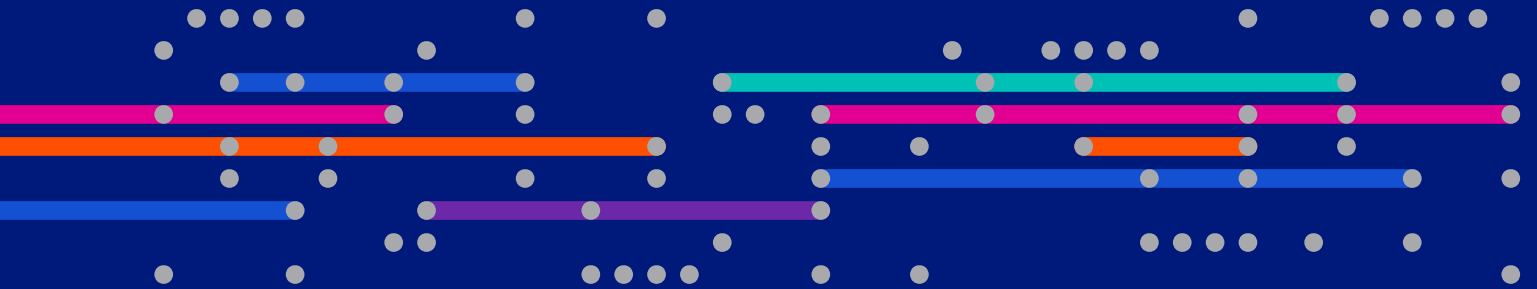




Invesco Global Factor Investing Study 2018

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



This document is intended only for Professional Clients and Financial Advisers in Continental Europe (as defined in the important information); for Qualified Investors in Switzerland; for Professional Clients in, Dubai, Jersey, Guernsey, Isle of Man, Ireland and the UK, for Institutional Investors in the United States, Australia and Singapore, for Institutional Investors and/or Accredited Investors in Singapore, for Professional Investors only in Hong Kong, for Qualified Institutional Investors in Japan; for Wholesale Investors (as defined in the Financial Markets Conduct Act) in New Zealand, for accredited investors as defined under National Instrument 45-106 in Canada, for Qualified Institutions/Sophisticated Investors in Taiwan and for one-on-one use with Institutional Investors in Chile, Panama and Peru.

03 **Executive summary**

04 **Key metrics**

06 **Theme 1**
What's in a name - how do investors think of factor terminology?

Investors now see 'factor' as the preferred term for the overall philosophy of systematic investing strategies; and terms such as 'smart beta' and 'active quant' as subsidiary product terms.

18 **Theme 2**
Learning the ropes: factor investors are building experience.

Factor investing is long established, but many of today's factor investors are relatively recent adopters who are seeking its return and risk benefits as they build capability.

36 **Theme 3**
Factor allocations and applications are expanding.

Factor investing is growing, both as adoption spreads but also because factor investors tend to increase the number of factor strategies they use and their overall allocation over time.

62 **Theme 4**
Implementation barriers are falling away.

Traditional barriers to the adoption of factor investing are now falling rapidly as investor capability is developed; investors also have a broad range of implementation vehicles available with exchange-traded products often preferred.

78 **Theme 5**
Factor experience has been a positive one for most investors.

Factor investing has been notable for many investors for meeting or exceeding expectations in most cases; many are planning to further increase factor allocations in coming years.

92 **Appendix and methodology**



Georg Elsaesser
Senior Portfolio Manager
Invesco Quantitative Strategies
georg.elsaesser@invesco.com
+49 69 29 807 174

Introduction

Welcome to our third annual Global Factor Investing Study, in significantly expanded form. Based on an interview program of over 300 institutional and wholesale investors across all major global regions and segments, plus a series of case studies (found at the end of themes 1 to 4 and based on follow-up interviews with a handful of experienced factor investors), the study is without question the largest in-depth analysis of global factor investing being undertaken at the current time.

Because of the size of the study and the diversity of factor applications around different regions, this main report of the study deals principally with global themes, with call-outs in each case of the approaches and practices of more experienced and sophisticated factor investors. The main report is supported by a series of regional supplements which discuss regional variations in North America, EMEA, and Asia Pacific.

The concept of factor investing – an investment strategy in which securities are chosen based on certain characteristics and attributes – has existed since the 1950s. However, the strategy has only gained more acceptance in recent years. The study is an opportunity to understand what the remaining barriers to adoption are, what the experience to date has been for investors and what their future intentions are. We explore these topics and more through five key themes with insights drawn together from face-to-face interviews which seek to capture the depth, colour and context of the thinking of these investors.

- In theme 1, we address the sometimes vexed issue of the inconsistent terminology used in relation to factor investing. For investors there is a clear hierarchy of terms, with ‘factor’ being the preferred overarching term for the philosophy and practice of systematic strategy investing. Other terms in common usage such as ‘smart beta’ and ‘active quant’ are located lower in that hierarchy as product-related terms denoting different types of factor strategies.
- The second theme explores the progress of factor investors, which as noted above are still often relatively new and gaining experience. Most are developing their factor capabilities and are in the process of gaining a better understanding of how factor strategies can be applied within their portfolio, both at a strategic level (particularly a better view of portfolio level risk) and in expressing tactical and thematic views, notably environmental, social and governance (ESG). We find that investors are not swayed by marketing and products but instead concentrate on doing their own research.
- Theme 3 assesses the growth narrative of factor allocations, addressing both the reasons for expanding allocations and what’s being replaced in the process. Factor adopters rarely stop after their first allocation – they increase the number of factor strategies implemented, add macro factors to style factors, and consider how to extend from equities portfolio applications to fixed income and multi-asset.
- We look at the practical issues of implementation in theme 4. In factor investing, investors have a broad range of implementation vehicles available, and it is notable for the frequent preference for exchange-traded products (ETPs), particularly exchange traded funds (ETFs), even for institutional investors.
- Our final theme discusses the factor investor experience, which has been positive for a large proportion of investors, with relatively few disappointments.

This is fuelling ongoing intentions to allocate more to factor strategies. The results suggest factor investing is increasingly considered in its own right, distinct from market-cap weighted strategies on the one hand and traditional stock-picking on the other.

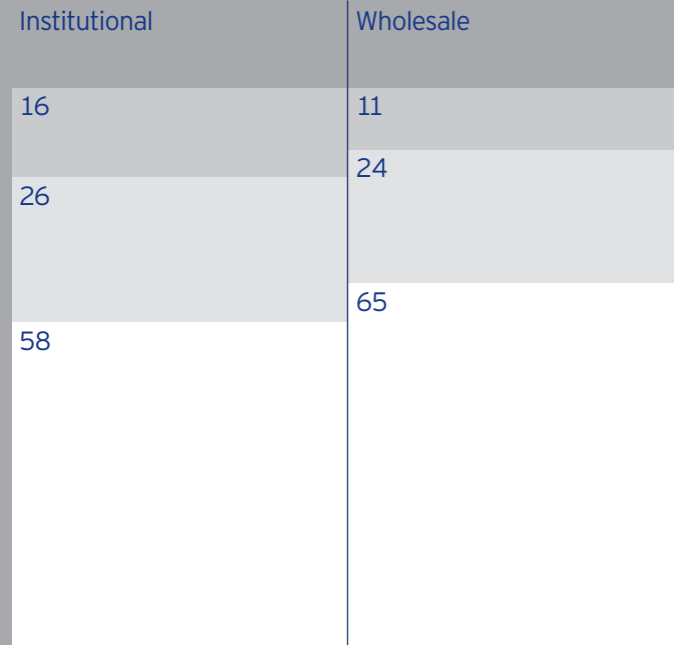
Factor investing continues to expand and mature, based on broadly favourable outcomes and investor satisfaction. As noted above, the real test will come when the many relatively recent adopters take their factor strategies through a market downturn. This may prove an inflexion point in which, should factor continue to meet or exceed expectations, it jumps from the early adopters into the mainstream.

We trust you will get the same value from digesting the findings from this years’ study as we gained from producing it.

Key metrics

Active, passive, and factor portfolio allocations of factor users

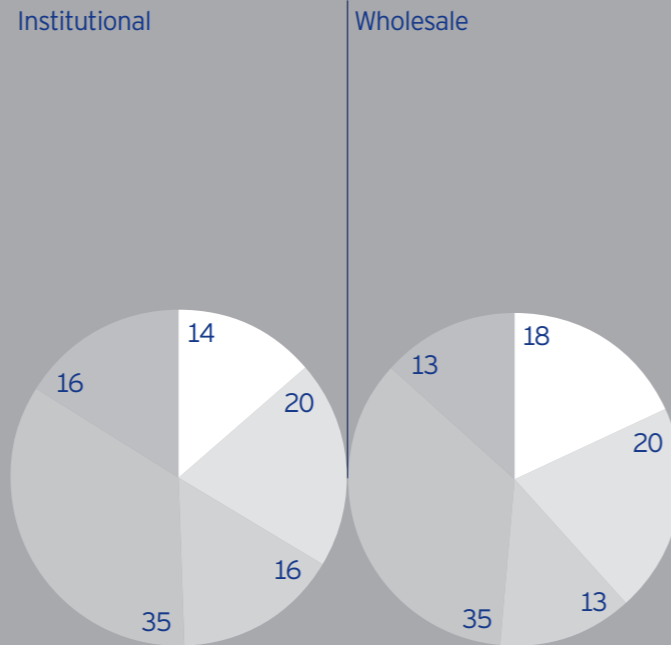
- Factor
- Passive
- Active



Sample: institutional: 74, wholesale: 113

Experience of factor investors, year of first adoption (%)

- 2017 until now
- 2016
- 2015
- 2010-2014
- Before 2010



Sample: institutional: 81, wholesale: 119

Extent to which factor strategies can address ESG needs (%)

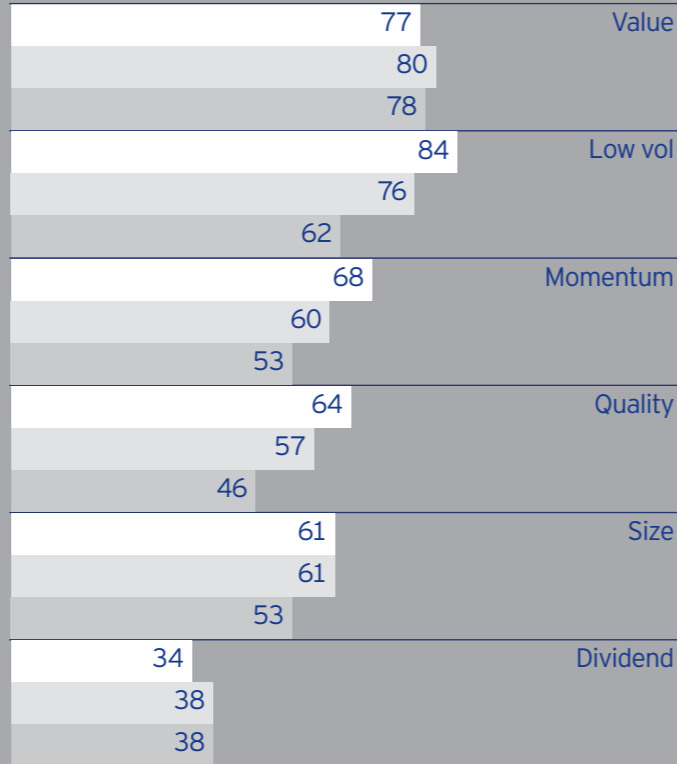
- Yes
- No



Sample: institutional: 107, wholesale: 131

Main factors in use 2016-2018 (%)

- 2018
- 2017
- 2016



Sample: 2016: 54, 2017: 98, 2018: 260

Use of factors in fixed income (%)

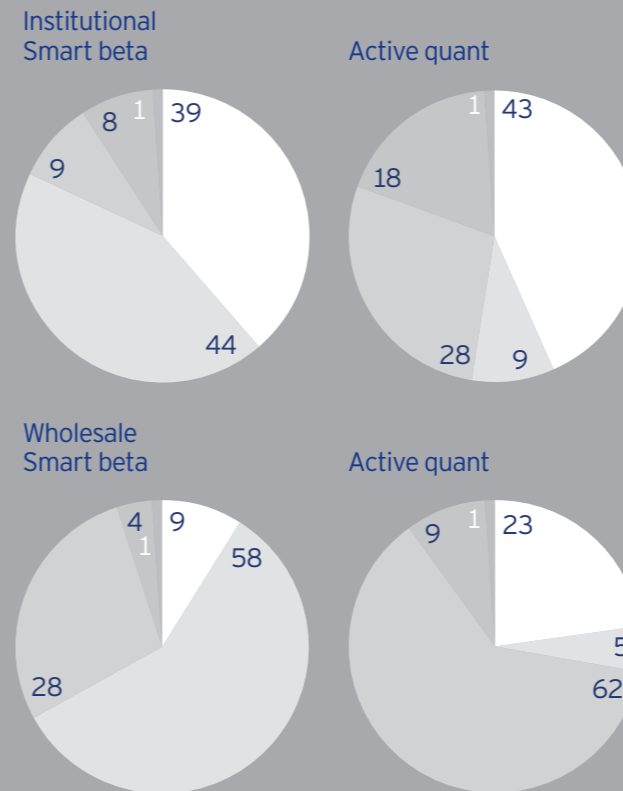
- Extending use
- Currently using
- Considering adding
- Have not considered



Samples: institutional: 122, wholesale: 136

Preferred factor implementation vehicles (%)

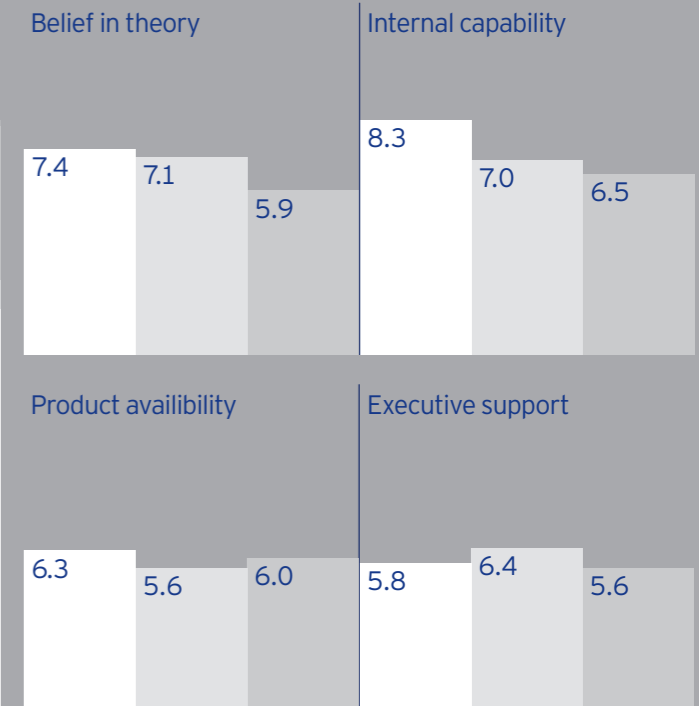
- Segregated mandates
- ETPs
- Mutual funds
- Other pooled vehicles
- Total return swaps



Sample: institutional: 202, wholesale: 145

Barriers to adoption trends 2016-2018 (%)

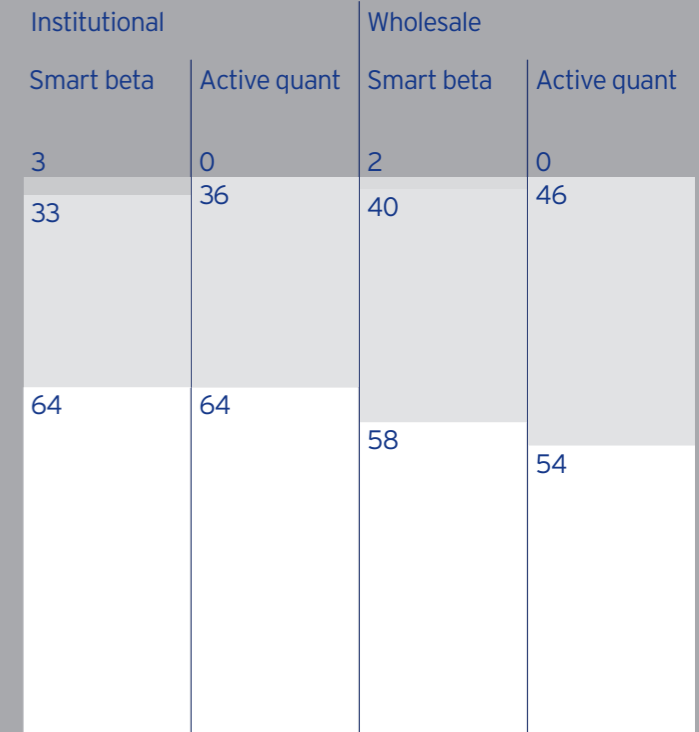
- 2016
- 2017
- 2018



Sample: 2018: 267, 2016: 51

Factor allocation intentions next 3 years (%)

- Decrease
- No change
- Increase



Sample: smart beta institutional: 102, active quant institutional: 82, smart beta wholesale: 114, active quant wholesale: 92

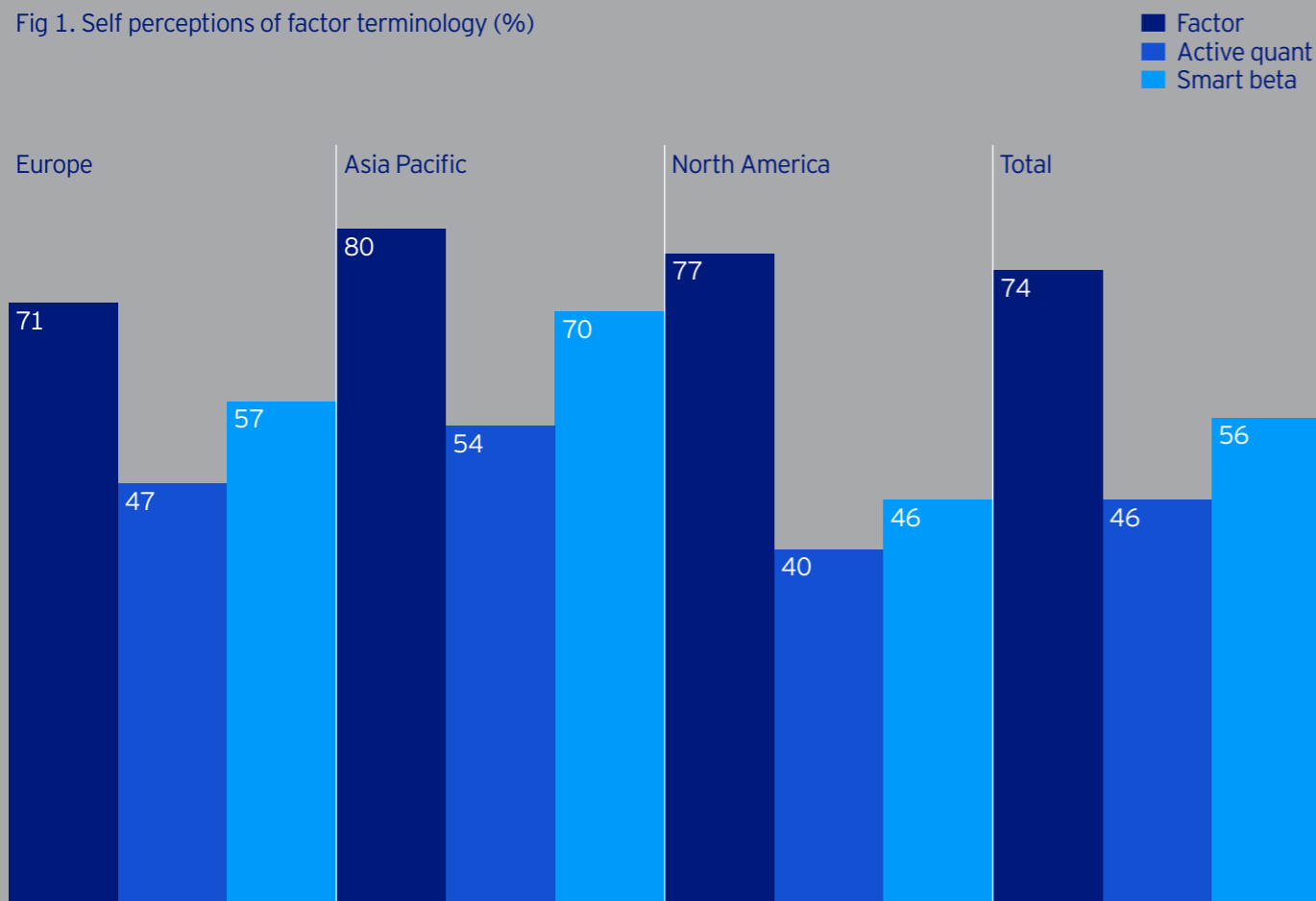
Theme 1

What's in a name - how do investors think of 'factor' terminology?

- In a confused category terminology landscape, 'factor' is the preferred investor term for the overall philosophy of systematic investing strategies.
- Other common terms such as 'smart beta' and 'active quant' are seen as product-related terms which are part of the overall factor hierarchy.
- Investors see industry standardisation of factor terminology as a desirable development which will help its spread to new adopters.

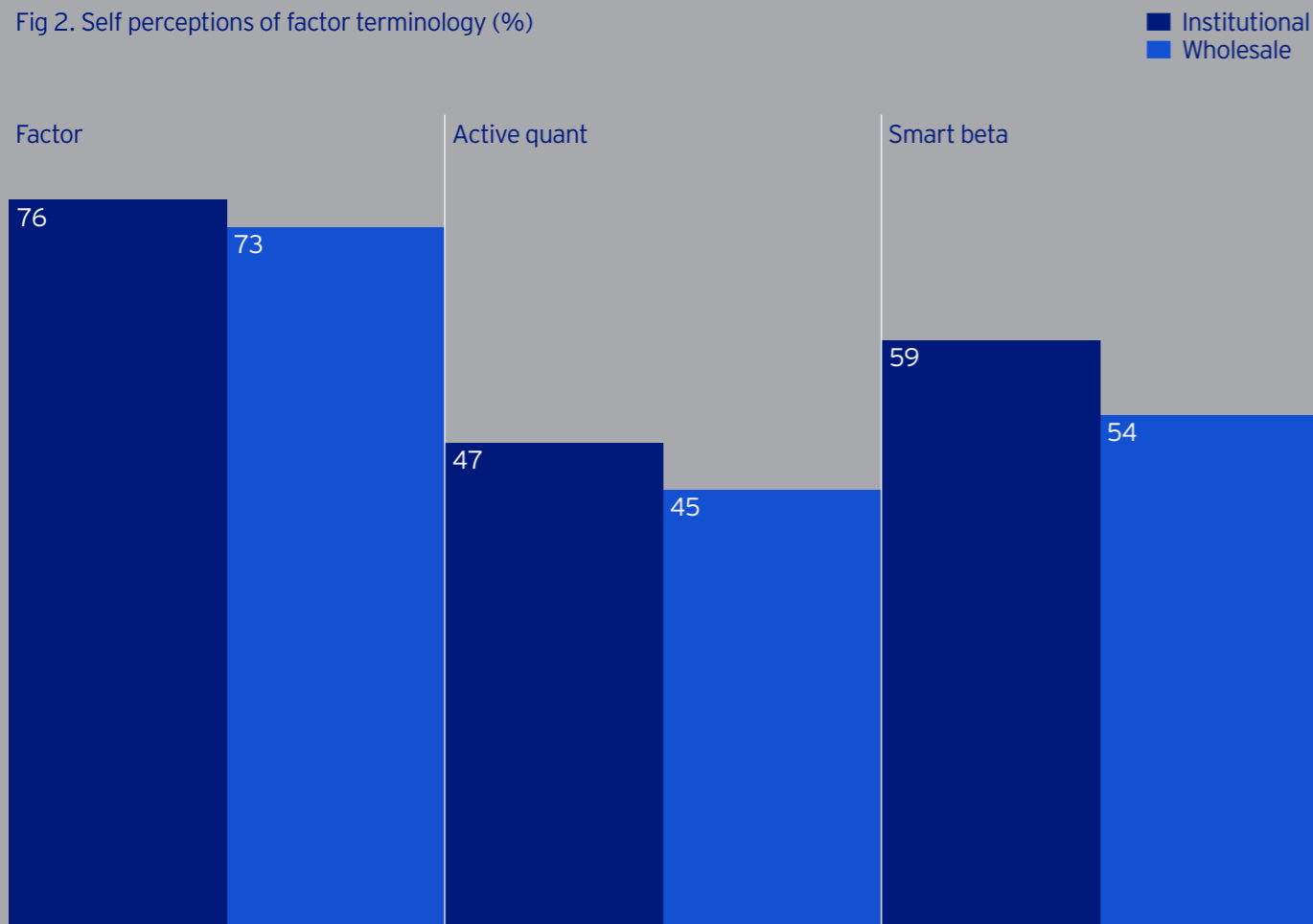


Fig 1. Self perceptions of factor terminology (%)



Sample: 135 (Europe), 50 (APAC), 81 (North America), 266 (total)

Fig 2. Self perceptions of factor terminology (%)



Sample: 128 (institutional), 138 (wholesale), 266 (total)

Factor investing has a long history, grounded in academic research dating back more than 50 years, and some investors have commensurate length of experience. However, for many investors, the explicit use of factor as distinct strategies in portfolios is relatively new.

The financial crisis was an important catalyst in that it highlighted weaknesses in the traditional asset allocation approach to portfolio construction, as correlations between asset classes spiked and disappointed those expecting diversification benefits. This led investors to focus more on building holistic and efficient portfolios which considered a broader set of risk drivers, with the consideration of factors being one of those sets.

In parallel, closer examination of active management approaches, particularly within equities, has led investors to consider systematic vs non-systematic sources of excess returns, and the potential of factor investing to deliver the former more reliably and at lower cost.

As adoption of factor investing as an explicit strategy has increased, the asset management industry has evolved its offering to meet demand. This has given rise to a number of challenges for investors, particularly the understanding of factor terminology, and how to incorporate factor strategies into portfolios.

Terminology has not yet settled down into a widely accepted framework, with at least three major terms being applied:

- Factor strategies.
- Smart beta strategies.
- Active quantitative strategies.

There are widely varying views about what these terms mean and how they relate to each other - indeed even whether they are different. Sometimes they are used interchangeably - across customers, within industry, and even within participants. As a result, clarifying the use of terminology has become both necessary and useful.

So how do the users of factor, smart beta, and active quant think of themselves, and what terms do they apply to what they are doing? A hierarchy of key terms is shown in figure 1.

For the majority, 'factor' is the lead term which describes the overall strategy of this type of systematic investing. Investors predominantly see themselves as factor strategy investors, and that smart beta, and often active quant, are product applications of factor investing.

This hierarchy is particularly pronounced in North America, but also persists, albeit in slightly more muted terms, in Europe and APAC.

It's notable that this hierarchy is not segment specific; as figure 2 illustrates, it's a view which is just as likely to be held by wholesale (aggregated retail assets) investors as institutions.

Some caution should be used in interpreting relativities. There is currently considerable confusion about terms, and terms were regularly swapped by respondents, particularly by wholesale investors. There are also gaps in associations. We found situations, again particularly in wholesale, where investors were not aware they were using a product that would normally be considered a type of factor strategy. For example, some respondents were using equal weight or value factor ETFs, but were not identifying them as factor products, indicating that some investors are unconsciously introducing factor exposures to portfolios.

Industry needs to become a bigger part of the solution

Investors can't be blamed for having some confusion. Factor investing may be growing quickly but it is not a start-up category. Typically, the challenge in new categories is to create awareness of a clearly communicated proposition, which then leads to consideration and take-up. With factor investing, clarity of communication appears to be the problem once awareness has been created.

Figure 3 aggregates how investors score (on a 0-10 scale) the factor management industry by their clarity in defining what they offer. With scores averaging between 4 and 6, a charitable interpretation (keeping in mind that these are existing factor users), it is clear that there is considerable room for improvement.

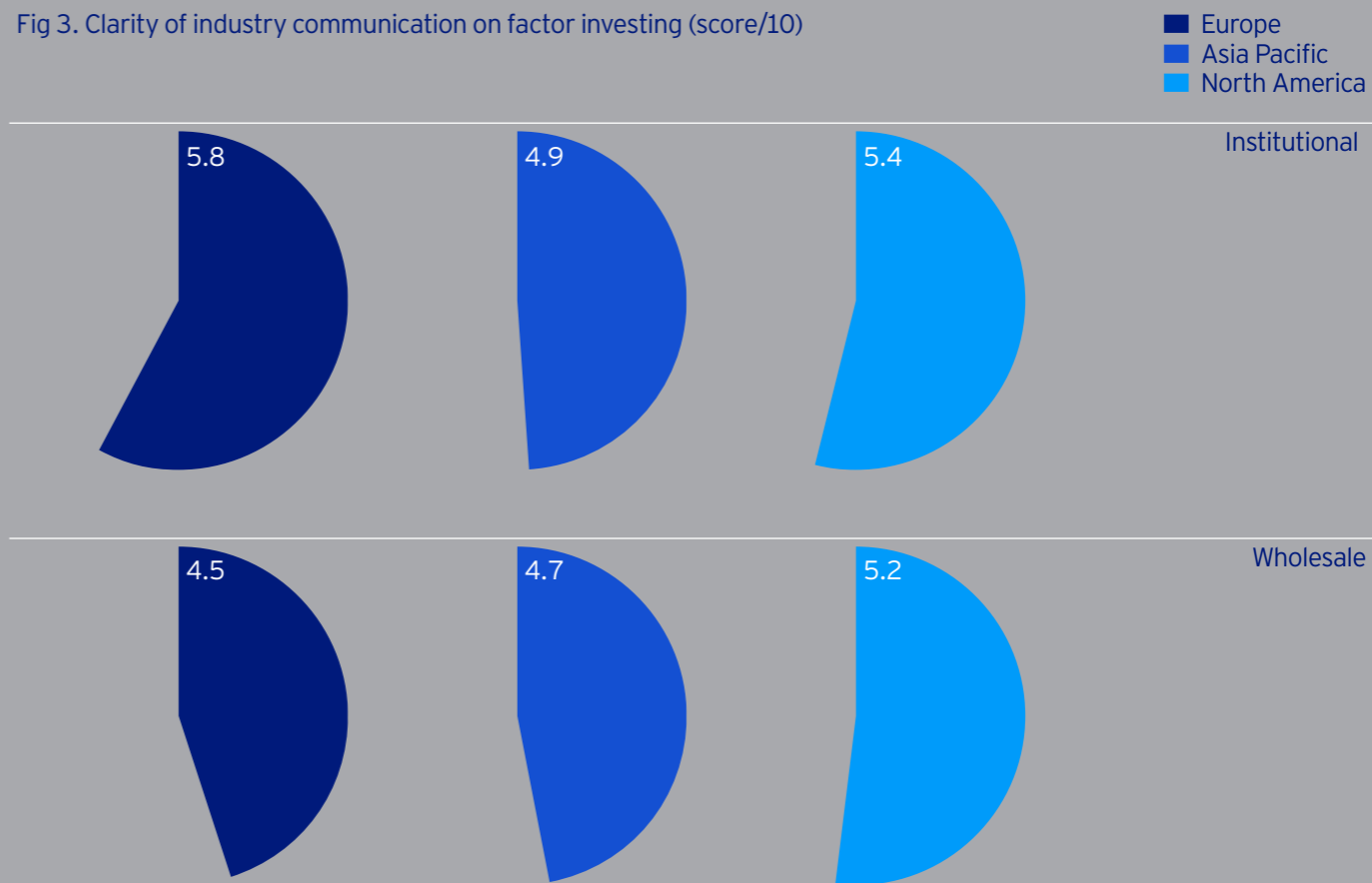
Factor investing concepts can be complex, which might explain relatively poor scores amongst wholesale investors. However the picture is only modestly better amongst institutional investors. With the best regional score being just 5.8 for European factor investors, asset managers need to do a better job when it comes to explaining and communicating the terms and value proposition of factor investing.

The lack of consistent definitions creates something of a barrier to broader adoption, as figure 4 indicates. Although scores of between 5 and 6 across segments and regions do not seem to represent high barriers, these can be compared with the wider set of adoption barriers discussed in theme 4.

Comparing figure 4 with figure 38 in theme 4 suggests that communication of consistent term definitions would be a second tier barrier to adoption, and therefore of some importance for asset managers to resolve. That this has not been resolved to date generates a degree of cynicism amongst some investors that terminology issues can work in favour of less scrupulous asset managers, such as by redefining existing but commercially less successful products as factor investing.

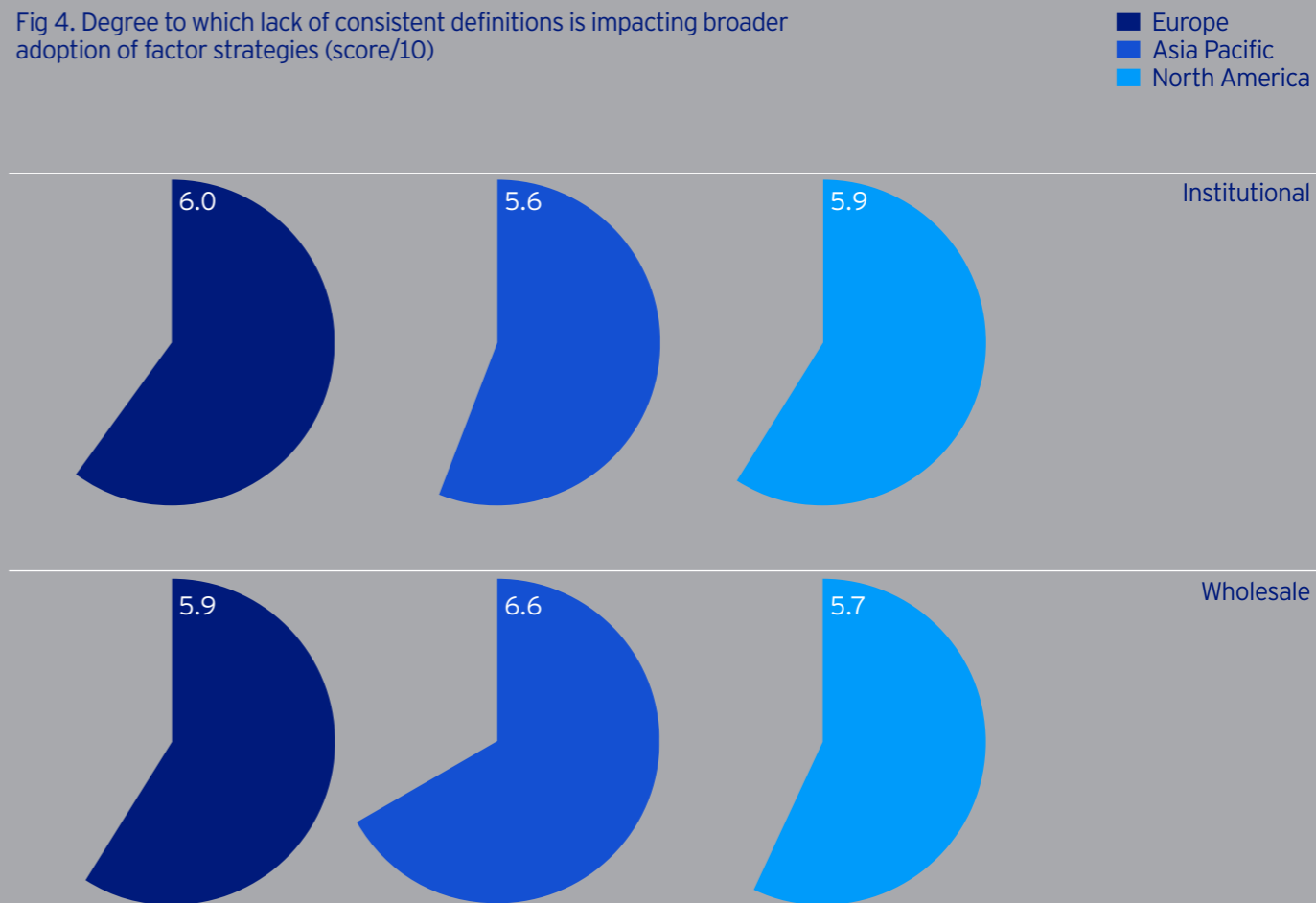
To a significant extent investors are simply getting on with it while the factor industry sorts out its definitions. As investors gain experience, what ultimately matters is that the internal investment team is clear, and can communicate with asset managers accordingly. That process is an opportunity for investors to work with asset managers to understand their portfolio exposures, lay out a house view of factor investing, and work out how it can best be used in the portfolio.

Fig 3. Clarity of industry communication on factor investing (score/10)



Sample: 42/28/38 (institutional: Europe/APAC/North America), 93/15/35 (wholesale: Europe/APAC/North America), 251 (total). Score 1-10, where 10 is complete clarity.

Fig 4. Degree to which lack of consistent definitions is impacting broader adoption of factor strategies (score/10)



Sample: 42/26/39 (institutional: Europe/APAC/North America), 93/15/35 (wholesale: Europe/APAC/North America), 250 (total). Score 1-10, where 10 is most significant impact.

Fig 5. Institutional investor definitions of factor investing



Sample: 121

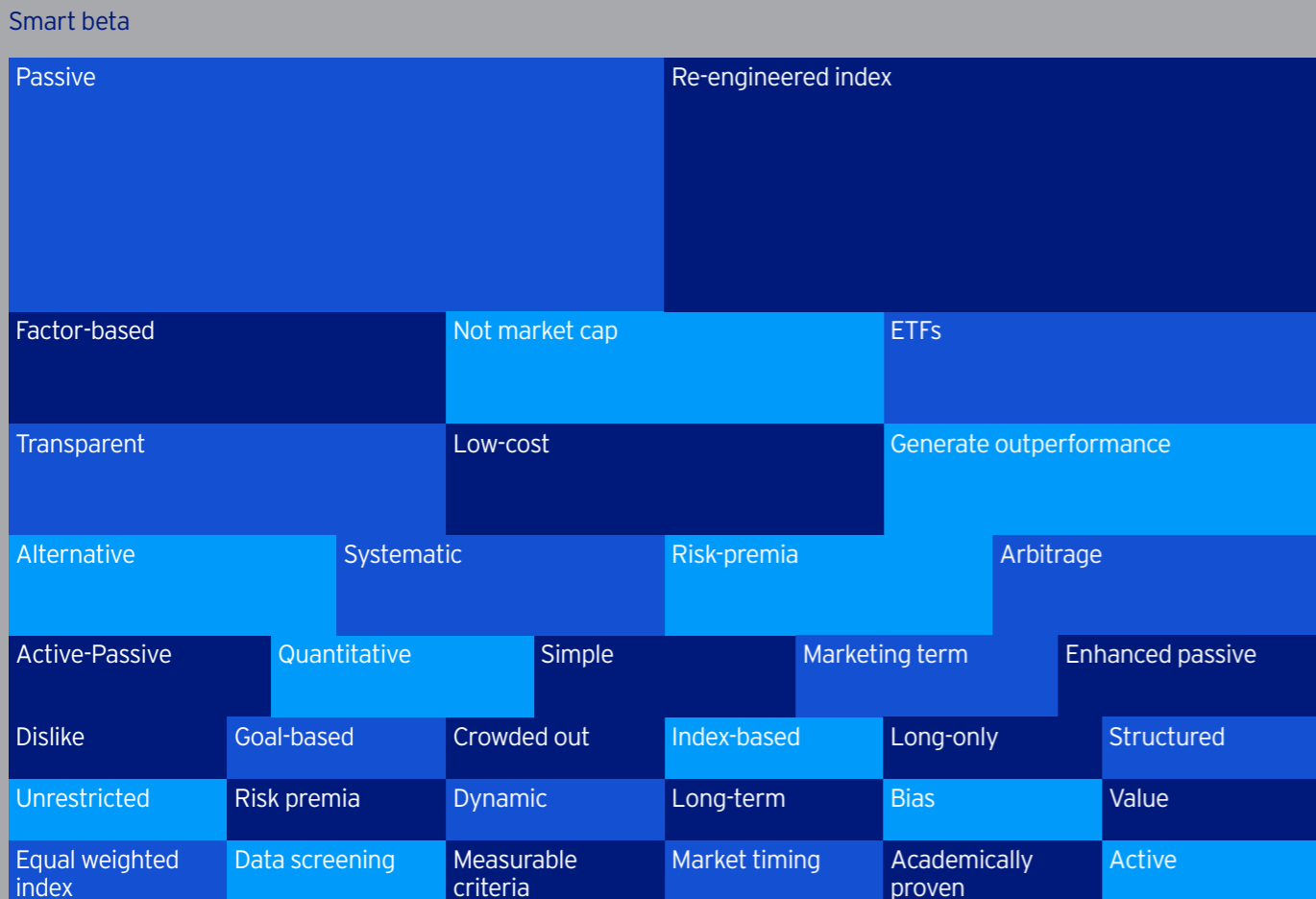
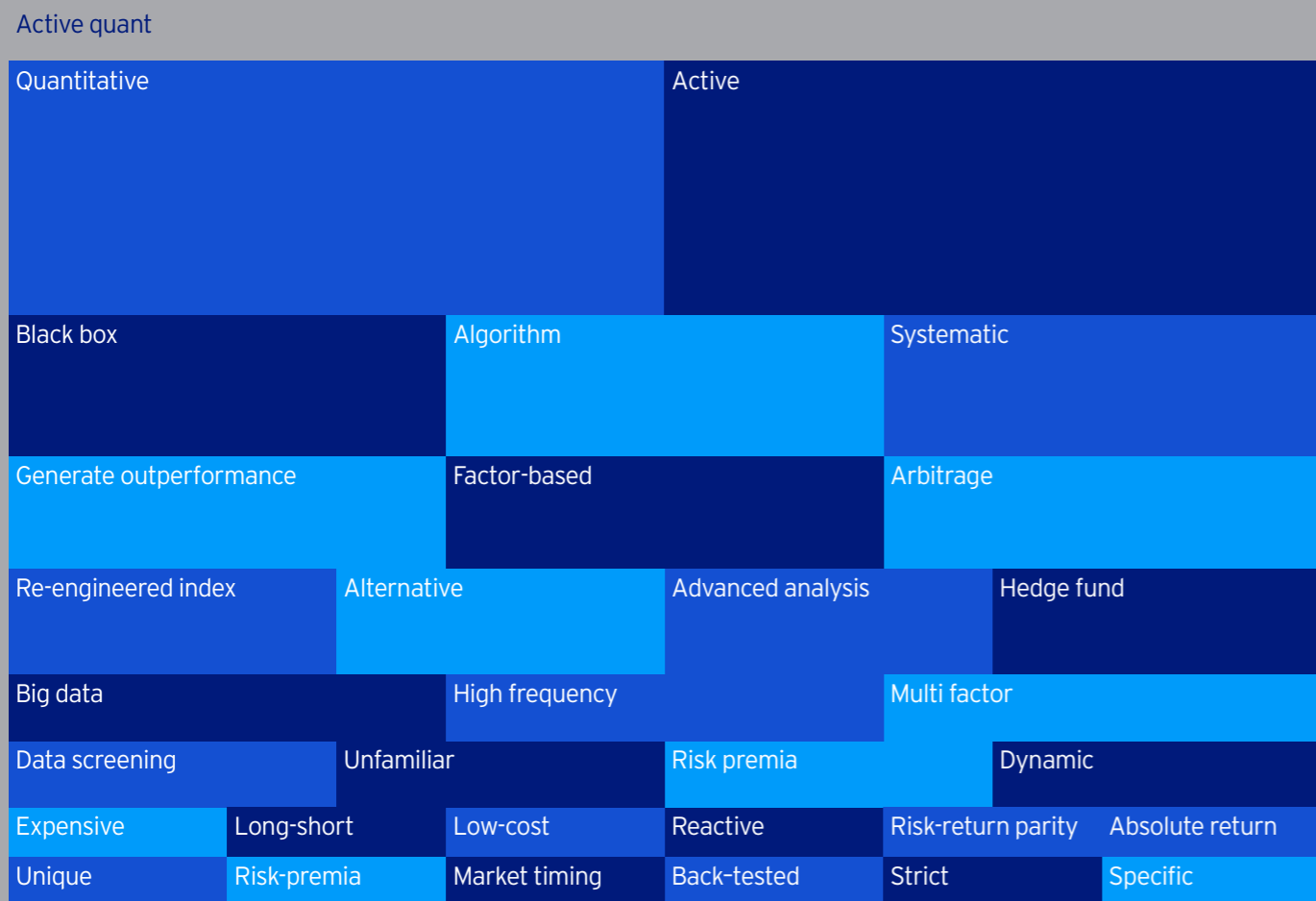
Key factor terms suggest distinct attribute associations

The clear distinctions in attributes which investors attach to factor, smart beta, and active quant reinforce the view of a terminology hierarchy with factor at its peak, but also highlight the tendency of individual terms to be seen in either a strategy or product lens.

The factor investing term generated a rich word cloud of associated attributes, as illustrated in figure 5, with attributes appearing in the largest box having received the most citations. Beyond its richness, several characteristics are notable:

- Most important term is customer outcome (generate outperformance).
- Tend to be strategic in nature.
- Mostly positive.

Fig 6. Institutional investor definitions of active quant and smart beta investing



Sample: 101 (active quant), 112 (smart beta)

The overall investor impression of factor investing as a term is of connoting robustness, strategic rather than tactical, and outcome orientated.

Perspectives of both active quant and smart beta terms are very different, as illustrated in figure 6. They have a narrower set of associated attributes, which are also more product related, referring frequently to inputs and technical features.

The attributes of both active quant and smart beta are largely positive, but there are some qualifications. For active quant, the major attributes associated are 'quantitative', 'systematic', and 'active', but 'black box' can be a detractor, referring to less than optimal transparency. There are associations with the poor performance of some quantitative strategies during the 2008-2009 financial crisis, as well as other quant disappointments.

For smart beta, the major associations are 're-engineered index' and 'passive'; the term is also linked with ETFs. On the less positive side, 'gimmick' is sometimes used in reference to the rapid expansion of the smart beta product universe in recent years; while many products are robust and based on well-accepted themes, some are less soundly constructed.

The other common notable attribute of both active quant and smart beta word clouds is the reasonably prominent appearance in both of 'factor-based'. This does not appear in reverse in the factor investing word cloud.

This supports a view that 'factor investing' is the umbrella or strategy term favoured by investors, and that active quant, smart beta, and other terms are subsidiary or product-related terms which fit under the factor umbrella.

For the balance of the study, respondents were asked about their use of factor investing, described as any investment strategy which considers the role of factors as part of the portfolio construction or monitoring, in a systematic way.

Respondents were asked to distinguish their use of these strategies from actively managed strategies and traditional passive (market capitalisation) strategies, and within factor investing their use of active quant and smart beta strategies (based on their own definitions).

What motivated you to add factor investing into your equity portfolio?

We wanted to diversify risk, but given the fund's investment restrictions, there were limited avenues to doing this. We also wanted to achieve this in a cost-efficient manner. Previously the portfolio had been very much market-cap weighted and while we were aware of factor exposures (such as value) we were not using the information. The fund has always believed in the efficient market hypothesis for developed market equities, so the introduction of factor investing is a philosophical change.

What did the process of factor adoption look like?

The investment team spent a lot of time thinking about what they wanted from factor exposures. Once this had been considered, the implementation required significant organisational changes even for small allocations. With larger allocations to factor, this has required changes to the front and back office, as well as risk management, so it has triggered an expansion of the organisation and changes in the ways of working.

What does factor mean to you?

We see factor investing as being a non-market-cap weighted, rules-based portfolio, but beyond that the implementation is passive.

Which factors do you target exposure to?

We have an agnostic view of factors so long as they are academically researched and the evidence is there - including value, momentum, quality, and low volatility. There is scepticism about the existence of a size factor. We don't limit ourselves to rigid definitions of factors as there is not necessarily one correct way and it is better to be dynamic in the approach. Overall we want as many factor exposures as possible to diversify the portfolio and assist with the investment goal. There is a preference for an integrated approach as this is more efficient, i.e. multi factor rather than single factors.

What challenges have you experienced on the factor journey so far?

Challenges have been encountered from decision-making to implementation. The theory is one thing but there are practical issues in terms of new processes and gaining acceptance in the organisation of a new way of working. Strong support from the executive management team and board was needed to overcome some of these issues. The availability of academic research was important in this respect as it provides credibility for the benefits proposed for factor - lower risk and lower cost than active management.

Have you considered whether factor approaches can be used to meet ESG objectives?

The fund has an exclusion strategy at present, plus some impact investing mandates. We don't see ESG as a factor for returns so far - there is not enough data. But we do see it as a way of managing risk. At this time we are just monitoring this but as more data becomes available, this position may change.

Based on your experience so far, where do you expect to go from here?

The fund has not yet decided to fully commit; so far we are trialling it. We feel it is important to remain open-minded and understand the potential for and be prepared for downswings in performance. That said, we expect allocations to expand. Our current target is 10% over several years. The nomination of 10% as a target figure was not a very scientific approach; it represented more of a commitment to making changes in the portfolio within a comfort level.

Where is your thinking about whether factors can be applied beyond equities?

We believe factors can be applied to fixed income, currencies, and commodities. Equities are the first step; we will soon look at fixed income and currencies. We are considering value, momentum, and other factors typical of the asset class. We also expect to start looking at the overall fund through more of a factor lens.

How do you benchmark your factor allocations?

We're not sure what the right benchmark is - and there may not be a correct way. You can start with a BARRA standard risk model, which is not gospel but could be an objective benchmark as it has widely used definitions. This is one of the one of the challenges going forward.

What learnings would you pass on to investors who are considering introducing factor?

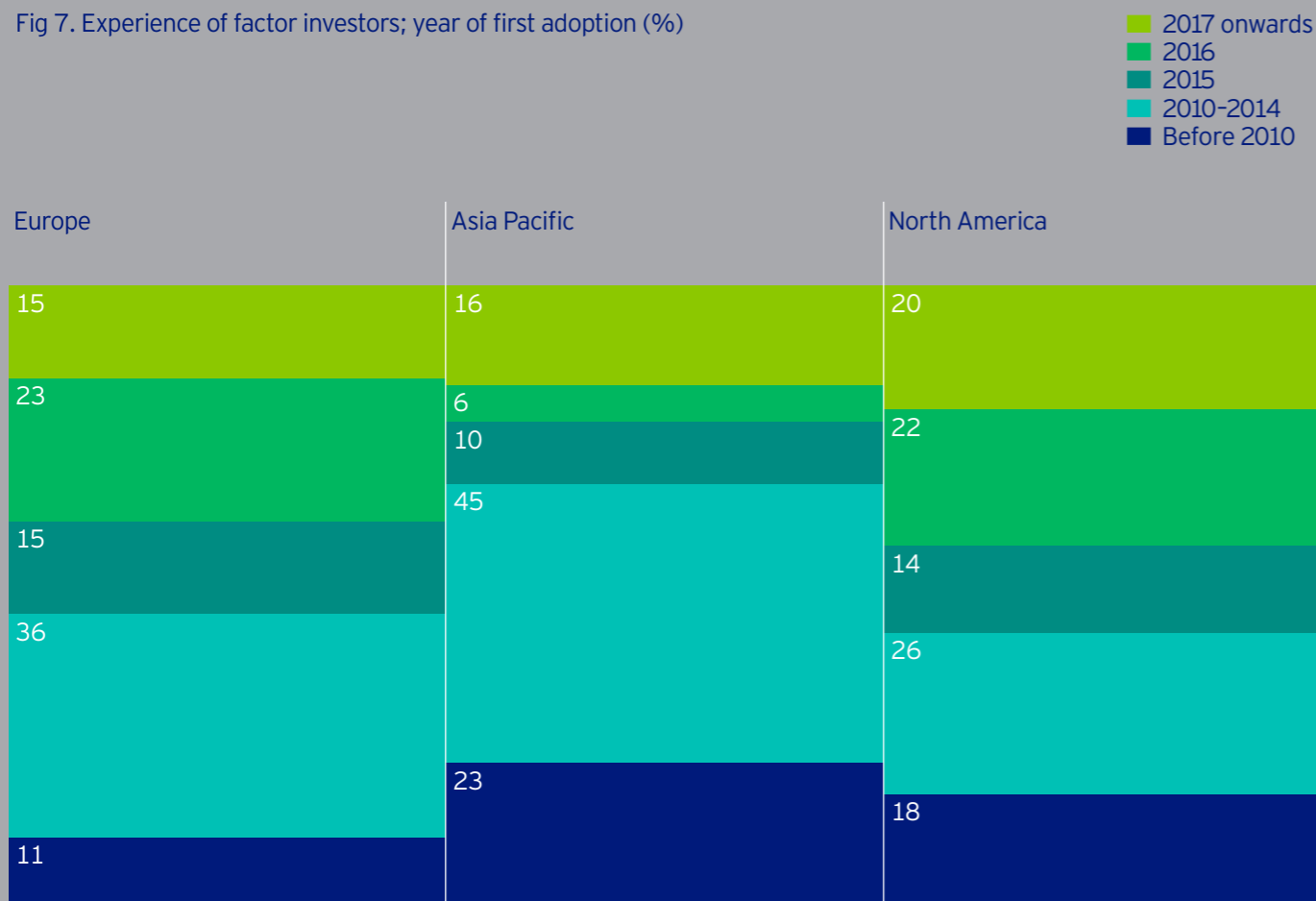
Factor investing is a long-term commitment - you need to have a long-term view and organisational commitment. We are still learning, but we have already learnt that internal processes are difficult to change. It is a slow process which has to be internally driven - for us it would not have worked if it was an external party such as an asset consultant driving it.

Theme 2
Learning the ropes: factor investors are building experience.

- Factor investing has been in existence for a long time, but many current factor investors are relatively recent adopters.
- Key reasons for adopting factor investing are improvement of returns, and lower or better managed levels of risk.
- Factor provides investors with a more sophisticated way of looking at risk within a portfolio than asset class views alone and facilitates the expression of specific tactical or thematic views in a portfolio, including ESG.

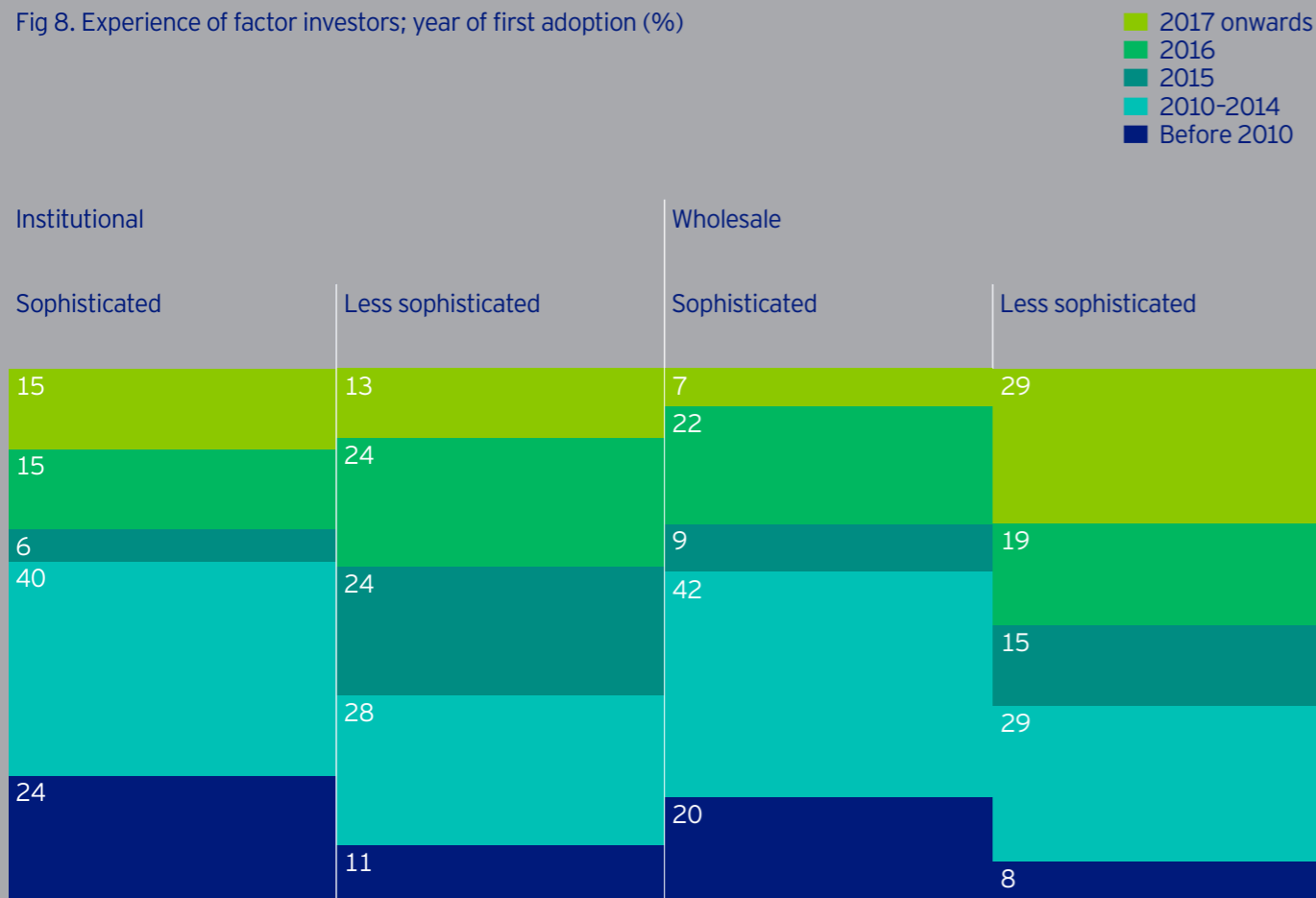


Fig 7. Experience of factor investors; year of first adoption (%)



Sample: 119 (Europe), 31 (APAC), 50 (North America), 200 (total)

Fig 8. Experience of factor investors; year of first adoption (%)



Sample: 33 (sophisticated institutional), 46 (less sophisticated institutional), 55 (sophisticated wholesale), 62 (less sophisticated wholesale)

It can be easy to forget that despite the long history of factor academic research and the length of experience of pioneering investors, it is still relatively early in the adoption cycle. Factor is in the early growth phase in 'S-curve' terms and has not yet jumped into the mainstream:

- We estimate that around half of institutional investors have taken up a factor strategy, with retail lower at around 20%.
- If anything, this overstates current factor penetration. Amongst study respondents (which are all factor investors), in over 80% of cases, factor strategies still represent <20% of equity and fixed income allocations. Most allocations to factor strategies are still at the smaller end.
- Conversely, only a small number (<10% of institutional respondents) have effectively switched (i.e. >80% allocated to factor) their equities approach to factor investing.
- None of our respondents have switched to the same degree in fixed income, but a small percentage (<10% of institutional smart beta investors) have done so to 50%-80% of their portfolio.

This makes sense when the experience level of factor investors is considered. Figure 7 demonstrates that around half of our respondents adopted factor investing for the first time in 2015 or more recently, around a third in the 2010-2014 period, and about 15% prior to 2010.

An important implication is that relatively few factor investors have experience stretching back 10 years or more. Only a third have 4-8 years of experience, and half are relatively new.

This matters because it is hard for investors (especially investors citing risk as a key adoption driver) to assess the true effectiveness of factor investing until they have experienced a full market cycle, including volatile and declining markets. Performance during such conditions is likely to be a determinant of whether factor investing jumps into the mainstream of the adoption of S-curve.

The experience picture changes, but not greatly, when investors are segmented by sophistication levels.

Respondents were asked to score their level of factor investing sophistication; those who self-scored as 4 or 5 out of 5 were placed into a 'sophisticated factor investor' segment while those who self-scored as 1-3 out of 5 were placed into a 'less sophisticated factor investor' segment. Note that this is self-scored and implies no judgement of ability but is an indication of a set of investors who are more experienced and confident with factor investing relative to a set which is less so.

Figure 8 shows that an important distinction between those self-scored as sophisticated and less sophisticated, is their experience. For the sophisticated investors, both institutional and wholesale, slightly more than 20% first invested in 2010 or earlier, while ~40% first invested in 2015 or more recently.

Less sophisticated factor investors are partly so because they have less experience. The less sophisticated segment has fewer than 10% having first invested earlier than 2010, while ~60% first adopted factor investing in 2015 or more recently.

Why and how factor investing is adopted

Despite the youthfulness of the factor experience of the respondent cohort, there is reasonable clarity in terms of what benefits are being sought. The benefits of factor investing are typically seen as relating to risk, returns, and costs - benefits which fundamentally relate to core long-term objectives, and which are enduring and strategic rather than cyclical or tactical.

There are also shorter-term applications of factor investing, such as expressing a particular view or theme, but even here the use of factors often becomes the new way of expressing tactical portfolio views.

Figure 9 provides granularity about those and other reasons to adopt factor investing. As expected, return and risk benefits lead the list of drivers. It's notable the risk benefits have two dimensions - risk reduction in a broad sense (i.e. reducing volatility and correlations) and portfolio exposure control improvements, a more specific form of risk management including underlying factor exposures. Investors using factor strategies are generally motivated by more sophisticated risk management and/or achieving potentially more favorable net returns for an existing level of risk, so for them the 'why factor' conversation has moved on from being one of simply 'risk management'.

Cost reductions scored lower than expected. This further highlights that the factor adoption path is not always from active management to factor management (where a significant cost reduction might be expected). In a material proportion of cases - and increasingly likely to be the case into the future as indicated by sophisticated institutional investor intentions - the adoption path is passive (market cap weighted) management to factor management. That direction of travel is likely to result in cost increases rather than savings.

Other benefits of note include improvements to benchmarking and transparency, and the ability to replace or outperform either passive or active portfolios, highlighting that factor investing is sourced from both active and passive (see theme 3).

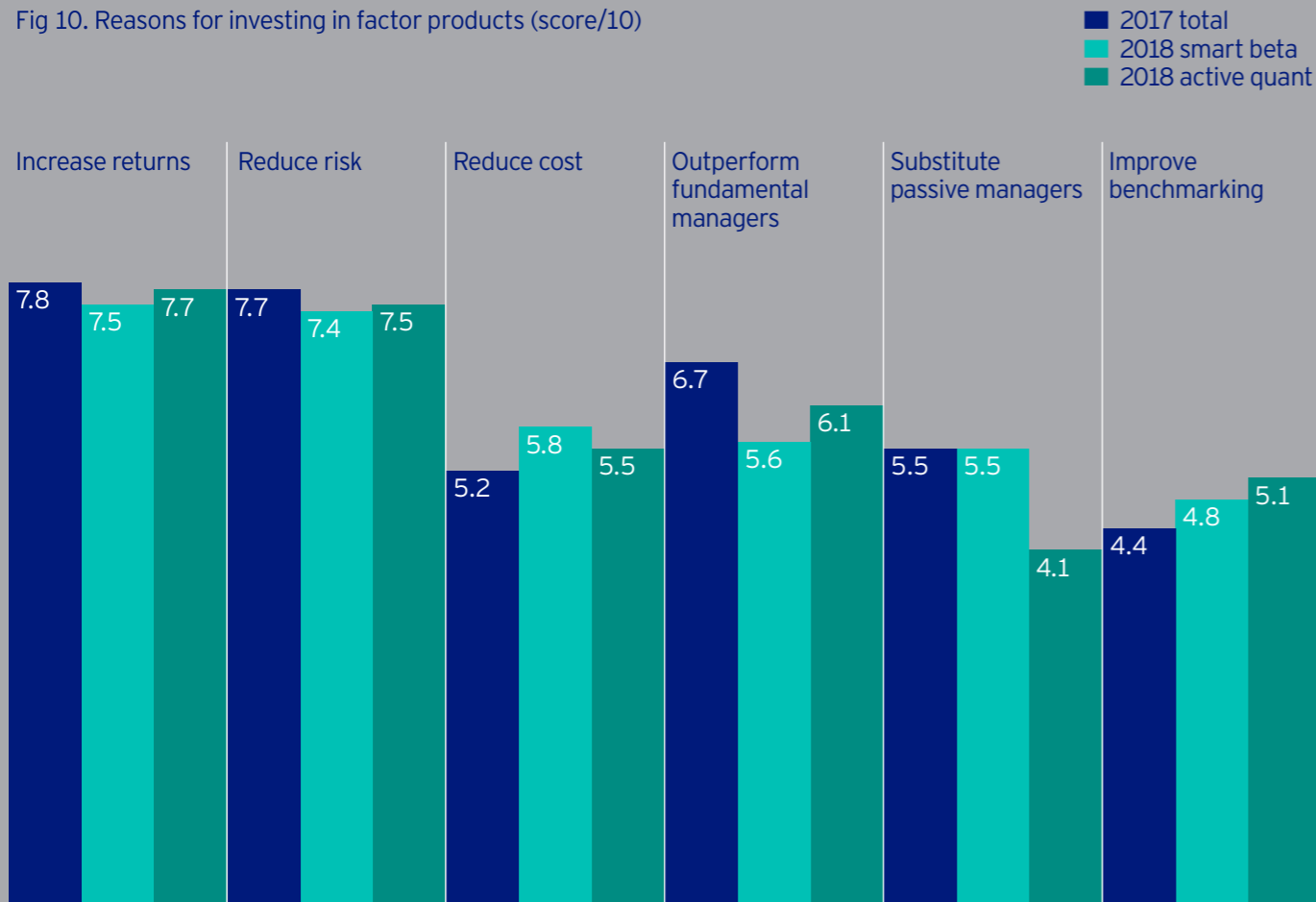
Fig 9. Reasons for investing in smart beta and active quant products (score/10)

■ Institutional
■ Wholesale



Sample: 109 (smart beta institutional), 111 (smart beta wholesale), 78 (active quant institutional), 81 (active quant wholesale). Score 1-10, where 10 is most important

Fig 10. Reasons for investing in factor products (score/10)



Sample: 220 (smart beta), 159 (active quant). Score 1-10, where 10 is most important

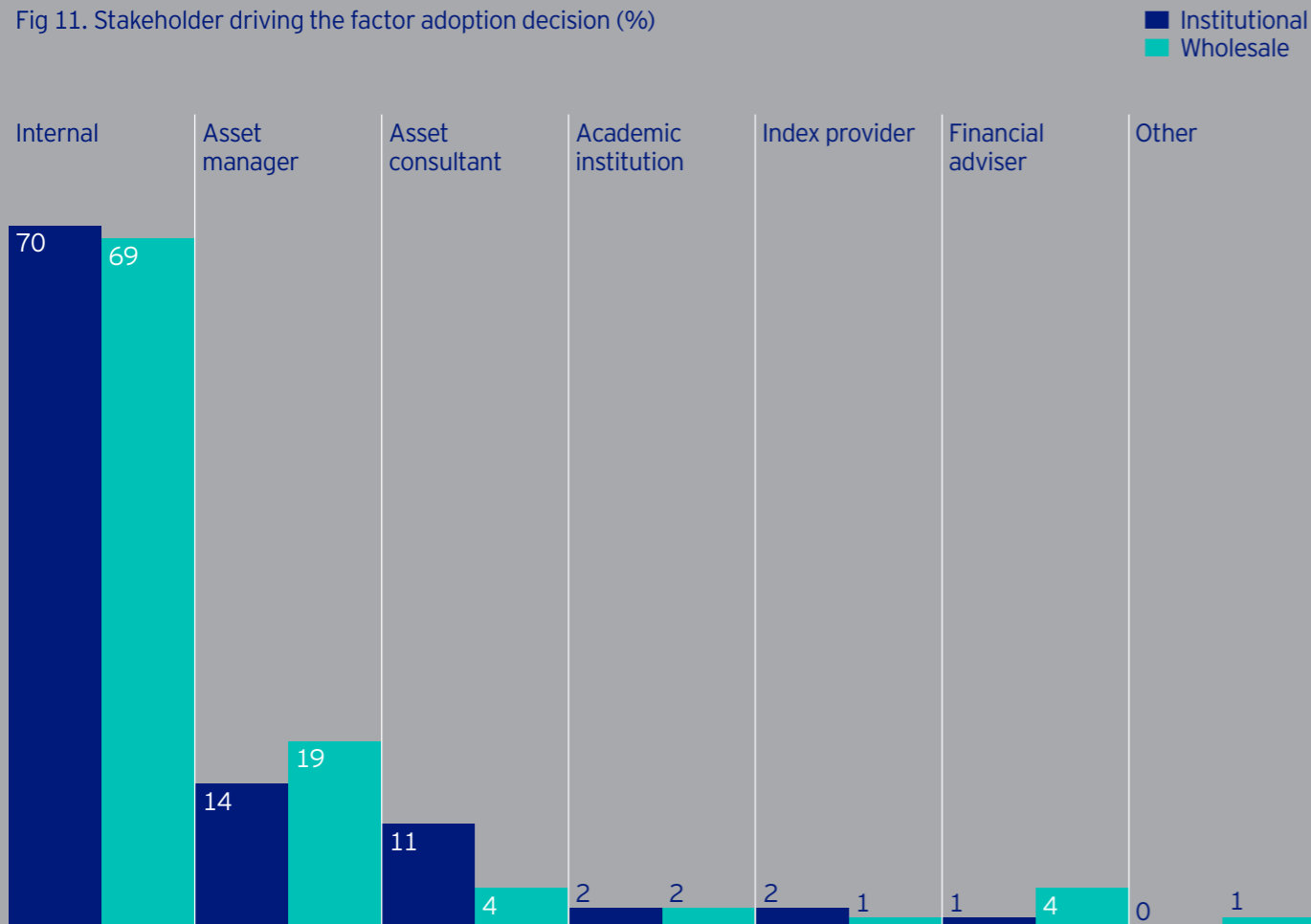
There has been limited change in these reasons in the past year as figure 10 shows, particularly core risk and return benefits. There has been a reduction in the importance of using factors to outperform fundamental managers, and an increase in cost focus and benchmark improvements - although caution should be used given the increase and change in sample since 2017.

The adoption of factor investing by an asset owner is overwhelmingly the result of internal efforts, as figure 11 indicates, supplemented by influences from asset managers and asset consultants. In practice this is usually the result of several years of internal consideration and research.

The asset owner will typically have deployed active and/or passive strategies within equities asset classes (equities is usually the trigger) and perceived inefficiencies or shortcomings. This may include observations that active strategies contain some degree of systematic approach which could be codified and replicated at lower cost; or that market capitalisation based passive strategies contain undesirable biases and weaknesses.

This results in a research process to verify the issue and consider alternatives if verified; factor investing is just one alternative considered. Outside inputs from asset managers, consultants, academia, and other market participants are often incorporated. The decision to adopt factor strategies is made via a rigorous and often lengthy internal process - just like any other new strategy within a portfolio. Once this has been done, investors typically go on to implement multiple factor strategies (see theme 3).

Fig 11. Stakeholder driving the factor adoption decision (%)



Sample: 115 (institutional), 138 (wholesale)

Applying factor strategies within a portfolio

An important driver of how investors seek to apply factor strategies is how they see portfolio construction. One of the potential benefits of factor investing is the ability to see what risks are present across the portfolio, rather than looking only at the portfolio on an asset class by asset class basis.

Institutional investors in particular are moving in this direction as figure 12 indicates. While few institutional or wholesale investors have dropped asset class based portfolio construction entirely in favour of risk premia approaches, around half of institutional investors, and a quarter of wholesale investors, have introduced risk premia approaches alongside their traditional asset allocation approach.

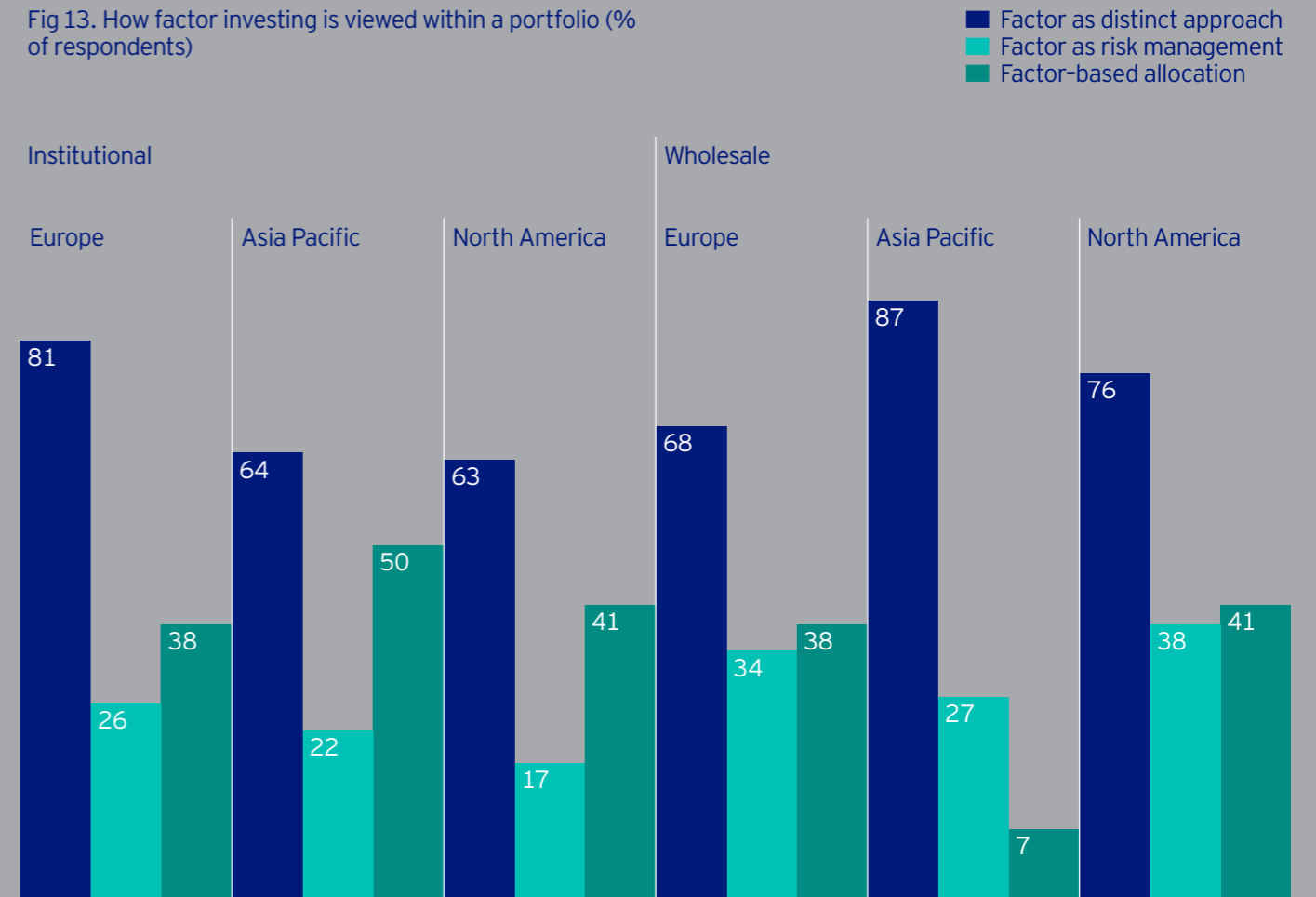
The corollary of this is how factor investing is thought of within the portfolio. In most cases, factor investing is still thought of a distinct approach, usually applied on an asset class basis, sitting between active and passive (figure 13). This is especially so amongst wholesale investors. However, there are significant segments which see more sophisticated applications of factor investing, either as a portfolio risk management tool, or as a different way of thinking about portfolio allocations.

Fig 12. Asset class vs risk premia perspectives in portfolio construction (% of respondents)



Sample: 120 (institutional), 112 (wholesale)

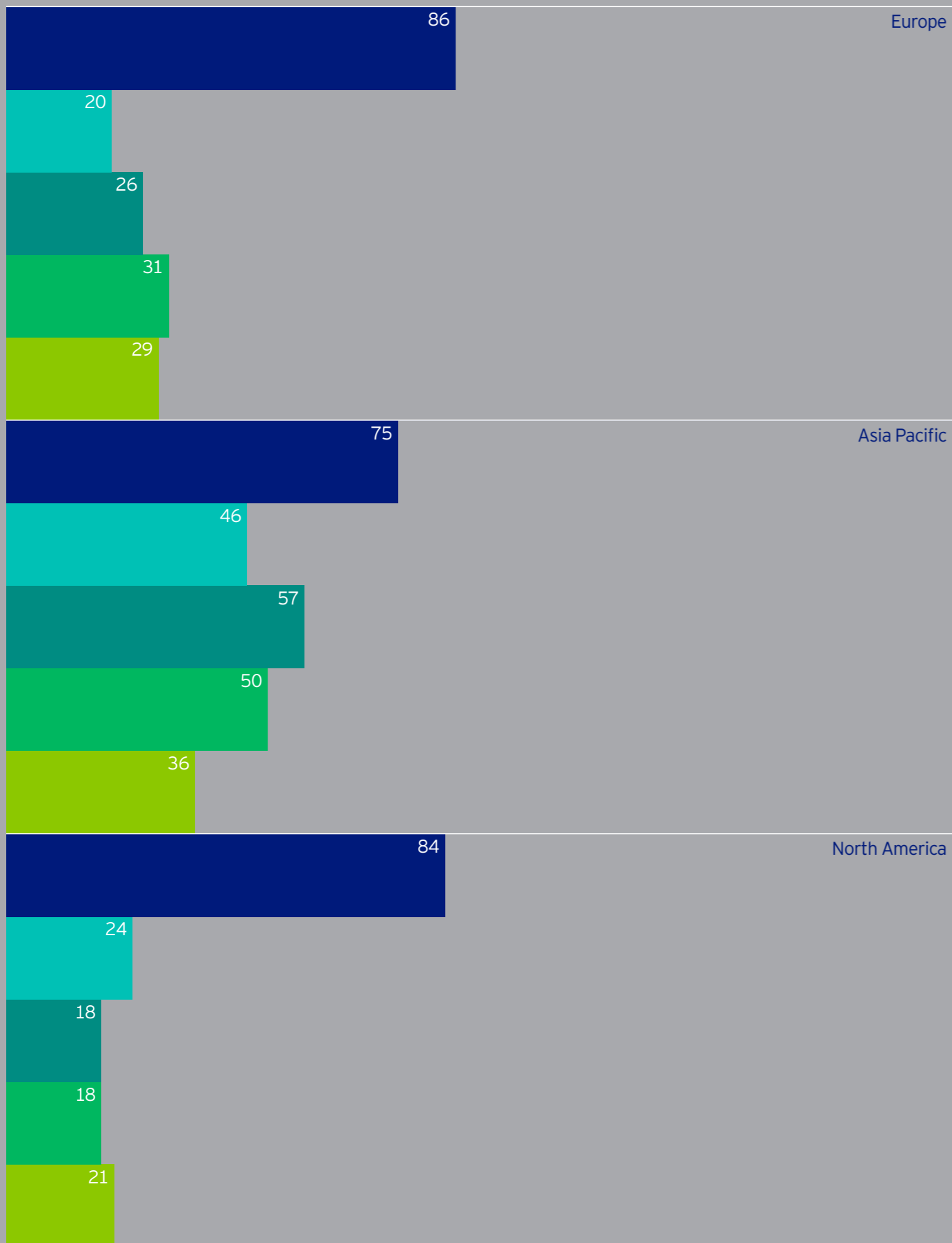
Fig 13. How factor investing is viewed within a portfolio (% of respondents)



Sample: 42, 36, 46 (institutional: Europe, APAC, North America), 74, 15, 34 (wholesale: Europe, APAC, North America)

Fig 14. Areas of increasing factor expertise (% of respondents)

- Equity factors
- Fixed income factors
- Multi factor
- Portfolio construction
- Risk management



Sample: 35, 28, 38 (Europe, APAC, North America)

The current emphasis on asset class applications is reflected in where investors are looking to develop in-house factor expertise within the organisation. Half of our institutional respondents and a third of wholesale respondents are increasing factor expertise within their investment teams, particularly in APAC. Figure 14 highlights that a large portion of that effort is being directed towards equity asset class factors, with most investors across all regions building capability there. Smaller proportions are also building factor capability in a range of organisational areas including fixed income, multi asset, portfolio construction, and risk management.

The development of factor capability occurs in two forms:

- Investment strategy, either at an asset class or portfolio level. In this model, the investor does not intend to manage its own factor mandates but wishes to build an internal capability to understand how factor fits into asset class allocations, or applications of factors at a portfolio level.
- Investment strategy plus mandate capabilities. In this model, the investor extends from factor strategy capability to also running its own internal factor-based mandates.

Expressing tactical and thematic views

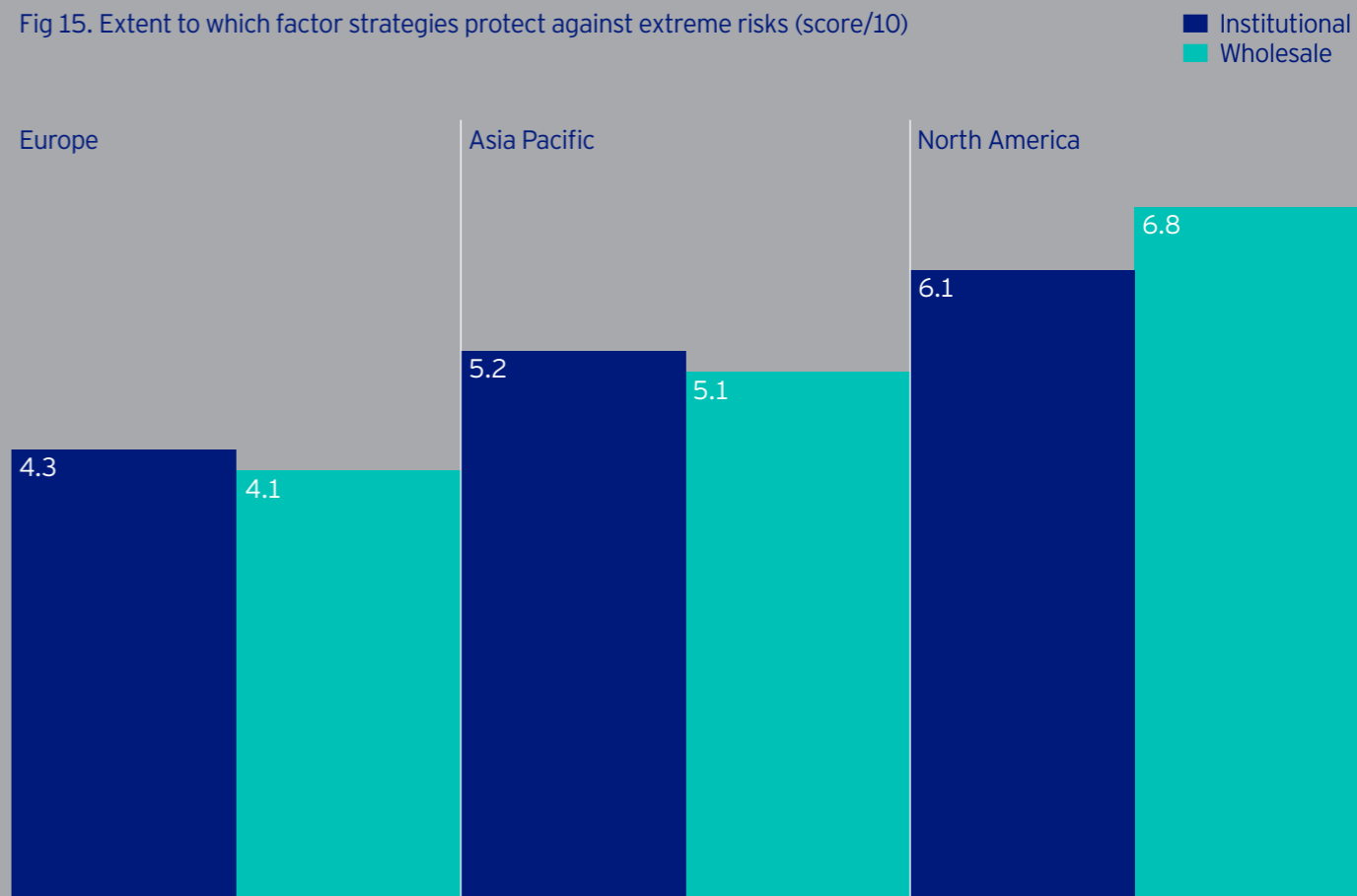
The other main application of factor investing is the use of factor products to express a more tactical view, rather than a permanent strategic allocation to factors within asset classes or within the portfolio as a whole. Factors can be used to alter risk exposures at an overall portfolio level or to target exposures to certain investment themes; the rise of factor-based ETFs has made this relatively straightforward to implement.

There is a reasonable level of support amongst factor investors for both approaches. Figure 15 shows that North American investors in particular see the potential use of factor strategies to provide protection against low probability but high impact risk events.

Similarly, there are constituencies which see factor as a way to efficiently express particular types of views, themes, or exposures. A relatively new development of this approach is to use factor allocations to address portfolio ESG requirements, particularly amongst institutional investors.

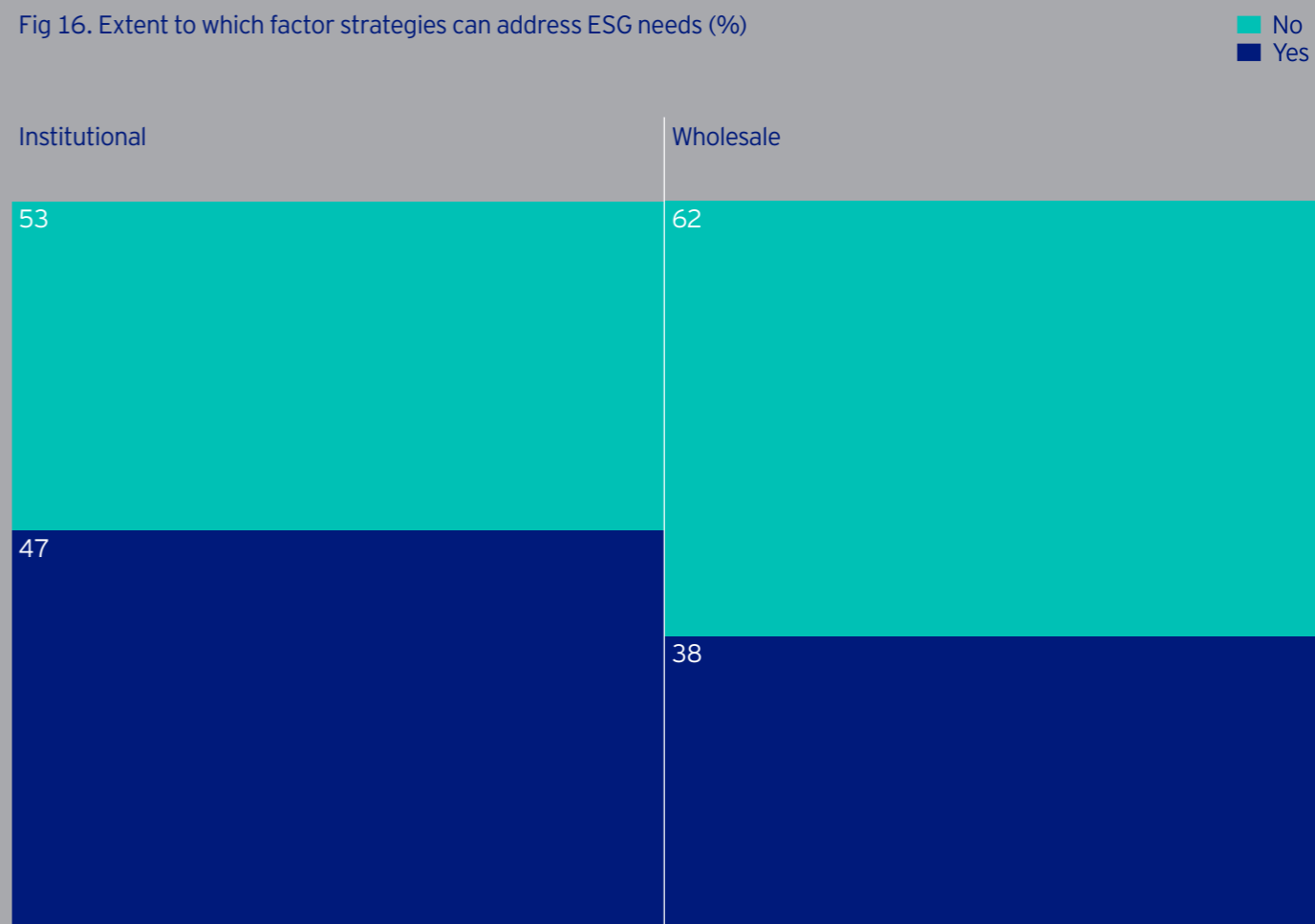
With half of respondents being recent entrants, and with most respondents overall having been focused on initial applications of factors to equities, to already see significant levels of support for more advanced applications such as tail risk management and ESG, is encouraging for longer factor investing demand.

Fig 15. Extent to which factor strategies protect against extreme risks (score/10)



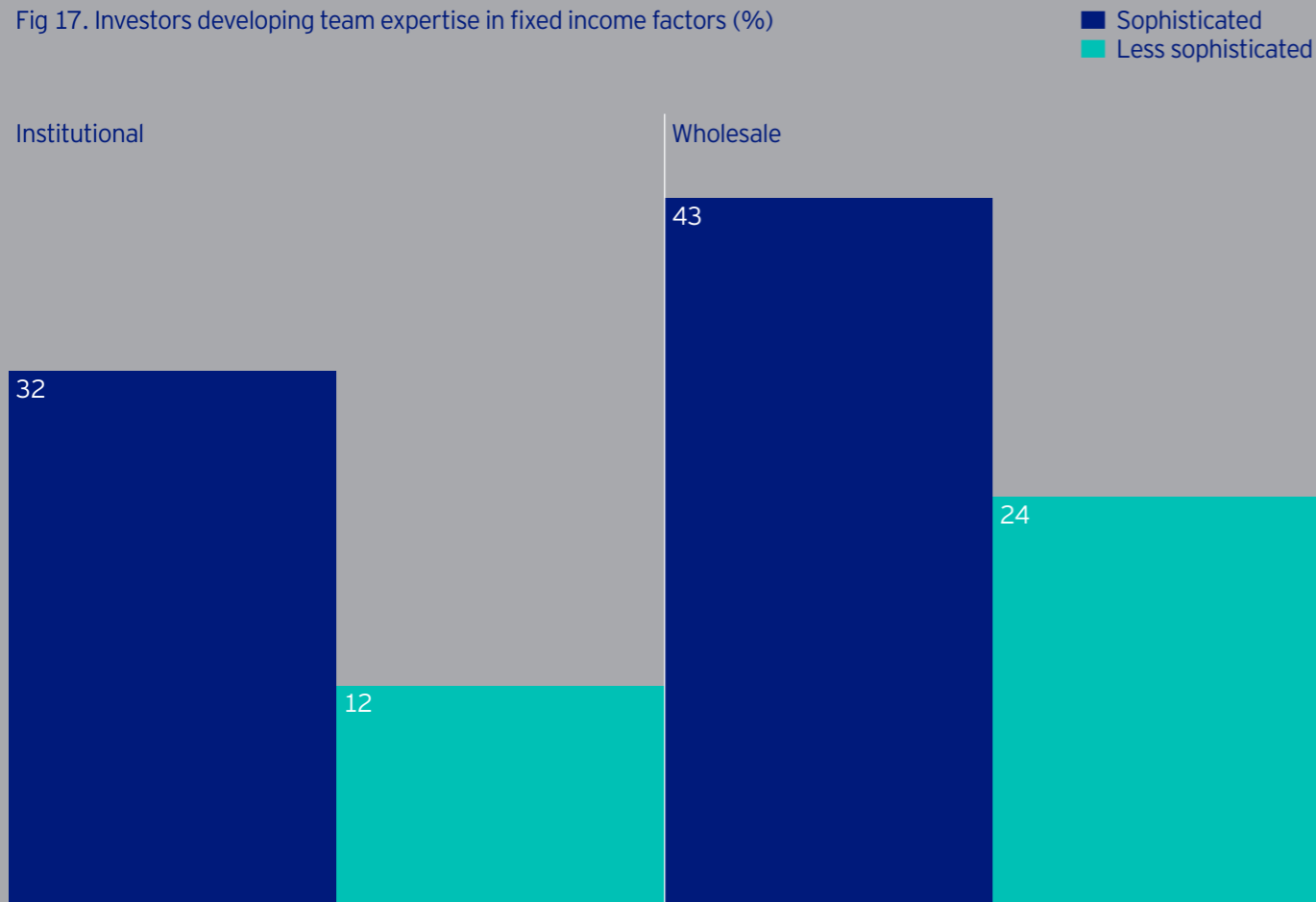
Sample: 43, 27, 34 (institutional: Europe, APAC, North America) 76, 12, 34 (wholesale: Europe, APAC, North America). Score 1-10, where 10 = completely protect.

Fig 16. Extent to which factor strategies can address ESG needs (%)



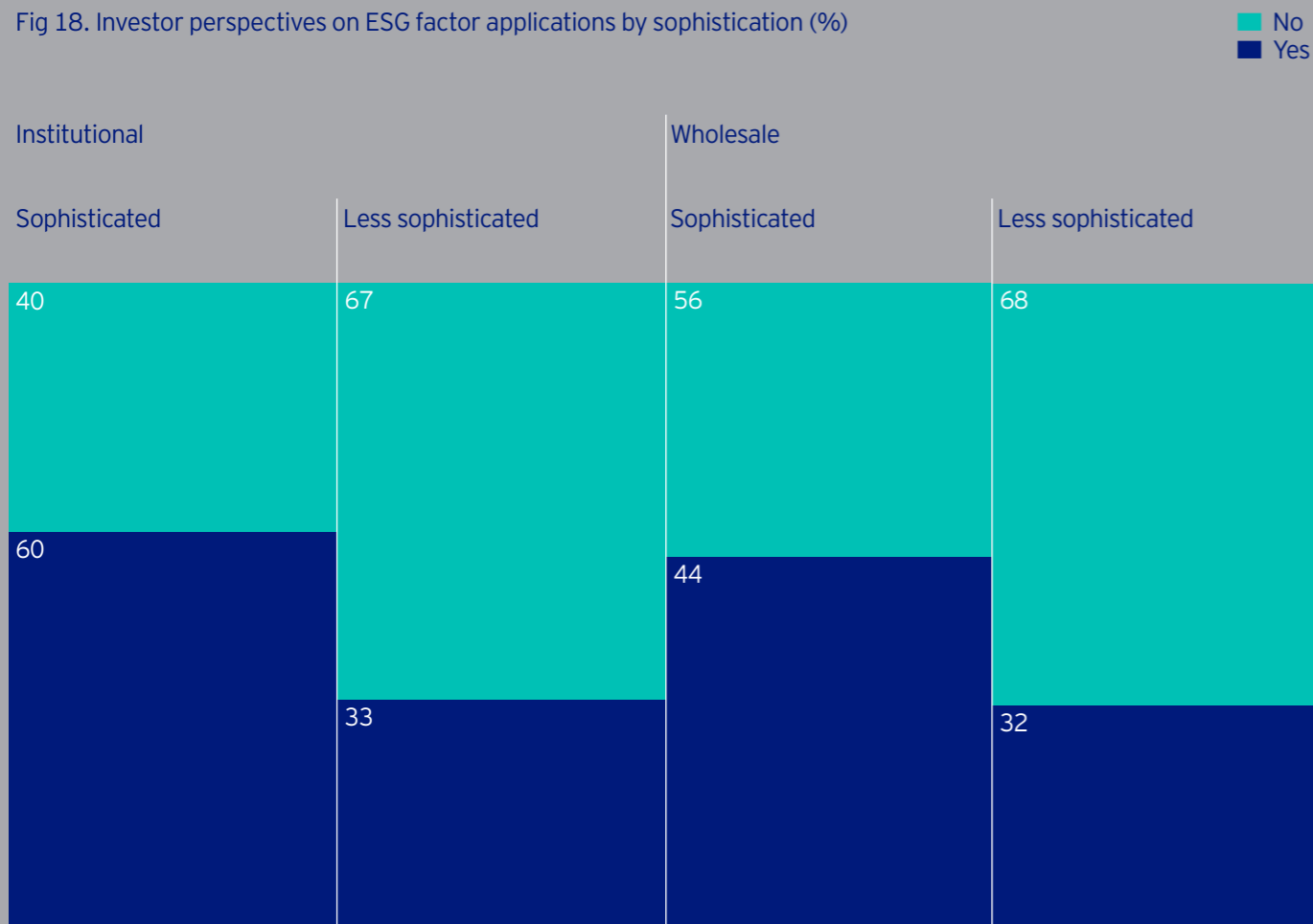
Sample: 107, 131 (institutional wholesale)

Fig 17. Investors developing team expertise in fixed income factors (%)



Sample: 31, 25 (institutional: sophisticated, less sophisticated), 28, 17 (wholesale: sophisticated, less sophisticated)

Fig 18. Investor perspectives on ESG factor applications by sophistication (%)



Sample: 53, 51 (institutional: sophisticated, less sophisticated), 59, 71 (wholesale: sophisticated, less sophisticated)

Sophisticated factor users call-out

In thinking about factor strategy at a portfolio level, sophisticated factor investors are distinguished (from less sophisticated factor investors) by the likelihood that they are considering how to apply factors in broader and/or specialised ways.

They are slightly more likely to be incorporating risk premia – sources of expected excess return for assuming investment risk – in portfolio construction, but the biggest single difference is at the asset class level. Both sophisticated and less sophisticated investors have similarly high levels of commitment to building their expertise in equity factors. The more sophisticated investors are however much more likely to be also building capability in fixed income factors, as figure 17 indicates.

In addition to becoming active in fixed income applications beyond equities, more sophisticated factor investors also tend to be more interested in how factor strategies can be deployed to address particular scenarios or themes in a portfolio.

They are more likely to use factor strategies to help protect portfolios against extreme risks, particularly amongst wholesale investors. However, the difference is particularly marked in terms of considering the usefulness of factor strategies to address ESG objectives.

Figure 18 below adds context to figure 17, revealing that amongst more sophisticated institutional factor investors, 60% see potential ESG applications for factor strategies. As less sophisticated factor investors gain experience, this implies that the overall consideration of factor in addressing ESG issues is likely to rise in coming years.

The same trend, albeit less accentuated, can be seen amongst wholesale investors, suggesting increasing support for expressing ESG views via the factor toolkit.

What was your rationale for introducing factor investing into your portfolio?

We have always had a significant allocation to market-cap passive strategies in our equities portfolio. We believed that for developed market equities this was a more efficient approach than an active management, given our views on market efficiencies. There is a place for active management in less efficient markets, such as emerging markets, where transaction costs are higher, and in private markets. Over time, through internal research and with conversations with consultants and asset managers, we decided that using factor strategies in more efficient markets could lead to better risk-adjusted returns over a full market cycle than market-cap passive strategies, with different factors expected to perform better in different market environments. We could achieve alpha in a more systematic way than using active managers.

What proportion of your portfolio is currently invested in factor strategies?

Approximately 40% of our asset managers utilise factor strategies. We are gradually increasing this, but we also balance increasing the proportion of the portfolio with developing a more sophisticated approach to our existing strategies.

How has the implementation of your factor strategies evolved over time?

Initially we implemented our factor strategies in a passive way, using different weightings for our stock indices. From there we moved into specific single factor mandates targeting different styles such as value, momentum and low volatility. As we evolved our research and better understood the correlations of different factors, we have moved towards a multi factor approach which we believe will perform better over the business cycle and allow us fully to understand the overall portfolio exposures. Most recently we have been exploring a more dynamic approach to allocating to the different factors within our mandates.

Have you decided to take a full factor approach to your portfolio?

Not at this stage. We still use a traditional asset allocation approach to portfolio construction. In our second layer of portfolio construction we consider factors. We have regular debate within the investment team about whether to adopt a factor approach to portfolio construction. The factor strategies have performed as we expect them to - not always good, but generally in line with when we would expect different factors to outperform or underperform. We need to see over a full economic cycle, including the next downturn.

Do you currently use factor strategies in your fixed income portfolio?

At present we have just one strategy in our fixed income portfolio. We believe that factor investing can be applied to fixed income, but it is harder. We believe there are more factors, and that issues around liquidity and common bond issuance may present a problem in implementation.

Do you use factors to achieve your ESG objectives?

We conducted a lot of research into whether ESG factors can generate excess return. We have not yet seen enough data and evidence to suggest that it does. However, we believe that it is an important contributor to reducing risk in portfolios and over the long term we would expect companies that are well governed to outperform less well governed companies.

What challenges have you faced during your journey?

There are a lot of customised indices and academically-backed factors. The challenge is developing the right strategy that fits within your portfolio. At the moment we have the challenge of figuring out whether it is possible to time factor strategies.

Theme 3

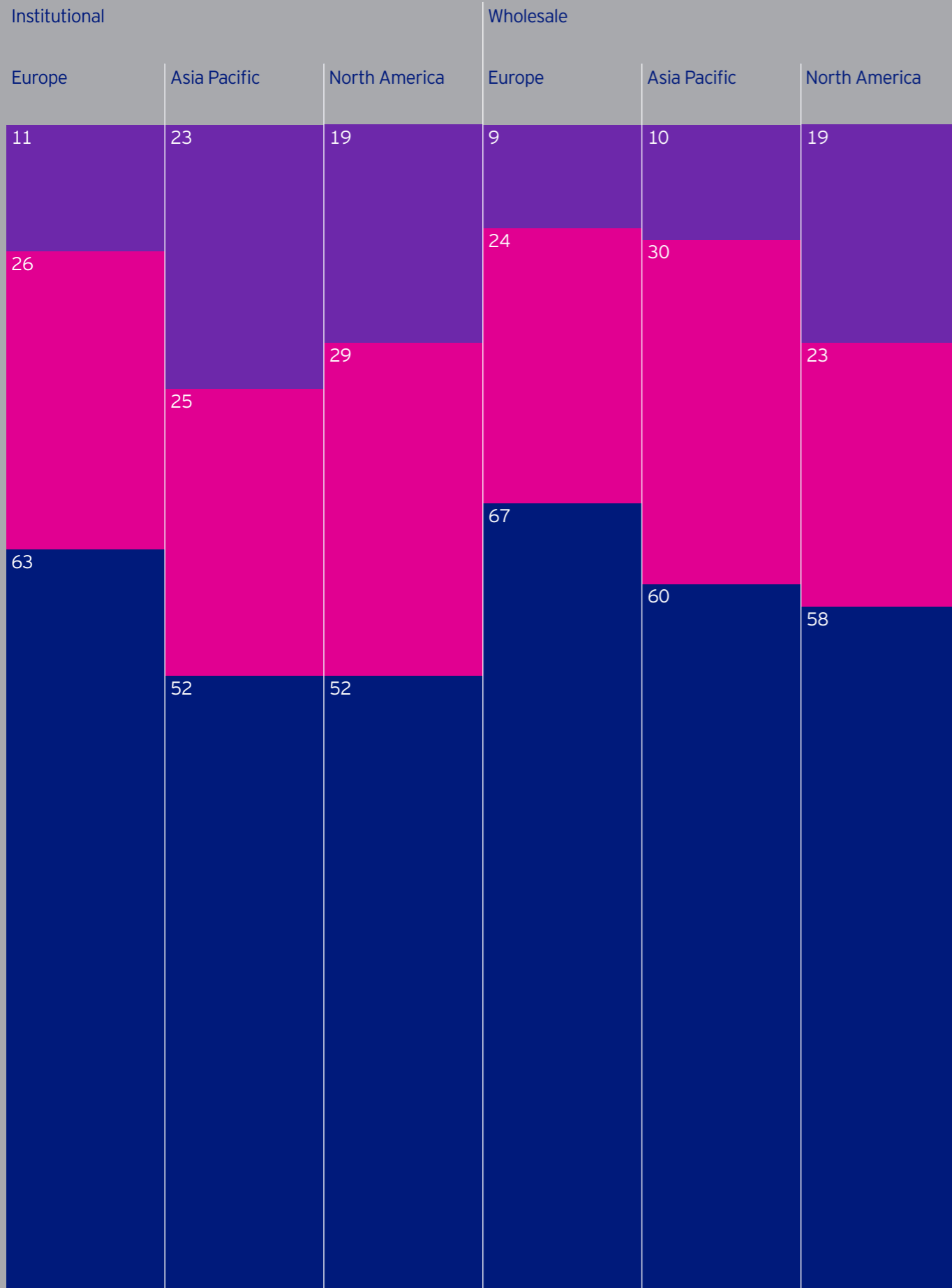
Factor allocations and applications are expanding.

- Factor investing is growing rapidly - not only are more investors adopting factor strategies, but as investors gain experience they increase their use of it.
- Funding for factor strategies has come from a mix of new cashflow, and existing active and passive allocations, adding perspective to the prevailing paradigm of active to passive migration.
- Investors tend to start with style factors and add macro factors; equally they start with equities and look to extend into fixed income and multi asset applications.



Fig 19. Active, passive, and factor portfolio allocations (score/10) (%)

Factor
Passive
Active



Factor allocations are becoming an increasingly important part of portfolios. For those asset owners who have adopted factor investing, it is no longer an experimental allocation. Figure 19 provides credence to the view that amongst adopters, factor investing is becoming a third strategic allocation alongside traditional active and passive (market cap weighted) strategies. While still usually the smallest style component, factor allocations are visibly significant in all segments and regions, and rivals passive in APAC institutional and North American retail.

Sample: 38, 18, 20 (institutional: Europe, APAC, North America), 80, 9, 25 (wholesale, Europe, APAC, North America)

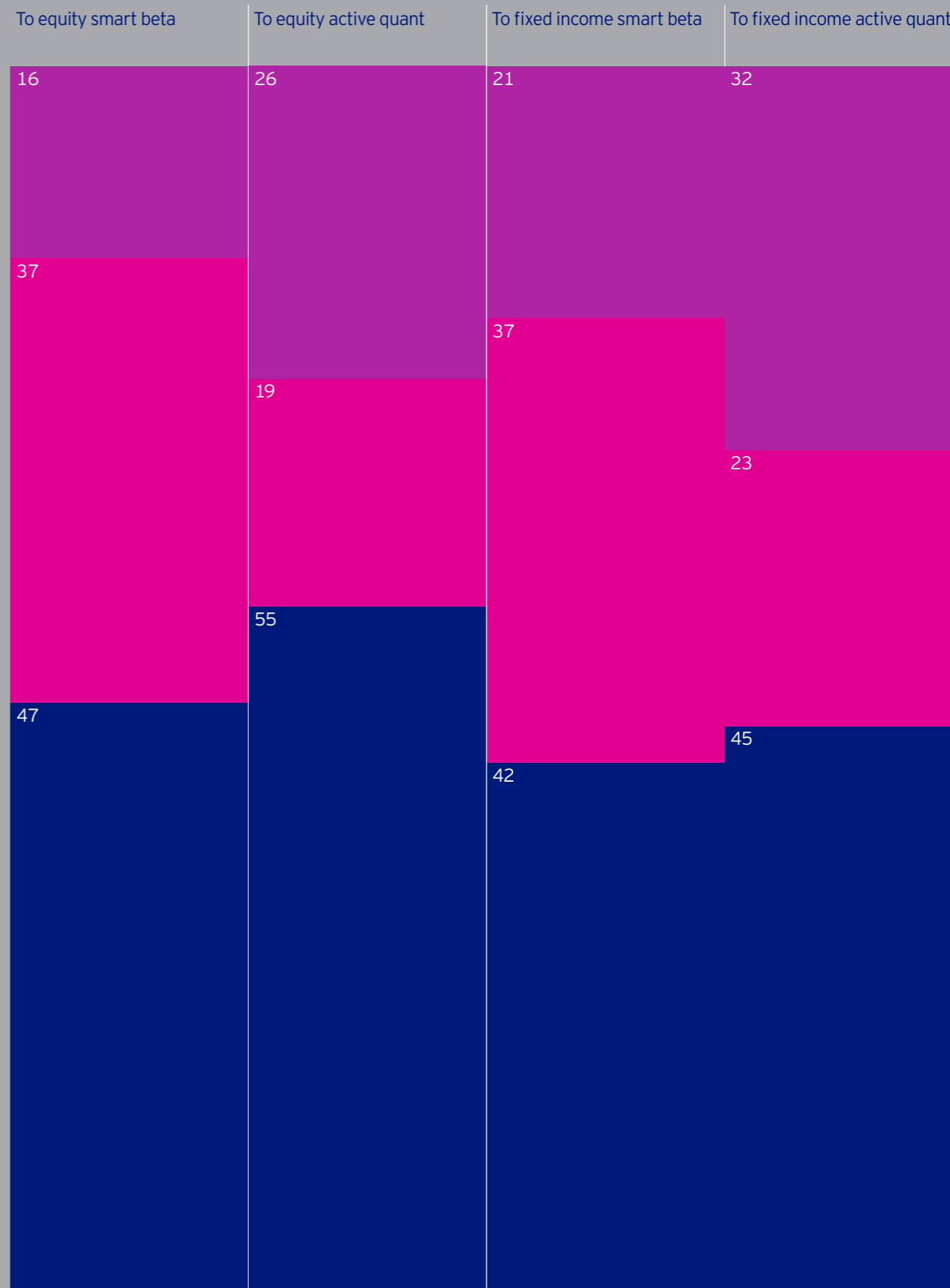
The origin of this process is indicated in how asset owners fund their allocations to factor strategies. Funding may be sourced from existing active or passive allocations if the asset owner is looking to replace an existing strategy, or has no net cashflow, or from new cashflow if that is available.

To date, as figure 20 indicates, there has been a mix of sources, but they are weighted towards funding from active strategies. However, it is a nuanced picture with variations between strategy type and region:

- For new smart beta type allocations, passive allocations are almost as important a source of funding as active allocations.
- For active quant type allocations, new cashflow is a significant secondary source of funding in addition to active allocations, especially in Europe and APAC.

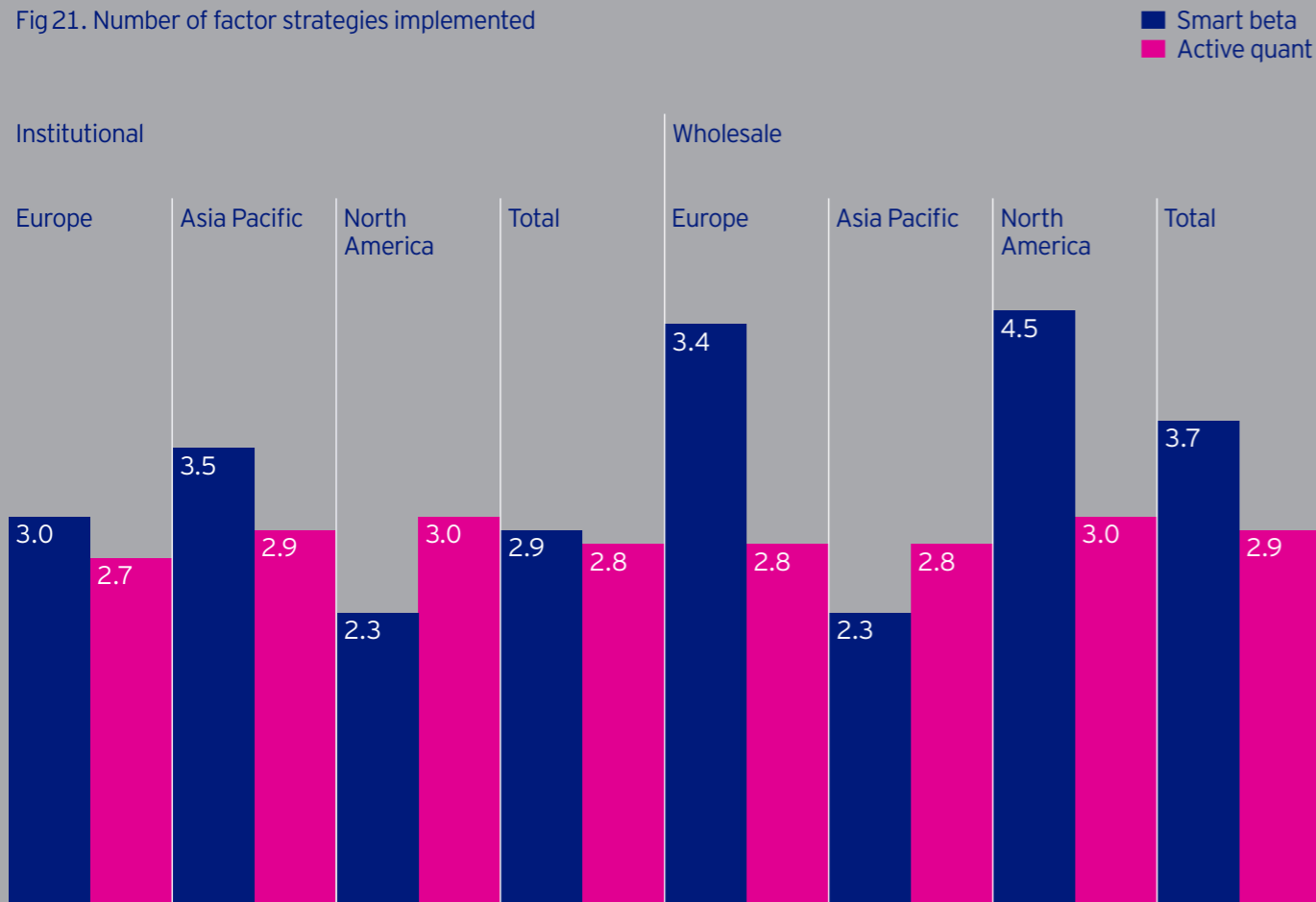
Fig 20. Funding sources by factor strategy destination (%)

■ New capital flows
■ Passive
■ Active



Sample: 237 (equity smart beta), 52 (fixed income smart beta), 154 (equity active quant), 56 (fixed income active quant)

Fig 21. Number of factor strategies implemented



Sample: 57, 38, 42 (institutional: Europe, APAC, North America), 104, 17, 40 (wholesale: Europe, APAC, North America)

Allocations are expanding, both in percentage terms, but also in the sense that while an asset owner often commences their factor journey with a single strategy, it is uncommon for them to stop there. Figure 21 shows that both institutional and wholesale investors have gone on to implement from two to four strategies on average.

Some regional and segment differences are apparent here. Institutional APAC investors report the highest number of factor strategies deployed, although European investors are generally more advanced in their use of factor strategies. Europe's experience is more apparent amongst wholesale investors, although North America usage is boosted by the widespread ability of smart beta ETFs.

Despite the broadening of uptake, factor allocations remain relatively small proportions of the asset classes they are being applied to. As figure 22 highlights, in the vast majority of cases (looking at equities and fixed income), allocations to factor strategies remain in the 0%-20% range. This means that even for factor adopters, most still have over 80% of their equity and fixed income allocations in traditional active and/or passive strategies.

Fig 22. Factor allocations (%)



Sample: 105 (institutional), 134 (wholesale)

Factors and their portfolio applications

When investors consider introducing factor strategies to their portfolio, they typically consider what types of factor exposures they consciously want to introduce or add. Predominantly these are style factors, as indicated in figure 23, although around a third of institutions and a quarter of wholesale investors also consider macro factors. Few consider macro factors in isolation.

Drilling down into each category of factors, within style factors in figure 24, value continues to be the most commonly utilised factor in portfolios and is particularly ubiquitous in institutional portfolios - which is notable given the extended underperformance of equity value strategies in recent years.

The other key style factors (defined on p47) are low volatility, momentum, size, quality, and dividend yield for wholesale. There is then a large gap to niche usage of other style factors.

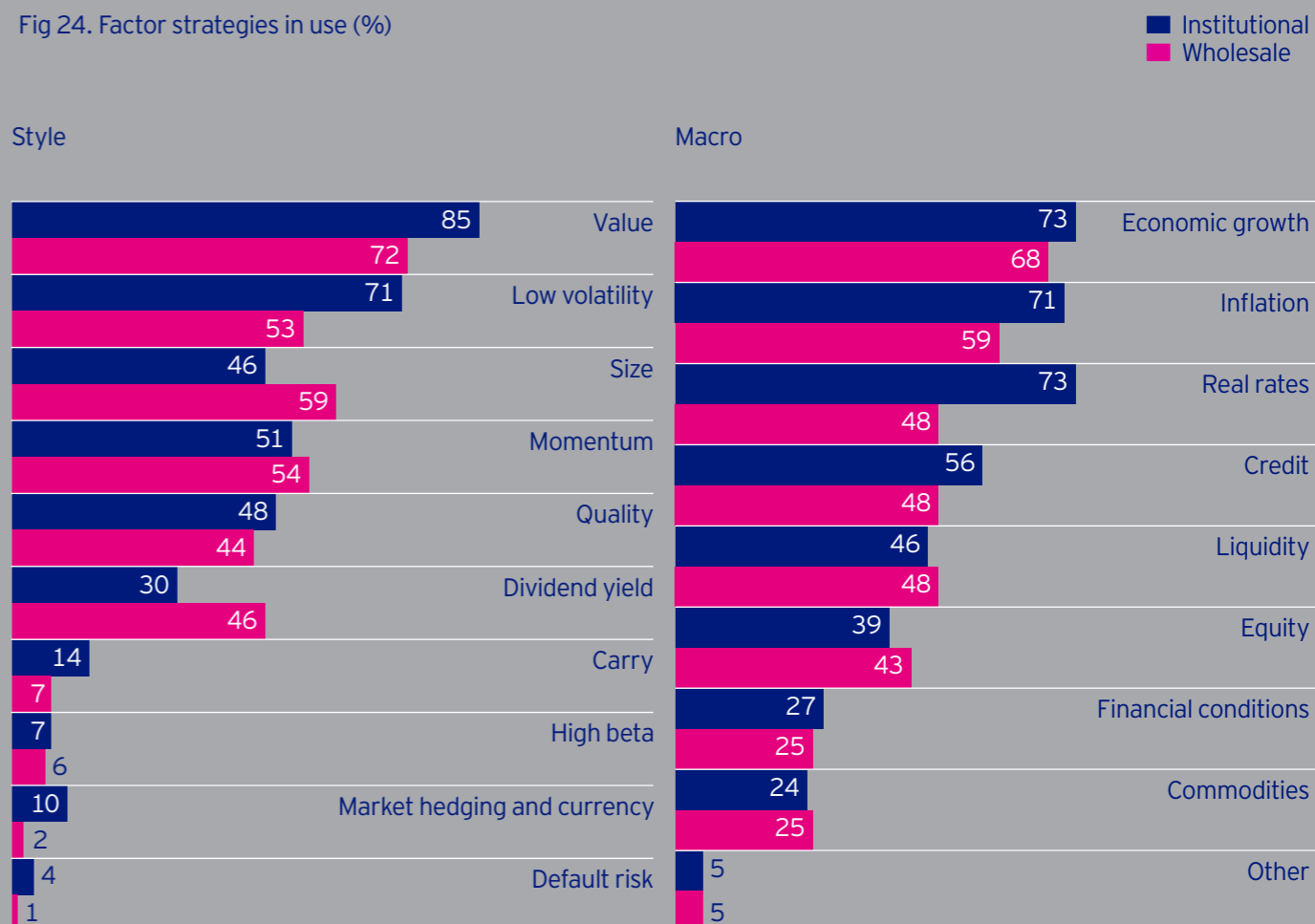
Within the macro factors typically used in conjunction with style factors, there are three leading factors - economic growth, inflation, and real rates for institutions. In addition to being investment factors in their own right, these can be particularly useful in helping institutional investors hedge specific risks including inflation and real rates which can have a significant impact on the value of liabilities such as defined benefit pensions.

Fig 23. Types of factors considered by segment (%)



Sample: 124 (institutional), 138 (wholesale)

Fig 24. Factor strategies in use (%)



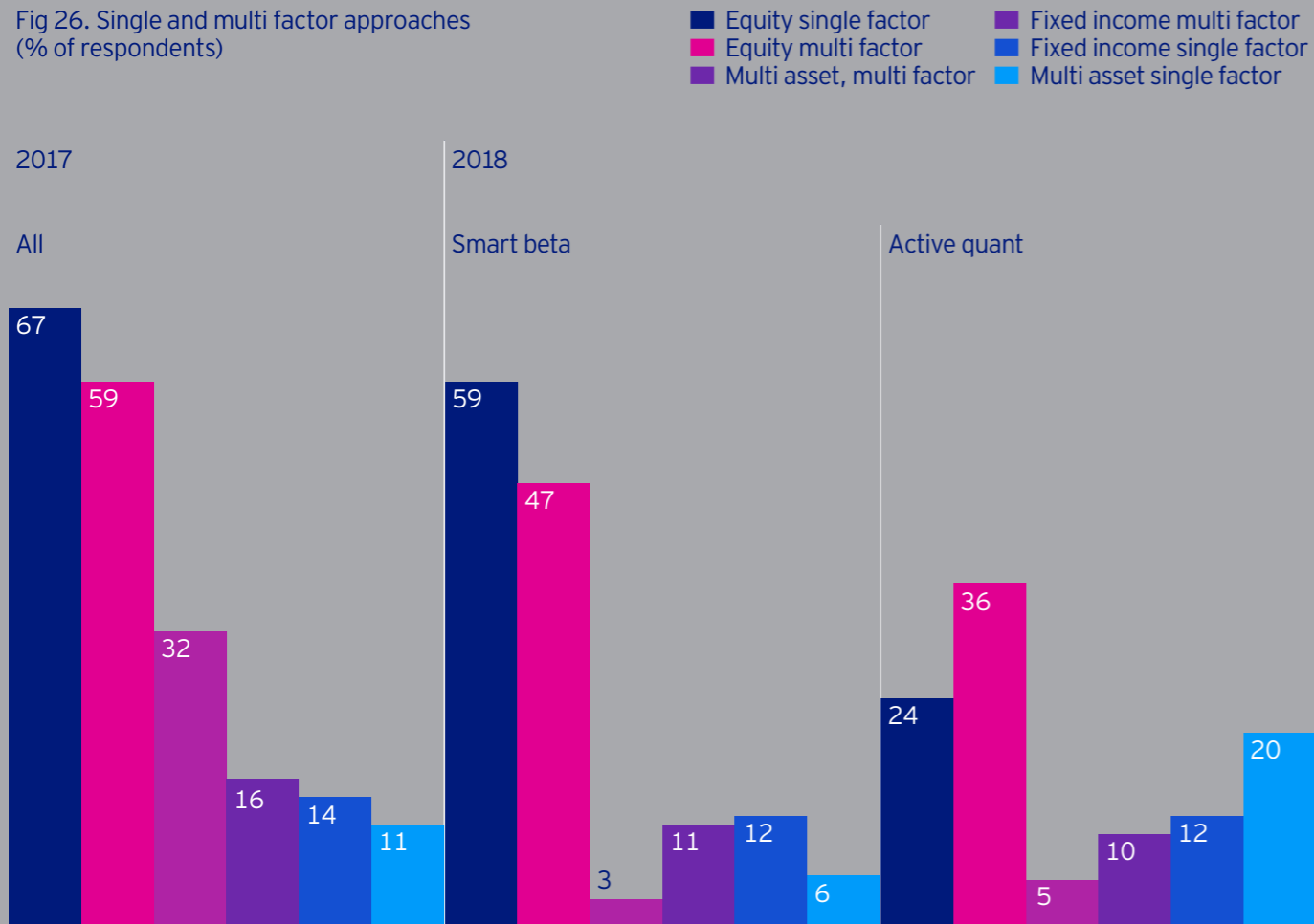
Sample: 123, 137 (style: institutional, wholesale), 41, 44 (macro: institutional, wholesale)

Fig 25. Factors in use over time (%)



Sample: 260 (2018), 98 (2017), 56 (2016)

Fig 26. Single and multi factor approaches (% of respondents)



Sample: 250 (2018), 97 (2017)

There appear to have been some material changes in the use of major factors in the past few years as shown in figure 25.

Value has retained its place as one of the leading factors with broad usage. However there have been significant reductions in the appearance of low volatility, momentum, and quality across the samples. It is likely that part of this is due to substantial changes in sample size and composition, so the comparisons between different years should be made with care.

When it comes to applying a single or multi factor approach, figure 26 shows that equity single factors are the most common approach (and partly reflecting that it is the best researched and easiest to implement), closely followed by equity multi factor. In active quant strategies, equity multifactor is considerably more important. Some distance behind are multi asset approaches, and fixed income using both single and multi factor.

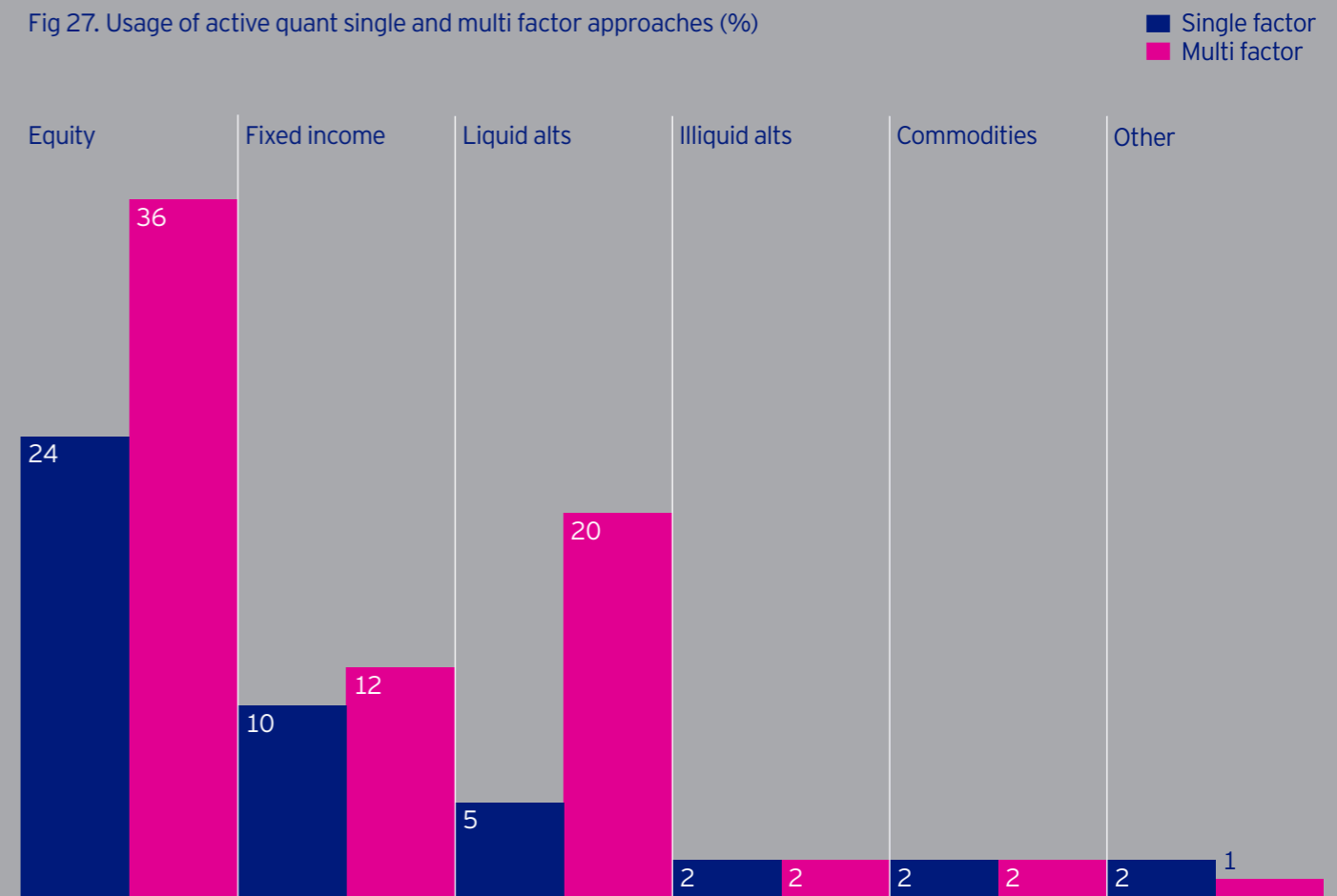
It is evident that the application of factors within active quant presents a very different view of usage compared to smart beta. Figure 27 shows that equities is still the most important application but it is no longer dominant. Fixed income has a similar usage picture to smart beta, but the importance of active quant multi factor applications is evident. Notably this profile is similar for both institutional and wholesale investors.

The reasoning which pushes investors to prefer single or multi factor approaches is relatively clear and rational, as depicted in figure 28. For institutions, single factor approaches are driven by the desire to reduce or minimise complexity and to keep costs low. This is particularly relevant for newer factor investors and smaller institutions with limited internal resources.

Institutions favouring multi factor approaches have different motivations. Multi factor permits more sophisticated strategies and the drivers reflect this - control of risk, factor tilting, and enhancement of performance are much more important than costs. These strategies tend in any event to be applied by larger investors which have significant scale and lower cost ratios.

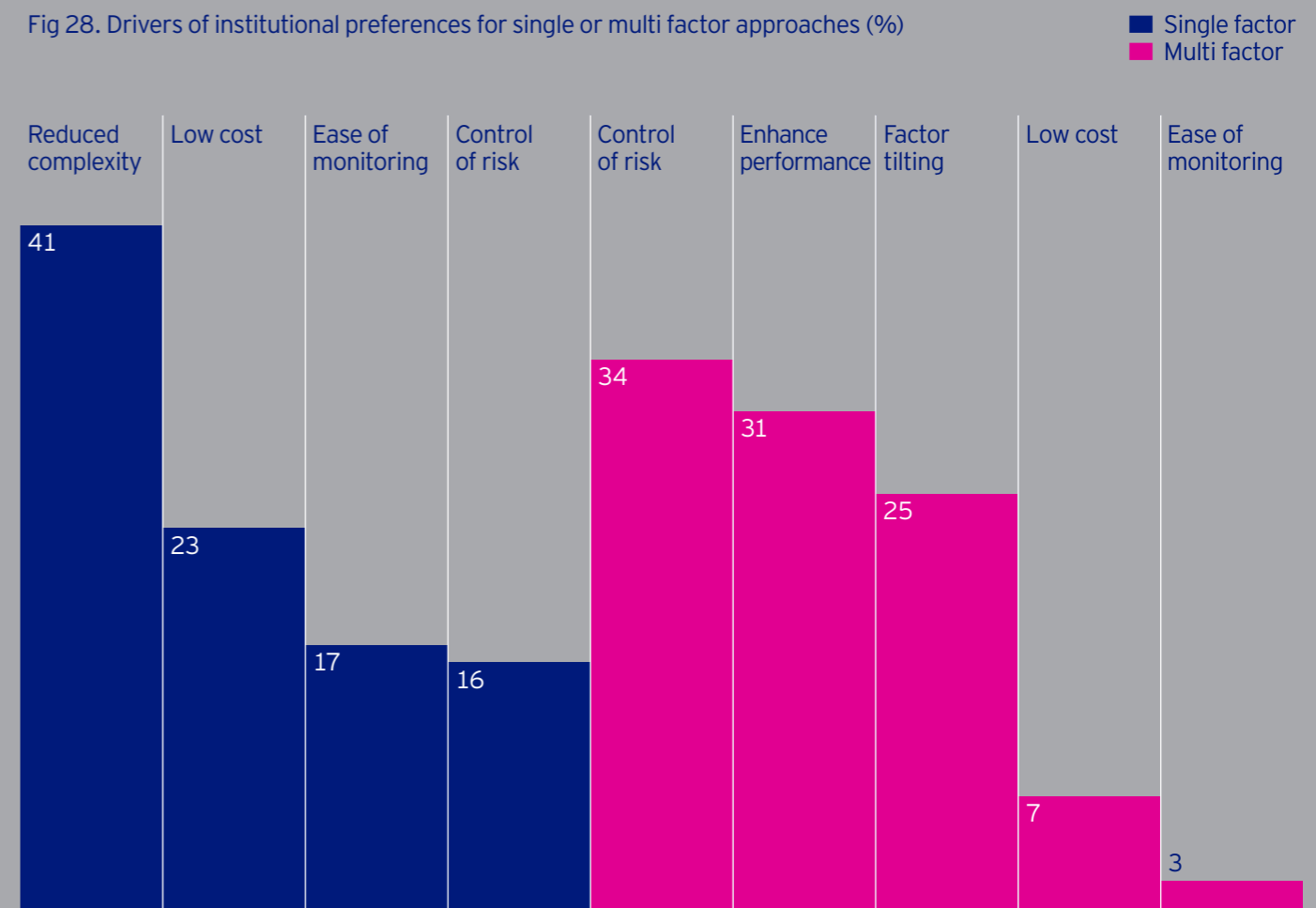
For wholesale investors, the drivers are very similar, other than that lower costs are an even stronger driver for single factor usage.

Fig 27. Usage of active quant single and multi factor approaches (%)



Sample: 250

Fig 28. Drivers of institutional preferences for single or multi factor approaches (%)



Sample: 64 (single factor), 74 (multi factor)

Fig 29. Belief in application of factors to fixed income (%)



Sample: 137 (institutional), 147 (wholesale)

Fig 30. Specific factors which can be applied to fixed income (%)



Sample: 47 (institutional), 71 (wholesale)

Potential for extending usage is significant

The scope for further expansion of factor applications is evident by considering the gap between the current state of investor beliefs of how factor investing theory can be applied.

As noted already, there is now broad acceptance of the application of factors within equity portfolios, so the question within equities is now more one of future penetration than application. For other asset classes and the portfolio as a whole, much less research has been performed and track records of performance are shorter where they exist at all, so questions of application remain.

The information situation is improving over time and within fixed income, there is now a reasonably high level of confidence that factors can also be applied in that asset class. Slightly more than half of both institutional and wholesale investors believe that factors can be applied to fixed income in full or in part (figure 29), and only ~10% have concluded that this is not possible. However a large minority - around a third of each segment - are still unsure. There is still a considerable amount of work to be done to educate the market.

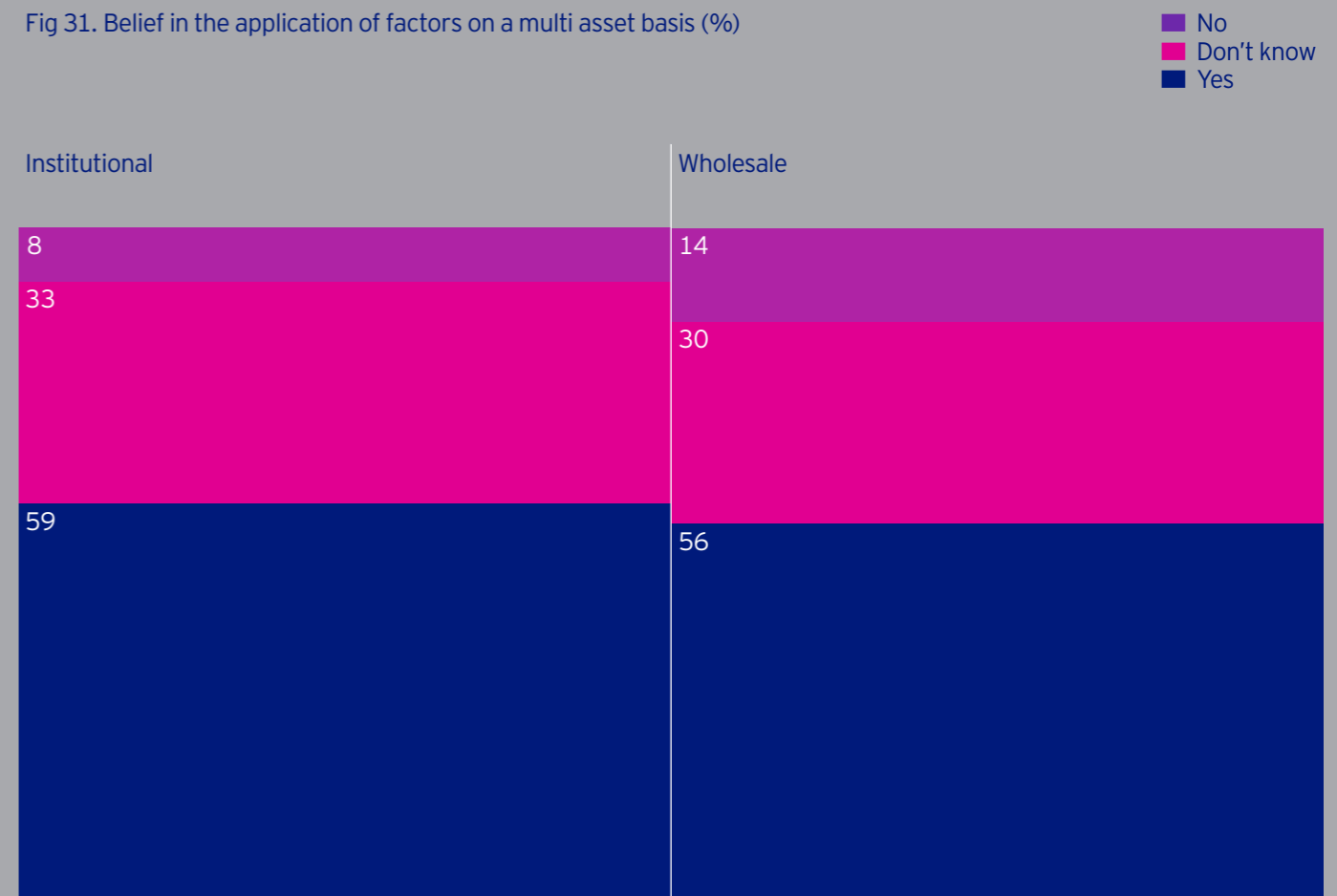
The types of factors seen to be most applicable to fixed income are all style factors, as outlined in figure 30. This set of factors with significant support is small, and the level of confidence is only notably high in the case of institutions and value. Otherwise confidence levels could still only be described as moderate.

The picture is similar for multi asset applications, at least in terms of belief of the applicability of factor investing. As figure 31 shows, the level of belief of the application of factors on a multi asset basis is ~60%, with ~10% opposed and ~30% undecided. This can be potentially seen as a multi asset strategy within a diversified portfolio, or across the diversified portfolio as a whole (which would have substantial implications).

However, within the believers there is a materially stronger view about which specific factors are relevant. Compared to fixed income, there are a larger set of factors seen as relevant, more investors believe they can be applied, and a macro factor is included alongside the style factors. This points to the potential to apply factors at scale as an overall portfolio solution.

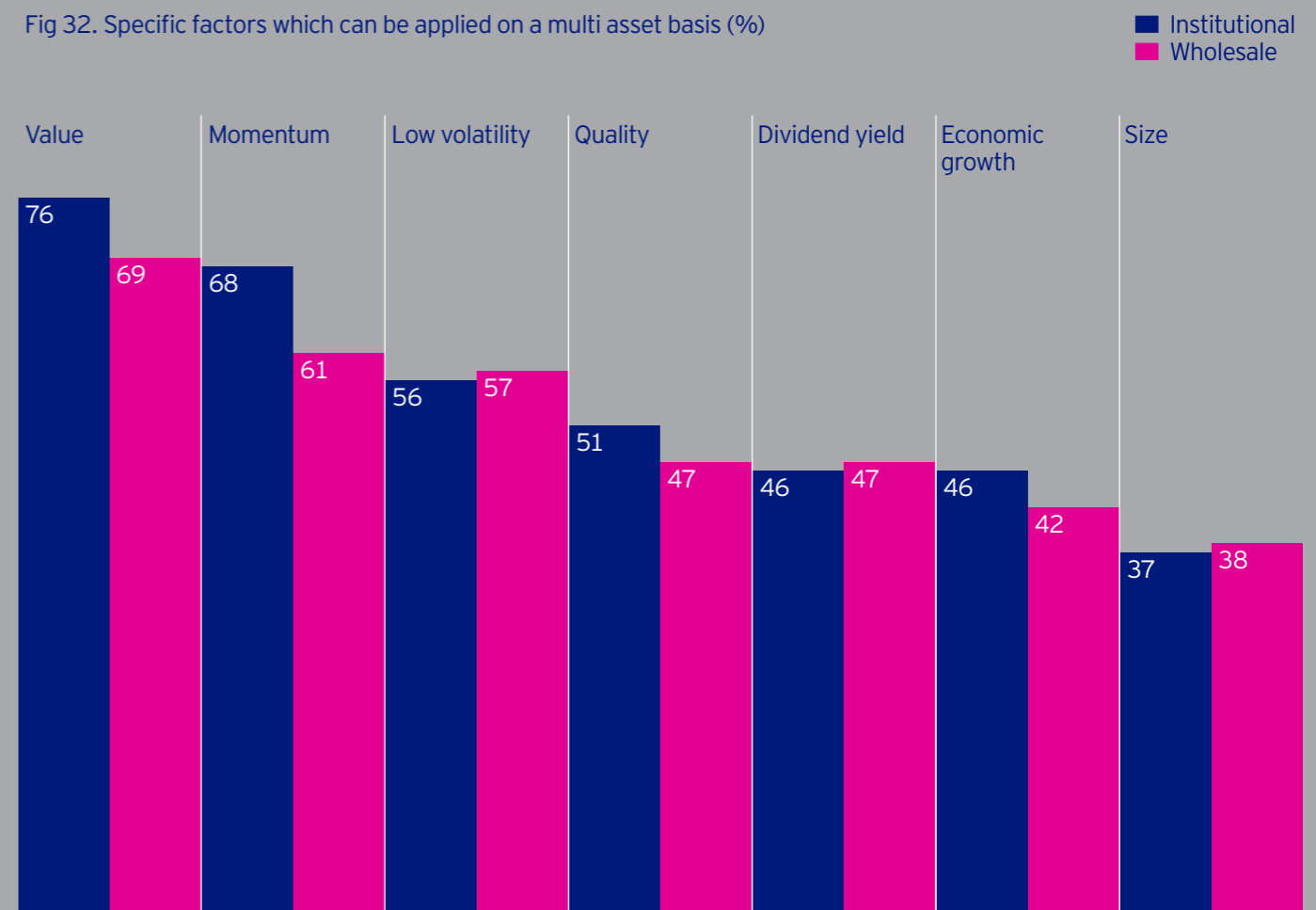
This sense of a big gap persisting between current and potential usage of factor strategies is borne out in figure 33 by the large proportions of factor users who are not yet considering them outside of equities.

Fig 31. Belief in the application of factors on a multi asset basis (%)



Sample: 129 (institutional), 145 (wholesale)

Fig 32. Specific factors which can be applied on a multi asset basis (%)

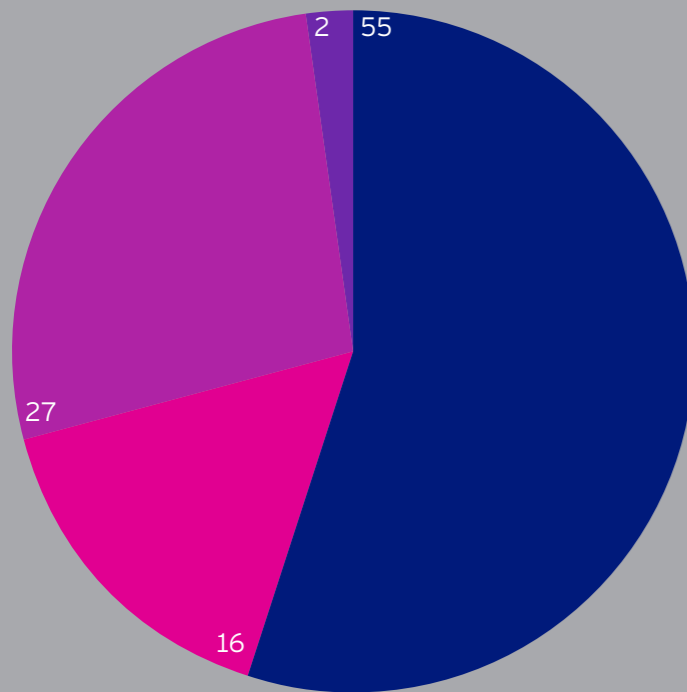


Sample: 129 (institutional), 145 (wholesale)

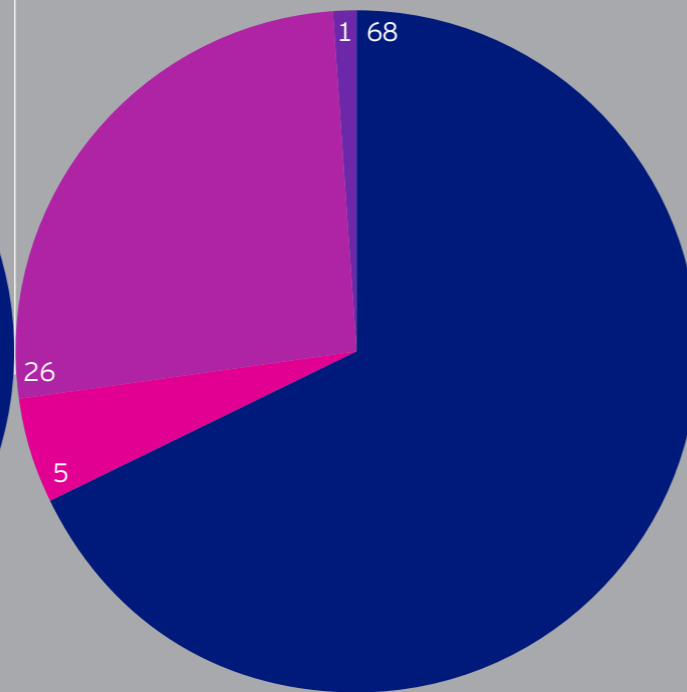
Fig 33. Use of factors in fixed income and multi asset portfolios (%)

- Have not considered
- Considering adding
- Currently using
- Extending use

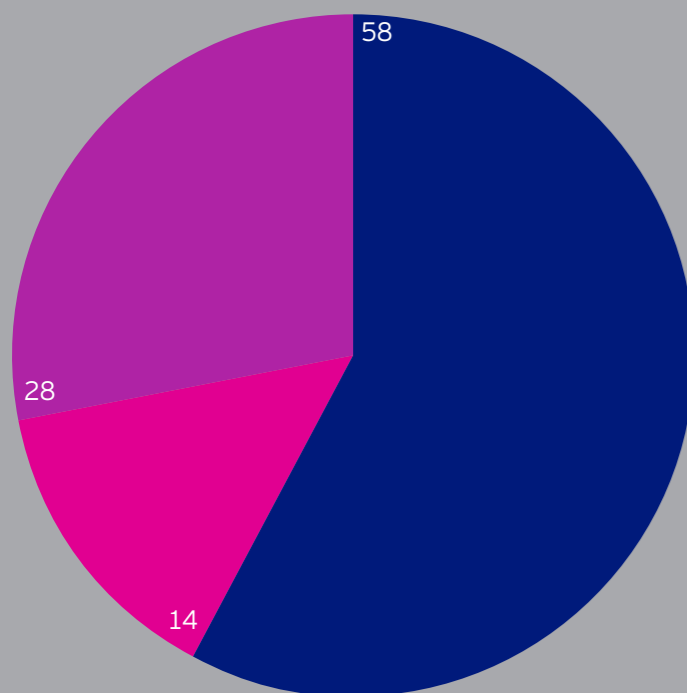
Fixed income institutional



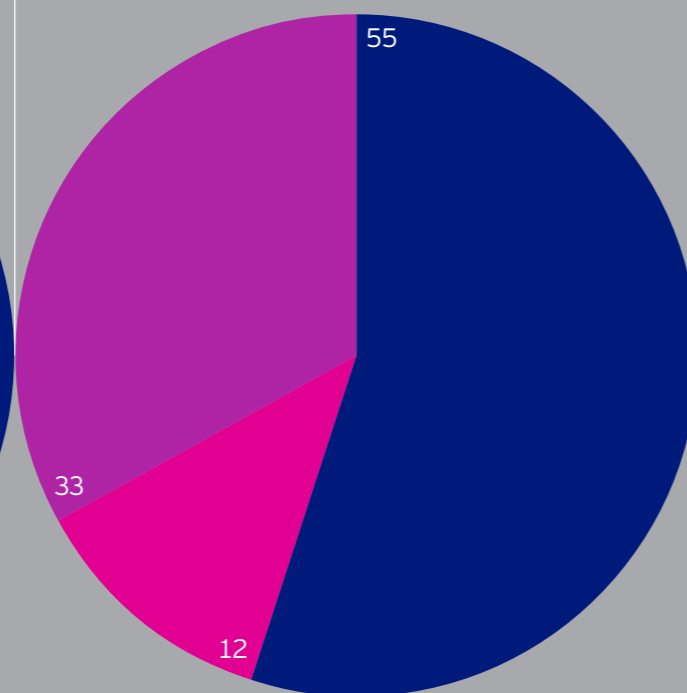
Fixed income wholesale



Multi asset institutional



Multi asset wholesale



Sample: 122/136 (fixed income: institutional/wholesale) 105/129 (multi asset: institutional/wholesale)

This can also be compared to the proportions of investors who believe that factors can be applied for fixed income and on a multi asset basis. Figure 33 above shows that ~60% of factor investors share these beliefs, yet only around half that figure is currently doing so in either case. Even ignoring all those who are undecided at this stage, this demonstrates the potential for a doubling of fixed income and multi asset adoption, just amongst existing factor users.

Sophisticated factor users call-out

The self-assessed more sophisticated users of factor investing have larger and broader application of factor strategies within their portfolios. The gaining of factor knowledge and capability tends to see initial adopters increase and extend its use, pointing to favourable experience.

Figure 34 shows that amongst institutional factor users, the more sophisticated segment has nearly double the average allocation to factor strategies of the less sophisticated segment, at nearly 20%.

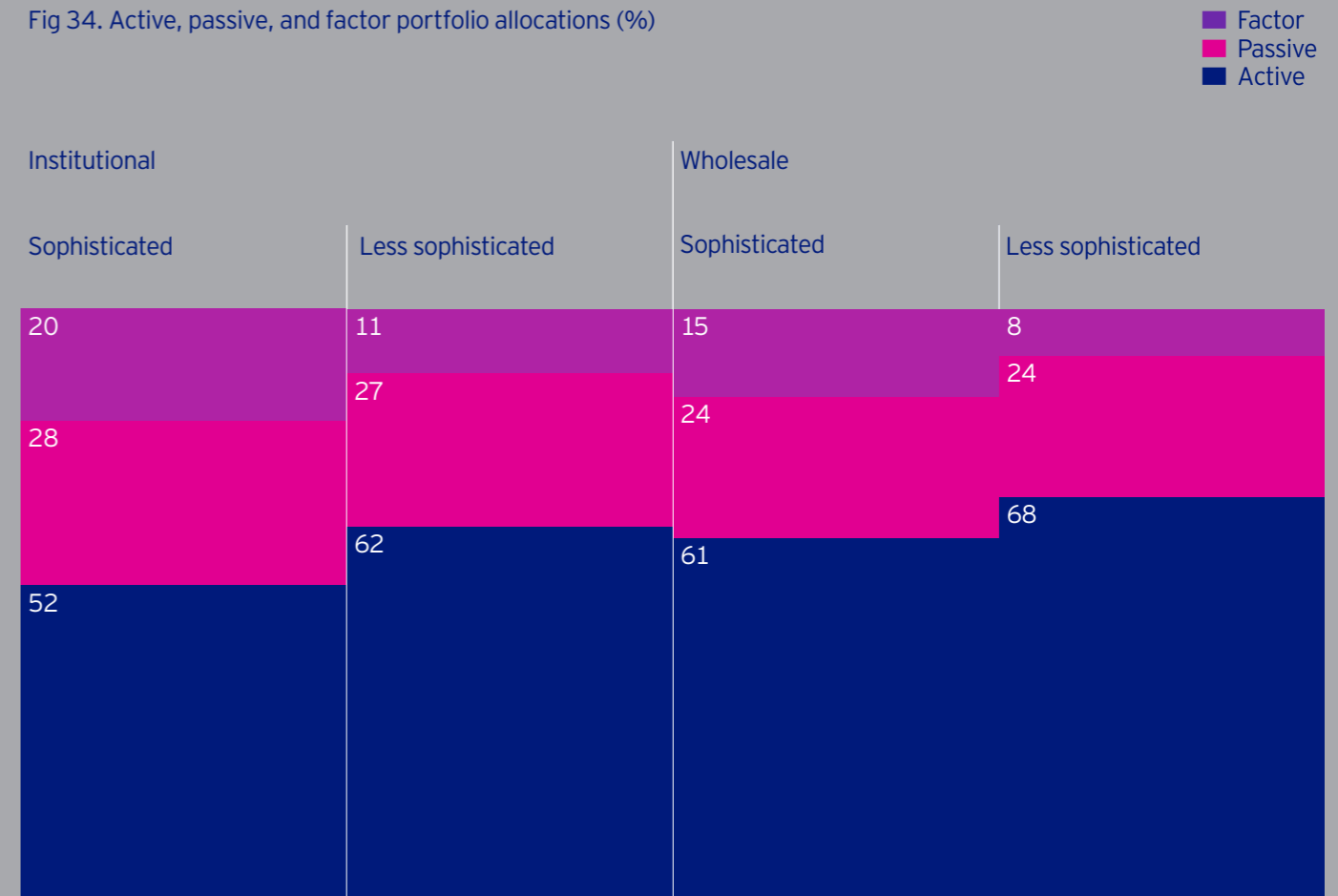
This is also evident amongst wholesale investors at a lower level, where the more sophisticated users have average factor allocations of 15%.

Also notable amongst more sophisticated factor investors is the degree to which their factor allocations are approaching their allocations to traditional market-cap passive allocations. For both institutional and wholesale, the average allocation gap is now down to ~9% in each case. Given their intentions to increase allocations further in coming years, this creates the potential that average factor allocations may eventually exceed passive allocations.

The higher overall allocations to factor strategies are reflected in several different ways. Firstly, figure 35 shows that more sophisticated users tend to increase the number of factor strategies they use within a portfolio, rather than simply adding to existing strategies.

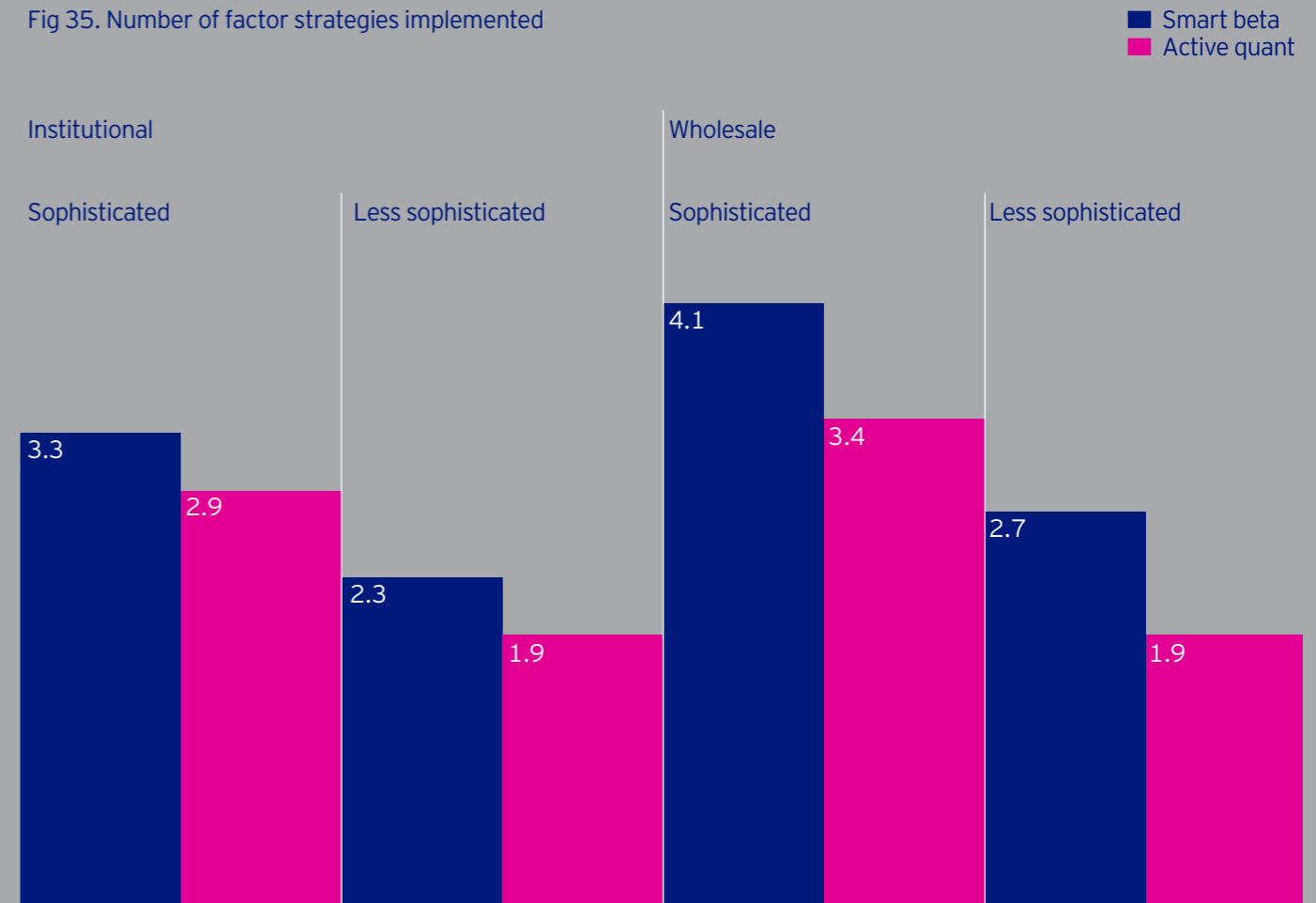
Amongst institutional investors, the more sophisticated factor users on average deploy three factor strategies over the less experienced at two, whether for smart beta or active quant product types. For wholesale investors, the difference is even larger at three to four strategies for the more sophisticated vs two to three for the less sophisticated.

Fig 34. Active, passive, and factor portfolio allocations (%)



Sample: 76/62 (institutional: sophisticated/less sophisticated) 70/82 (wholesale: sophisticated/less sophisticated)

Fig 35. Number of factor strategies implemented



Sample: 76/62 (institutional: sophisticated/less sophisticated) 70/82 (wholesale: sophisticated/less sophisticated) 76

Fig 36. Types of factors considered by segment and sophistication (%)



Sample: 64/57 (institutional: sophisticated/less), 66/70 (wholesale: sophisticated/less)

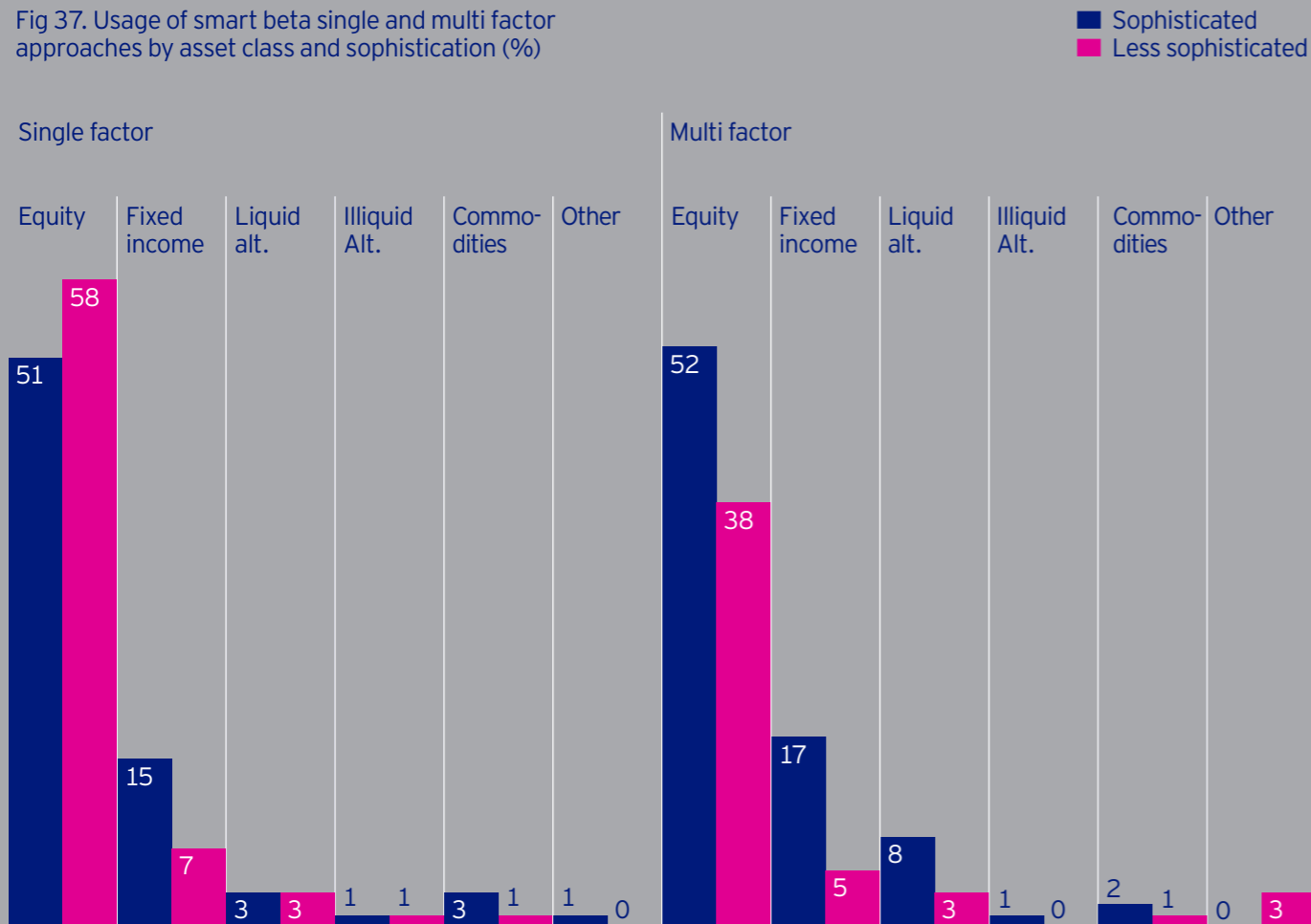
In addition, more sophisticated factor users are more likely to consider a broader spread of factors, as shown in figure 36.

For both institutional and wholesale factor investors, more sophisticated users are more likely to have moved on from using style factors only to using a combination of style and macro factors, as their understanding of how factors can be applied improve.

And finally, not only are sophisticated factors users more likely to have commenced using factors in asset classes beyond equities, figure 37 shows that they are also more likely have moved from single factor to multi factor approaches.

This is the case across the board in terms of asset classes, but is particularly evident in the case of fixed income, and the early allocations of factor investing to alternatives.

Fig 37. Usage of smart beta single and multi factor approaches by asset class and sophistication (%)



Sample: 128, 117 (sophisticated/less sophisticated)

How did your factor journey start?

We have a large exposure to Australian shares, which is a relatively small capital market. As we are a large fund, this presented problems around growth and capacity. We need equities strategies that work in mid-caps and small-caps, recognising that capacity is a particular problem in those parts of the market (and we believe they are important for outperformance). So we looked at factors as a potential solution.

What did the process of factor adoption look like?

We introduced factor investing into Australian equity allocations in 2017 after three years of research and development. So we are still relatively new to it, and we are running most of the factor strategies internally, together with a couple of external asset managers for specific strategies.

Are you likely to expand your use of factors beyond domestic equities?

We intend to expand factor strategies into our international equity portfolios. This may see us hire and/or partner with external asset managers given our lack of experience in the idiosyncrasies of equity markets outside of those prevalent in Australia. We have low levels of fixed income in our portfolio and currently have no plans to apply factor-based strategies there.

What has been your experience with the performance of your factor strategies to date?

Our back-testing leads us to expect risk-adjusted performance, which is very different to the fundamental active managers we use. Our factor track record is too short to be meaningful, but so far, half the factors used have added value to relative performance while half have subtracted (however it is a 60/40 strike rate at a stock level). Volatility has been similar to active fundamental managers, if not slightly less.

What is your factor approach?

We see our approach as multi factor that is somewhere between the widespread definitions of smart beta and active quant. It is objective-driven systematic investing rather than smart beta or active quant per se.

What challenges have been encountered?

The biggest hurdle was demonstrating how what we wanted to do was better than what we could buy readily in the market from a global asset manager. We concluded that we had to build an operational platform that was better than those utilised by external asset managers, and accordingly that we had to make quality hires of talent that were as good or better than those employed by external managers. Then we had to demonstrate how we would build scale so that we would deliver results and be able to compensate the investment professionals. That process took three years.

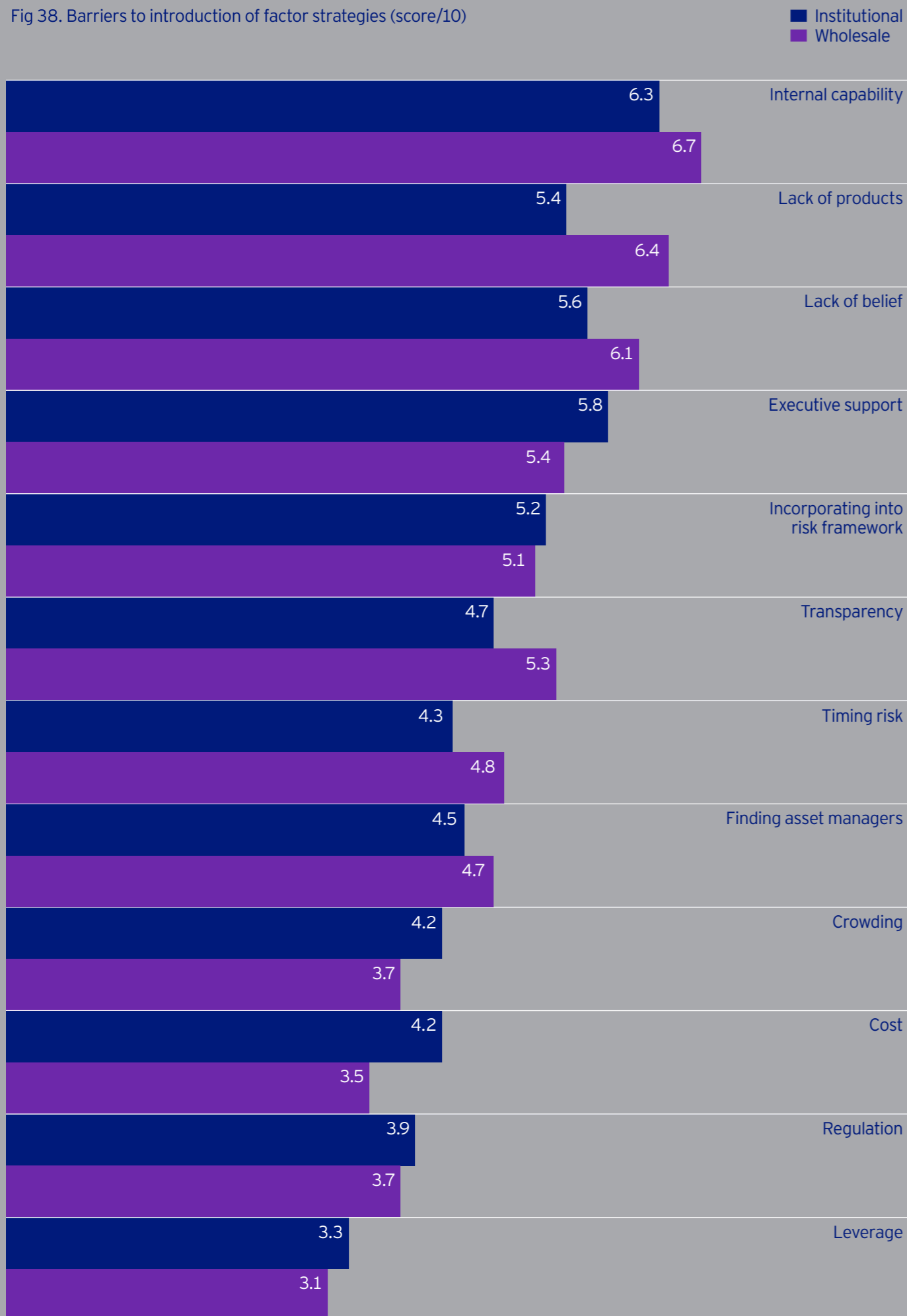
Theme 4

Implementation barriers are falling away.

- Barriers to adoption of factor investing, which have been high in previous years, are falling away rapidly, partly due to investment in factor capabilities.
- Concerns about some longstanding factor issues such as crowding have ebbed.
- ETFs and other ETPs are preferred for implementation (including by institutions) and investors often prefer a single or handful of asset manager relationships.



Fig 38. Barriers to introduction of factor strategies (score/10)



Sample: 131/147 (institutional/wholesale). Score/10 where 10 is most significant barrier

The prospective new factor investor has always faced a series of barriers to implementation, which we have tracked since 2016. Those barriers persist but are falling - sometimes significantly - in important areas.

Figure 38 outlines the current set and height of factor adoption barriers. Beyond terminology (discussed in theme 1), the most significant barrier is (and has always been) internal capability. This is in itself important because it demonstrates that investors see factor investing as a distinct competency requiring specific rather than generalist expertise from elsewhere in the internal team. The development of internal capability is therefore an essential pre-requisite.

It should be noted that the development of internal capability says little or nothing about whether the asset owner intends to manage internal factor pools or do their own factor research; where an asset owner appoints external managers to manage mandates, or purchases pooled factor products, capability still needs to be built in a range of areas including research, investment strategy, risk management, and within the asset class(es) where the strategies will be applied.

Other key barriers can be grouped into several key areas:

- Belief in factor theory within the investment team - there needs to be broad support across at least the equities and portfolio strategy teams that factor theory is valid.
- Asset manager issues - finding the right asset manager, finding the right product, and gaining sufficient transparency.
- Internal organisational issues - stakeholder support at multiple levels (management, committee and board), integration with existing portfolio processes such as risk management and leverage.
- External issues - including national regulation which limits the scope of some asset owners.

Unsurprisingly barriers are highest for the new factor investor, but they do fall away as experience is gained and capability developed.

Barriers have dropped since 2016

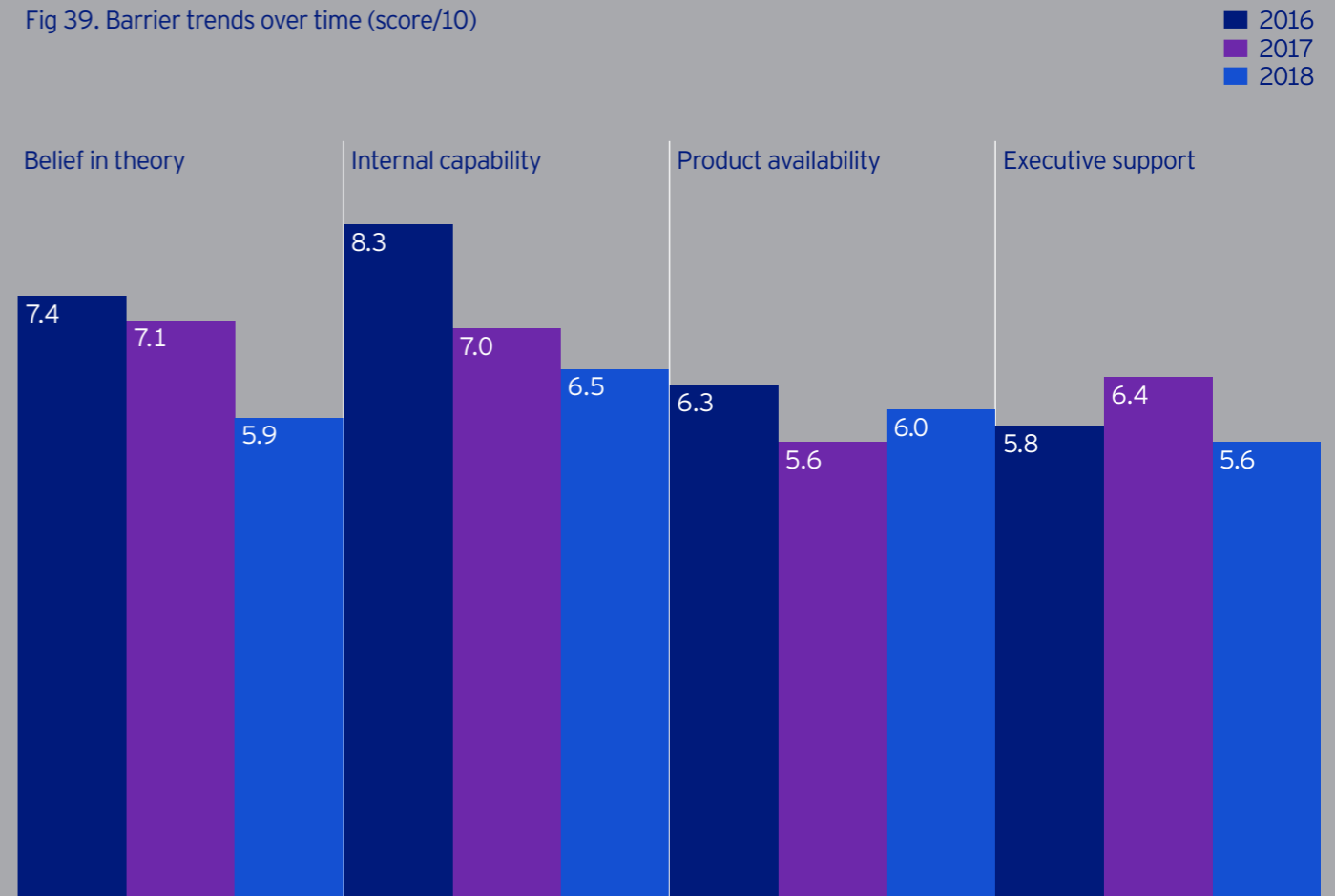
A key set of barriers has been tracked which allows a comparison of how barriers have changed since 2016. Even allowing for some impact due to sample change, figure 39 demonstrates that there have been some significant declines in barriers.

These are most obvious in terms of the internal investment team. The increased availability and awareness of factor research has seen lack of belief in factor theory barrier score drop by 1.5 points in just two years; while the results of factor capability builds within asset owners also appear to be evident, with internal capability barrier scores dropping 1.8 points. This means it is now the biggest barrier to overcome, but is no longer the mountain it was in 2016. The third leg of the falling internal investment barriers relates to the need to gain the approval of internal stakeholders. This has improved only slightly over two years, which supports anecdotal feedback that stakeholder education and approvals remain a significant issue on the road to factor implementation.

In terms of external barriers, it is notable that there has also been little improvement in product availability as a barrier, indicating that for all the factor product development of recent years, the market is still demanding high quality new products.

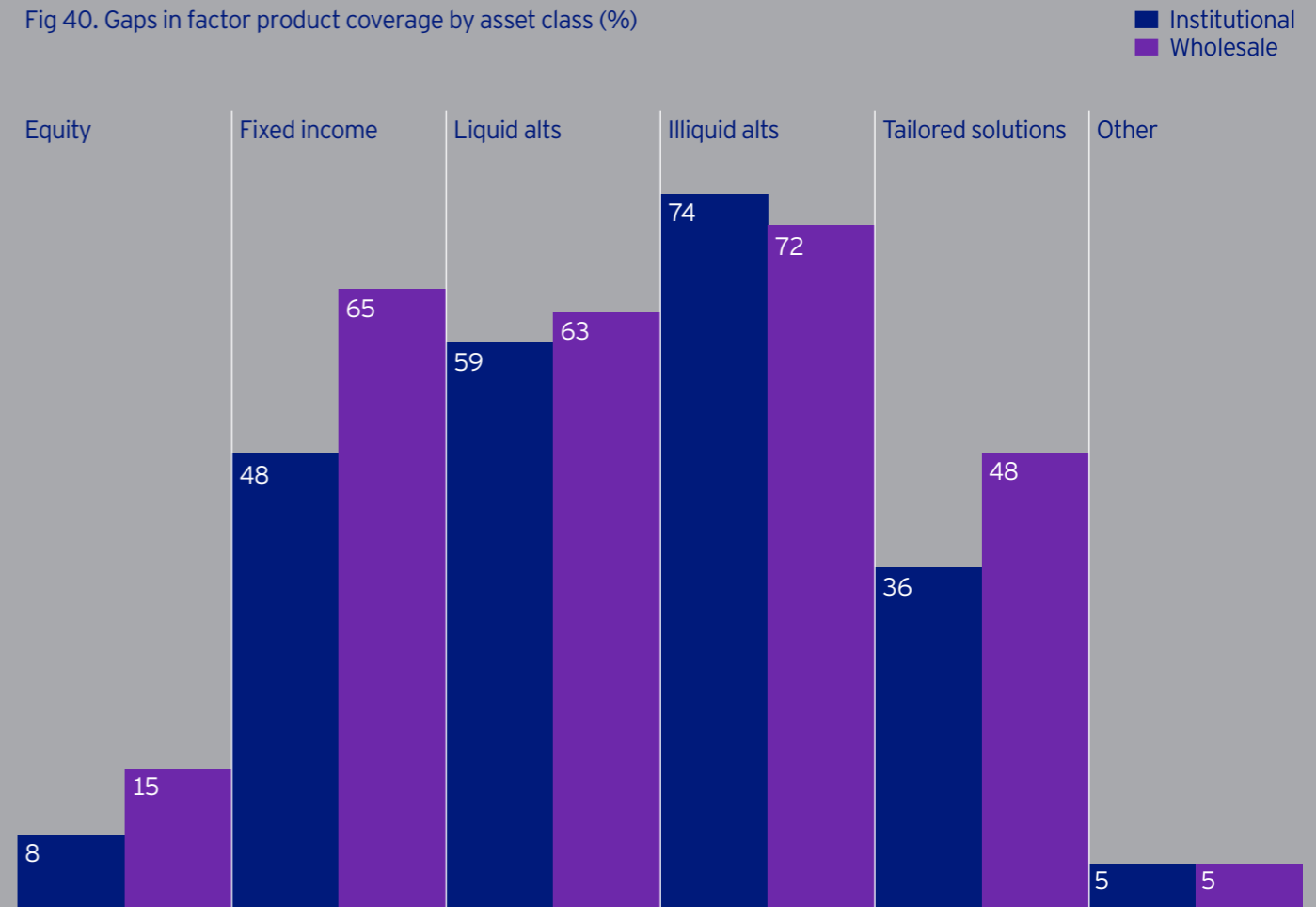
The idea of a shortage of factor products may seem unlikely, but as figure 40 clearly shows, investors see only equities as being well covered. Even fixed income is seen as sparsely covered, although the picture for institutions is better than for wholesale investors. In the newer and more innovative applications of factor investing, the product landscape is relatively empty.

Fig 39. Barrier trends over time (score/10)



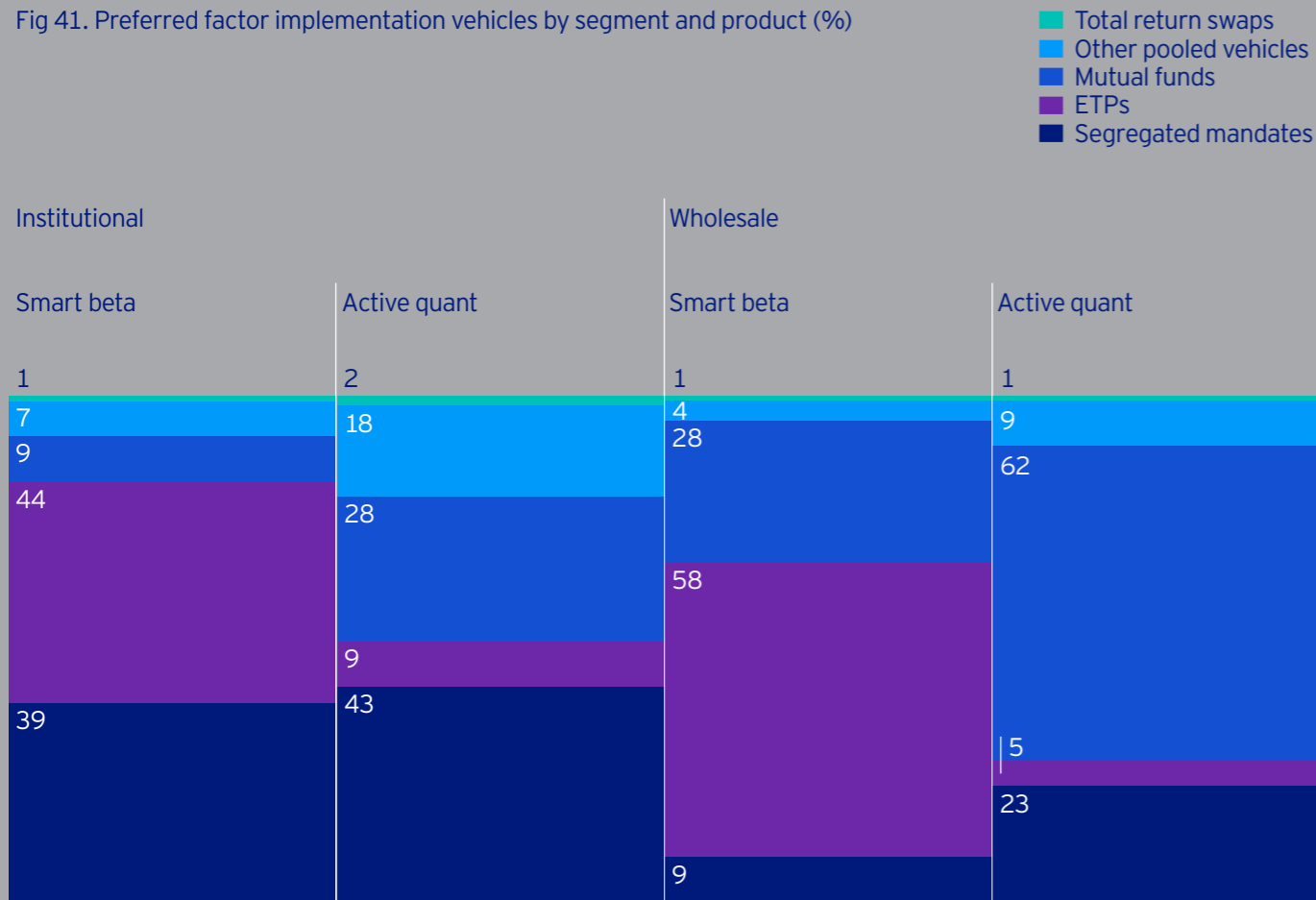
Sample: 278 (2018), 101 (2017), 53 (2016). Score/10 where 10 is most significant barrier

Fig 40. Gaps in factor product coverage by asset class (%)



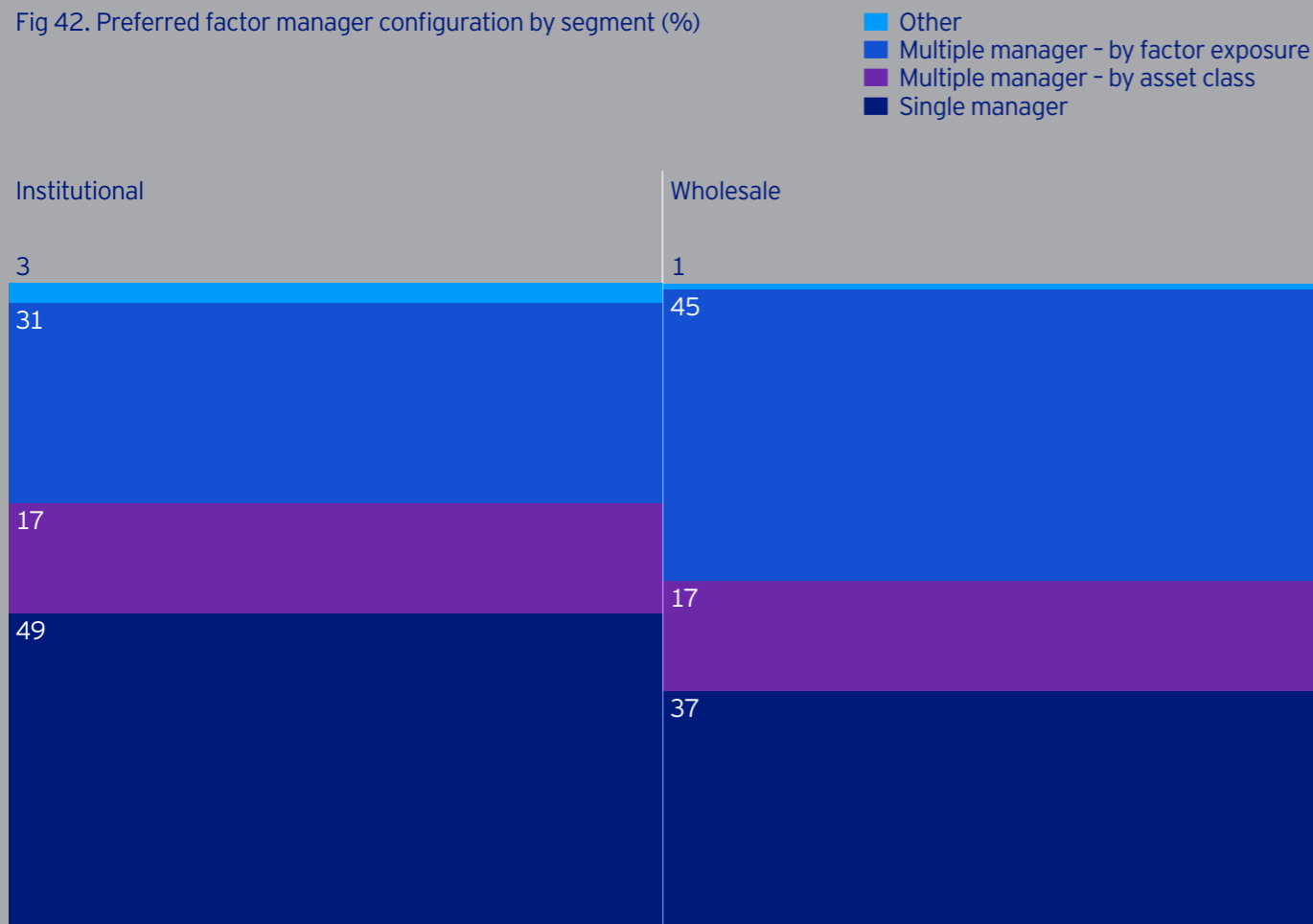
Sample: 80/110 (institutional/wholesale)

Fig 41. Preferred factor implementation vehicles by segment and product (%)



Sample: 202/145 (institutional/wholesale)

Fig 42. Preferred factor manager configuration by segment (%)



Sample: 94/132 (institutional/wholesale)

Vehicles, managers, and post-implementation needs

We asked investors how they execute their factor strategies in terms of investment vehicles. When it comes to factor investing, investors have a relatively wide range of vehicles to choose from, as figure 41 outlines.

Factor is notable as a category because mandates are not the dominant vehicle in the institutional segment, as they are in most other public security categories. At 40% share of institutional implementation it's still a major avenue of course, but there are other serious options, the biggest of which are exchange traded products (ETPs) including exchange-traded funds (ETFs) and exchange-traded notes (ETNs). This has the lead share of smart beta type implementation, even with institutions. Mutual funds and other pooled vehicles also play an important institutional role, especially for active quant implementation.

Wholesale investors often do not have the operating model or scale needed for mandates, although it does occur. They are particularly reliant on pooled products. ETFs and ETNs dominate smart beta implementation, and mutual funds dominate active quant implementation.

When it comes to selecting the manager(s) of an asset owner's preferred implementation vehicle, there is a significant constituency for a single strategic manager relationship, which figure 42 makes clear:

- Nearly half of institutions and over one third of wholesale investors prefer a single manager relationship.
- Slightly less than 20% select multiple managers on an asset class basis.
- The balance - one third for institutions and nearly half of wholesale investors - select multiple managers on a factor exposure or style basis.

By implication a single manager relationship needs to satisfy all an investor's factor needs, which speaks to a requirement for scale in factor capability and product range. It is possible to pursue narrower specialist strategies, in particular asset classes or exposures, but this will significantly restrict an asset manager's market, especially in institutional.

Factor manager scale is also desirable because of the range of non-investment needs required by factor investors. This was visible to an extent in the context of adoption barriers. It is even more obvious when considering investors' post-investment needs in figure 43.

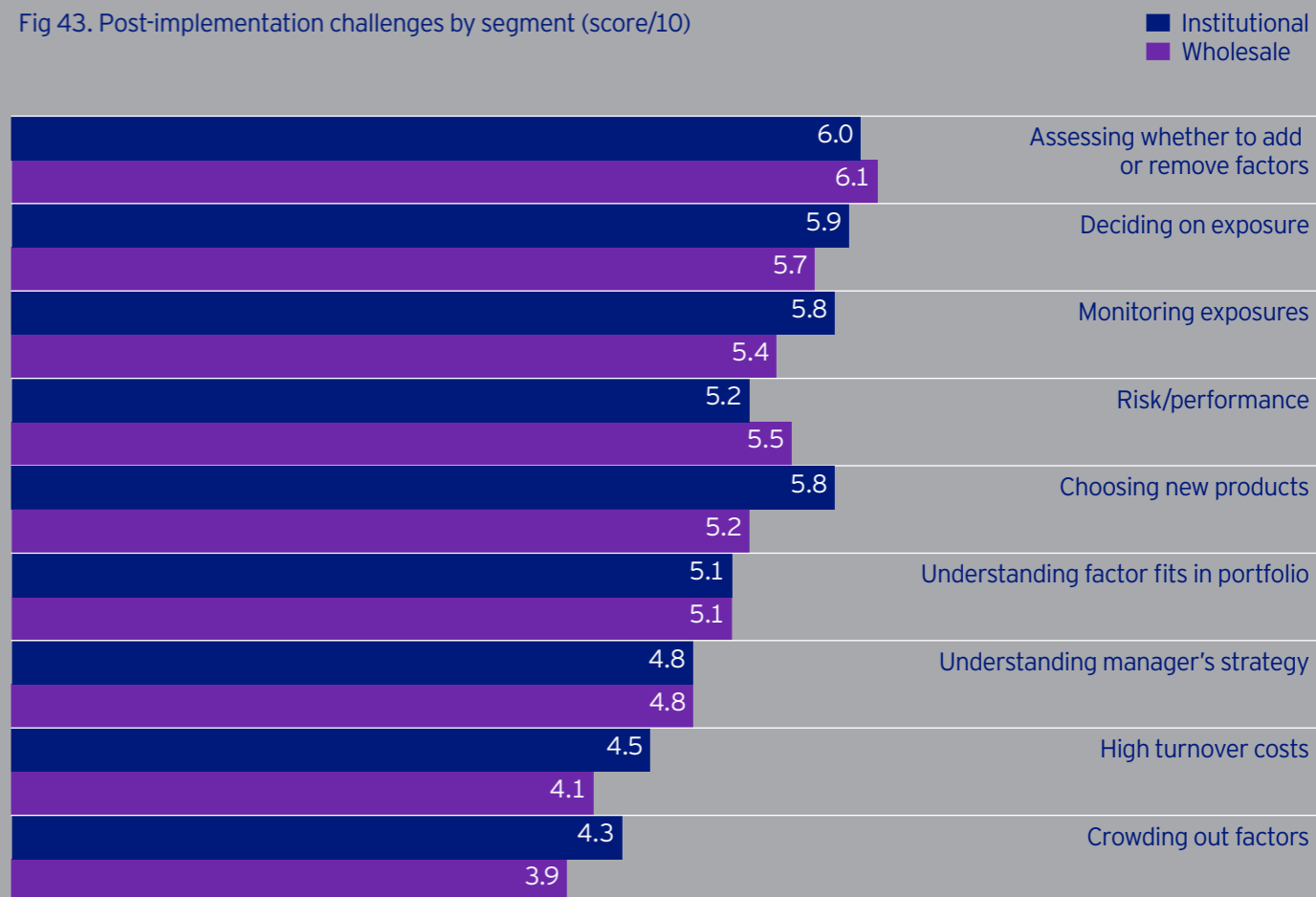
This makes clear that in many ways, the point of investment is just the start of the challenge for the asset manager. Investors have a range of needs, centred on additional take-up and extending the use of factors across a portfolio.

As one of the major industry participants, asset managers have a role to play in terms of improving investor confidence, with investors nominating a range of areas in which industry contributions are welcome in figure 44. This highlights the importance of more academic research, which is needed to help investors extend factor investing beyond equities. The operating and reporting complexities of factor investing are evident in the desire for support in performance attribution.

Two smaller categories of needs are open to industry solutions. Investors are open to new factor solutions, and institutions to solutions tailored to their needs. There is also a segment of both institutional and wholesale investors which value the industry making contributions to learning and development, both in terms of staff training and board education.

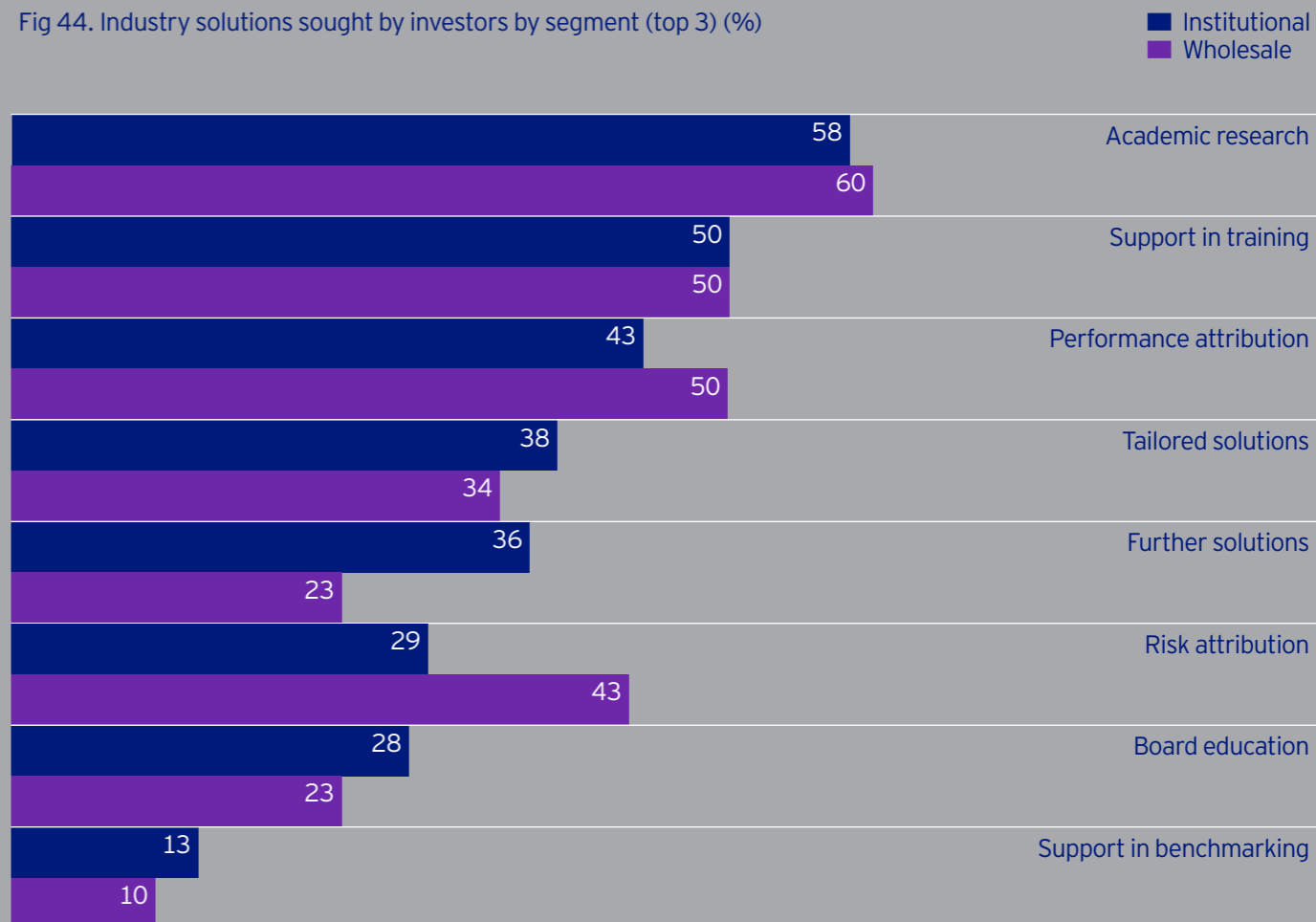
There is a balance here of course - some asset managers will be concerned that in providing extensive assistance they are enhancing an investor's ability to internalise. That is a business risk; however, for asset managers keen to respond to those factor investors seeking a single relationship, the value-added services are part of the package.

Fig 43. Post-implementation challenges by segment (score/10)



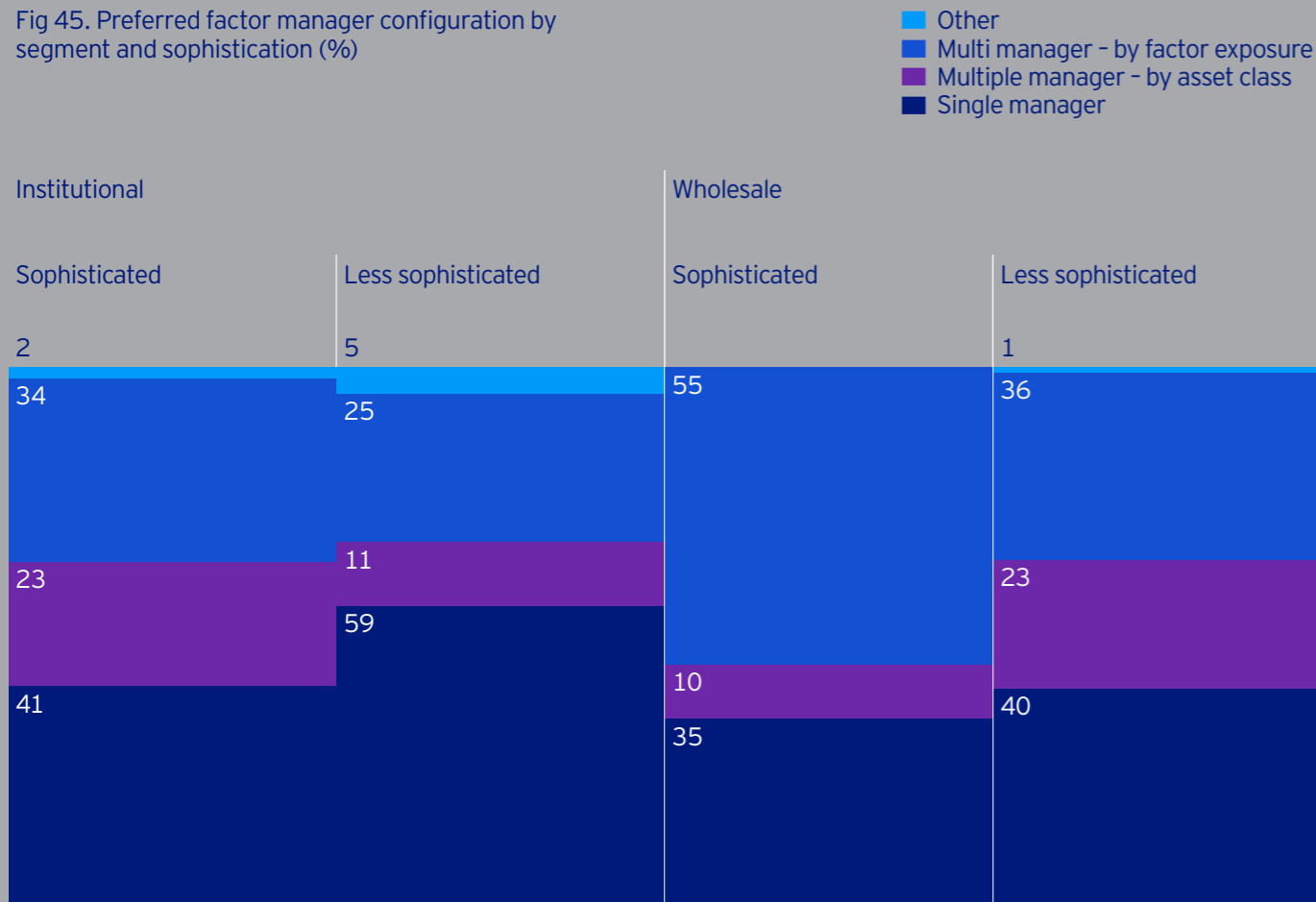
Sample: 116/130 (institutional/wholesale). Score/10 where 10 is most significant challenge

Fig 44. Industry solutions sought by investors by segment (top 3) (%)



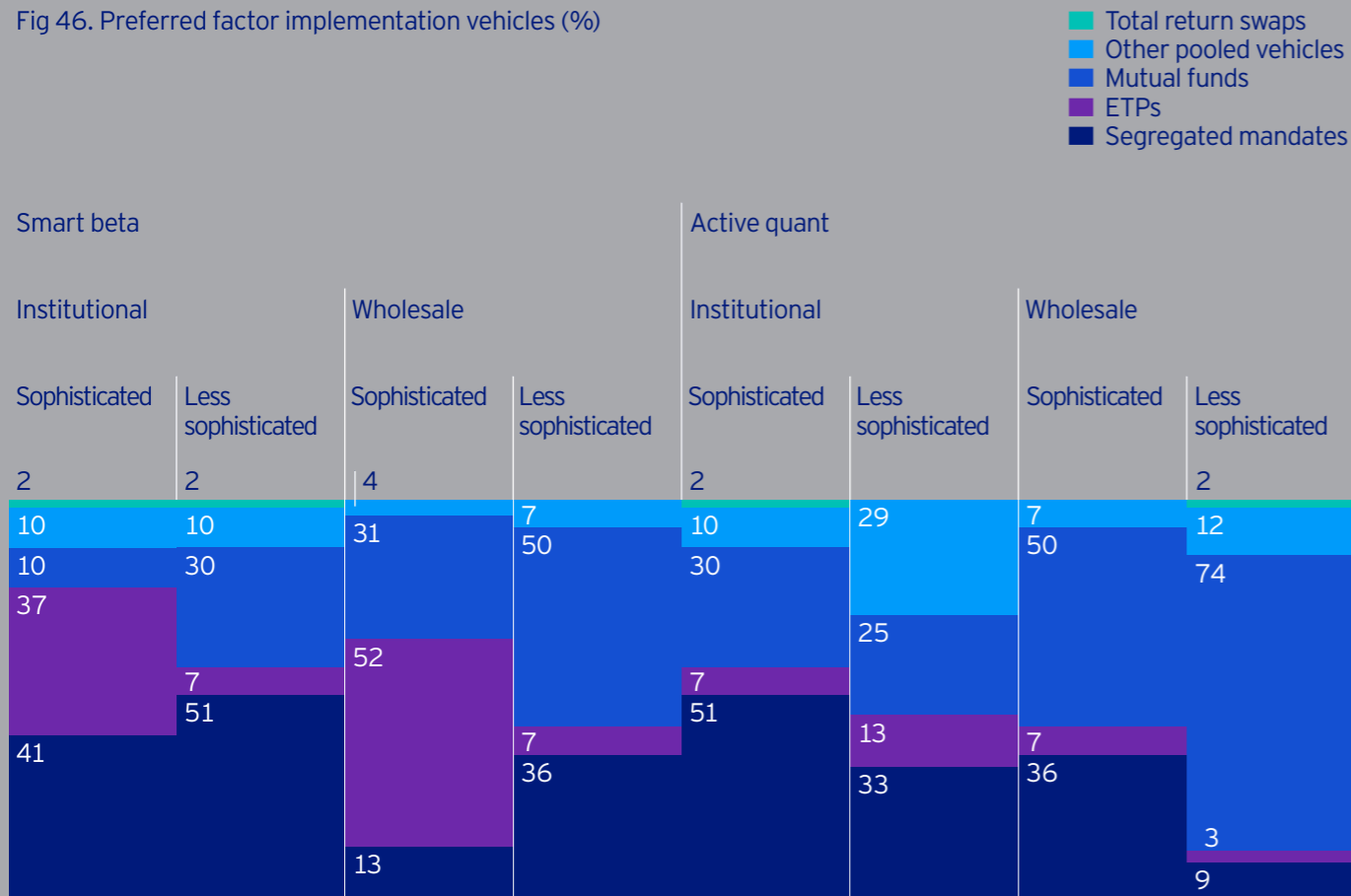
Sample: 104 (institutional), 141 (wholesale)

Fig 45. Preferred factor manager configuration by segment and sophistication (%)



Sample: 47/44 (institutional: sophisticated/less sophisticated), 60/70 (wholesale: sophisticated/less sophisticated)

Fig 46. Preferred factor implementation vehicles (%)



Smart beta: institutional: 91 (52/39 - sophisticated/less sophisticated), wholesales: 108 (54/54 - sophisticated/less sophisticated). Active quant: institutional: 65 (41/24 - sophisticated/less sophisticated), wholesale: 76 (42/34 - sophisticated/less sophisticated)

Sophisticated factor users call-out

Sophisticated factor users unsurprisingly face lower barriers, particularly in relation to internal capability, degree of belief in factor investing, and incorporating factor strategies into their risk management framework. Part of becoming a sophisticated investor implies having made significant progress on those issues.

Their post-implementation challenges are also comparable to factor investors in general; the only area where this is significantly less of an issue is in understanding where factor investing fits into their portfolio.

The key differences relate to how sophisticated users interact with factor asset managers. As figure 45 indicates, sophisticated factor investors are more likely to have multiple manager relationships, particularly at a factor exposure level.

This indicates that as factor investors gain experience, they tend to diversify their asset manager relationships. But this is far from a general rule. It's particularly notable that 40% of sophisticated institutional investors and a third of wholesale investors continue to have a single factor manager relationship, pointing to the stickiness of some of these relationships once established.

This is also reflected in the product usage patterns of the more sophisticated investors in figure 46.

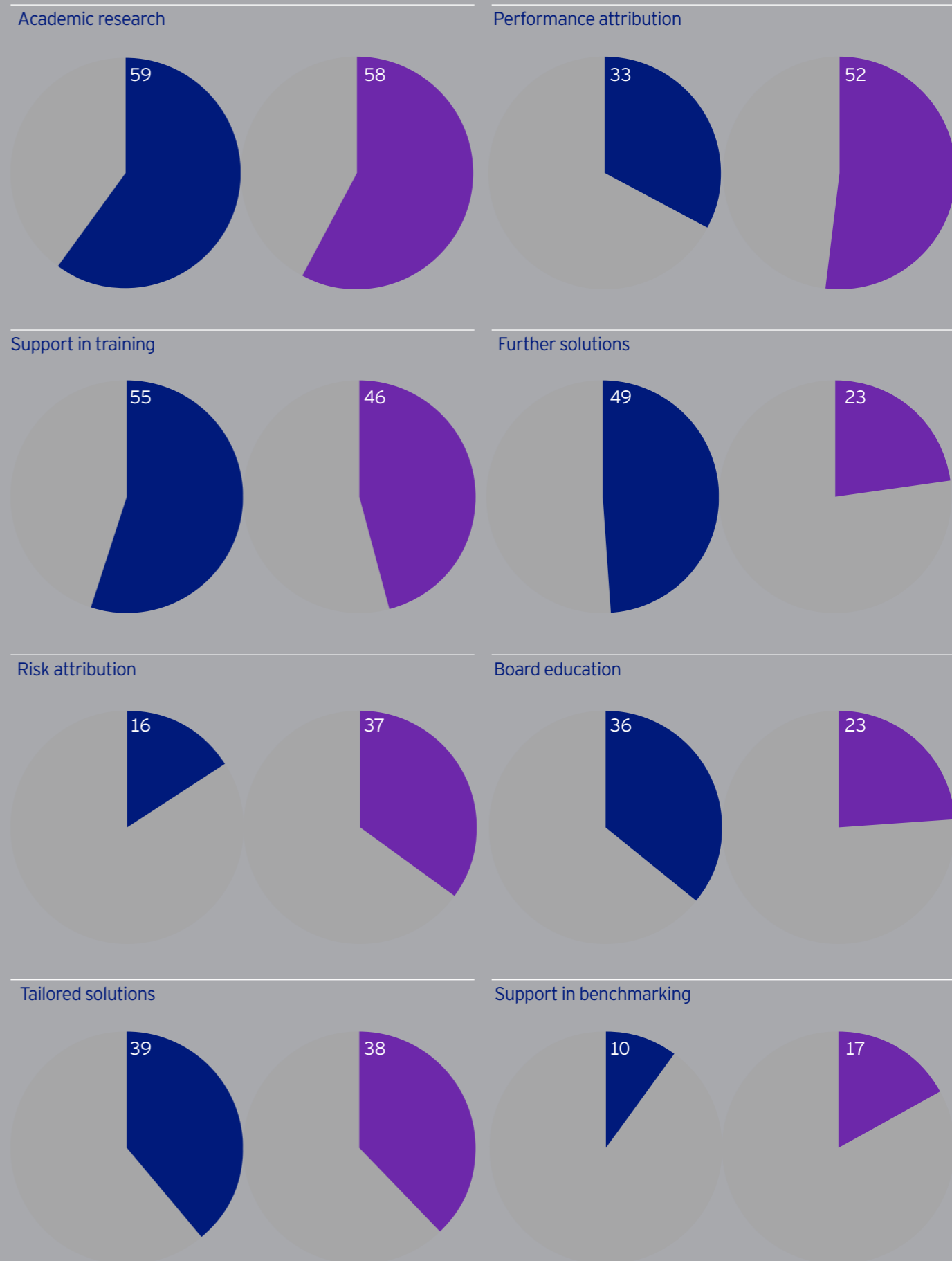
For both institutional and wholesale investors, the use of exchange-traded products tends to fall with increasing sophistication and an associated increased consideration of the range of vehicles available for factor implementation. That said, exchange-traded products remain a critically important category in both cases. The more sophisticated institutional factor investors swap some ETF usage for factor mandates. Wholesale investors, with less scale, are more likely to add mutual funds than mandates to their ETFs. This does not necessarily mean that sophisticated investors cease their use of particular products (although no doubt this occurs in particular cases); it may reflect that as investors add new allocations and new strategies, they do so with a new implementation structure.

In terms of what more sophisticated factor investors want from industry to address their concerns, facilitation of academic research continues to top the list, as figure 47 suggests. However beyond that there is a bifurcation - there is significantly less demand for operational support such as performance and risk attribution.

Conversely, there is considerably more demand for the provision of additional factor investing solutions, and for training and education at management team and board levels.

Fig 47. Industry solutions sought by institutional investors by sophistication (top 3)(%)

■ Sophisticated
■ Less sophisticated



Sample: institutional: 101/49 (sophisticated/less sophisticated)

To what extent do clients use factor strategies in their portfolios?

We see a lot of queries come in from advisers looking to utilise factor strategies in their client portfolios. It's an area of growing interest.

What has driven this increased interest in factor strategies?

Advisers don't just want to buy low cost passive strategies. They need something that helps to target specific outcomes for their clients. For example, for clients that are closer to retirement but want to maintain a high level of equity exposure, we would consider low volatility strategies.

What proportion of portfolios do you advise clients to invest in factor strategies?

Currently we think about 25% of US equities is an appropriate amount for clients, though this will vary depending on specific requirements.

Do your clients have any factor strategies in their fixed income portfolios?

Not many clients do. There aren't many fixed income factor ETFs, though this is an area we expect to grow. At the moment there is some research backing certain fixed income factors such as momentum and high yield, but we need to be a lot more careful when considering implementation of strategies in fixed income because of liquidity and trading costs.

How are advisers investing in factors?

Private clients are behind institutions, but they are following on their tails. We recommend a diverse mix of factor strategies, preferably through multi factor strategies. However many advisers prefer to implement through single factor strategies as it is easier for their clients to understand these strategies.

Are your clients generally happy with the performance of their factor strategies?

For the most part yes. We manage expectations carefully, trying to explain which factors we would expect to perform better and worse in different market situations. We believe it is tough to time strategies and advise our clients that a long-term mindset is needed.

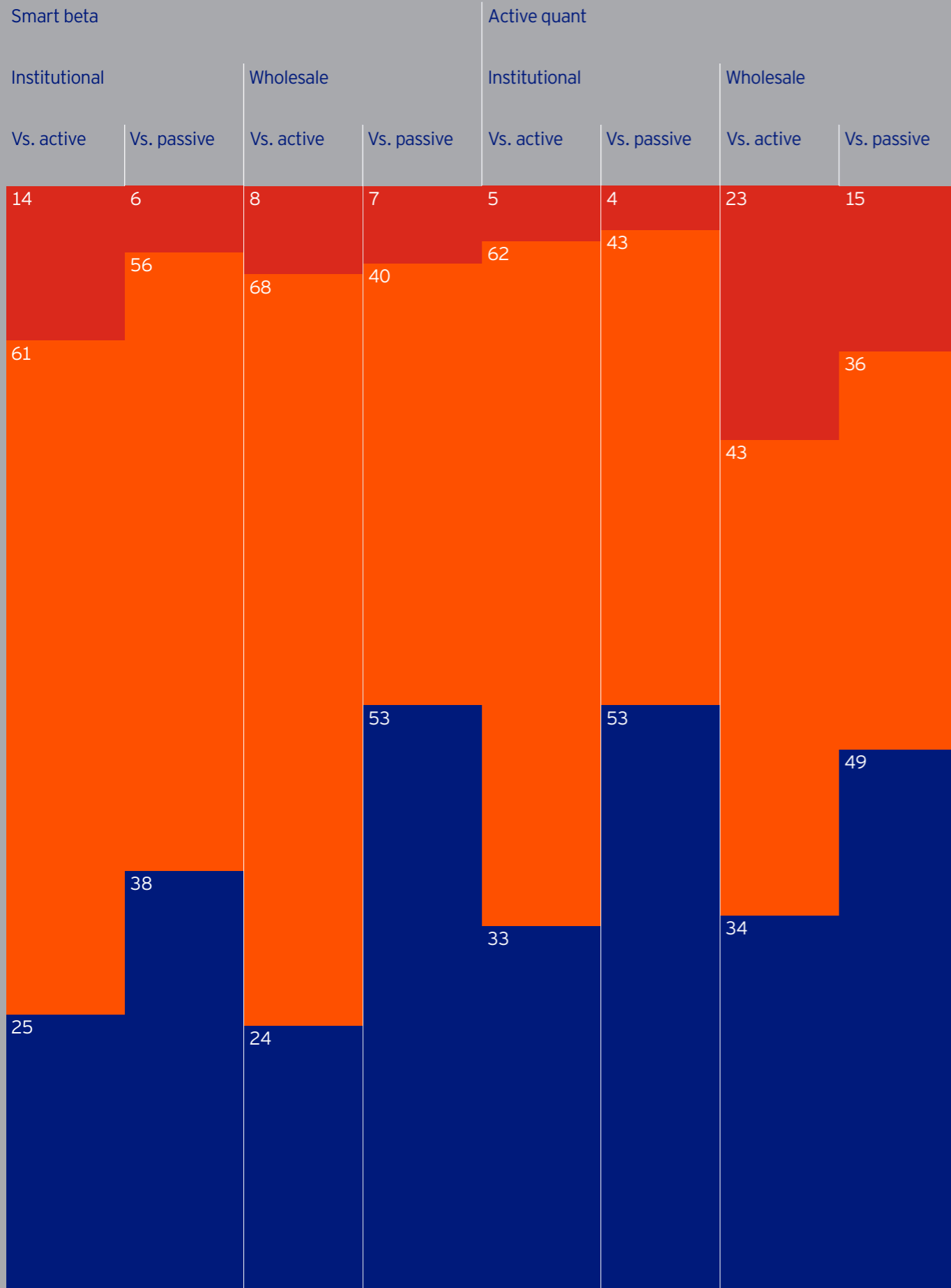
Theme 5
Factor experience has been a positive one for most investors.

- In the great majority of cases, the performance of factor strategies has been in line with or has exceeded investor expectations.
- Between half and two thirds of investors intend to increase allocations to factor strategies in the next three years as a means of further improving net performance.
- Higher factor allocations will increasingly be funded from passive allocations, setting the scene for a long-term challenge to the dominance of traditional market-cap based strategies.



Fig 48. Factor relative performance by segment (%)

■ Underperformed
 ■ In-line
 ■ Outperformed



Although investors never plan to have a poor experience, an unusual but welcome aspect of factor investing is that the great majority of investors report a favourable experience so far. In fact, as figure 48 shows, for a significant proportion, factor has outperformed their expectations, to the extent that the situation looks too good to be sustainable, if not too good to be true. The claim of factor investing to be able to exploit market opportunities in a systematic and low cost manner has been borne out to a significant degree.

Sample: 77/91 (smart beta: institutional/wholesale), 61/67 (active quant: institutional/wholesale)

How factor investors assess performance

Around two thirds of investors start their factor journey with a smart beta type allocation, and one third with active quant, as figure 49 shows.

The starting point matters because expectations and the way in which performance is benchmarked is substantially different:

- Smart beta allocations are benchmarked to market cap indices with few exceptions.
- Active quant allocations have a range of benchmarking treatments; delivery of satisfactory absolute returns is the most common approach either alone or in combination with market cap indices and/or long-only managers.

Regardless of the benchmark, factor investors use a relatively small range of metrics to assess the effectiveness of their allocations. Figure 50 shows that risk-adjusted returns (returns achieved relative to the amount of risk taken) are the most important metrics for measuring effectiveness, closely followed by returns (relative or absolute as appropriate) and risk reduction. Somewhat surprisingly, factor capture is less important, although this may reflect the difficulties experienced by investors in performance attribution noted in theme 4.

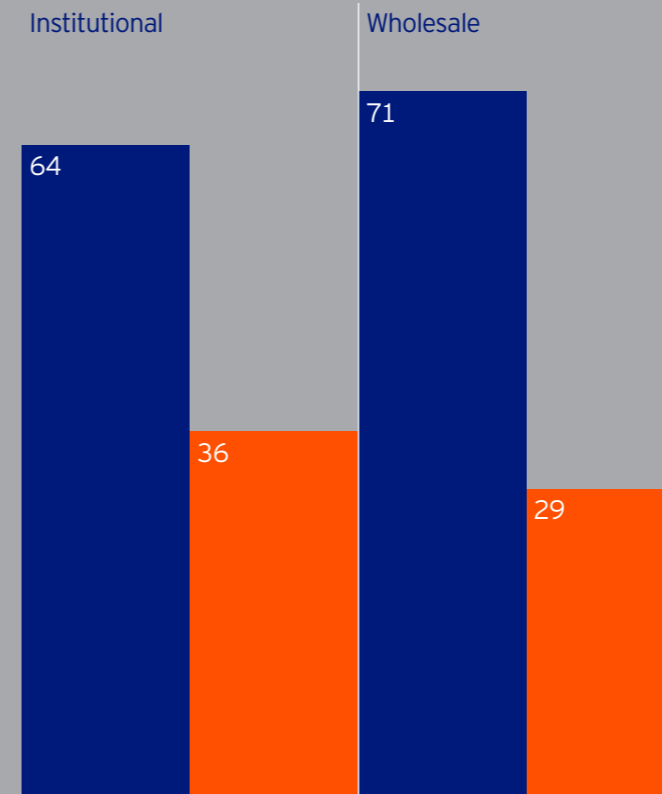
In some ways it is too early for a robust assessment of experience. In theme 2 we discussed that only ~15% of factor investors commenced prior to 2010, which means that few have seen how factor allocations weather a severe market dislocation such as the financial crisis. Many quantitative strategies performed poorly over 2008-2009 after an extended period of prior outperformance; investors will want to see factor strategies do relatively better in the next market downturn. Indeed, this is likely to be an event which takes factor investing through to the investing mainstream if it is navigated successfully.

There have been additional benefits for factor investors beyond the key return and risk metrics used for benchmarking. Although cost is not a top motivation for adopting factor investing, it can be a welcome positive, for investors using factor to replace active allocations in any event. Figure 51 shows that nearly half of institutions and over half of wholesale investors have experienced a reduction in portfolio costs as a result. Some wholesale investors have seen large decreases.

On the flipside, 20% of institutional investors, and a third of wholesale investors, have seen their portfolio costs rise as a result of factor adoption. This is likely to have occurred as a result of replacing passive allocations with factor strategies, and is another reminder that passive managers are a significant funding source.

Fig 49. First factor strategy implemented by segment (%)

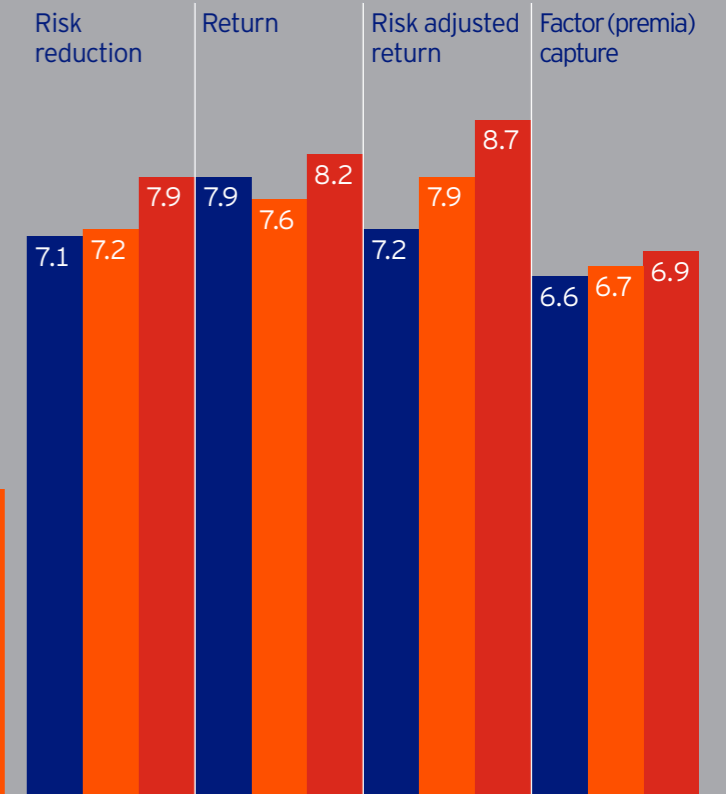
■ Smart beta
■ Active quant



Sample: 61/59 (institutional/wholesale)

Fig 50. Benchmarking metrics for factor allocations by region (score/10)

■ Europe
■ APAC
■ N.A.M.



Sample: 135/42/81 (Europe/APAC/N.America) Score/10

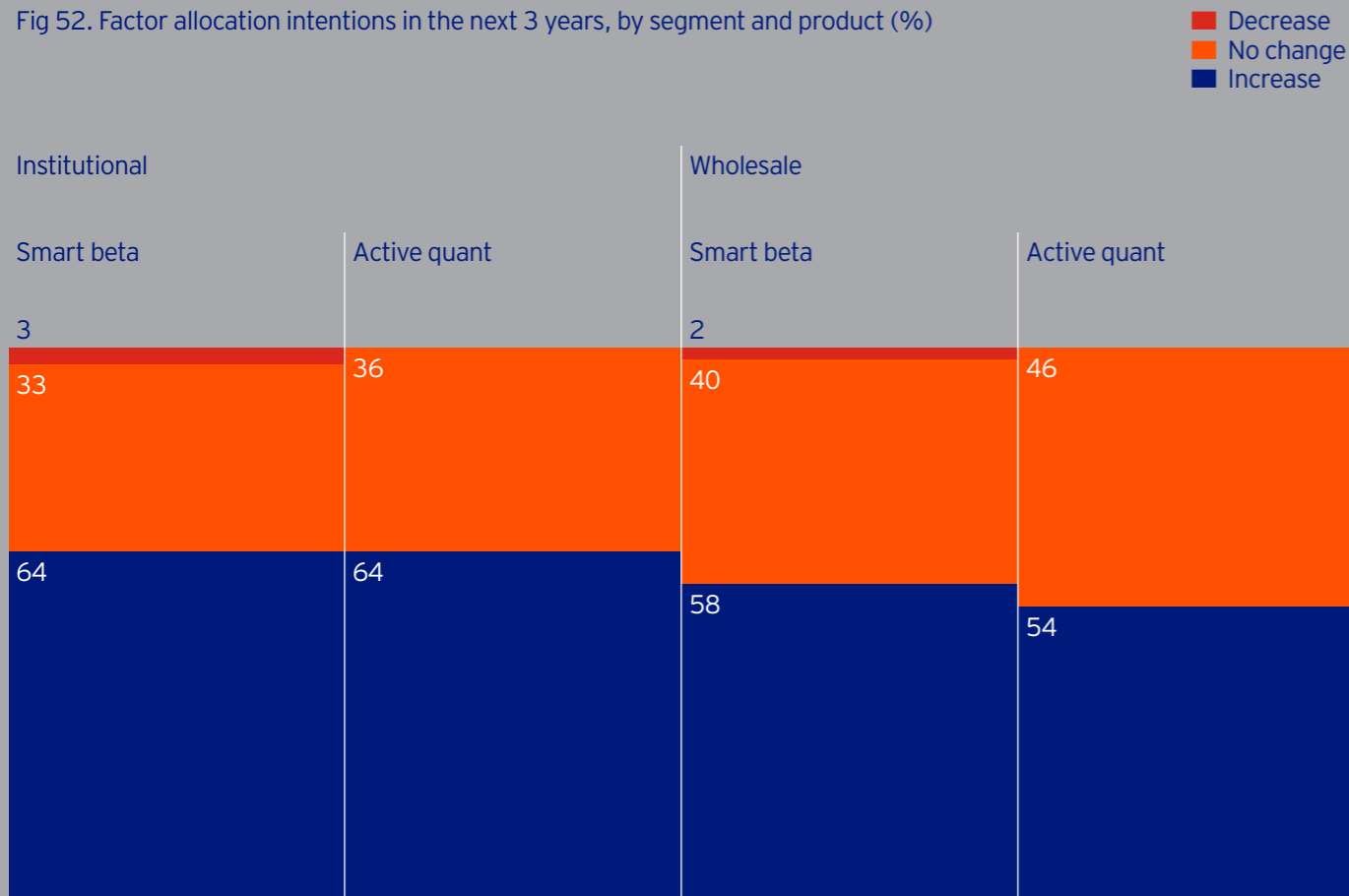
Fig 51. Portfolio cost impact of adopting factor investing (%)

■ Small increase
■ No change
■ Small decrease
■ Large decrease



Sample: 76/98 (institutional/wholesale)

Fig 52. Factor allocation intentions in the next 3 years, by segment and product (%)



Sample: 102 (smart beta institutional), 83 (active quant institutional), 114 (smart beta wholesale), 92 (active quant wholesale)

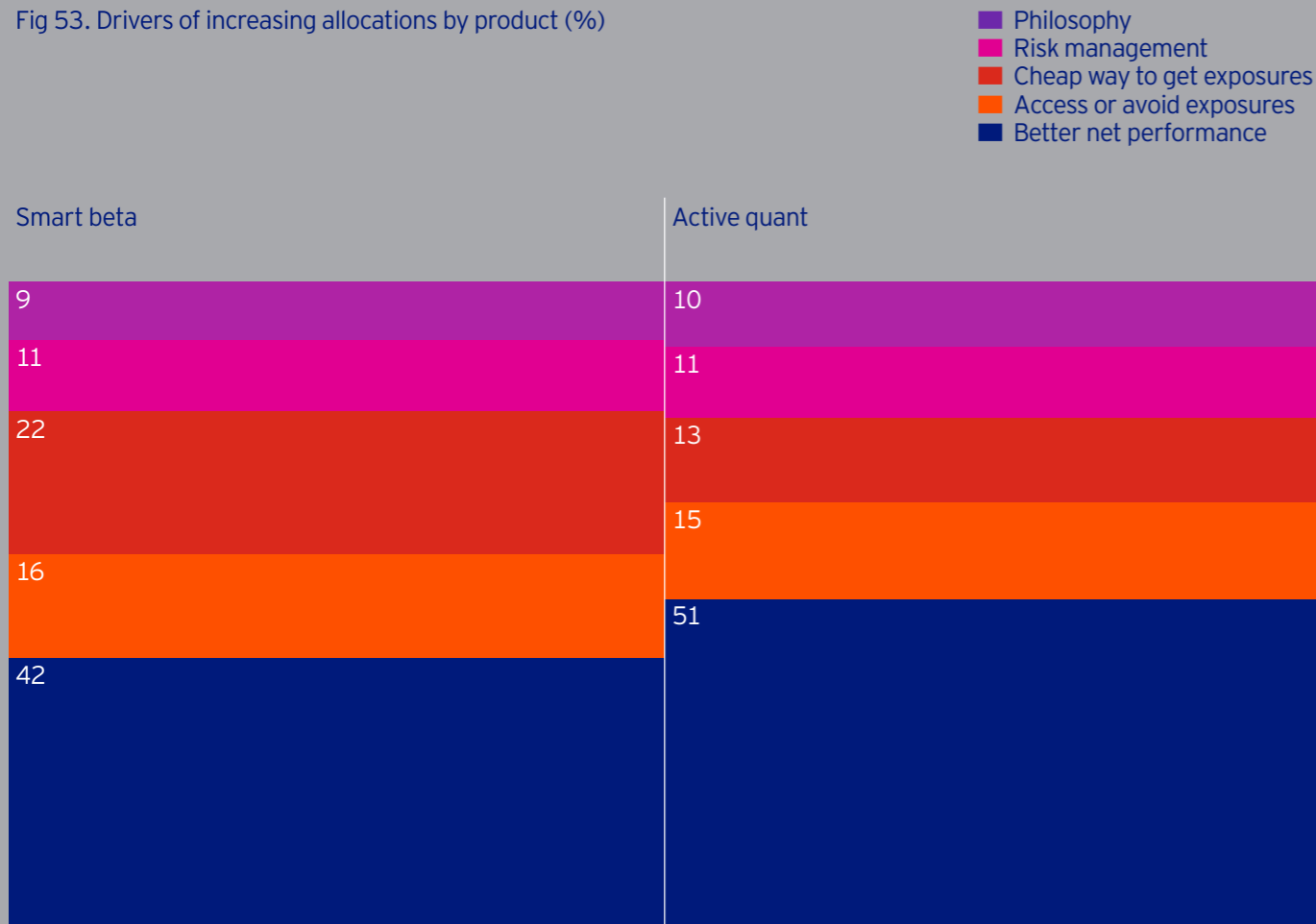
Investor intentions are strongly net positive

With a combination of in line or better than expected experience, plus fee benefits in many cases, the majority of current factor investors intend to add to their allocations on a three-year view, as seen in figure 52. This intention is slightly stronger amongst institutional investors where around two thirds intend to increase factor allocations.

Very few investors intend to decrease allocations; even those amongst the small segment of disappointed investors are more likely to maintain their current allocations rather than reduce. Combined with the probability of increased adoption amongst today's non-factor users, the three-year outlook for factor investing remains very positive.

Looking at the drivers of increasing adoption, figure 53 suggests no fundamental changes about what is important, but perhaps a reordering. Improvements in net performance are seen as the most important driver by some distance, with risk less prominent, especially compared to the initial motivations of taking up factor investing. Cost benefits are also important for smart beta product allocators in particular.

Fig 53. Drivers of increasing allocations by product (%)



Sample: 150/122 (smart beta/active quant)

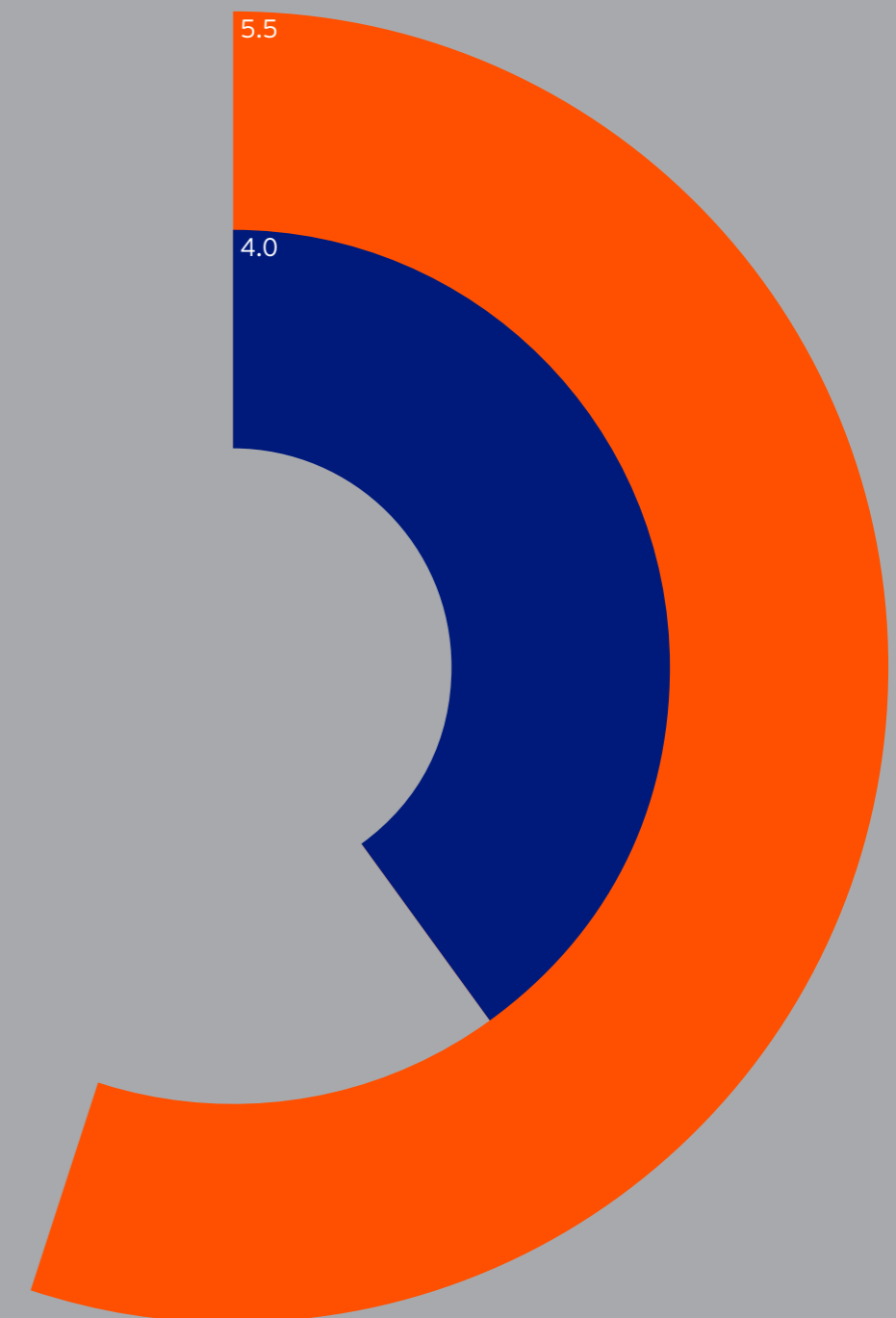
What is seen as most likely to halt the advance of factor allocations? In the absence of a major market event to provide a crisis test, a key risk seen continues to be crowding out. Yet here too concerns are abating, as figure 54 shows.

The level of concern about crowding has dropped significantly in two years. It is particularly low amongst European investors, and slightly higher amongst APAC institutions and North American investors, but overall this is one of the lower ranked ongoing concerns of factor investors.

Rather, the drivers which would cause factor investors to rethink their commitment are a reversal of the performance and risk benefits which most have seen so far, or an adverse effect on costs - in other words if the factor investing ceased to deliver on its value proposition.

Fig 54. Crowding out concerns (score/10)

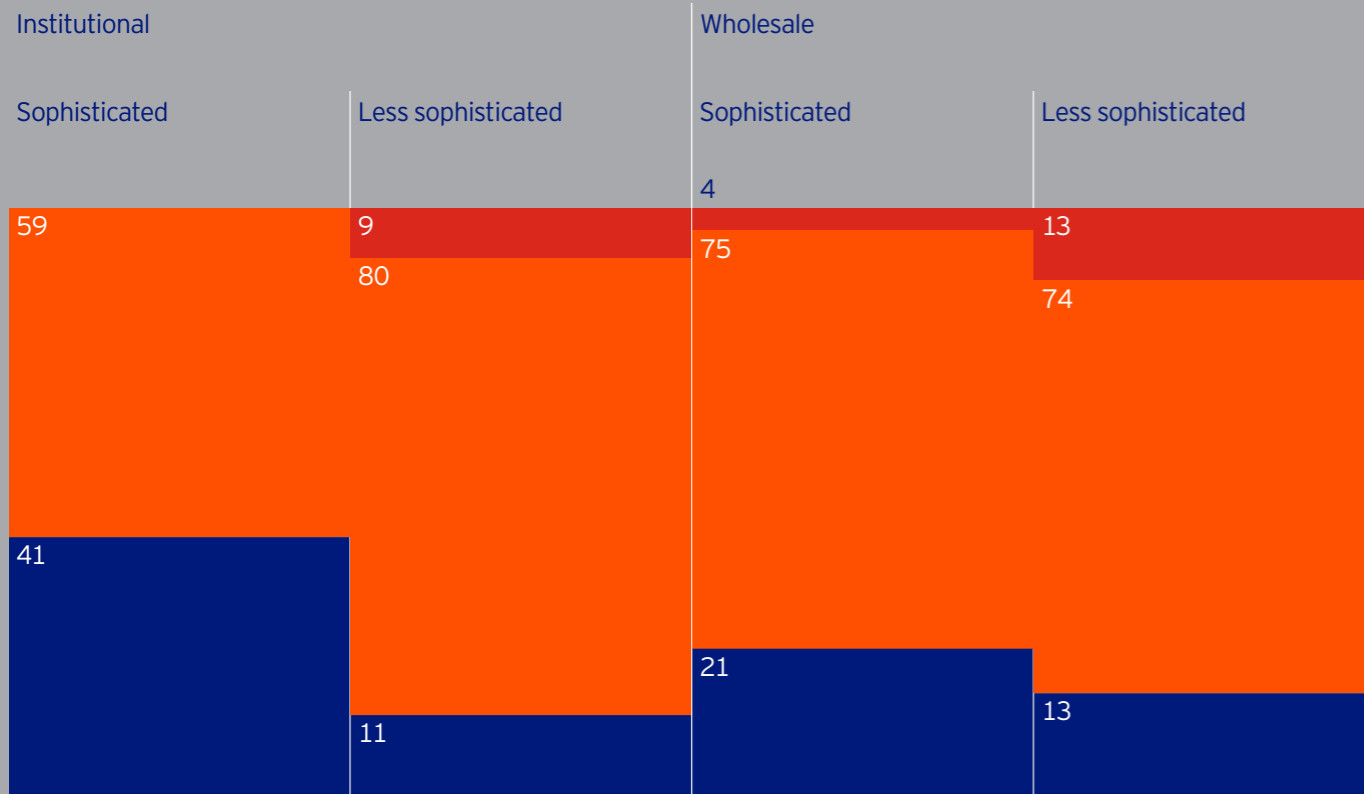
2017
2018



Sample: 232 (2018), 91 (2017), 13 (2016). Scale 1-10 (where 10 is most concerned)

Fig 55. Factor performance relative to expectation (%)

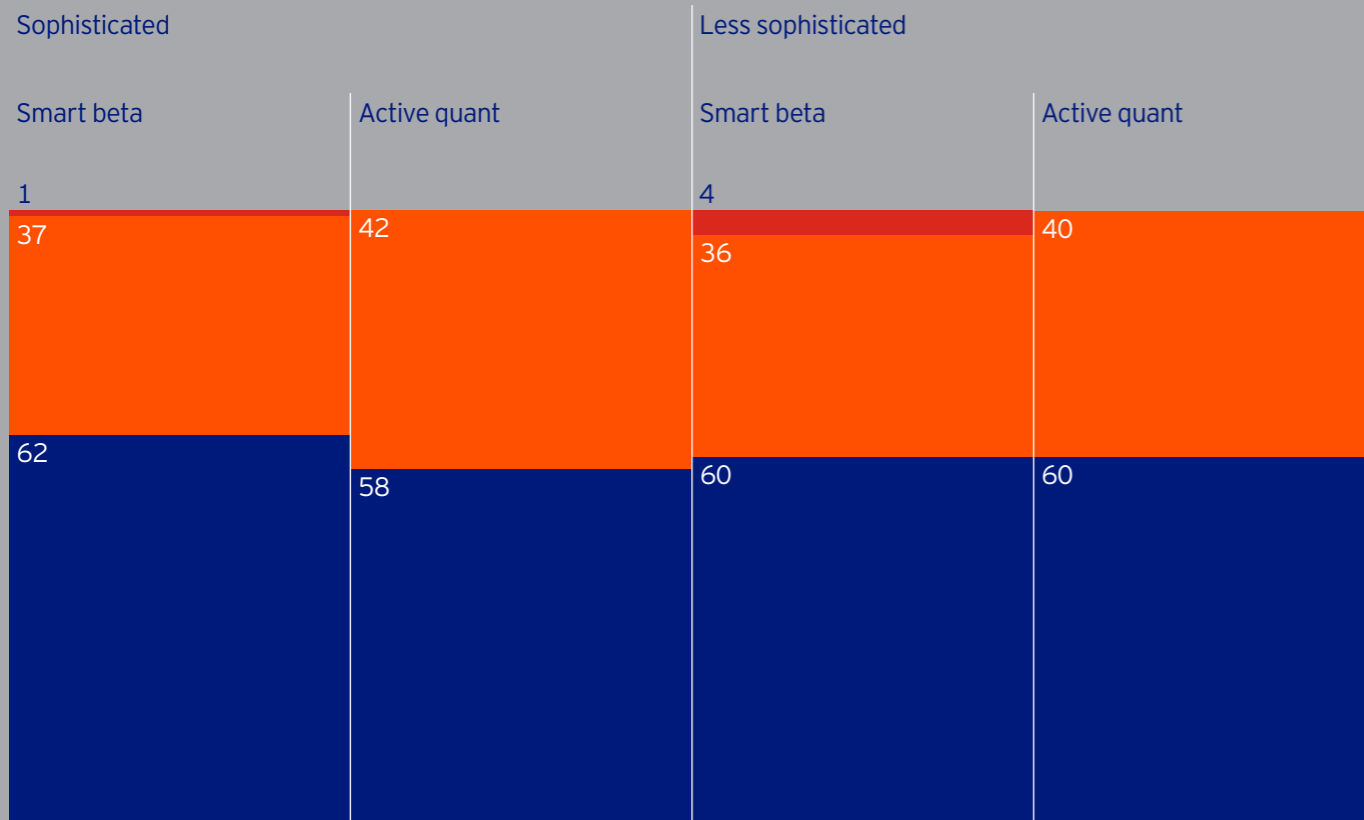
■ Did not meet expectations
■ Met expectations
■ Exceeded expectations



Sample: 54/44 (institutional sophisticated/less sophisticated) 57/64 (wholesales sophisticated/less sophisticated)

Fig 56. Factor allocation intentions in the next 3 years (%)

■ Decrease
■ No change
■ Increase



Sample: 110/93 (sophisticated smart beta/active quant) 103/77 (less sophisticated smart beta/active quant)

Sophisticated factor users call-out

The factor experience has been even more positive for more sophisticated investors than it has been overall. For experienced institutions, it exceeded expectations in nearly half of respondents, and for over 20% of experienced wholesale investors. There have been some factor performance disappointments in recent years, albeit isolated. Figure 55 shows that these have been concentrated in (self-assessed) less experienced investors. This highlights the importance of asset managers setting investor expectations at the outset.

Unsurprisingly this is driving up factor allocation intentions for sophisticated factor users, although a similar proportion of less experienced investors also have intentions to increase allocations, as shown in figure 56. This is most accentuated for institutional smart beta product usage.

Given the small number of existing users intending to decrease allocations, this suggests that factor allocations amongst existing users will continue to increase relative to active and passive allocations. The relative impact of those allocations depends on where increased allocations are sourced from. An insight to this is provided in figure 57.

The expected sourcing for increased factor allocations differs significantly across each dimension.

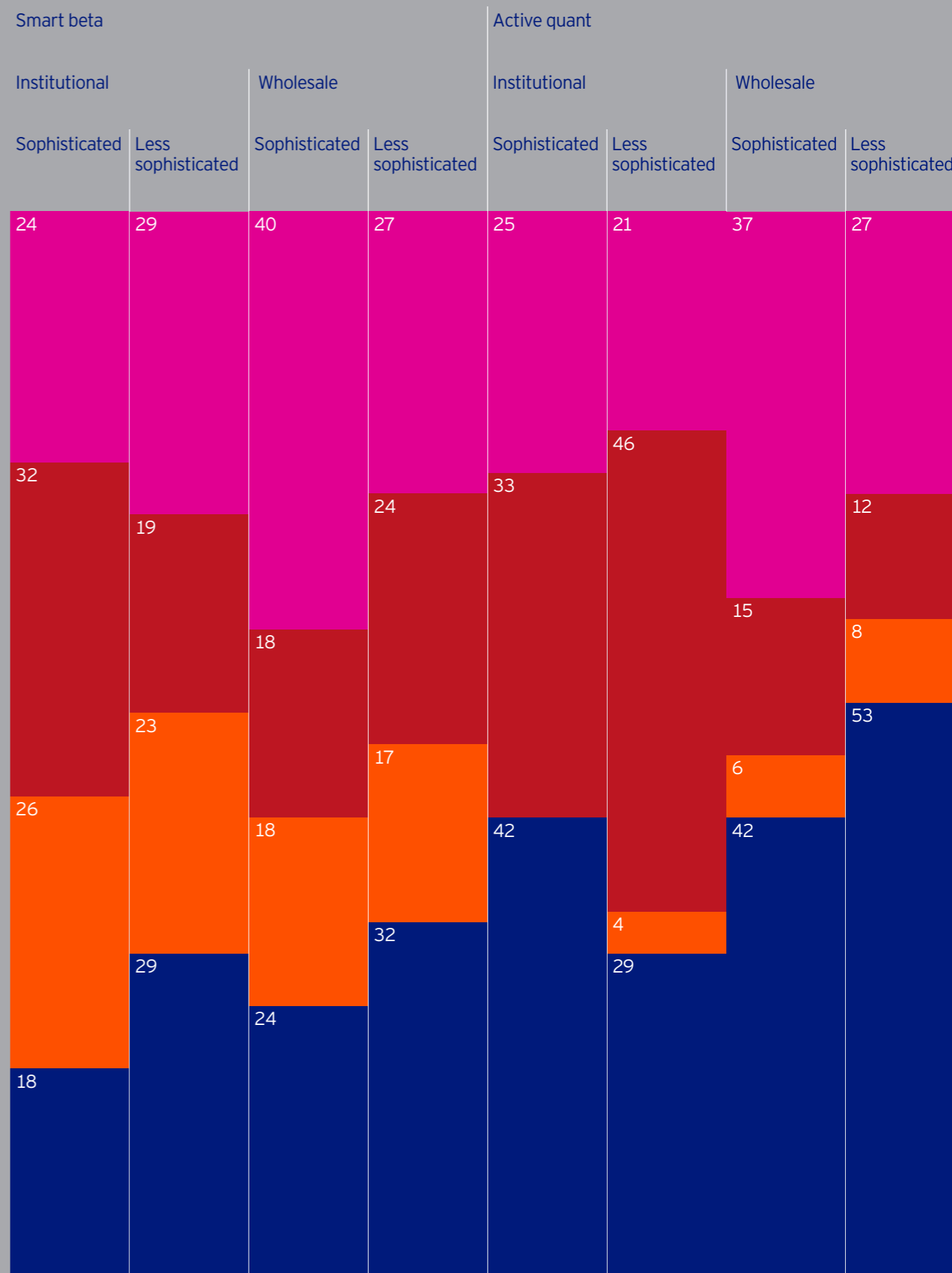
- For product types, investors intending to increase smart beta allocations have broad sourcing intentions across active, passive, new cashflows and mixtures.
- For investors expecting to increase active quant allocations, the predominant funding sources are seen as active allocations and new cashflow.
- For more sophisticated investors, active allocations are in most cases less common as the intended funding source. For sophisticated institutional investors looking to increase smart beta allocations, they are more likely to draw on active allocations than passive allocations, although sophisticated wholesale investors are still slightly more likely to draw on passive.

Overall there is a trend where increasing factor user sophistication results in increasing factor allocations, and where those allocations are funded from within the portfolio rather than new cashflow, the funding source shifts from active to passive allocations.

As the overall factor user cohort gains experience and becomes more sophisticated, that implies that this trend will become more embedded over the longer term. If so, this will further drive up average factor allocations relative to average passive allocations, cementing the place of factor investing in portfolios, with the potential to ultimately challenge the current place of traditional market-cap passive allocations in investor portfolios.

Fig 57. Funding sources of increased factor allocations (%)

■ Mixture
 ■ New cashflow
 ■ Passive
 ■ Active



Sample: 65/74 (smart beta: institutional/wholesale), 48/59 (active quant: institutional/wholesale)



Sample and methodology

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 decision makers within institutional investors, asset consultants, and private banks, conducting interviews using experienced consultants and offering market insights
- In-depth (typically one 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 2018, the third year of the study, we conducted interviews with 300 different asset consultants, insurers, pension funds, sovereign investors and private banks globally (up from 108 in 2017). In this year's study, all respondents were 'factor users', defined as any respondent investing in a factor product across their entire portfolio. We deliberately targeted a mix of investor profiles across multiple markets. The breakdown of the 2018 interview sample by investor segment and geographic region is displayed in figures 58 and 59.

Fig 58. Sample by investor segment

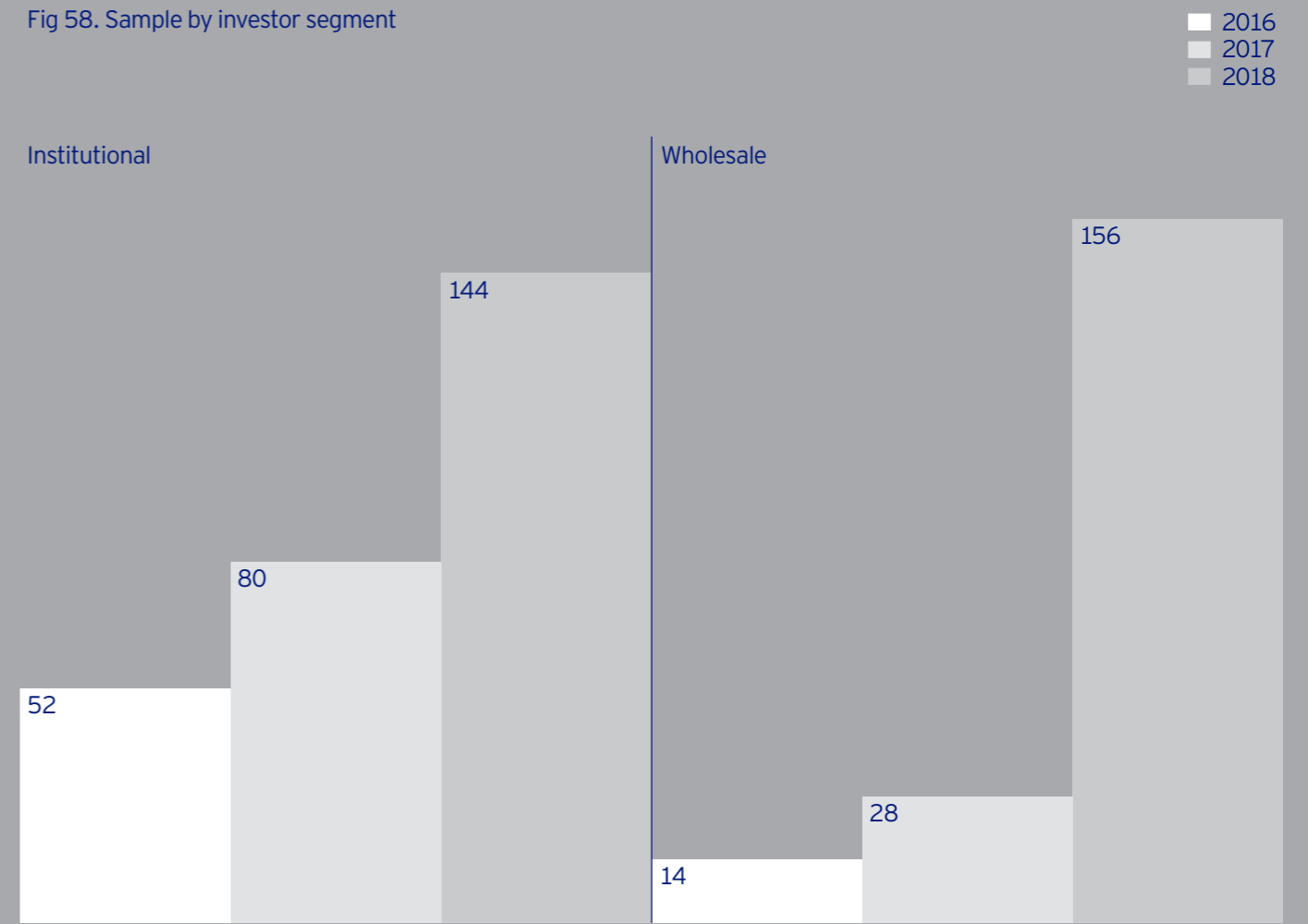
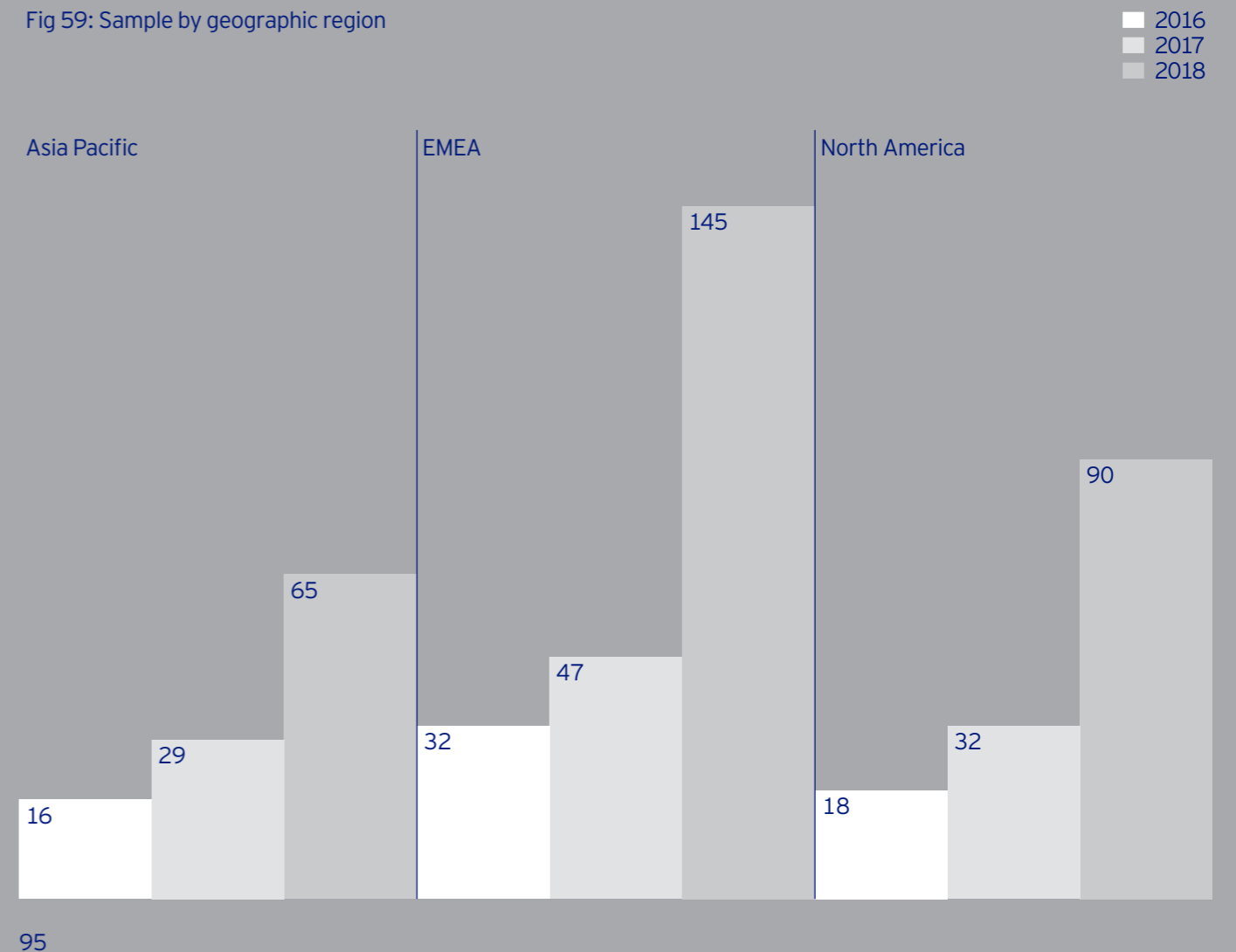


Fig 59: Sample by geographic region



This document is intended only for Professional Clients and Financial Advisers in Continental Europe (as defined in the important information); for Qualified Investors in Switzerland; for Professional Clients in, Dubai, Jersey, Guernsey, Isle of Man, Ireland and the UK, for Institutional Investors in the United States, Australia and Singapore, for Professional Investors only in Hong Kong, for Qualified Institutional Investors in Japan; for Wholesale Investors (as defined in the Financial Markets Conduct Act) in New Zealand, for accredited investors as defined under National Instrument 45-106 in Canada, for Qualified Institutions/ Sophisticated Investors in Taiwan and for one-on-one use with Institutional Investors in, Chile, Panama and Peru.

For the distribution of this document, Continental Europe is defined as Austria, Belgium, France, Finland, Greece, Luxembourg, Norway, Portugal, Denmark, Germany, Italy, the Netherlands, Spain, Sweden and Switzerland.

This document is for information purposes only and is not an offering. It is not intended for and should not be distributed to, or relied upon by members of the public. Circulation, disclosure, or dissemination of all or any part of this material to any unauthorised persons is prohibited. All data provided by Invesco as at 31 October 2018, unless otherwise stated. The opinions expressed are current as of the date of this publication, are subject to change without notice and may differ from other Invesco investment professionals.

The document contains general information only and does not take into account individual objectives, taxation position or financial needs. Nor does this constitute a recommendation of the suitability of any investment strategy for a particular investor. This is not an invitation to subscribe for shares in a fund nor is it to be construed as an offer to buy or sell any financial instruments. While great care has been taken to ensure that the information contained herein is accurate, no responsibility can be accepted for any errors, mistakes or omissions or for any action taken in reliance thereon. You may only reproduce, circulate and use this document (or any part of it) with the consent of Invesco.

Past performance is not indicative of future results.

Diversification does not guarantee a profit or eliminate the risk of loss. Factor investing is an investment strategy in which securities are chosen based on certain characteristics and attributes that may explain differences in returns. There can be no assurance that performance will be enhanced or risk will be reduced for strategies that seek to provide exposure to certain factors. Exposure to such investment factors may detract from performance in some market environments, perhaps for extended periods. Factor investing may underperform cap-weighted benchmarks and increase portfolio risk.

Australia

This document has been prepared only for those persons to whom Invesco has provided it. It should not be relied upon by anyone else. Information contained in this document may not have been prepared or tailored for an Australian audience and does not constitute an offer of a financial product in Australia. You should note that this information:

- May contain references to amounts which are not in local currencies
- May contain financial information which is not prepared in accordance with Australian law or practices;
- May not address risks associated with investment in foreign currency denominated investments; & does not address Australian tax issues.

Hong Kong

This document is provided to Professional Investors in Hong Kong only (as defined in the Hong Kong Securities and Futures Ordinance and the Securities and Futures (Professional Investor) Rules).

Singapore

This document may not be circulated or distributed, whether directly or indirectly, to persons in Singapore other than to an institutional investor pursuant to Section 304 of the Securities and Futures Act, Chapter 289 of Singapore (the 'SFA') or otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. This document is for the sole use of the recipient on an institutional investor basis and cannot be distributed within Singapore by way of a public offer, public advertisement or in any other means of public marketing.

New Zealand

This document is issued only to wholesale investors in New Zealand to whom disclosure is not required under Part 3 of the Financial Markets Conduct Act. This document has been prepared only for those persons to whom it has been provided by Invesco. It should not be relied upon by anyone else and must not be distributed to members of the public in New Zealand. Information contained in this document may not have been prepared or tailored for a New Zealand audience. You may only reproduce, circulate and use this document (or any part of it) with the consent of Invesco. This document does not constitute and should not be construed as an offer of, invitation or proposal to make an offer for, recommendation to apply for, an opinion or guidance on Interests to members of the public in New Zealand. Applications or any requests for information from persons who are members of the public in New Zealand will not be accepted.

This document is issued in:

Australia by Invesco Australia Limited (ABN 48 001 693 232), Level 26, 333 Collins Street, Melbourne, Victoria, 3000, Australia, which holds an Australian Financial Services License number 239916.

Austria by Invesco Asset Management Österreich - Zweigniederlassung der Invesco Asset Management Deutschland GmbH, Rotenturmstrasse 16-18, A-1010 Vienna, Austria.

Belgium by Invesco Asset Management SA Belgian Branch (France), Avenue Louise 235, B-1050 Brussels, Belgium.

Canada by Invesco Canada Ltd., 5140 Yonge Street, Suite 800, Toronto, Ontario, M2N 6X7, Canada.

Dubai by Invesco Asset Management Limited, Po Box 506599, DIFC Precinct Building No 4, Level 3, Office 305, Dubai, United Arab Emirates. Regulated by the Dubai Financial Services Authority.

France, Finland, Greece, Luxembourg, Norway, Portugal and Denmark, by Invesco Asset Management SA, 16-18 rue de Londres, 75009 Paris, France.

Germany by Invesco Asset Management Deutschland GmbH, An der Welle 5, 60322 Frankfurt am Main, Germany.

Hong Kong by Invesco Hong Kong Limited 景順投資管理有限公司, 41/F, Champion Tower, Three Garden Road, Central, Hong Kong.

Ireland by Invesco Global Asset Management DAC, Central Quay, Riverside IV, Sir John Rogerson's Quay, Dublin 2, Ireland. Regulated in Ireland by the Central Bank of Ireland.

The Isle of Man by Invesco Management S.A. 37A Avenue JF Kennedy, L-1855 Luxembourg.

Italy by Invesco Asset Management SA, Sede Secondaria, Via Bocchetto 6, 20123 Milan, Italy.

Japan by Invesco Asset Management (Japan) Limited, Roppongi Hills Mori Tower 14F, 6-10-1 Roppongi, Minato-ku, Tokyo 106-6114; Registration Number: The Director-General of Kanto Local Finance Bureau (*Kin-sho*) 306; Member of the Investment Trusts Association, Japan and the Japan Investment Advisers Association.

Jersey and Guernsey by Invesco International Limited, 2nd Floor, Orviss House, 17a Queen Street, St Helier, Jersey, JE2 4WD. Regulated by the Jersey Financial Services Commission.

The Netherlands by Invesco Asset Management S.A. Dutch Branch, Vinoly Building, Claude, Debussylaan 26, 1082 MD, Amsterdam, The Netherlands.

New Zealand by Invesco Australia Limited (ABN 48 001 693 232), Level 26, 333 Collins Street, Melbourne, Victoria, 3000, Australia, which holds an Australian Financial Services License number 239916.

Singapore by Invesco Asset Management Singapore Ltd, 9 Raffles Place, #18-01 Republic Plaza, Singapore 048619.

Spain by Invesco Asset Management SA, Sucursal en España, C/GOYA 6, 3rd floor, 28001 Madrid, Spain.

Sweden by Invesco Asset Management S.A., Swedish Filial, Convendum, Jakobsbergsgatan 16, 111 43 Stockholm, Sweden.

Switzerland by Invesco Asset Management (Schweiz) AG, Talacker 34, 8001 Zurich, Switzerland.

Taiwan by Invesco Taiwan Limited, 22F, No.1, Songzhi Road, Taipei 11047, Taiwan (0800-045-066). **Invesco Taiwan Limited is operated and managed independently.**

The UK by Invesco Asset Management Limited, Perpetual Park, Perpetual Park Drive, Henley-on-Thames, Oxfordshire RG9 1HH. Authorised and regulated by the Financial Conduct Authority.

The United States of America by Invesco Advisers, Inc., Two Peachtree Pointe, 1555 Peachtree Street, N.W., Suite 1800, Atlanta, Georgia 30309, USA.

