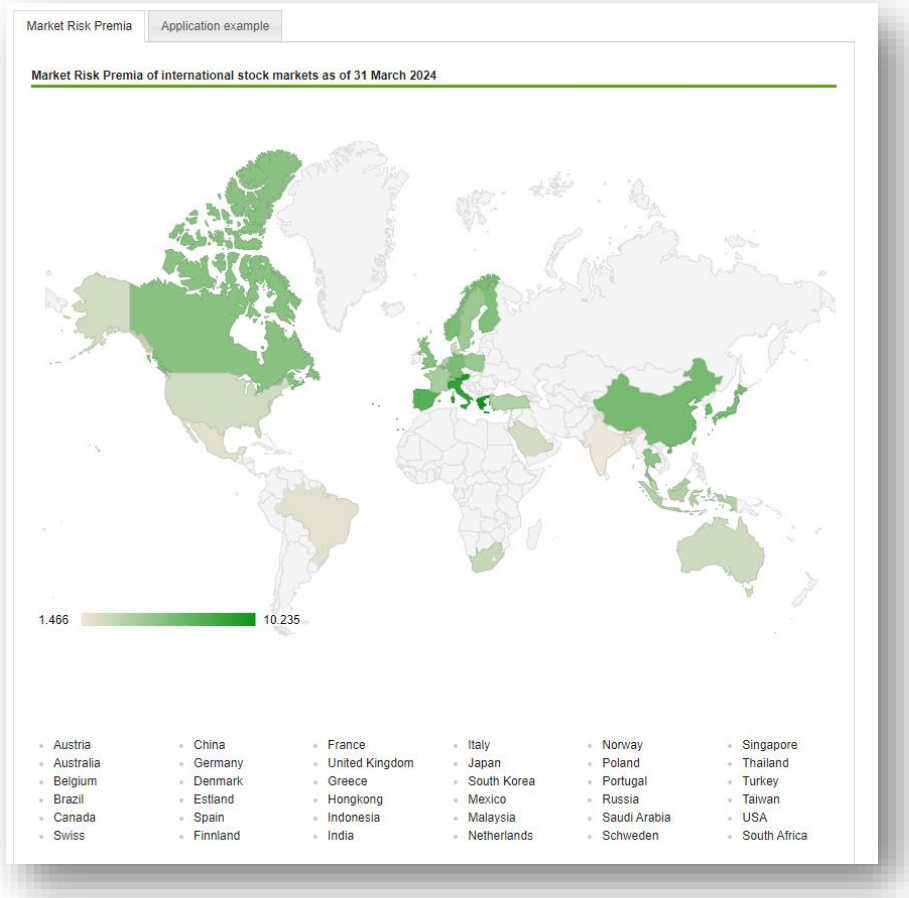
Source: Pablo Fernandez, Diego Garcia de la Garza, and Lucia Fernandez Acin, *"Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024", March 2024*

Implied Equity Risk Premium (ERP) Models

- Generally based on dividend discount models
- Need estimates of:
  - Consensus earnings estimates
  - Dividend (and potential buyback) Yields – Payout ratios
  - Long-term nominal earnings growth rate
- Arrive at an implied cost of equity
  - Deduct risk-free rate to arrive at the implied ERP

Implied Equity Risk Premiums – Example as of March 2023

market-risk-premia.com



Country	Equity Risk Premium (%)
Australia	2.70
Germany	6.04
United Kingdom	5.56
United States	2.61

Source: *market-risk-premia.com*

Kroll Eurozone Equity Risk Premium

KROLL

The Kroll Recommended ERP is a Two-Step Process

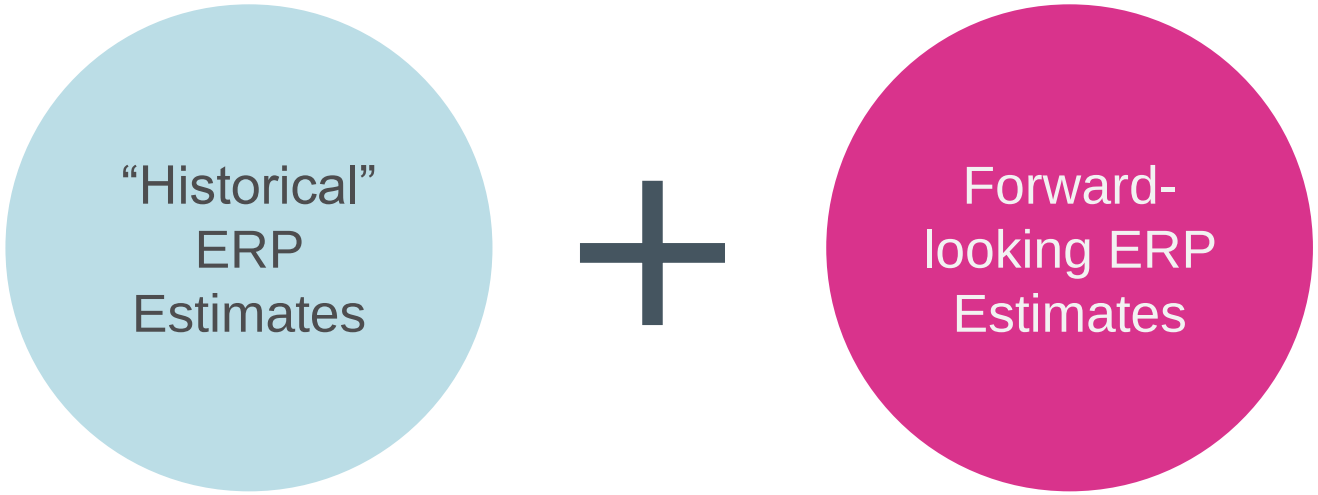
STEP 1: What is a reasonable range of unconditional ERP that can be expected over an entire business cycle?

"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?"

Kroll Considers Multiple Models to Estimate Eurozone ERP



Summary Table of Factors – Eurozone

Changes from December 31, 2023 to **June 30, 2024**

	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	▲	▲

Summary Table of Factors – Eurozone

Changes from December 31, 2022 to **February 29, 2024***

	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	▼	▼

*The Table of Factors presented herein represent data as of February 2024 and used to make cost of capital recommendations at that time. For more information on past and present cost of capital recommendations, visit:
https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-eurozone-equity-risk-premium-corresponding-risk-free-rates

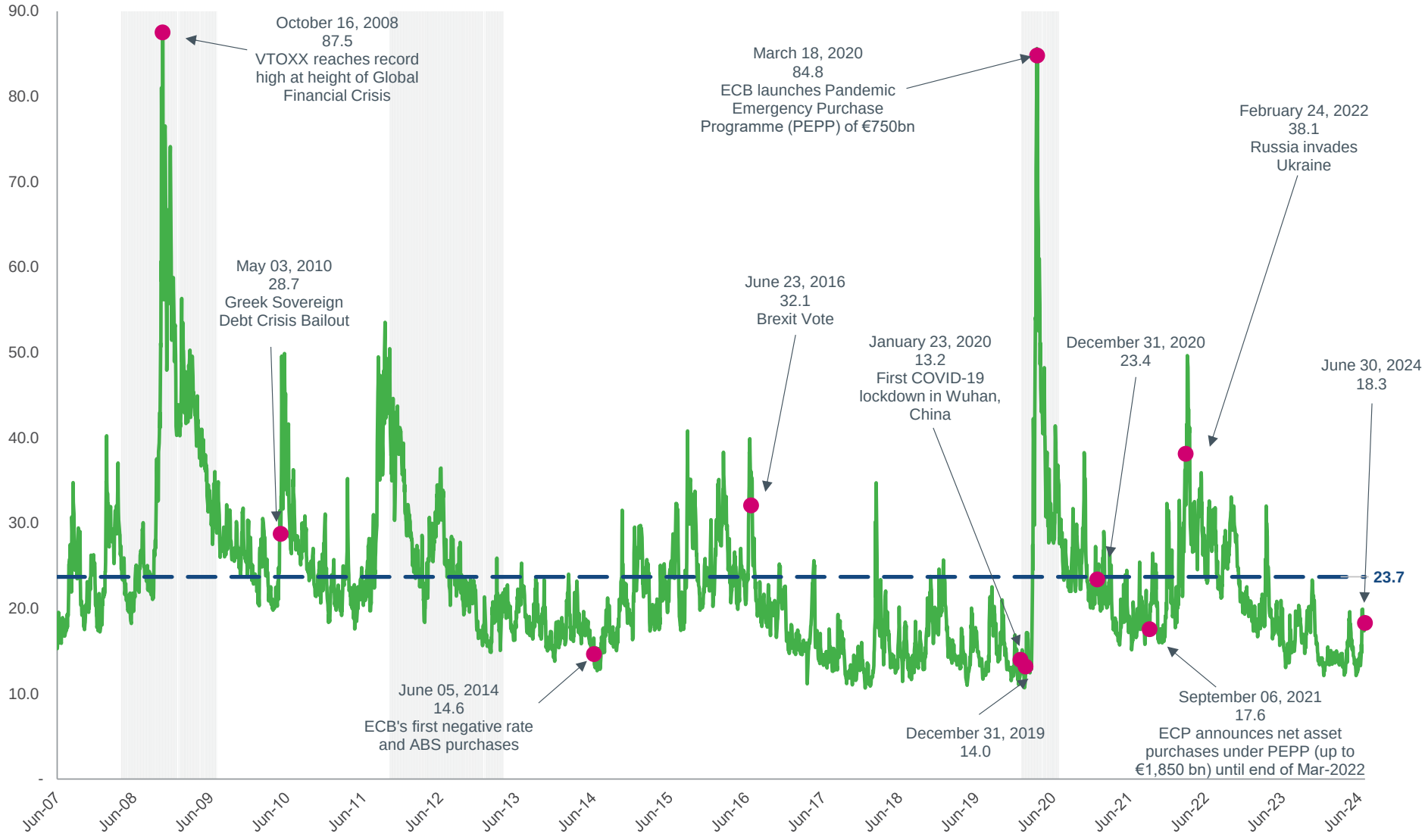
STOXX Europe 600 Index (EUR)

December 31, 2019 – June 28, 2024

Source: *Capital IQ*

EURO STOXX 50 Volatility Index

June 1, 2007 – June 30, 2024



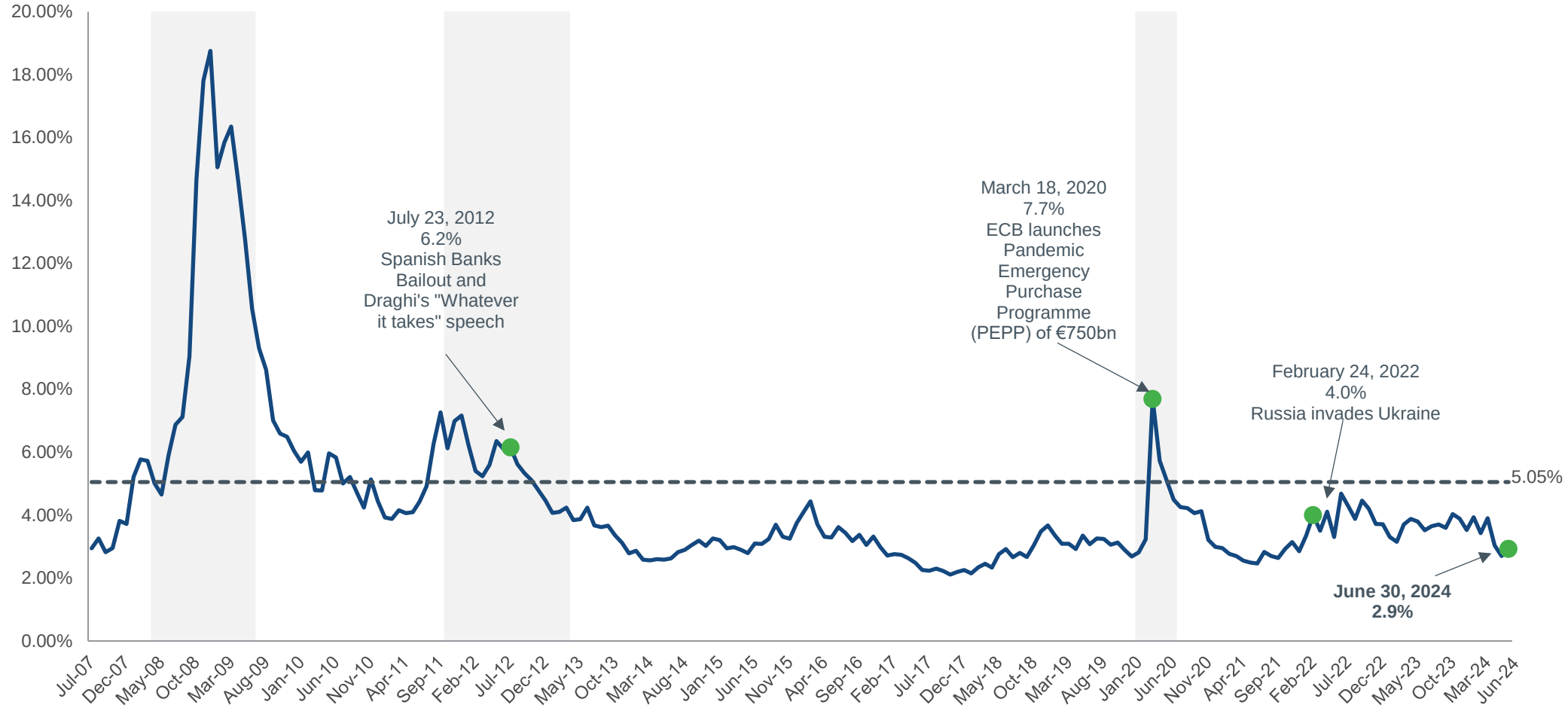
What is the volatility as of 8 July 2024?

13.3

Source: *Capital IQ*

Spread of Eurozone High-Yield Over Eurozone Investment-Grade Corporate Bond Yields

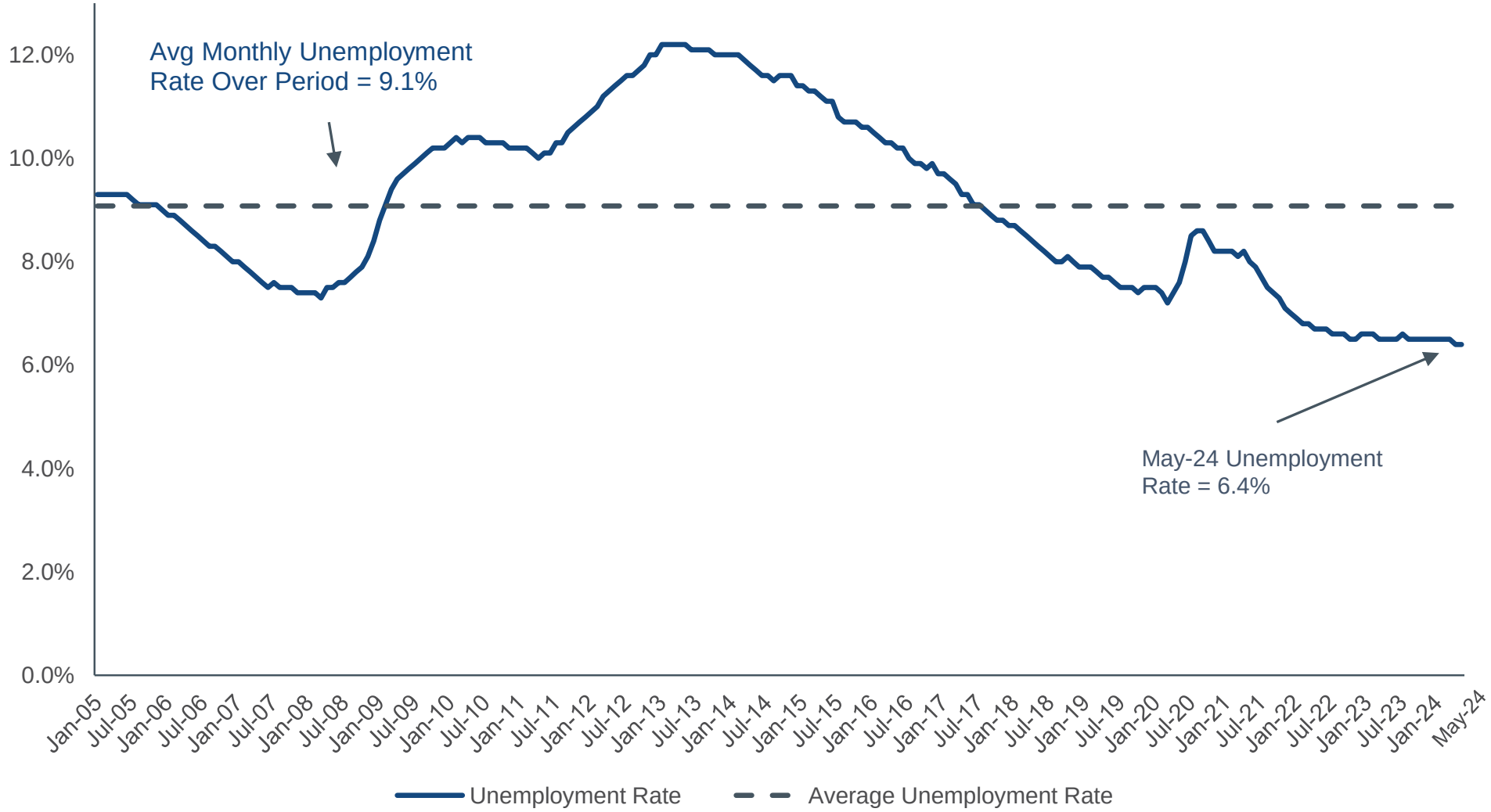
December 2007 – June 30, 2024



Source: Bloomberg. Based on the effective yields between of the Bloomberg Euro-Aggregate: Corporates Total Return Index and the Bloomberg Pan-European High Yield (Euro) Index.

Unemployment Rate in the Eurozone

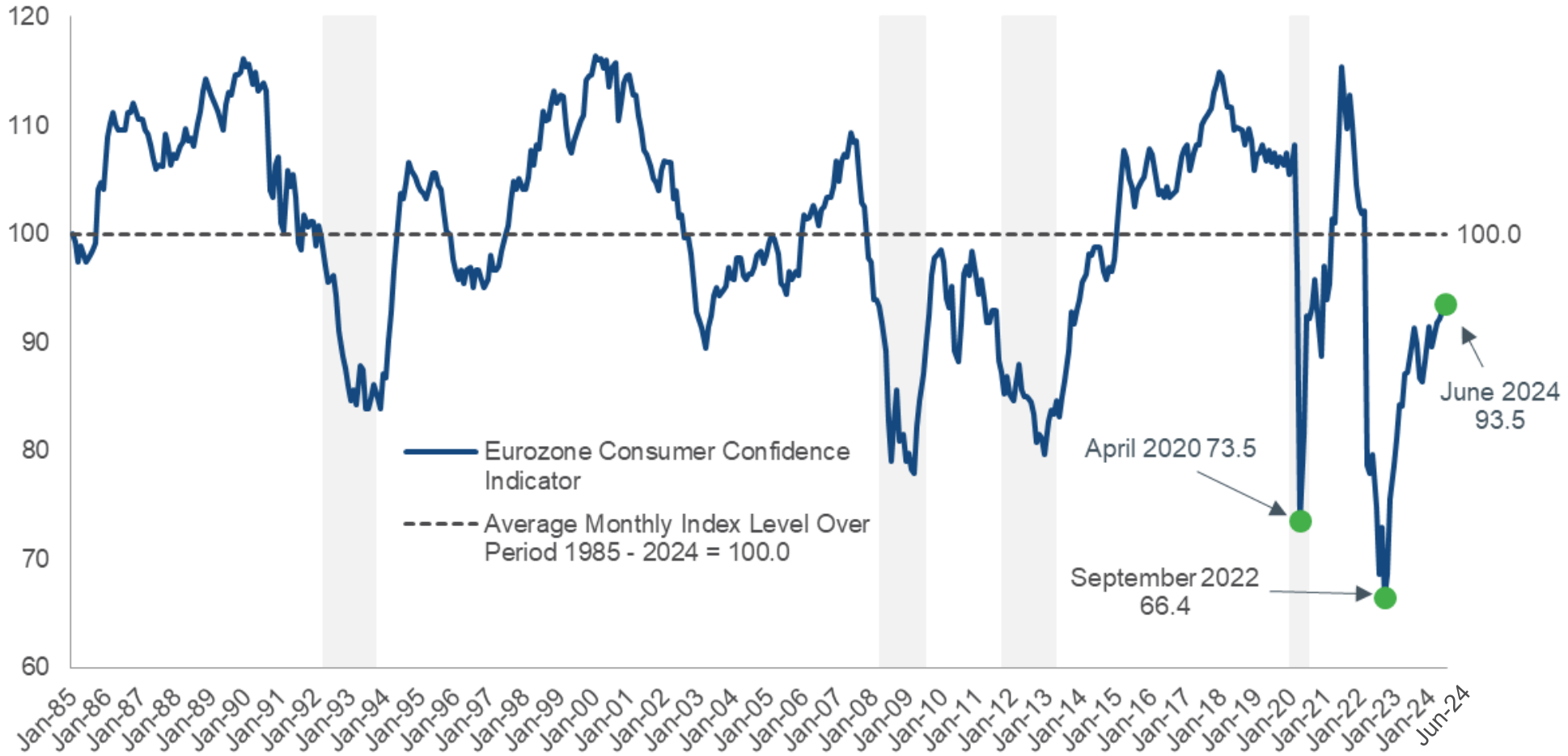
January 2005 – May 2024



Source: *Federal Reserve*

Eurozone Consumer Confidence Indicator

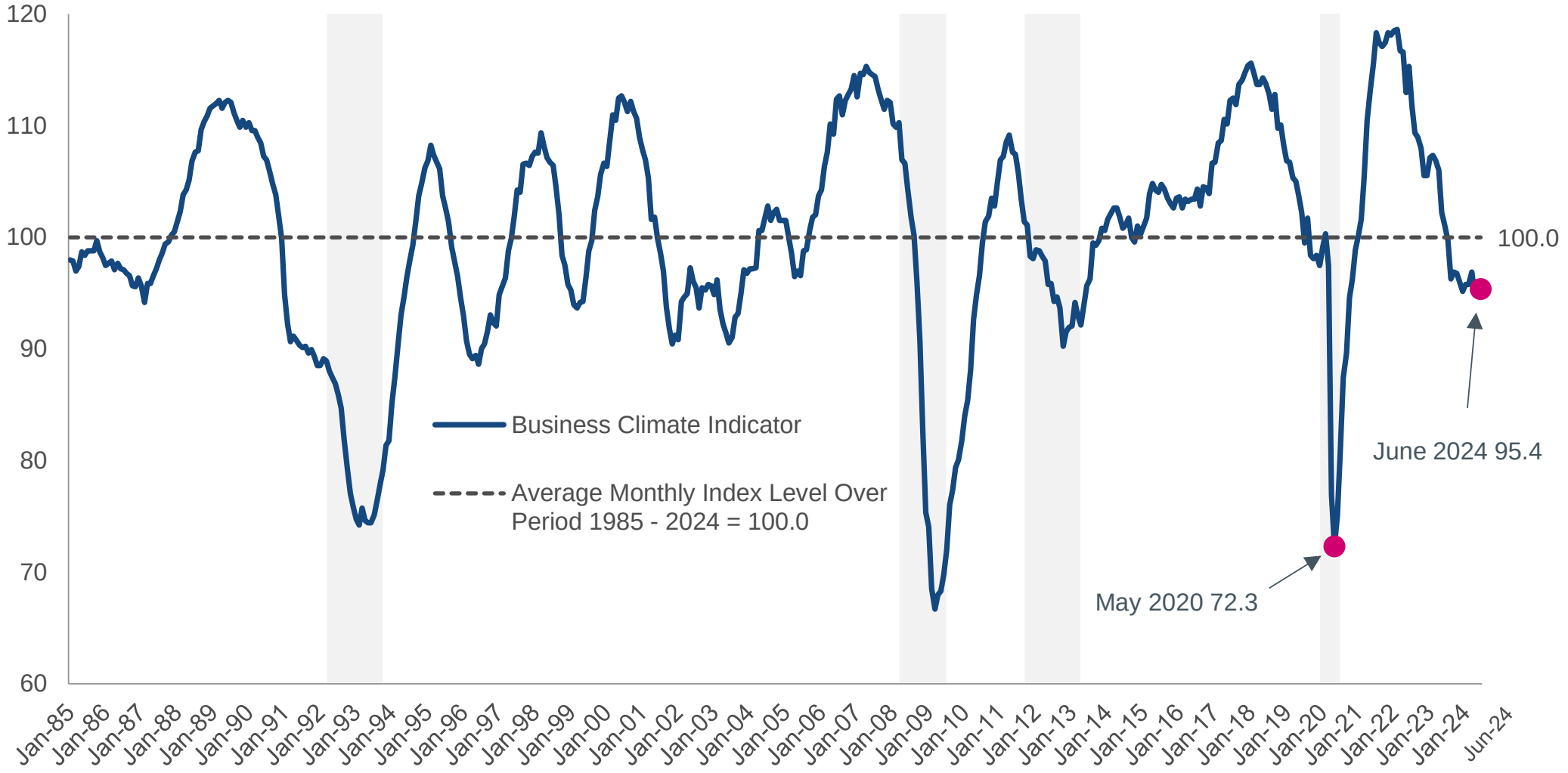
January 31, 1985 – June 30, 2024



Source: European Commission business and consumer surveys. The same methodology that the European Commission uses to standardize its Economic Sentiment Indicator was applied to the Eurozone Consumer Confidence.

Eurozone Business Climate Indicator

January 31, 1985 – June 30, 2024



Source: European Commission business and consumer surveys. The same methodology that the European Commission uses to standardize its Economic Sentiment Indicator was applied to the Business Climate Indicator series.

Conditional ERP – Quantitative Models

MODELS

- Default Spread Model *
- Dividend Discount Model (DDM) – Bottom-Up **
- Dividend Discount Model (DDM) – Top Down (Median)

* 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

Benchmark Index: **STOXX Europe 600**

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** $\left(1-\frac{LTG}{ROE(\text{10–year avg.})}\right)$
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 LSEG (formerly Refinitiv) I/B/E/S Estimates
- Payout Ratios and ROE are calculated based on data obtained from LSEG (formerly Refinitiv) DataStream

Long-term Projected Real GDP Growth

Estimates as of June 2024 (approximately)

SOURCE	Long-Term Average (%)
Consensus Forecasts	0.9
Economist Intelligence Unit	1.1
S&P Global Market Intelligence (formerly IHS Markit)	1.3
International Monetary Fund (IMF)	0.9
Oxford Economics	1.0
PwC	1.1

Median ▶ 1.0%

0.9% – 1.3%

Range of Real GDP Growth Estimates

Long-term Inflation Expectations

Estimates as of June 2024 (approximately)

SOURCE	Long-Term Average (%)
Consensus Economics	2.2
Economist Intelligence Unit	2.1
S&P Global Market Intelligence (formerly IHS Markit)	2.2
International Monetary Fund (IMF)	2.1
Oxford Economics	1.8
PwC	2.1
Range of Inflation Estimates	**1.8% – 2.2%**

2.1% ◀ Median

g = Long-Term Growth Rate (Nominal)

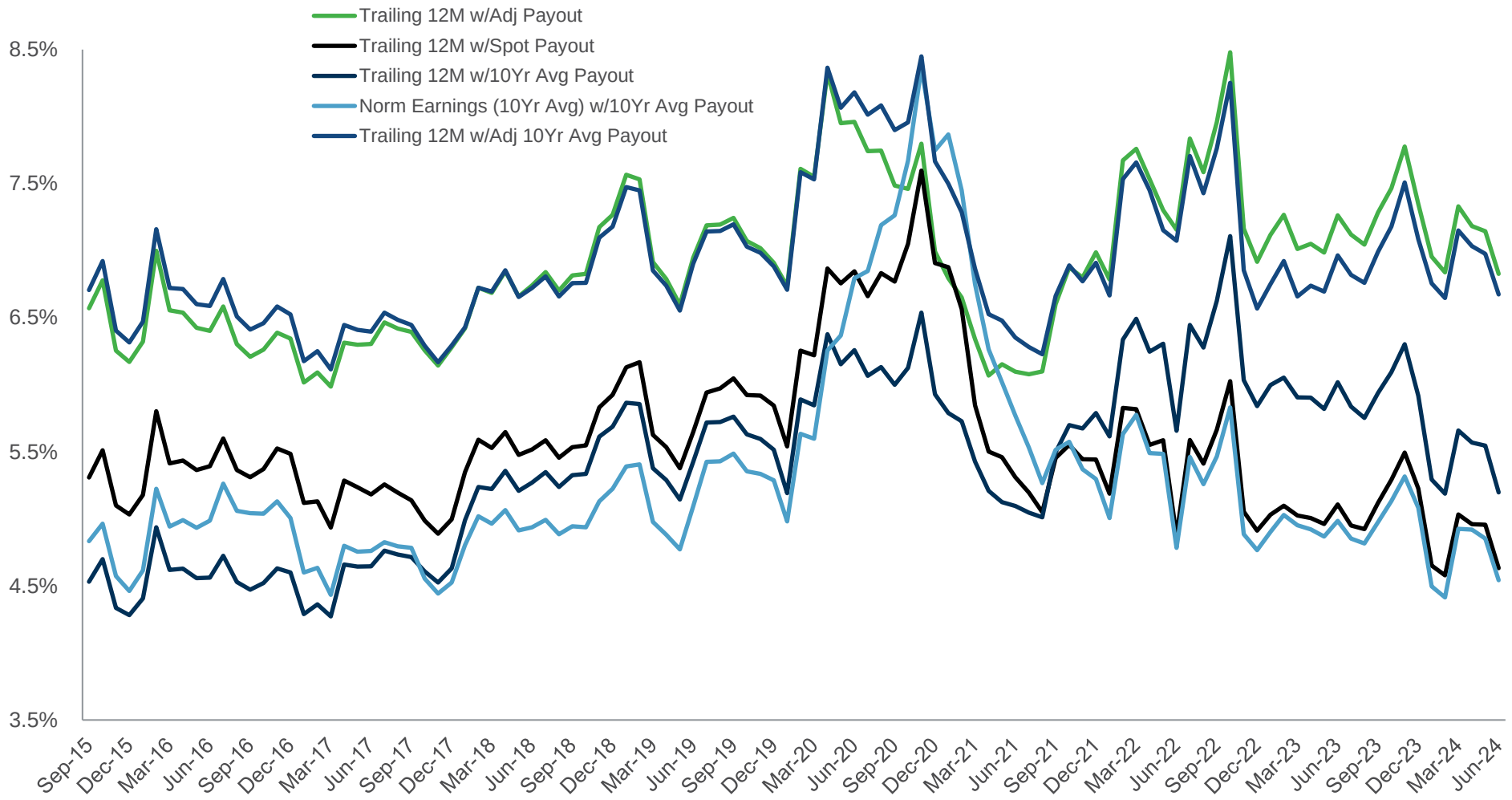
Estimates as of June 2024 (approximately)

Long-Term Growth Rate is calculated using the following formula:

Long-Term Growth Rate (Median)	=	(1 + Long-Term Real GDP Forecast)	×	(1 + Long-Term Inflation Forecast)	−	1
3.1%	=	(1 + 1.0%)	x	(1 + 2.1%)	-	1

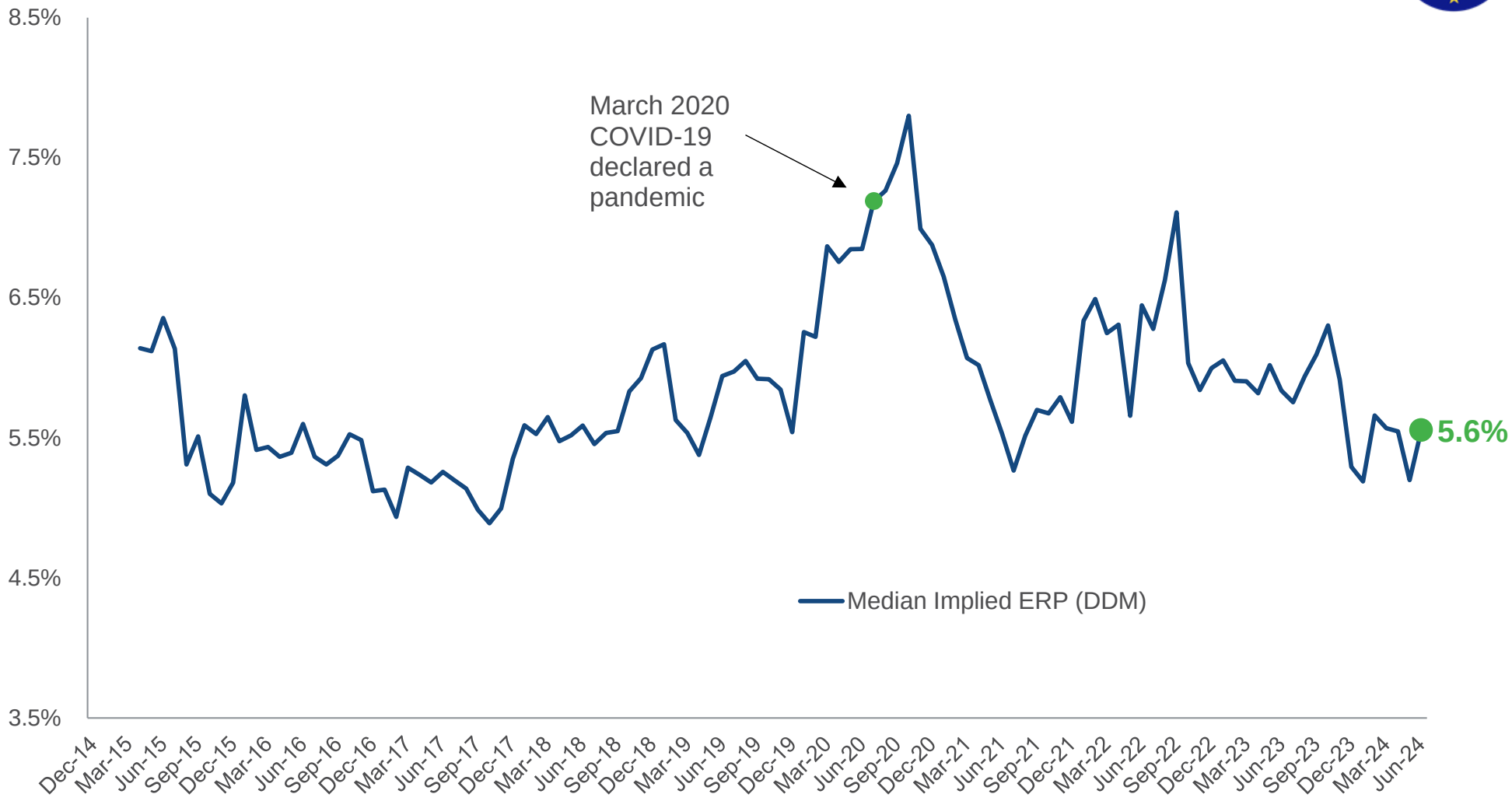
Top Down DDM Implied ERP (in €) – All Model Specifications

September 2015 – June 2024



Top Down DDM Implied ERP (in €) – Median

December 2014 – June 2024



Kroll Recommended Eurozone Equity Risk Premium

German Investor Perspective applied to EUR-Denominated Projections *

	December 31, 2019	March 31, 2020	December 31, 2022	December 31, 2023	June 30, 2024*
Normalized Risk-Free Rate – Germany	2.0%	2.0%	3.0%	3.0%	2.7%
Eurozone Equity Risk Premium Recommendation	4.5% to 5.0%	5.5% to 6.0%	5.5% to 6.0%	5.5% to 6.0%	5.5% to 6.0%
Base Cost of Equity	6.5% to 7.0%	7.5% to 8.0%	8.5% to 9.0%	8.5% to 9.0%	8.2% to 8.7%

* Using higher of the Normalized Risk-Free Rate or 15-Year German Government Spot Yield as of June 28, 2024.

* Some countries may have regulations or guidelines that preclude the use of normalized risk-free rates. The Kroll 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.

Country Risk Update

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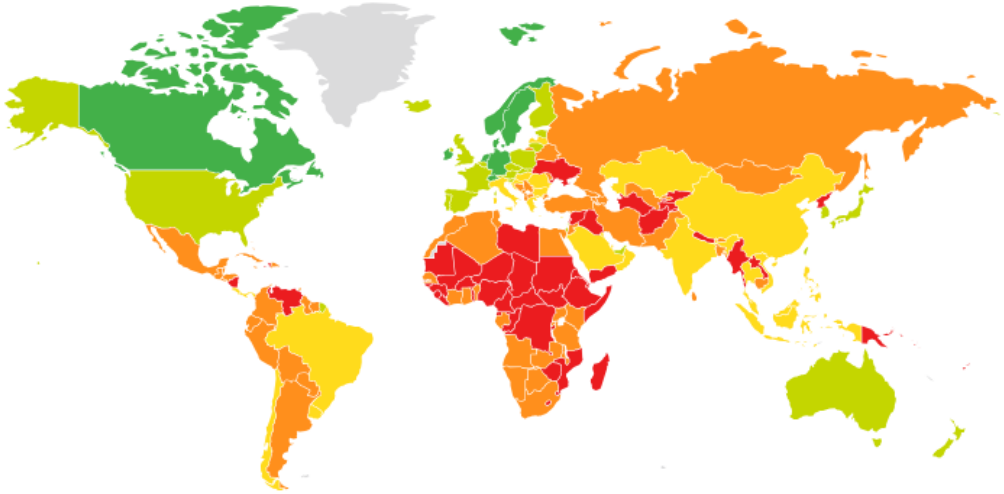
Kroll Country Risk Indications

Global Heat Map - Country Risk

Our global heat map illustrates risk across all countries, as well as a summary of country risk data by region from our three country risk models. Hover over the map to get a risk rating by country, slide the bar to see how by country risk changes over the time, or **click here** to get full country risk premia data by country in the International Cost of Capital Module.



Displaying Data as of March 31, 2024

Mar 2024

- Very High Risk
- High Risk
- Medium Risk
- Low Risk
- Very Low Risk
- Data not Available

*Ranking of risk based on each country's country risk index score. Starting in March 2023, scores are sourced from BMI, a Fitch Solutions Company. For more information on BMI, visit: **https://www.fitchsolutions.com/products/country-risk**.

Prior to March 2023, scores were sourced from Euromoney Country Risk (ECR). To the extent a country did not have an ECR score but had a sovereign credit rating issued by one of the main rating agencies (Standard & Poor's, Moody's, Fitch), a similar methodology to ECR's was used to assign the risk level. Euromoney has discontinued its ECR product. For more information on Euromoney, visit: **https://www.euromoney.com/**.

Country risk premia and relative volatility factors based on data extracted from the three international cost of capital models currently supported in the Cost of Capital Navigator's International Cost of Capital Module.

Median Country Risk Premium (CRP) and Relative Volatility (RV) Factors in USD by Region*

	CYS	CCR	RV
North America	0.0%	0.0%	1.0
Latin America and Caribbean	3.1%	3.5%	1.6
Europe	0.8%	0.8%	1.1
Africa	6.5%	5.5%	1.4
Middle East	3.3%	2.3%	1.1
Asia-Pacific	2.9%	3.7%	1.1

CYS = Country Yield Spread Model

CCR = Country Credit Rating Model

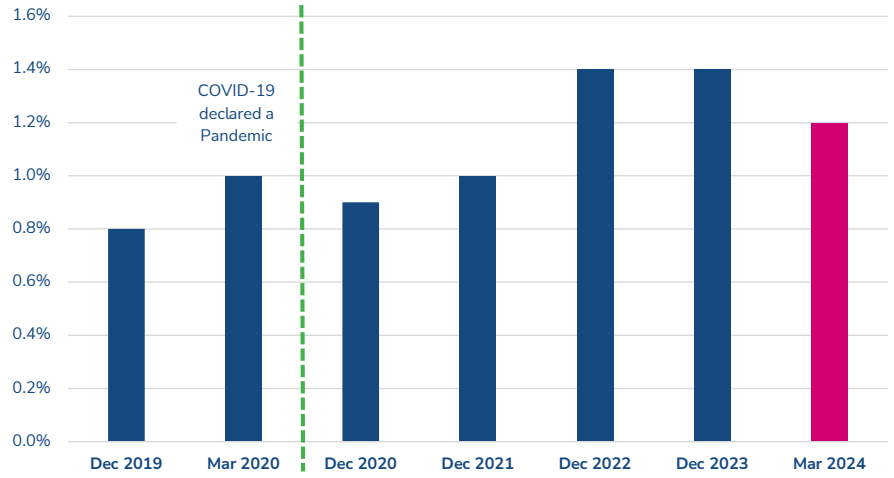
RV = Relative Volatility Model

Country Risk Premium Before and After COVID-19 (EUR)

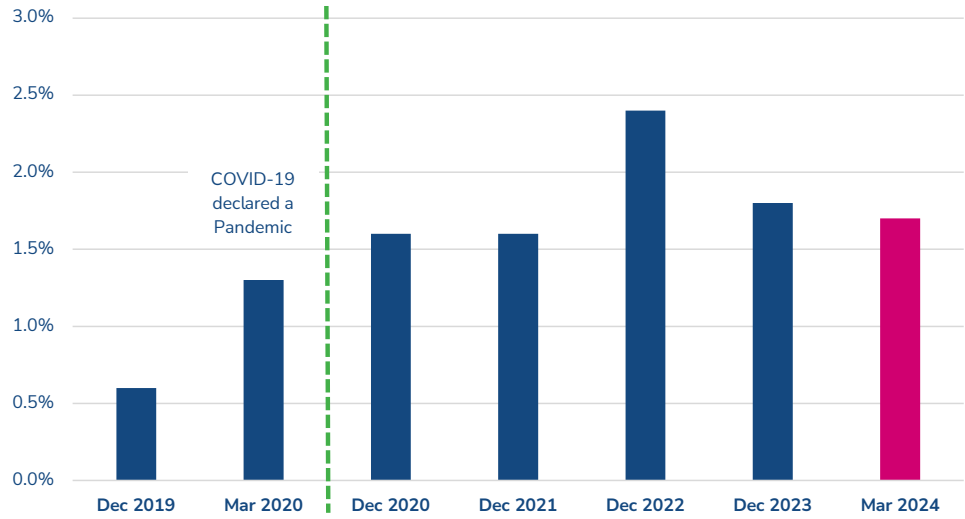
Country Yield Spread Model from a German (EUR) investor perspective

Data as of March 31, 2024

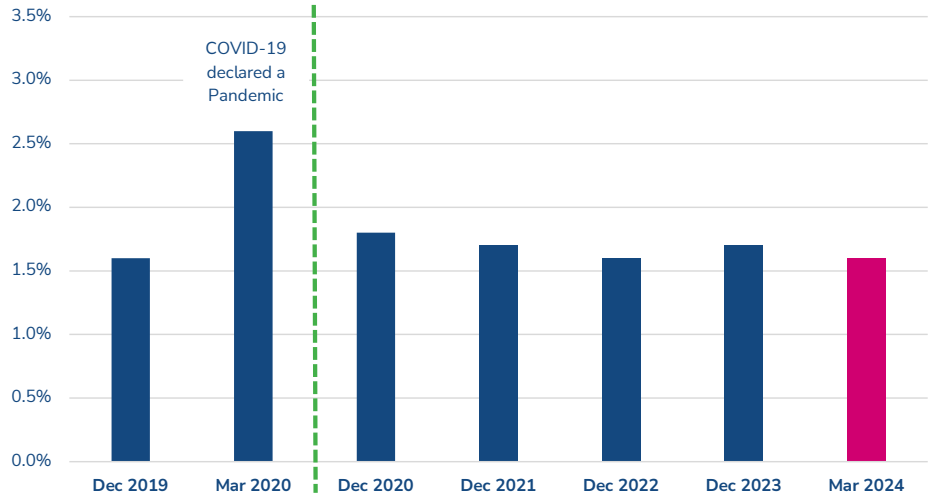
Poland



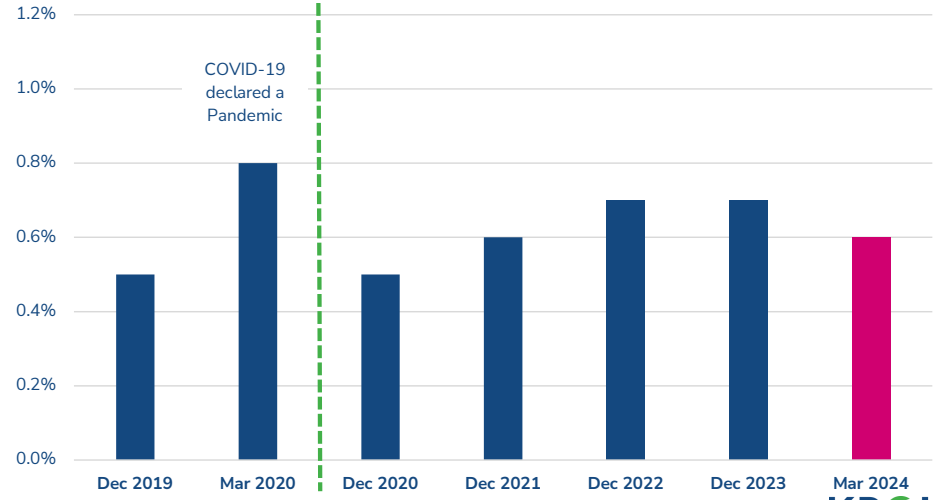
Hungary



Saudi Arabia



Qatar

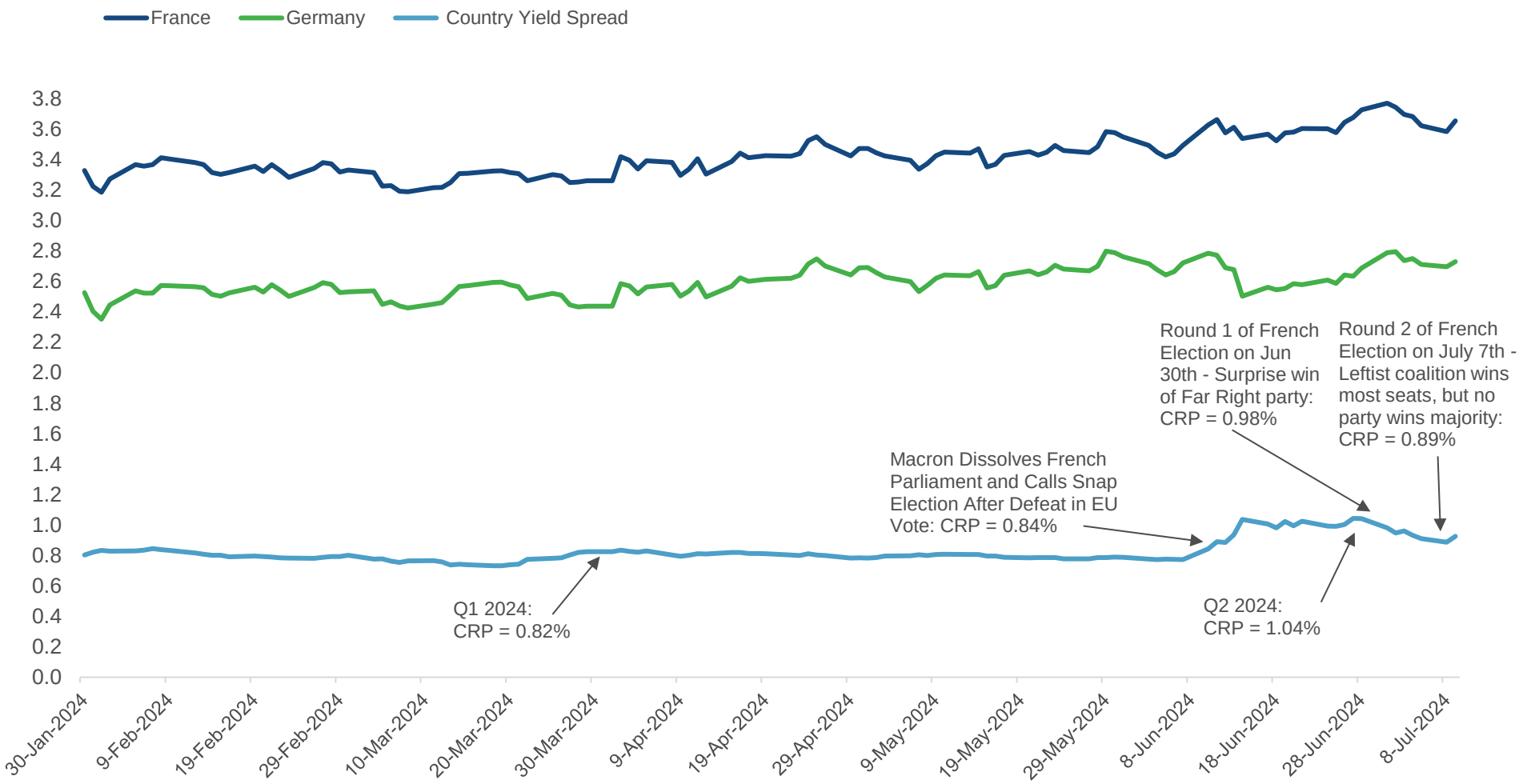


Source: Kroll Cost of Capital Navigator – International Cost of Capital Module | https://www.kroll.com/en/cost-of-capital/international-cost-of-capital

Country Risk Premium for France in 2024 (EUR)

Country Yield Spread Model from a German (EUR) investor perspective

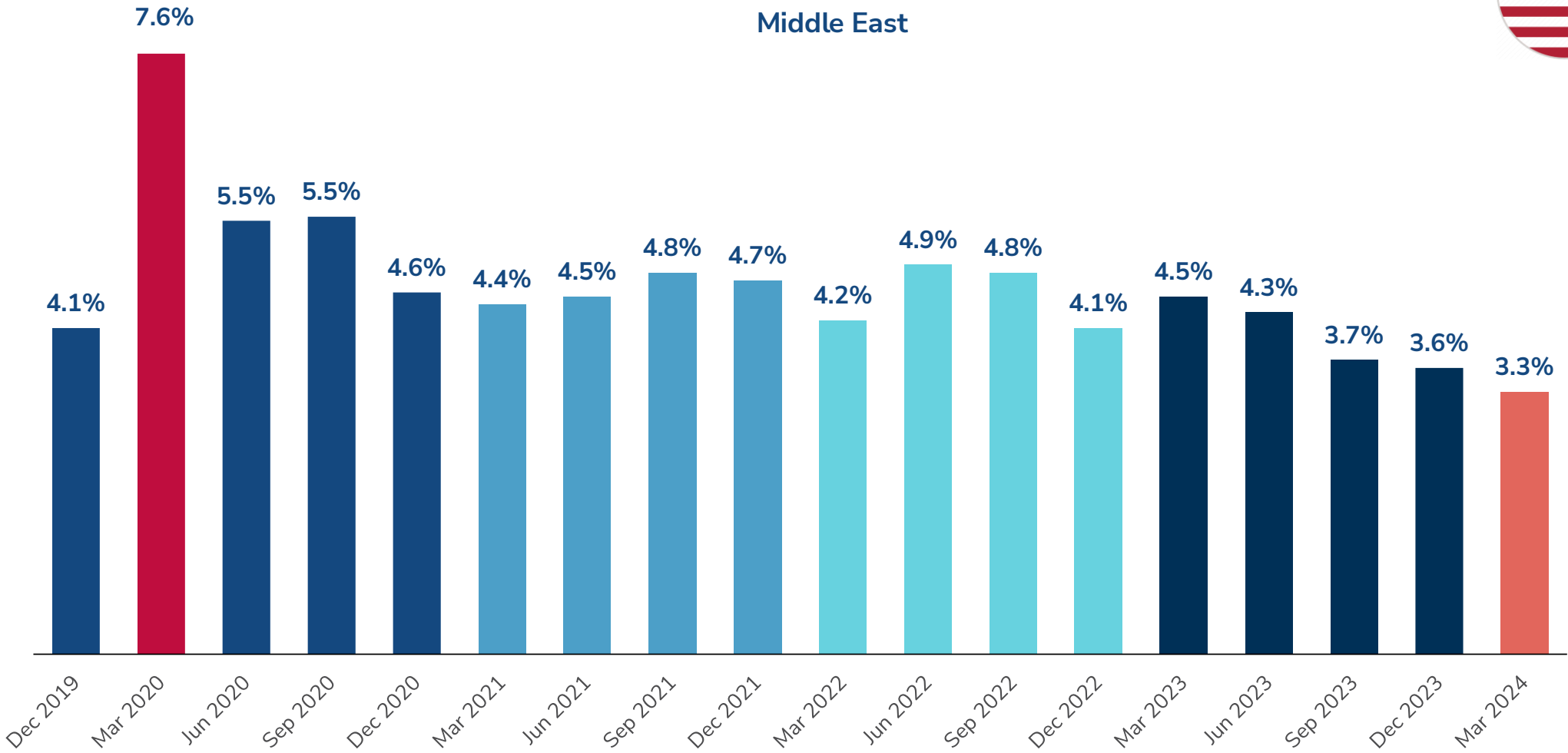
January 30, 2024 through July 9, 2024



Source: LSEG (Refinitiv) and Kroll Cost of Capital Navigator – International Cost of Capital Module | https://www.kroll.com/en/cost-of-capital/international-cost-of-capital

Country (or Sovereign) Yield Spread Model

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



* Based on the median country risk premia within geographic region.

Source: Kroll Cost of Capital Navigator – International Cost of Capital Module | https://www.kroll.com/en/cost-of-capital/international-cost-of-capital

Takeaways of Today's Presentation

Record high inflation had a significant impact on key value drivers:

- Projected Growth Rates and operating margins
- Discount Rates

Interest rates of safe-haven countries have risen to levels last seen prior to the 2008-2009 Global Financial Crisis, due to Central Banks actions in their attempt to tame inflationary pressures. **Cost of debt** is increasing accordingly.

Equity Risk Premium is cyclical

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

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

Q&A

Extra Resources

KROLL

Cost of Capital Thought Leadership Overview

As the world's premier valuation provider, we are a trusted expert in the field of cost of capital. For more than two decades, our professionals have published books, conducted studies, provided recommendations and built digital tools to help businesses and valuation professionals calculate cost of capital. Our databases are developed with rigorous analysis and based on the latest trends and insights.

Subject Matter Experts

Carla S. Nunes, CFA
Managing Director, Kroll

Anas Aboulamer, Ph.D.,
Director, Kroll

James P. Harrington
Director, Kroll

Our Valuation Digital Solutions experts strive to empower companies and finance professionals with cost of capital thought leadership and high-quality valuation data that enables them to make sound business decisions.

Cost of Capital Navigator

Our best-in-class, all-in-one solution, the Cost of Capital Navigator digital platform is built upon decades of valuation data and relies on established cost of capital theory and methodologies.

The U.S. and International Cost of Capital Modules provide everything you need for U.S.- and International-centric cost of capital calculations all in one place.

Learn more

ESG and Global Investor Returns Study

We examined the relationship between historical returns of over 13,000 publicly traded companies across a variety of geographies and industries and their ESG ratings to determine the correlation of ESG ratings to company performance.

Learn more

Webinars and Conferences

With deep technical expertise, our team continually presents in live webinars, conferences and workshops on how cost of capital and valuations are being impacted by the latest trends in the global economy and financial markets, industry developments, and much more.

Cost of Capital Infographic, Country Risk Heatmap and Other Innovative Tools

We provide insights and tools to assist users with quantifying risk during uncertain times, when performing cross-border valuations and more.

Kroll Recommended ERP is the benchmark reference in valuation

58.5%

of participants said that they use our recommended U.S. ERP*

View full report.

**Based on polling during our September 2023 webinar, Higher for Longer? Cost of Capital in the Current Environment of ~600 external live participants.

Key Cost of Capital Recommendations
as of June 5, 2024

Kroll regularly reviews fluctuations in the global economic and financial market conditions. These reviews warrant a periodic reassessment of the equity risk premium (ERP) and the accompanying risk-free rate and key inputs used to calculate the cost of equity capital in the context of the Capital Asset Pricing Model (CAPM) and other models used to develop discount rates.

	U.S. (in USD)	Eurozone ** (in EUR)	U.K. †† (in GBP)	Canada †† (in CAD)	Australia †† (in AUD)
Normalized Risk-free Rate	Higher of 3.5% or Spot*	Higher of 2.5% or Spot†	Higher of 4.0% or Spot‡	Higher of 3.5% or Spot§	Higher of 3.5% or Spot#
Equity Risk Premium	5.0%	5.5% to 6.0%†	n/a	n/a	n/a

* We recommend using the spot 20-year U.S. Treasury yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended U.S. normalized risk-free rate of 3.5%. This guidance is effective when developing USD-denominated discount rates as of June 16, 2022, and thereafter.

† We recommend using the spot 15-year German government bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended German normalized risk-free rate of 2.5%. This guidance is effective when developing EUR-denominated discount rates as of March 31, 2024, and thereafter. The Kroll Recommended Eurozone ERP remains in the range of 5.5% to 6.0%, based on current economic and financial market conditions, and we believe that a 5.5% ERP (i.e., towards the lower end of the range) is more appropriate when developing EUR-denominated discount rates as of February 5, 2024, and thereafter.

‡ We recommend using the spot 20-year U.K. Gilt yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended U.K. normalized risk-free rate of 4.0%. This guidance is effective when developing GBP-denominated discount rates as of October 18, 2022, and thereafter.

§ We recommend using the spot Government of Canada Benchmark Long-Term Bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended Canada normalized risk-free rate of 3.5%. This guidance is effective when developing CAD-denominated discount rates as of October 18, 2022, and thereafter.

We recommend using the spot 10-year Australia Commonwealth Government bond yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended Australia normalized risk-free rate of 3.5%. This guidance is effective when developing AUD-denominated discount rates as of October 31, 2022, and thereafter.

** 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.

†† Although currently we do not have an official Kroll Recommended ERP for the U.K., Canada and Australia, historical and other forward-looking ERP information for these countries is available in the International Cost of Capital Inputs dataset within the Cost of Capital Navigator.

www.kroll.com/cost-of-capital-resource-center

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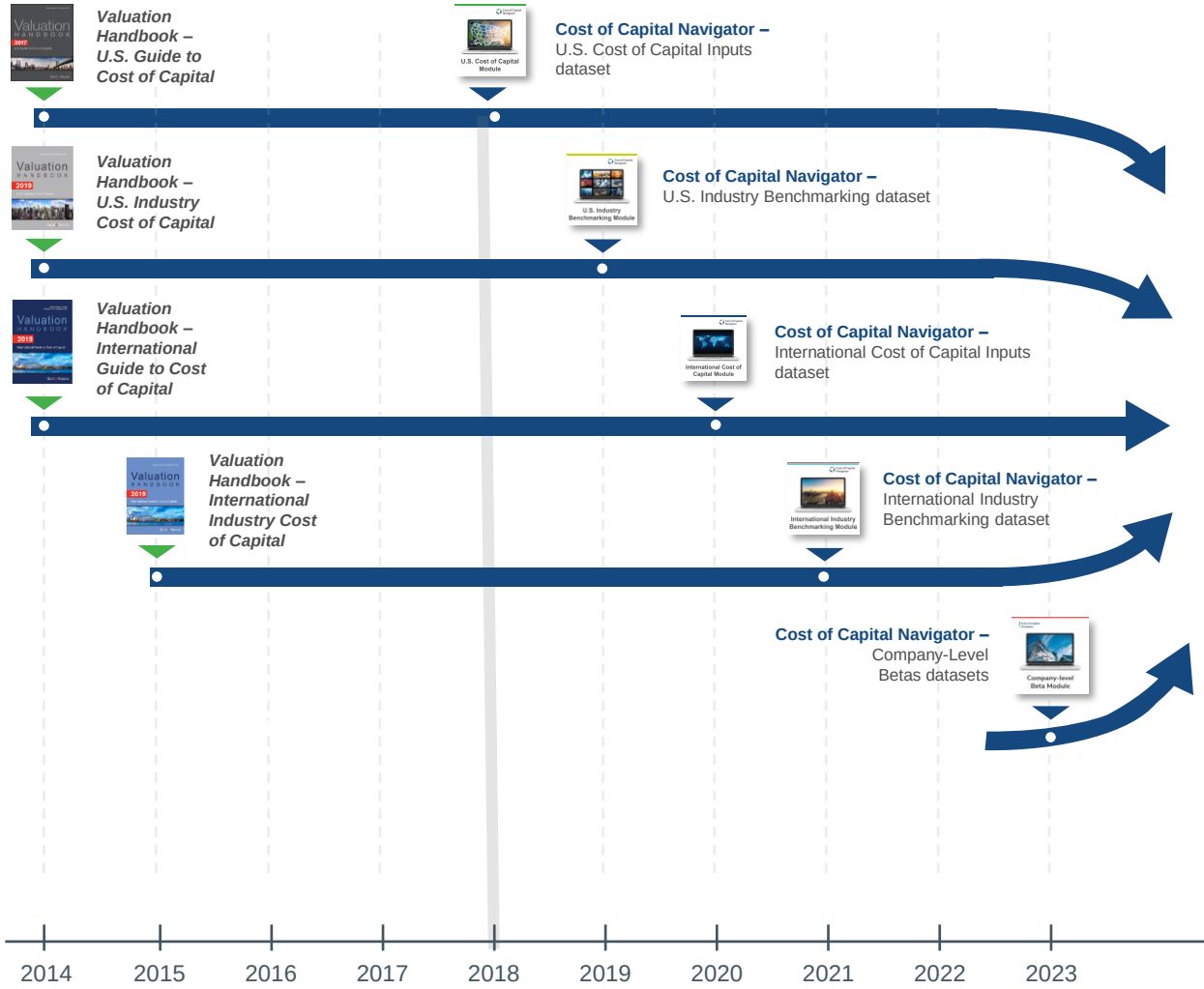
A Brief History

Cost of Capital Navigator Datasets



The Cost of Capital Navigator includes two subscription products:

- U.S. Cost of Capital Module
- International Cost of Capital Module

Includes all historical data for these datasets:

- U.S. Cost of Capital Inputs
- U.S. Industry Benchmarking
- U.S. Company-Level Betas

Includes all historical data for these datasets:

- International Cost of Capital Inputs
- International Industry Benchmarking
- International Company-Level Betas

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Available Modules and Datasets

Learn More

U.S. Cost of Capital Inputs
- Risk-free Rates
- Equity Risk Premia (ERPs)
- Size Premium
- Risk Premium Over the Risk-free Rate
- Betas and Industry Risk Premia

U.S. Industry Benchmarking
- 170+ industries analyzed each quarter
- Cost of equity, cost of debt and WACC estimates
- Performance statistics and ratio analysis
- Valuation multiples
- Levered and Unlevered Betas
- Capital structure inputs

U.S. Company-Level Betas
- 8,000+ U.S. Companies
- Currency: USD
- Market index: MSCI USA Index
- Levered, Unlevered, and Relevered Betas
- Statistical Quality of Betas
- Company-Level Metrics

Learn More

International Cost of Capital Inputs
- Country risk premia (CRPs) for 175+ countries
- Relative volatility (RV) factors for 70+ countries
- Risk-free rates
- Equity Risk Premia (ERPs)
- Long-term inflation expectations
- Statutory corporate tax rates

International Industry Benchmarking
- 200+ industries analyzed each quarter
- Cost of equity, cost of debt and WACC estimates
- Performance statistics and ratio analysis
- Valuation multiples
- Levered and Unlevered Betas
- Capital structure inputs

International Company-Level Betas
- 35,000+ Companies located in 110+ countries
- 140+ currencies
- 30+ equity market indices in the MSCI universe
- Levered, Unlevered, and Relevered Betas
- Statistical Quality of Betas
- Company-Level Metrics

Cost of Capital Navigator

To learn more about the Cost of Capital Navigator, or Kroll's Cost of Capital practice, visit:

Kroll.com/CostofCapitalNavigator

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About Kroll

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