



Invesco Global Fixed Income Study 2019

This study is not intended for members of the public or retail investors.
Full audience information is available inside the front cover.



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Welcome

Welcome to the second annual Invesco Global Fixed Income Study, part of Invesco's suite of thought leadership studies, including the Global Sovereign Asset Management Study and the Global Factor Investing Study.

In 2019, we have nearly doubled the respondents to the study, interviewing some 145 fixed income specialists – responsible for the fixed income components of portfolios totalling US\$14 trillion in AUM (as at 30 June 2018). Our respondents work across pension funds (both defined benefit and defined contribution), sovereign wealth funds, insurers and wholesale investors including private banks, diversified fund managers, multi-managers, and model builders. They are located across all the major regions of North America, Europe, and Asia-Pacific.

In 2019 respondents broadly view global economic conditions as being 'late-cycle' – expecting an end to the long-running global expansion within 1-2 years. Despite this foreshadowing of a downturn, the majority of respondents are expecting an economic 'soft-landing' where interest rate curves remain flat and credit spreads experience widening. Indeed, the risk of an equity market correction is largely more anticipated than a bond market sell-off. Notably, and perhaps due to both market and political events during our survey (Autumn 2018), North American investor views were similar to their global peers, but broadly exhibited more caution and concern.

Trade wars, Brexit, and other geopolitical risks are certainly on the radar, but for the most part our survey participants are focused on creating portfolios that are built for the long run and can look through such periods of volatility. A notable example of this is our analysis of investor views relating to Chinese fixed income, which we are looking at for the first time. Despite the potential for friction between the US and China, investors remain keenly interested in tapping into China's economic and financial market potential – particularly North American respondents. Acknowledging that Chinese bonds are likely to see a gradual but steady increased weight in major fixed income indices, many asset owners are actively contemplating how to increase their exposure

to Chinese fixed income.

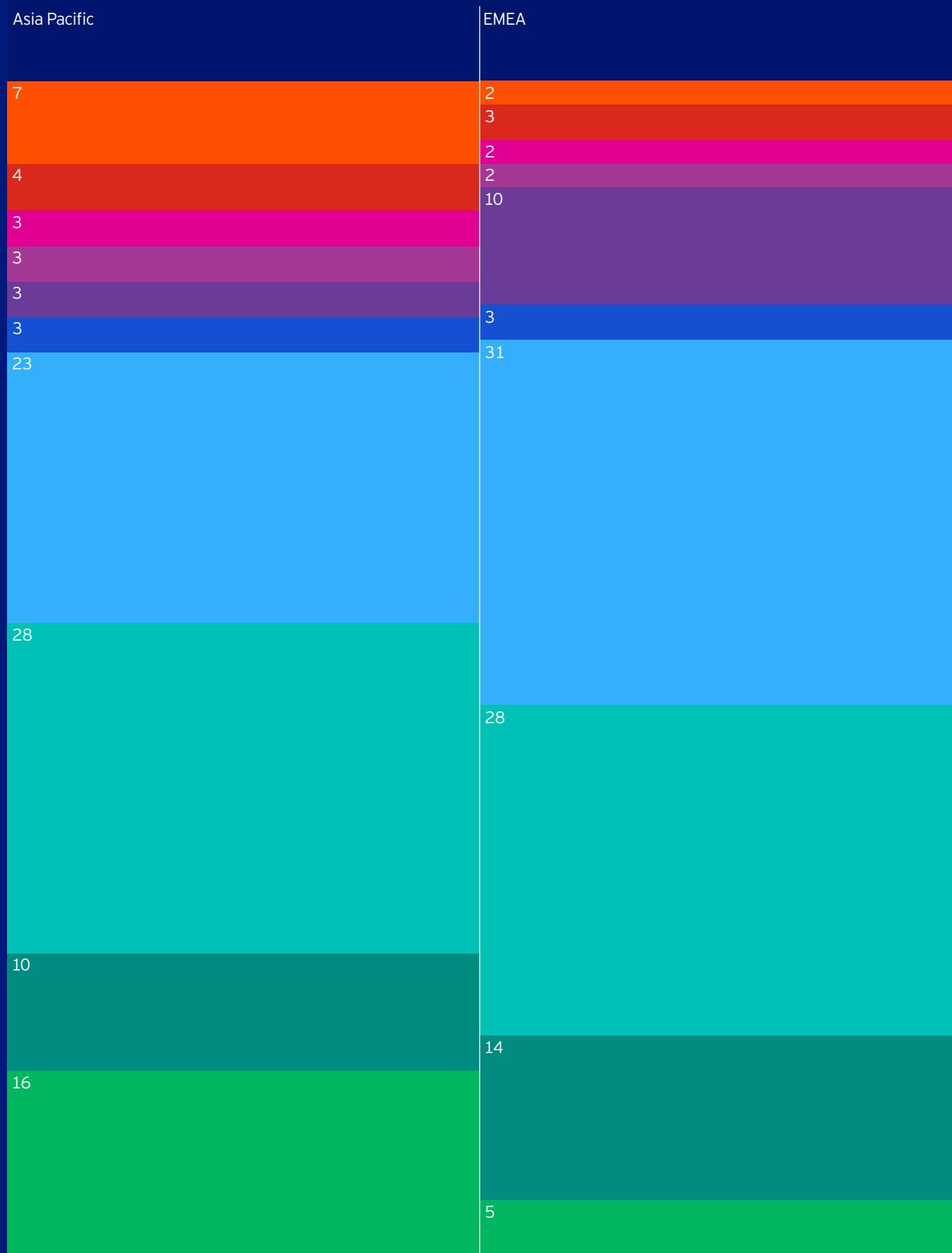
In this year's survey, we return to the topic of the application of ESG principles to fixed income, which last year's study found was at an early stage. As our readers are likely to have sensed, ESG investing in fixed income has already moved from niche to the mainstream. That said, asset owners are still to a large extent grappling with both how to incorporate ESG principles into requests for proposals (RFPs) and mandate terms, as well as how to measure the impact of such investments. An unexpected outcome of the rapidly expanding ESG movement is a strong preference for a more holistic approach from investment managers and a less enthusiastic embracing of more direct ESG-based investing through 'green' or 'social' bonds.

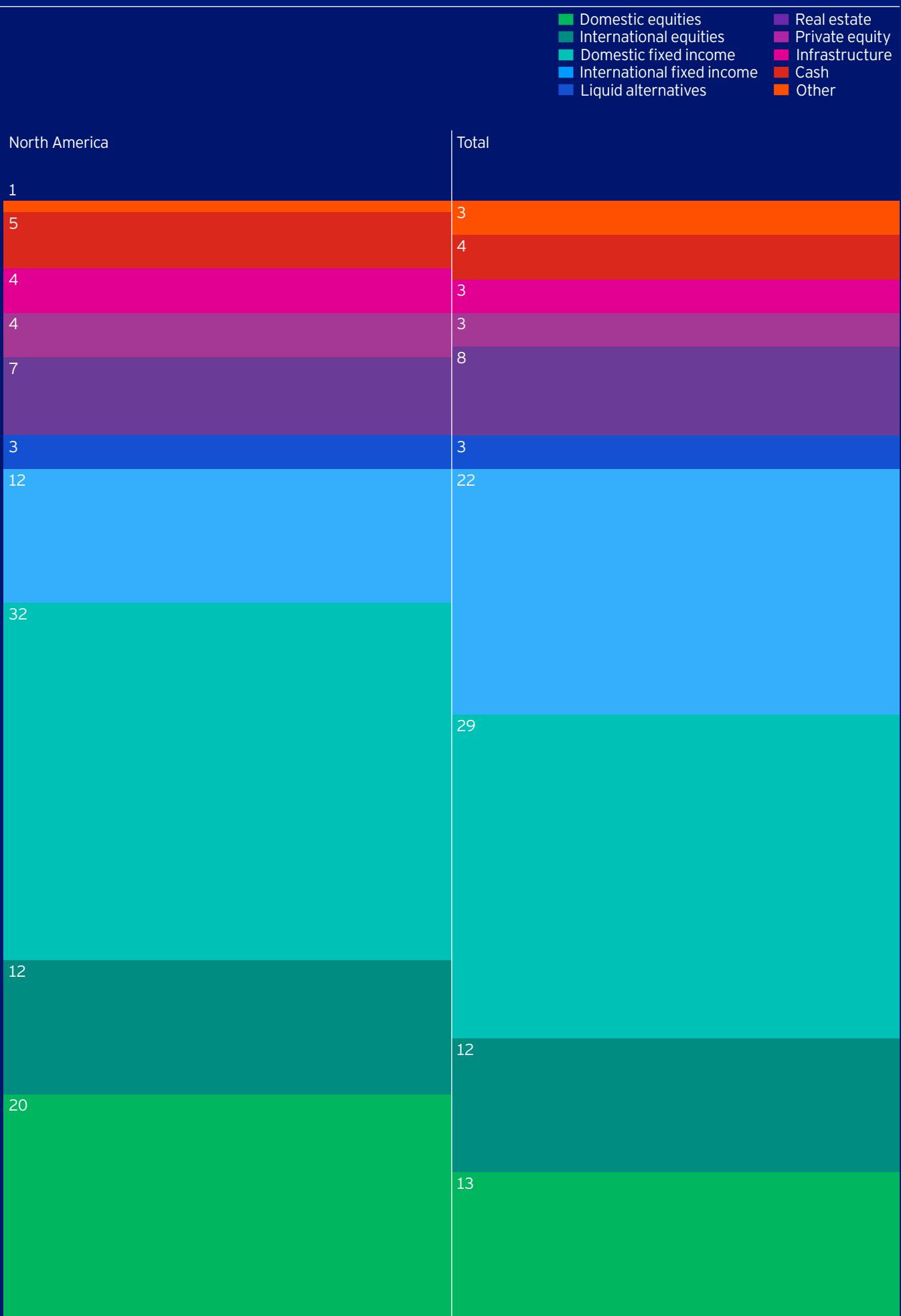
Lastly, we delved into how fixed income investing in defined benefit pension funds has been transformed by the spread of liability-driven investing (LDI) over the past decade, especially across EMEA. LDI has helped DB pension funds and their sponsors manage the reality of funding gaps and identify a trajectory to the end game (whether that is self-sufficiency, buy-in or buyout). What we did learn is that a growing group of long-term investors realize that LDI may not address the shorter-term funding needs for paying current benefits, which become more acute as DB funds close to new members and face slower accruals. These near-term needs are increasingly being tackled through a growing interest in cashflow-driven investing (CDI) portfolios that complement the hedging and return-seeking LDI portfolios already in place.

In 2019, Global Fixed Income Study suggests fixed income investors are expecting more challenging conditions ahead, but also looking through them to the longer term. With the end of the cycle in sight and more seminal changes to consider in relation to the evolution of global fixed income assets and their role in wider portfolios, the study provides fixed income professionals with a comprehensive and detailed perspective from their peers around the globe.

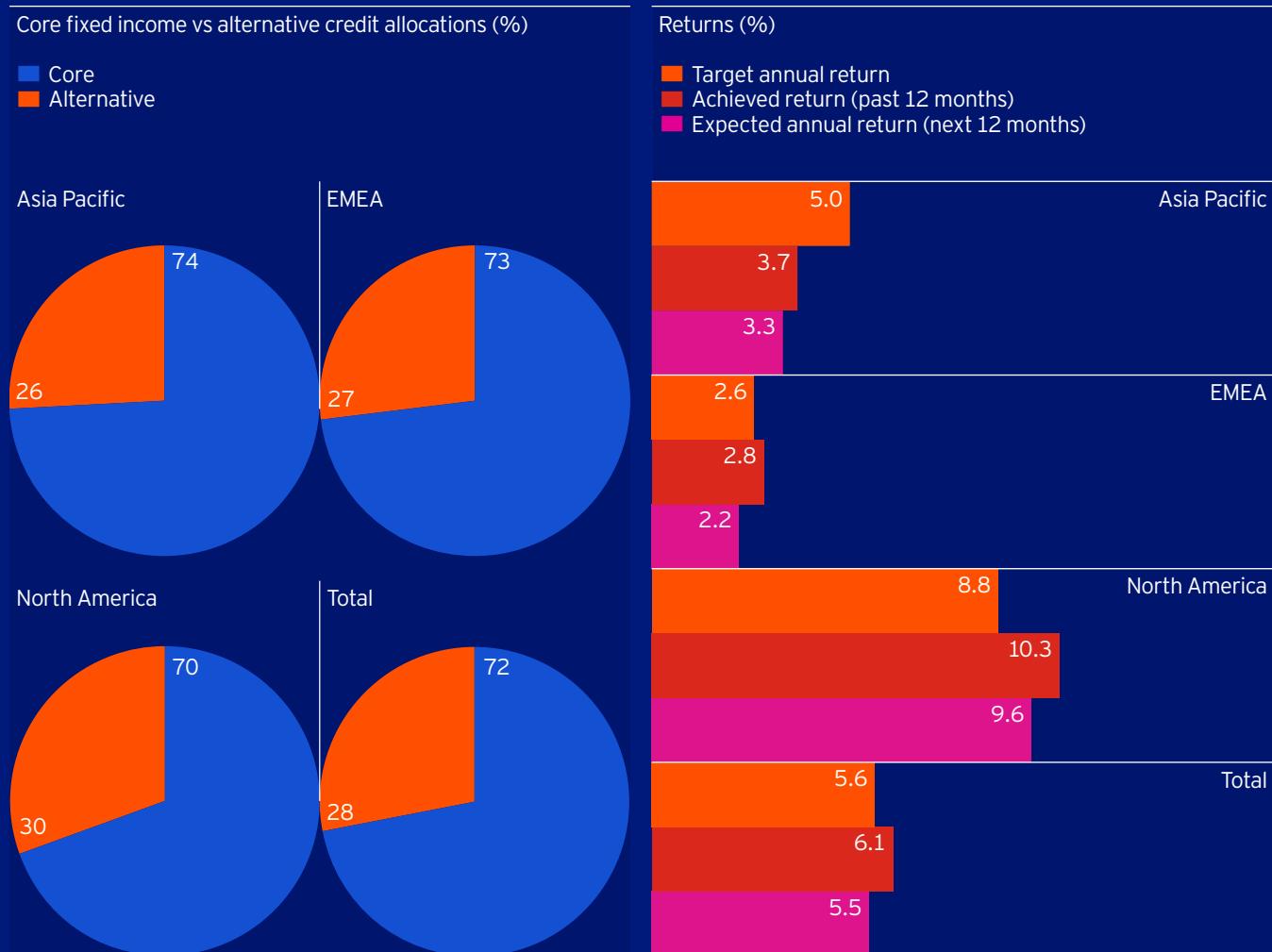
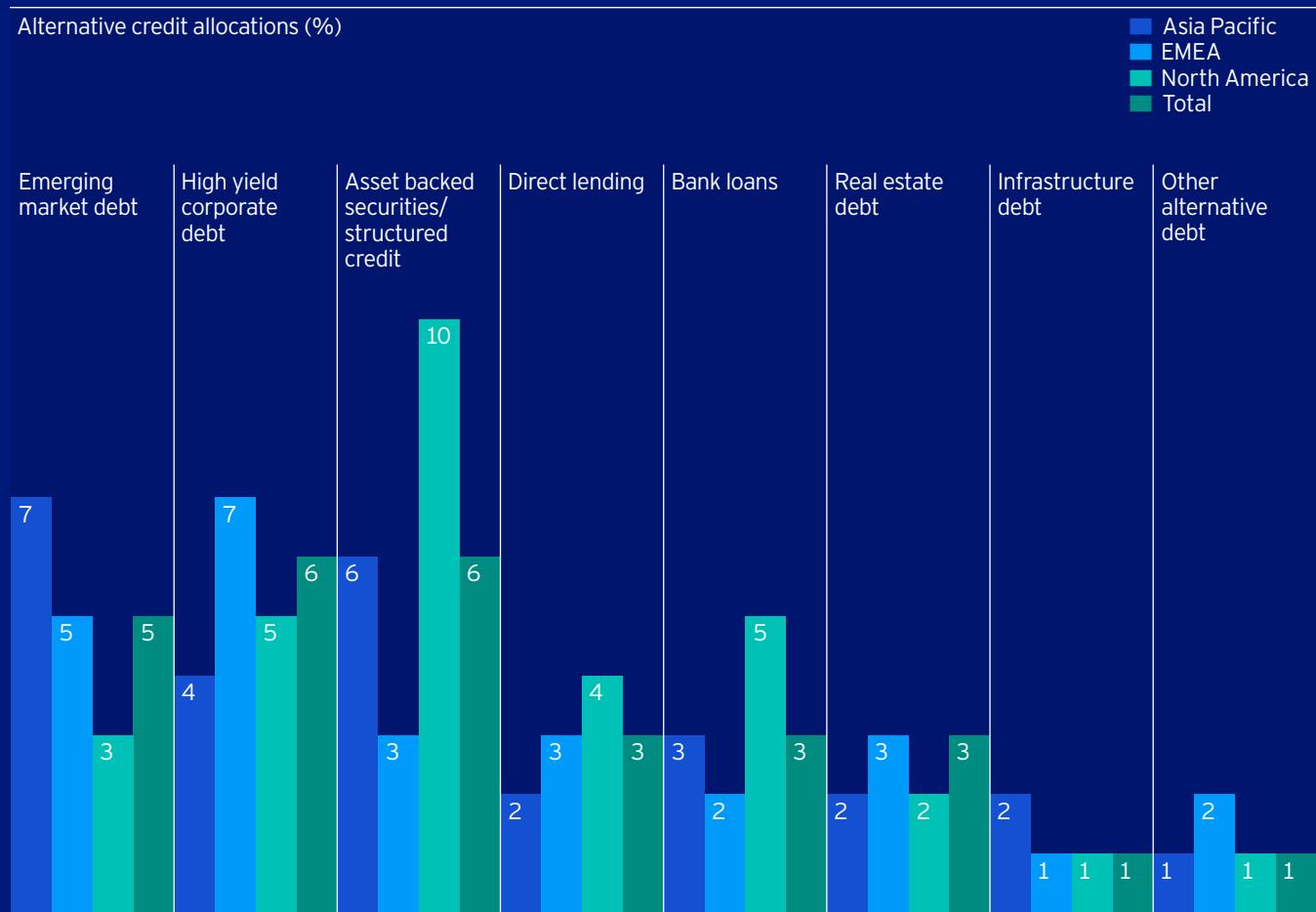
Key metrics

Asset allocation (unweighted) (%)



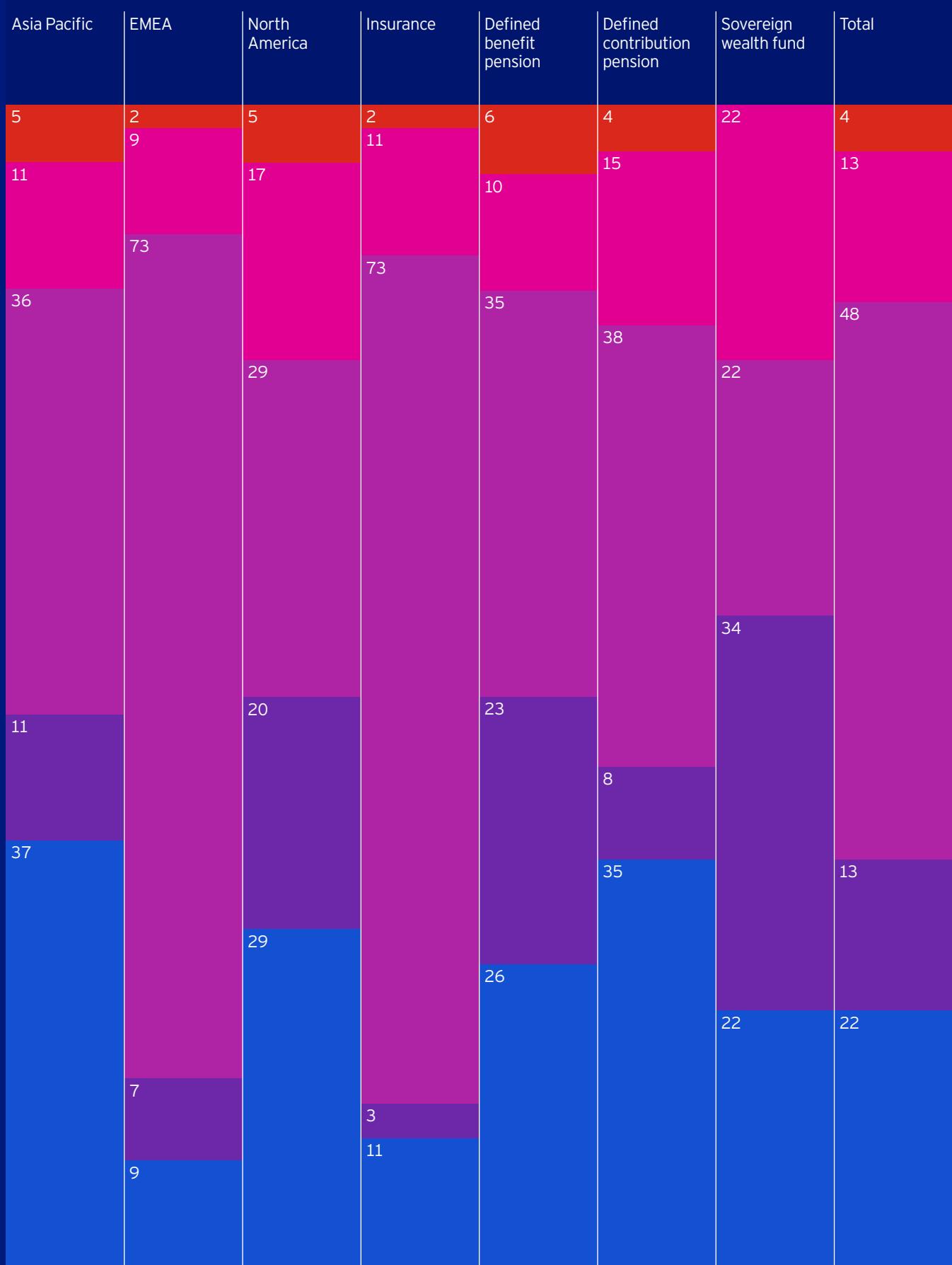


Key metrics



Primary objective for fixed income (% citations)

█ Provide liquidity
█ Generate income
█ Match liabilities
█ Reduce risk
█ Return



Key findings

- While last year's relatively unified view of the 'new normalisation' scenario largely came to pass, this year's outlook for the global economy has become more uncertain and divergent.
- Half of the global respondents expect the economic cycle to last another 1-2 years and that the end of the global expansion will begin to materialize as a 'soft-landing'. But there are concerns, particularly around higher levels of debt globally and the potential for geopolitical issues to disrupt both the global expansion and markets.
- Indicative of the late-cycle, investors across regions expect credit spreads to widen and yield curves to remain flat. The impact of trade wars and a significant market correction are concerns, with the risk of market correction more focused on equity than bond markets.
- One of the bigger surprises was the greater level of concern in North America. Potentially mirroring the market and political backdrop in the US at the time of the study in late 2018, North American investors evoked a decidedly more cautious tone across a number of issues.

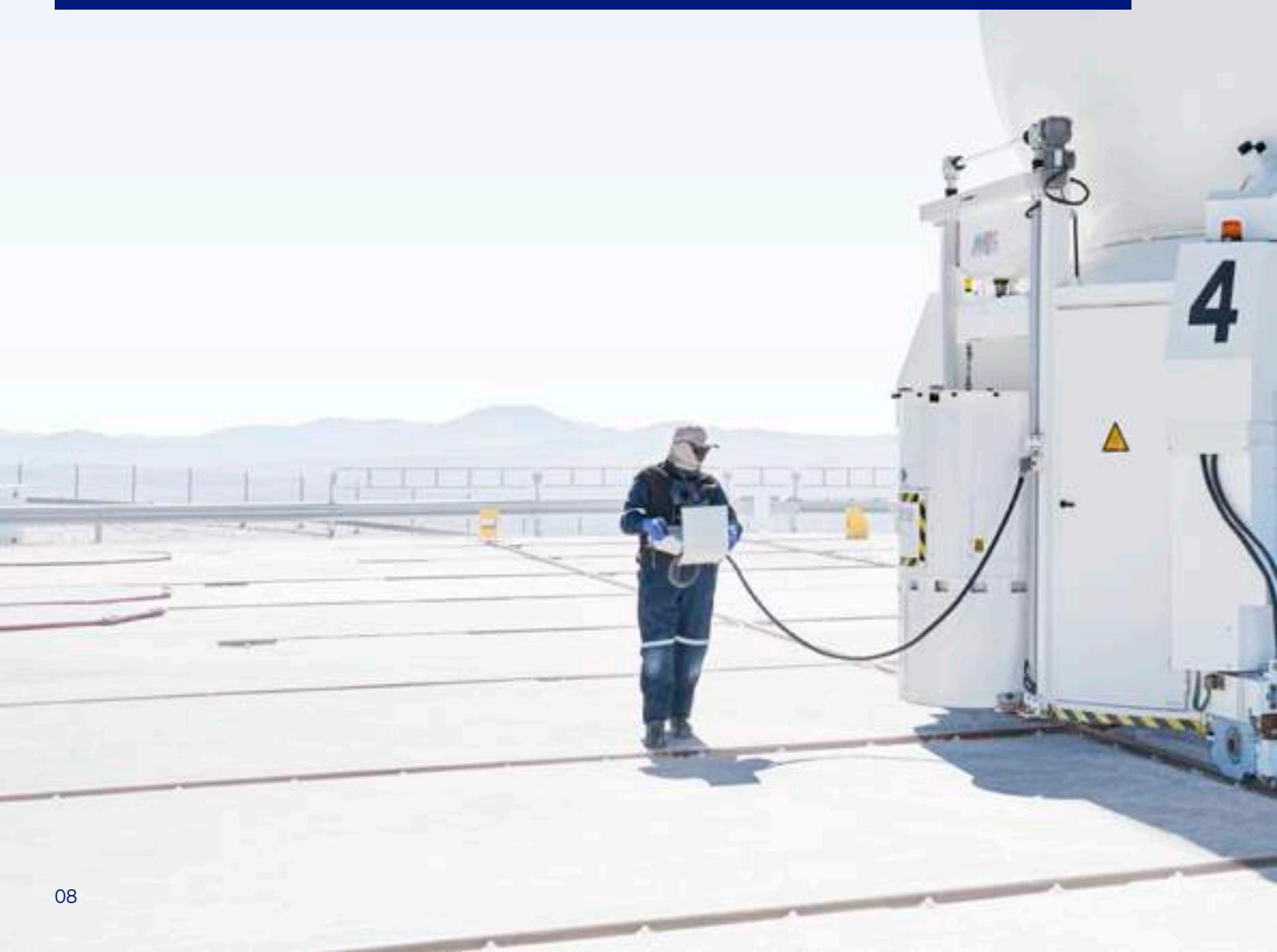
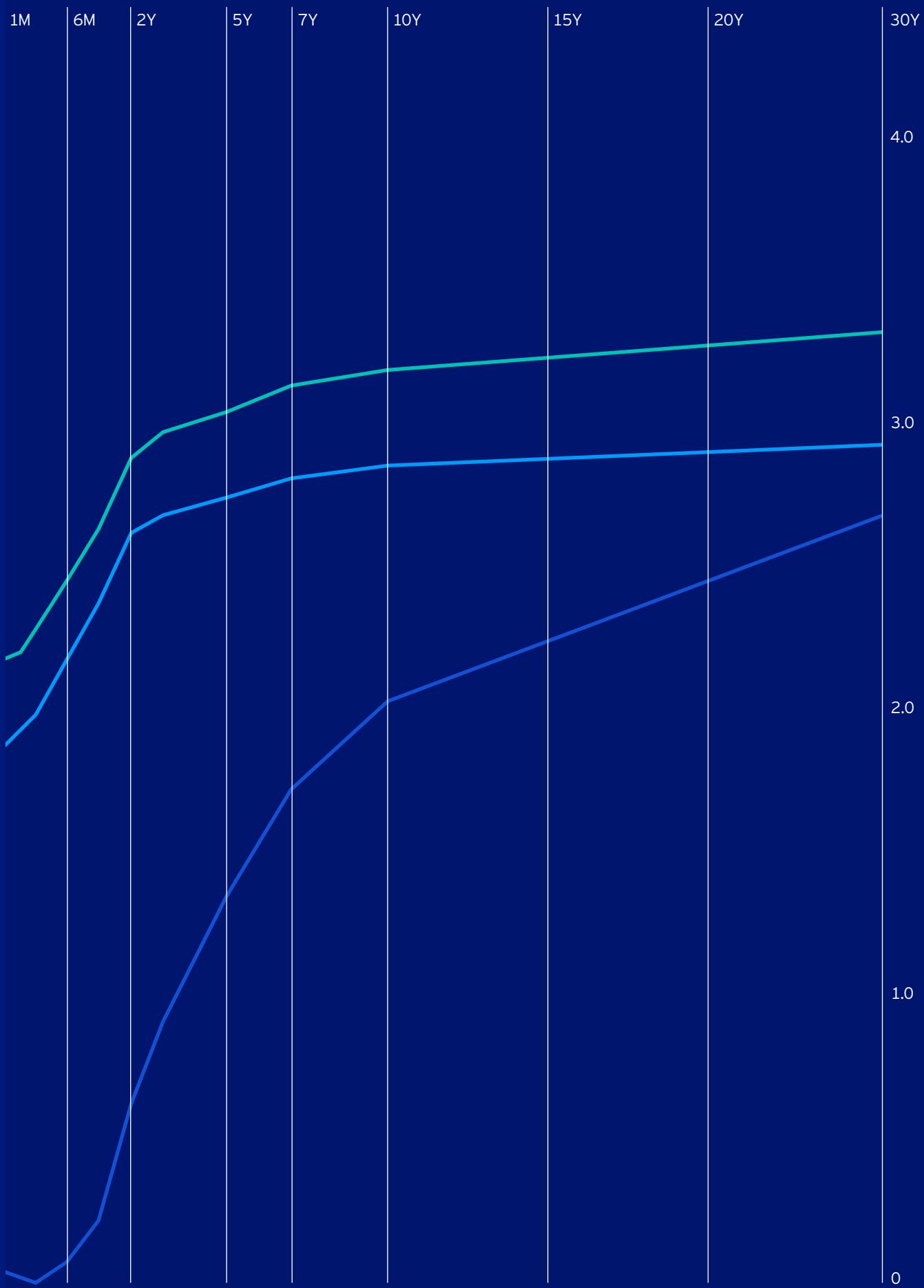




Figure 1. Yield curve, US Treasuries (%)
y axis: Yield to maturity (%)

17 October 2018
17 July 2018
16 October 2015



Source: Bloomberg L.P., as at 17 October 2018. Past performance is not indicative of future results.

What's happened since the last study

2018 unfolded broadly as the 'new normalisation' that the majority of last year's respondents predicted: the global expansion would continue, growth and inflation would remain moderate, and this backdrop would allow the US Federal Reserve (Fed) to continue to remove policy accommodation and the yield curve¹ would flatten as a result.

An unexpected rise in Consumer Price Index (CPI) inflation caused bond yields to rise across the curve in the first half of the year and the 10-year yield briefly breached the key 3% threshold, peaking at nearly 3.25% in October 2018. But those inflationary fears were broadly calmed by year end and the 10-year treasury stabilised and then eased to close the year below 2.7%. In parallel the Fed's perseverance in normalizing rates caused the short end of the treasury curve to rise sharply, and the yield curve flattened as predicted.

¹Unless otherwise stated 'yield curve' refers to US Treasuries throughout this document.

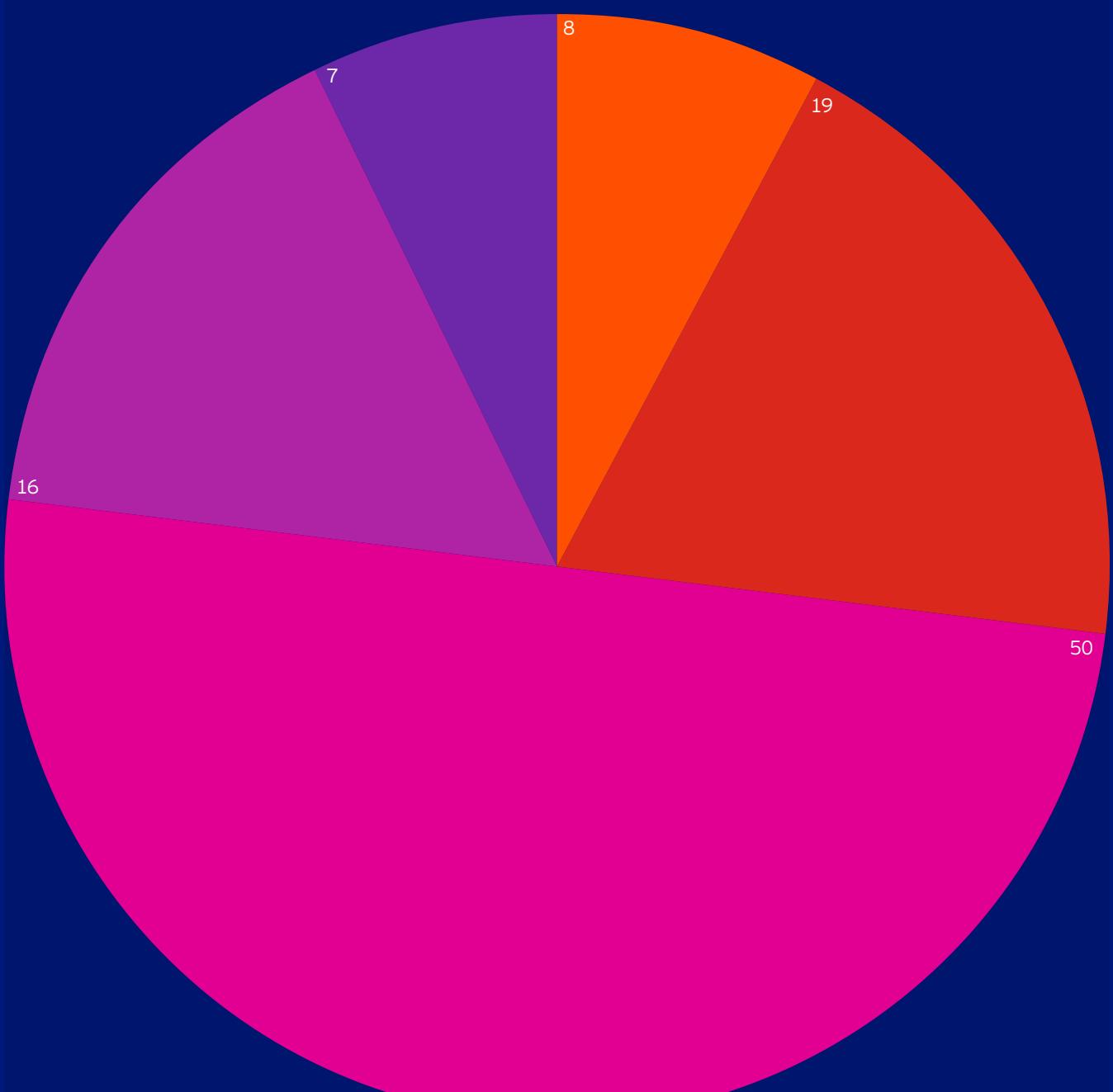
Investors are starting to look to the end of the cycle

Despite economic growth remaining positive – even robust in the US – and employment remaining strong, investors believe that we have entered the late-cycle phase of economic expansion. The current expansion has not featured strong growth but it has now been running for nearly ten years, making it one of the longest on record. Some investors are nervous about its further longevity, and are alert for triggers which could end it; such as the fading of the fiscal stimulation of US corporate tax cuts, or the withdrawal of monetary stimulus in both the US and Europe.

Globally, across the respondents, the central scenario is that the end of the cycle is 1–2 years away (i.e. late 2019 through late 2020). Figure 2 shows that half the global sample opted for this outlook with a broadly even dispersion of longer and shorter views.

Figure 2. Expected time until the end of the economic cycle (from Q4 2018) (%)

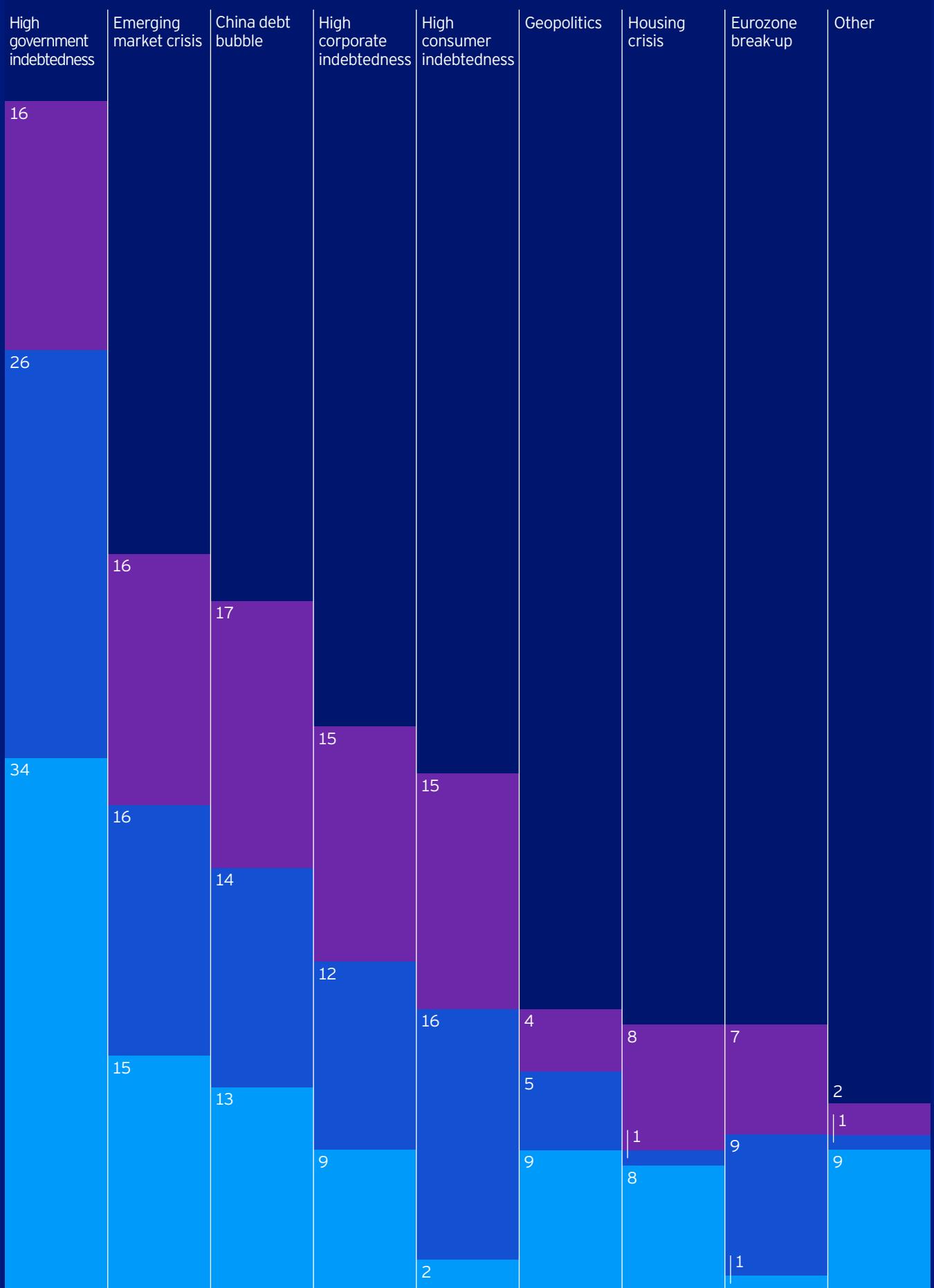
■ Less than 6 months
■ 6 months-1 year
■ 1-2 years
■ 2-3 years
■ More than 3 years



Sample size: 108

Figure 3. Potential triggers of the next recession or market crisis (%)

Rank 3
Rank 2
Rank 1



Sample size: 106

When asked what might trigger the next downturn, survey participants were predominantly concerned with high levels of debt. High levels of government debt incurred in the wake of the financial crisis and due to ongoing structural fiscal deficits are seen as the biggest risk, though there was notable concern regarding corporate and consumer debt.

This focus on debt as a key issue is perhaps unsurprising in the aftermath of record low interest rates for a prolonged period. While investors, consumers and companies have benefited from supportive fiscal and monetary policies in the form of strong economic growth (in more recent years), our respondents see a rising interest rate environment as being likely to have a significant impact on interest costs and default rates.

Participants also saw a number of sources for potential disruption emanating from the global backdrop. While potentially interrelated, a crisis in emerging markets, a debt bubble in China, and geopolitical risks (including trade wars) were cited as potential triggers. Our respondents were generally less concerned with the prospects for a housing crisis and the break-up of the eurozone, even when offered as potential risks.

Wholesale investors

The end of the cycle looms large

A feature of the wholesale channel is the closer relationship that discretionary managers and portfolio constructors have with more engaged end-clients, a greater commercial focus and shorter-term time horizons. This channel is often cited as having relatively high turnover as a result.

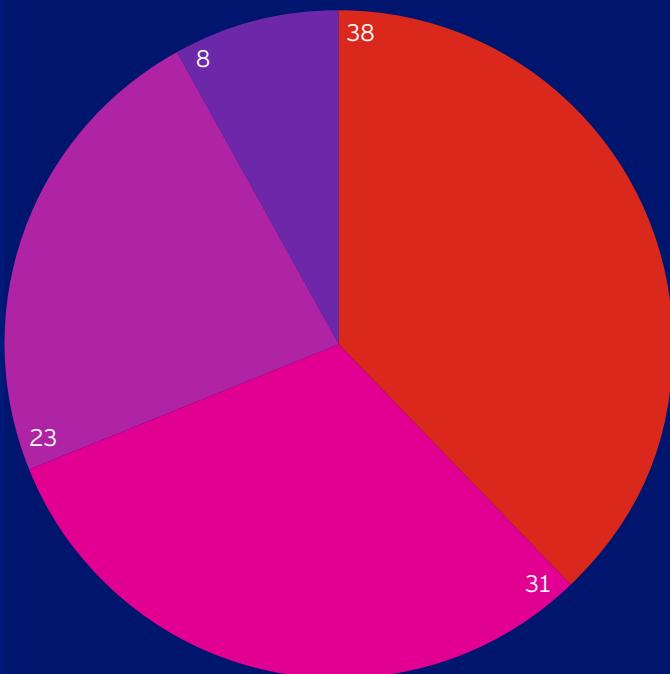
It is perhaps understandable then that wholesale respondents are relatively more pessimistic about the near-term outlook than institutional investors, with 36% expecting the economic cycle to end within 6-12 months, as illustrated in Figure 4, and were already adjusting their portfolios by the time of this study.

Wholesale investors currently see the end of the cycle bringing a negative environment for both equity and fixed income markets.

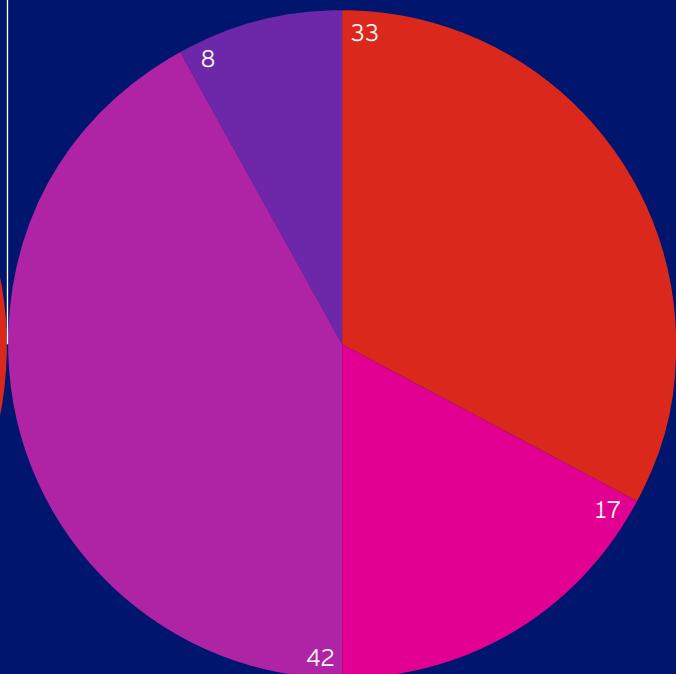
Figure 4. Expected time until the end of the economic cycle (from Q4 2018) (%)
Wholesale investors

Less than 6 months
6 months-1 year
1-2 years
2-3 years
More than 3 years

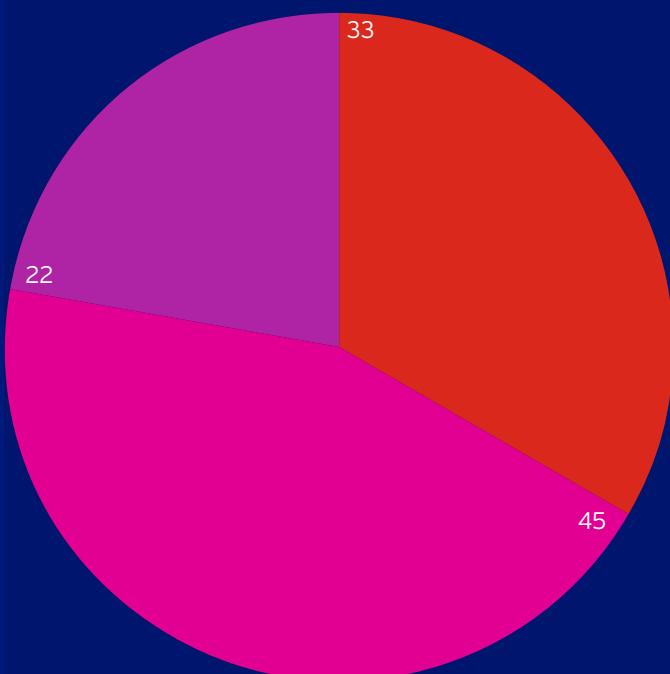
Asia Pacific



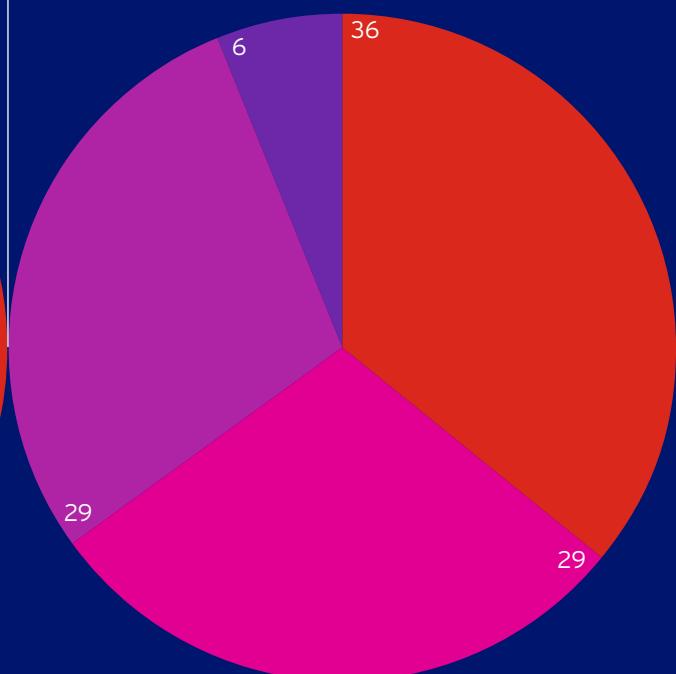
EMEA



North America



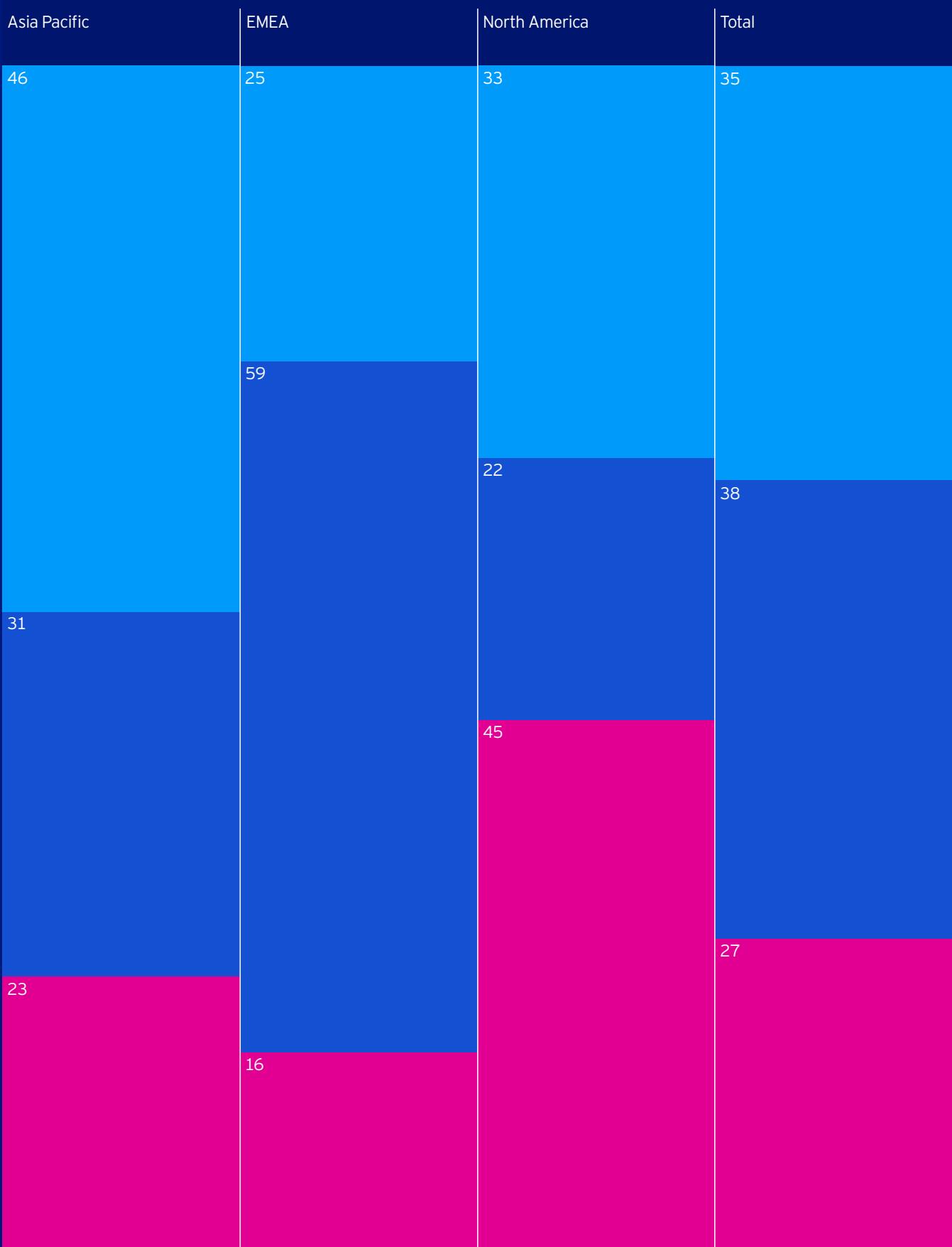
Total



Sample size: 34

Figure 5. Potential for market reversals (%)
Wholesale investors

Crash in bond market is biggest tail risk



Sample size: 31

Crash in equity markets is likely

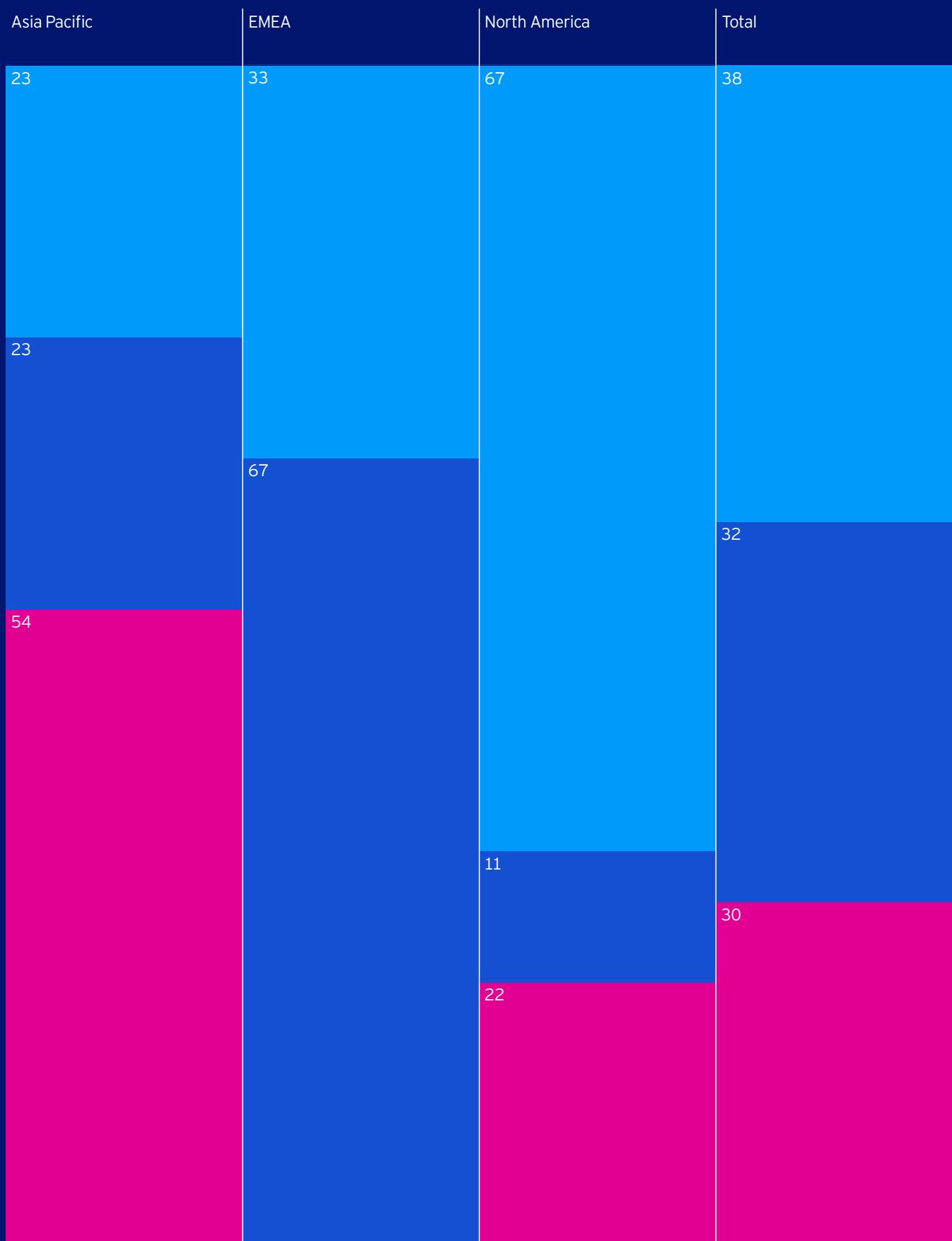
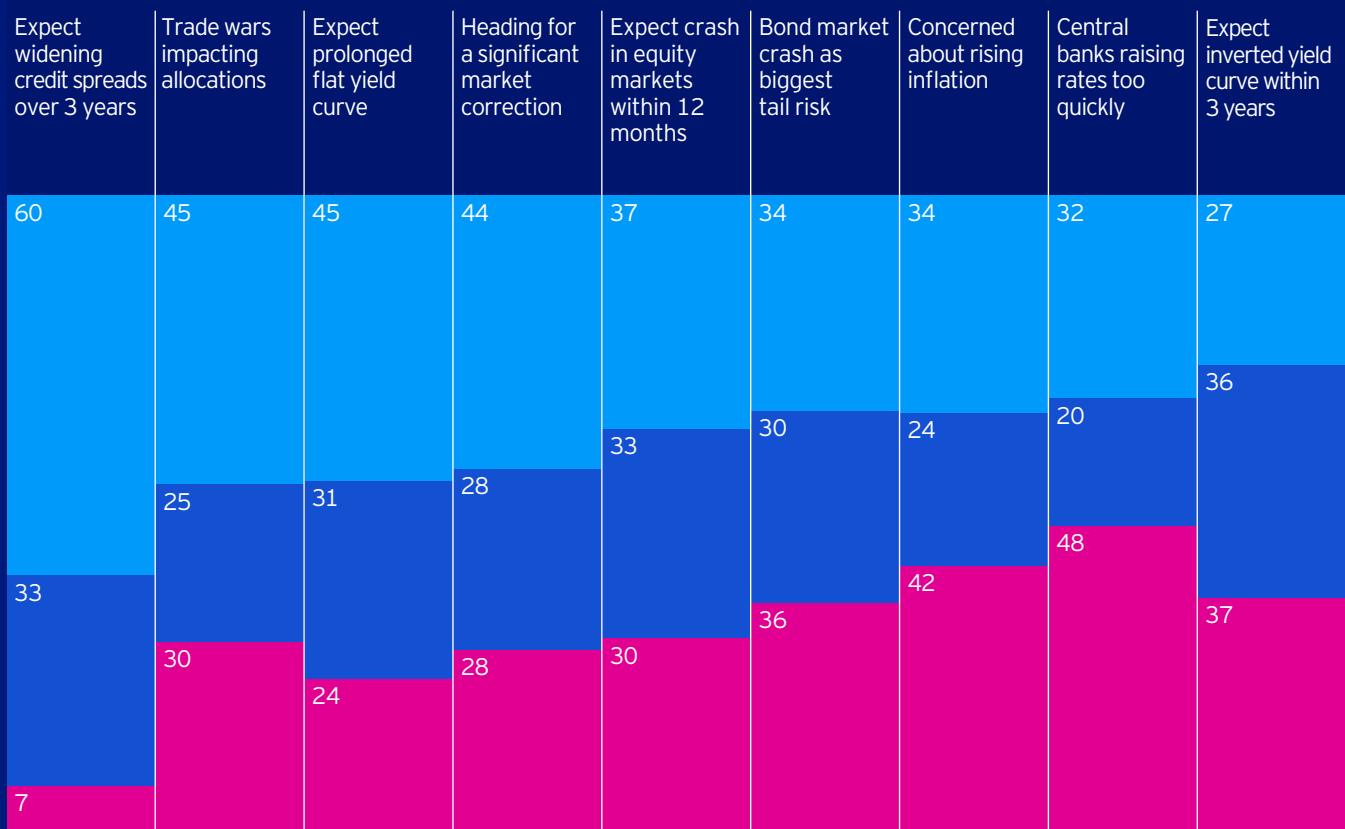


Figure 6. Perspectives on state of the economic cycle (%)

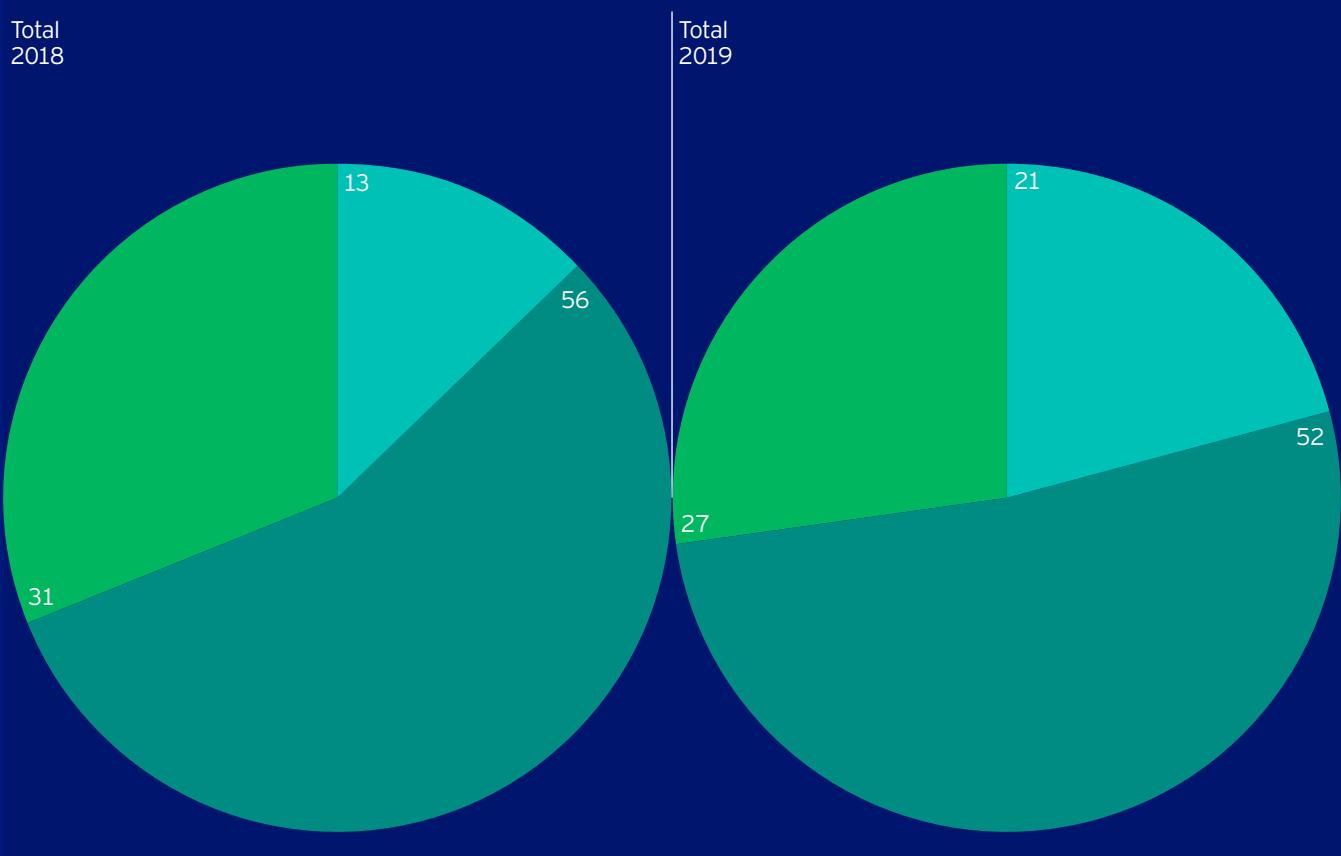
Strongly agree/Agree
Neutral
Strongly disagree/Disagree



Sample size: 109

Figure 7. Expected portfolio duration changes (%)

Longer
Same
Shorter



Sample size: 108 (2018 and 2019)

With growing nervousness around the end of the economic cycle, there are concerns about the potential for material reversals in markets, as shown in Figure 5 (page 18 and 19), although concerns are slightly tilted towards equity markets over fixed income.

However, as Figure 6 shows, market reversals are not seen as the most likely consequence of views on the current stage of the economic cycle. By far the strongest area of agreement amongst study respondents is for credit spreads to widen over the next three years. Other areas of significant consensus were that trade wars are having a tangible impact on portfolio allocations - either at a strategic or tactical level - and that the yield curve will remain flat.

Other aspects of the outlook for fixed income are much more sanguine. Our respondents have little concern about rising inflation and thus don't believe policymakers are raising rates too quickly. As a result, there is little concern that the Fed (or other policymakers) would engineer an inverted yield curve (thought to foretell recession) or cause a bond market crash.

In thinking about 2018 retrospectively and 2019 prospectively (Figure 7), approximately half of respondents intended to maintain duration - many do not take active interest rate bets within their portfolios. Amongst those which intended to alter duration, there has been some change in stance since last year's clear bias to shorten duration ahead of policy normalisation. 2019 is expected to see a more even split between those shortening and lengthening, with the effect being a material increase in those investors lengthening duration this year.

²Portfolio duration was defined by respondents as:
a. The weighted average of time to receipt of aggregate cashflows; or
b. The weighted average of the individual bond durations comprising the portfolio.

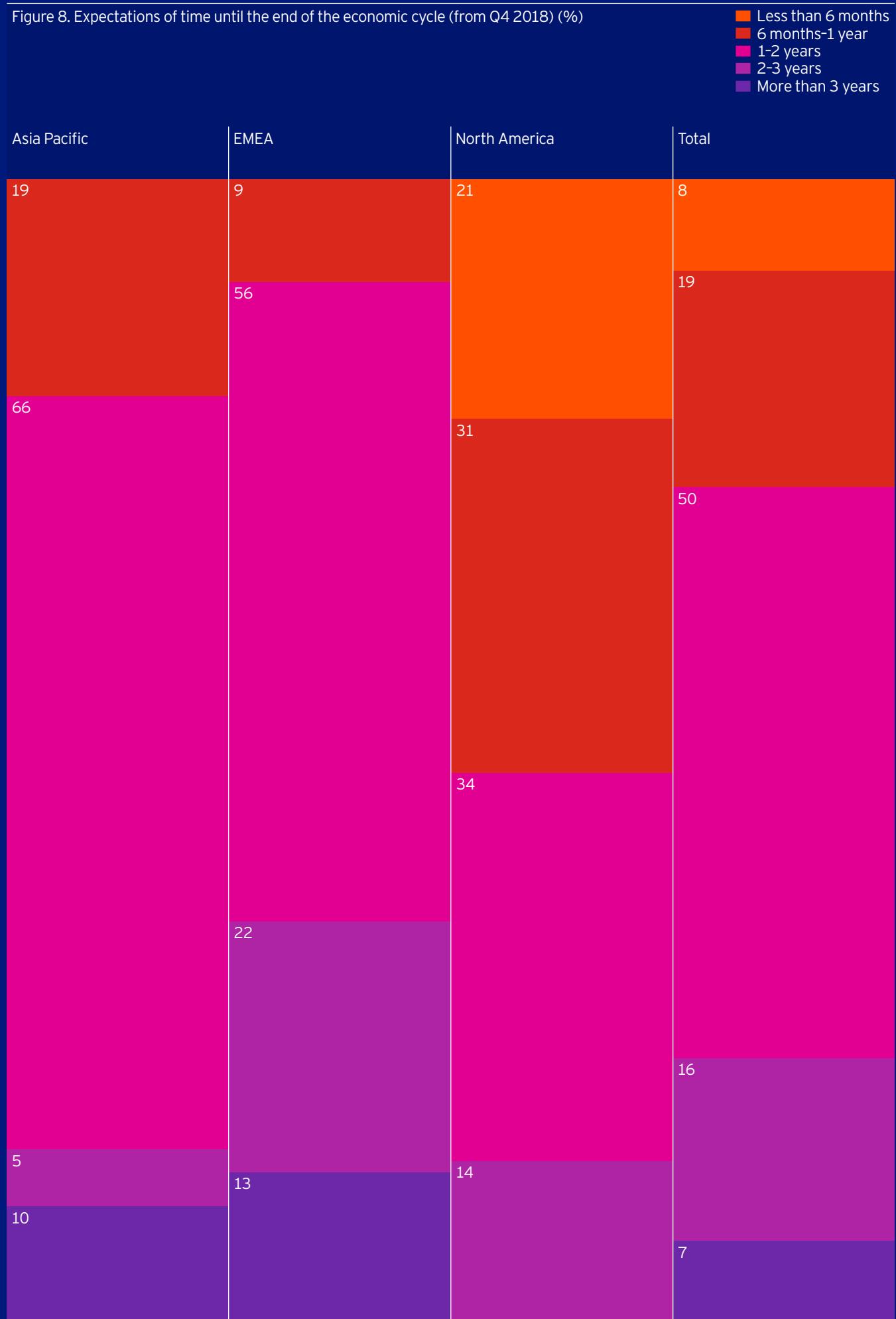
North American investors are decidedly more concerned

Essential as it is to see the overall fixed income landscape as outlined by our global participants, it is also important to note the divergence in views of North American respondents. From an economic cycle perspective, Figure 8 shows Asia Pacific is the most convinced that the expansion is on track for the next year or two, while EMEA is the most optimistic (at the time of fieldwork) that it could well last beyond 1-2 years. But expectations for how much longer the expansion has to go is much shorter for North American respondents: 52% believe the expansion will end within a year.

This surprisingly pessimistic result may be due in part to events in North America at the time of the interviews - in politics, policies and in markets. Elevated rhetoric from the Trump administration regarding trade with China, Europe, Canada, and Mexico, actual tariff impositions, perceptions that the Fed remained determined to remove policy support, speculation of the potential for the yield curve to invert (possibly signalling recession), and sharp falls in equity markets would all have impacted on optimism.

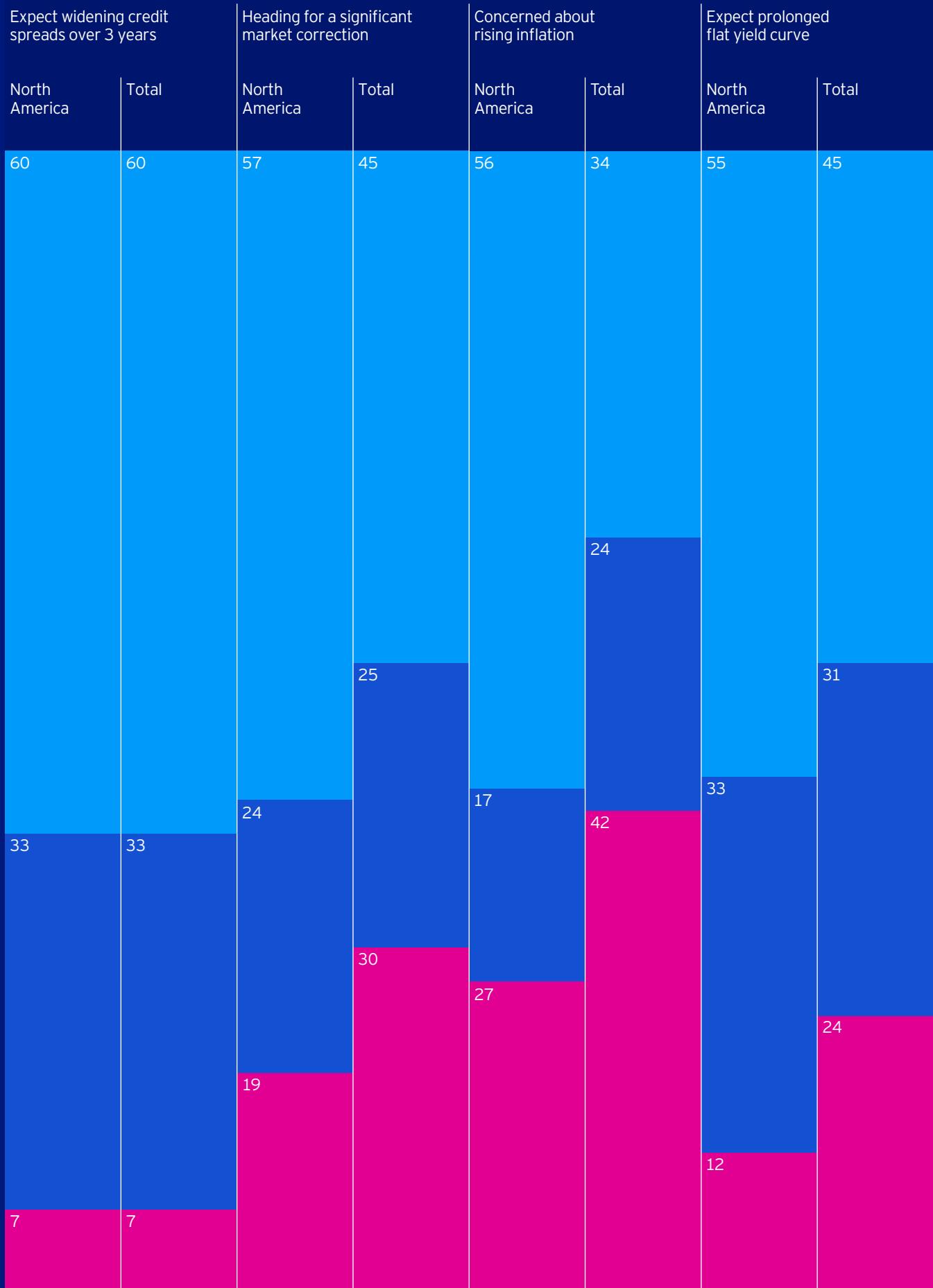
Looking at the drivers of this perspective in Figure 9 (over the page), North American investors have a near identical view to the global respondent set that credit spreads will widen, of the risk of a bond market crash, and in fact they are slightly less concerned about the need to make allocation changes based on trade war concerns. But these are the exceptions. Across the board, they are significantly more concerned than their global peers, particularly in relation to rising inflation, the risk of the Fed raising rates too quickly, and the potential for a significant market correction.

Figure 8. Expectations of time until the end of the economic cycle (from Q4 2018) (%)



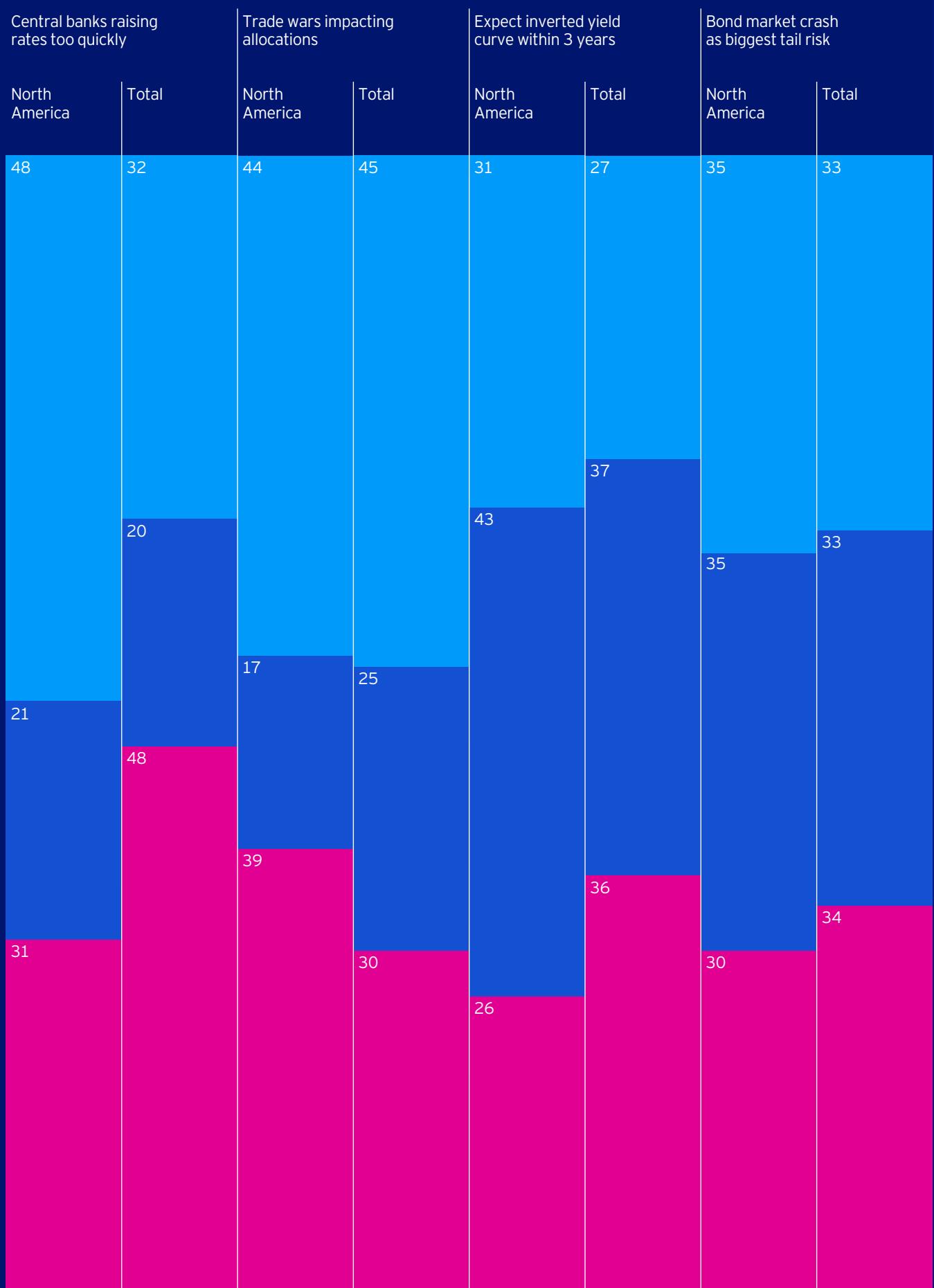
Sample size: 108

Figure 9. North American perspectives on the state of the economic cycle (%)



Sample size: North America: 42; Global: 109

Strongly agree/agree
Neutral
Strongly disagree/disagree



Wholesale investors

Concerns about geopolitical risks are bigger influencers of portfolio allocations

Having largely adjusted portfolios to deal with expectations of negative market environment, a more pressing concern for wholesale investors now is the impact of geopolitical events, including the potential for US/China conflict that would see a sharp correction. This is partly due to the closer proximity of wholesale investors to more engaged set of end-clients, some segments of which are particularly averse to capital losses (especially in Asia Pacific).

Figure 10 shows that 55% are adjusting portfolio allocations to reflect the impact of rising tensions over trade and 65% of respondents report that Brexit has influenced them to alter European and UK allocation.

Key takeaways

Given expectations for slowing growth and a long list of potential sources of risk (particularly when viewed from a North American perspective), respondents are actively repositioning fixed income portfolios to be better positioned to handle a variety of potential outcomes.

- Last year's bias toward shortening duration has become more evenly split this year between those shortening and lengthening; only EMEA region respondents are still more focused on shortening duration as policy rates still have room to rise.
- A wide variety of portfolio strategies are being considered: some are targeting yield, some are seeking the safety of shorter durations or cash in case volatility spikes, while some want the flexibility of floating rate instruments.
- Significant divergence in views among investors toward key factors at play in global markets and the uncertainty around outcomes, is illustrative of the variety of solutions investors require to deal with them today, including diversification of securities and the skilled deployment of portfolio strategies. This will be evident in Theme 2 which discusses the rising appetite for Chinese fixed income exposure.

Figure 10. Responding to geopolitical issues (%)

Strongly agree
Agree

Brexit is changing the way we consider our European and UK allocations

Trade wars are impacting our strategic and/or tactical portfolio allocations

Institutional

Wholesale

14

20

41

24

Institutional

Wholesale

13

33

26

29

Sample size: 143

Theme 2

Chinese fixed income allocations are on the rise

Key findings

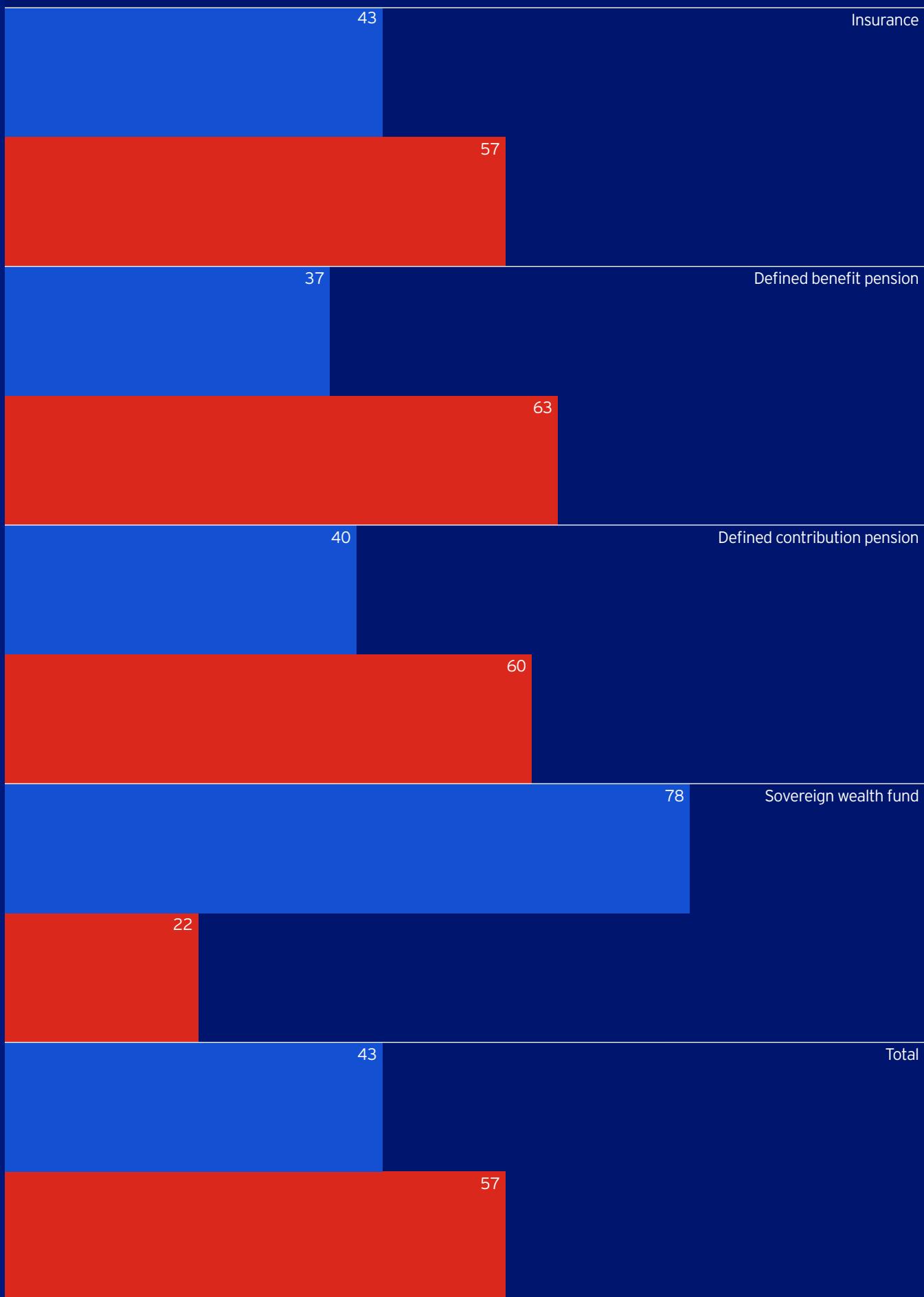
- The search for new fixed income securities and strategies discussed in Theme 1 has, combined with improved access and transparency, produced more interest and investment in the Chinese fixed income market.
- Investor segments have maintained or increased Chinese fixed income allocations in the last three years, and express intentions to extend allocations in the coming years.
- Barriers still exist in the form of access limitations, local currency risks, threat of government intervention and limited transparency, but these are receding.
- This is a long-term trend; most investors allocating to China are doing so strategically rather than for shorter-term thematic or tactical reasons.





Figure 11. Engagement with Chinese fixed income, by segment (%)

Yes
No



Sample size: 106

Allocations to Chinese fixed income are already material and rising

Allocations to Chinese fixed income are rising. Total foreign investment into China's fixed income market rose rapidly in 2018, despite the fall in the Yuan and compression in the yield premium that Chinese government bonds have historically offered over US Treasuries of equivalent maturities.

China is one of the world's largest bond markets but has long been underweight in (or entirely absent from) the fixed income portfolios of professional investors, despite supportive investment considerations such as relative valuation, yield and expected total returns.

- Foreign investors have traditionally taken a cautious view of participation in Chinese capital markets; for many China has simply been out of scope.
- For investors pursuing benchmark-relative objectives or with mandates constraining deviations into non-benchmark exposures, the exclusion of China from fixed income indices (more recently its low weighting), has prevented them from making significant allocations, or even any allocation at all.

In practice, investor exposure to Chinese fixed income has often come via allocations to emerging markets portfolios managed by their asset managers. Engagement levels have been low. However, with barriers to foreign investment coming down and the structural tailwind of higher weightings in fixed income indices, Chinese fixed income allocations are set to rise further.

At a time when the local currency has been falling and yield spreads narrowing, interest in Chinese fixed income ought to be waning, however, this hasn't been the case. The low return environment has been a prominent issue for insurers and defined benefit pension funds in particular, major investors with current and future liabilities to fund. As Theme 1 discussed, this has led investors to search outside typical core fixed income allocations to meet their return objectives.

Initially this mostly occurred by adding new types of fixed income exposures within existing investment geographies. This has started to spill over into consideration of new geographies, and demand for exposure to Chinese fixed income markets has been one of the beneficiaries. Chinese government bonds have often offered a yield premium over US Treasuries of 1% pa or more (for example on 10-year bonds), but this yield premium has narrowed to 50bps or less at the date of this study. The sharp fall in Chinese government bond long yields made it one of the world's best performing sovereigns for the 2018 calendar year.

Nearly half of respondents already have allocations to China, as illustrated in Figure 11, reflecting a high level of engagement with Chinese fixed income as an asset class.

Larger allocations from sovereign wealth funds reflect the greater freedom which they often enjoy in relation to investment policy, relative to more restricted investors such as DB and DC pension funds and insurers. With their strategic asset allocations often managed relative to – and so constrained by – benchmark indices, their ability to consider Chinese fixed income exposures has been limited.

In geographical terms, less surprising given their proximity, is that Asia Pacific investors are currently the most engaged with Chinese fixed income, with 68% reporting having some level of exposure. However as Figure 12 indicates, this is not just an Asia Pacific story – there are material levels of engagement in both EMEA and North America. The latter is particularly significant given the breadth and depth of local securities available in the US local fixed income market and the tendency therefore for US investors to maintain a strong home bias.

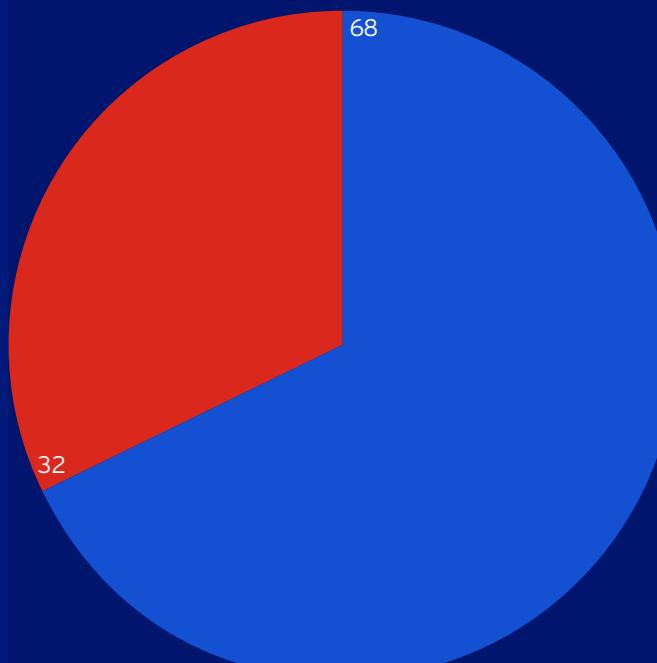
Figure 13 (over the page) shows a picture of progressive increases in allocations over the last three years; only a very small number of investors lowered their allocations. Around a third of investors globally increased allocations.

The forward picture is very similar at a global level. Most investors intend to maintain their positions, but a third are seeking to increase allocations, while the number of investors intending to lower their allocations is negligible. It's notable in both cases that North American investors are leading in terms of allocation increases, increasingly so on the forward view (albeit from a low base).

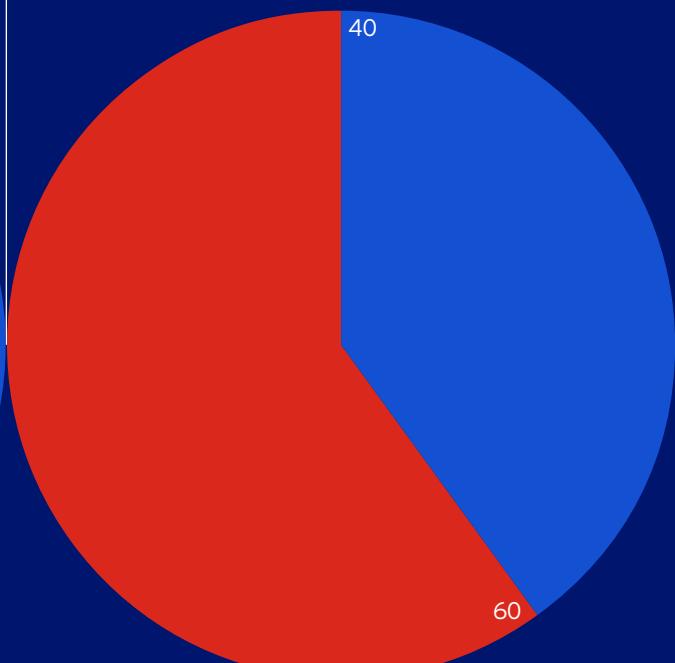
Figure 12. Engagement with Chinese fixed income, by region (%)

Yes
No

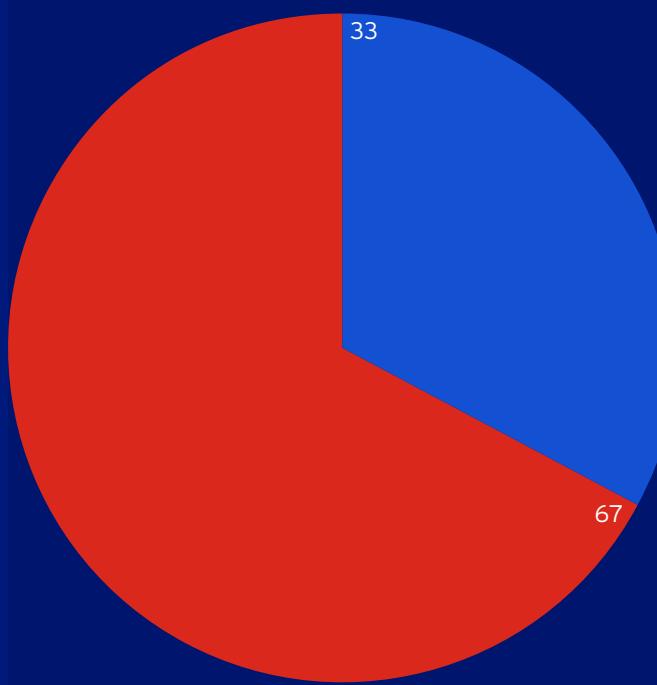
Asia Pacific



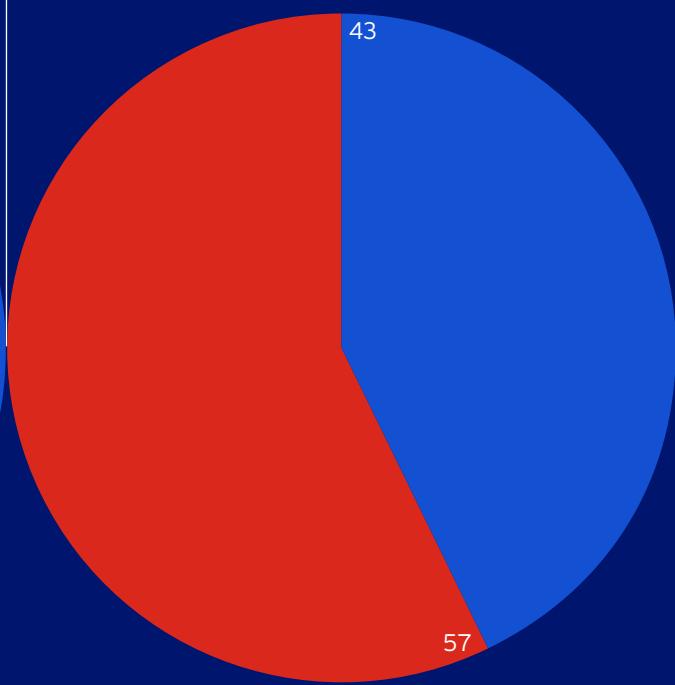
EMEA



North America



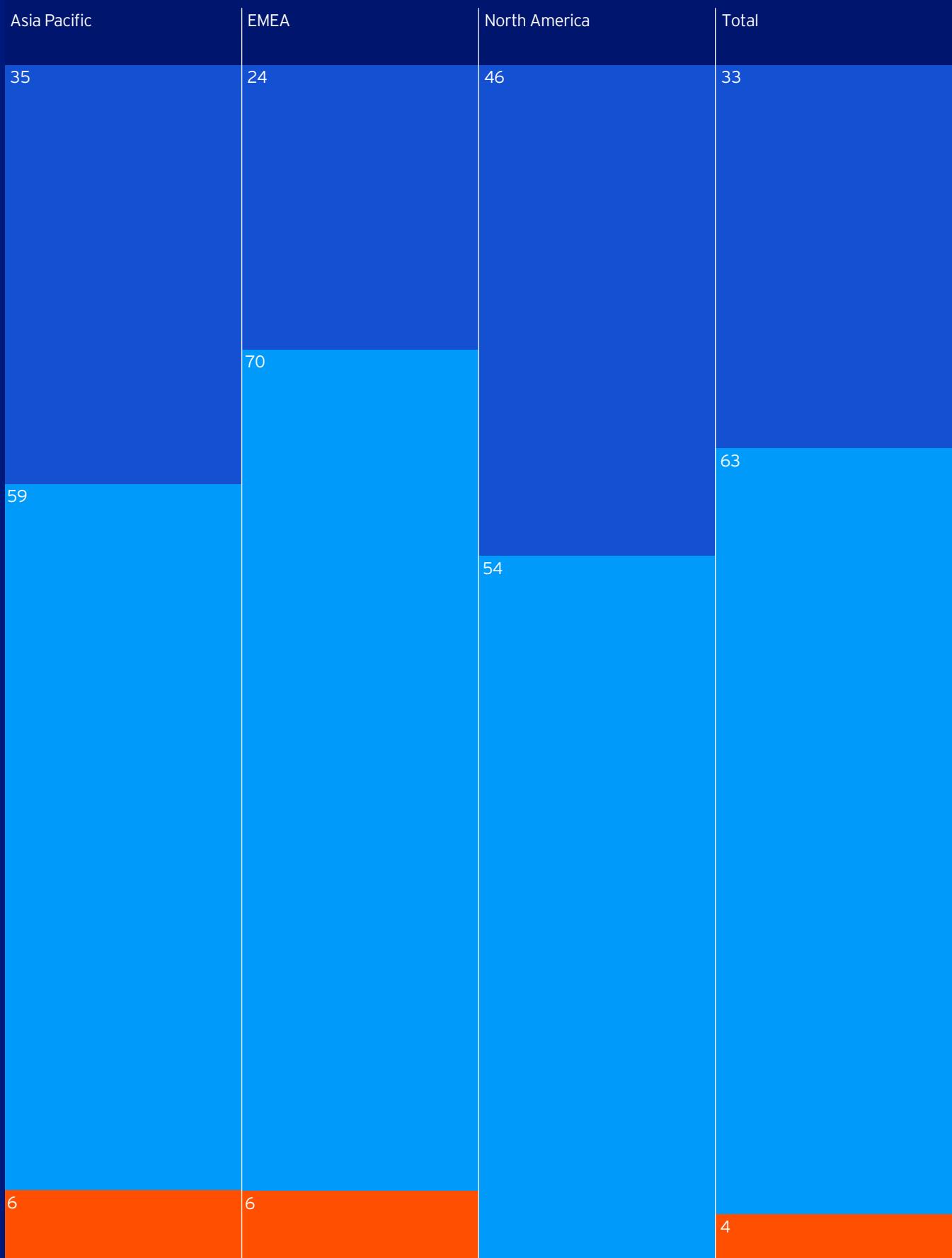
Total



Sample size: 106

Figure 13. Changes to allocations to Chinese fixed income (%)

Past 3 years



Sample size: 75

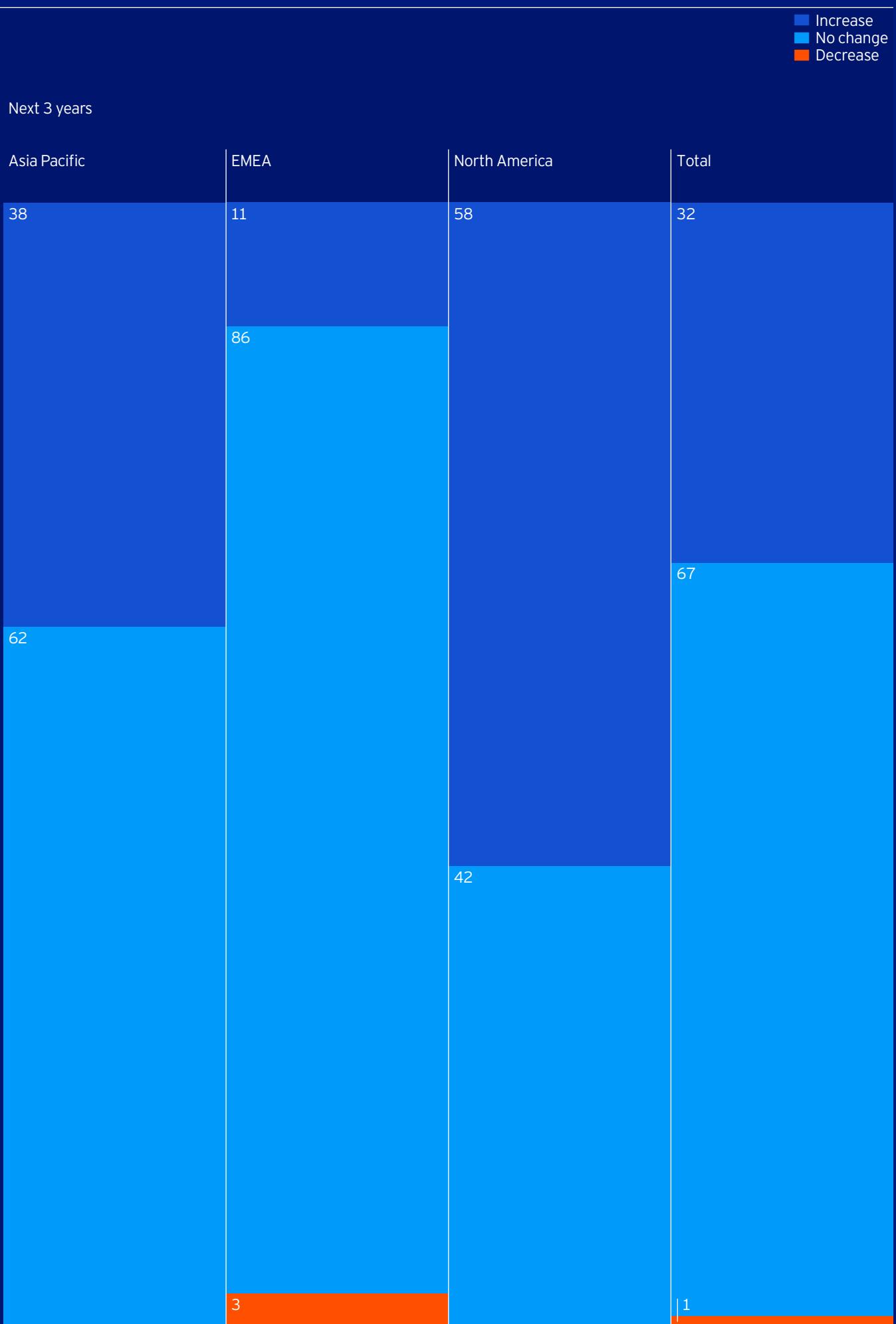
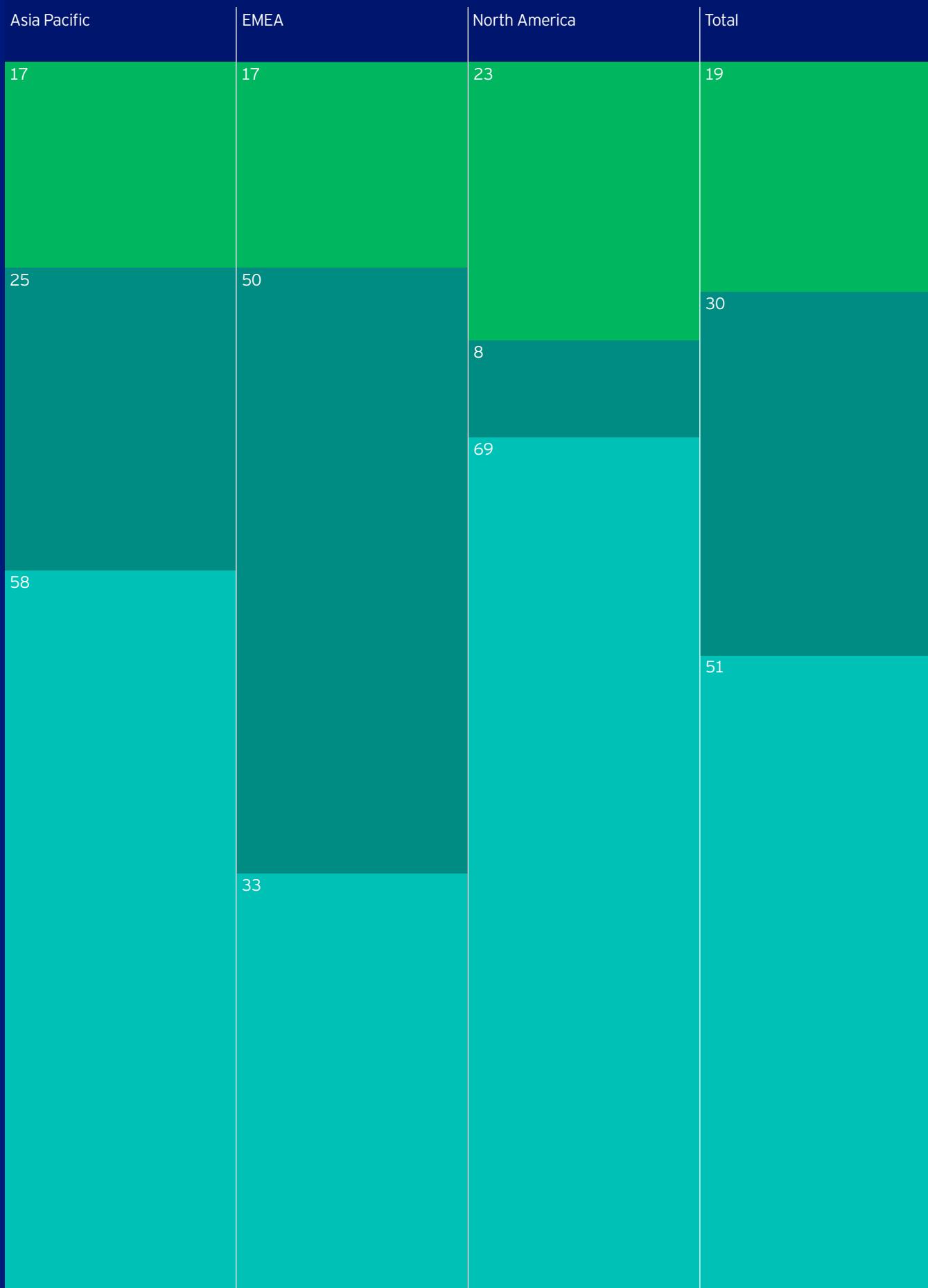


Figure 14. Exposure to Chinese fixed income - strategic, tactical or thematic (%)

█ Tactical
█ Thematic
█ Strategic



Sample size: 43

Allocations to Chinese fixed income is primarily strategic and likely to be maintained

Investors in this study have generally been increasing China's weight in their strategic asset allocations and intend implementing further increases in the future as illustrated in Figure 13 previously.

For most investors engaging with Chinese fixed income, this is not a short-term tactical play. Figure 14 shows around half of the respondents are making a strategic commitment to the asset class for the longer term, suggesting that increased allocations should weather a variety of return environments.

That said, there are a variety of approaches evident in respect to Chinese fixed income, some of them short-term and opportunistic. This includes the strong thematic flavour amongst EMEA investors, while there is a segment across all regions, particularly North America, which are taking tactical exposures to China beyond their long-term strategic asset allocations. A third of Asia Pacific investors intend to build allocations; their proximity to and higher level of familiarity with the Chinese market means they are likely to have higher allocations to Chinese fixed income to begin with.

Overall, North American investors are less likely to currently hold Chinese fixed income, but most likely to be increasing allocations, and doing so in a strategic context. They are doing so despite rising concerns of trade wars and political tensions between the US and China, indicating confidence in looking through and beyond these issues. This reinforces the observations of Theme 1 in respect to North American investor perspectives of trade wars: whether concerned or not, the prospect of trade wars does not appear to be impacting their fixed income allocation decisions more generally, and Chinese allocations specifically.

Wholesale investors

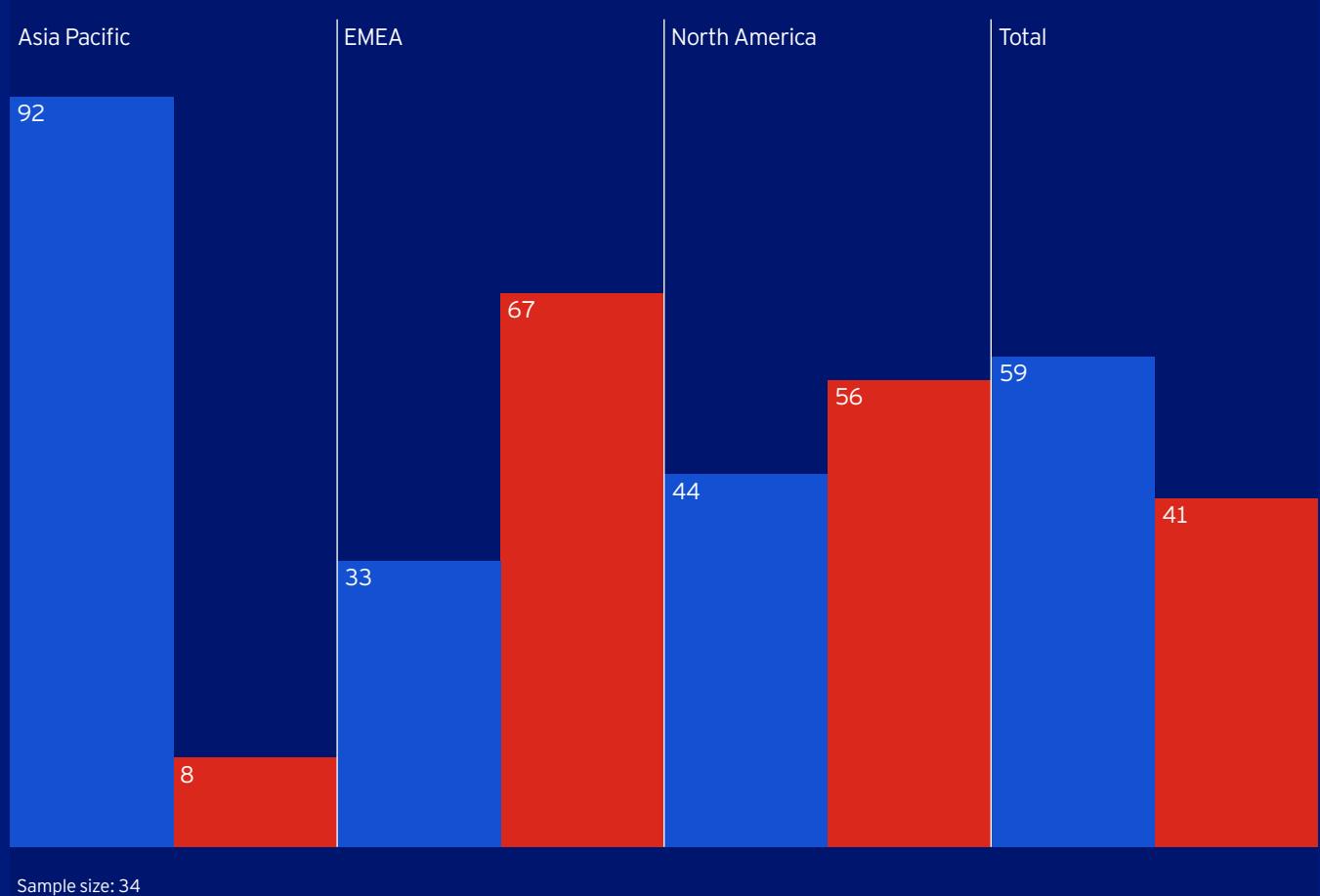
Asia Pacific wholesale investors are significant supporters of Chinese fixed income

Wholesale investors overall generally are less likely to have exposure to China in their fixed income portfolios - with the clear exception of Asia Pacific as Figure 15 makes clear. Asia Pacific wholesale investors have a high level of engagement with Chinese fixed income, which is partly a function of Chinese clients of private banks in Asia Pacific, especially Hong Kong.

Such clients typically have a strong preference for capital preservation and are often overweight fixed income as a result. They may already be familiar with Chinese issuers (both government and corporate), but a primary motivation for Chinese high net worth individuals choosing to bank in Hong Kong is to move their wealth into hard currency, as they prefer USD to RMB currency exposure.

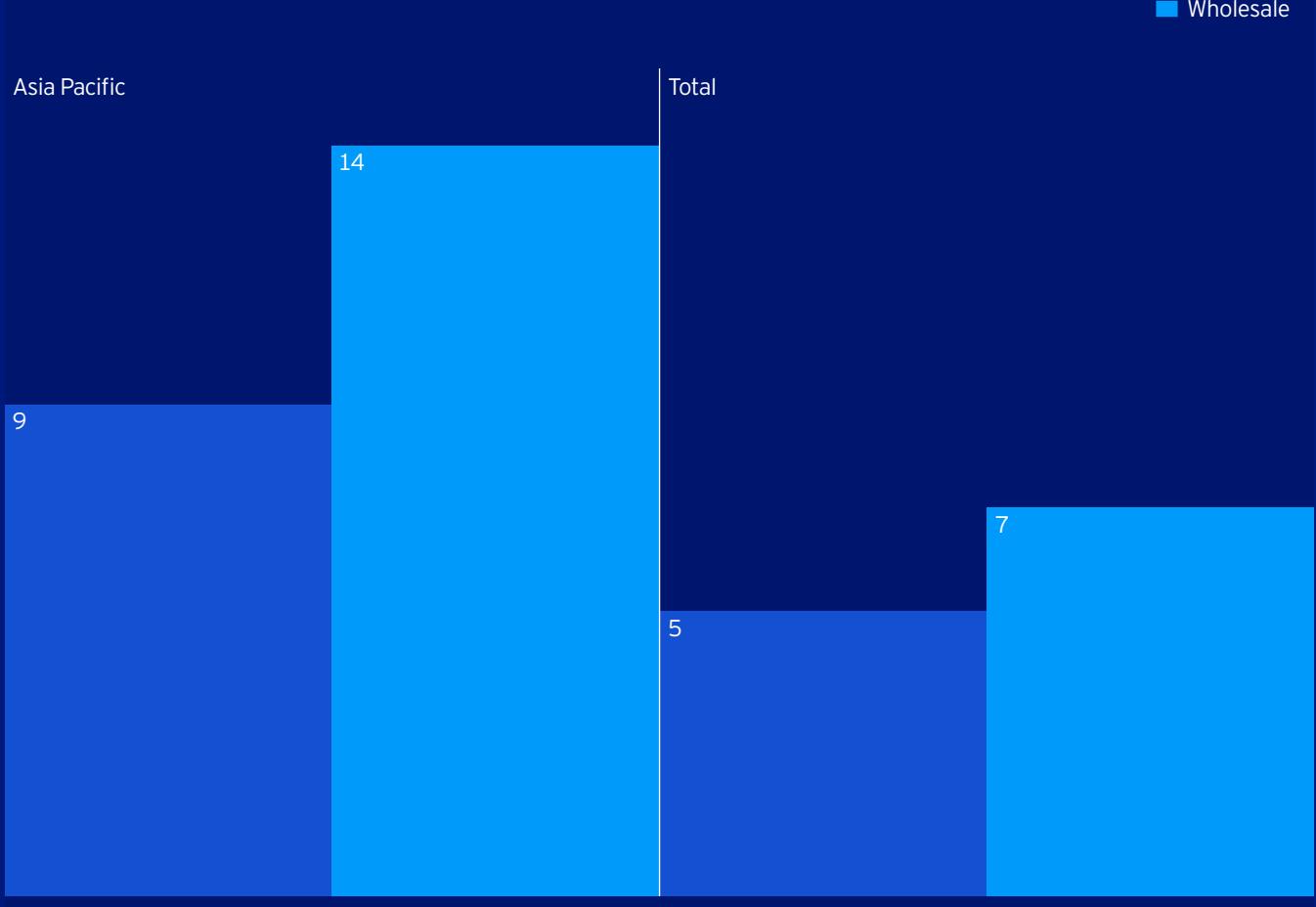
With Chinese issuers offering a yield premium to US equivalents, this segment is relatively open to having Chinese US\$-denominated fixed income exposures in their portfolios. Moreover, where Asia Pacific investors do make allocations to China as Figure 16 illustrates, the allocations are higher than in institutional.

Figure 15. Exposure to Chinese fixed income (%)
Wholesale investors



Sample size: 34

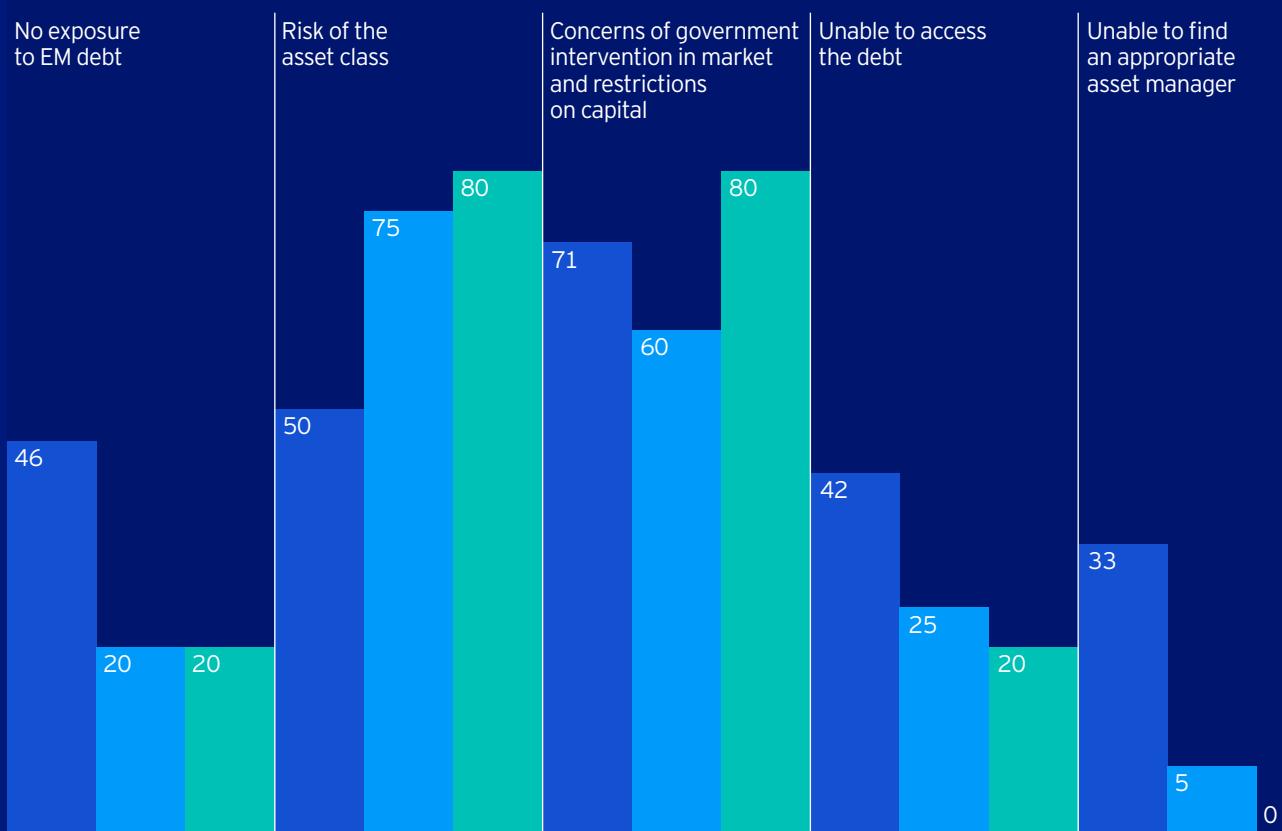
Figure 16. Average fixed income allocations to China (%)



Sample size: 23

Figure 17. Barriers to investing in Chinese fixed income, by region (%)

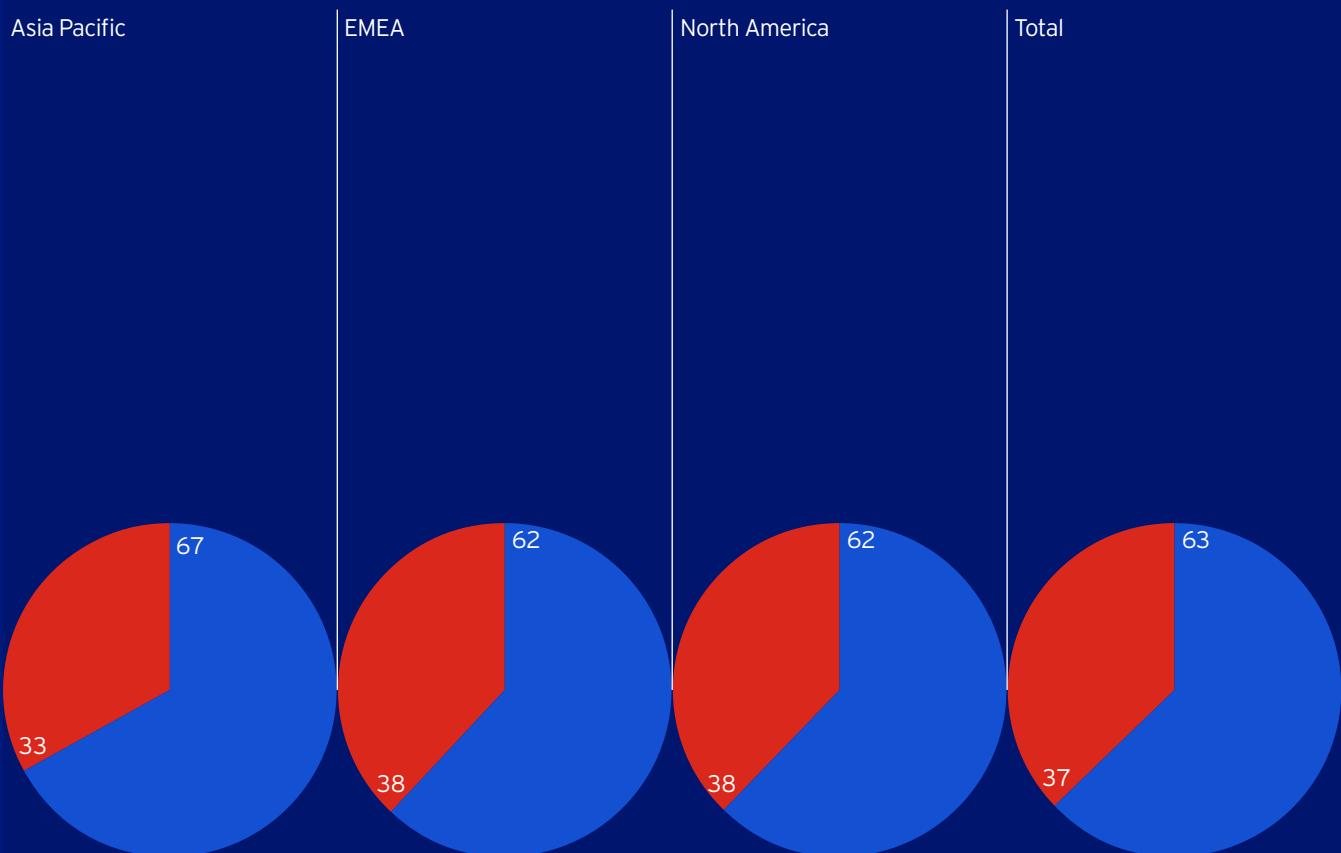
North America
EMEA
Asia Pacific



Sample size: 49

Figure 18. Belief that China is underrepresented in fixed income indices (%)

Yes
No



Sample Size: 76

Barriers to investment are slowly coming down

China has offered relatively attractive yields compared to developed market peers - often cited by investors as the primary rationale for increasing allocations to China - but returns are not the only driver of exposure decisions, which also include:

- Continued liberalisation of China's capital markets, as it seeks to attract foreign capital to support its ambitions for the renminbi as a global reserve currency.
- Actual or prospective inclusion of Chinese securities in major bond indices.
- Potential for index providers to increase China's representation in bond indices over time to progressively reflect its market weight and status as one of the largest bond markets in the world.

Just over half of our study respondents do not yet invest in Chinese fixed income. As Figure 17 illustrates, those investors not allocating to Chinese bonds are most concerned about government intervention and potential restrictions on capital, as well as the general risk of the asset class.

Concerns about government action were relatively even across regions, although it is interesting to observe that it is highest amongst a small number of Asia Pacific investors that do not invest in China and who have the closest proximity to the market, and lowest amongst EMEA investors, who are the most distant. North American investors are relatively less concerned about asset class riskiness, and more concerned about structural barriers such as strategic portfolio allocations and accessibility, and the commercial challenge of finding a good asset manager. However barriers are becoming less of an issue. For example, accessing the market, once considered a major challenge, has retreated as a major barrier for investors and is now a secondary issue at most, as Figure 17 shows.

An important and persistent practical consideration has been index inclusion. Despite becoming one of the largest bond markets in the world, China has lacked representation in fixed income indices, which has contributed to investors with benchmark-relative mandates having nil or only small allocations to China. Figure 18 shows that most investors still believe China is underrepresented in bond indices, which continues to constrain capital managed to index-relative mandates.

This is changing. Providers of major bond indices, such as the Bloomberg-Barclays Global Aggregate Index, have announced they will begin including China. In the case of Bloomberg, China exposure will be introduced in April 2019 and phased in over 20 months from zero to 5.5%, starting with sovereign bonds and more liquid bank bonds. This follows Chinese efforts to improve access to its bond market and address concerns of foreign investors and index providers in relation to:

- Lack of liquidity.
- High costs.
- Constraints and delays imposed on foreign investors to participate (limits on the repatriation of capital, time and delays in registration for quotas, and lock-ups, for example).

A range of initiatives (such as Bond Connect, launched in July 2017) have effectively removed or diluted some of these constraints.

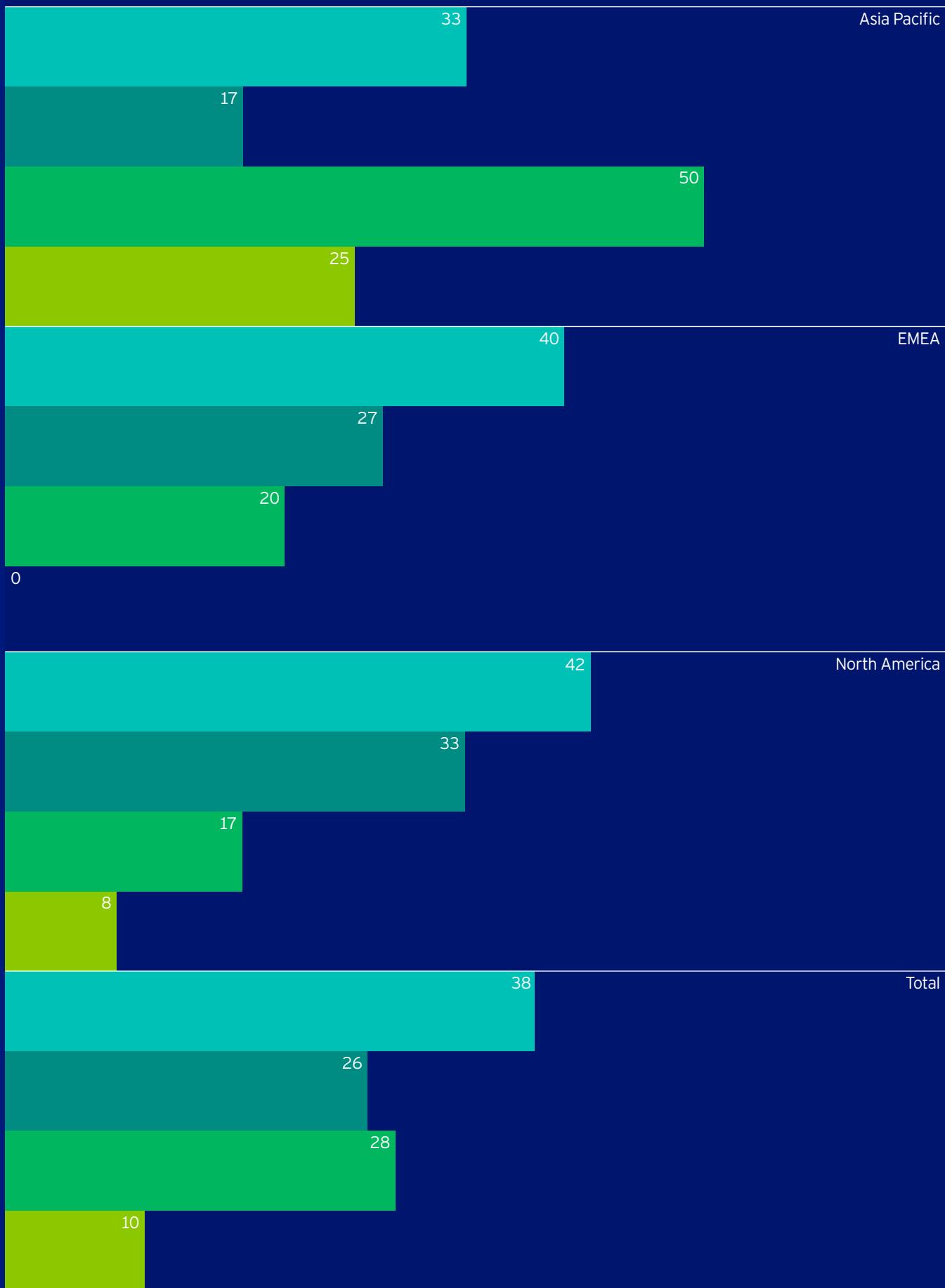
Despite these improvements, Figure 19 shows currency remains a major concern for investors for now. Despite China's inclusion in the International Monetary Fund Special Drawing Rights (IMF SDR) basket, many investors still prefer to hold Chinese fixed income via offshore USD-denominated exposure due to access restrictions and high hedging costs. Continued liberalisation of the market may lower hedging costs and encourage greater onshore buying, but that remains potential for now.

Global fixed income investors will become increasingly familiar with Chinese fixed income over coming years, even if only due to moves by benchmark providers.

- Passive and benchmark aware investors will be likely to see material increases to China in their portfolios, some for the first time.
- Active investors will need to be sufficiently engaged to make informed decisions to overweight or underweight China, and which securities to include in portfolios.
- This is occurring against a volatile backdrop, including falling premiums to US Treasuries, and in the second half of 2018, a weaker renminbi. Barriers are coming down and access is increasing rapidly but risks remain for foreign investors.

Figure 19. Onshore versus offshore access (%)

Asian
Offshore renminbi market
Chinese onshore CNY market
Other



Sample size: 39

Key findings

- Rising yields, strong equity markets, and special contributions in recent years have improved funding ratios of defined benefit (DB) pension funds, allowing investors to focus on closing fund gaps and reducing funding level volatility through liability-driven investing (LDI) strategies.
- However, cashflow requirements for DB pension funds have increased as funds have closed, increasing the importance of managing cashflow as well as the funding level.
- Traditional methods of meeting cashflow requirements from contributions and income are less viable as schemes close to new members and/or accruals, and yields on traditional income generating assets fall below target levels.
- Rise of cashflow-driven investing (CDI) strategies to sit alongside the return seeking and LDI portfolios is gradual to date but future intention to adopt is high.



Liability-driven investing is now a well-established trend, dating back to the early 2000s in Europe as DB pension funds began considering ways to close funding level gaps and reduce funding level volatility (with implications for parent company reported profitability), control unrewarded risks (interest rate, inflation, and spread risk) and ultimately transfer risk off their books.

As the numbers of schemes closing to future members and/or accruals (in favour of defined contribution pension structures) has increased, the question of whether assets will meet future liabilities has become front of mind for trustees, sponsors and employees alike.

The management of the pension funds run-off phase appears to be changing, with a marked increase in the size of the buy-out market as pension funds look to close off or cap their exposure by transferring part or all of their liabilities to a third party, particularly major insurers.

To reach this destination, DB pension funds have increased the focus given to the liability side of the equation, given that small changes in long-term bond yields have a large impact on their long duration liabilities. Although long-term yields have been on a structural downward trend for several decades, the financial crisis exacerbated funding level volatility, leaving DB pension funds with significant funding deficits as bond yields fell (increasing the value of liabilities) and equity markets plummeted, reducing the value of the traditional 60% equity/40% bond portfolio, widening the gap between assets and liabilities.

The second half of the last decade has been more favourable for DB funds, in particular the past three years. Although liability values have increased with actuaries revising down discount rates in light of the 'new normalisation' scenario described in last year's Global Fixed Income Study, pension fund assets, for the most part, have kept pace (corporate pensions more so than public pensions).

There have been three main drivers of improved funding levels:

Increased focus on liability hedging

DB pension funds have moved assets out of equities into fixed income and fixed income-like securities to better match assets to liabilities. Originally focused on long dated bonds, LDI strategies have evolved significantly to limit the impact of rates, spread risk, inflation and longevity. A wide range of strategies, typically using derivatives, are employed to match liabilities and reduce funding level volatility. The use of derivatives allows schemes to maintain assets in their return seeking portfolio with the aim of further progress in closing deficits.

High equity and illiquid alternative investment returns

Despite lower allocations to equities, growth assets overall have performed well over recent years. Investors have increased allocations to alternatives as they moved away from the traditional 60/40 portfolio, in search of new risk premia such as illiquidity.

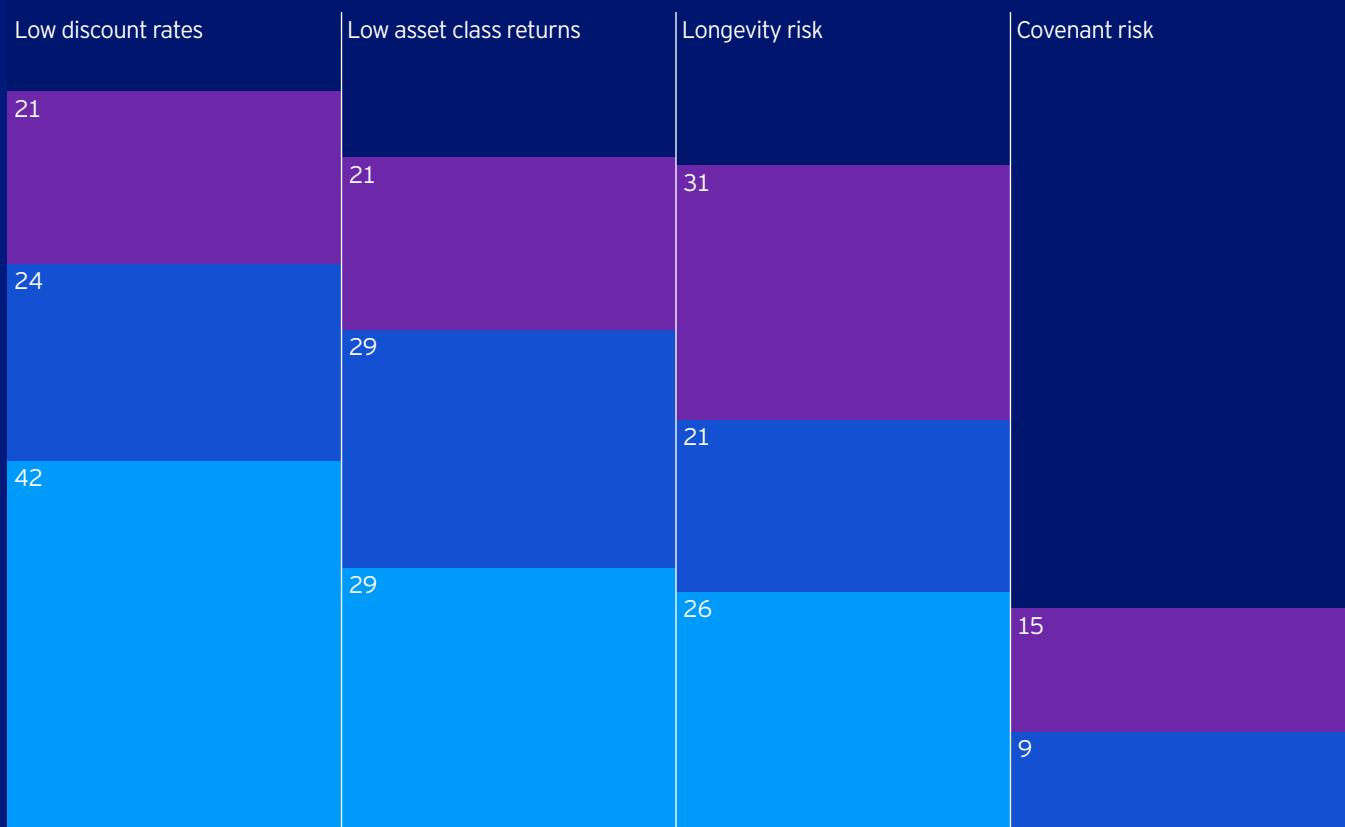
Special employer contributions

Sponsors have accepted that achieving full funding by relying solely on novel investment strategies and returns will be difficult. Strong earnings growth and low borrowing rates have made it attractive to top up pensions with additional contributions. In the US, an additional benefit in 2018 was taking advantage of tax deductions at the higher 35% corporate rate before the 21% corporate tax rate came into effect, as well as the reduction in the tax rate for US corporates to repatriate international cash.¹

¹<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/Tax/us-tax-considerations-for-accelerating-deductions-for-qualified-retirement-plans.pdf>

Figure 20. Most significant challenges facing defined benefit pension funds (%)

Rank 3
Rank 2
Rank 1



Sample size: 34

Table 1. Top challenges facing defined benefit pension funds

■ Structural
■ Markets

Risk	Challenges raised	Investor concern level	Impact on assets and liabilities
Ageing population	Despite some deteriorations in 2018, estimates of life expectancy typically have pensioners living longer, increasing the period over which benefits are paid	High	<ul style="list-style-type: none"> Increased liability values Greater need for yield assets to meet cashflow requirements Difficulties in predicting liability and cashflow requirements impact accuracy of hedge ratios
Closure	With the shift in focus from defined benefit pensions to defined contribution, DB pension funds have been closing to new members and/or accruals	High	<ul style="list-style-type: none"> Shorter investment timeframes to close funding level gaps Fund becomes cash negative requiring yield from assets to cover required payments to beneficiaries. If this is not possible, funds are forced to sell assets
Covenant risk	End of the economic cycle and rising interest rates could weaken covenant strength (particularly in structurally challenged industries such as retail)	Low	<ul style="list-style-type: none"> Respondents view this as a limited concern Some countries have safety nets in place (e.g. UK PPF)
Interest rates	US Federal Reserve has lifted base rates, but the yield curve remains flat. The key challenge for investors is the level of hedging to implement as they contemplate future interest rate movements	High	<ul style="list-style-type: none"> Rising rates reduce liabilities, but also fixed income assets supporting them Higher yields benefit funds needing income to meet cashflow requirements
Equity values	Fixed income investors (particularly in North America) are anticipating the end of the economic cycle, and equity values may not yet reflect this	High	<ul style="list-style-type: none"> Potentially significant impact on asset values and funding levels (depending on level of hedging)

After recent progress in reducing deficits, defined benefit pension funds see tougher times ahead

Volatility in equity markets in late 2018, coupled with the start of quantitative tapering, has highlighted the ongoing risk of funding level volatility. Addressing the long-term issues of DB pension funds remains a significant concern, with respondents acknowledging challenges including the low yield environment and ageing populations. Figure 20 highlights that little has fundamentally changed over the past year.

Investors see tougher times ahead, anticipating uncertainty due to the structural and market forces in Table 1. With rates beginning to rise, albeit slowly, trustees and pension fund managers are re-evaluating hedge ratios. Those with a defined journey plan and funding level triggers are not as concerned - but these investors are a minority.

Interest rate paths have proved difficult to predict (the difference between future spot rates and the forward curve being what impacts the effect of a hedge). Respondents pointed to under-hedging of liabilities directly following the financial crisis, believing that it was costly to lock in at historically low rates, with rates seen as being able to go in only one direction - up. When this proved not to be the case, schemes were hurt by the further downward trend in yields, with future spot rates ending lower than the forward curve had priced in.

The dominant decision in the past decade for DB pension funds has been how to manage the risk of funding level volatility. Unable to simply reduce risk by reducing allocations to return seeking portfolios (which investors believe is compensated, and needed to bridge the funding level deficit), investors have sought instead to reduce risk by striking the right balance (specific to each fund) between retaining risk exposure to maximise long-term returns vs hedging the portfolio by matching assets to liabilities and transferring out risk via liability-driven investment (LDI).

Improved funding levels in recent years have further increased the emphasis on de-risking through liability hedging strategies, and brought plans closer to their end-games of transferring out risk in the form of bulk annuity, buy-in, and buyout deals.

However, closing funds to new members and/or new accruals has reduced the timeframe that pension funds have to bridge funding level deficits. This emphasises the importance of the right balance between the return-seeking portfolio to bridge this gap, and the liability matching portfolio. The use of derivative-heavy LDI strategies is one answer, but leveraged LDI strategies introduce new risks and governance requirements and as a result are not a solution for all.

As yields have started to rise, DB pension funds have started considering how fast and how far they will rise (if indeed the upward trend continues).

As LDI strategies become more common and sophisticated, there is scope for a shift in emphasis back to the return-seeking portfolio, using smaller amounts of cash and bonds as collateral for a levered derivatives portfolio.

There is significant regional divergence in the use of LDI strategies (see Figure 21). EMEA investors have been at the forefront of LDI strategies, in part due to the better funded nature of DB pension funds in Europe relative to Asia Pacific and North America, deteriorating scheme demographics, and regulatory frameworks that encourage matching and mark-to-market valuations to reduce short-term volatility.

Although liability hedging strategies appear to be a solution to funding level volatility, it's not without its costs and suitability issues, cited by respondents who are yet to introduce an LDI strategy:

— **Cost and governance**

LDI is complicated and additional governance and costs will be incurred relative to a traditional bond portfolio used for hedging.

— **Employer covenant**

Respondents with strong employer covenants have more scope to accept greater funding level risk.

Figure 21. Defined benefit pension fund respondents implementing an LDI strategy (%)

■ Yes
■ No

EMEA

92

Total ex. EMEA

57

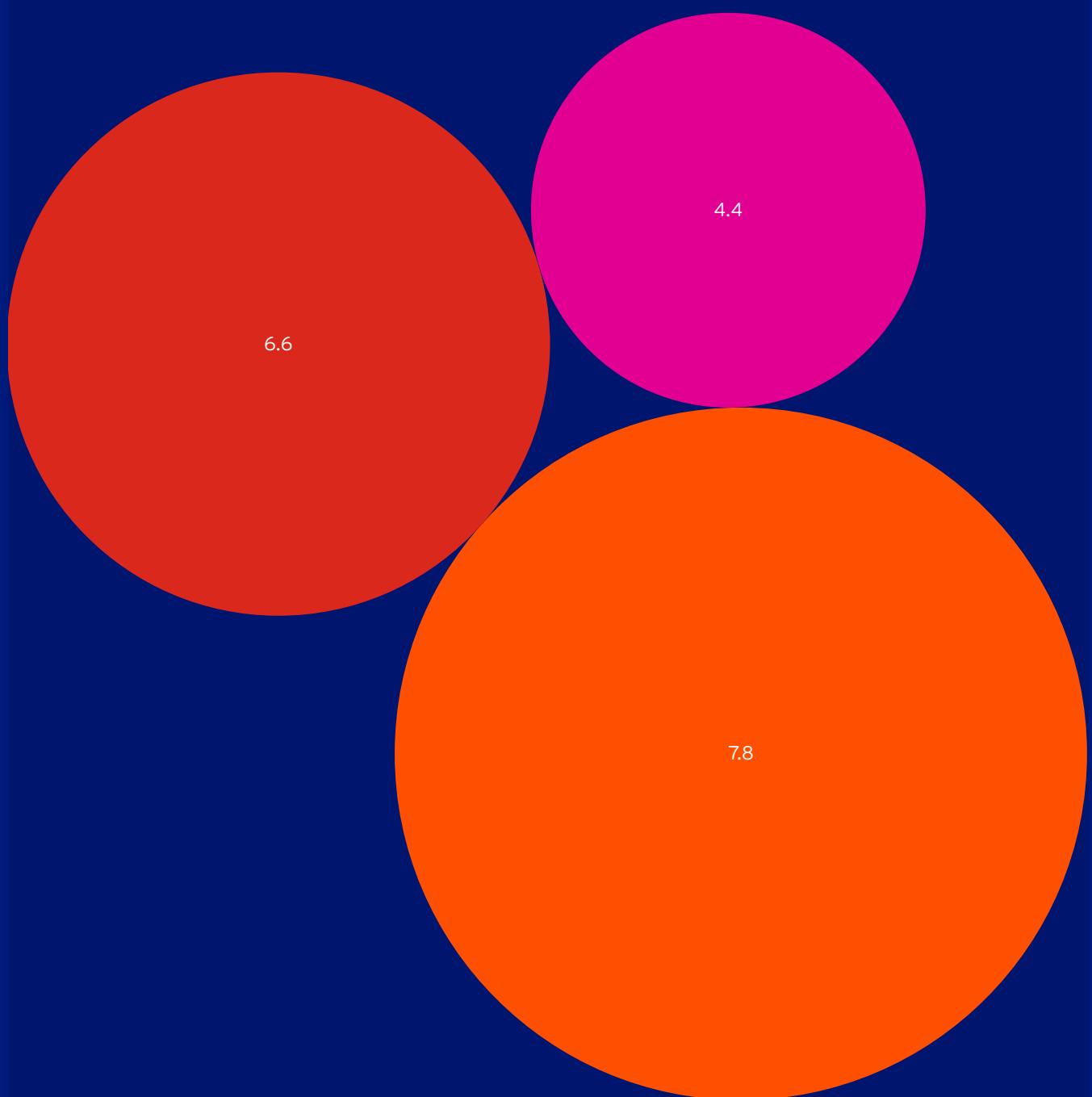
43

8

Sample size: 34

Figure 22. Confidence in meeting cashflow requirements, defined benefit pension funds by funding level
(Scale 1-10 where 10 = most confident)

■ <80%
■ 80%-100%
■ >100%



Sample size: 33

Although LDI has become widely utilised, its goal – to stabilise funding levels – does not necessarily help DB pension funds achieve their cashflow requirements. Irrespective of improvements in funding levels, the need for current income is increasing. Funds have met cashflow needs from three traditional sources, but respondents see difficulties in today's environment:

- **Contributions from employers or employees**
Less viable as schemes close to new members and/or accruals.
- **Investment income**
Low yields on income generating assets means required yield is often greater than yield currently being generated.
- **Sale of assets**
Funds may be unable or unwilling to sell assets to meet cashflow requirements due to conflicts with funding gap objectives or concerns about crystallising losses. Liquidity is a growing concern given larger allocations to illiquid alternatives such as real estate and private equity.

As funds have closed, the decumulation period has been brought forward, implying net cash outflows. Figure 22 shows that DB pension funds are concerned about their ability to meet cashflow requirements – confidence scores are not high, especially for funds with lower than 100% funding levels. Even funds with greater than 100% funding display considerably less than overwhelming confidence.

DB pension funds are turning their attention to this new challenge of meeting cashflows. But uptake to date has been slow and it is not straightforward to add a third sub-portfolio – cashflow-driven investing (CDI) – to existing mixes of LDI and the return-seeking portfolio.

Respondents cited numerous issues contributing to the need to pay more attention to CDI despite the challenges:

— **New normalisation playing out**

Although the short end of the yield curve has risen over 2018, there has been a limited increase in long-end rates given the lack of inflationary pressures.

— **Selling down assets** (see Figure 23)

When short of specific income-generating assets, investors liquidate assets to meet cashflows.

As volatility re-emerges and the end of the economic cycle is seen as drawing nearer, the concerns that investors will be selling into lower than expected valuations has increased.

— **Limited impact of increasing portfolio duration**

The flat yield curve presents a challenge to investors looking to increase yields by increasing the duration of their portfolios.

— **Liquidity conditions**

DB pension funds are meeting cashflows needs from a range of assets, a popular strategy being to increase fixed income assets (for liability hedging purposes) and also illiquid alternatives (in the search for yield and diversification). Funds have concerns about the ability to liquidate assets in a down market, particularly illiquid alternatives. The experience of the financial crisis indicates that if unable or unwilling to liquidate private markets investments, cashflow hungry investors may have to turn to selling their more liquid bond holdings.

Some respondents expressed concerns regarding the impact of quantitative tapering on volatility and liquidity in risky asset markets. In bond markets, capital constraints and the Volcker rule, restricting investment banks conducting market making activities, are also cited concerns that could impact liquidity. Funds with over 100% funded status have the ability to look through down market periods. They are more likely than those less well funded to hold property and direct lending exposures (Figure 24).

Current use of CDI strategies is relatively low (especially in comparison to the use of leveraged derivative-based LDI strategies), although this is not a surprise given the different maturity of each market. Figure 25 (page 56) shows the widespread usage of LDI strategies, and the corresponding usage of a full CDI strategy or a hybrid approach, defined as a specific portfolio designed to generate income, but not matched specifically to liability cashflows. Investors with low funding levels who continue to increase risk in portfolios to bridge the funding level gap, are not able to implement a CDI strategy, which focuses on yield but not capital appreciation.

Figure 23. DB pension fund concerns of realisation risk, by funding level (%)

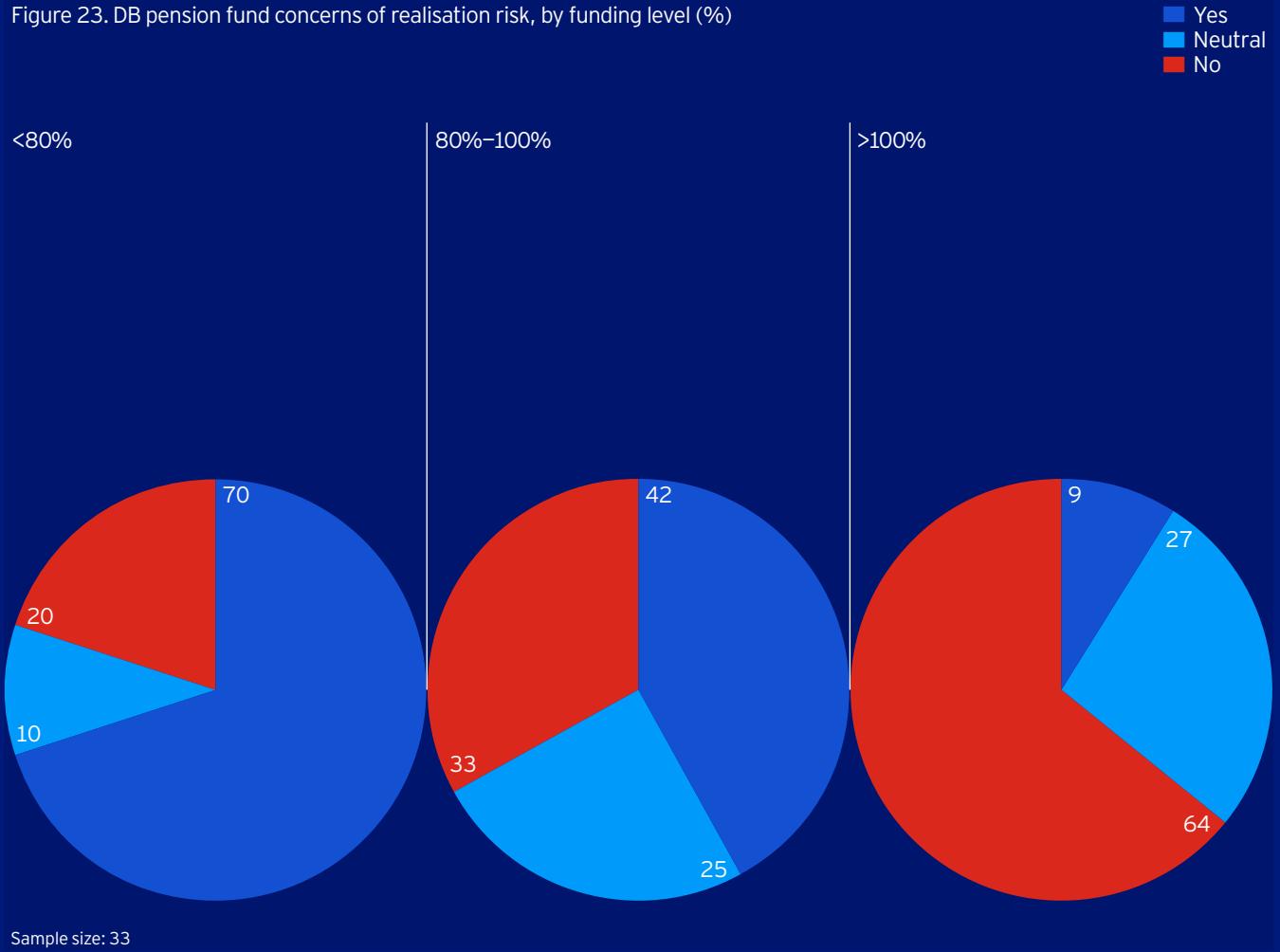
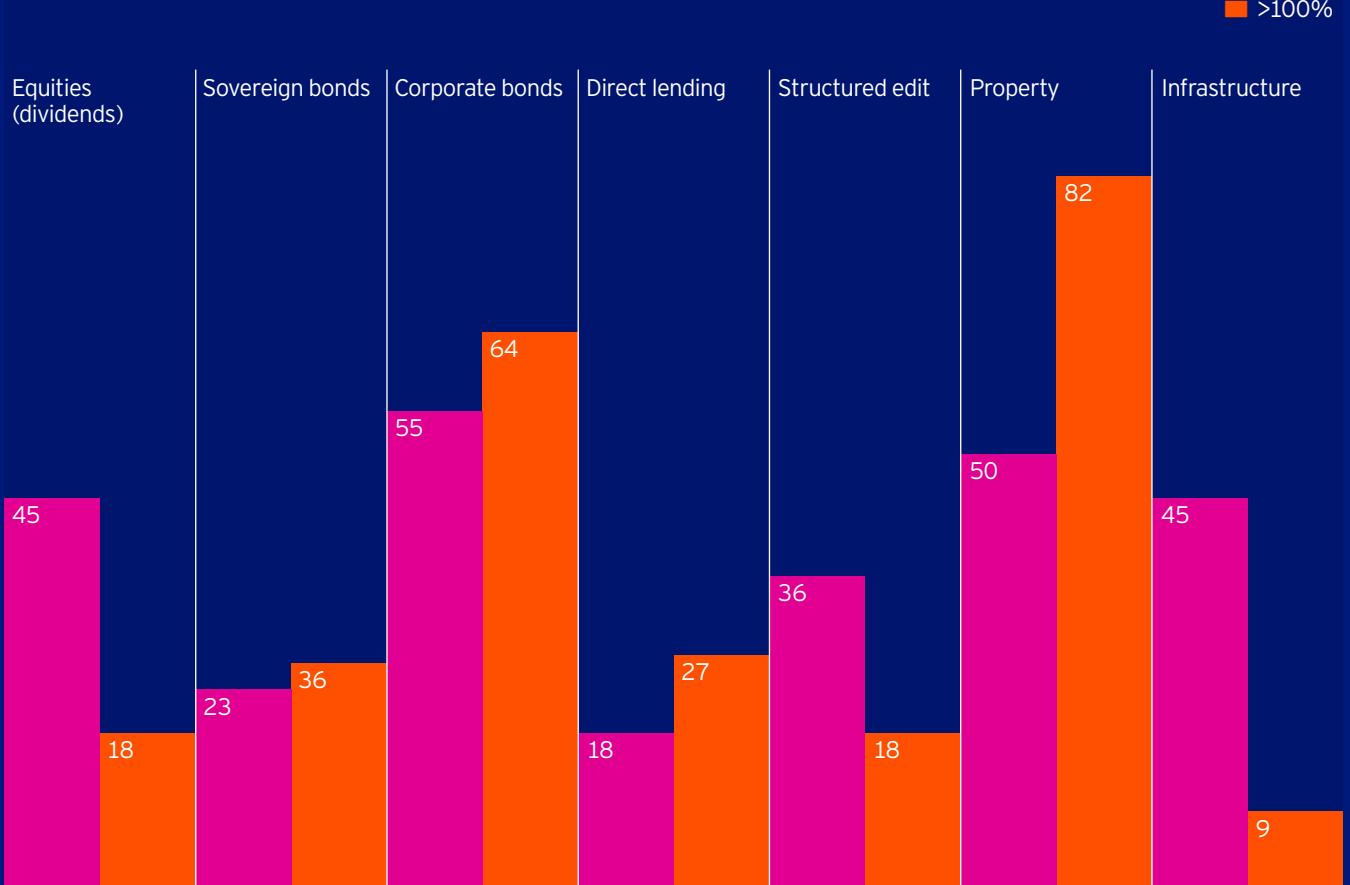
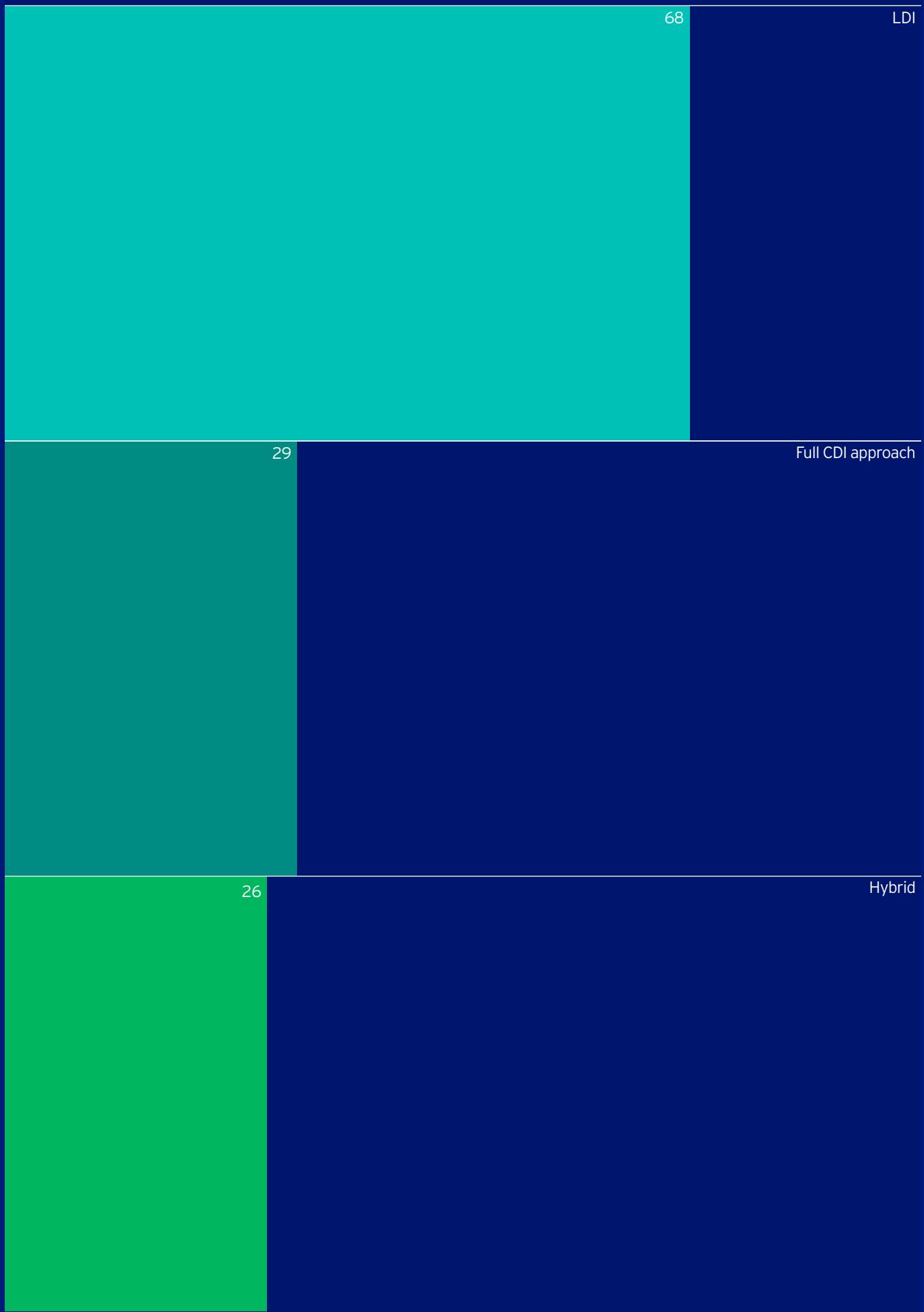


Figure 24. Asset classes used to generate income, DB pensions, by funding level (%)



Sample size: 33

Figure 25. Defined benefit pension funds implementing types of liability management strategies (%)



Sample size: 34

CDI strategies have benefits beyond just cashflow management. They can act as a bridge between the return-seeking and liability matching portfolios. The use of buy-and-maintain mandates, where investors hold fixed income assets to maturity, removes mark-to-market fluctuations and provides respondents with more certainty of expected returns, which assists in reducing funding volatility.

LDI and CDI strategies have been largely focused on institutional investors, with limited attention paid to potential applications for retail investors. The complexity of the strategies coupled with the lack of contractual liabilities have been the key barriers.

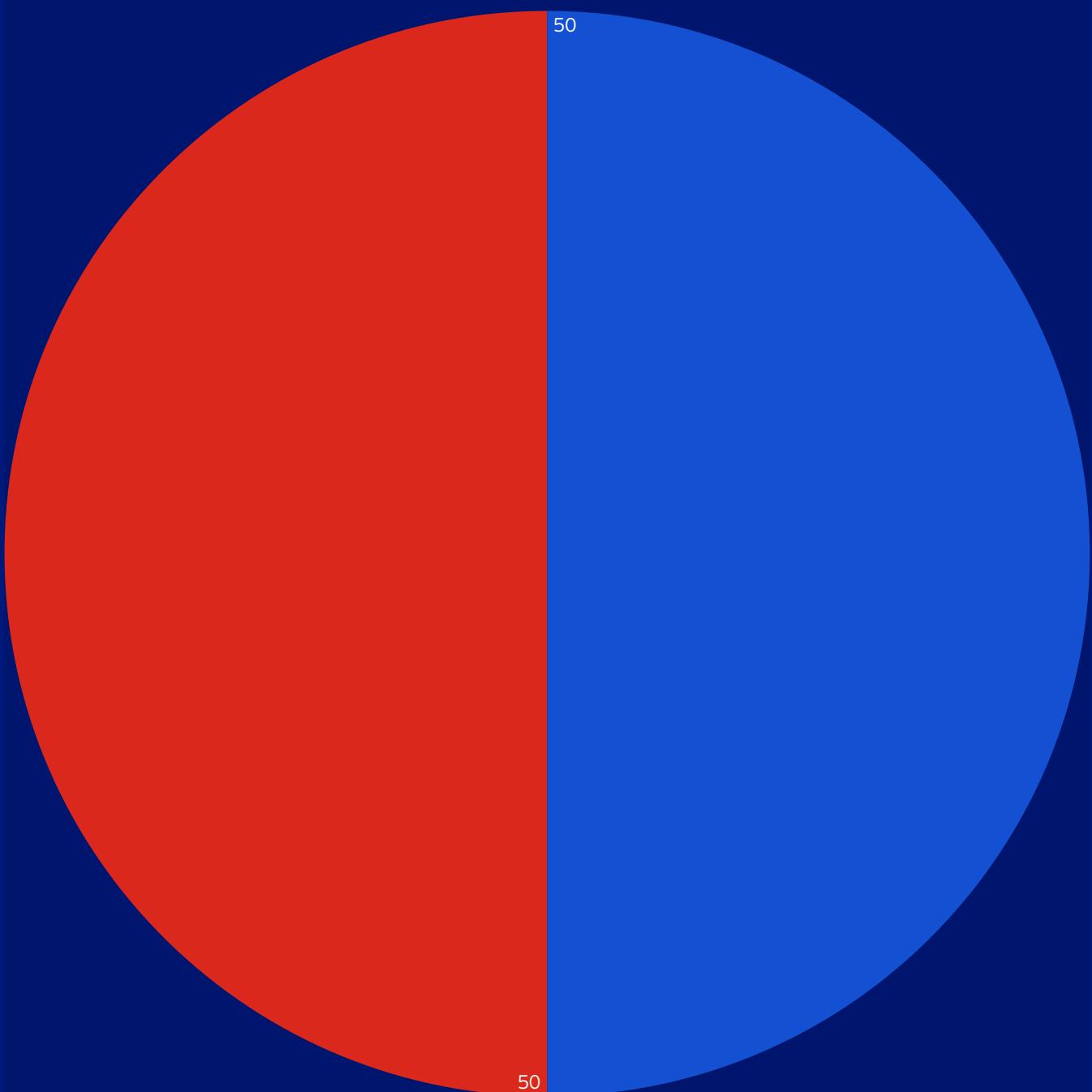
However there is growing interest for strategies for retirement income portfolios. Income demand amongst retirees is high, but like institutional investors there is a balancing act between capital appreciation and income generation. With annuity yields unattractive, a CDI strategy may appeal to retail investors needing to boost income without drawing on capital or significantly increasing the risk profile of their portfolio. Alternatively, retail investors may simply be looking for an income boost to bridge the gap until a DB pension commences.

Given the preference for income amongst retail investors, progression towards a form of CDI strategy makes sense, but adapting the strategy to the uniqueness of investors' cashflow needs (even pooled LDI funds for institutional investors offer an element of customisation) is a challenge. Respondents indicated they are increasingly seeking a buy-and-maintain type strategy that delivers a regular income stream over a defined period, utilising investment grade credit and government bonds. In the early stages of the portfolio, income would be met from a mixture of coupons and capital from bond maturities. As the fund runs-off, a greater proportion of the income would be met from maturity of bonds than from coupon payments.

As shown in figure 26, 50% of study respondents that do not currently utilise a CDI strategy intend introducing one as funding levels tick upwards, and they become comfortable with their LDI portfolios. For now, the use of CDI is heavily weighted towards better funded pension funds, which have these characteristics, than those with significant funding gaps, which require a higher rate of return than is achievable from a CDI portfolio.

Figure 26. Defined benefit pension fund intention to introduce CDI strategy (%)

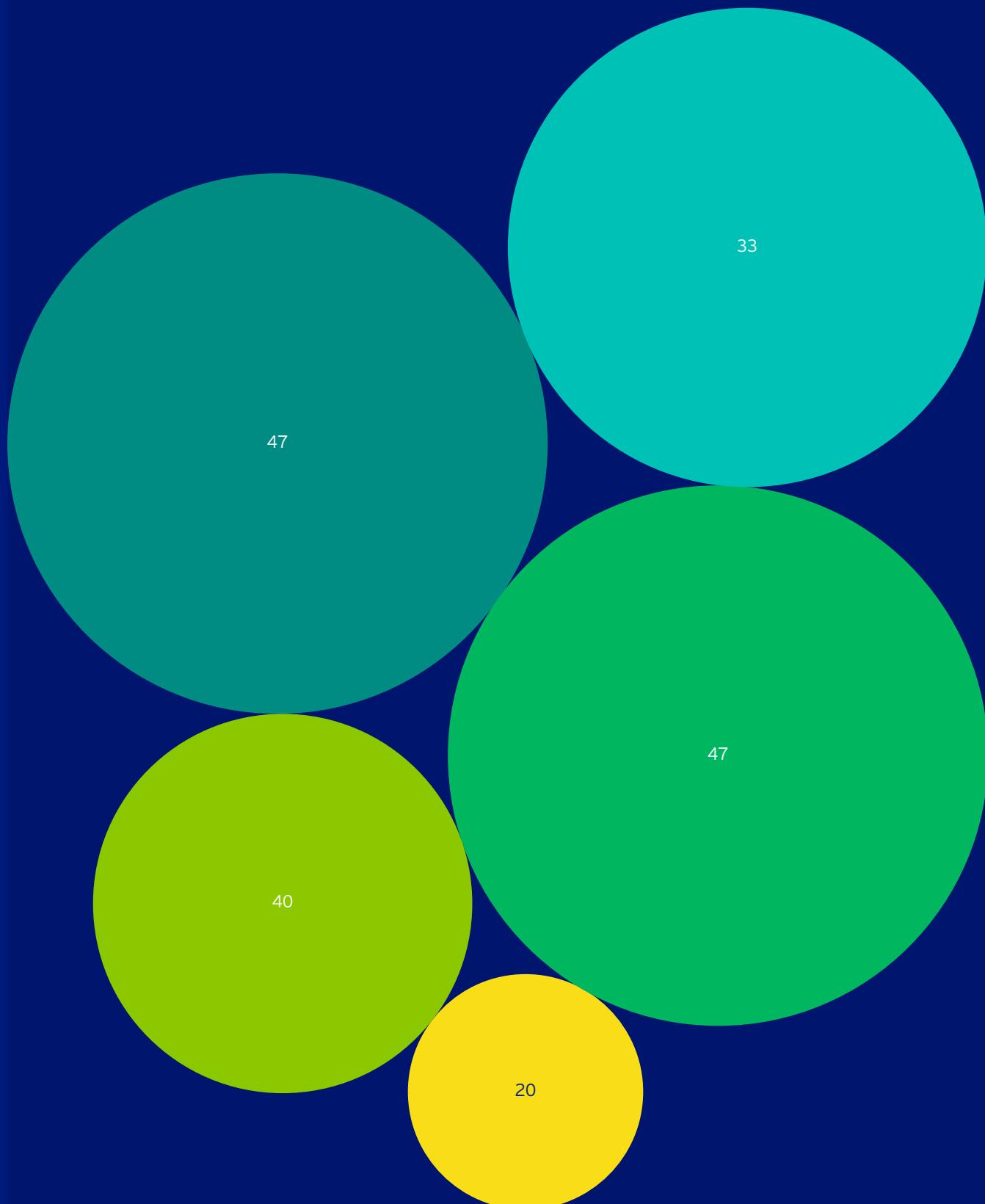
■ Yes
■ No



Sample size: 16 (only pension funds with no existing CDI strategy)

Figure 27. Defined benefit pension fund reasons for not utilising a CDI strategy (%)

- Not well funded enough
- Unfamiliar with CDI strategies
- Too high governance
- Lack of resources
- Fund is too small



Sample size: 15 (only pension funds with no existing CDI strategy)

Investors highlight several reasons for not yet implementing a CDI strategy (Figure 27), the biggest of which are lack of familiarity and perceptions of governance requirements. These should be surmountable with increased education and support from asset managers and consultants.

An additional barrier is the need to increase credit risk within the portfolio as investors move from government bonds into corporate bonds in search of the yield pick-up. Respondents which have incorporated a full CDI strategy have moved beyond traditional buy-and-maintain credit mandates in search of higher yielding assets such as infrastructure debt and relatively secure income alternatives (e.g. long lease real estate and ground rents).

As discussed in last year's report, this opportunity to invest in new forms of credit has opened to investors in wake of the financial crisis, with capital regulations forcing banks to withdraw from certain lending activities, leaving a gap for asset owners to step in to fill. These assets can provide predictable and stable cashflows with a yield pick-up relative to traditional liability matching securities, often inflation-linked and backed by quality issuers or government. They often have lower correlations to traditional risk assets and traditional liability hedging assets, improving the efficiency of the overall portfolio.

However, these are idiosyncratic assets which require funds to acquire new skills for sourcing appropriate assets and managing their complexity and illiquidity risk. These are not trivial to introduce.

The end game being targeted also plays an important role in the type of CDI strategy implemented. Respondents targeting a buyout have CDI strategies focused on more liquid yield generating assets (e.g. government and corporate bonds) as illiquidity could become an issue when ready to transfer their assets and liabilities to a third party.

LDI and CDI strategies play an important role in the portfolio and will only grow in importance as DB pension funds move further into the decumulation phase:

- CDI helps to match cashflows to benefit payments, reduces funding level volatility, acting as a bridge between the return-seeking and liability management strategies.
- CDI should be considered an extension of an LDI strategy; considering the two together aids investors from both a governance and effectiveness perspective.
- While CDI was once synonymous with a buy-and-maintain corporate credit mandate, the universe of suitable assets for a CDI portfolio has since expanded and investors are taking advantage of this to develop a well-diversified portfolio that covers a wide range of alternative credit assets.

Key findings

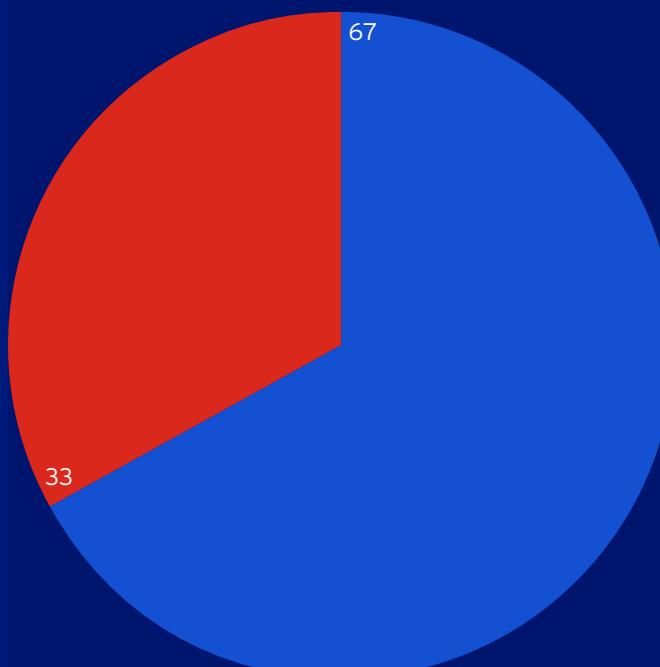
- ESG integration within fixed income continues to gain traction – and is moving into the mainstream as investors weave ESG factors into policy statements and portfolios.
- The primary driver of ESG within fixed income is a transmission effect from firm-wide adoption which usually commences with equities. Other influences include perceived benefits relating to risk management, enhanced returns, and the views of stakeholders.
- Significant adoption issues remain, with respondents challenged by a lack of reliable data and a limited number of quality ESG capabilities and products seen to be suitable for their fund.
- Transactions of green, social, and other forms of specific ESG-related bonds are largely driven by investors with existing allocations, with the broader investment community cautious due to issuance and liquidity concerns.



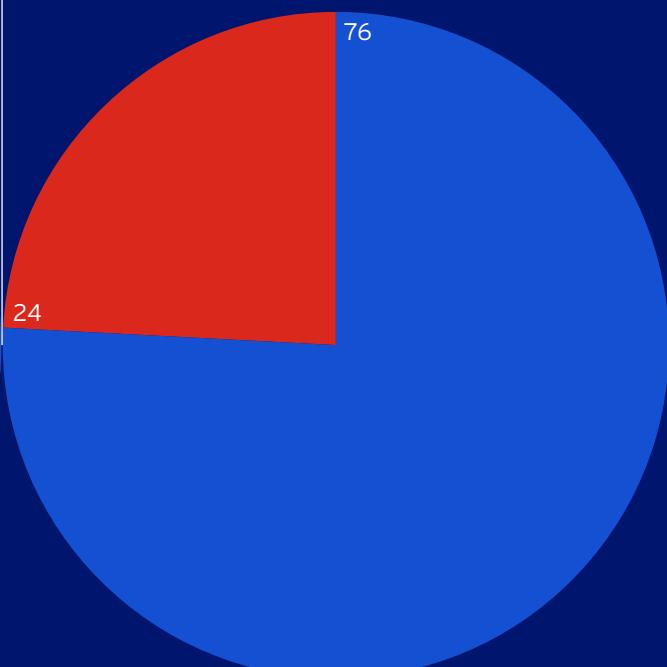
Figure 28. Overview of ESG adoption level (%)

Yes
No

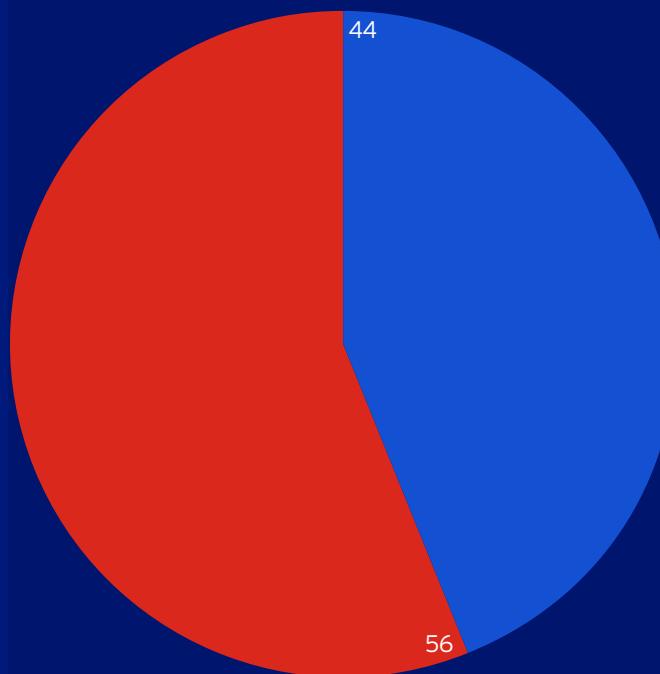
Asia Pacific



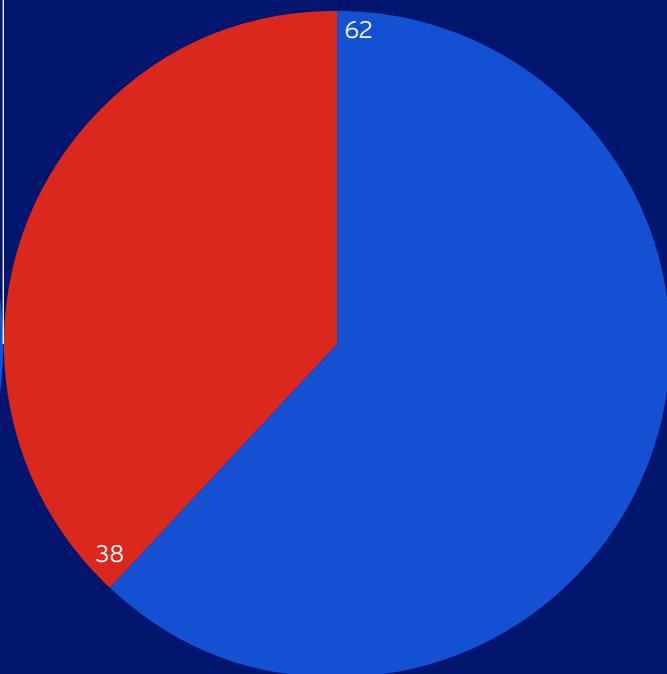
EMEA



North America



Total



Sample size: 102

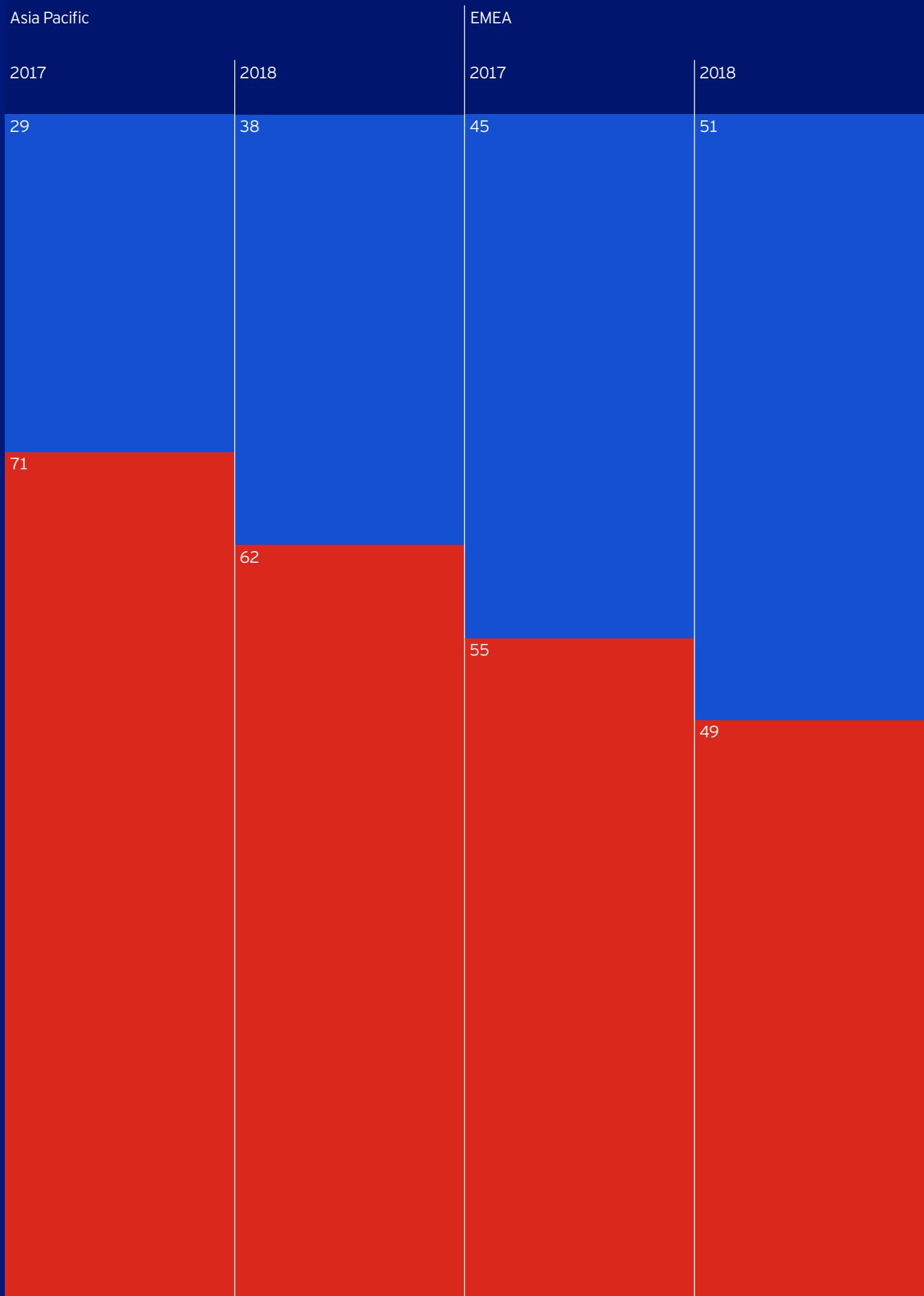
ESG investing is moving from a niche position on the fringes of fixed income portfolios to becoming part of the mainstream investment process. With segments of ultimate beneficiaries, and especially stakeholders representing their interests, becoming increasingly active in applying pressure to align investments with values (in the case of beneficiaries) or values codified as ESG principles (in the case of stakeholders), many investors are acting on or anticipating such demands and incorporating initial responses into their fixed income portfolios.

As Figure 28 indicates, EMEA investors have led the way in driving ESG adoption. EMEA respondents are also unique in being open to trading off some quantum of returns in the process, with more leeway seen to be provided by beneficiaries and stakeholders.

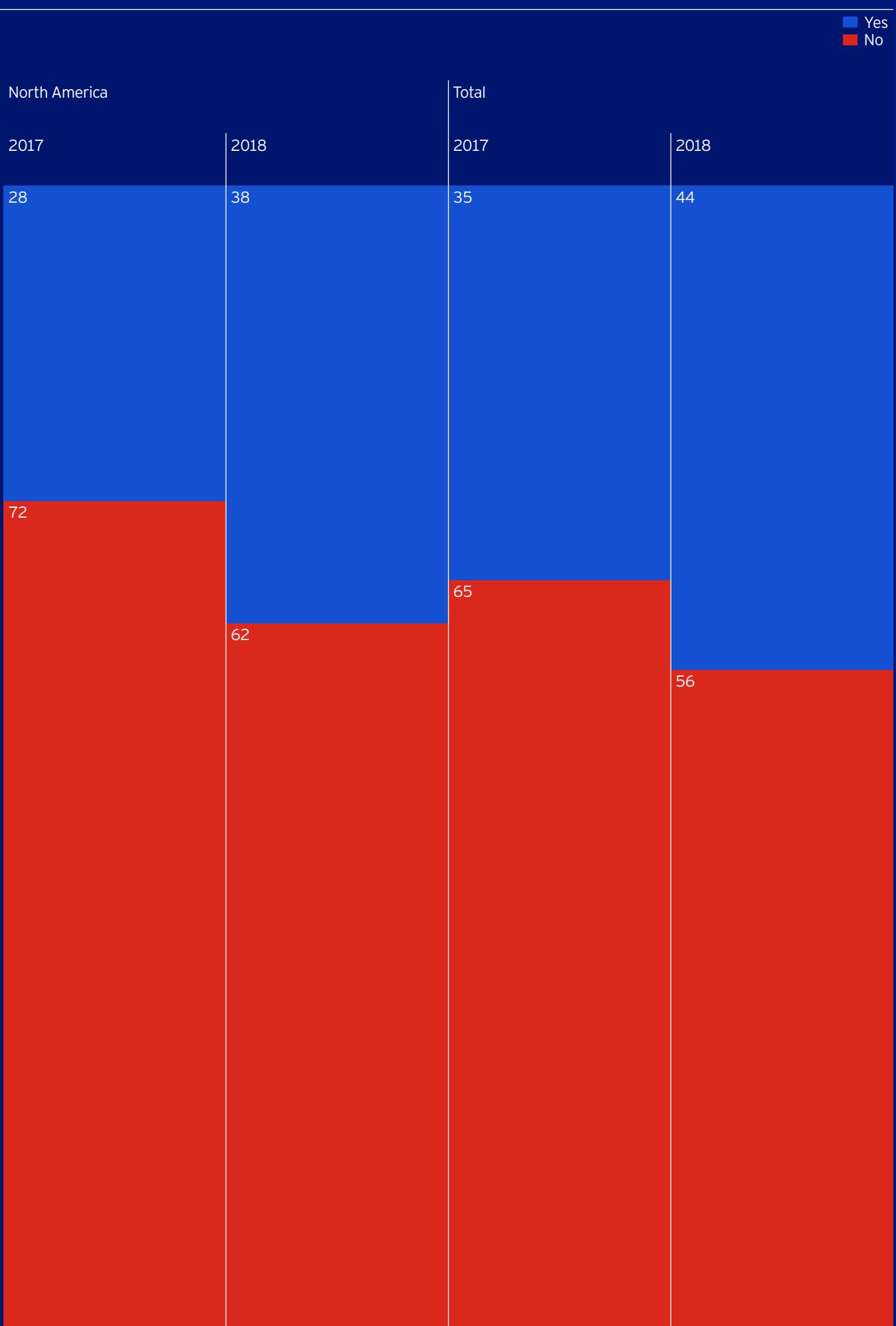
ESG adoption among Asia Pacific respondents is also on the rise, while North American investors are the relative holdouts: half have yet to adopt an overall policy. Respondents in both regions are also much less open to the idea of forgoing returns for implementation of ESG principles.

Global implementation levels are healthy with nearly two-thirds of investors now incorporating ESG considerations into their overall portfolio; Figure 29 shows adoption climbing year-over-year across all regions. However, while adoption of ESG continues to rise overall, implementation to fixed income has lagged to date. As Figure 29 over the page highlights, only two-fifths of respondents consider ESG factors for their fixed income portfolio.

Figure 29. Level of Inclusion in fixed income portfolio 2017-18 (%)



Sample size: 108

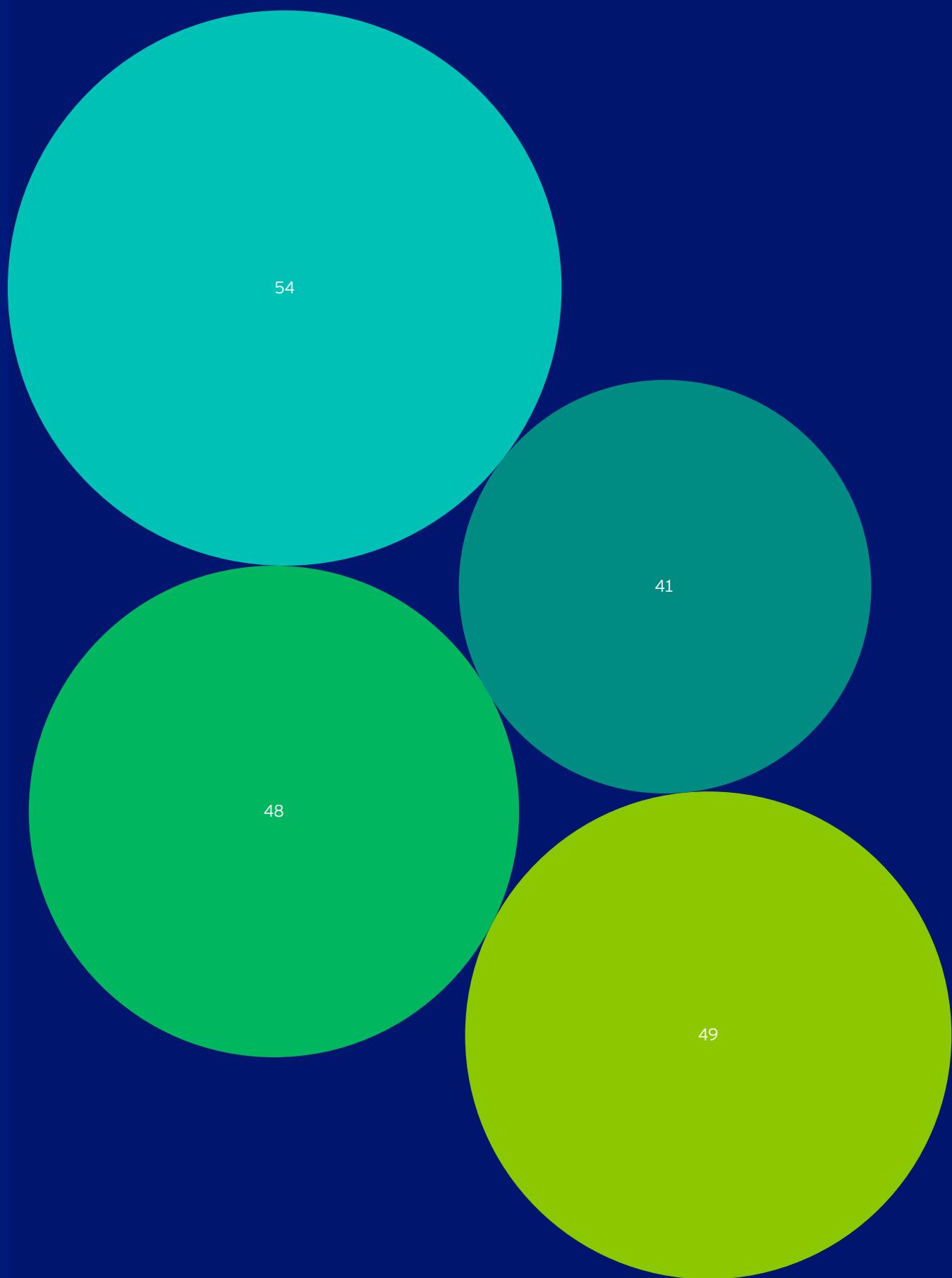


Investors taking a cautious approach to ESG adoption

Although most investors recognise potential benefits in embracing ESG, the level of commitment to implementation varies widely, as shown in Figure 30. Larger funds are more likely to have made a firm commitment to ESG, to have built specialist teams, to be engaging directly with companies, and to have taken part in initiatives to further ESG adoption across the industry.

Figure 30. Commitment to building internal ESG capability, by investor size (%)

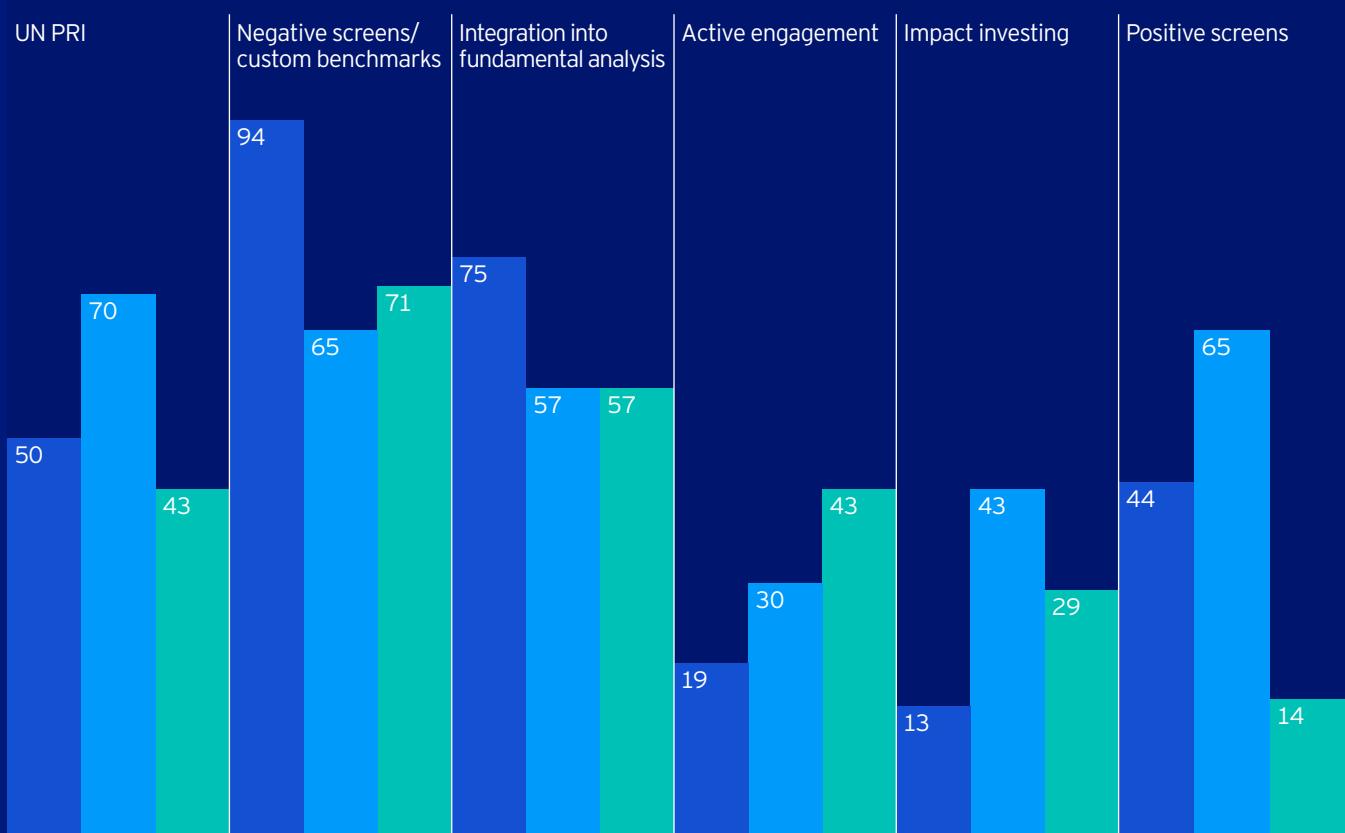
Large
Medium
Small
Total



Sample size: 108. Small: <\$5 Billion, Medium: \$5-\$25 Billion, Large: \$25 Billion+

Figure 31. Methods of incorporating ESG into fixed income portfolio (%)

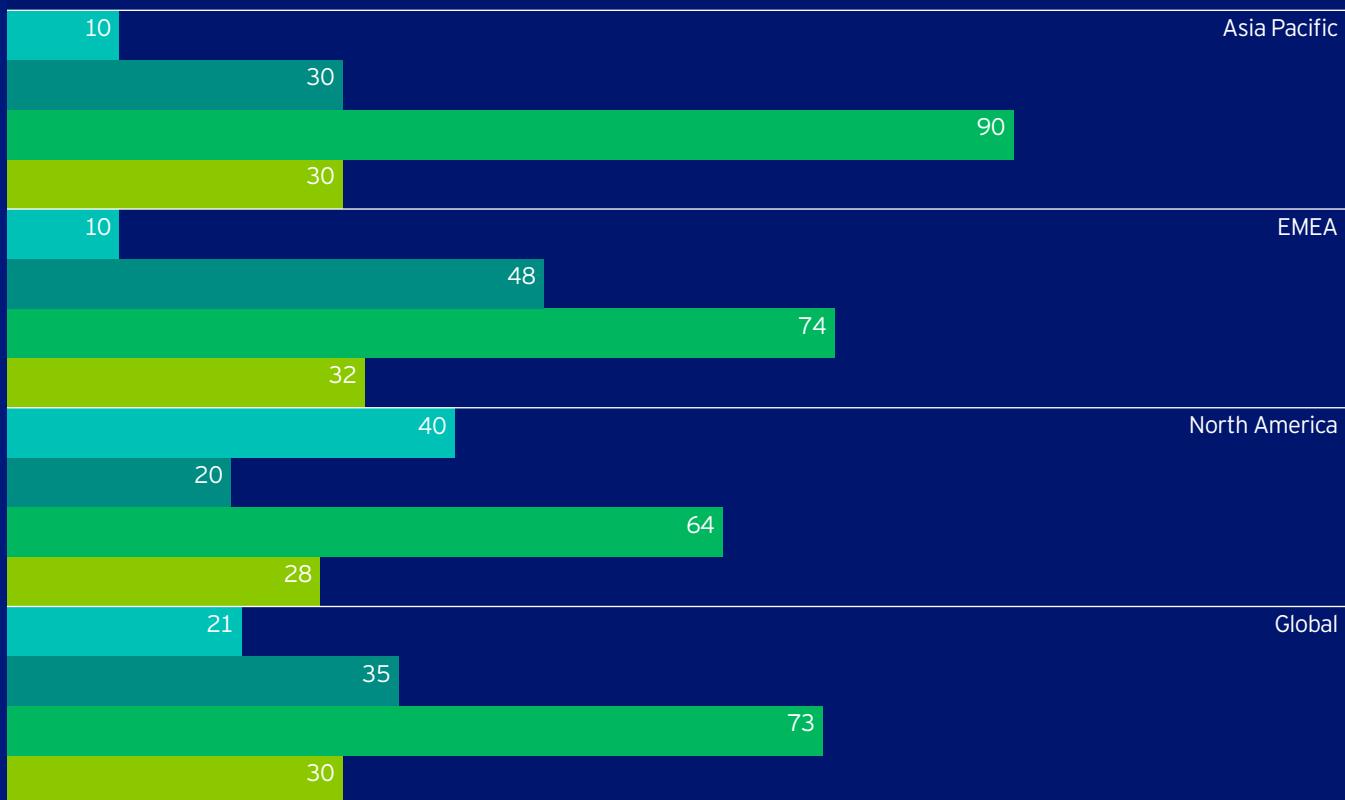
North America
EMEA
Asia Pacific



Sample size: 46

Figure 32. Methods of ESG monitoring (%)

Not monitored
Benchmarked against fund guidelines
Internal audit
External audit



Sample size: 66

Comprehensive approaches such as these are the exception and many respondents have only taken tentative first steps. An indication is the continued widespread utilisation of screens (as per Figure 31), often a first step (or an attempt to signal), an interest in considering ESG factors. In all three regions, investors commonly utilise negative screens as an initial implementation of ESG factors into their fixed income portfolio. In North America, over 90% of investors utilise this approach - making it the most preferred method for ESG analysis.

Methods of ESG monitoring shown in Figure 32 provide further evidence of the relatively early stage that many investors are at. Three quarters of investors internally audit their ESG portfolio, utilising in-house resources and staff to review and oversee their ESG-focused investing paradigm and portfolio rather than exposing their practices to an external audit. A fifth have yet to solidify a process. Many fixed income investors, particularly amongst small and medium sized funds, lack the resources or are unsure about the proper approach to take.

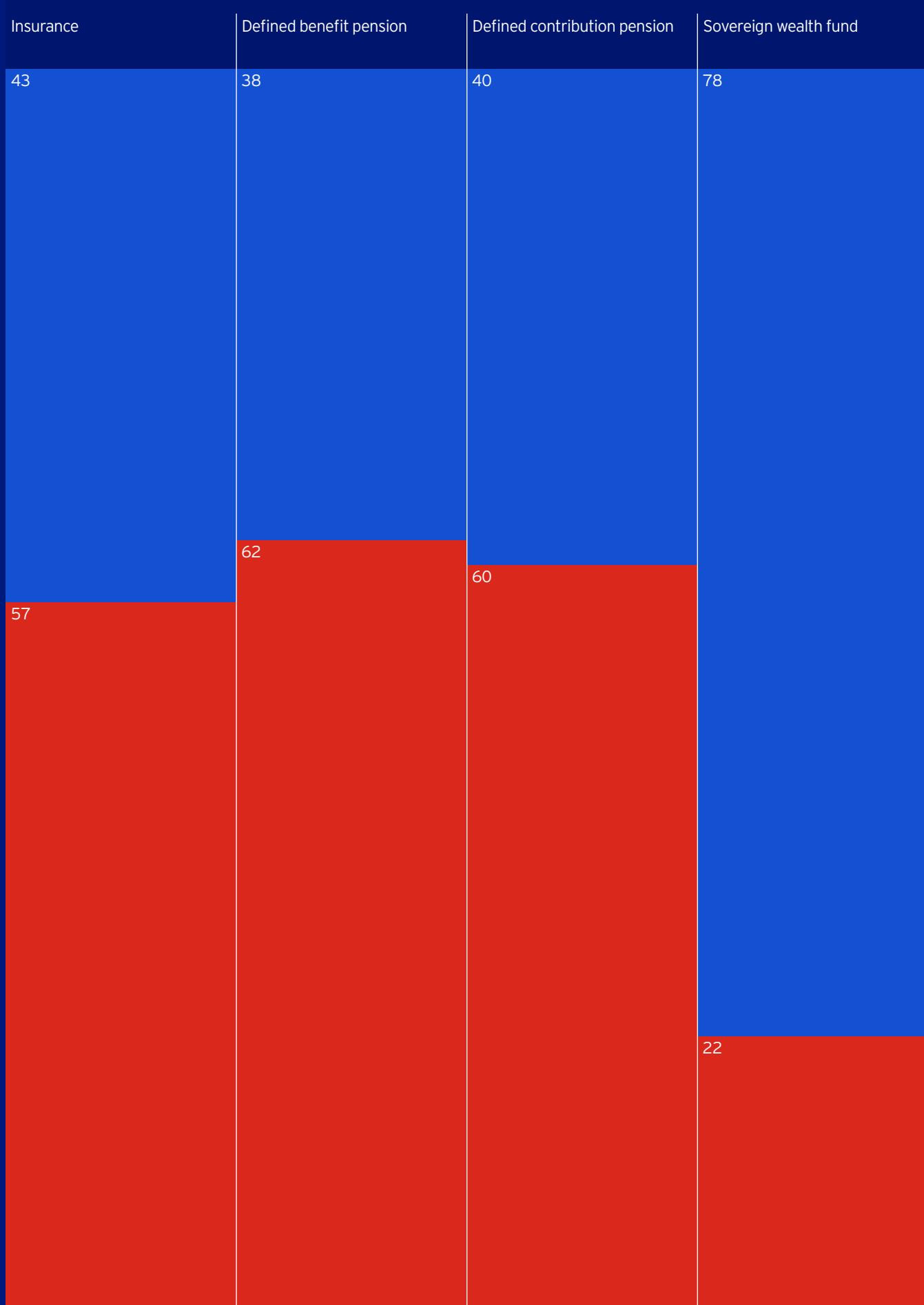
Motivations vary by segment and region

As Figure 33 indicates, there is no single driver of ESG adoption across segments:

- Sovereign wealth funds (most notably in North America where they include public sector pension funds) are furthest along in incorporating ESG within fixed income, with uptake driven by stakeholders wanting to align fund investments with ESG values.
- In comparison, over half of pensions funds are not yet using ESG factors when reviewing their fixed income portfolio. Those pension funds which have not yet adopted state a lack of alignment with beneficiary or sponsor interests, potential for negative returns (absolute or relative), and lack of internal consensus on the topic as reasons.
- Adoption levels amongst insurers are similar to pension funds; they primarily consider ESG factors for fixed income as a potential tool for risk management.

Figure 33. Segment adoption of ESG in fixed income portfolio (%)

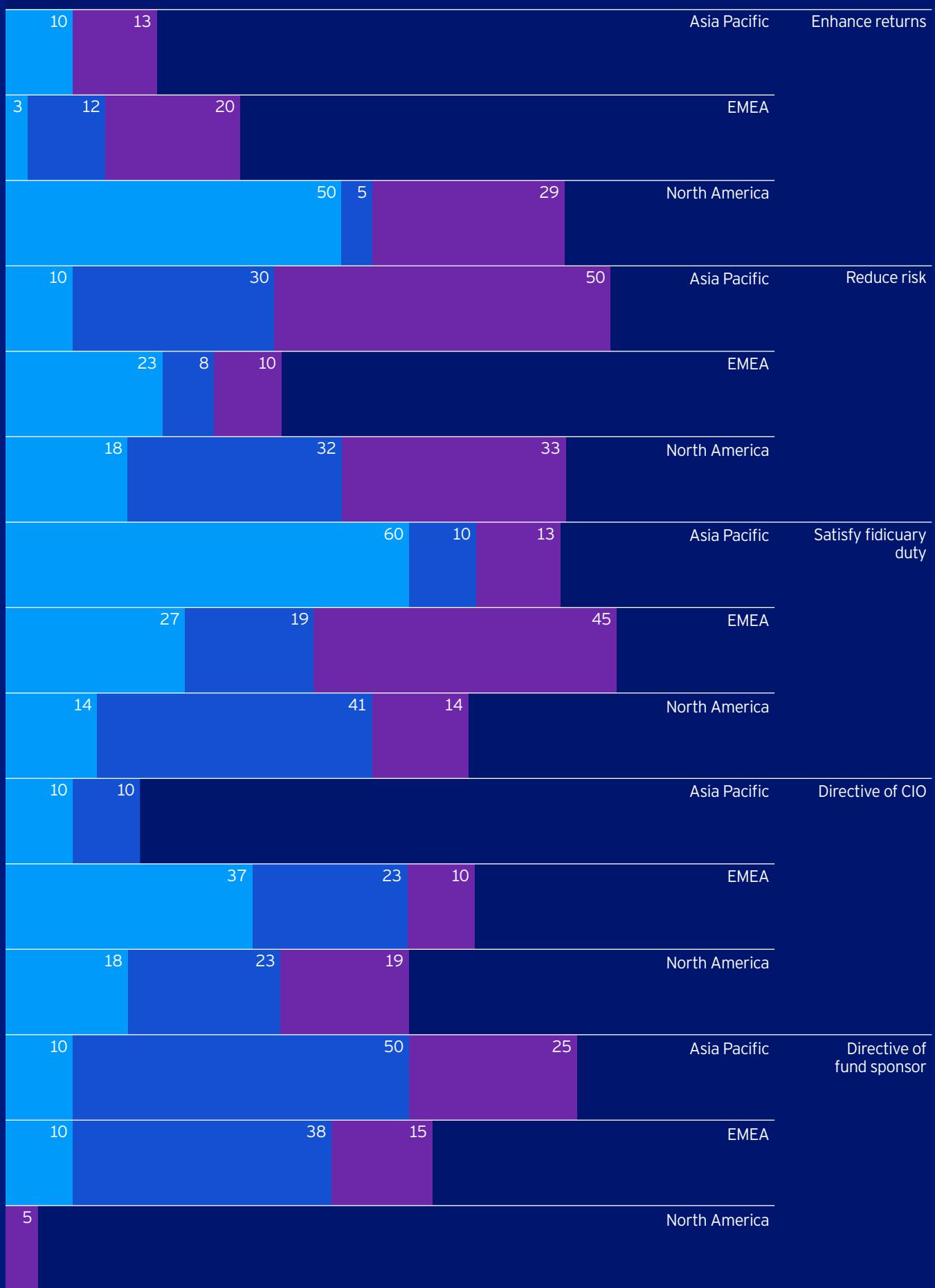
■ Yes
■ No



Sample size: 108

Figure 34. Reasons for including ESG in fixed income portfolio (%)

Rank 1
Rank 2
Rank 3



Sample size: 62

From a regional standpoint, EMEA and Asia Pacific investors are the most active in implementing stakeholder ESG preferences and are more likely to have engagement with regulators and governments in relation to fiduciary standards. That said, it is increasingly common for larger funds in all regions to now include ESG language in fiduciary documents such as their investment policy statement, and ESG information and requirements in RFPs for potential asset managers.

Most North American fixed income investors that have adopted ESG were at least partly motivated by the prospect of enhanced returns (as opposed to the EMEA appetite for principles-returns trade-offs). An expectation of enhanced returns is more likely to be needed to help convince investment committee members in North America, who tend to believe that experimenting with ESG factors could act as a drag on returns (and therefore impact the closure of DB funding gaps).

This sentiment was notably common in the Midwest, where few DB pension funds have appetite for anything that won't directly help tackle funding gaps. As a result, when introducing a potential ESG-focused investment, investment teams of public sector funds in North America often play down the potential social impact aspects with board members. North American investors that do not currently have an ESG policy are unlikely to adopt one soon, and often stated that they would only consider an ESG-focused investment if it fits the portfolio need from a risk/return perspective.

ESG has typically been viewed as a lens for equity portfolios and have usually initially implemented on an equities-only basis. But with more vocal stakeholder pressure (some of whom represent their perceptions of beneficiary views), government and regulatory initiatives supportive of ESG, and a roadmap set by larger institutions, once equities implementation has been completed, investors begin to implement firm-wide policies that attempt to extend ESG standards to all asset classes.

Fixed income is often the next step.

As fixed income investors refine and increase their utilisation of ESG methodologies, they face similar hurdles to early adopters of ESG within equities. Despite an increase in the number of data vendors, investors cite the overall quality of data as the biggest challenge to properly integrating ESG factors into their fixed income portfolio. Many, therefore, currently take an improvised approach to gathering ESG data, collecting information from various sources and using the 'best-worst option'. However, information in certain channels (such as emerging markets) is either lacking or simply unusable for proper due diligence.

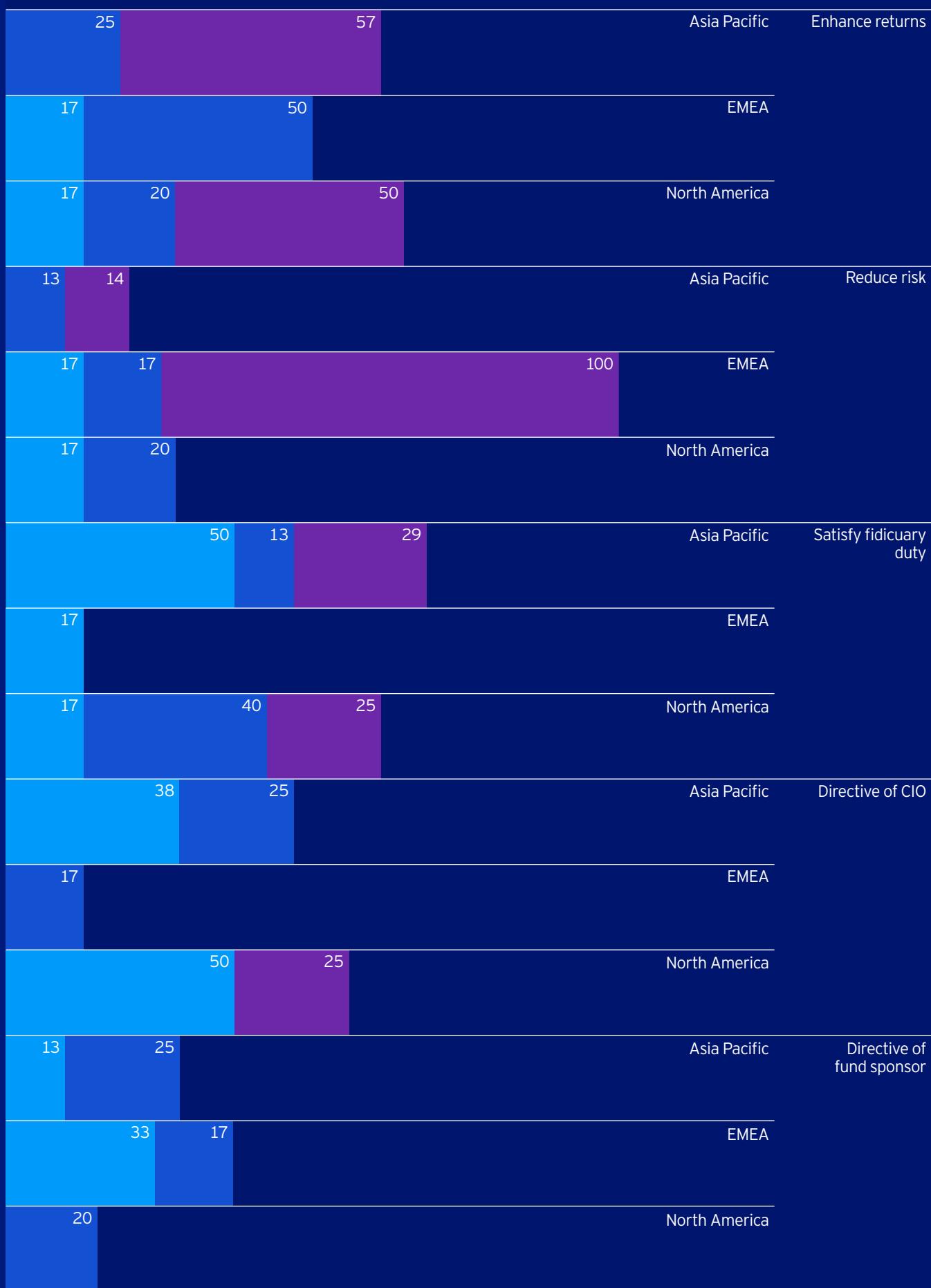
Embedding ESG factors in fixed income carries its own set of challenges, and the major factors in this area appear in Figure 36 (page 78 and 79). These include how to properly engage with issuers (particularly for sovereign wealth funds), ongoing debate surrounding the role ESG plays in credit ratings, and the scarcity of credible index options in comparison to equities. Respondents also commented on the dearth of ESG-focused products that they would feel comfortable with were of sufficient quality to bring to their board or investment committee.

Wholesale investors primarily adopt ESG considerations because of bottom-up factors. Mandated CIO directives are minor factors in motivating ESG integration among wholesalers. Furthermore, adoption is equally prevalent in the wholesale channel as it is in institutional. However, the belief that incorporating ESG into fixed income investment processes can achieve comparable or better risk-adjusted returns plays a much larger role in wholesale than institutional. Wholesale respondents universally note better performance and ability to further mitigate risks as prime reasons of ESG after adoption, as shown in Figure 35.

These concerns are particularly apparent with ESG-specific securities, as shown in Figure 37 (page 80). Ten years after green bonds were introduced, specific issues attract considerable profile from financial media, but broader investor interest remains muted. Those fixed income investors holding green and social bonds in their portfolio found value in these investments and intend to increase their allocation.

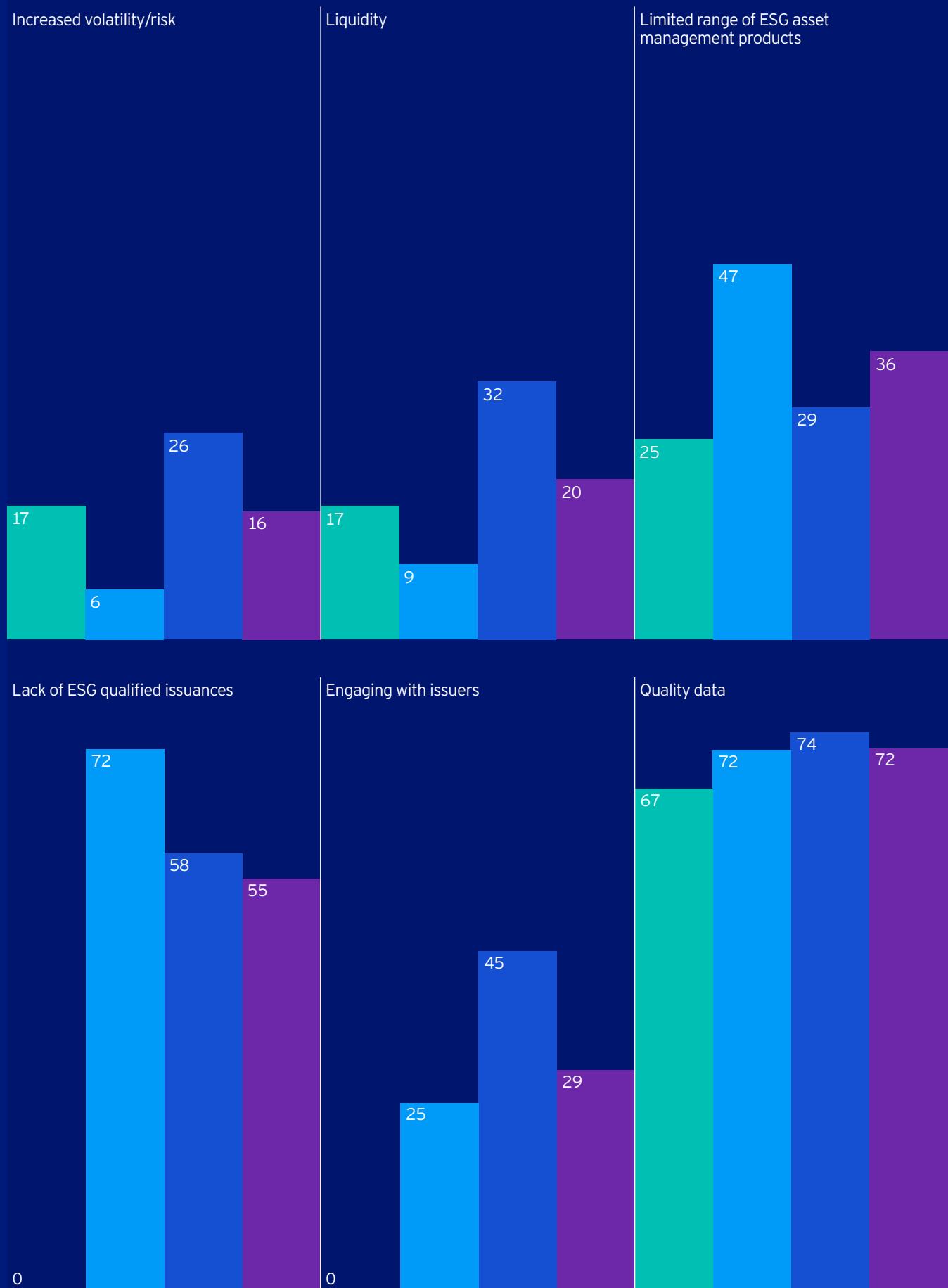
Figure 35. Rational for including ESG, by region (%)
Wholesale investors

Rank 1
Rank 2
Rank 3



Sample size: 20

Figure 36. Challenges for incorporating ESG in fixed income (%)



Sample size: 75

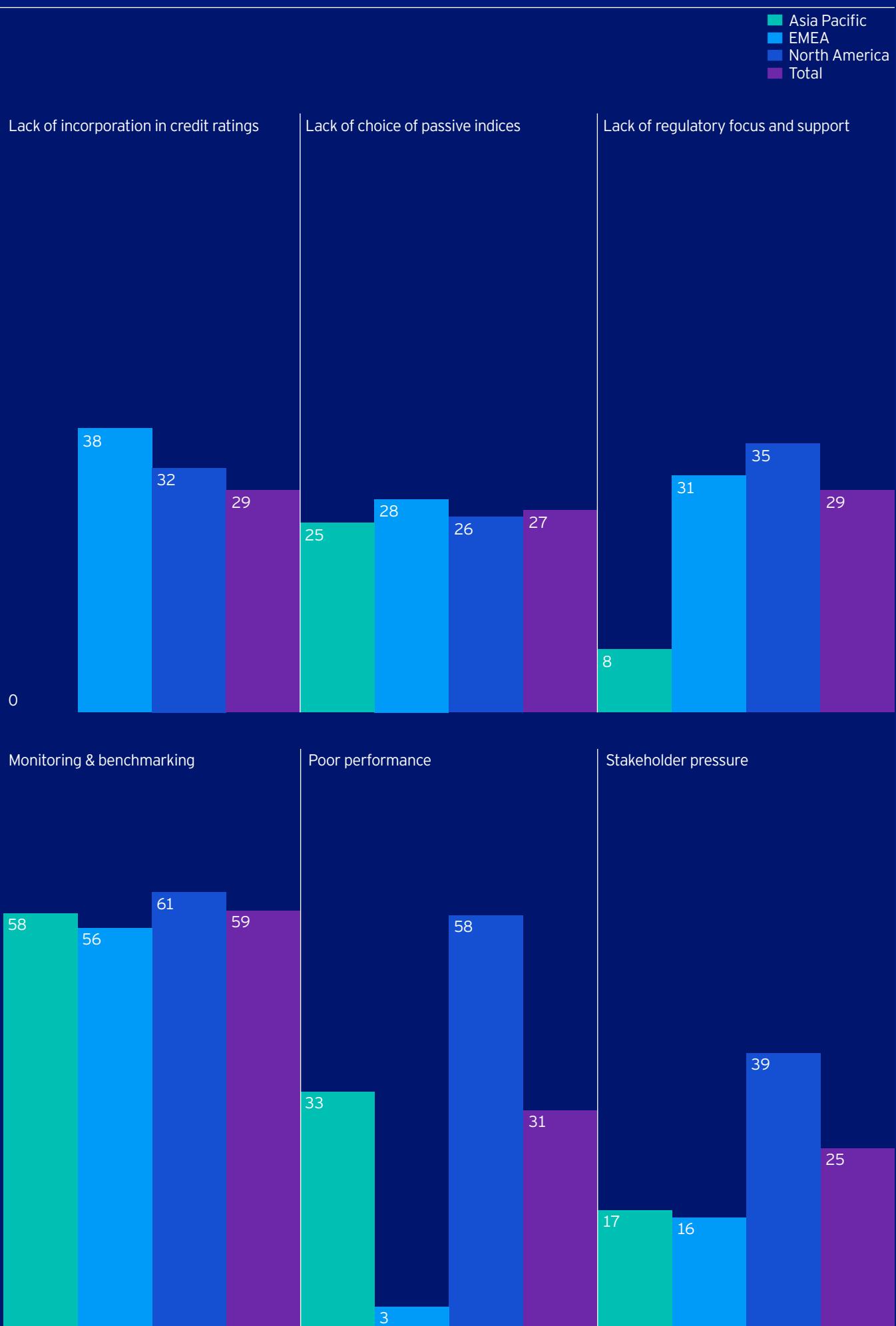
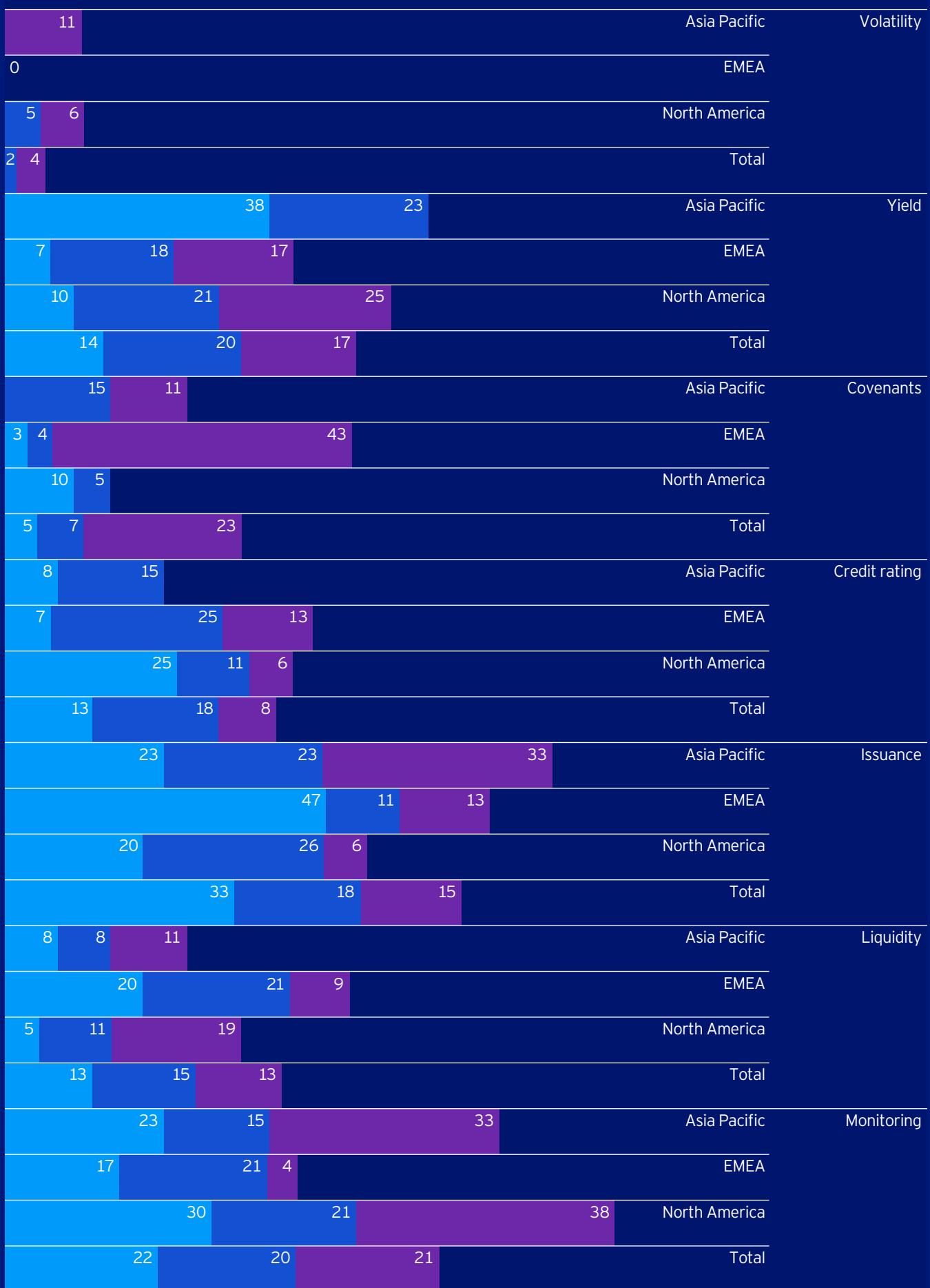


Figure 37. Key challenges in investing in green and social bonds (%)

Rank 1
Rank 2
Rank 3



Sample size: 63

The respondents in our study with no ESG investments currently show very limited interest in the space. A key concern is that they lack the appropriate resources to monitor such investments. Reservations also relate to a lack of market depth, with investors citing the low level of issuance and liquidity as key concerns.

ESG integration in fixed income is moving into the mainstream, but many investors are still at an early stage in their fixed income ESG journey:

- Most investors are considering ESG, and considerations are extending from equities to fixed income.
- There is a wide dispersion of views on the principles-returns trade-off, but a broad view that the market is short of quality ESG capabilities and products.
- Investors are struggling with data and other implementation challenges.
- Partly reflecting the movement into the mainstream, ESG is becoming less about green bonds and other ESG-specific fixed income securities - these markets are niche and fixed income investors expect them to stay that way in the near term.

Figure 38. Sample by investor segment

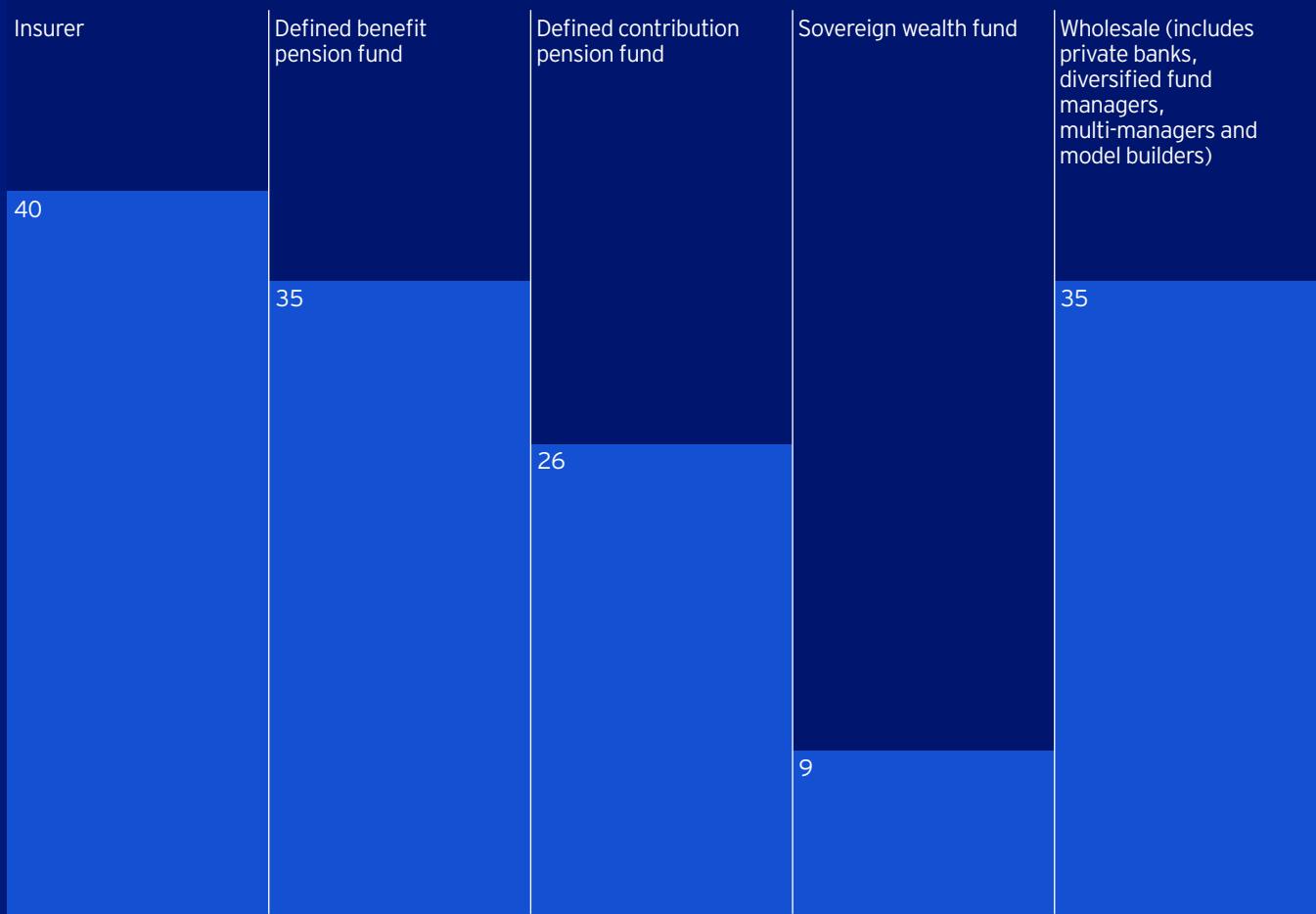
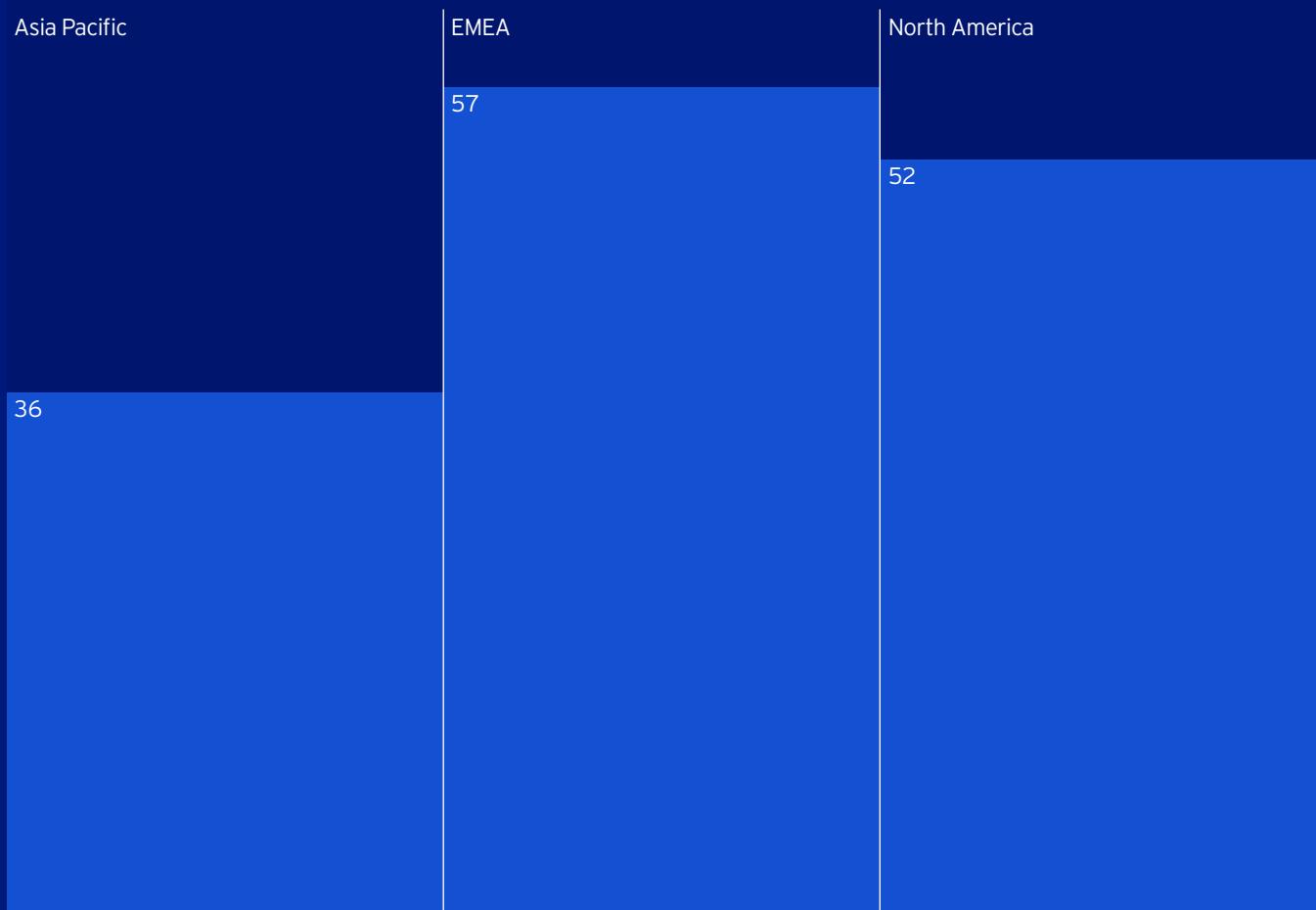


Figure 39. Sample by region



The fieldwork for this study was conducted by NMG's strategy consulting practice. Invesco chose to engage a specialist independent firm to ensure high quality objective results. Key components of the methodology include:

- A focus on the key fixed income decision makers within institutional investors and wholesale investors (including private banks, diversified fund managers, multi-managers and model builders), conducting interviews using experienced consultants and offering market insights rather than financial incentives
- In-depth (typically 1-hour) face-to-face interviews using a structured questionnaire to ensure quantitative as well as qualitative analytics were collected
- Analysis capturing investment preferences as well as actual investment allocations with a bias toward actual allocations over stated preferences
- Results interpreted by NMG's strategy team with relevant consulting experience in the global asset management sector

In 2019, we conducted interviews with 145 different insurers, defined benefit and contribution pension funds, sovereign investors and private banks across Asia Pacific, EMEA and North America. The breakdown of the 2019 interview sample by investor segment and geographic region is displayed in Figures 38 and 39.

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