For global professional / qualified / institutional clients and investors

Index investing

Contents

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Introduction

The indexing industry has changed and evolved significantly since the first indexed equity portfolio was launched in 1971. More than USD 24 trillion is now invested on a passive basis globally[1] – tracking a wide range of benchmarks across different asset classes in a variety of investment vehicles.

Over the past two decades index investing has crystallized into a sophisticated quasi-science/quasi-art investment style that requires high levels of skill, pragmatism and market knowledge.

We view index investing as a multi-step iterative process consisting of a series of decision/action points and considerations for investors, which we broadly group in four clusters (*Exhibit 1*).

Exhibit 1: Multi-step iterative process

Source: UBS Asset Management.

Index selection focuses on the various dimensions/exposures of benchmarks such as market, size, style, strategy, market capitalisation weighted vs. alternative beta, and the different types of index providers (e.g., with global index offering or with local index offering).

Investment vehicle selection assesses the features of pooled vehicles, including ETFs, and segregated accounts.

Portfolio management covers portfolio construction techniques (full replication, sampling, optimisation), trading for index changes, rebalancing, liquidity, capacity, ongoing portfolio monitoring, sources of added value, corporate actions. Investors should also look at the experience of the indexing team, their track record and the systems they use.

Client-specific requirements include securities lending, withholding tax on dividends, currency hedging, custody, customisation, responsible ownership.

1 Source: Boston Consulting Group. Data as of 2023.

1

Index selection

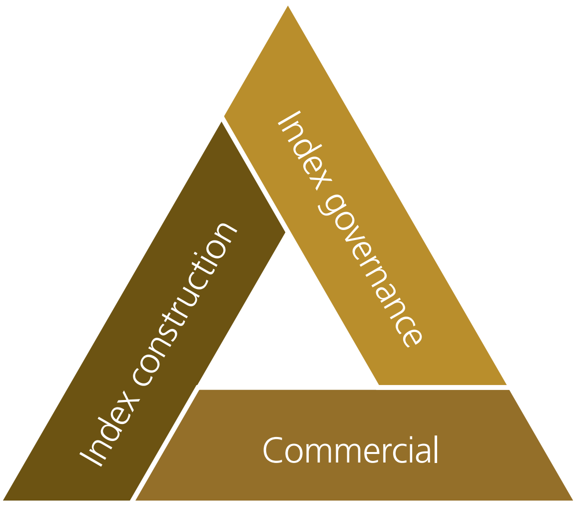
Multi-step iterative process

Source: UBS Asset Management.

Selecting a standard or custom index for an index or rules-based equity portfolio, similar to the overall index investing process, is a multi-step iterative task comprising a set of quantitative and qualitative criteria.

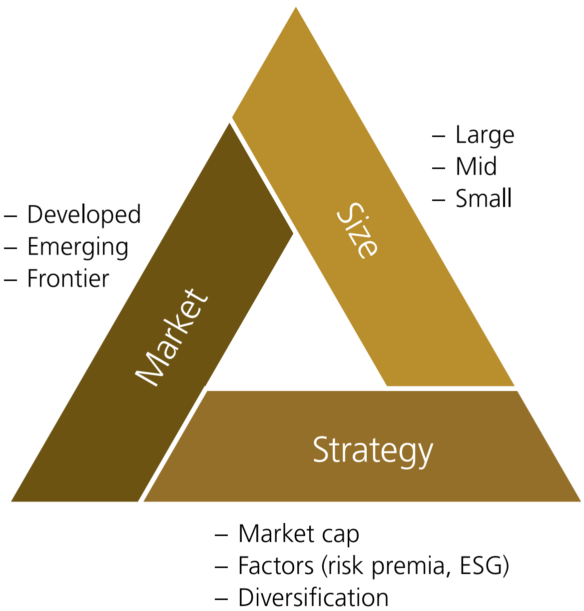
Exhibit 2 highlights our in-house selection analytical framework that spans three dimensions: index construction, index governance, and commerciality. In the following two sections, benchmark selection and index provider selection, we elaborate on these criteria and outline some of the key consideration points in selecting an index for an index or rules-based portfolio.

Exhibit 2: Benchmark and index provider selection
Multi-step iterative process comprising quantitative and qualitative analysis



Source: UBS Asset Management.

Exhibit 3: The investable equity index universe



Source: UBS Asset Management.

Benchmark selection

It is estimated that more than three million indexes are calculated daily by the major index providers.[2] With such multitude of indexes available, a methodical and objective approach to benchmark selection is helpful in selecting a suitable benchmark for an index portfolio.

The index equity investable universe could broadly be viewed alongside three dimensions: market, size, and strategy, shown in *Exhibit 3*. As a first step in selecting an index, investors would need to decide in which of these three dimensions their benchmark should fit.

Market
Investable markets are organised in three geographical groups (developed, emerging, frontier) and each group comprises a number of countries.

Decision points:
- Developed or emerging, and if exposure to both is required, a combined all-world index or separate developed and emerging.
- Regional (e.g., Europe, APAC) or country (e.g., US, UK) indexes.
- If initial exposure would be required to one market/ region, would exposure to other markets be required in the future: this would be a determining factor for index provider selection as different index providers classify some of the markets differently (e.g., Korea is classified as emerging by MSCI and as developed by FTSE Russell).

Size
Investable markets are organised in three size segments (large cap, mid cap, small cap), with large and mid-cap typically combined in what is known as 'standard index'.

Decision points:
- Large and mid or small cap exposure, and if exposure to all there is required, a combined all-cap index or separate standard and small cap index.

Strategy
relates to the stock selection and/or stock weighting methodology of an index. Some of the key strategies include: market capitalisation weighted, risk premia factors, sustainable factors, thematic, diversified (e.g., equal weighted or a more complex approach to diversification). Other strategy indexes include: currency hedged, derivative (leverage, inverse, protected), and active strategies embedded in an index.

2 Source: Index Industry Association. Data as of 2022.

After a decision regarding the relevant components of the investable universe is made, investors would typically consider a number of points related to the index construction, including:

Index delivering on its objective
This might sound obvious, but there are cases of indexes being marketed by the index providers with a particular objective, yet upon analysing the data it is evident that the index does not actually meet such objective. For example, if an index claims to be 'low volatility', analysis of the historical volatility of returns should provide an indication of how this compares to the volatility of the underlying market cap weighted index.

Simplicity and transparency
One of the attractions of index investing is that indexes are typically constructed via clear unambiguous rules. If the construction methodology for an index is obscure, this could leave room for interpretation of the rules, and could potentially impact the tracking accuracy of the index portfolio.

Rebalancing frequency and turnover
Another attraction of index investing is lower cost compared to active management. Indexes with more frequent rebalancing and/or higher turnover would lead to higher transaction costs associated with the rebalancing trades.

Capacity and liquidity
Market cap weighted indexes with large- and mid-cap developed markets equity exposure tend to be highly liquid with high capacity, while some non-market cap weighted indexes and/or indexes with emerging markets and small-cap equity exposure could have lower liquidity and lower capacity. This point is particularly relevant for larger mandates.

Breadth
This point relates to the market and size dimensions of the investable universe outlined above.

Risk models (proprietary vs. industry-wide adopted)
More complex indexes involving optimisation/tilts are typically constructed using a risk model. Indexes constructed with an industry-wide adopted risk model (e.g., Barra, Axioma, etc.) allow their construction methodology to be analysed/tested more accurately by investors, while indexes constructed with proprietary risk models are more akin 'black boxes'.

Back-tests vs. live track record
This point is particularly relevant for some of the more recently launched factor and sustainable indexes where the performance and other metrics presented by the index providers are based on back-tests rather than live data. In some cases, the back-tested data might have been overfitted, and the risk-return profile of the index after launch might differ from the back-tests.

Rules-based strategy or an index
This point relates mainly to non-market cap weighted indexes, including factor and sustainable, when clients might opt either for a third party factor and/or sustainable index, or select market cap weighted index and achieve the factor exposures via screens and/or tilt on the portfolios, i.e. via a rules-based strategy.

Index provider selection

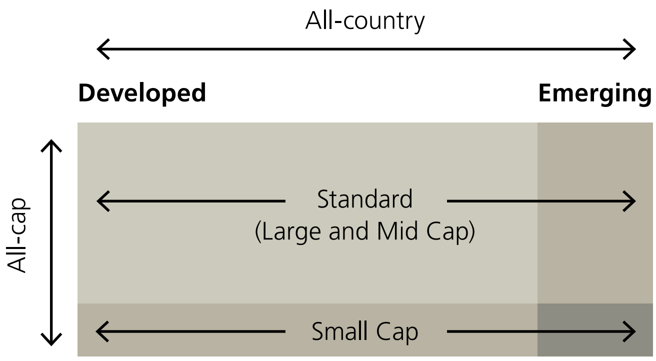
The requirements for market, size, and strategy exposure of the benchmark noted in the above section would typically influence the selection of an index provider. Index providers tend to offer their indexes in two main groups, local and global, as outlined below.

Local indexes are the so-called 'flagship' indexes covering a specific geographic segment. Examples include: S&P 500, Dow Jones Industrial Average, Russell 3000, FTSE 100, EUROSTOXX 50, DAX, SPI, etc. These indexes could be viewed as 'stand-alone' as they are not constructed with a building block approach in the context of the global investable universe – i.e., these indexes are favoured by investors aiming to gain exposure to a specific geographic segment via the flagship/blue chip local indexes associated with that segment. For example, if an investor would like to gain exposure to the US large- and mid-cap equity market, and are not interested in gaining exposure to other markets/size segments, they would likely consider S&P 500.

Global indexes aim to capture the global investable equity universe via indexes constructed by a building block approach, allowing investors to gain exposure to one, more, or all market and size segments globally without gaps or overlaps. These are suitable for investors who either want to gain exposure to the global investable universe from the onset of launching their index equity portfolio (via a global index) or gradually via combining different market and size segments (building blocks). MSCI Global Investable Market Indexes (GIMI) and FTSE Global Equity Index Series (GEIS) are some of the most popular global index series. In *Exhibit 4* we outline the typical building block approach in constructing global indexes.

In addition to mainstream, long established index providers such as MSCI, FTSE Russell, S&P DJI, and STOXX, there are more niche, specialist index providers such as Scientific Beta and Research Affiliates, focusing on construction of factor indexes, as well as index disruptors such as Solactive, offering high degree of customisation.

Exhibit 4: Global indices constructed via building blocks



Source: UBS Asset Management.

In addition to deciding on local vs. global index provider, investors should also consider index governance and commercial aspects as part of their index provider selection.

Index governance

Index provider reputation and longevity
Once a benchmark is selected and applied to an index equity portfolio, it is very disruptive to have to change it for another index, especially an index from another index provider. Such change might be triggered by the index provider going out of business or having to rationalise index series due to low investor interest making these index series financially not viable. A due diligence on the index providers, including review of their ownership structure, financial position, and business plan, could provide insights on their potential longevity.

Research, data availability, and support
Established index providers employ large teams of researchers conducting analysis on a variety of topics, including market structure, corporate events, risk premia factors, sustainability, etc. Availability of such research and databases is particularly relevant in the construction of custom indexes. Additionally, timely and comprehensive support from the index providers in answering investor questions is important, especially when the questions concern treatment of corporate events in the index, as these could impact the tracking accuracy and the value of the index portfolio. Data and analytics are increasingly important in light of the growth in factor and sustainable indexes, with many index providers buying specialist database, especially in the field of sustainable data. While such databases allow index provider to offer more customisation, such customisation tends to be restricted to the toolkit of the index provider.

Proven governance history
As indexes are rules-based strategies, transparent, unambiguous and robust rules related to their construction methodology, calculation policy, corporate events treatment, and rebalancing, are key for the efficient implementation and management of an index portfolio.

Commercial

Asset-based index licence fee and index data cost
With the continuing strong growth in index investing, index providers are trying to capitalise on this trend by charging asset-based index licence fees for the right to track their indexes (typically these fees are basis point-based fees applied on AUM) as well as custom index data fees for constructing tailor-made indexes (typically these fees are annual fixed monetary amount fees applied per index). These fees are payable by investors in addition to the management fee, and for larger size index portfolios index fees could dominate the overall fee. Fees vary between index providers, and could also be negotiable, hence, it is worth obtaining indicative fee quotes from different index providers.

Competing indexes
Related to the above point on index fees, availability of competing similar indexes constructed by different index providers could potentially allow investors to select the most cost effective index.

Client interest
Client interest in an index is important from two aspects. First, the more popular an index is, the more resources, support and maintenance an index provider would typically allocate to that index, and it would also be less likely such index to be discontinued. Second, the more assets track an index via index portfolios, the more impact there would likely be on the price formation of the basket of additions to and deletions from the index around index rebalance, and the more micro inefficiencies could potentially be exploited allowing to add incremental value to an index portfolio.

2

Investment vehicle selection

Multi-step iterative process

Source: UBS Asset Management.

There are two popular investment approaches for long-only equity index portfolios, segregated accounts, typically used by institutional clients with large, often customised, portfolios, and exchange traded funds (ETFs), typically used by institutional, wholesale and retail clients with portfolios of any size. In general, ETFs are best suited for tactical exposure while segregated accounts are best suited for strategic exposure, although there are exceptions to this, including many investors using ETFs as part of their strategic asset allocation.

ETFs are a relatively newcomer to the investment world but have recorded spectacular growth since their launch in 1990. Total AUM in ETFs have now reached USD 14 trillion globally[3], and exceed AUM in hedge funds. Given ETFs' increasing share of overall index assets, we believe investors need to be aware of their specifics when selecting an investment vehicle for their index portfolio. Below, we outline some of the key points that investors should consider when assessing the suitability of different investment vehicle options for their index portfolios.

Structure and regulation
Segregated accounts are created for and managed on behalf of one investor only and they are typically unregulated. Such structure allows literally unlimited degree of flexibility in terms of mandate customisation to suit investor's specific requirements. In contrast, ETFs are organised as pooled vehicles open to many investors. They are listed on regulated exchanges, trade throughout the day and are continuously priced, just like common stocks. ETFs are regulated by national and supra-national investment directives, such as the UCITS directive in the EU. Although customisation is not available on ETFs, the vast range of ETFs available on practically any index allows investors to select from a variety of exposures. ETFs offer three key advantages: intraday liquidity, holdings transparency, and certainty of execution. They can be traded on the primary stock exchange, on multi-lateral trading facilities via the request for quote protocol and off exchange via the systematic internalizer regime. They can be traded on risk or versus NAV depending on the client's execution strategy. Unlike other pooled funds, there is no concept of a swing adjustment so the client knows the ETF price or spread to NAV before trading. ETF providers are required to publish the full holdings daily.

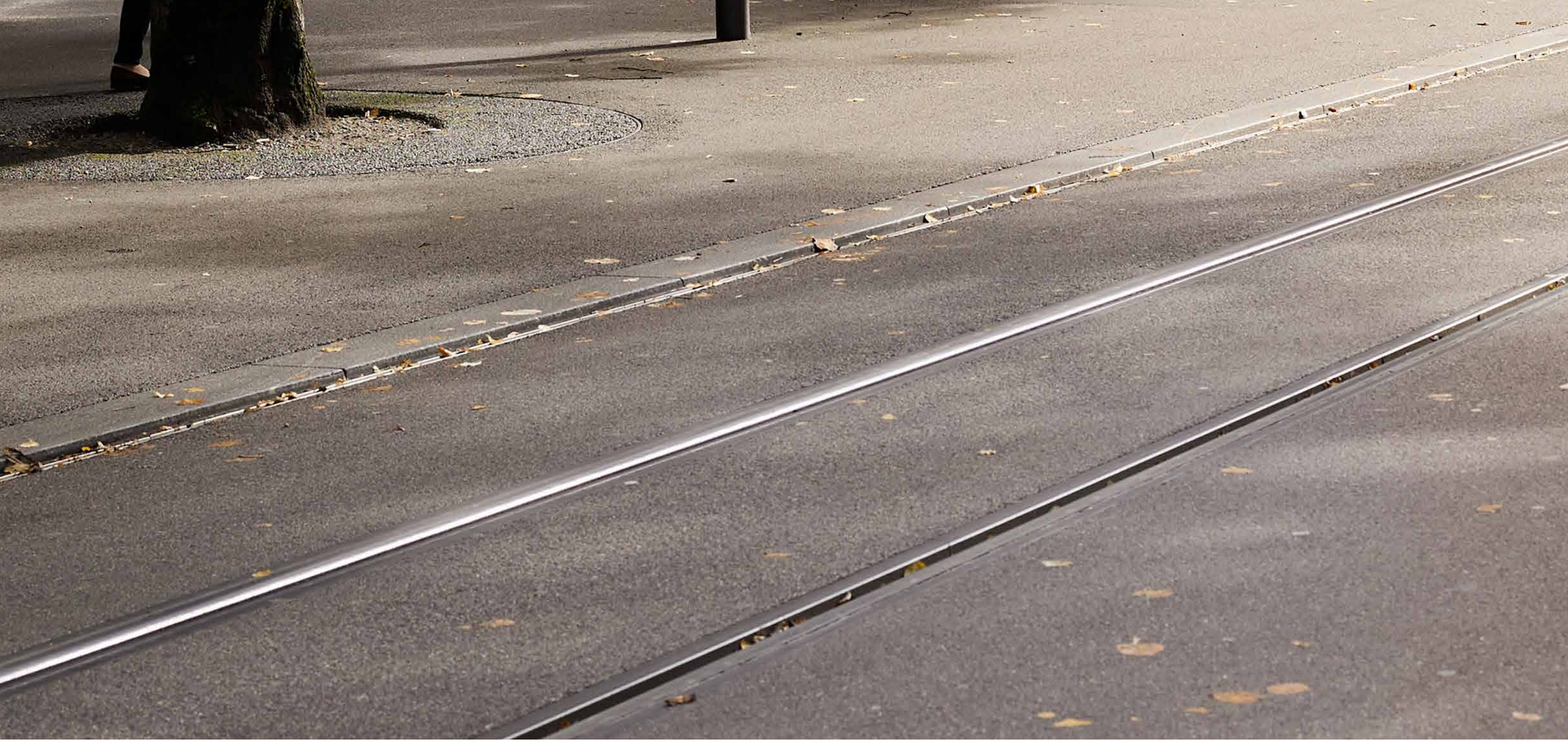
Cost
Segregated accounts and ETFs are priced differently and the overall cost, for a product tracking the same index, could vary significantly between the two. As a general rule, for larger size long term mandates segregated accounts tend to be a more cost effective solution than ETFs, but investors need to consider the specifics associated with the cost of the two investment vehicles, including:

– ETFs typically quote total expense ratio (TER) which, as the name suggests, is an all-encompassing flat fee that all investors in the ETF would pay, irrespective of the size of their portfolio.

– The cost of a segregated portfolio comprises several components, including management fee, index fee, and custody fee. Management fee, paid to the index manager, is negotiable and impacted, among other factors, by portfolio size, index complexity and index geographical exposure. Index fee includes asset-based index licence fee and index data fee, paid to the index provider, typically applies to all index portfolios, and, depending on the portfolio size and index type, could be the highest component of the overall fee. Custody fee, paid to the custodian, is usually negotiated between the client and the custodian of their choice.

Stock lending income can help offset the cost for both ETFs and segregated accounts, although investors in segregated accounts would have more control over the stock lending arrangements. Investors in ETFs may be able to earn additional stock lending income from lending the ETF.

3 Source: ETFGI, data as of August 2024.

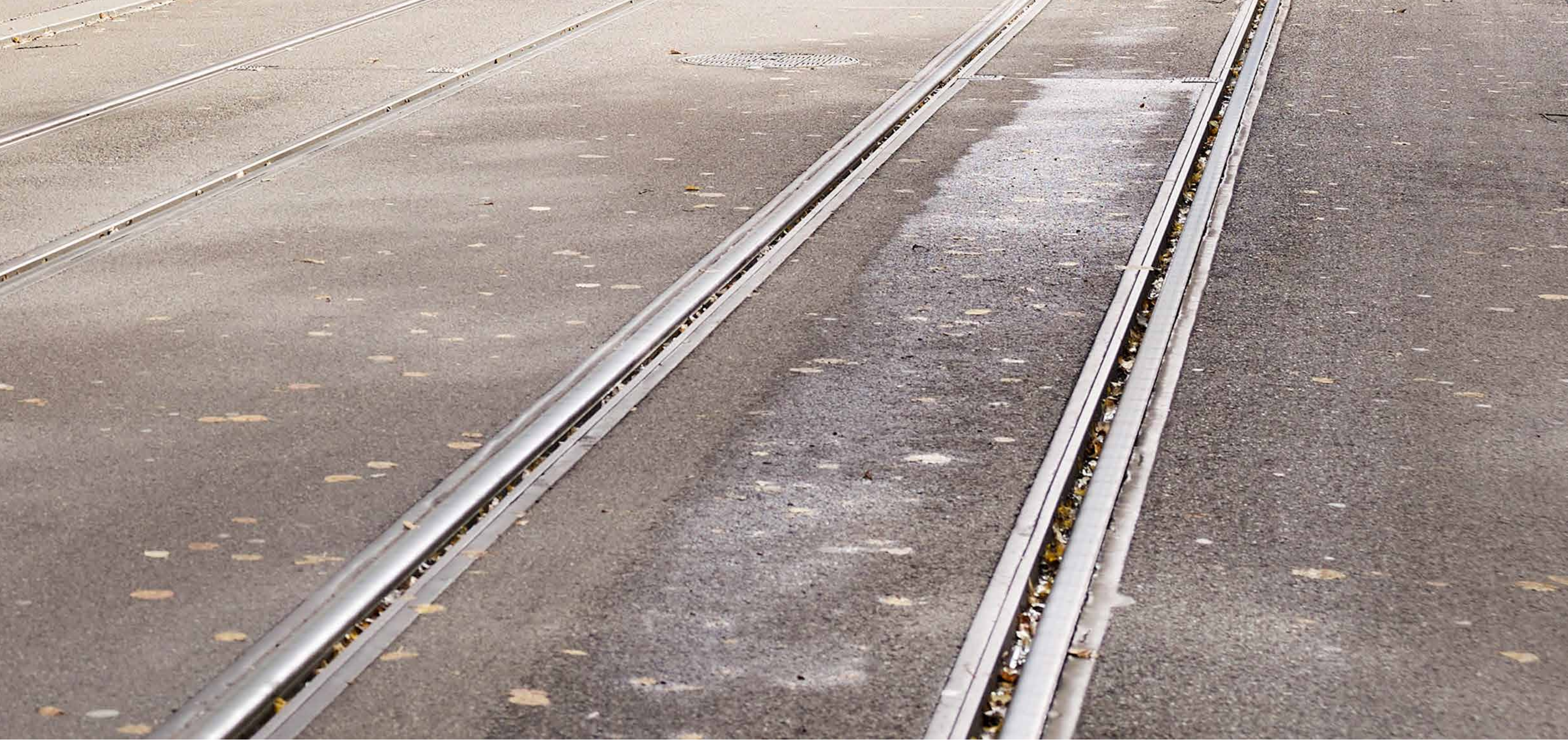


Operational set-up
ETFs are operationally easy and quick to access for investors: they are long-only instruments with continuous pricing, have no maturity date and trading ETFs is analogous to trading cash equities. ETFs benefit from no onboarding requirement with the ETF provider and anonymity of investment. Segregated accounts tend to have a longer operational set-up process, involving execution of Investment Management Agreement, which is tailored for every segregated portfolio, custody set-up with the client's preferred custodian and customised reporting. In emerging markets opening custody accounts could be a long and somewhat expensive process.

Transparency
Both segregated accounts and ETFs are highly transparent investment vehicles, but their transparency stems from different aspects. ETFs' transparency is related mostly to their structure and set-up, i.e., continuous trading throughout the day on regulated exchanges and daily disclosure of holdings. Segregated accounts' transparency occurs because the underlying equities are owned directly by the client, allowing continuous transparency, if required. One area where transparency tends to be higher for ETFs compared to segregated accounts is performance: performance for segregated accounts typically occurs on a monthly basis while for ETFs it is available daily.

Customisation
As pooled vehicles are open to many investors, ETFs and index funds do not offer any customised features – to put it simply, investors get what's 'written on the tin'. However, the vast range of ETFs available on practically any index allows investors to select from a variety of exposures. Segregated accounts, in contrast, can be tailored to client's specific requirements from a number of angles. Clients can select a custom index as a benchmark for their index portfolio, or they can opt to keep the underlying index unchanged and apply the customisation on the portfolio via a custom rules-based strategy.

Direct ownership of underlying
The topic of direct ownership of underlying is, in a way, related to the topic of customisation. Because ETFs are pooled vehicles open to many investors, clients don't typically have control over matters such as trading for index changes, corporate actions treatment, risk budget utilisation, and voting (the latter is starting to change with potential opportunities to vote in certain exposures). Investors with segregated accounts, on the other hand, have a very high degree of control, as they could discuss and agree with their index manager the most efficient trading strategy and risk budget utilisation, stock lending arrangements, voting and engagement policy to match their specific requirements.



Trading and liquidity

ETFs are usually traded on risk (an arrival price benchmark) or versus NAV (NAV benchmark). Increasingly we are seeing ETFs traded via dedicated fair value algorithms. The client is in full control of the execution strategy in terms of how to trade (exchange, multi-lateral trading facility or over the counter), when to trade (risk or versus NAV) and with whom to trade (which broker to trade with via the request for quote protocol). ETF investors can choose an execution strategy in line with their best execution policy. ETFs benefit from the concept of netting. In the secondary market ETFs buyers and sellers may match off therefore there is no primary market trade. As there is no primary market trade ETF investors may benefit from a reduced bid-ask spread versus NAV. Netting can be very beneficial in exposures with a large creation redemption spread due to taxes and stamp duties. The liquidity and spread of an ETF is a function of the liquidity and spread of the hedge. The hedge can be the underlying constituents, futures, other ETFs or the ETF itself. ETFs benefit from explicit liquidity (i.e. the ADV of the ETF itself) and implicit liquidity (i.e. what could be traded by analysing the liquidity of the hedge alternatives). An ETF tracking the S&P 500 Index that has never traded is not illiquid as it has high implicit liquidity due to its ability to be hedged with S&P 500 futures.

Segregated accounts, on the other hand, are traded with one particular entity and would not typically be economically viable for very low investments, given the initial set-up costs.

Withholding tax on dividends

The impact of withholding tax (WHT) on dividends on client portfolios varies significantly depending on, among other factors, client type, domicile and vehicle jurisdiction. While we do not offer tax advice, segregated accounts could be highly efficient vehicles for pension funds as they typically benefit from favourable tax treatment on dividends in certain jurisdictions. Investment in ETFs, on the other hand, could be subject to WHT on the dividend. When dividends are paid in the ETF, the level of non-reclaimable WHT would depend on the domicile of the ETF. If and when dividends are paid out of the ETF to investors, they may also be subject to WHT depending on the domicile of the ETF and the investors. Therefore, when selecting an ETF, investors would typically consider simultaneously the fund domicile, the tax treatment on ETF dividend distributions, and their tax position on distributions, in order to optimise their total cost of ownership.

Ultimately, segregated mandates are typically more suitable and cost-effective for longer term, larger size investments, especially with customisation, for institutional investors, while ETFs might be more suitable for institutional, wholesale and retail clients with portfolios of any size, given they could be highly liquid, cheaper to trade and faster to set up. In practice, many institutional clients often invest their index portfolio in a mix of segregated accounts and ETFs.

3

Portfolio management

Multi-step iterative process

Source: UBS Asset Management.

In 1989, to celebrate its 150th anniversary, Swiss watchmaker Patek Philippe created a pocket watch, Caliber 89, which to this day remains the most complicated portable timepiece ever made.

The watch comprises 1,728 parts, including two dials, eight disks, 61 bridges, 129 jewels, 184 wheels, 332 screws, 415 pins, and 429 mechanical components; it took five years of research and development, and another four years to bring it into physical existence[4].

Managing and implementing efficiently index portfolios is analogous to the level of complexity (but thankfully not the cost!) of Caliber 89: a portfolio benchmarked to a equity index could typically comprise c. 3,000 index constituents from c. 50 countries and c. 25 industries and be exposed to multiple risk premia and/or sustainable factors. Using sophisticated systems and processes, each index constituent has to be analysed carefully and index changes have to be implemented optimally as they occur; a process, involving timely, detailed, precise and pragmatic consideration of liquidity, turnover, cost, corporate events and valuation metrics. In this note we discuss our approach to unravelling and managing these complexities.

Trading for index changes: the 'mainspring' in the index portfolio management process
Our experience over many years is that when stocks are added to or deleted from major indexes, prices can be distorted by market trading at the impact point due to aggregate market demand. Thus, adjusting the timing of purchases and sales by a short period in a risk controlled manner can often add value without significant risk to the performance of the portfolio. These small but incrementally significant gains could be a major source of added value for index equity strategies. Attention to detail of stock price formation patterns could allow index clients to capture added-value from pricing inefficiencies at the impact point of index changes with minimal impact on tracking accuracy. The degree of value that could be added depends on a number of aspects, including the amount of assets tracking particular index, the size of basket of additions/deletions, liquidity, stock specific events, accuracy of predictions, etc.

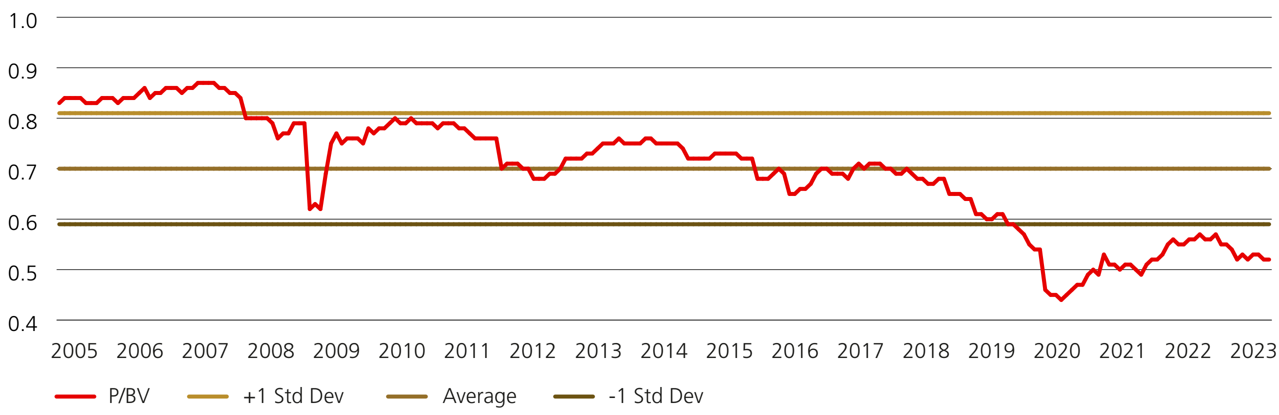
Corporate events: the 'wheels' that make the index tick
Specific rules apply to corporate actions treatment in different index types, for example between market capitalisation weighted and non-market capitalisation weighted (for example factor indexes, sustainable indexes, etc.) indexes. When corporate actions affecting index constituents are announced, we have to decide how to trade and implement them in our clients' portfolios. Due to the above mentioned nuances and intricacies, often the treatment of the same stock impacted by the same event would differ between our market cap and non-market cap portfolios. Corporate activity in market cap indexes is largely self-rebalancing. This might not be the case with non-market cap indexes. The main difference in the treatment between market cap and non-market cap indexes is in the case of corporate events such as spin-offs, mergers, takeovers and rights issues. While these events require little or no actions in market cap indexes, they may result in far more significant trading in risk premia factor and sustainable indexes. When events are treated on a 'case-by-case' basis, we analyse carefully the treatment of the event in question in different indexes, and, if necessary, we seek further clarity from the index providers, in order to determine our trading and implementation strategy for our clients' portfolios.

4 Source: Patek Philippe.

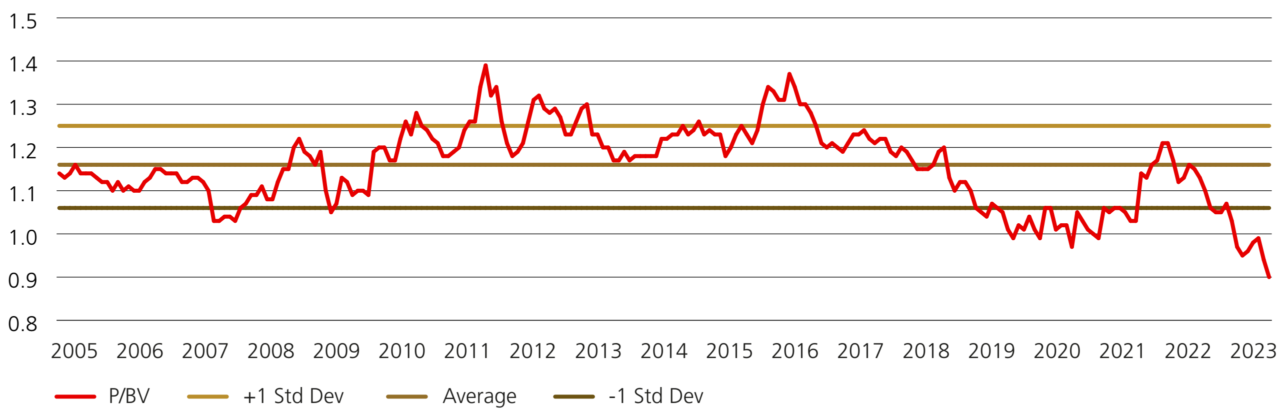
Valuation metrics: the 'hands' of the index 'clock' measuring the spirit of time
Similar to the way active equity portfolio manager review stocks' valuation metrics, as part of our index analysis, we examine a range of fundamental valuation metrics indexes, especially on non-market cap weighted indexes such as factor indexes, and compare these to the valuation levels of market cap indexes. Such analysis provides us with an indication of the valuation levels of factors indexes, relative to their long term historic trading levels and to the underlying market cap index.

In *Exhibit 5* we show the valuation levels of different factor indexes capturing some of the key equity return factors, namely value, size, low volatility, quality. It is hard to time accurately entry and exit points into a particular factor strategy, and we would not suggest using index valuation levels as a tool to 'time' entry and exit points, but as a broad indication and a 'common sense' check of the trading levels of alternative beta indexes. If we observe that certain indexes trade outside their long term historic levels, we investigate the causes of the valuation patterns. For example, if a factor index trades at high multiples, one

Exhibit 5: Alternative beta indexes valuation: developed markets
Factor valuations tend to be cyclical
Relative P/BV: MSCI World Value Weighted vs. MSCI World



Relative P/BV: MSCI World Min Vol USD opt vs. MSCI World



Source: UBS Asset Management, MSCI, RIMES.
Note: Data for developed markets relative P/BV ratio, historic average, plus and minus 1 standard deviation to 31 December 2023. Indexes valuation metrics based on monthly data from January 2005 (October 2008 for MSCI World Equal Weighted) which are the earliest dates when data is available for the examined indexes. Data for alternative indexes contains live and back-tested data sourced from index providers.
Past performance is not a reliable indicator of future results.

might conclude stocks capturing this factor are overvalued. But further valuation analysis of the index might reveal a different story: some alternative indexes tend to be more concentrated, consequently addition/deletion or large weight change of just several major index constituents could impact the overall index valuation metrics. However, this does not necessarily mean that all stocks capturing the factor in question are overvalued.

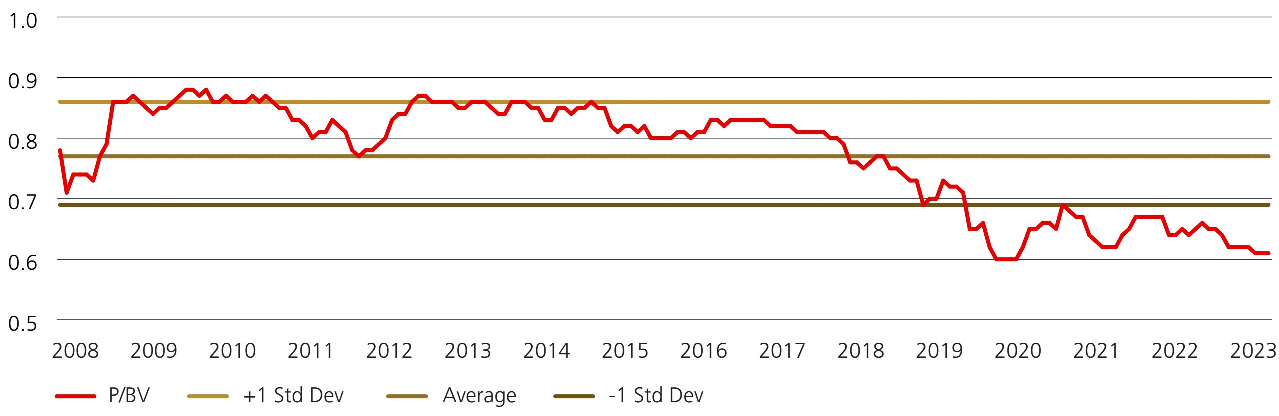
Implementing index portfolios efficiently: staying ahead of time

In summary, index portfolio implementation is an elaborate process requiring skill and dedication, just like Swiss watchmaking. Our approach involves in-depth, timely and precise analysis of index changes, liquidity, turnover, cost, corporate events and valuation metrics – but with experience and expertise these processes can run like clockwork.

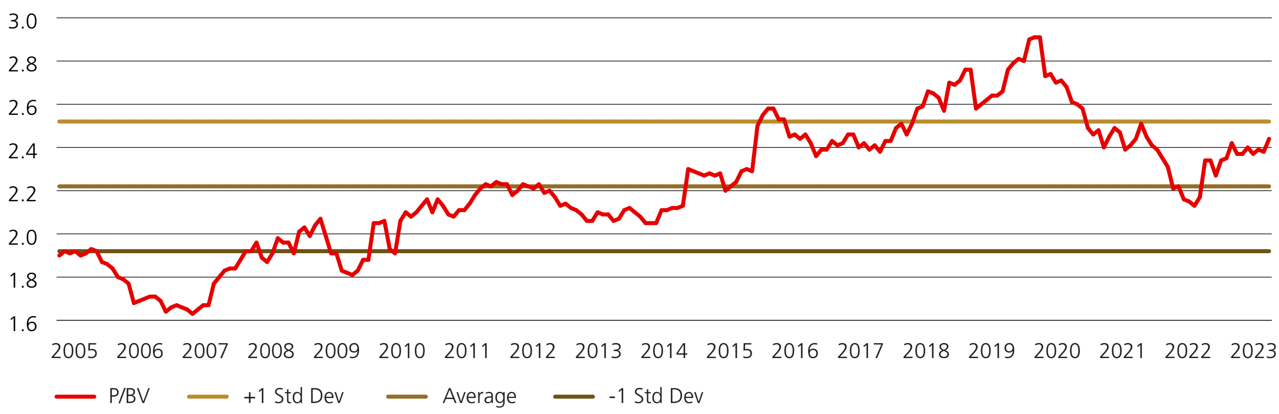
Exhibit 5: Alternative beta indices valuation: developed markets

Factor valuations tend to be cyclical

Relative P/BV: MSCI World Equal Weighted vs. MSCI World



Relative P/BV: MSCI World Quality vs. MSCI World



Source: UBS Asset Management, MSCI, RIMES.
Note: Data for developed markets relative P/BV ratio, historic average, plus and minus 1 standard deviation to 31 December 2023. Indexes valuation metrics based on monthly data from January 2005 (October 2008 for MSCI World Equal Weighted) which are the earliest dates when data is available for the examined indexes. Data for alternative indexes contains live and back-tested data sourced from index providers.
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Americas
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