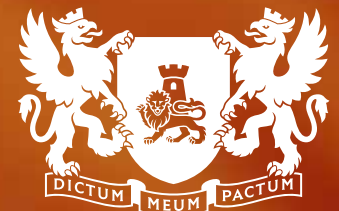


December 2024

FTSE World Government Bond Index (WGBI)

A global standard for the
sovereign debt markets



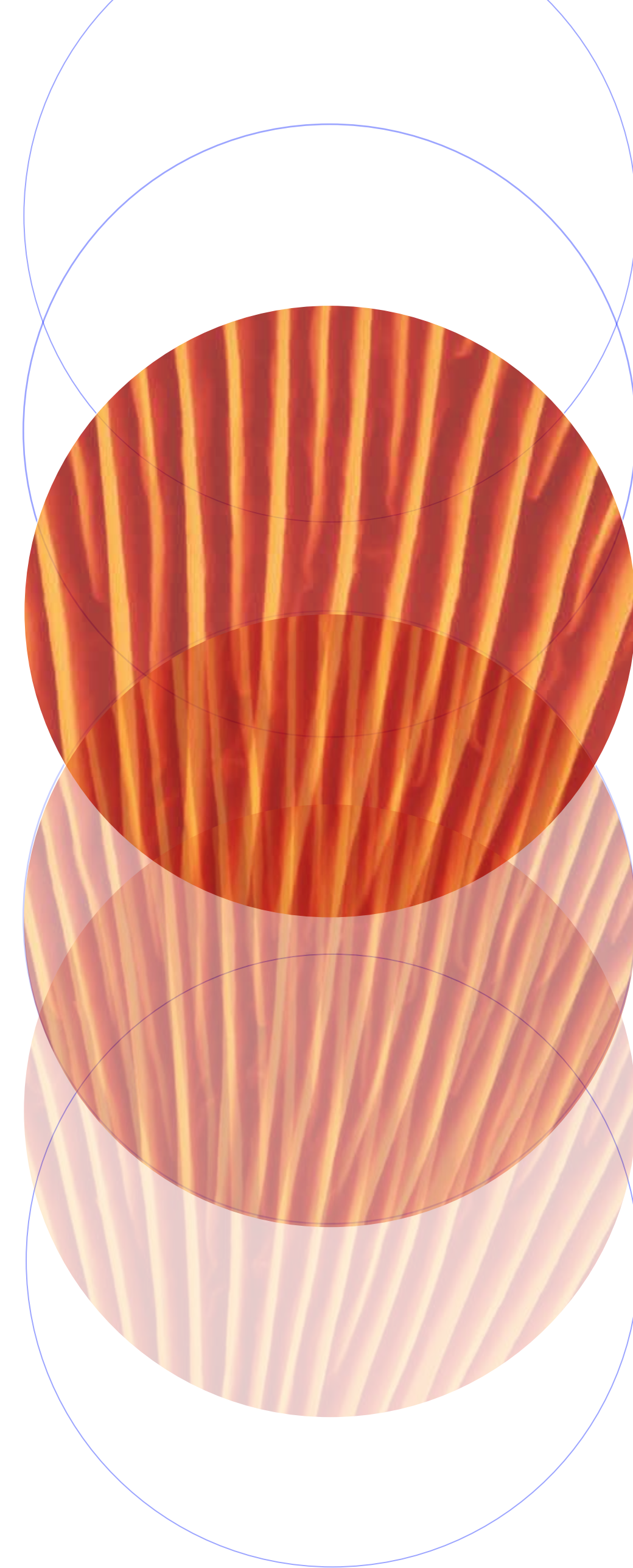
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Introduction

During the high-inflation 1970s, few investors wanted to own bonds. Fixed income securities fell so out of fashion they earned the derogatory nickname “certificates of confiscation”. By 1981, bond prices plummeted so far that the yield on the 30-year US Treasury bond hit a remarkable 15.2%.

Figure 1: US 30-year Treasury yield 1977–2024

US 30-year
Treasury yield
to maturity (%)



But then, the outlook brightened. Oil prices peaked and the global economic recession ended. Governments cut taxes and introduced pro-growth policies. There were early signs of an end to the Cold War. Inflation and interest rates fell, and bonds started to generate capital gains rather than losses.

In the middle of the decade, a new index appeared, helping clients navigate the now rapidly developing global bond markets. The World Government Bond Index (WGBI) was launched in 1986 by Salomon Brothers, the leading Wall Street trading firm.

The nine-country index, said Marty Leibowitz, head of fixed income research at Salomon, “would be useful . . . to all investors who sought a standard for comparing performances of their portfolios”¹.

Though the WGBI now includes 24 fixed-income markets², with bonds denominated in 16 currencies, it continues to perform this role for the world’s largest sovereign wealth funds, asset owners and asset managers.

Since 2017, FTSE Russell has been the owner and administrator of the WGBI. We have sought to build on its impressive, decades-long legacy. Among other changes, we have:

- introduced a rigorous market classification methodology
- diversified the index price sources
- embedded the WGBI within our comprehensive governance framework
- launched a number of derivative indices

The World Government Bond Index (WGBI) was launched in 1986 by Salomon Brothers...

Let’s look at how the WGBI became an indispensable aid to investors in the global bond markets – and why it should continue to perform that role.



1.

Indexing the bond market

Equity markets earn most of the attention of the financial media. Yet the world's fixed income ("bond") markets outweigh them by size³ and, arguably, importance.

Within the fixed income asset class, the \$30 trillion government bond market⁴ plays a special role. Government bonds generate so-called “risk-free” interest rates for use in financial analysis and modelling. They are the most popular form of collateral in the wholesale financial markets. And they are the cornerstone of many balance sheets.

Fixed income indices play a vital role in measuring the aggregate return of bond markets. They provide a set of financial indicators for investors, a

benchmark for active portfolio managers, and a way of investing in the bond market through index tracker funds, such as ETFs.

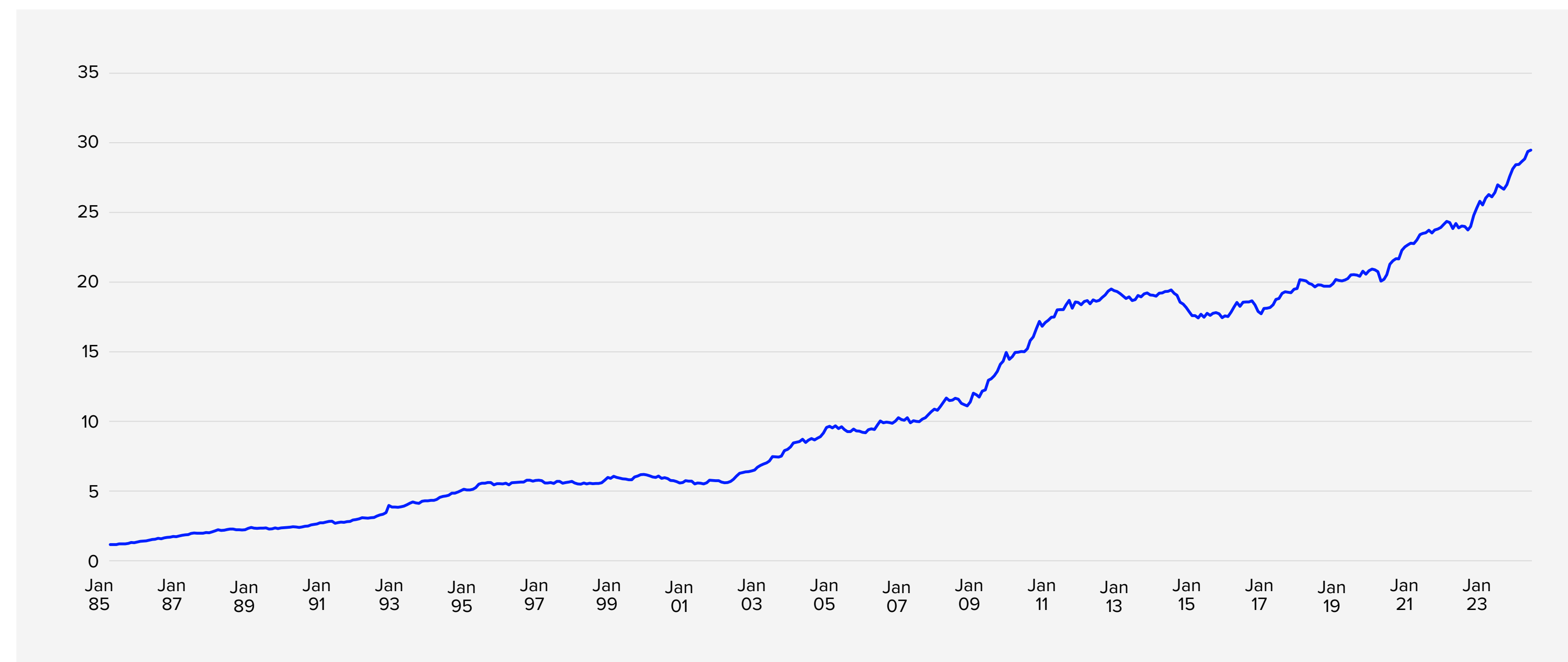
But bond indices were relatively late additions to professional investors’ toolkit. Equity indices were introduced in the late 19th century, but the first bond indices were only created in the 1970s. They were developed by Wall Street trading firms and initially had a single-market, single-currency focus.

FOR EXAMPLE: The Salomon Brothers Long-Term High-Grade Corporate Bond index (later renamed the Salomon Broad Investment Grade Index, then the Citigroup BIG, now the FTSE USBIG index) was launched in 1973. The Kuhn Loeb Aggregate bond index (later the Lehman Aggregate and now the Bloomberg Aggregate), was another US bond index launched in the same year.

There is common ground between a global equity index such as the FTSE All-World and a global bond index like the WGBI. Both rely on a market classification framework, a set of published rules and a method for keeping the index up to date.

However, bond index designers face specific challenges that reflect the nuances of their asset class. This is particularly true when it comes to including bonds from a global set of issuers, denominated in multiple currencies.

Figure 2: WGBI market value 1985–2024 (US\$ billions)



These are critical issues to professional investors:

- What should fixed income indices include?
- What credit standards should they meet?
- Where and when should prices be sourced?
- How can an index meet the needs of professional investors?
- Who oversees the index and any changes to its methodology?
- Who develops the associated analytics?

2.

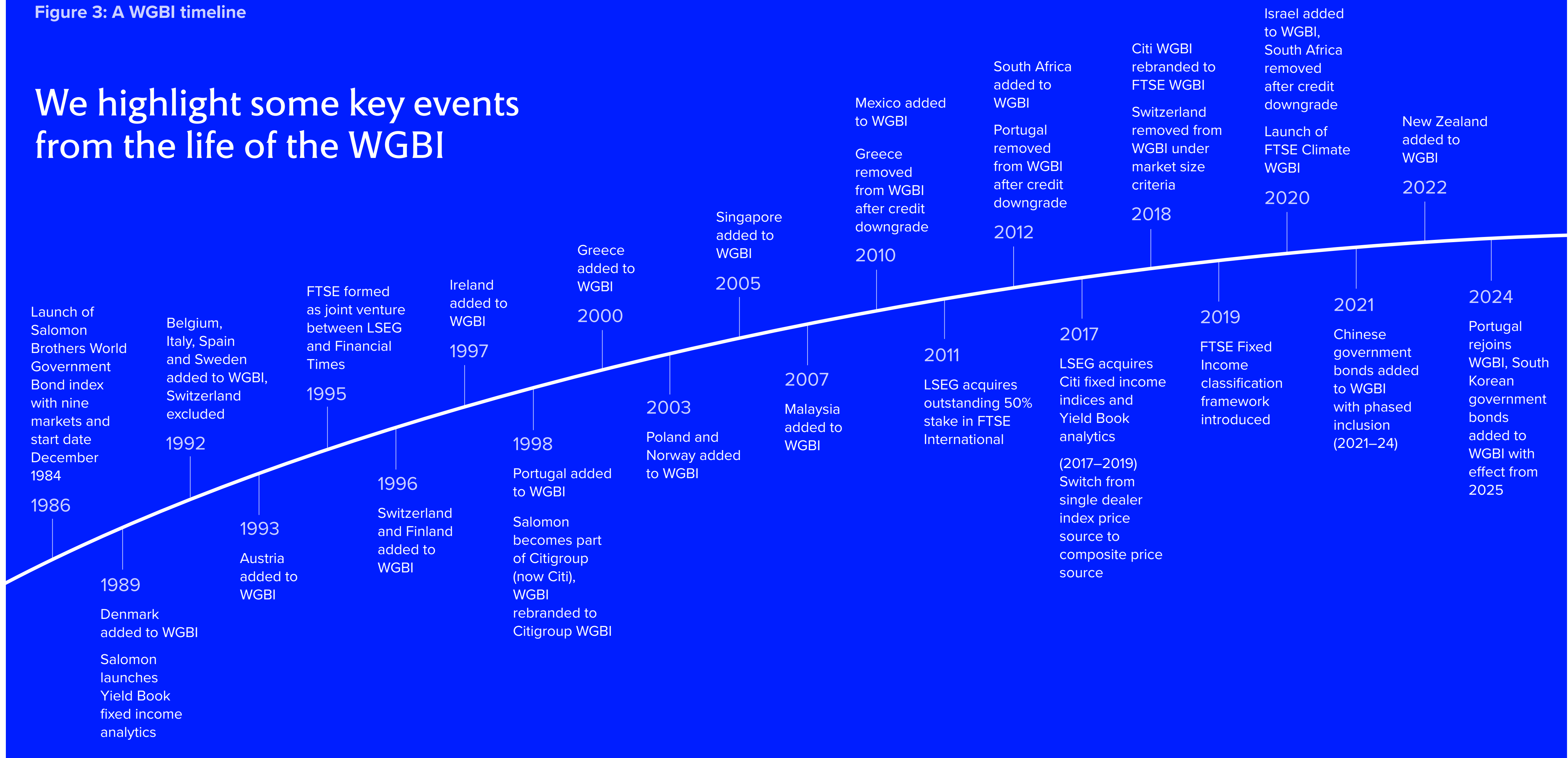
A WGBI timeline

Launched in 1986 with an index history from 31 December 1984, the Salomon Brothers World Government Bond index (WGBI, now the FTSE WGBI) has undergone significant changes in its composition, methodology, pricing and oversight.



Figure 3: A WGBI timeline

We highlight some key events from the life of the WGBI





3.

What the WGBI includes (and why)

The FTSE WGBI aims to capture liquid, investment-grade, highly accessible local government bond markets. But what does that mean in practice?

At the launch of the WGBI, Salomon Brothers restricted index eligibility to nine “industrial” countries’ fixed income markets:

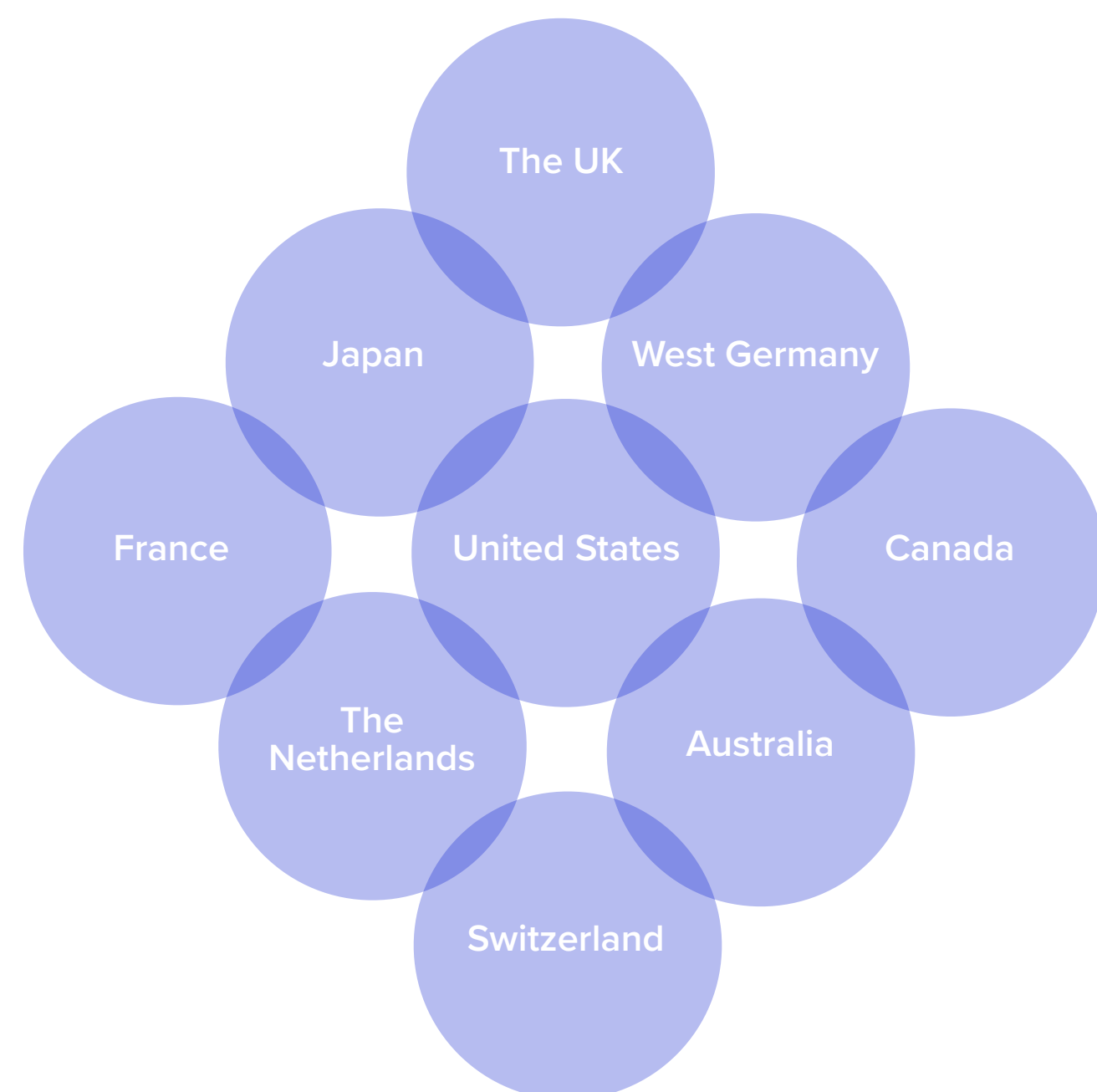


Figure 3 shows how the WGBI universe expanded over time, initially to include some peripheral European debt markets, then to encompass a broader range of global government bonds, including those of emerging economies with sufficiently large and liquid domestic debt markets (but subject to minimum credit rating and market size criteria – see below).

Eligibility per fixed income country classification

Since 2019, eligibility for the index has depended on compliance with a rigorous fixed income country classification framework. We designed and published the framework [following an extensive consultation with our clients](#), many of whom are the largest asset owners in the global fixed income markets.

The principal idea underlying the fixed income country classification framework is that index eligibility should depend on the extent to which local currency government bond markets are open to global investors. This requires a robust and transparent scoring system used to assign market accessibility levels for local currency government bond markets.

The FTSE fixed income country classification framework focuses on four distinct aspects of accessibility:

- market, macroeconomic and regulation
- foreign exchange market structure
- bond market structure
- global settlement and custody

Each area comprises a number of accessibility metrics, on which individual bond markets are scored.



Key metrics

As a global fixed income index requiring the highest standards of open access, the FTSE WGBI requires constituent markets to meet 17 metrics in full (see figure 4).

We review market accessibility levels semi-annually in March and September and we publish a “watchlist” of fixed income local government markets that may move to a higher or lower accessibility level.

Figure 4: FTSE Fixed Income Country Classification Framework – Accessibility metrics and index eligibility

	Level 2 (i.e., WGBI) Minimum requirement	Level 1 (i.e., EMGBI) Minimum requirement	Level 0 (i.e., Frontier) Minimum requirement
1. Market, Macroeconomic and Regulation			
No Unduly Investment Restrictions on Foreign Investors	●	○	○
Sustainable Issuance and Debt Management Practices Supportive of Market Liquidity	●	●	●
Sound Regulatory Environment	●	○	○
Transparent FX Policy and Communication	●	○	○
Taxation Regime not Burdensome to Foreigners	●	○	○
Clear Registration Process for Foreign Investors	●	●	○
2. Foreign Exchange Market Structure			
Sufficient FX Liquidity and Investability	●	○	○
No Overly Prohibitive Currency Restrictions for Investment Purposes	●	○	○
Currency Hedging Onshore or Offshore using NDF with Limited Divergence to Onshore	●	○	○
3. Bond Market Structure			
Sufficient Bond Liquidity in Primary and Secondary Markets	●	●	○
Competitive Transaction Costs	●	○	○
Efficient Fixed Income Dealing and Trading Landscape	●	●	○
Bond Conventions that Support Index Calculations	●	●	●
Availability of Suitable Bond Pricing for Index Calculation	●	●	●
4. Global Settlement and Custody			
Settlement Accommodative of Global Investors	●	○	○
Availability of DvP	●	●	○
Competitive Custody Market	●	○	○

- Criterion must be fully met
- Criterion must be partially met
- Criterion is not applicable

WGBI and other FTSE Russell government bond indices

There are overlaps between the WGBI and other FTSE Russell local currency government bond markets with an emerging market focus (see figure 5).

However, most emerging bond markets don't qualify for the WGBI. Most markets in the FTSE Emerging Market government bond market index (FTSE EMGBI) have a market accessibility level of 1, making them ineligible.

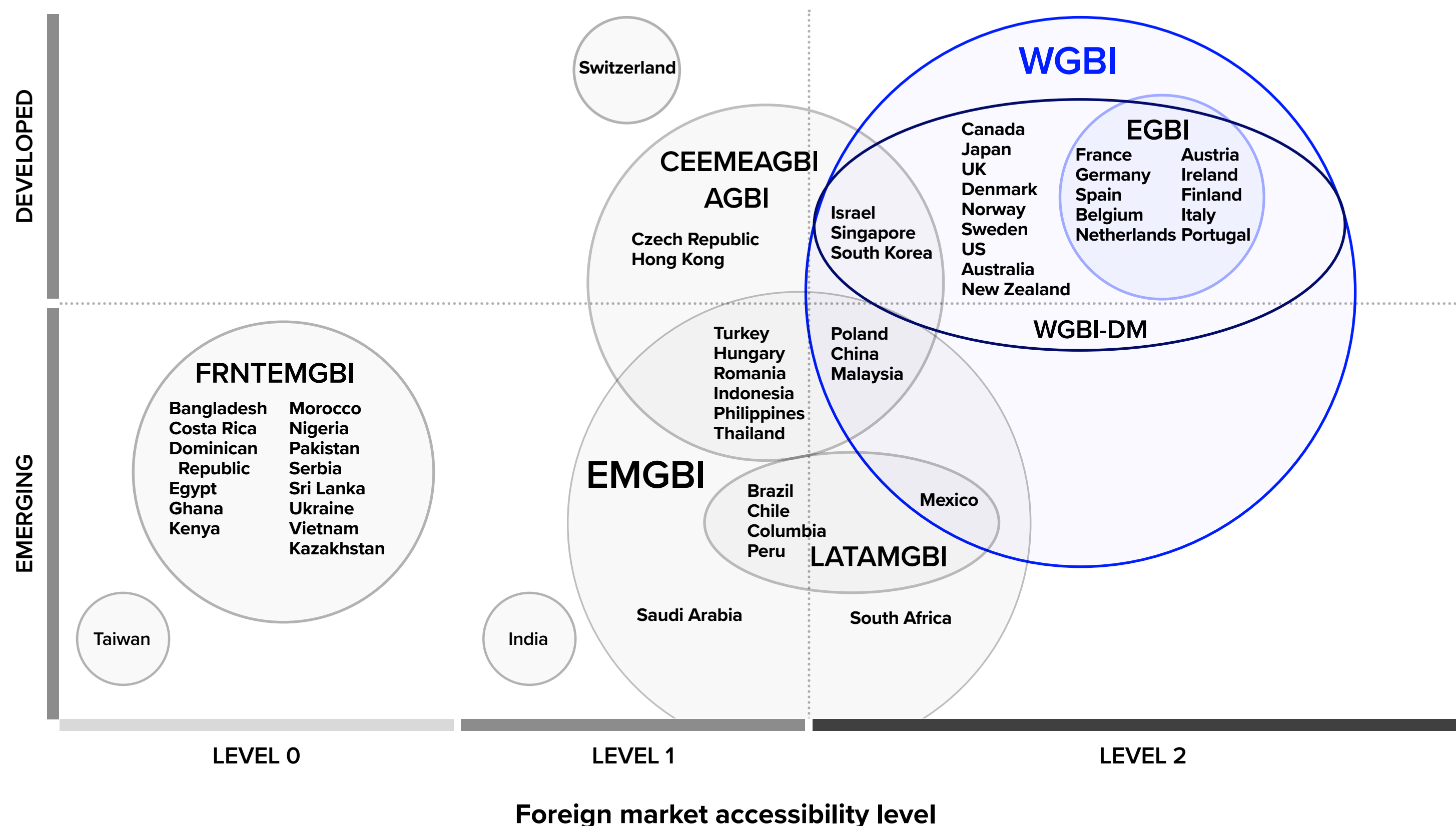
Markets considered eligible for index inclusion but with the lowest accessibility score (Level 0) are the frontier government bond markets. Although ineligible for the WGBI, they qualify for the FTSE Frontier Emerging Markets Government Bond index (FTSE FRNTEMGBI), which requires full or partial compliance with 5 of the 17 metrics in the FTSE fixed income country classification framework.

Important WGBI subcategories include the FTSE European Government Bond index (FTSE EGBI) and the FTSE World Government Bond Index - Developed Markets (WGBI-DM), which measures the performance of fixed-rate, local-currency, investment-grade sovereign bonds issued in developed markets only.

The WGBI's sister index, the FTSE World Inflation-Linked Securities Index (WorldILSI) measures the returns of inflation-linked government bonds from thirteen countries. Eligibility for the FTSE WorldILSI requires the highest market accessibility level (2) under the FTSE fixed income country classification framework.

In combination with the WGBI, the FTSE WorldILSI enables the analysis of inflation break-even rates across major economies, as well as the analysis of the relative valuation of different asset classes.

Figure 5: FTSE Russell government bond indices by economic development status and market accessibility level





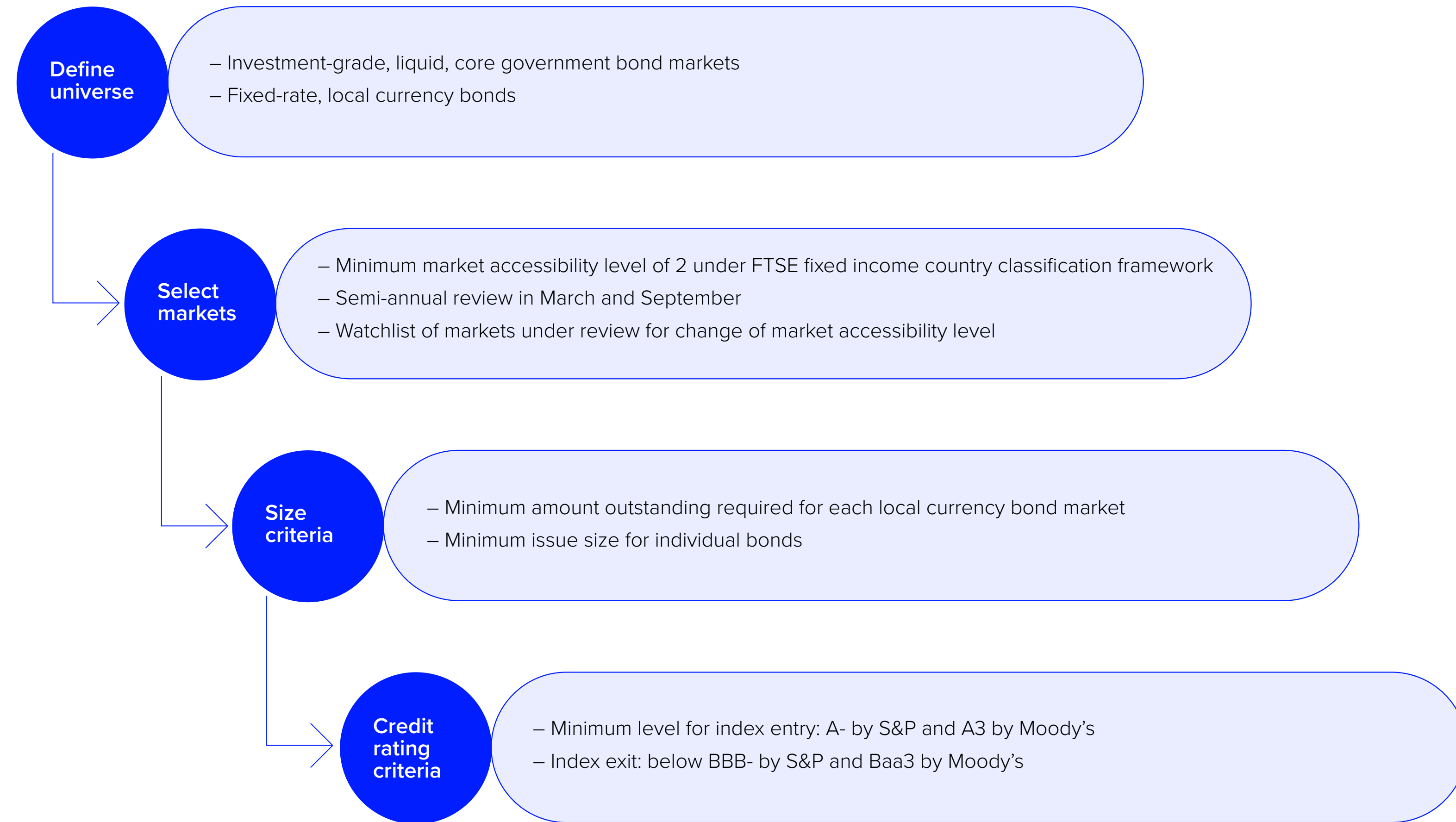
4.

Building the WGBI

As described above, the country classification framework determines the overall eligibility of local currency bond markets for the WGBI.

The index's construction methodology also includes minimum market size criteria (both at the aggregate level and at the level of individual bond issues) and a minimum investment grade credit rating requirement (see figure 6).

Figure 6: Building the WGBI



In aggregate, these design steps (and the principles behind them) ensure that the FTSE WGBI is a market-leading benchmark for global government bonds. It is:

Objective

It includes (and excludes) markets according to a robust and transparent classification framework.

Relevant

It includes markets that are relevant to a diverse group of investors, both active managers and those seeking to track a benchmark.

Modular

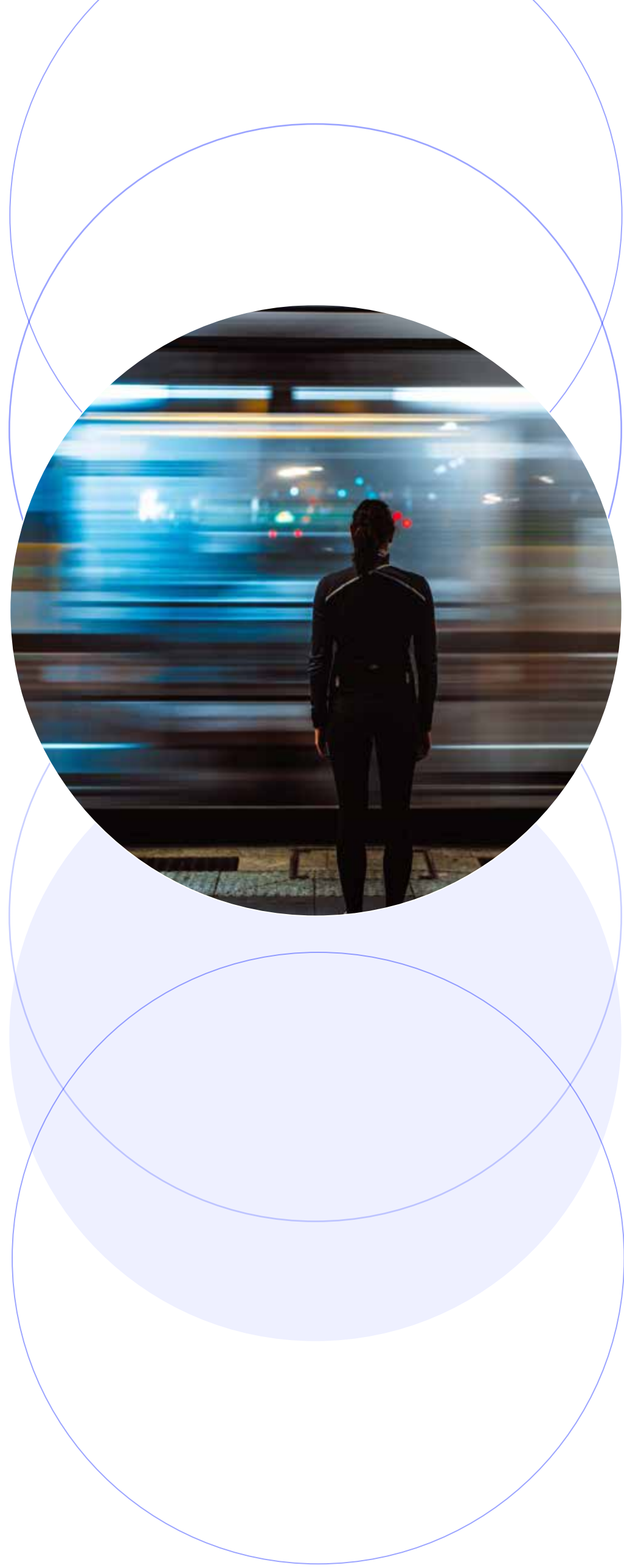
It can easily be segmented into different index building blocks, such as those delineating fixed income market exposures by geographical region, credit rating or maturity.

Predictable

Index inclusion is based on a transparent and predictable methodology.

Replicable

The index's focus on larger and more liquid bonds means it is designed to serve as a performance target in index-tracking funds and ETFs.



5.

How have WGBI exposures changed over time?

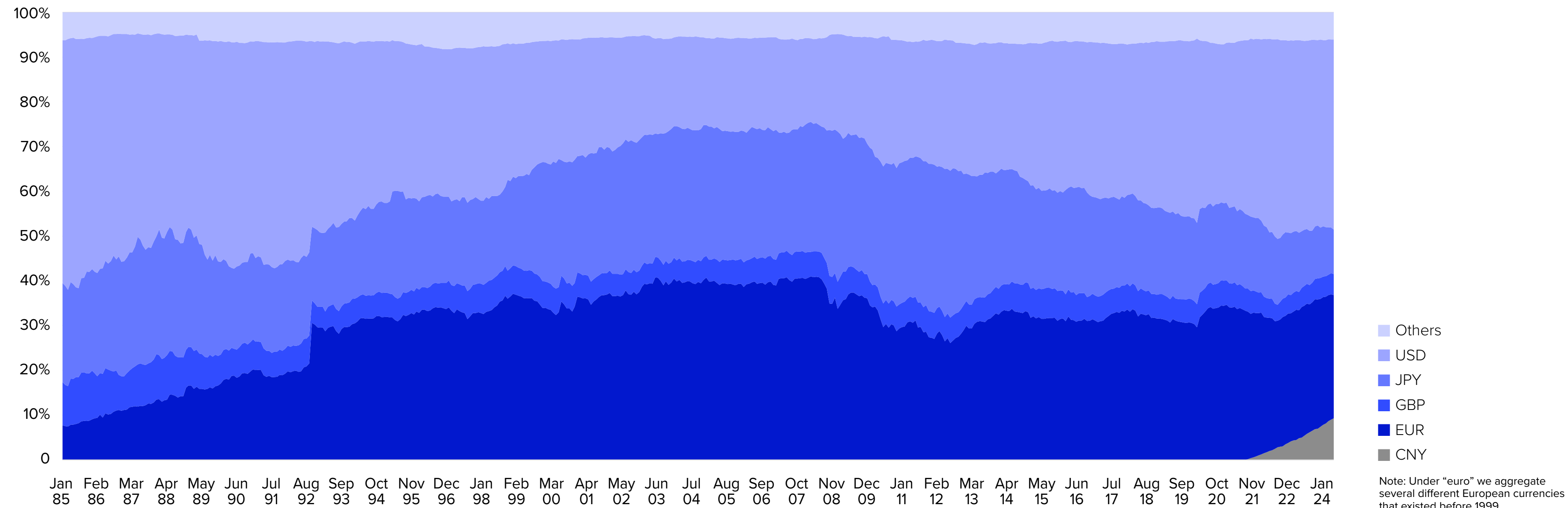
Since the inception of the FTSE WGBI, the largest five currencies (the US dollar, Japanese yen, euro, British pound, and the new joiner, the Chinese yuan) have accounted for 93%–95% of the entire index by weight.

Even though it contains bonds denominated in 16 currencies⁵, the WGBI is therefore not a very diversified benchmark in terms of currency exposure, reflecting the unequal sizes of different sovereign bond markets.

Figure 7 shows that, before the 1990s, the US and Japan accounted for nearly 70% of WGBI. Thereafter, European government bonds partially replaced the US Treasury market, with euro-denominated bonds reaching an aggregate weighting of around 30% in the early 2000s.

During the American subprime mortgage crisis, the index's US dollar exposure hit its lowest level, accounting for only 20% of the index, with the allocation to Japanese government bonds (JGBs) and European sovereign bonds hitting 30% and 40%, respectively. After 2012, the index's dollar weighting increased again, with the yen exposure falling in tandem.

Figure 7: WGBI currency exposure 1985–2024



Note: Under "euro" we aggregate several different European currencies that existed before 1999.

⁵ As at June 2024.

Source: FTSE Russell monthly data from 31 Dec 1984–30 Jun 2024. Under "euro" we aggregate several European currencies that existed before 1999.

What about the WGBI's credit exposures over time?

The index currently consists of 24 government bond markets, and the index rules require every constituent to be rated investment grade or above (i.e., to have a minimum rating of BBB- by S&P, and Baa3 by Moody's). Overall, government bonds are conventionally considered a relatively risk-free asset, and FTSE WGBI gives investors exposure to the sovereign debt markets of better quality.

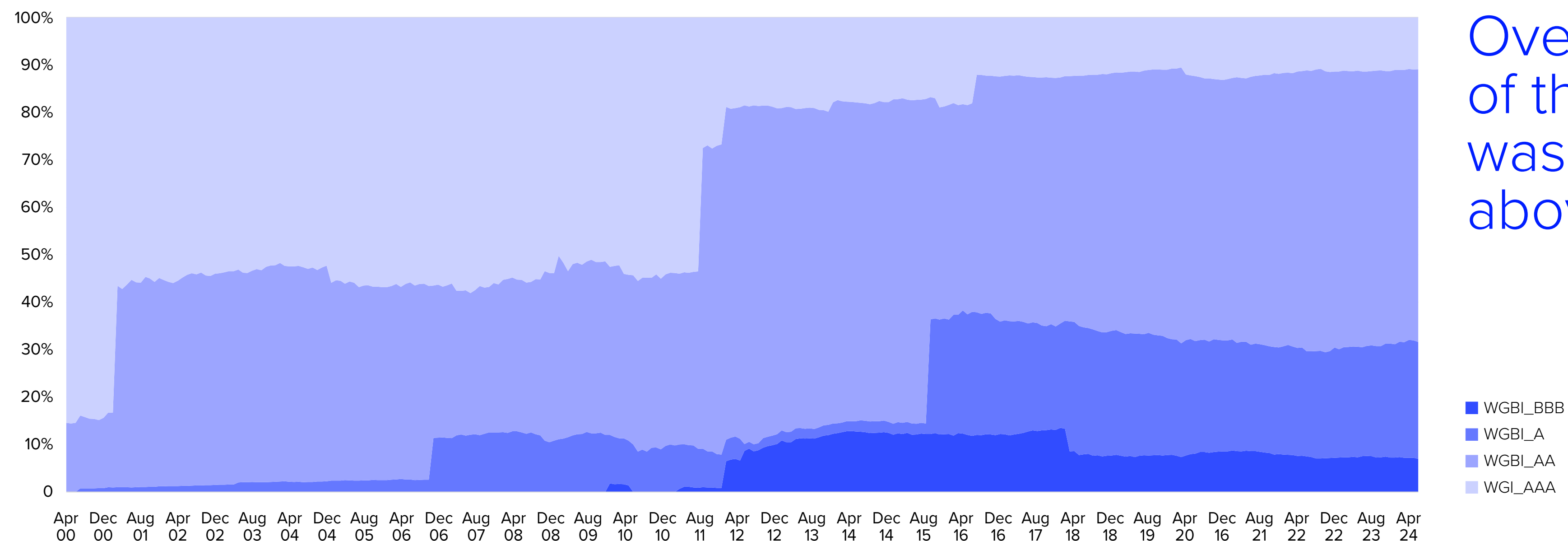
The decline of creditworthiness

Nevertheless, the index shows an overall decline in sovereign creditworthiness since the turn of the millennium.

Before 2000, WGBI was perceived as almost exclusively an AAA-rated index, as figure 8 shows. During the European sovereign debt crisis of 2009–2011, several European governments lost their AAA ratings.

The increasingly indebted Japanese and US governments lost their AAA ratings from S&P in 2001 and 2011, respectively. The credit downgrade of these large treasury markets thus led to a lower-rated WGBI overall. As of July 2024, only 11% of the WGBI remained AAA-rated and the majority (57%) of the WGBI is now in the AA-rated sector.

Figure 8: WGBI constituent credit rating 2000–2024



Over two-thirds of the FTSE WGBI was AA-rated or above in July 2024.

Yield history of the index presents a quite dramatic picture

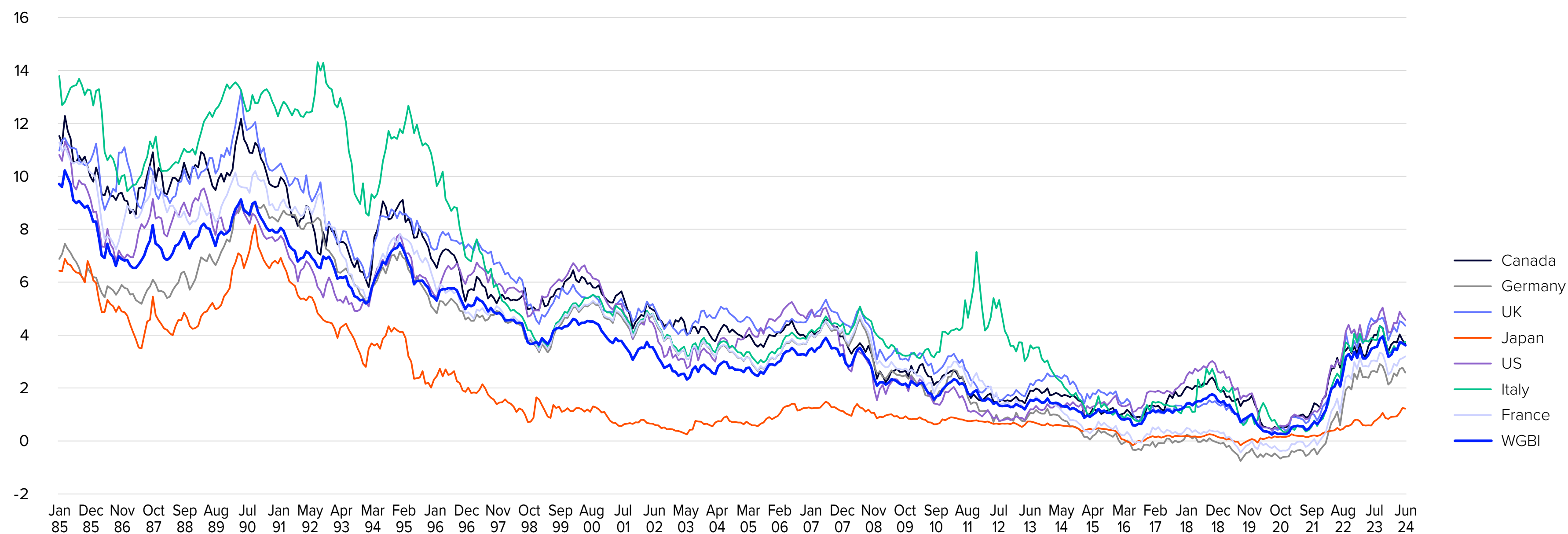
At the inception of the WGBI (the index history dates from 31 December 1984), its weighted average yield was nearly 10% (see figure 9). After that, the index yield gradually dropped, reaching a record low in March 2020 just as the Covid-19 pandemic exploded.

The downward trend in yields started to reverse as investors took fright over rapidly rising inflation, such as when the US consumer price index jumped

9.1% year-on-year in June 2022. In tandem, the US Federal Reserve raised its target interest rate dramatically, hiking from 0% to 5.25% in 18 months⁶. Other central banks around the world also raised interest rates sharply.

By July 2024, WGBI's yield had reached 3.6%, a similar level to the pre-2008 period. Looking back, it is now hard to believe that during the period between 2015 and 2020, the yields of several European sovereign bond markets and of Japanese government bonds (JGBs) were negative because of the fear of deflation.

Figure 9: Historical yield of G7 countries in WGBI (1985–2024)



WGBI duration has increased over time

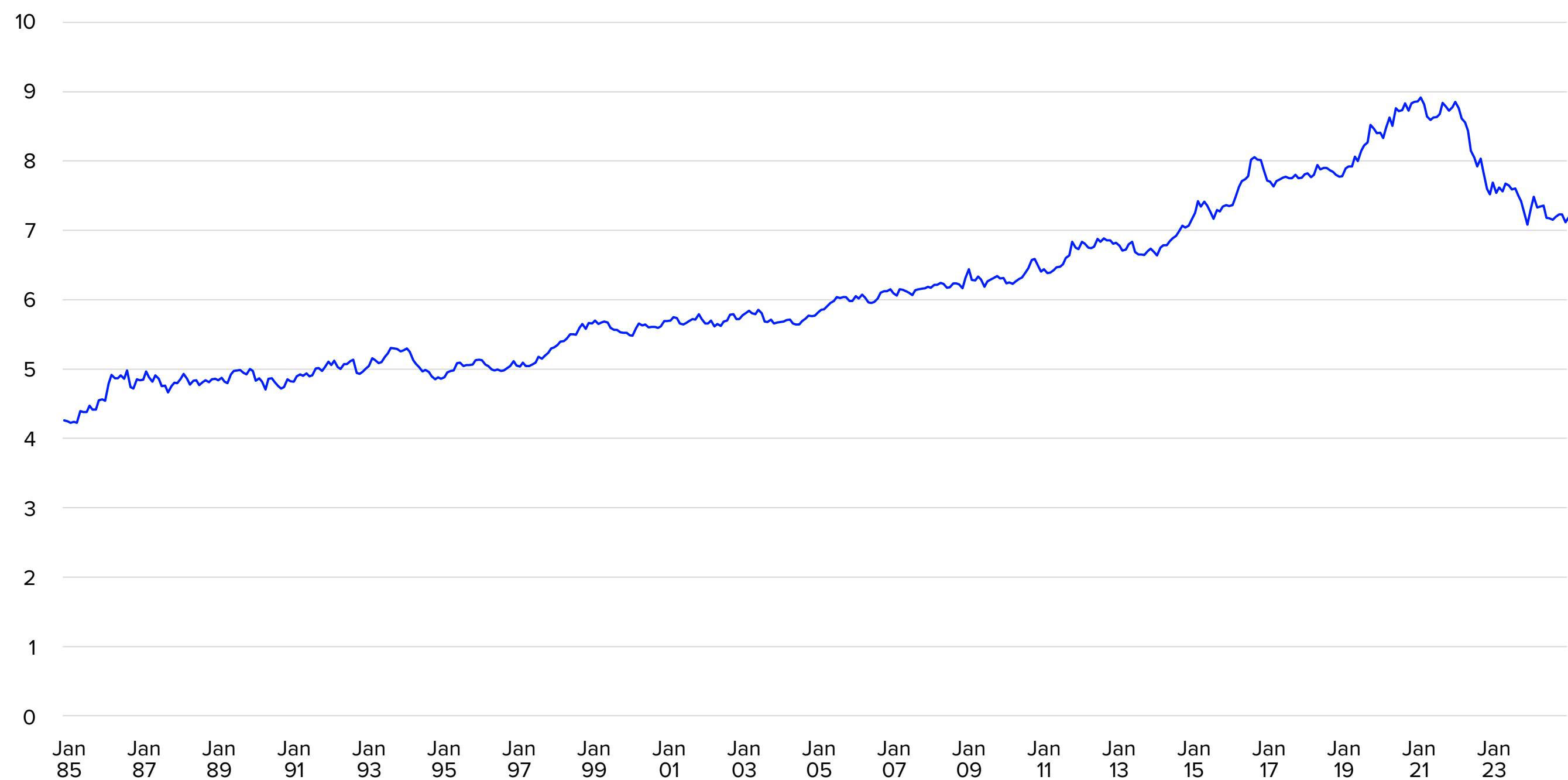
In addition to the structural changes described in the previous pages – an increase in the index’s number of constituent markets since its inception, a decline in aggregate credit quality and a drop in its average yield – the WGBI has also seen a rise in its duration (see figure 10).

Figure 10 captures a change in issuance strategy by sovereign bond issuers, particularly during the period following the financial crisis: the FTSE WGBI duration rose from six years in 2007 to nearly nine years in 2020.

The rise in index duration during the post-crisis period reflected a number of factors:

- Central banks’ net government bond purchases under quantitative easing, which depressed yields and increased duration
- Zero interest rate policies, which had a similar effect
- Increasing popularity of liability-driven investment (LDI) strategies, which drove demand for longer-dated sovereign bond issuance

Figure 10: FTSE WGBI duration (years)



A decorative graphic on the left side of the slide. It features three overlapping circles. The top circle is white with a blue outline. The middle circle is light blue with a blue outline. The bottom circle is a blurred image of a train tunnel, showing the tracks and the structure of the tunnel, with a blue outline. The number '6.' is positioned to the right of the top circle.

6.

Pricing the index's bonds

In a global equity index calculated daily, pricing is (relatively) straightforward: equity prices are sourced from the world's stock exchanges.

For example, the FTSE All-World index, our flagship benchmark of global equity markets, uses closing mid-market or last trade prices, where available, for securities with local market quotations.

Pricing a bond index has never been so simple

In the early days of bond indices, the entity compiling the index was often the entity trading (making markets) in the constituent bonds. While this approach had advantages (a direct connection between the index price and the market price), it also had disadvantages.

Since the bond market is opaque and there is no official price for individual bonds, potential conflicts of interest within a bank that is publishing the index and at the same time trading in the index's bonds (and in derivatives that reference the index's bonds) must be handled carefully.

Evolution of methodology

After the London Stock Exchange Group (FTSE Russell's parent company) acquired the WGBI from investment bank Citi in 2017, we proceeded to switch the price source for most of the government bond markets in the index from a single bank's trading desk (Citi) to a composite bond price service provided by Refinitiv.

Refinitiv's evaluated price service (later rebranded as LSEG D&A evaluated price service) serves as an independent, global evaluated pricing source covering over 2.7 million fixed income securities, derivatives and bank loans.

In October 2024, FTSE Russell announced that from March 2025 it would use Tradeweb FTSE benchmark closing prices for US Treasuries, European Government Bonds and UK Gilts in FTSE's global fixed income indices, including the WGBI.

Tradeweb is a leading builder and operator of electronic marketplaces and a major platform for the trading of government bonds: in July 2024 it recorded average daily trading volume of \$206bn in US government bonds and \$43bn in European government bonds.





7.

The broader WGBI family

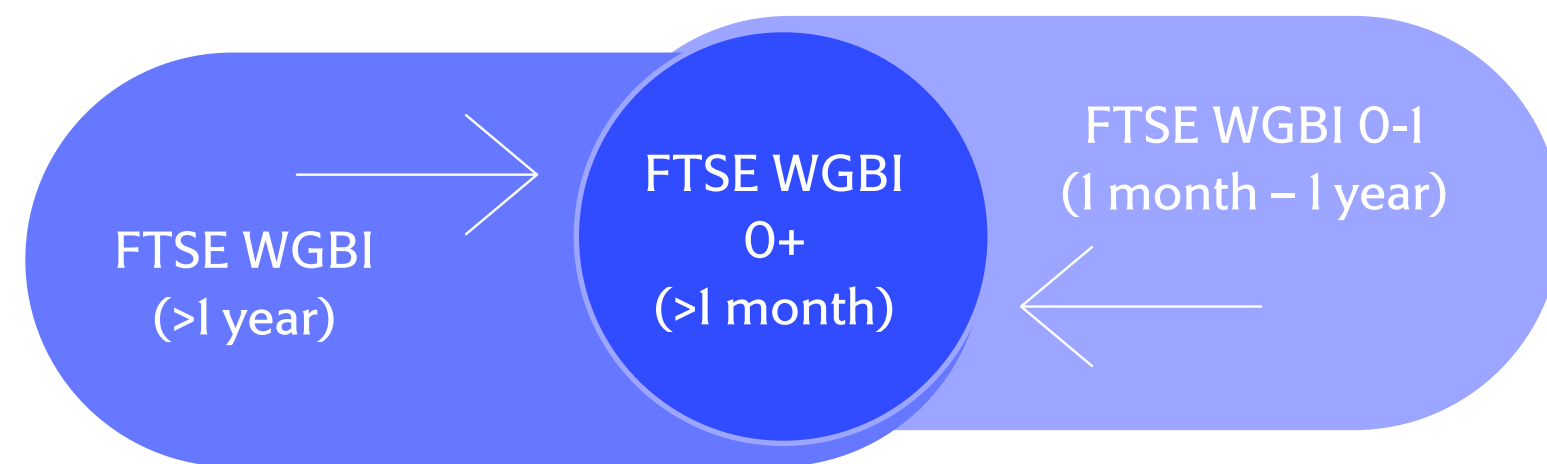
The WGBI sits at the centre of a family of government bond indices, differentiated by maturity profile, regional focus, credit rating or sustainability.

One popular set of indices focuses on short-maturity government bonds that fall outside the traditional maturity profile of the WGBI. Since the minimum maturity of index-eligible bonds is one year, bonds are removed from the WGBI at the next monthly index rebalancing once their term to maturity falls below this threshold.

To complement the WGBI and to ensure modularity across the fixed income index range, FTSE Russell has introduced the FTSE World Government Bond 0-1 Year index. This index tracks so-called 'roll-down' bonds from the FTSE WGBI (those moving to a maturity shorter than one year), using a common methodology.

Combining the FTSE WGBI and the FTSE World Government Bond 0-1 Year index produces an aggregate maturity index called the FTSE World Government Bond 0+ Years Index (see figure 11). It tracks the universe of securities that meet the eligibility criteria for the flagship FTSE World Government Bond Index (WGBI) all the way down to one month to maturity.

Figure 11: FTSE WGBI plus FTSE WGBI 0-1 makes FTSE WGBI 0+



Other WGBI offshoots focus on sustainability, debt capacity and regional investor requirements. They include:

FTSE Climate Risk-Adjusted World Government Bond Index

Incorporates a climate-tilting methodology, which adjusts index weights according to each country's relative climate risk performance, assessed by three 'pillars' (physical risk, transition risk and resilience).

FTSE Advanced Climate Risk-Adjusted World Government Bond Index

Constructed with a stronger tilt towards the transition risk pillar, offering greater exposure to countries with a stronger alignment to the 2-degree pathways.

FTSE Climate CaRD WGBI

Provides targeted exposure to the sovereign bonds in the FTSE Climate WGBI, using weights that aim to maximise the index's yield return (Carry) and its Roll Down return.

FTSE Nomura Climate CaRD WGBI

Aims to maximise the carry and roll-down of the index subject to duration and country weight constraints of the Climate WGBI, supporting global fixed income investors to incorporate climate risk considerations while providing flexibility on optimising factor variants.

FTSE ESG WGBI

Incorporates a tilting methodology that adjusts index weights according to each country's relative Environmental, Social and Governance (ESG) performance.

FTSE Debt Capacity WGBI

Focuses on countries with lower debt issuance relative to their GDP and stronger debt servicing capabilities.

FTSE MPF WGBI

Designed to help users meet the regulatory requirements governing investments in debt securities by Hong Kong Mandatory Provident Fund (MPF) schemes.

8.

Making index changes predictable for users

On average, fixed income indices undergo greater internal changes than equity indices. While an equity is irredeemable except in certain circumstances, most bonds have a fixed redemption date.

Once a bond is issued, each day brings it a step closer to maturity. At or near that point, an issuer often refinances the maturing bond with a new bond issue. So as time passes, bond indices change their constituents regularly. When bonds move closer to maturity, they drop out of indices and are replaced by new issues.



Fixed income index as a benchmark

For a fixed income index to serve as a benchmark, its methodology must be transparent and its changes predictable.

To help fixed income index users anticipate forthcoming changes, we specify monthly fixing dates for each bond index. These provide a clear reference point for index users to know, in advance, of any changes to the composition of the indices for the upcoming months.

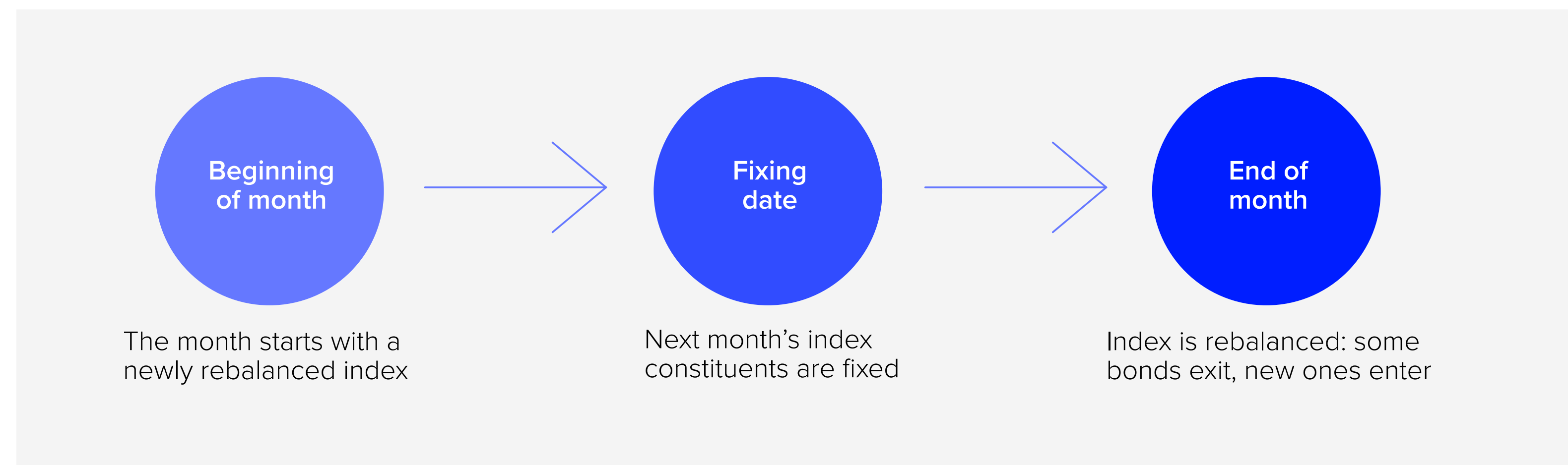
On each index fixing date, publicly available securities information is used to determine index eligibility and indicative values for the following month's index profile. The rebalancing timeline is shown in figure 12.

Daily preview files provide an additional tool to help clients predict the future composition of FTSE fixed income indices. These reflect the latest information regarding the eligibility of bonds for the index according to the following month's profile and are provided as an additional tool for clients managing portfolios using our indices as a benchmark or performance target.

Even when an index's constituents have been 'fixed' for the following month, changes can occur – as when bonds are called, tendered or have suffered a default. So we calculate daily preview reports for the days between fixing and month-end, helping clients to reflect any other changes allowed by the index rules.

For a fixed income index to serve as a benchmark, its methodology must be transparent and its changes predictable.

Figure 12: Fixed income index rebalancing timeline





9.

Governance and oversight

To build a better global fixed income benchmark, we have put in place additional structures to ensure the long-term stability of the WGBI's approach – among which are regular oversight by market experts and a transparent governance framework.

Regional fixed income advisory committees for Asia, EMEA, the US and Canada, consisting of senior market practitioners, convene on a regular basis to provide feedback on our fixed income index methodologies.

These committees ensure that the criteria used to determine country classification, for example, meet the needs of global investors and are evaluated objectively. Feedback gathered through these channels is used to assess whether a local market's accessibility level warrants adjustment if there is a failure to meet the existing thresholds, or if there are material changes to the local investment conditions that merit a higher value.

We publish the terms of reference for all four of our [regional fixed income advisory committees on our website](#).

Any proposals for significant amendments to our fixed income index methodologies are also subject to consultation with the FTSE Russell advisory committees and with other stakeholders, as appropriate, including full market consultations.

The involvement of external stakeholders in our indices' oversight and design is a crucial part of our approach to benchmarking the world's markets.

How we dealt with the March 2020 market turbulence

THE CHALLENGE

A collaborative approach to index oversight can prove its worth in times of extreme market turbulence or disruption. In March 2020, following consultations with our advisory committees and clients, we announced that we would suspend the rebalancing of certain FTSE Fixed Income indices, including the WGBI, for the March 2020 month-end.

Our consultations revealed that global fixed income market conditions had become severely stressed, with impaired liquidity, a market infrastructure that was challenged because of the changes to normal working practices, and a trading environment that was characterised by extremely wide bid-offer spreads, reduced dealer inventory and poor price discovery.

OUR APPROACH

We determined this situation to be a market disruption event, in accordance with the FTSE Fixed Income Statement of Principles, which allows us to exercise expert judgment to ensure that indices continue to meet the needs of index users and to meet their stated objectives in such extreme circumstances.

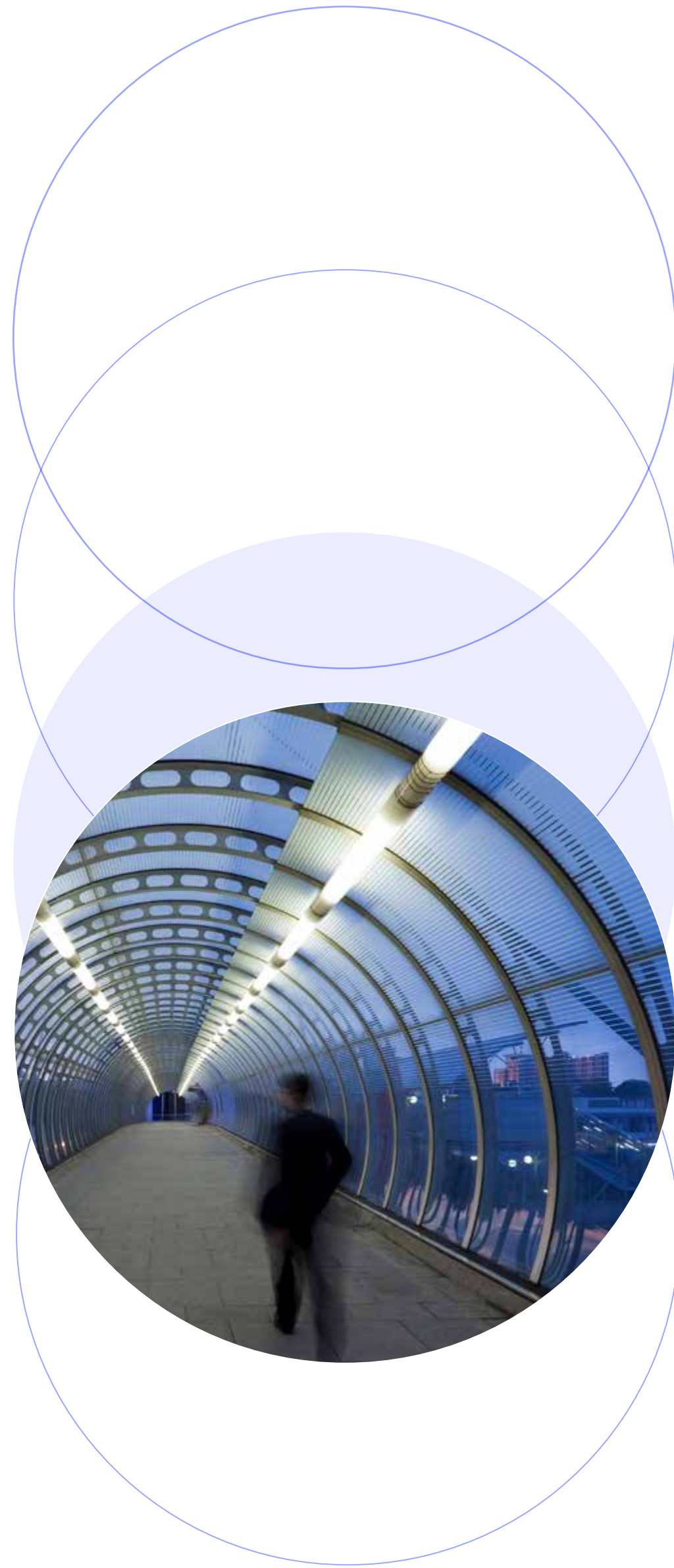
The involvement of external stakeholders in our indices' oversight and design is a crucial part of FTSE Russell's approach to benchmarking the world's markets.

10.

WGBI and fixed income analytics

As a leading global government bond benchmark, the WGBI is supported by a full suite of fixed income analytics.

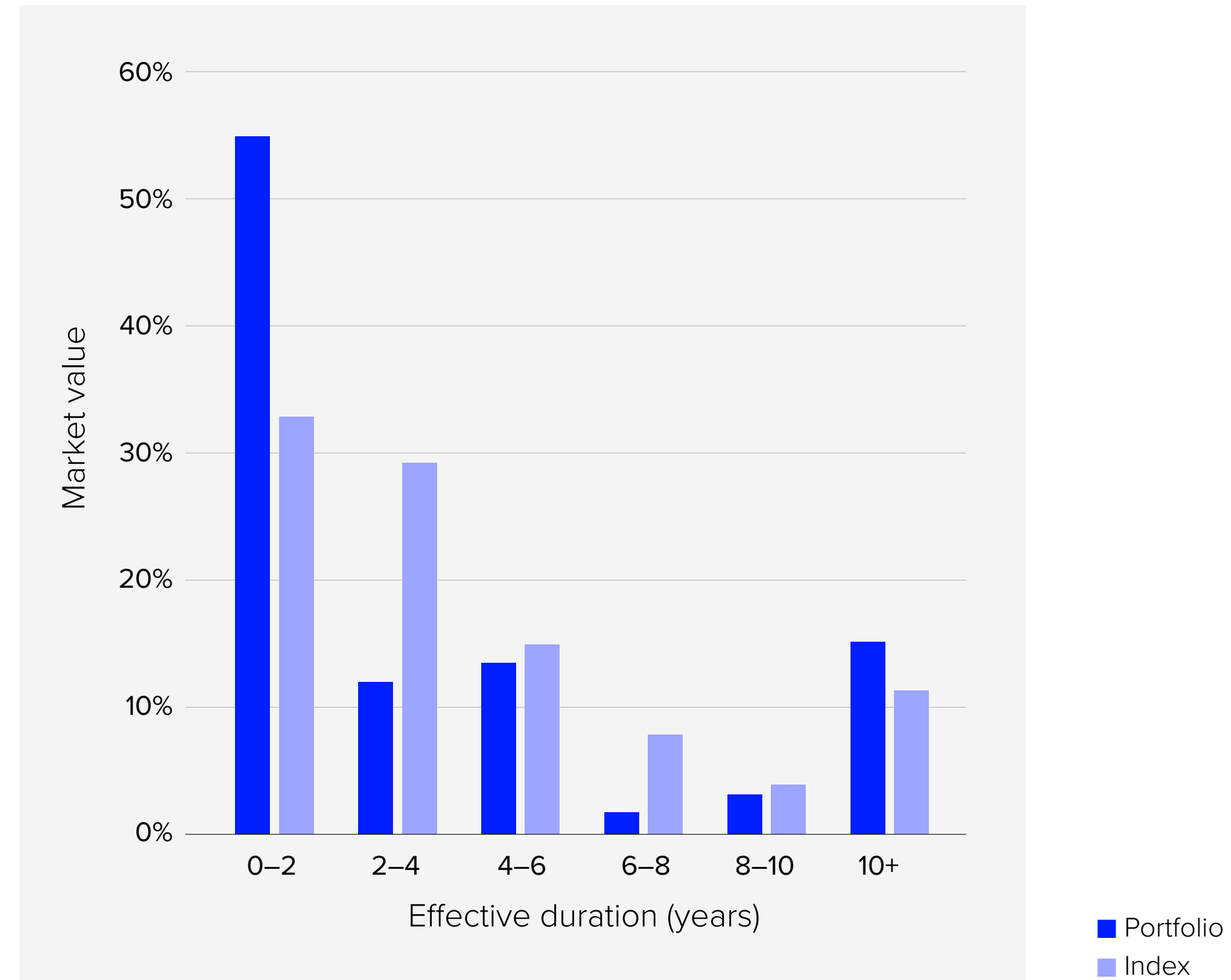
LSEG's Yield Book is a trusted and authoritative source for fixed income analytics that enables market makers and institutional investors to perform complex and accurate portfolio analysis and risk management.



Yield Book provides government yield and swap curves for a variety of fixed income markets, including those in the WGBI. These government yield and swap curves help investors perform relative value analysis for treasury securities.

Yield Book also assists portfolio managers in analysing trade ideas and portfolio strategies. It can address scenarios involving individual securities, multiple security types or portfolios and in one or more currencies (see figure 13). Yield Book also provides clients with the ability to customise reports.

Figure 13: Yield Book duration calculation





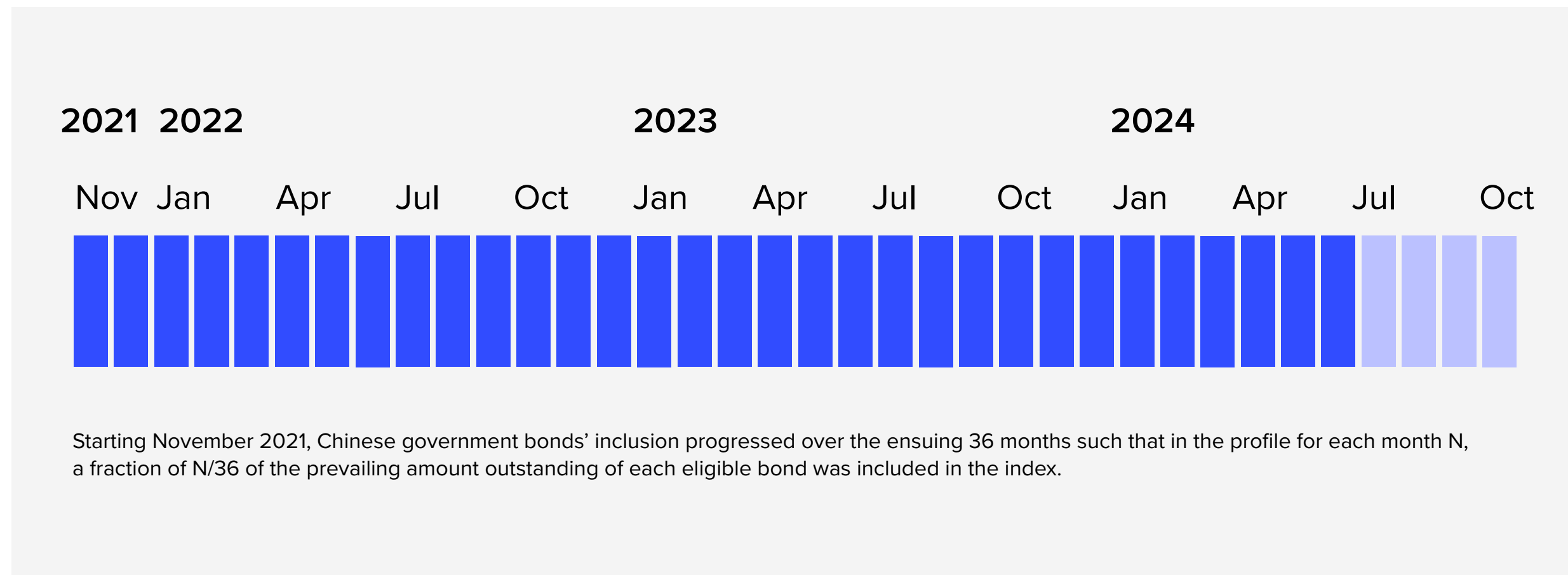
11.

Looking forward

As the WGBI prepares to celebrate its 40th anniversary, it is also broadening its scope and admitting new markets.

For example, Chinese government bonds have joined the index in a 36-month phased inclusion that concluded in October 2024.

Figure 14: Chinese government bonds' inclusion in WGBI



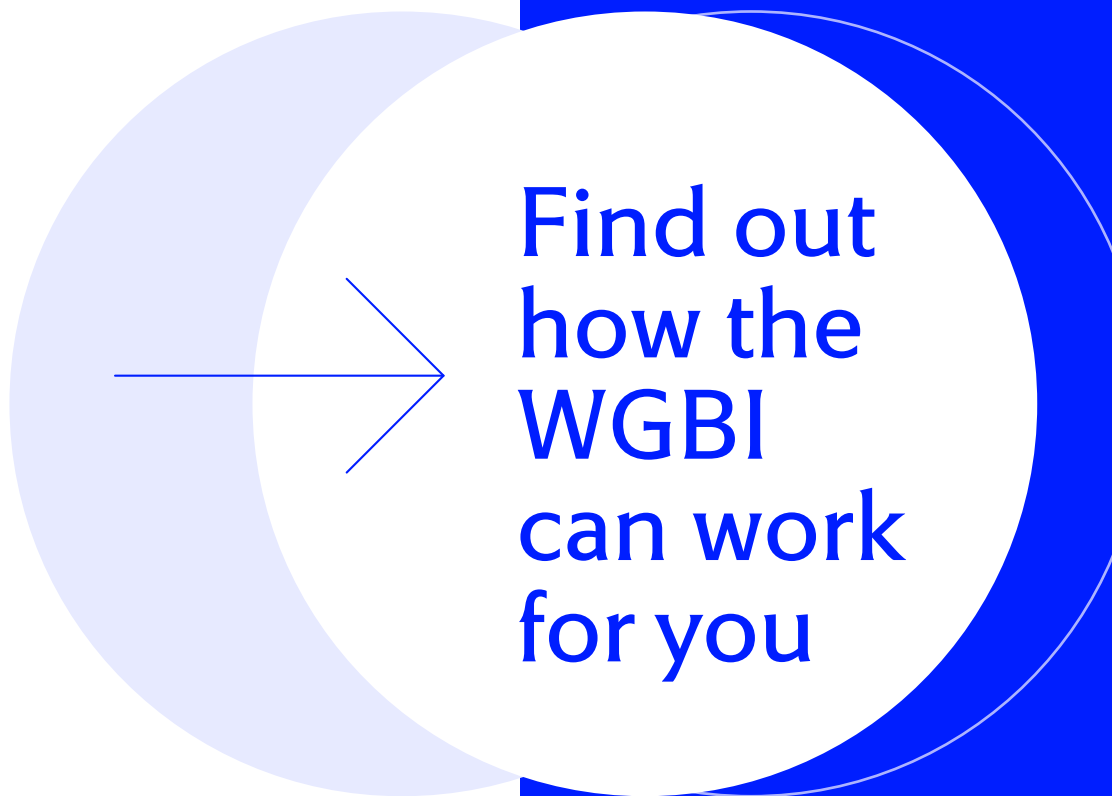
In October 2024, FTSE Russell also announced the results of its September 2024 Fixed Income Country Classification review, as part of which the market accessibility level for South Korea was raised from 1 to 2.

As a result, South Korean government bonds will soon be added to the WGBI (to give market participants adequate advance notice, the inclusion will start in November 2025 and be phased in quarterly over a year).

Over four decades, the WGBI has evolved in tandem with the structural and technological changes taking place in the world's bond markets.

The index remains true to its initial aim.

It serves as a global standard for investors in the sovereign debt markets, helping them manage and compare the performances of their portfolios.



FTSE Russell has the knowledge, the expertise and the ability to connect the dots for our fixed income clients to help them navigate rapidly changing markets with confidence.

About FTSE Russell

FTSE Russell is a leading global provider of index and benchmark solutions, spanning diverse asset classes and investment objectives. As a trusted investment partner we help investors make better-informed investment decisions, manage risk, and seize opportunities.

Market participants look to us for our expertise in developing and managing global index solutions across asset classes. Asset owners, asset managers, ETF providers and investment banks choose FTSE Russell solutions to benchmark their investment performance and create investment funds, ETFs, structured products, and index-based derivatives. Our clients use our solutions for asset allocation, investment strategy analysis and risk management, and value us for our robust governance process and operational integrity.

For over 35 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

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