MOODY'S
RATINGS

Changing landscape for rating agencies

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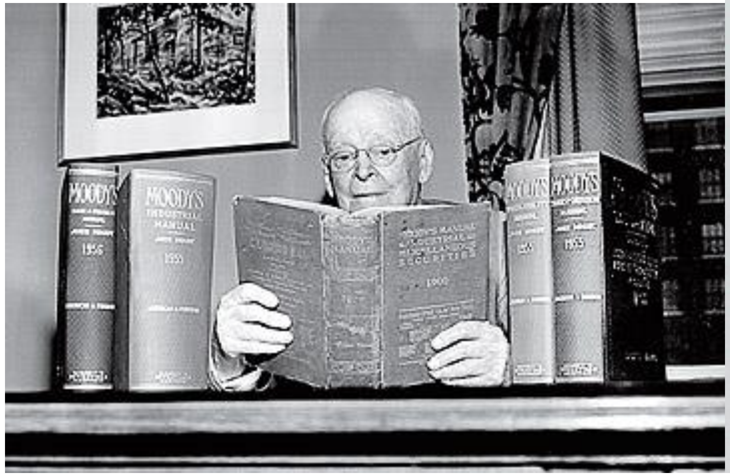
Agenda

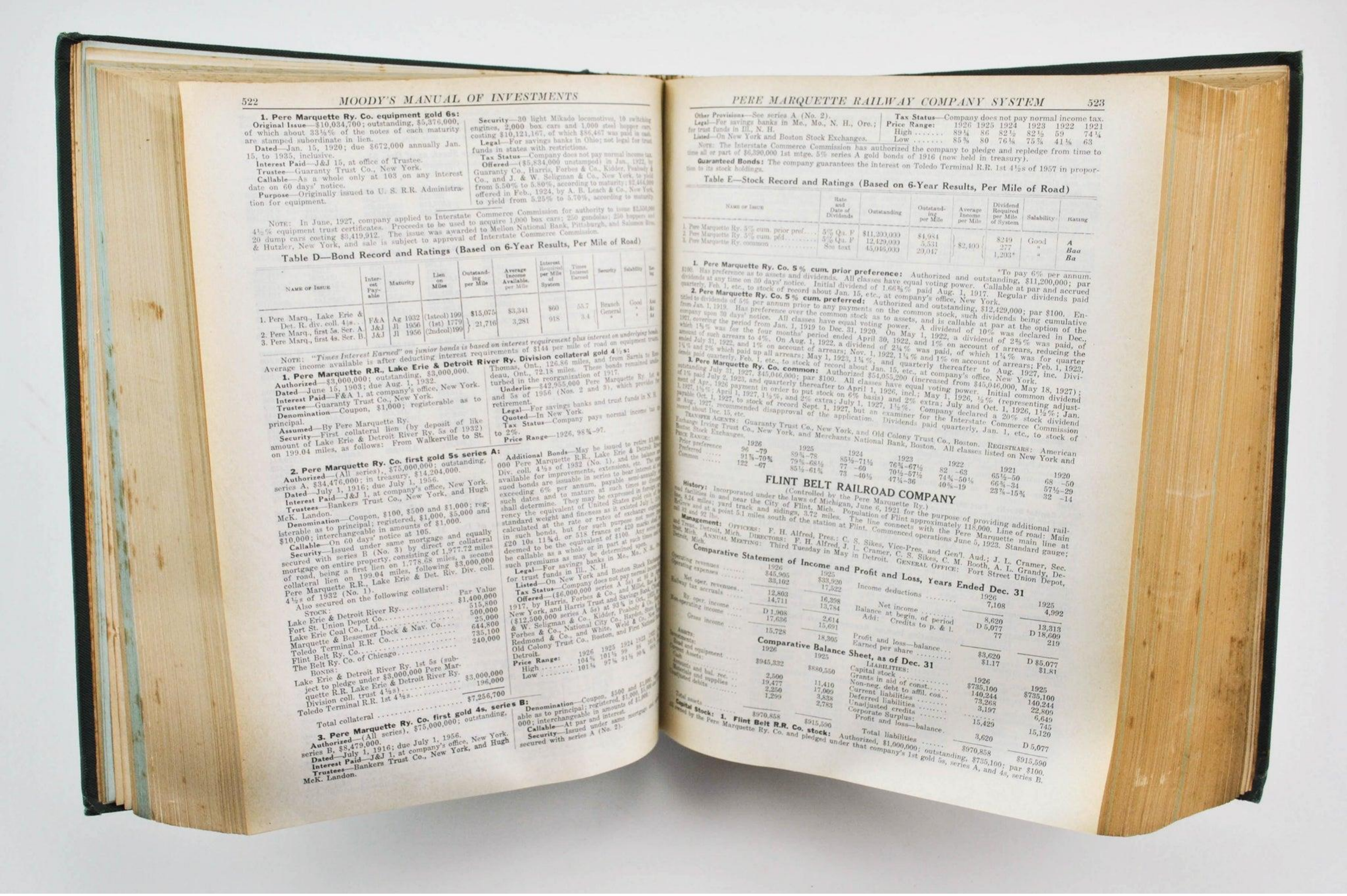
1. What rating agencies do
2. How are we doing?
3. Outlook for economy and credit

What rating agencies do

John Moody

In 1909 Moody entered the business of analyzing the stocks and bonds of America's railroads, and with this endeavor, he became the first to rate public market securities.





What rating agencies do

Moody's Global Rating Scales

Ratings assigned on Moody's global long-term and short-term rating scales are forward-looking opinions of the relative credit risks of financial obligations issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities. Moody's defines credit risk as the risk that an entity may not meet its contractual financial obligations as they come due and any estimated financial loss in the event of default or impairment. The contractual financial obligations[1] addressed by Moody's ratings are those that call for, without regard to enforceability, the payment of an ascertainable amount, which may vary based upon standard sources of variation (e.g., floating interest rates), by an ascertainable date. Moody's rating addresses the issuer's ability to obtain cash sufficient to service the obligation, and its willingness to pay.[2] Moody's ratings do not address non-standard sources of variation in the amount of the principal obligation (e.g., equity indexed), absent an express statement to the contrary in a press release accompanying an initial rating.[3] Long-term ratings are assigned to issuers or obligations with an original maturity of eleven months or more and reflect both on the likelihood of a default or impairment on contractual financial obligations and the expected financial loss suffered in the event of default or impairment. Short-term ratings are assigned to obligations with an original maturity of thirteen months or less and reflect both on the likelihood of a default or impairment on contractual financial obligations and the expected financial loss suffered in the event of default or impairment.[4,5] Moody's issues ratings at the issuer level and instrument level on both the long-term scale and the short-term scale. Typically, ratings are made publicly available although private and unpublished ratings may also be assigned.[6]

What rating agencies do

Global Long-Term Rating Scale	
Aaa	Obligations rated Aaa are judged to be of the highest quality, subject to the lowest level of credit risk.
Aa	Obligations rated Aa are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated A are judged to be upper-medium grade and are subject to low credit risk.
Baa	Obligations rated Baa are judged to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics.
Ba	Obligations rated Ba are judged to be speculative and are subject to substantial credit risk.
B	Obligations rated B are considered speculative and are subject to high credit risk.
Caa	Obligations rated Caa are judged to be speculative of poor standing and are subject to very high credit risk.
Ca	Obligations rated Ca are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated C are the lowest rated and are typically in default, with little prospect for recovery of principal or interest.

Note: Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category. Additionally, a "(hyb)" indicator is appended to all ratings of hybrid securities issued by banks, insurers, finance companies, and securities firms.*

Note: For more information on long-term ratings assigned to obligations in default, please see the definition "Long-Term Credit Ratings for Defaulted or Impaired Securities" in the Other Definitions section of this publication.

** By their terms, hybrid securities allow for the omission of scheduled dividends, interest, or principal payments, which can potentially result in impairment if such an omission occurs. Hybrid securities may also be subject to contractually allowable write-downs of principal that could result in impairment. Together with the hybrid indicator, the long-term obligation rating assigned to a hybrid security is an expression of the relative credit risk associated with that security.*

What rating agencies do

Expected Recovery Rate	Fundamental	Structured Finance
99 to 100%*	B1*	B1 (sf)*
97 to 99%*	B2*	B2 (sf)*
95 to 97%*	B3*	B3 (sf)*
90 to 95%	Caa1	Caa1 (sf)
80 to 90%	Caa2	Caa2 (sf)
65 to 80%	Caa3	Caa3 (sf)
35 to 65%	Ca	Ca (sf)
Less than 35%	C	C (sf)

* For instruments rated B1, B2, or B3, the uncertainty around expected recovery rates should also be low. For example, if a defaulted security has a higher than a 10% chance of recovering less than 90%, it would generally be rated lower than B3.

What rating agencies do

$69,975,000
MARYLAND HEALTH AND HIGHER EDUCATIONAL FACILITIES AUTHORITY

Frederick Health

Revenue Bonds
Frederick Health System Issue
Series 2023

Dated: Date of initial delivery

Due: July 1, as shown below

CUSIP*	Principal Amount at Issuance ($)	Security Description *	Coupon	Maturity Date	Initial Offering (%)			Current LT Rating			
					Price/Yield	Price	Yield	Fitch	KBRA	Moody's	S&P
57421CEV2	26,875,000	FREDERICK HEALTH SYS	5.25	07/01/2053	-	105.576	4.55	A-	-	Baa1	-

$29,405,000
Housing Opportunities Commission
Of Montgomery County
(Montgomery County, Maryland)
Single Family Mortgage Revenue Bonds

CUSIP*	Principal Amount at Issuance ($)	Security Description *	Coupon	Maturity Date	Initial Offering (%)			Current LT Rating			
					Price/Yield	Price	Yield	Fitch	KBRA	Moody's	S&P
6133498R3	8,880,000	SER A	5.75	07/01/2054	-	111.602	4.19	-	-	Aa2	-

Credit ratings

Objectives of rating systems

Ratings are

→ Forward looking opinions

→ Rankings of credit risk

→ Measures of expected losses for private sector investors (EL vs PD)

→ Largely ordinal (vs cardinal)

→ Predictors of default

Accuracy

→ Ordinal accuracy vs cardinal accuracy

Stability

→ Rating reversals

→ Large rating actions

→ Volatility

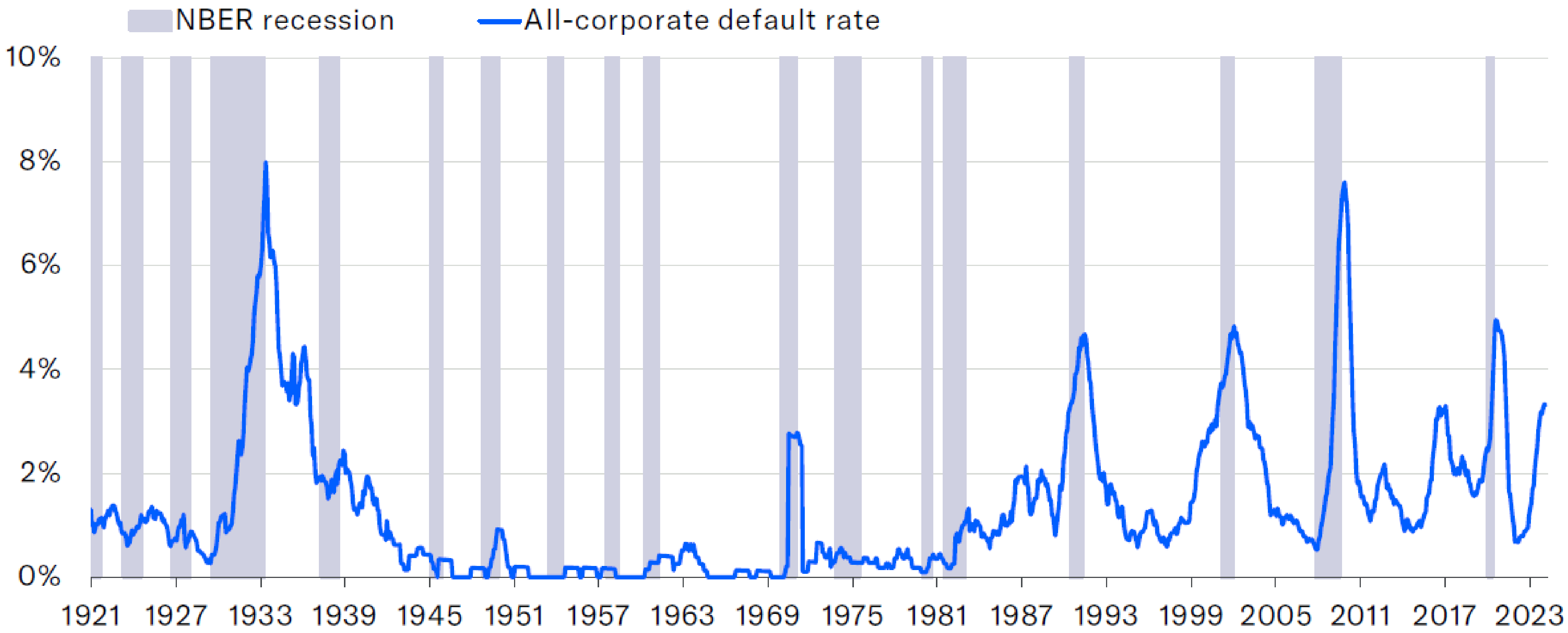
Consistency

→ Over time

→ Across sectors

→ Through the cycle?

How are we doing?

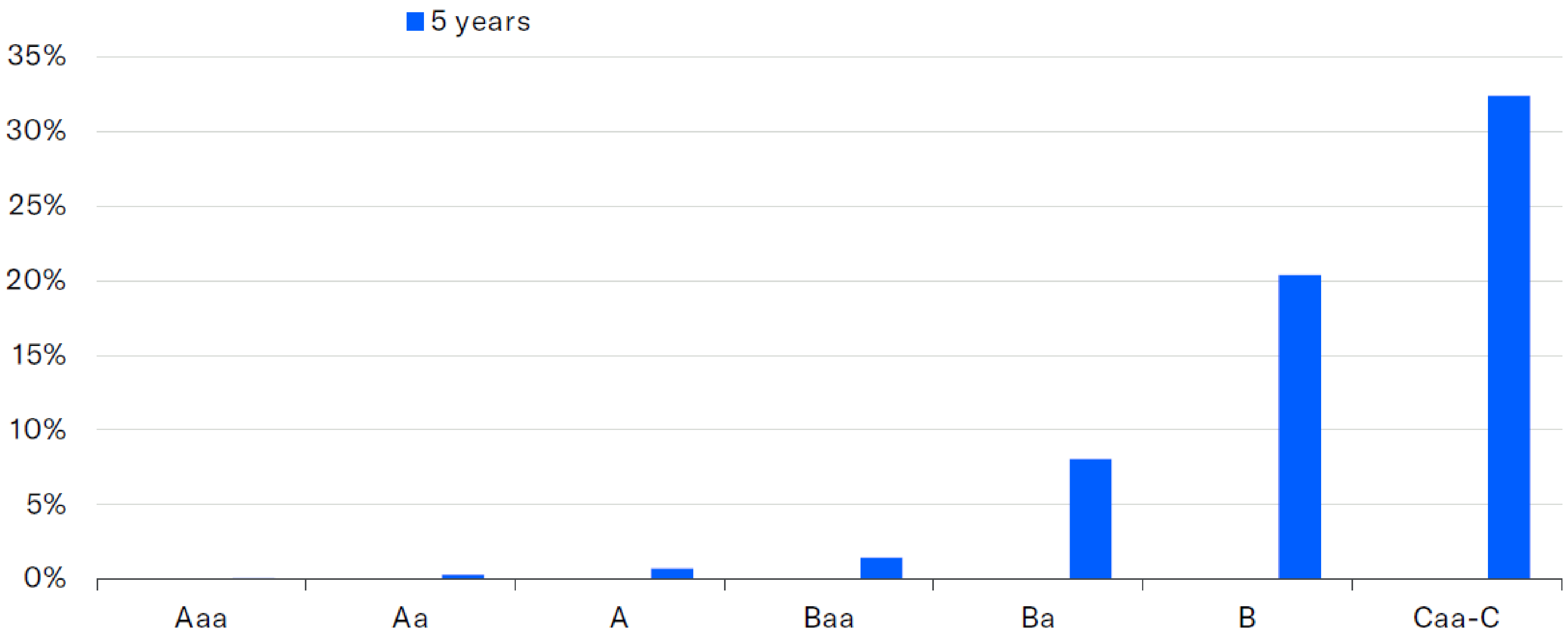


Source: Moody's Ratings

US 12-month trailing all-corporate default rate (investment and speculative grade). For a reference see Bond defaults are typically symptoms —not causes —of macroeconomic shocks

How are we doing?

Ratings should rank order credit risk; ratings and default rates correlate well

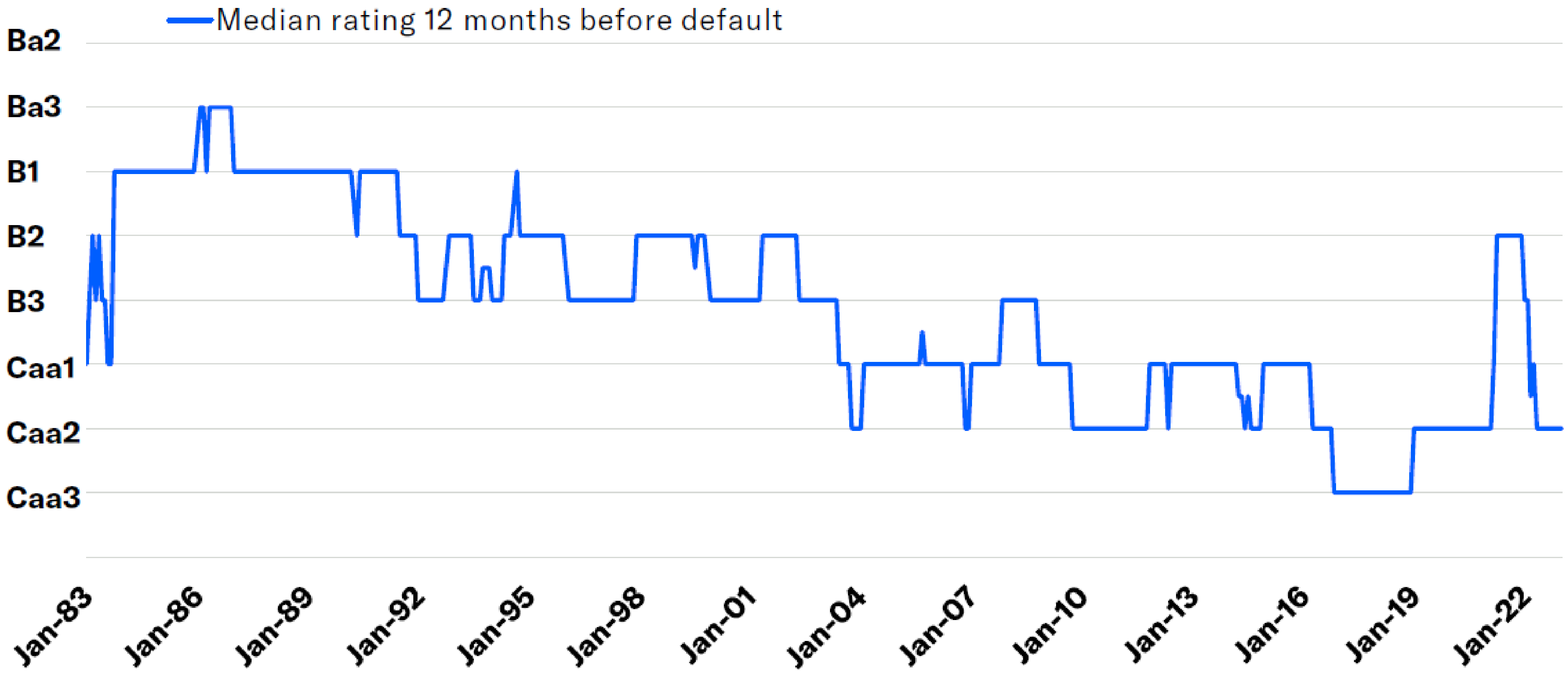


Source: Moody's Ratings

Cumulative default rates at different time horizons (1983-2023, global corporates)

How are we doing?

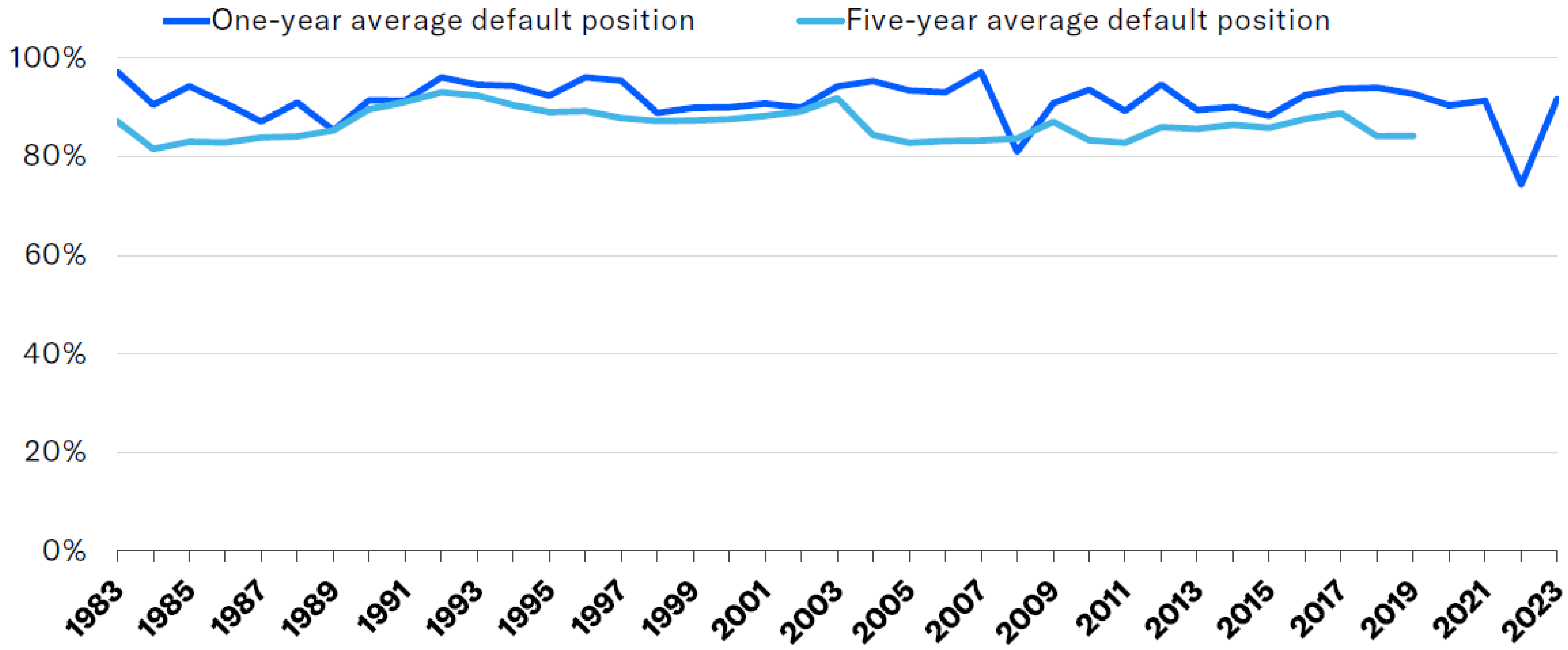
The median rating of defaulters is usually low: credit risks well signaled



Source: Moody's Ratings

How are we doing?

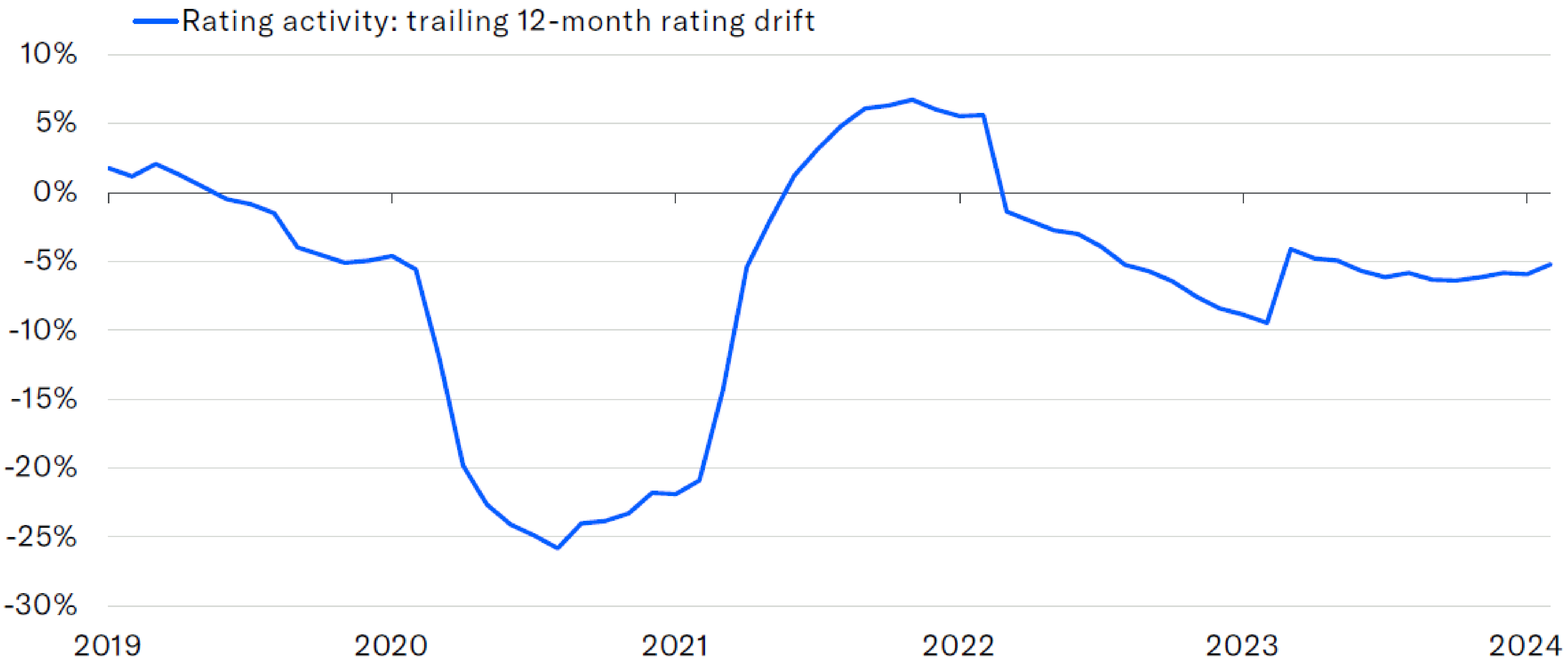
Alternatively, Average Default Position considers rank order of defaulters and non defaulters



Source: Moody's Ratings (Default Trends – Global, Annual Default Study)

ADP by cohort year, 1983-2023. ADP measures how well ratings rank ordered default risks over the measured horizon (Measuring Ratings Accuracy Using the Average Default Position)

How are we doing?

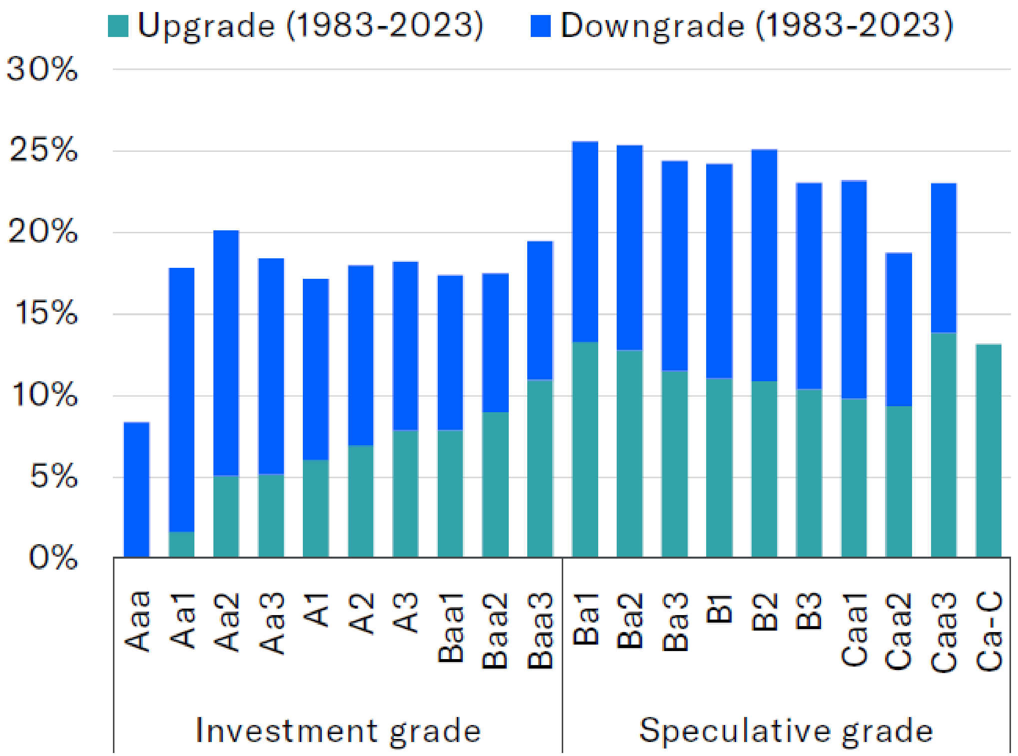


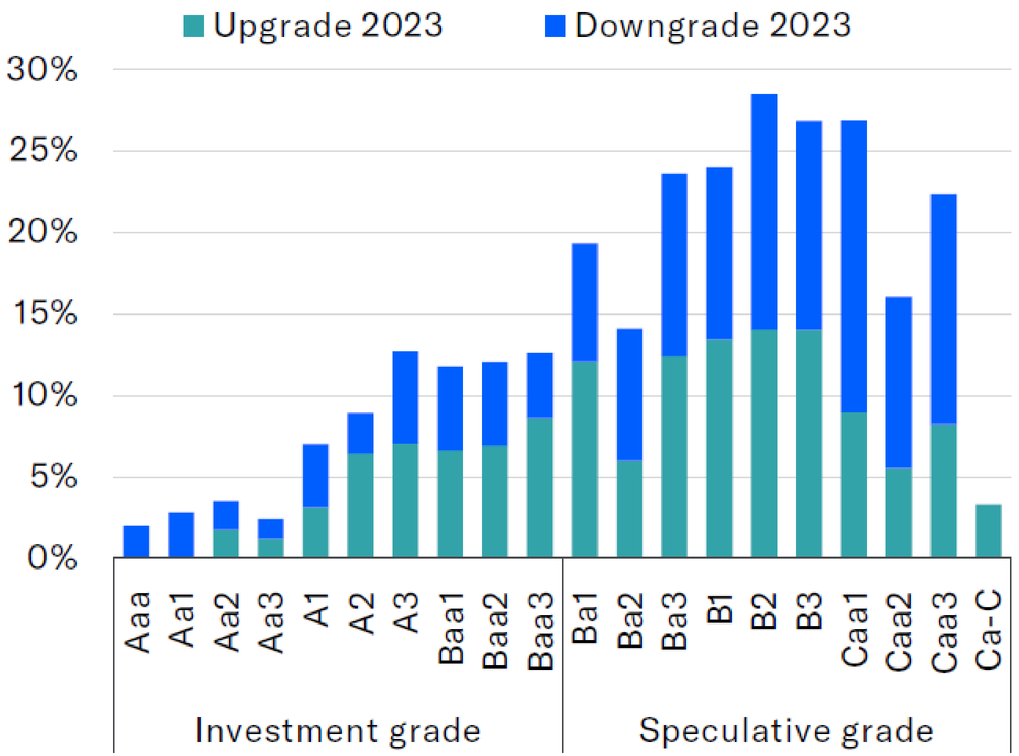
Source: Moody's Ratings (Default Trends – Global: March 2024 Default Report)

Rating drift = (notch upgrades - notch downgrades)/rated issuers

How are we doing?

Transition rates highest for speculative-grade ratings



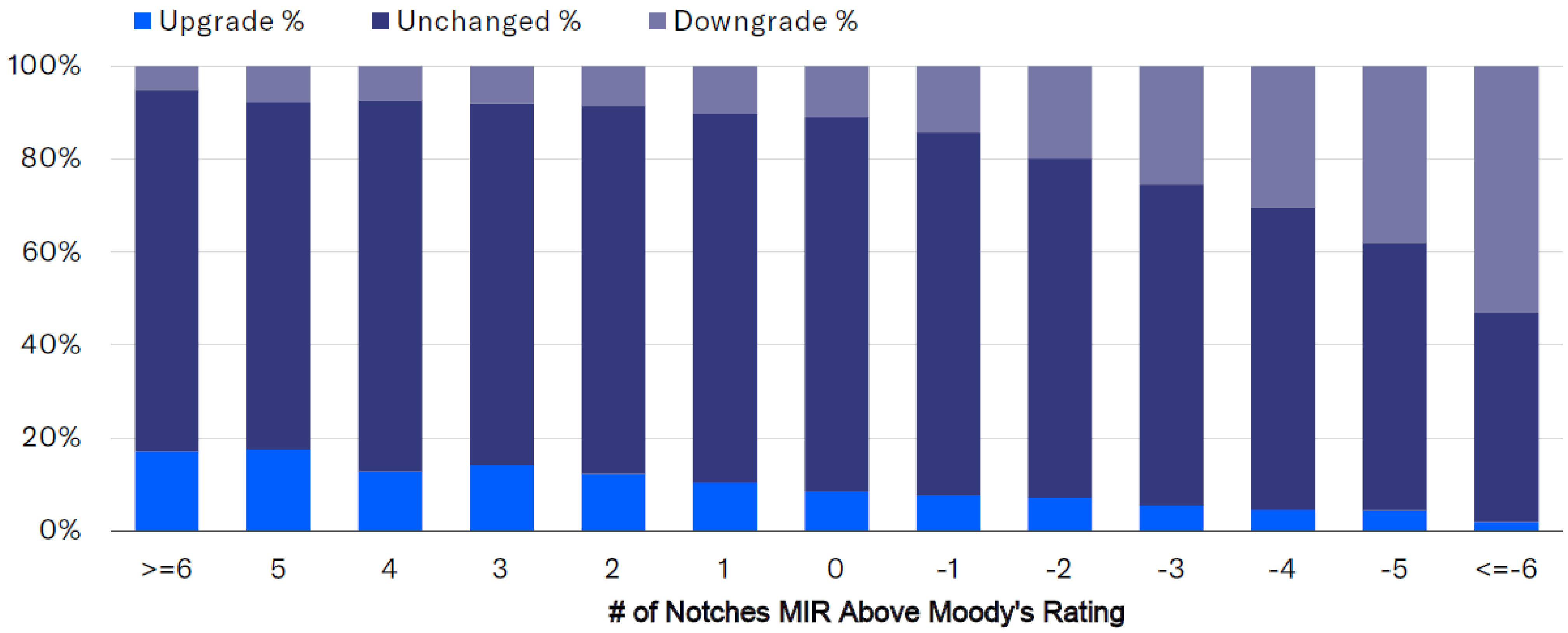


Source: Moody's Ratings

One-year rating transition rates (% of ratings) 1983-2023 (LHS) and 2023 (RHS)

How are we doing?

Market signals can lead ratings

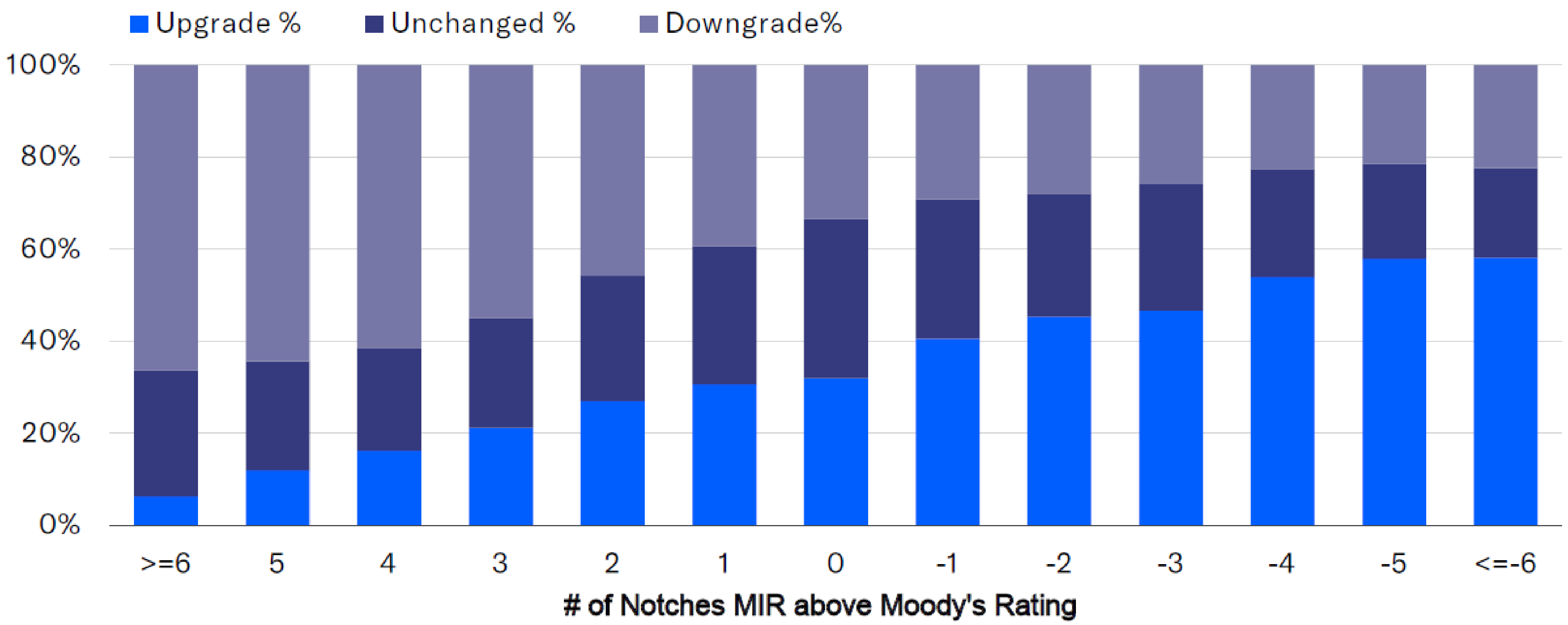


Source: Moody's Ratings

One-year changes in ratings, given initial gap between market-implied ratings and Moody's ratings; For more details see Market Indicators Have Converged More Frequently Towards Our Ratings.

How are we doing?

More frequently, ratings lead market changes



Source: Moody's Ratings

One-year changes in market-implied ratings (MIR), given initial gap between MIR and Moody's ratings; For more details see [Market Indicators Have Converged More Frequently Towards Our Ratings].

Outlook for economy and credit

Four major credit themes will be top of mind for credit market participants

Higher-for-longer rates
The impact of decade-high interest rates on economic growth, credit and default rates will unfold throughout 2024

Reform and regulation
Governments and regulators will respond to the effects of new finance and technology products and practices, which will shape credit outcomes

Adapting to structural shifts
Climate change, new technologies and population aging will challenge existing business strategies and revenue models throughout the economy

Polarization
Geopolitical tensions and social pressures will drive the development of strategic industries and policy priorities

For details, see: Credit conditions – Global: 2024 Outlook - Adjusting to a new normal driven by rates, geopolitics and technology, November 2023.
Source: Moody's Investors Service

Outlook for economy and credit

Global Macro Outlook 2024-25: Growth for G-20 economies to stabilize at modestly lower levels in 2024

G-20 global growth is likely to decline from 2022 and 2023 levels

- We expect a **steady normalization** in economic activity through this year and next across advanced and emerging market countries.
- A **soft landing** appears within reach for several advanced economies because of effective policy maneuvering, improved supply-demand balances and good fortune such as mild winters in Europe.
- We forecast **G-20 economies** will collectively expand by 2.4% in 2024 and 2.6% in 2025, down from 2.9% in 2023.

G3 central banks are on paths to normalize rates

- We maintain our expectation that the **Fed** will lower the federal funds rate by a cumulative 100 basis points in 2024, bringing it to 4.25%-4.50%, and cut further still in 2025.
- We expect the **ECB** to begin its rate cutting cycle in the second quarter, with a higher likelihood of earlier cuts than the Fed.
- While the **BoJ** seeks to normalize monetary policy and move away from negative interest rate policy and yield curve control, a softening of inflation could delay the process.

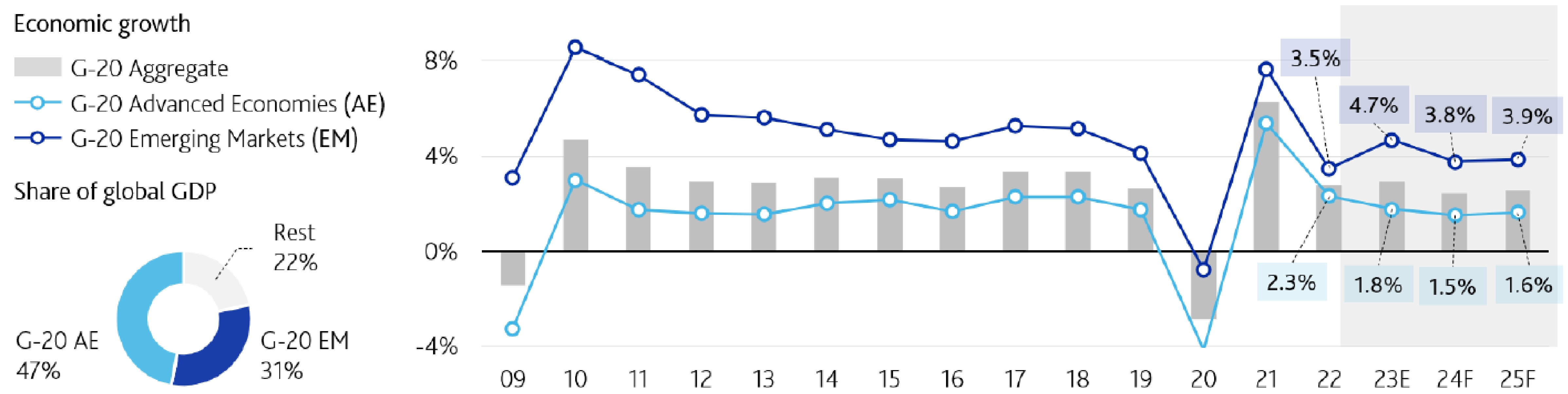
Macroeconomic risks have subsided compared to last year while geopolitical risks are prominent

- Key **macroeconomic and financial risks** that remain on our radar include inflation risks, uncertainty about the level of terminal interest rates, and pockets of vulnerability within the financial sector.
- **Geopolitical developments** continue to pose risks to commodity markets and global trade.
- The ongoing Russia-Ukraine war, conflicts in the Middle East and tensions across Asia add significant uncertainty to regional and global growth.

Outlook for economy and credit

Global growth set to stabilize in 2024 and 2025

G-20 annual growth



Outlook for economy and credit

Inflation

Stalling disinflation that keeps inflation above central banks' targets, particularly in the US, poses the greatest risk to our interest rate and growth forecasts.

Terminal interest rates

A higher-than-expected neutral federal funds rate would prevent the Fed from lowering the federal funds rate as low as markets currently expect and would raise long-term equilibrium rates.

Financial sector risks

High interest rates have raised repricing, default and duration risks for a range of financial entities. Some lending markets — commercial real estate (CRE), in particular — are undergoing significant adjustments.

Geopolitics

The ongoing Russia-Ukraine war, conflicts in the Middle East and tensions across Asia add significant uncertainty to regional and global growth.

Trade policy

In a shifting geopolitical landscape, economic, industrial and trade policies will be heavily influenced by the global political conjuncture. In particular, there is a risk of increased protectionism in the US after the upcoming elections, targeting imports of all trade partners.