

THE LONG AND WINDING ROAD:

HOW LONG-ONLY EQUITY MANAGERS TURN OVER THEIR PORTFOLIOS EVERY 1.7 YEARS

TRAGEDY OF THE HORIZON PROGRAM

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TRAGEDY OF THE HORIZON:

EXPLORING AND ADDRESSING THE SHORT-TERM FOCUS OF CAPITAL MARKET ACTORS TO SECURE A MORE SUSTAINABLE ALLOCATION OF CAPITAL FOR THE LONG-TERM

A 2° INVESTING INITIATIVE & GENERATION FOUNDATION PROJECT:

ABOUT THE PROJECT: The 2° Investing Initiative & The Generation Foundation have formed a multi-year partnership to explore and address the 'Tragedy of the Horizon', describing the potential suboptimal allocation of capital for the long-term due to the limited ability of the finance sector to capture long-term risks within short-term risk-assessment frameworks. The project aims to assess artificial and natural factors that compress the horizons of market players, such that long-term risks—transmitted from physical assets through to asset owners and managers—get mispriced. Such a mispricing of long-term risks creates a 'void' between the assets and liabilities of long-term asset owners and can eventually amount to an asset-liability mismatch.

This report is the second in the Tragedy of the Horizon series and focuses on the role of equity fund managers by assessing portfolio turnover. Like drivers on their way to a destination for a certain time, we view investors as agents on a journey with liabilities to meet in the future. Their headlights are their outlook on the future and the brightness of these headlights determines how fast they are able to drive on a road at night. The faster they drive, the sooner they may reach their destination and meet all of their liabilities. If the road is full of turns, then the driver can never turn their brightest beams on and reach full speed. Similarly, high portfolio turnover makes the investor's decision-making process full of twists and turns, obstructing their view of long-term performance and an optimal allocation of capital for the long-term. Giving investors a straighter road, or holding assets for longer, may make them more efficient drivers and better fiduciaries in the long-term.

Stages of the 3-year project include:



1. Informing the debate by quantifying time horizons across the investment chain, for example, with respect to the liabilities of asset owners, mandates of asset managers, maturity of credit, equity portfolio turnover, time periods analysed by analysts when performing discounted cash flow calculations, time horizons of risk models, backward-looking/forward-looking time horizons of data, and the lifetime of industrial assets, etc.).



2. Identifying the unintended consequences of risk management practices resulting from short-term frameworks, including barriers to the transmission of long-term risk signals and the implications for efficient and productive capital allocation;



3. Developing responses in partnership with the two key stakeholder groups, financial policymakers and long-term asset owners, to overcome the tragedy of the horizon, for example, by addressing reporting, risk management practices, products and tools, as well as policy frameworks.

We are interested in your views on this report and welcome collaboration. For more information, please visit:

www.tragedyofthehorizon.com

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FOREWORD FROM 2° INVESTING INITIATIVE

This report is part of a series on the *Tragedy of the Horizon*, the product of a partnership between The Generation Foundation and the 2° Investing Initiative. The project explores the idea of a financial risk-assessment 'valley of death', where long-term risks to real economy assets (for example, those stemming from climate change and the energy transition) get missed by financial intermediaries due to short-term time horizons in capital markets. Short-term pressures – including compensation incentives, client demands, the availability of data, and the cost of long-term risk integration – often amount to limited assessment of long-term risks, potentially resulting in suboptimal capital allocation and costly asset-liability mismatch for the long-term. This implies a fundamental mispricing of assets which, when corrected, could amount to both investor losses and costs borne by society more broadly. Measuring the extent of this problem, and developing potential solutions to it, is the core focus of the Tragedy of the Horizon project.

A key example of this tragedy is when asset managers seek short-term gains that run contrary to asset owners' potential interests in the longer-term. Previous research in this series (see 'All Swans are Black in the Dark' by 2° ii & The Generation Foundation, 2017), demonstrates that equity analysts typically do not capture non-linear risks likely to materialize beyond 3-5 years.¹ One of

the key obstacles to undertaking longer-term risk assessment by both buy and sell-side research is a lack of demand from the investors themselves. This is partly driven by the fact that even 'long-term' investors often collapse their *effective* time horizons by turning over their portfolios more frequently than their strategies imply – or by more than what may be optimal given the underlying risk-exposure of their assets and their long-run asset-liability management needs. The goal of this study is therefore to quantify the extent to which this might be the case in equity markets, via more up-to-date measurements of portfolio turnover, and to get a sense of the various drivers and constraints potentially contributing to this phenomenon.

Whether analysts focus on the short-term due to a lack of demand from investors, however, or investors feel the need to frequently turnover their holdings as a de-facto risk-management strategy given short-term analysis, remains to be seen. That said, regardless of where this cycle of 'short-termism' begins, the underlying securities remain exposed to real economy risks and are thus still subject to impairments, stranding or write-downs. As such, turning over portfolios without proper long-term risk assessment may not constitute an effective risk-management strategy but, rather, a risky game of financial 'hot potato'.

Figure 1: Time Horizons in A Long-term Investor's Portfolio Management



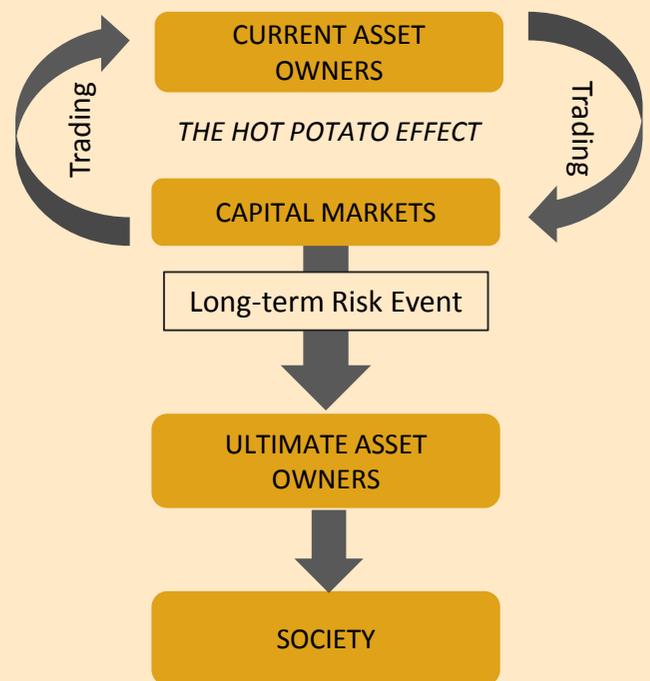
Source: 2°ii 2017

In financial markets, equity shares of real assets change hands many times, like a game of hot potato. When securities change hands, the liabilities of physical and intangible assets change hands. For example, a share of a utility company represents an ownership stake in a distribution network, among other things. Investors seeking alpha may exchange the security many times depending on the price of the security. Investors do not always consider the lifetime and risks faced by the underlying assets themselves, which often determine the price of the security. Long-term investors, though, often do consider how assets will perform in the long-term and may hold a security for long enough to maximize their risk-adjusted return. This will also enable them from becoming the Ultimate Asset Owner, or the investor that holds an asset when the music stops and long-term risks materialize in the form of losses (see right). However, market conditions may prevent the long-term investor from looking sufficiently far ahead.

The hot potato game places limitations on the time horizons of long-term investors. The high liquidity of public markets enables investors to trade frequently and capture profits from short-term price movements. Naturally, this trading pattern leads many investors to be more interested in what a stock price will be tomorrow than in 10 years. The accumulation of short-term profits can make investing very profitable over relatively short timespans. Thus, investors often focus on the drivers of short-term fluctuations and technical indicators of stock value rather than long-run fundamentals. This bias, enabled by highly liquid and frequent trading, means that asset management fees often do not get reinvested in long-term research and analysis, company stewardship, or innovation in longer-term risk-assessment frameworks. These pressures and incentives to focus on the short-term may not always serve the best interests of long-term asset owners.

As a result, the time horizons and incentives of asset owners may be misaligned with fund managers. Asset owners have liabilities that extend over many years. For many asset owners, liabilities can extend as far as 50 years, e.g. for endowment funds, sovereign wealth funds, and pension funds (see right). These asset owners require long-term research to give visibility into the likelihood of meeting their liabilities. Institutional equity funds often act as fiduciaries for these asset owners and limit their investment decisions via an investment mandate. This mandate often contains a strategy that is in line with the client's interests. But, in most cases, the incentives of the fund manager are not well aligned with the asset owner's liabilities.

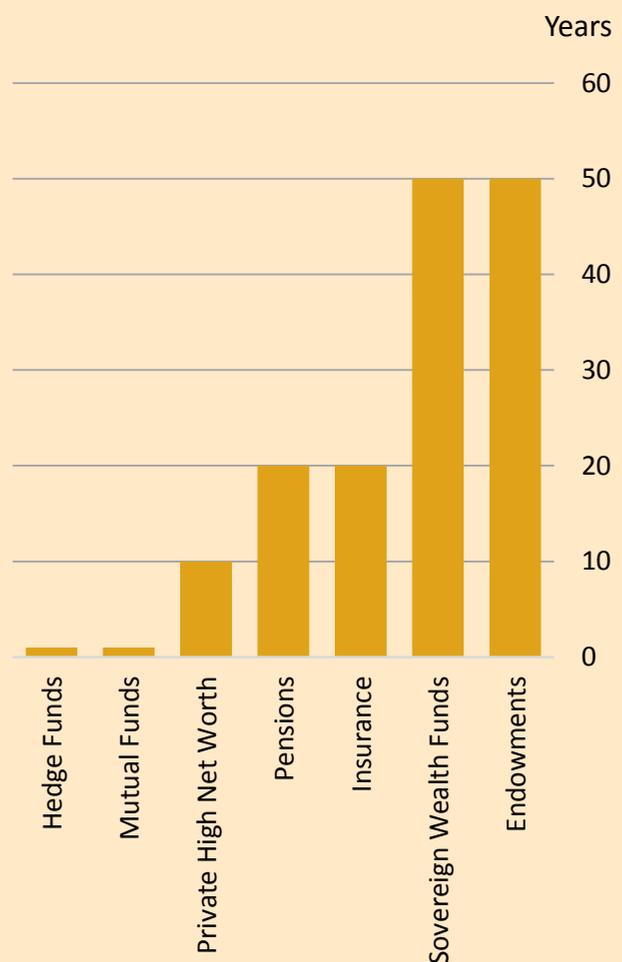
Fig. 2: The Hot Potato Game of Capital Markets



Source: 2^oi 2017

Fig. 3: Average Liability Lengths of Leading Asset Owners

Asset Owners Have Long-Liabilities



Source: MFS 2016

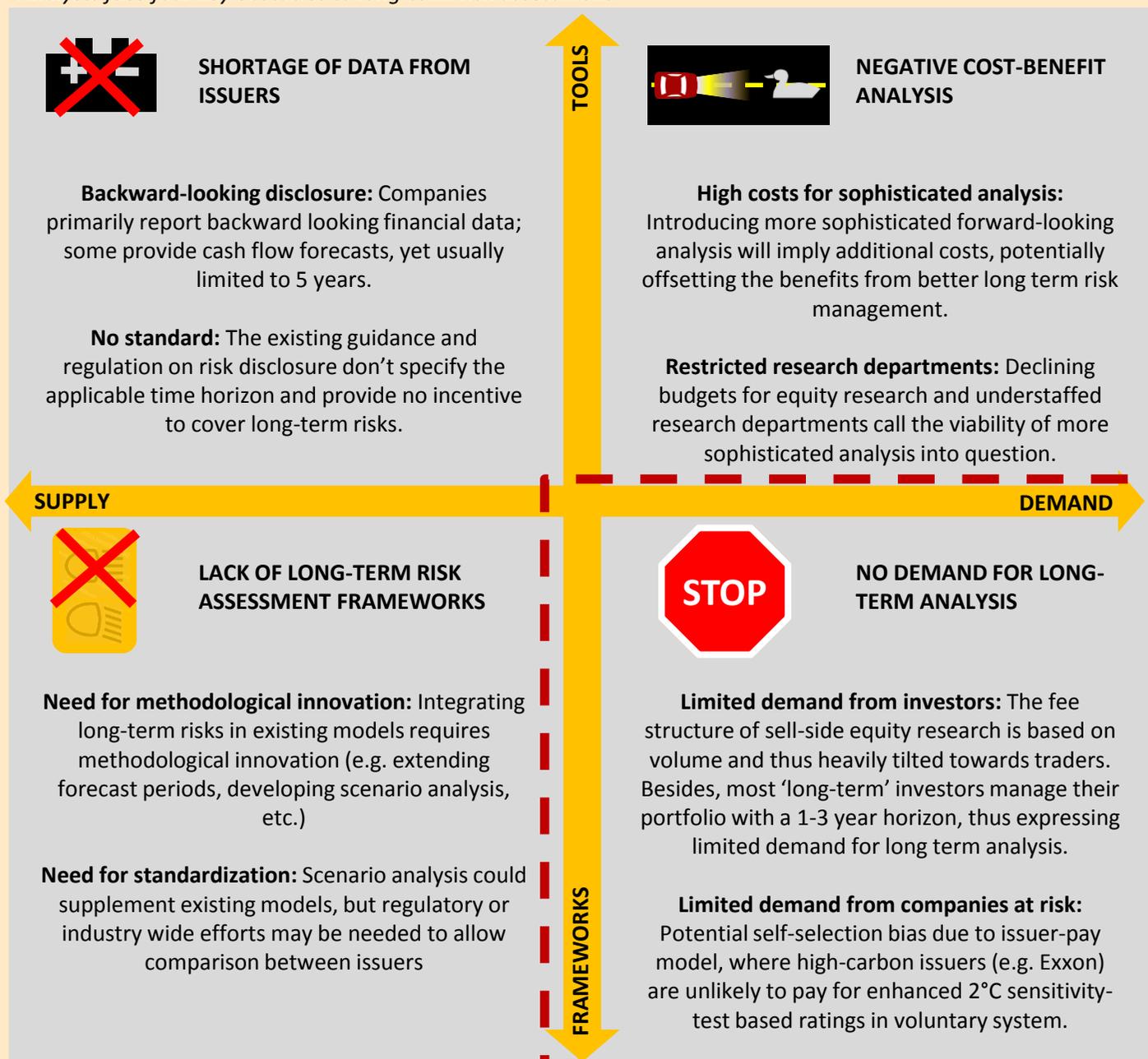
The short-term time horizons of asset managers may constrain the time horizons of other actors in the investment chain. 2° Investing Initiative and the Generation Foundation’s “All Swans are Black in the Dark” report identified four constraints on long-term analysis (beyond 3-5 years) undertaken by sell-side and buy-side analysts (see Table 1).² In the first quadrant, a shortage of data from companies on their long-term plans, in the second, the high cost and low benefit of long-term analysis, in the third a lack of standardized frameworks for long-term risk analysis, and in the fourth, a lack of demand from investors. Taken together, these factors constrain investment decision makers from accurately assessing long-term risks beyond 3-5 years and thus allocating capital accordingly.

This report focuses on the lack of demand for long-term risk assessment. Investors might not demand long-term research, even when financially material, if their time horizons are compressed compared to their underlying risk exposure. Interviews with leading research firms revealed that the predominant clients of equity research are short-term traders with no interest in the prospects of a security beyond one year; investors with long-term liabilities also demanded only short-term research. The consequent short-term focus by financial analysts affects security pricing and can amount to suboptimal capital allocation. To quantify this, this study analyzes portfolio turnover of institutional equity funds, a useful indicator of investor time horizon and approach.

Figure 4: Obstacles to Long-term Risk Analysis

Analysts face four key obstacles to long-term risk assessment

Source: Authors



The consequence of this mismatch may be that asset owners are exposed to mispriced long-term, nonlinear, and non-cyclical risks. Previous 2^oii & The Generation Foundation research has distinguished certain types of risk that are commonly missed by investors due to short-term time horizons, called White Swans in the Dark.³ These risks include slow-building, de-anchoring, and point-in-time risks (see Fig. 5 at right). These risks are probable and may materialize at any time.

Some examples of these risks include the Energy Transition and Artificial Intelligence. The Energy Transition refers to the de-carbonization of the economy due to climate policies. The probability of this risk has increased after the 2016 Paris Agreement and will affect companies in the long-term. Artificial Intelligence refers to the automation of important functions within the economy and is expected to develop rapidly over the next 30 years. Both of these trends pose risks and opportunities to certain companies and sectors. If companies do not prepare for and adapt to these risks, their products or business models could become obsolete. For the Energy Transition, highly carbon intensive industries are exposed to losses due to carbon regulations, and for Artificial Intelligence, business services and consumer industries are arguably most threatened.

Ignoring these risks could expose both investors and society to widespread losses. Anticipating non-linear developments allows for a more sustainable allocation of capital for the long-term. If investors finance the solutions to major problems, then capital markets can continue to improve society by distributing resources towards ventures that maximize social welfare. Failing to anticipate these risks, however, might imply negative externalities and financial losses that ultimately get passed onto society if governments step in to bear the costs. Additionally, companies that do not adapt from 'doomed' business models may become overvalued, exposing investors to crashes. Further, governments may need to bail out affected companies, similarly exposing investors and society to high costs. While markets integrate new information highly efficiently, forward-looking trends are often only partially integrated. As such, the materialization of long-term risks may occur before the market has sufficient forewarning to accurately price them.

“Less can be more” for portfolio turnover. To solve this problem, investors could support companies that are well-positioned to benefit from long-term trends and avoid those that are exposed to long-term risks. Moreover, longer-term investors can build a demand for long-term research.

Fig. 5: Taxonomy of White Swans in the Dark
Non-linear and long-term risks likely to get missed by financial models
 Source: 2^oii 2017

Type of Risk	Detailed Definition
Slow-Building E.g. ‘Sharing Economy’ shifts consumption patterns and shrinks market share (e.g. Airbnb effect on hotels).	<ul style="list-style-type: none"> Risks are slow to build at first but gain momentum over time so the expected impact of an event risk grows at a greater-than-linear rate over time. Linear cash flow projections neglect the non-linear trajectory of the risk.
De-Anchoring E.g. Stricter regulations (e.g. no indemnity for decommissioning) shift profitability of nuclear power below operating cost-efficiency.	<ul style="list-style-type: none"> Status quo relies on artificial or regulatory safeguards or barrier(s) to competition. If barriers are removed, the risk to the future cash flows of incumbents spikes dramatically. Linear cash-flow projections assume an artificial ‘risk anchor’, and thus do not account for the potential that it could be removed.
Point-in-Time E.g. An unfixable oil spill puts an oil company out of business, and potentially brings about regulation that hampers the entire offshore industry.	<ul style="list-style-type: none"> Probability of a high-impact event occurring in the short-term is low, but almost certain to materialize at some unforeseen point-in-time over the long-term. Linear cash flow projections do not take such high-impact events with low immediate probability into account.

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EXECUTIVE SUMMARY

For the last decade, think tanks, industry commentators, investment institutions and regulators have been contemplating how to achieve ‘the holy grail’ of long-term investing and capture the resulting benefits. Progress has been made, with the introduction of stewardship codes, the publication of academic research and the introduction of new initiatives, institutions and investments strategies focused on long-term value creation. Yet, we know that many investors still don’t operate as long term investors, evidenced in part by the fact that investors often do not look ‘under the hood’ to explore the inner-workings of long-term investing in practice. This paper seeks to contribute to closing the gap between theory and practice in three ways:

- First, by taking a detailed look at the turnover experience of long-only active equity fund managers in Mercer’s database and related trends,
- Second, through exploring a number of manager investment case studies, and
- Finally, by making a number of recommendations to help investors develop and align intended turnover expectations in the implementation of investment portfolios.

By examining the turnover of active equity fund managers across different geographies and styles, we are able to learn more about asset managers’ time horizons and trading practices. This paper’s focus is on the role turnover plays in the asset owner-asset manager relationship and how a deeper understanding of this particular variable during fund evaluation can help investors to answer the following questions:

- Does measuring and monitoring turnover provide useful insights to the investor?
- Are investment managers’ actual turnover results in line with their *ex ante* projections and are they as focused on the long-term as many claim to be?
- Are investment managers cognizant of how portfolio turnover impacts transactions costs (and therefore risk/return) and whether turnover aligns with their mandates from asset owners?
- Does an ‘optimal level’ of turnover exist, either for the performance of investment portfolios, or the economy at large?

Through consideration of our quantitative and qualitative analysis, we can draw a number of key findings.

EVIDENCE OF LONG-TERM THINKING IN LONG-ONLY EQUITY FUND MANAGEMENT

The turnover of professionally managed long-only equity funds is going down on average despite rising overall stock market turnover, which means that long-only equity managers are not contributing in aggregate to rising stock market turnover.

Institutional equity fund investors tend to favor lower turnover strategies. Sixty percent of the assets managed by strategies in our sample have portfolio turnover of less than 40% and only 4% are in strategies with more than 100% portfolio turnover.

Overall equity managers appear to do a good job on average of keeping actual turnover within or near initial expected turnover levels. This is different from earlier findings which saw managers broadly exceeding turnover expectations over the period of study (June 2006 – June 2009) during which markets experienced a period of heightened market volatility around the Global Financial Crisis (GFC).

Sustainable and Responsible Investment (SRI) funds exhibit lower turnover than non-SRI funds. This evidences the philosophical alignment between the SRI and long-term investment movements, and the importance of long-termism to evaluating and understanding environmental, social and governance (ESG) risks and opportunities.

Trading costs and related impacts are monitored quarterly and are an active consideration in portfolio construction among a majority of managers we interviewed. While there is a recognized (potential) trade-off between alpha and trading costs, managers were generally of the view that trading activities will be influenced by return expectations, risk management considerations and transaction costs – all of which are changing over time.

A majority of the managers interviewed have sought to explicitly align a portion of employee compensation with the time horizon of the strategy's philosophy. In particular, for longer-term oriented, lower-turnover investment strategies, longer term performance (e.g. 3 and in some cases 5 years) often influences the calculation of an employee's total compensation.

EVIDENCE OF SHORT-TERM THINKING IN LONG-ONLY EQUITY FUND MANAGEMENT

'Optimal' turnover for investment performance is not a well-defined concept, though a review of current literature on the subject points to a 4-year holding period (25% turnover) as a reasonable estimate. This is well below the average turnover rate identified in this analysis.

Optimal turnover from the perspective of the environment and society at large is even longer than 4 years. Sustainable development requires thoughtful consideration today of long-term systemic issues like climate change and an aging population since many company capital expenditures and other investments in the real economy have lasting environmental and social impacts many of which are not thoroughly considered in financial analysis.

We find that equity fund managers replace all the names in their portfolio every two years on average, which compares to an average share replacement rate of 1.7 years (58%)(See Fig. 4).⁴ While these average levels of observed turnover are lower than in years past, they remain roughly two times higher than the theoretical optimal level of 4 years or 25%.

Quantitative strategies on average exhibit higher turnover than fundamental and blended strategies. This is unsurprising though does emphasize the need for an added degree of scrutiny when reviewing quantitative strategies as they are typically higher turnover and are thus more likely to experience higher transaction costs.

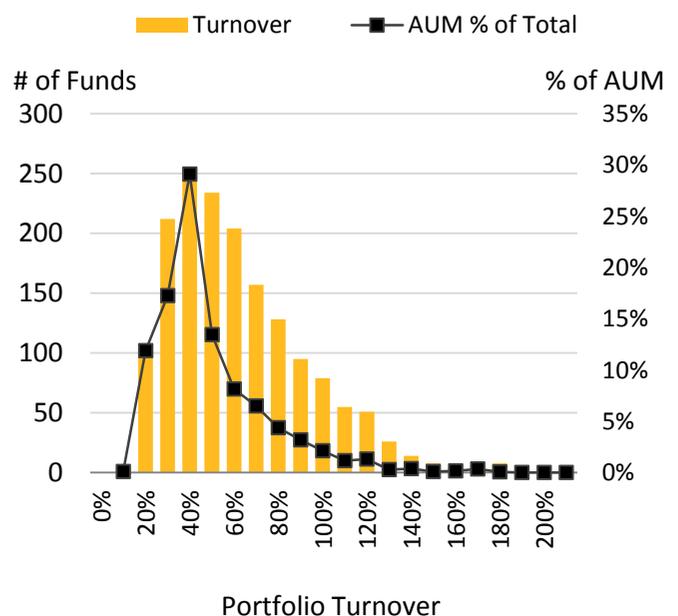
There are cases where managers seem to make suboptimal decisions due to their belief that clients could not tolerate short-term volatility. For example, one manager we interviewed had altered their portfolio construction process to invest in a wider number of stocks beyond their 'top picks' in order to dampen short-term volatility. The manager's perspective was that this had the potential of eroding long-term alpha generation.

Managers commonly view the turnover ratio statistic as an outcome of their process (not an input or an end sought). While trading costs are typically monitored quarterly, in practice, the extent to which managers actively quantify and continually monitor these costs and associated benefits can vary significantly. Managers expressed the need to balance ongoing management of the portfolio to implement the strategy and manage risk with the associated transaction costs that serve as a drag on returns. All of the managers interviewed indicated that investors and investment consultants rarely ask about turnover and trading activity when conducting due diligence or monitoring. When this variable is queried it is typically from the perspective of wanting to validate that the portfolio management team's implementation of the strategy is in line with the stated philosophy.

Managers of longer-term oriented, lower turnover investment strategies often commented that short-term volatility can create attractive buying opportunities to be exploited. For example, a number of portfolio managers interviewed believe that a disproportionate focus on the short-term (e.g. 0 to 12 months) by traders and the sell-side analyst community can create inefficiencies and opportunities for patient investors with longer-time horizons that have a differentiated view on the company's earnings potential compared to the market. So while equity managers may not be contributing to short-termism in markets by virtue of their own trading activity they are not likely to advocate for overall market change if it is seen to diminish opportunities for investors.

Figure 6: Portfolio Turnover Distribution by Fund Count and AUM Percentage

Fund managers average 58% portfolio turnover

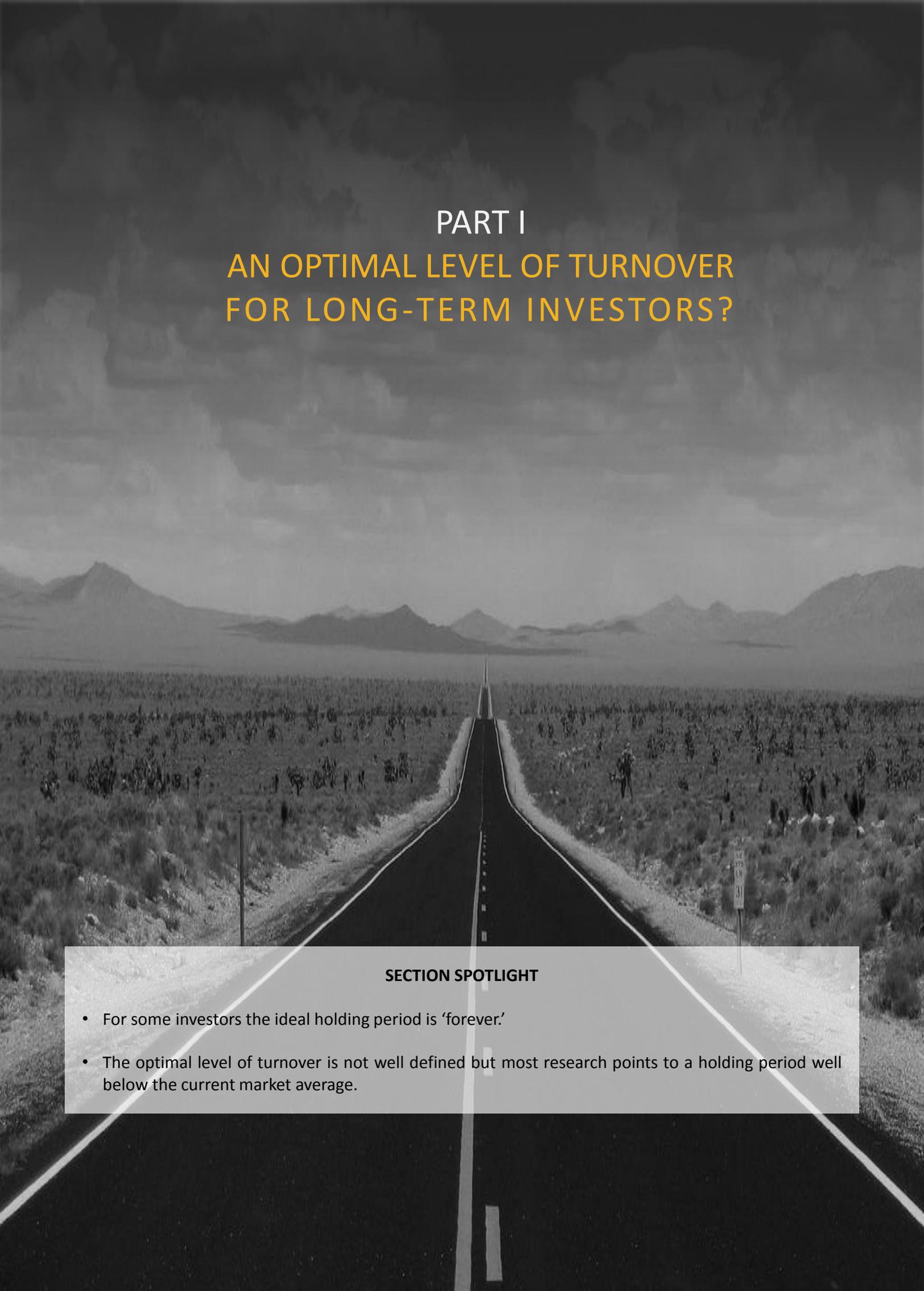


In a diverse financial ecosystem with many different types of investors and motivations/goals, there is likely a role for both short and long-term trading practices. Though based on the findings of this research and others before it the overall equity marketplace is arguably skewed toward shorter-term behavior than might be considered optimal. Thus even though the investment managers interviewed did not see a particular need for changes or interventions in markets to promote a more long-term orientation there are many potential drawbacks to short-termism which need to be better understood; the same holds for the potential benefits of long-termism.

RECOMMENDATIONS

With this frame of reference we offer a series of **recommendations** for key members of the institutional investor value chain. We consider lessons learned from our analysis and how they could positively influence behavioral change to support more thoughtful consideration of time horizon and costs when making or monitoring investment decisions. Overall asset owners must improve how they monitor and communicate with investment managers if they wish to encourage optimal behavior. In turn investment managers attempting to capture long term value should look for clients that are comfortable with the occasional volatility that high conviction, long-term portfolios may exhibit, and regulators should consider the merits of additional disclosure. More specifically, for each of these value chain segments we offer the following recommendations:

Recommendations	
ASSET OWNERS	Investment Beliefs: Be explicit about time horizon and expectations about how this will affect asset class exposures and the types of investment managers and strategies employed. This could include a behavioral policy statement, for example, incorporated as an appendix to the Statement of Investment Beliefs document. Ideally, the beliefs would establish a clear set of actions that specify how the asset owner would expect to react to short- and medium-term manager underperformance.
	Manager Monitoring: Asset owners can avoid making short-term decision by designing a reporting framework for monitoring managers that looks beyond short-term price performance. The following are examples of alternative areas of focus for the reporting/monitoring process.
	Develop and promote a process to cross-check manager behavior against expectations. This may include areas such as portfolio characteristics, level of portfolio turnover and drivers of portfolio activity.
	Comparing actual performance against the hypothetical 'buy-and-hold' performance of the portfolio over a given period to assess the performance benefit of portfolio turnover over the period.
	Ask for more detail regarding frictional transaction costs incurred by managers and develop a process to cross-check manager behavior against initial expectations (turnover metrics are helpful in this regard).
ASSET MANAGERS	Be explicit about their time horizon and how they expect it to affect their decision-making, the design of employee compensation and incentives, and the setting of expectations for how they will interact with clients. As several investment managers noted during our interviews, positive client relationships are often the product of a clear understanding of time horizon.
	Include greater discussion of turnover and management of transaction costs in the ongoing management of the portfolio.
REGULATORS	Consider broadening fund disclosure requirements to better cover transaction costs. Aggregate brokerage fees incurred are already typically disclosed in fund financial statements; giving the market more information about this fund performance variable up front (e.g. in prospectuses for US mutual funds) rather than deep in financial documentation could be a useful improvement to fund disclosure requirements enabling investors to effect more comprehensive assessment of a given fund's management.
	Adding a more comprehensive disclosure of transaction costs, one which potentially includes reference to the impact of bid-ask spreads, price movements and tax implications, may be further beneficial to investors though any added disclosure requirement should of course be weighed against the related costs to fund managers and practicalities of tracking and reporting the variable in a standardized fashion.



PART I
**AN OPTIMAL LEVEL OF TURNOVER
FOR LONG-TERM INVESTORS?**

SECTION SPOTLIGHT

- For some investors the ideal holding period is 'forever.'
- The optimal level of turnover is not well defined but most research points to a holding period well below the current market average.

1.1 ALIGNING INVESTOR TIME HORIZONS IS POSSIBLE

Some investors take a truly long-term view. The benefits of long holding periods are exemplified by many famous investors, but none more so than Warren Buffett. Buffett credits much of his investment success to knowledge gleaned from the book by Benjamin Graham, *The Intelligent Investor*. Graham espouses investing with a longer term perspective to help reduce the speculative mindset that comes along with many market timing activities. In the short-term, there are many variables including behavioral tendencies that can move the price of a stock or portfolio one way or another. Over a longer investment horizon, Graham posited, the underlying fundamentals of a company are more likely to shine through and improve valuations.

It appears few investors today exhibit Mr. Buffett's laudable virtues of patience and long-term thinking. Research from many sources, including the Focusing Capital on the Long Term (FCLT) initiative, points to a preponderance of investors seeking returns as quickly as possible. This has a variety of potentially damaging effects including the following:

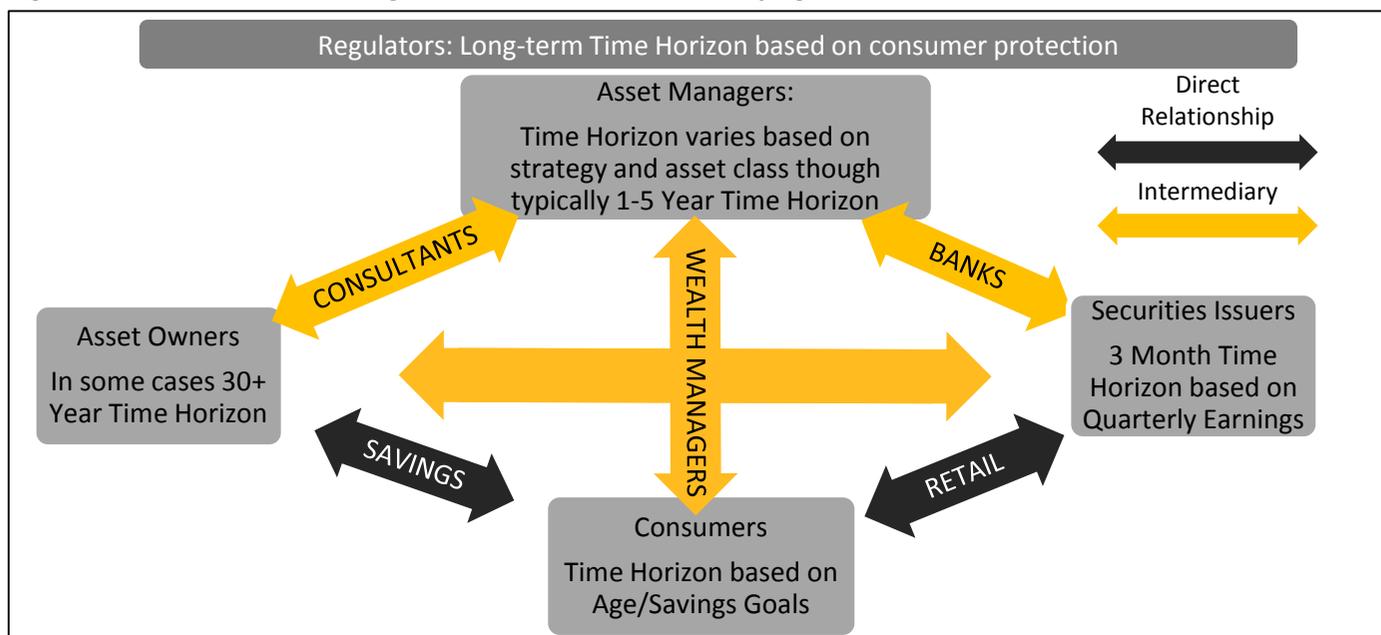
- companies may miss out on profitable investment opportunities and underinvest in longer-term projects for fear of missing quarterly earnings guidance;
- savers may miss out on potential returns due to undervaluation of companies making long-term investments and;
- society may miss out on long-term growth and innovation because of persistent underinvestment.⁵

2° Investing Initiative Insight:

Long-term risks build over time and undermine the viability of business models if not properly addressed. These kinds of risks are not always captured by the typically short timeframe of risk analysis and investors who do not analyze long-term risks may not realize their presence until it is too late. The materialization of mispriced long-term risks may result in asset impairments and write-downs.

Time horizons are mismatched around the “Value Circle” of Investment Management as illustrated in Figure 6. Consumers are motivated to invest their savings so as to secure long-term financial security in retirement, pay for education, maintain insurance coverage, etc. Asset owners, typically the direct repositories of these consumer savings, reflect these attitudes but then most often outsource the management of these funds to asset managers. Asset managers in turn are evaluated quarterly (and often more frequently) by asset owners on their financial performance. Asset managers then evaluate securities issuers (stocks, bonds and other instruments issued by companies and public entities), often on a daily basis. Completing the circle, consumers often work for and purchase goods and services from securities issuers. The existence of these differential time horizons within the value circle has given rise to concerns around principal-agent issues and a misalignment of incentives between individual actors in the circle. These concerns arise in part from a lack of agreement and understanding regarding the optimal investment time horizon or holding period for a given investment mandate and the impact of turnover on the various players in the investment circle.

Figure 6: The Investment Management “Value Circle” and Varying Time Horizons



Source: Authors

1.2 OPTIMAL TURNOVER FOR INVESTMENT PERFORMANCE

Turnover might be considered optimal if it provides long-term investors with optimal risk-adjusted returns. Research looking to identify optimal turnover in terms of performance in equity markets is limited, though evidence generally suggests that low turnover in and of itself is no guarantee of outperformance. However, if combined with other variables, low turnover has been observed to contribute to durable outperformance. For instance, researchers at the University of Notre Dame and Rutgers found that investment strategies in the lowest turnover quintile of their sample set (< 27% turnover) as a class tended to outperform, but only if they also held portfolios with high active share versus benchmarks (see Fig. 7).⁷

A cursory review of Mercer’s own data suggests low turnover may be an indicator of long-term outperformance. Specifically when looking at global equity strategies in Mercer’s database with 20 years of performance data, we found that 8 of the 10 best performers over that time period and in the sub-universe target turnover of 30% or less.⁸ Interestingly, the remaining 2 of the 10 were exceptionally high turnover strategies (>100%) which underscores our view that, though high turnover strategies do have potential drawbacks, there can still be a place for such approaches in a diversified portfolio especially when looking to capture value from typically fleeting style factors like momentum.

It may be possible to justify an optimal level of turnover based on chaos theory. Clifford Dow’s analysis⁹, based largely on prior research by Edgar Peters, implies a turnover ratio of 25% would be optimal as it reflects the fact that stocks in the U.S. market on average exhibit cycles of approximately 48 months in duration (with notable variance across sectors. See Fig. 8).¹⁰

Also of interest here is the recent launch of the Long Term Value Creation (LTVC) index by S&P with support from 6 major asset owners, including Canada Pension Plan Investment Board (CPPIB). The index was designed with the intent to capture value from “companies that anticipate and manage current and future economic and governance opportunities and risks by focusing on long-term strategy, innovation and productivity...[and] have demonstrated a sustained history of financial quality.”¹¹ Its unique “vintage year” construction ensures name turnover of 33% and exhibits portfolio turnover of around 22% (See Fig. 9).¹²

Figure 7: Average Outperformance of Fund Types with High Active Share, 1994-2013

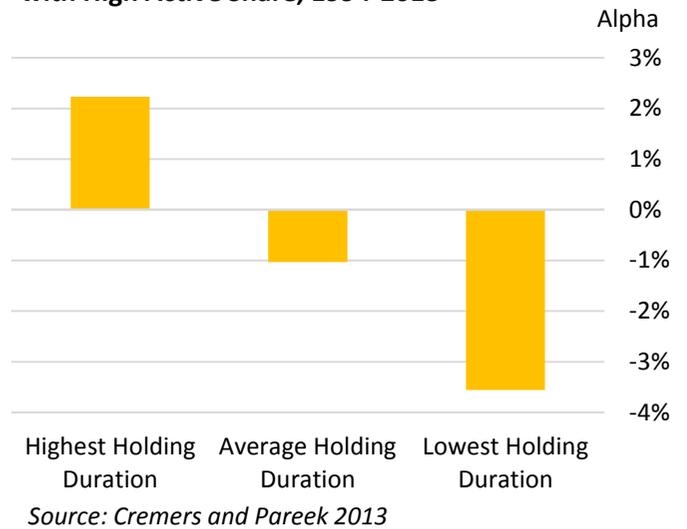


Figure 8: Average Business Cycle Length

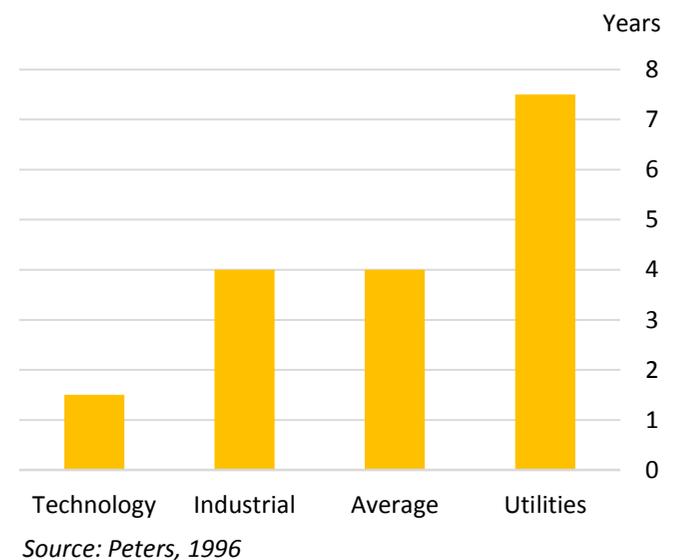
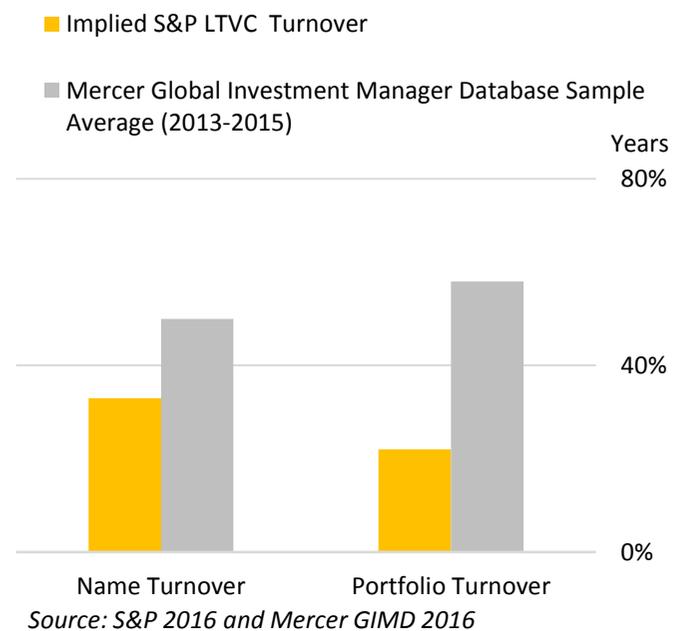


Figure 9: Turnover of S&P LTVC Index Compared to Equity Fund Manager Turnover



Furthermore, recent research into the impact of investor time horizons on corporate performance indicates that companies with higher shares of ownership by long-term investors – those exhibiting <35% portfolio turnover and falling roughly in the bottom quartile of investors captured for the study in question – exhibit a range of corporate behaviors that lead to increased shareholder value, and this relationship is causative.¹³ So while this research does not indicate a specific optimal turnover it does indicate that longer holding periods are value-generative and the associated signal is visible below the 35% turnover level. **While much of this research is more illustrative than conclusive, all of the literature surveyed here points to a holding period of 4 years or more as a strategy with a potential long-term advantage.**

1.3 OPTIMAL TURNOVER FOR ENVIRONMENTAL AND SOCIAL OUTCOMES

Turnover might also be considered optimal if it serves to improve environmental or social sustainability. Thus the second ‘lens’ through which we can contemplate optimal turnover, is through the role it plays in promoting thoughtful analysis and pricing of ESG factors by capital market participants, which in turn promotes thoughtful management of these issues and underpins sustainable environmental and social outcomes.

In order for companies to align their business plans (and associated capital expenditures) with improved ESG outcomes – such as addressing the adverse impact of systemic issues like climate change and an aging population – they need support from their largest and most influential shareholders. The validity of an investor’s focus on long-term performance is further supported by evidence that the present values of many industries are skewed toward the long-term, with the most extreme example being the utilities sector, where over 65% of net present value derives from cash flows beyond 20 years in the future¹⁴

Many argue that the financial system needs to consider long-term sustainability issues in valuations today in order for the real economy to properly address such long-term challenges, though related efforts are confounded by a number of countervailing issues including: uncertainty about the time frame during which long-term sustainability trends will become material to investment outcomes; the need for investment liquidity to match liabilities and align with regulatory strictures; incentives compelling market actors to seek returns from short-term market fluctuations; etc.

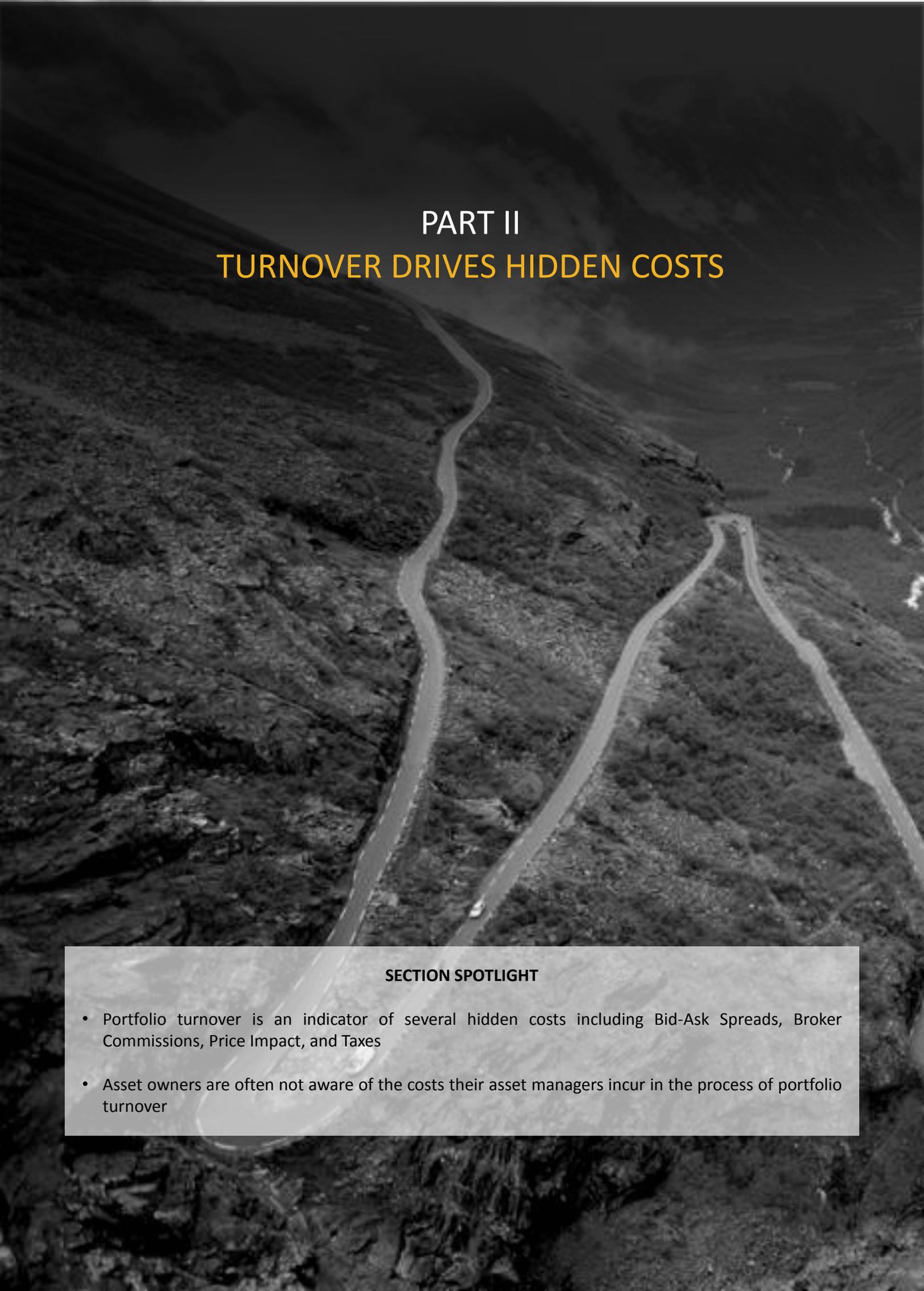
All else being equal, “it is reasonable to conclude that investors with longer-term time horizons will tend to take a broader array of issues that could affect their investment into account, including many environmental and social factors.”¹⁵ And, if investors do a better job of taking such issues into account, sustainable development should more readily follow. However, while compelling investors to evolve their processes to include consideration of long-term ESG factors may be necessary to achieving sustainable development goals, it is not by itself sufficient. Such a shift in practice will have only limited effect and until the negative externalities of security issuers (e.g. carbon emissions) are internalized (e.g. priced) by legislative/regulatory action or market forces, making investments today in assets which support long-term environmental and social goals more palatable.

There may be no optimal time horizon for the achievement of sustainable development and the economic benefits it will reap, though definitively longer-term is better. **So to paraphrase Warren Buffett, from the perspective of the environment or society, the best holding period may be forever.**

2° Investing Initiative Insight

While ESG integration helps to internalize environmental and social externalities, the purpose of SRI and ESG analysis is not to address the types of non-cyclical, non-linear risks likely to materialize over periods longer than 3-5 year outlook of investors. Examples of such non-ESG related long-term risks previously included the mispriced risk of subprime mortgages ahead of the crisis and today, the potentially disruptive impact of artificial intelligence and the rise of the sharing economy, among others.

Arguably, if long-term investors turn over their portfolios every 1-3 years, they are unlikely to generate demand for the analysis of such types of long-term risk. Given that shorter-term investors are even less likely to do so, these types of risk are highly susceptible to being mispriced.

An aerial photograph of a dark, rugged mountain landscape. A winding, light-colored road or path snakes across the steep, rocky terrain. The overall tone is dark and moody, with the road providing a clear path through the complex, textured environment.

PART II

TURNOVER DRIVES HIDDEN COSTS

SECTION SPOTLIGHT

- Portfolio turnover is an indicator of several hidden costs including Bid-Ask Spreads, Broker Commissions, Price Impact, and Taxes
- Asset owners are often not aware of the costs their asset managers incur in the process of portfolio turnover

2.1 TURNOVER MAY INDICATE HIDDEN COSTS

A key implication of turnover for investors is the hidden cost of transactions. Most mandates give active managers freedom to make trades at their discretion. These trades typically incur transaction costs that can erode returns. It is thus in an asset owner’s interest to understand the expected level of turnover costs of trades when selecting a manager. Managers commonly disclose their fees and are required to disclose their turnover rates in regulatory filings. However, the transactional costs of trading are rarely disclosed or are difficult to find which may contribute to misalignment between asset managers and asset owners.

It is important for asset owners to understand the turnover and associated costs of a strategy they invest in; this way they have greater clarity around what is driving under- or out-performance. Asset owners may select a high turnover strategy based on its risk-reward profile but not understand the cost implications of high turnover. If so, they may view underperformance as a consequence of market forces instead of asset turnover and the associated costs.

Portfolio turnover is used as a proxy for often difficult to ascertain portfolio transaction costs, which are typically embedded in gross performance figures, and related tax implications (for taxable investors).¹⁶ Transaction costs are incurred in the form of brokerage commissions, bid–ask spreads, and price impacts. These various cost types are described in more detail in Figure 10.¹⁷ While turnover is a proxy for these costs, it is not a readily comparable financial variable and it masks the individual cost components which the act of trading engenders.

A breakdown of transaction costs may be necessary to understand the optimal level of turnover. Recent literature has criticized turnover for being too coarse a measure and potentially unrepresentative of differences in transaction costs across fund types.¹⁸ Bid-ask spreads and price impacts can differ based on different types and sizes of trades. For example, illiquid securities will carry higher bid-ask spreads and high volume trades may carry higher price impacts. Turnover does not measure these costs exactly and a more detailed accounting of these costs may assist asset owners in aligning their time horizons with managers.

Figure 10: A Description of the Various Transaction Cost Types Associated with Turnover

Source: Authors

Brokerage Commissions	Bid-Ask Spreads	Price Impacts	Taxes
Brokerage commissions are payments made by investment managers to brokerage firms for executing trades. These are readily tracked and typically included in mutual fund financial statements.	The bid price is the price at which one can sell a security; the ask price is the price at which one can buy a security. The difference between the two is called the spread. While seemingly straightforward, calculating the true impact of the bid-ask spread on traders is not straightforward which poses challenges for the standardized measurement and reporting of related costs.	A large position change by an investor typically involves multiple separate trades that take place over time. Price impact refers to the fact that every time a purchase is made, the next bid–ask quote tends to be a little higher, and every time a sale is made, the next bid–ask quote tends to be a little lower. Thus, equity funds generally pay an increasingly higher price for each incremental purchase. The magnitude of the price impact depends on the size of the position change. These costs are difficult to measure but are considered by most researchers to represent material costs.	Taxes are incurred when gains are realized in a portfolio. Therefore, the more frequently and investor trades locking in gains the more often the investor will generate taxable income. The length of the holding period for securities in a fund is also important for US investors where gains on investments held for more than one year (long-term gains) are currently taxed at a lower rate than short-term gains.

That being said, turnover appears repeatedly in the literature showing reasonably strong correlation with fund performance (see Figure 12 on the next page). Putting concerns about their measurement aside, the impact of transaction costs on ultimate performance outcomes is incontrovertible and turnover is one of few readily available metrics to enable the assessment of an otherwise hidden variable affecting fund performance (e.g. Aggregate Trading Costs as shown in Figure 8, though a better predictor of performance is not easily calculated). In addition, a survey of research on this topic indicates that portfolio transaction costs, which turnover is intended to proxy, are often as significant as fund management fees (see Figure 11) and can vary significantly across equity styles and market capitalization focus.¹⁹

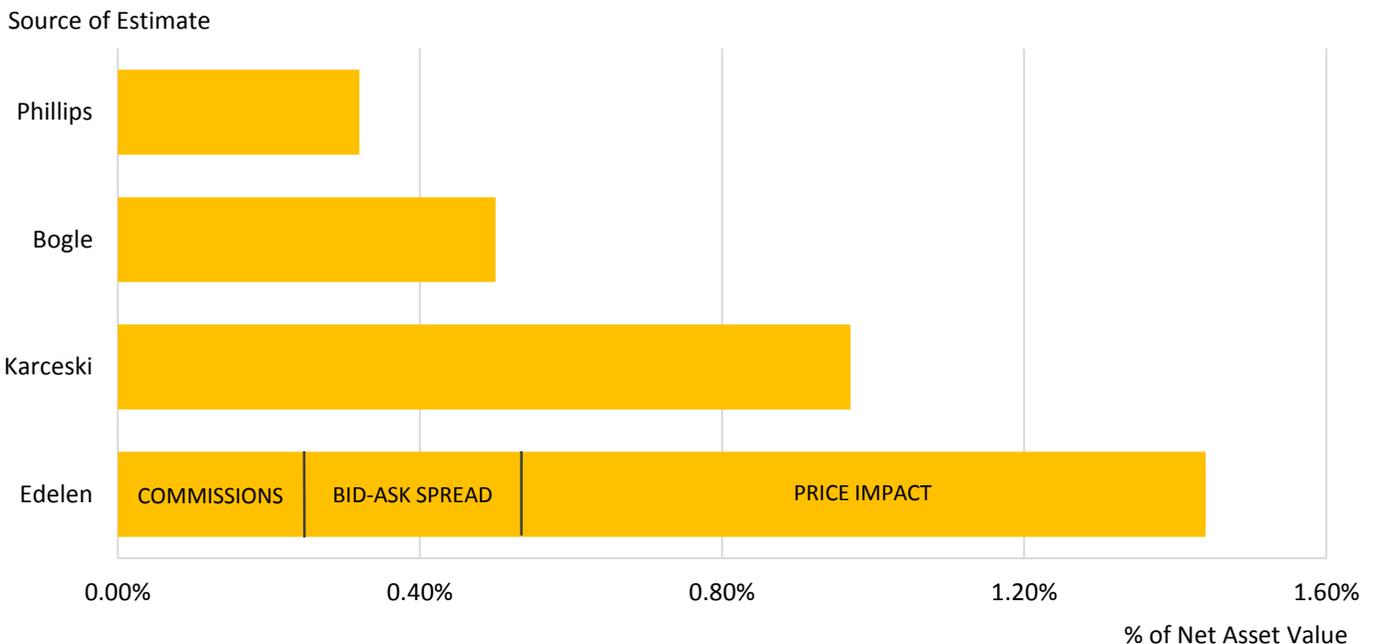
Transactions costs can amount to as much as 1.4% of assets. Each of the study results summarized in Figure 10 seeks to quantify explicit (e.g. brokerage commissions) and implicit (e.g. bid-ask spread; price impact) transactions costs in different ways. The lowest of the estimates featured in Figure 10 attempts to quantify turnover-related expenses by comparing the asset-weighted average net performance of active US large cap equity funds against an appropriate index. The difference in performance between the fund average and the index less average management fees is attributed to transaction costs. The highest estimate of 1.4% takes a more granular approach attempting to quantify each element of transaction cost – commissions, bid-ask spread, price impact – separ-

Manager Attention to Trading Costs in Investment Processes Varies

Fund managers typically balance transaction costs against performance targets and risk management needs. For some managers interviewed, transaction costs had no effect at all on decision-making (which could lead to higher than optimal turnover). For more managers, though, transaction costs were an explicit factor alongside benchmarking, risk targets, and client preferences. Only one manager reviewed turnover costs on a monthly basis via their trading desk. Surprisingly, in that case, the manager exceeded their expected turnover by 40%.

-ately and fastidiously using trade-level data where available (see fig. 11). In between John Bogle (of Vanguard fame) uses a common sense approach based on a survey of existing literature whereas the Karceski analysis takes an approach similar to the approach expanded upon by Edelen. The wide range of results reflects the difficulty in efficiently translating turnover metrics and other reasonably available disclosures (e.g. brokerage commissions) into comprehensive cost estimates. As a point of reference, the median investment management fee for an equity fund across all vehicle types with \$25M of invested capital was 0.75% according to Mercer’s most recent biannual fee survey.²⁰ Thus, transaction costs can be higher than fees.

Figure 11: Select Estimates of Average Transaction Costs Incurred by Mutual Funds²¹



2.2 TURNOVER CAN ERODE ALPHA

Transaction costs can diminish investor returns.

Prudence would suggest an understanding of the reasons for a given turnover outcome and related transaction costs when reviewing a given strategy. Undoubtedly for similarly situated strategies (e.g. in the same sub-universe) there exists a greater potential for alpha erosion associated with those exhibiting higher turnover (See Fig. 12 below). The increased trading costs and tax implications that typically come along with high turnover portfolios make it that much more difficult for these managers to outperform an index on a net basis especially after considering additional investment management fees.

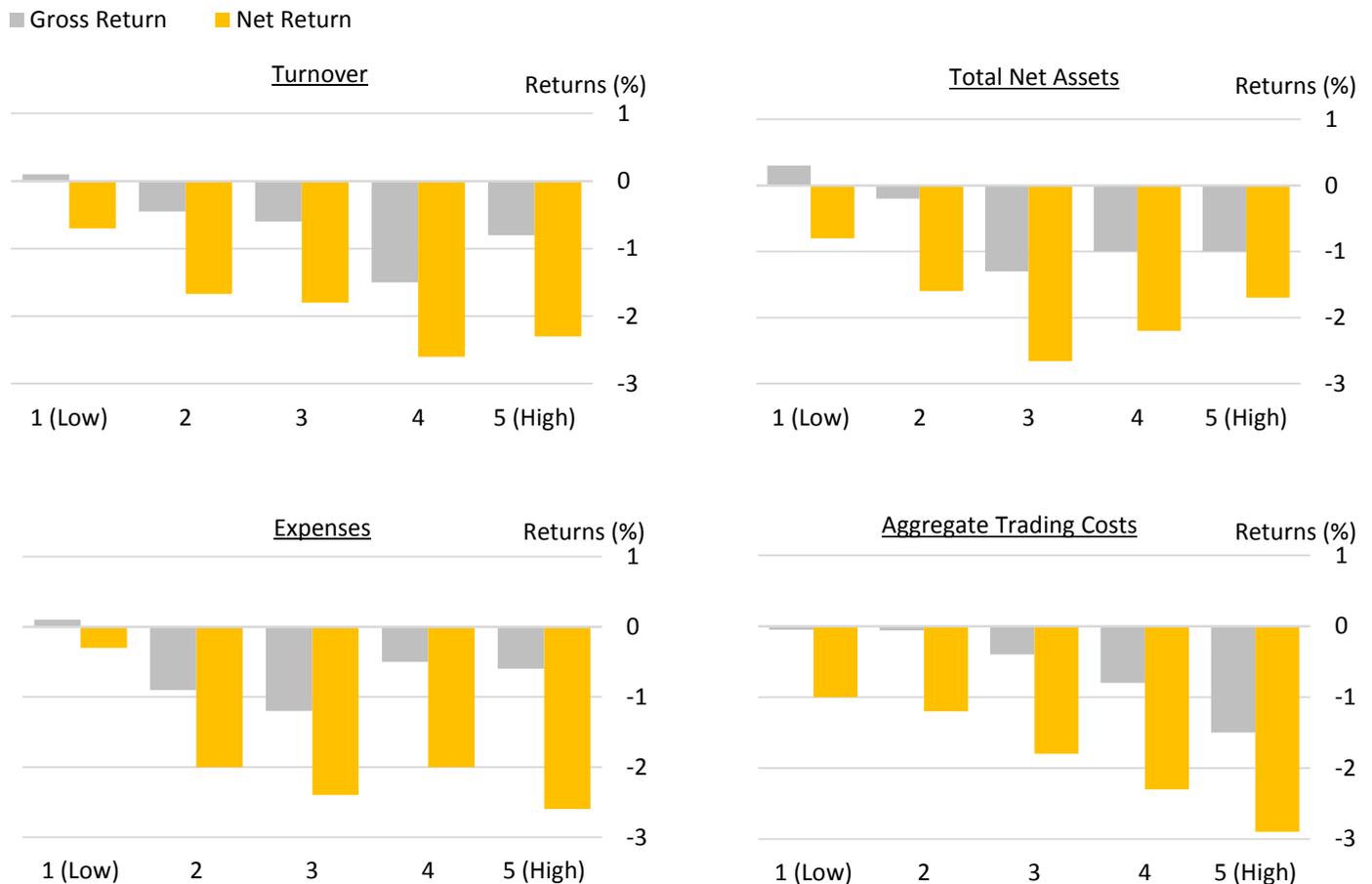
Turnover is required to be disclosed as a proxy for costs. It is primarily because of high transaction costs that the SEC in the US requires a fund to disclose its portfolio turnover in its prospectus with supportive language akin to the following:

“The Fund pays transaction costs, such as commissions, when it buys and sells securities (or “turns over” its portfolio). Higher portfolio turnover may indicate higher

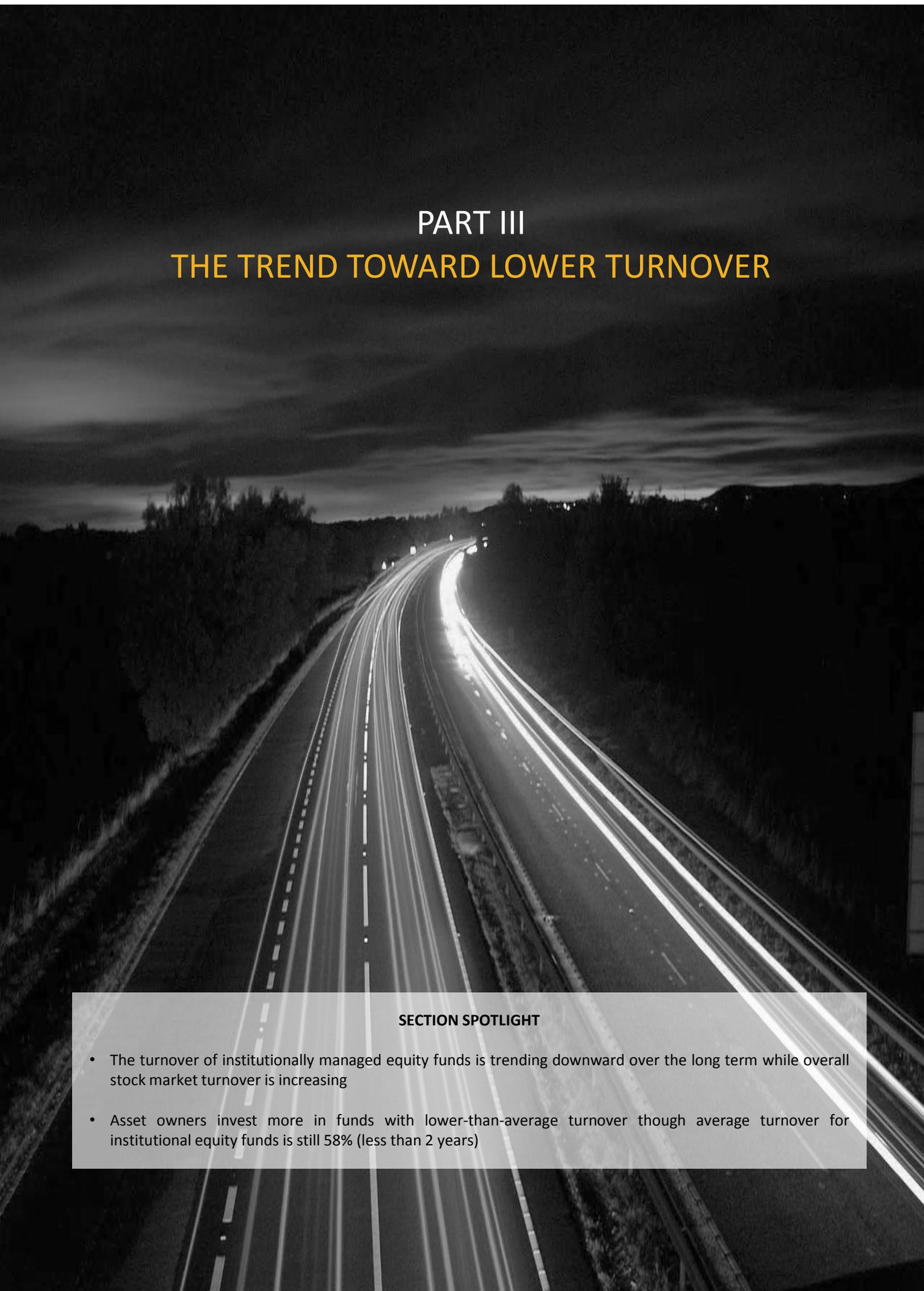
transaction costs and may result in higher taxes when shares are held in a taxable account. These costs, which are not reflected in annual fund operating expenses or in the example [of expenses incurred in certain situations], affect the Fund’s performance. During the most recent fiscal year, the Fund’s portfolio turnover rate was XX% of the average value of its portfolio.”

More detailed descriptions of costs may be needed to align incentives. More prescriptive reporting requirements, which may include disclosure of the various transactions costs turnover is expected to proxy, have typically been avoided by US regulators to date in part due to the difficulties discussed in the prior section of calculating implicit transaction costs (e.g. price impact) in a consistent and facile fashion. Brokerage commissions on the other hand are an explicit cost already quantified by most mutual fund managers. Making this information more readily accessible to investors as has been suggested in prior research might be a palatable and useful regulatory disclosure requirement.²² Such an added disclosure requirement could serve to improve the dialogue between asset managers and asset owners around a fund’s holding period leading to better alignment of time horizons and incentives.

Figure 12: Quintile Performance Sorts of Mutual Funds by Certain Variables



Source: Edelen, et al; 2013



PART III

THE TREND TOWARD LOWER TURNOVER

SECTION SPOTLIGHT

- The turnover of institutionally managed equity funds is trending downward over the long term while overall stock market turnover is increasing
- Asset owners invest more in funds with lower-than-average turnover though average turnover for institutional equity funds is still 58% (less than 2 years)

3.1 GRADUAL DECLINE IN PORTFOLIO TURNOVER

Turnover has declined over time but only gradually.

A study of over 3,500 institutional long-only active equity funds in Mercer’s Global Investment Database shows that turnover has declined since 2004. The decrease in turnover suggests increasing demand for longer-term investments from asset owners. Even so, turnover has only gradually decreased over time and is still high relative to theoretically optimal levels. This suggests there remains more room for turnover levels to fall amongst long-only active equity managers before reaching equilibrium.

3.2 TYPES OF PORTFOLIO TURNOVER

For the purpose of this report, there are two types of turnover that we considered: portfolio and name.

Portfolio turnover measures the buying and selling activity of a fund in the aggregate. It accounts for the change in fund value from the complete sale of shares of a company, the purchase of shares of a new company and changes in the size of existing positions. Name turnover, on the other hand, measures the extent to which new positions are added or subtracted entirely and so ignores the impact of shifts in position size.

Importantly, name turnover is an oft overlooked metric which can offer valuable insight into the investment practices of a fund and its time horizon.

One of the many supposed drivers of short-termism in markets today is that company management teams perceive investors to be impatient (as evidenced by quarterly analyst calls) and will focus excessively on short-term decisions as a result. But if in fact, an asset manager holds onto names for longer than its aggregate trading activity might suggest, this could send a different signal to manage-

-ment (and to the fund’s prospective investors).²³ We believe this report is unique in putting forward this name turnover metric for analysis at this scale. Further information on the calculations used to produce these values for funds can be found in the Data Used and Calculation Methodology sections on page 42.

3.3 TURNOVER WAS HEAVILY INFLUENCED BY THE GLOBAL FINANCIAL CRISIS

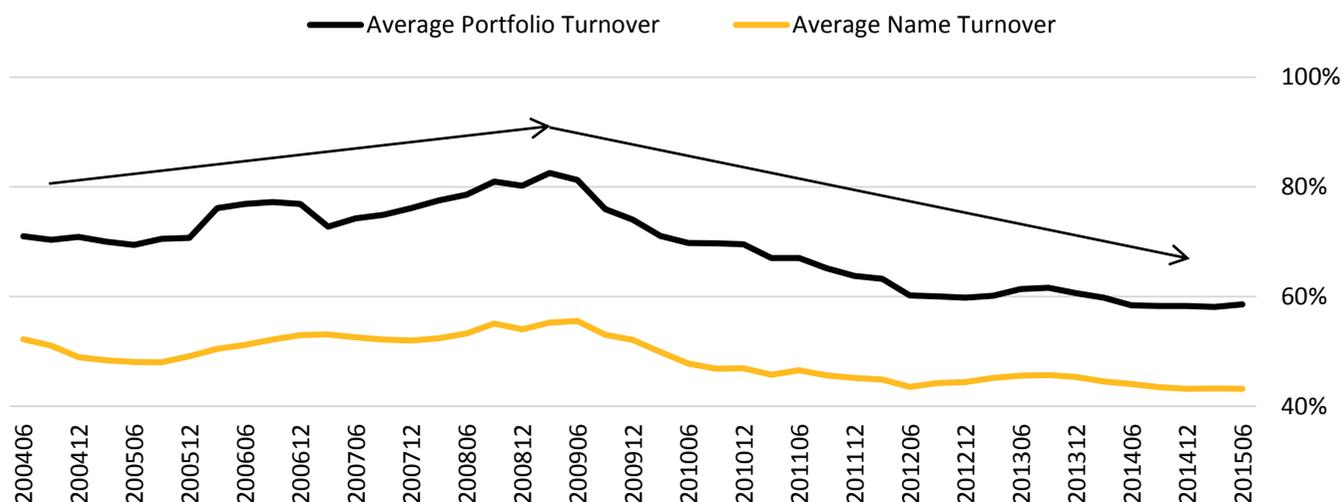
Looking at the entire dataset, there was a significant increase in portfolio and name turnover leading up to the Global Financial Crisis (GFC).

From June 2004 leading up to the end of 2008 average annual equity portfolio turnover increased from roughly 70% to 80% whereas name turnover increased from roughly 50% to 55%.

Since 2008 we have seen a consistent and sharper decrease in both measures of turnover.

While the differential between the two measures has remained relatively consistent, we have seen it decline modestly in recent years in line with the decline in weight turnover. Portfolio turnover has declined more steeply than name turnover in the most recent 6 year period, implying that managers are taking more bets with consistent portfolios of names than previously (e.g. increasing or decreasing position sizes in the same companies). The medians are notably lower than their respective means, implying skewness of the distribution with a “long tail” of managers with high turnover strategies. Recent years have also seen the industry average turnover fall below the long-term averages for the entire sample of 64% and 44.5% for portfolio and name respectively resulting in a strong downward trend in both metrics over the full fifteen-year study period (see Figure 13).

Figure 13: Long-term Annual Portfolio and Name Turnover Trends



Source: Mercer Global Investment Manager Database (GIMD)

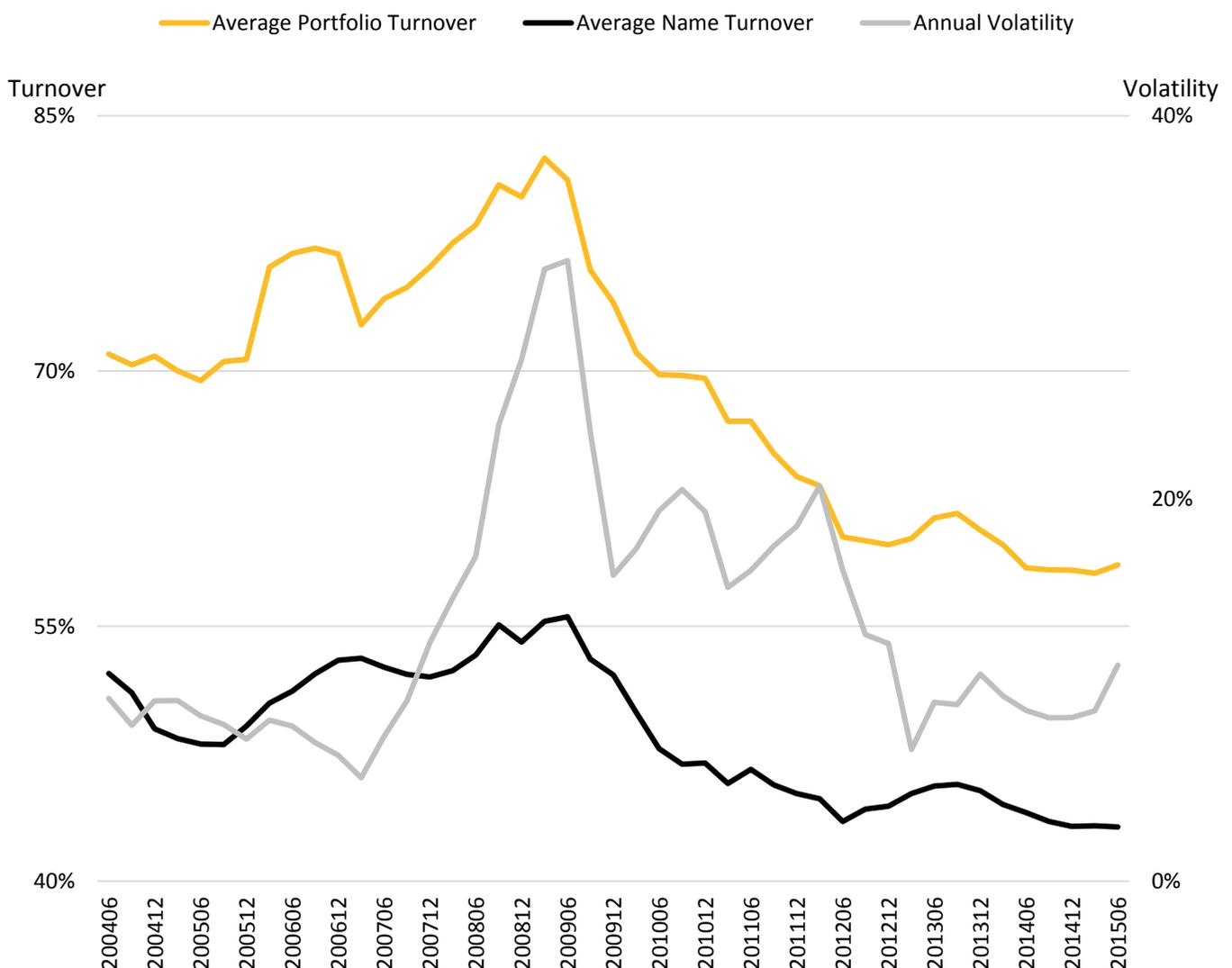
The shape of the previous chart would seem to imply a turnover cycle. To test this we first looked into the issue of selection bias e.g. that our data might contain more of one type or style of fund than is representative of the market at any given point in time. After extensive testing we found no apparent data discrepancies over the study period. For instance the count of quantitative or momentum-driven strategies remains relatively constant over the sample time period.²⁴

Moreover the increase in turnover pre-crisis implies cyclicity, not a systematic data bias. Based on the inference of some existing literature we looked into the potential linkage between market volatility and turnover and there does

indeed appear to be a fairly strong historic correlation between the two variables (see Figure 14). This result seems intuitive; in times of market distress one would expect trading activity to increase so as to avoid further losses and/or capture upswings.

Notably, though, correlation between volatility and turnover strengthens post-GFC, which suggests that the relationship between the two variables is not consistent, meaning other factors may well be at play in times of relative calm. Perhaps the stronger correlation post-GFC can be explained by a greater focus amongst market participants on volatility though other factors might be interesting to explore in further research.

Figure 14: Cause or Coincidence? Equity Market Volatility and Turnover



Source: Mercer GIMD and MSCI World USD Annualized Volatility

MSCI World Volatility Correlation w/ Equity Fund Portfolio Turnover	
Correlation (200912-201506 (Post GFC))	90.84%
Correlation (200406-200812)	60.00%
Correlation (200406-201509)	38.62%

3.4 OVER THE PAST 35 YEARS EQUITY FUND TURNOVER HAS DECLINED

Turnover has actually been declining since 1980, confounding the cycle hypothesis. In conducting further research we noted our observed, approximately ten-year “cycle” appearing in other analyses. For instance, the Investment Company Institute’s (ICI) annual Investment Company Factbook includes an assessment of asset-weighted turnover in mutual funds. The period of this ICI analysis coincident with our own exhibits a very similar shape (see red box inset in Figure 14). While the methods used to calculate turnover in each study differ making absolute values difficult to compare – ICI shows asset weighted turnover relying on annual reported data – the relative results are still meaningful. While the historical record does exhibit some peaks and valleys none are as pronounced as in the last 12 years. This said, the period 2004 to present is largely below the historical

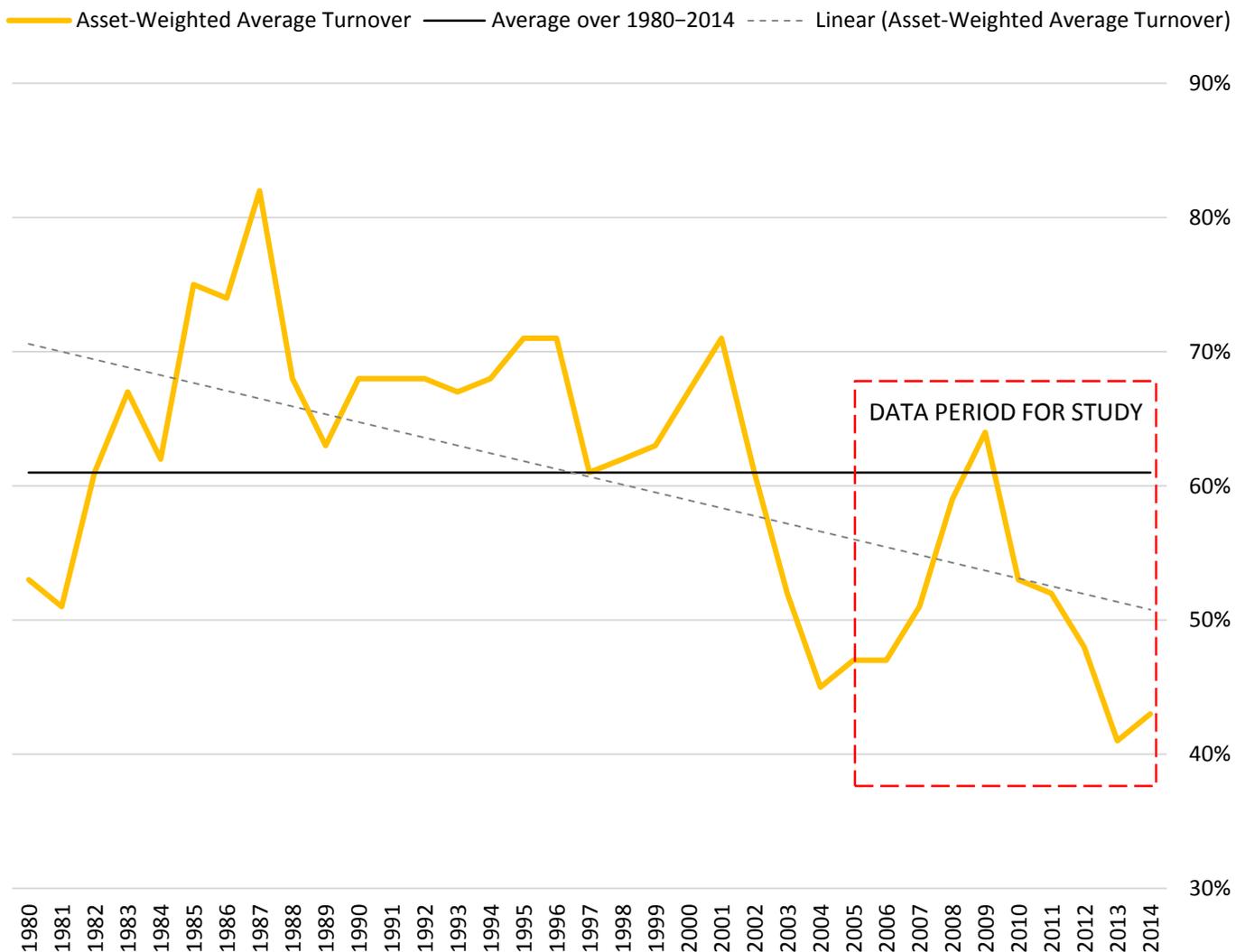
long-term average asset-weighted turnover and the long-term trend in the data is sharply downward. This implies an even longer cycle than evidenced by our data or a long-term secular shift in the turnover of equity funds. It also somewhat undercuts the above volatility hypothesis.²⁵

This trend implies increasing demand for low turnover fund management. Overall based on this analysis, ICI concludes:

“Investors tend to own equity funds with relatively low turnover rates. In 2014, about half of equity fund assets were in funds with portfolio turnover rates of less than 30%. This reflects the propensity for funds with below-average turnover to attract shareholder dollars.”²⁶

Our analysis also supports this finding (see Figure 16 on page 25).

Figure 15: Asset Weighted Average Turnover for Mutual Funds 1980-2014



Source: ICI Analysis, 2015

3.5 OVERALL MARKET TURNOVER IS INVERSELY RELATED TO EQUITY FUND TURNOVER

The long-term trend in equity fund turnover is inverse to the long-term trend in the broader stock market. Comparing stock market turnover data from the World Bank against the ICI mutual fund data featured in Figure 16 shows that the long-term downward trend in asset-weighted mutual fund turnover is not reflected in underlying stock markets.²⁷ To the contrary, underlying stock markets are exhibiting increasingly higher turnover ratios over time.

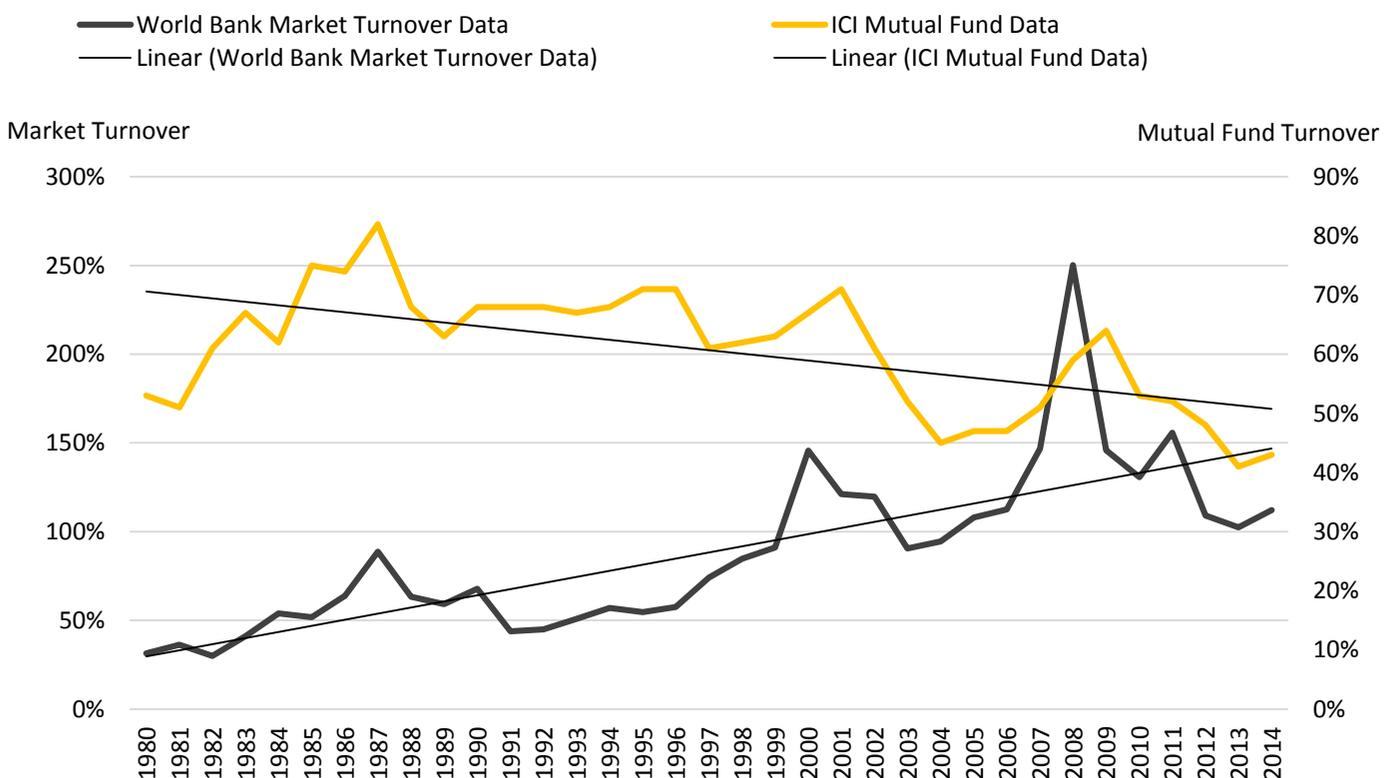
Equity investment managers are indeed increasingly reflecting the merits of long-termism in their trading practices. This may be down to increased pressure from asset owners causing them to think longer term though could also reflect a prevailing shift toward longer holding periods based on economic virtues alone. Alternatively, it may reflect a view which was expressed multiple times during our interviews with fund managers that more opportunity for alpha generation exists for long-term buy-side investors as the sell side and other market participants continue to grow more short-term in their actions (see call-out box at right). This would be an interesting subject to explore in further research.

The inverse relationship between stock market and mutual fund turnover would also indicate that the drivers of increased turnover in underlying stock markets are not institutional equity fund managers but rather a host of other players including other institutional investors (e.g. banks) trading for reasons other than alpha generation (e.g. liquidity) and, most controversially, sell-side market makers using high-frequency trading techniques for their own accounts.²⁸

Buy Side Research Insulated from Sell Side Short-Termism

Among the ten portfolio management teams we interviewed, a large majority reported that they conduct their own research with little reliance on sell-side research firms. Several managers stated that the time frame of sell-side research (typically 1-2 year horizon) is mismatched with their stated time horizon and so is not relied upon to inform buy or sell decisions significantly. Instead such research is most often used as a tool to condense and quantify recent news. In general, buy side fund managers conduct their own research with few inputs from third party research firms.

Figure 16: Stock Market versus Mutual Fund Turnover



Source: World Bank; World Federation of Exchanges; Investment Company Institute; Mercer Analysis

3.6 TURNOVER TRENDS BY EQUITY FUND CATEGORY

The long-term trends identified in the prior section are supplemented by an analysis of a narrower sample. To conduct more granular analysis of our data we applied a constraint on the fifteen-years and 3,500+ strategies of raw data obtained so as to ensure more consistent and reliable inputs (and therefore outputs). The following analysis is based on this constrained database. See Unconstrained vs Constrained Analysis on page 44 for further details.

3.6.1. ASSETS ARE FOCUSED IN LOW TURNOVER STRATEGIES

Managers appear to meet their ongoing turnover targets most of the time. Of the strategies with associated ex ante estimates of portfolio turnover (n 1,448), the split between those falling above and below up-front expectations is essentially even.²⁹ The margin by which managers exceed or fall below expectations is reasonable at around 20% in both directions, less than one standard deviation. This is a very different result than we discovered in our prior research on this subject just after the GFC which indicated that nearly two-thirds of strategies had turnover higher than expected with some exceeding expectations by a very wide margin.

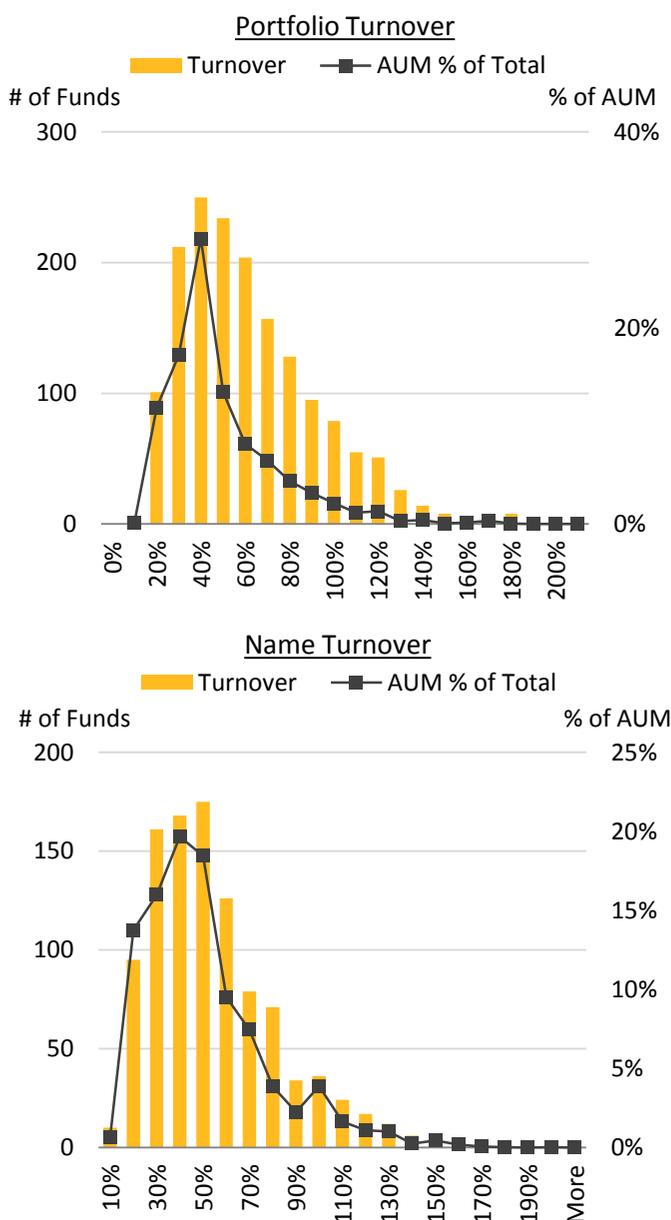
Assets skew towards funds with lower turnover. Looking at the histograms at right (Figure 17) the long-tail towards high turnover strategies. This reveals market bias amongst equity investors towards lower turnover strategies with the most common turnover range by count being 20-50% for both metrics (this equates to an implied 2-5 year hold). High name turnover strategies (> 100%) are less common than high portfolio turnover strategies.

Even so, nearly 90% of managers turn over their portfolios every 3 years or less. When weighting portfolio turnover by the strategy assets under management, 88% of assets are in funds with greater than or equal to 30% turnover. When weighting name turnover by the strategy assets under management, 88% of assets are also in funds with greater than or equal to 30% turnover. The average portfolio turnover for the sample is 58%, implying a portfolio duration of 1.7 years. This suggests that most managers turn over their portfolio every two years, and in general, may not be performing long-term analysis or obtaining long-term research and data regarding securities issuers.

Table 4: 3-Year Consecutive Sample Overview

	Portfolio Turnover	Name Turnover
Number of strategies	1709	1026
Average value of assets under management (millions USD)	\$3,746	\$3,943
Maximum value of assets under management (millions USD)	\$122,946	\$122,946
Number of strategies with expected turnover data	1448	N/A
Average turnover	58%	50%
Median turnover	51%	45%
Standard deviation	32%	29%
Number of strategies ex-post > ex-ante	725	

Figure 17: Portfolio and Name Turnover Distribution by Fund Count and AUM Percentage

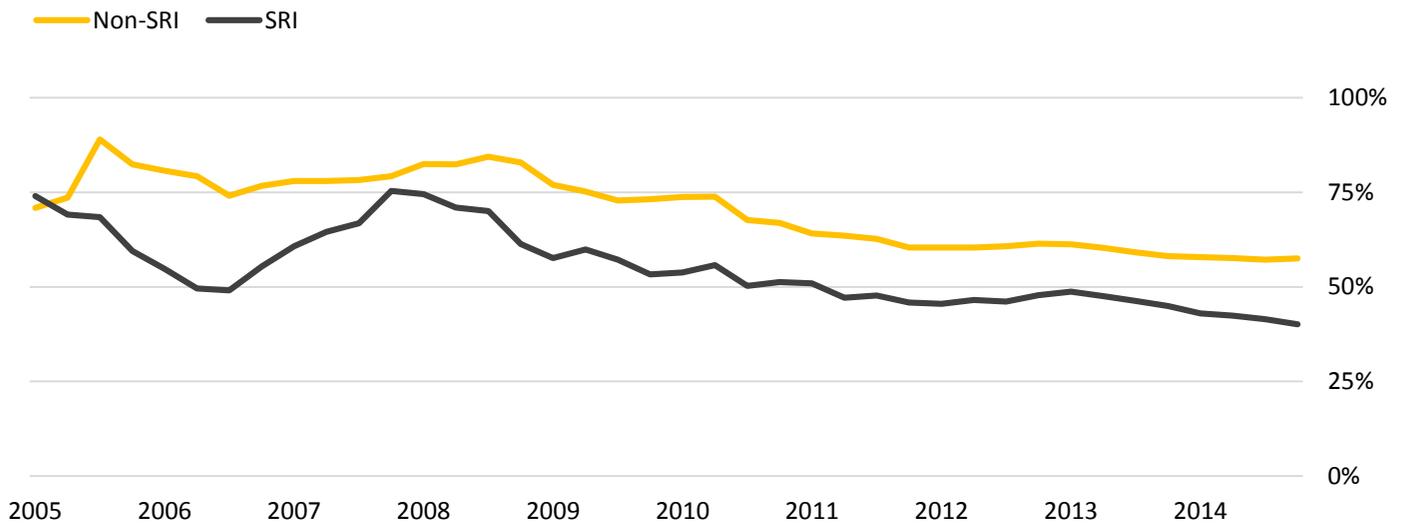


3.6.2 SRI STRATEGIES EXHIBIT LOWER TURNOVER THAN NON-SRI STRATEGIES

A focus on sustainable investing could explain lower turnover. Sustainable and Responsible Investment (SRI) strategies exhibit systematically lower portfolio and name turnover over time than non-SRI strategies.²⁹ This holds true even controlling for style (e.g. fundamental SRI strategies exhibit lower turnover on average than fundamental non-SRI strategies). On average, turnover in SRI strategies is roughly one third lower than non-SRI strategies and the difference is wider for name turnover (see Figures 18 and 19).

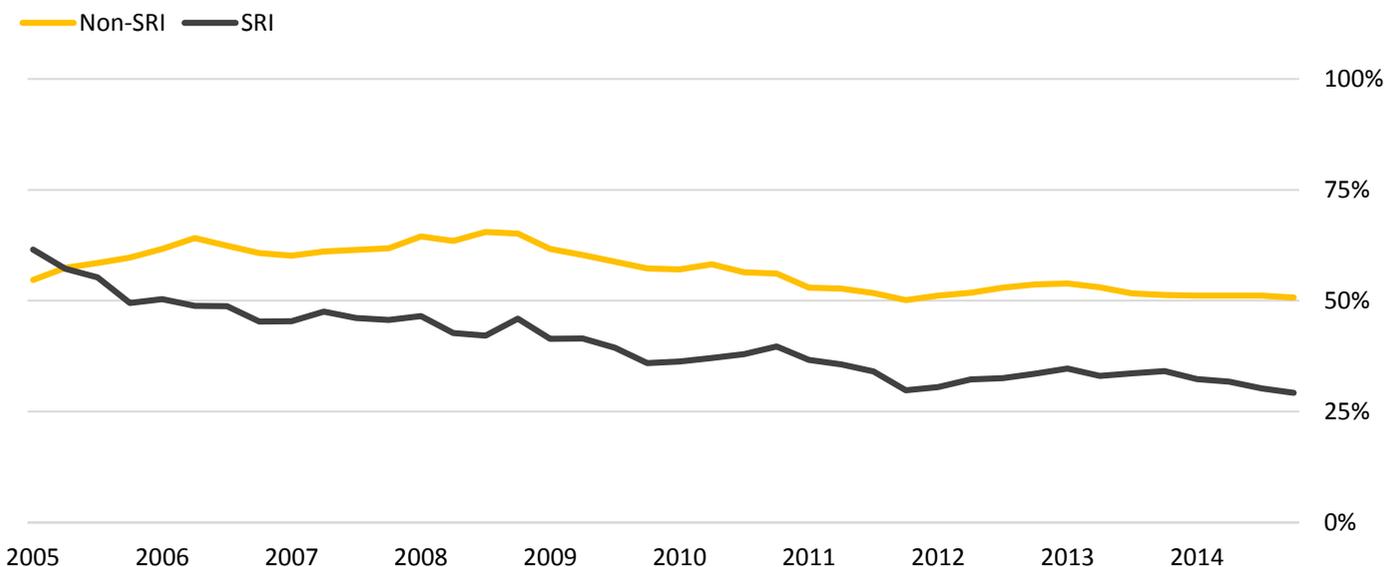
While there may be many factors driving the longer holding periods of SRI funds, this result is nevertheless indicative of the alignment between SRI and long-term investment approaches as SRI investors clearly favor longer holding periods for shares and names than non-SRI investors. This is also in keeping with the prospective SRI thesis at the heart of which (to paraphrase the UN PRI) is an effort to capture the long-term risk adjusted return benefit from the thoughtful consideration of material environmental, social and governance (ESG) factors during the investment process.

Figure 18: Average Annual Portfolio Turnover of SRI vs. Non-SRI Strategies



Source: Mercer GIMD

Figure 19: Average Annual Name Turnover of SRI vs. Non-SRI Strategies

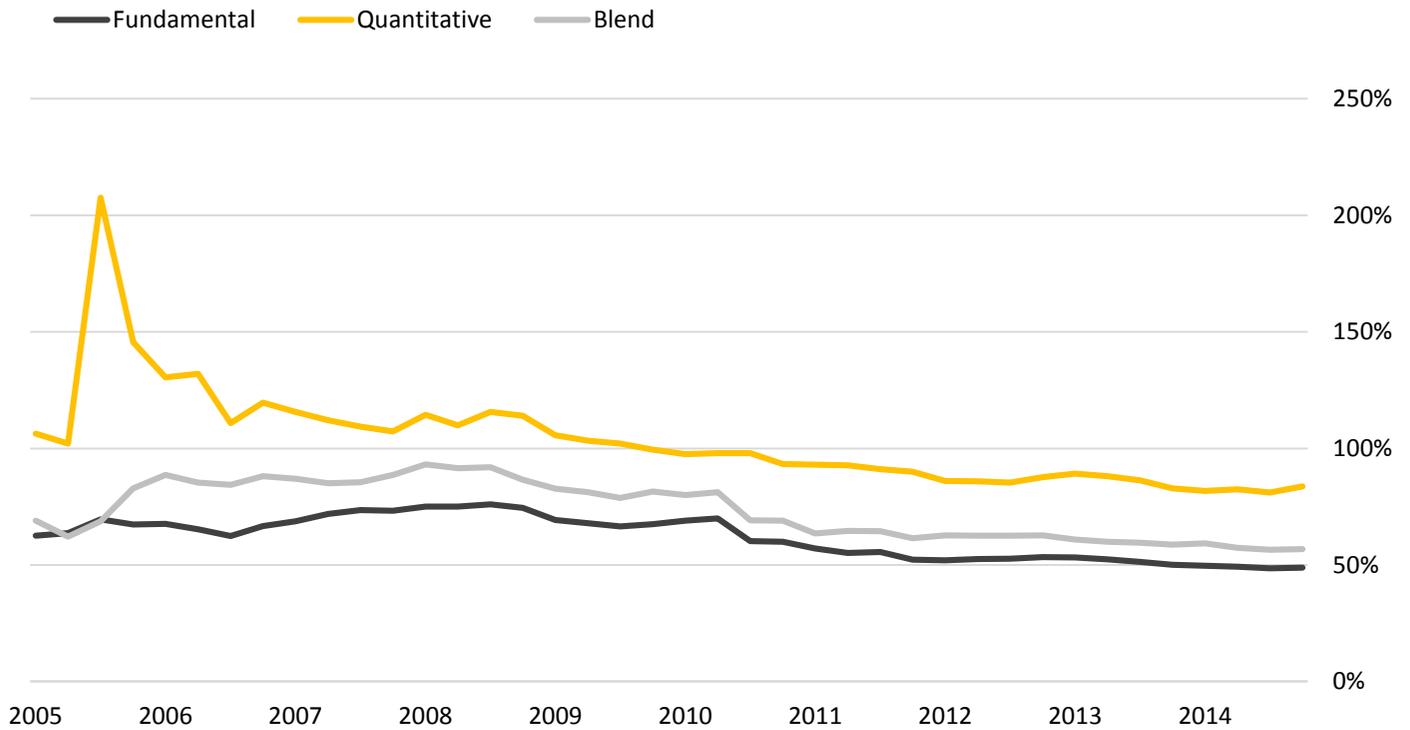


Source: Mercer GIMD

3.6.3 QUANTITATIVE STRATEGIES EXHIBIT HIGHER TURNOVER THAN FUNDAMENTAL STRATEGIES

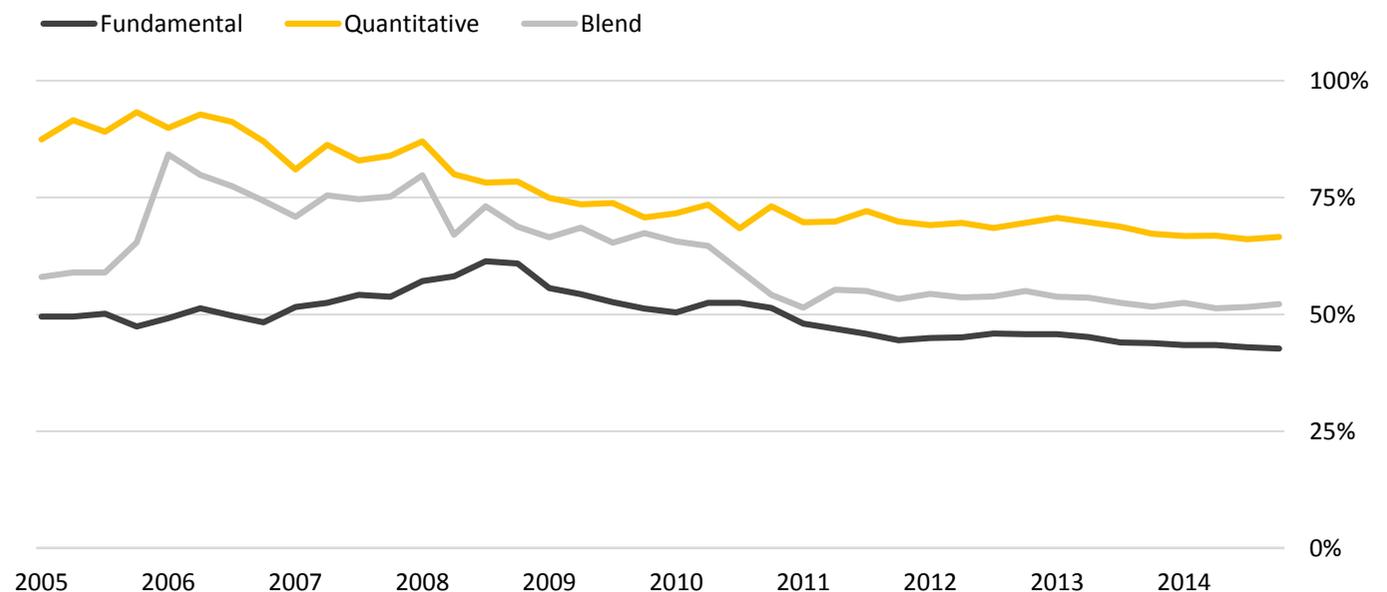
Quantitative strategies likely drive higher turnover. As expected, quantitative strategies show consistently higher weight and name turnover compared to fundamental strategies. It is important to note that while quantitative strategies may offer lower management fees than “comparable” fundamental strategies, they are more likely to incur higher transaction costs which may impact their performance and raise the bar for alpha generation in order to beat benchmarks. Thus, when reviewing quantitative strategies for investment it is important to understand the manager’s trading approach to ensure it is set up to minimize transaction expense and maximize the intended outcomes for the investor.

Figure 20: Average Annual Portfolio Turnover: Quantitative vs. Fundamental



Source: Mercer GIMD

Figure 21: Average Annual Name Turnover - Quantitative vs. Fundamental

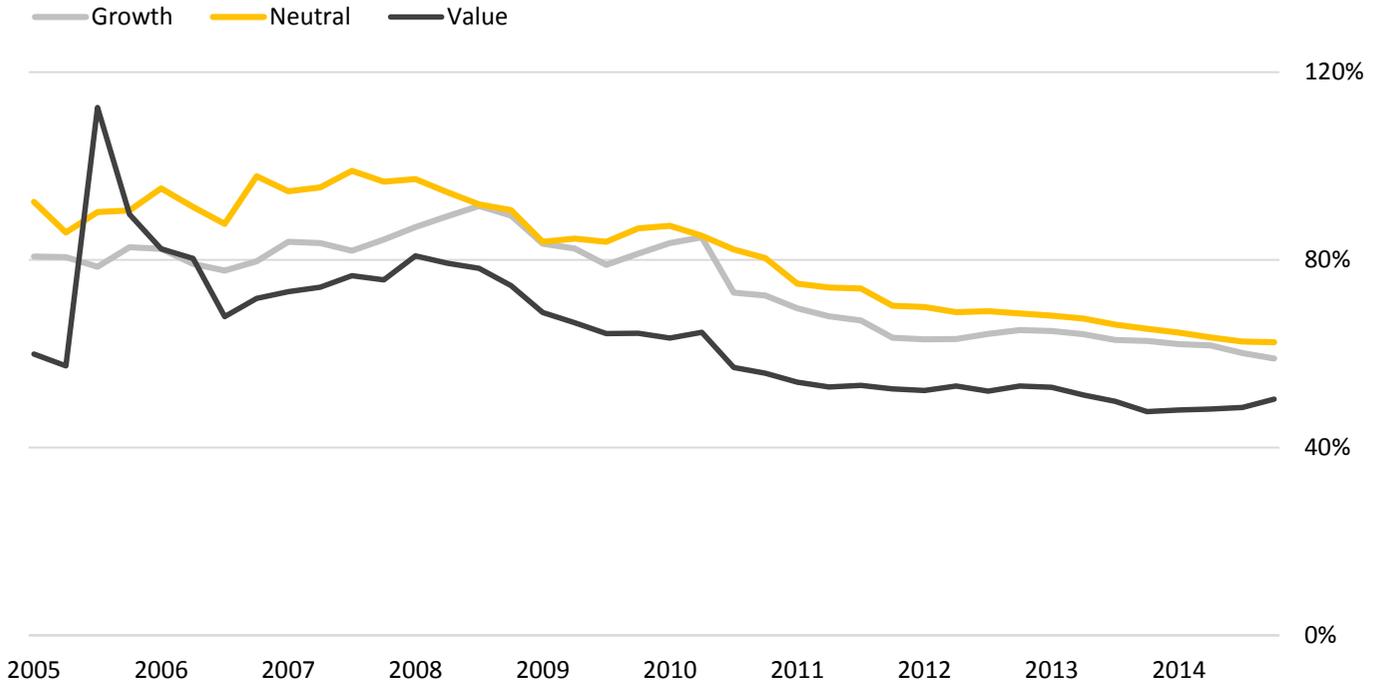


Source: Mercer GIMD

3.6.4 TURNOVER LEVELS DIFFER ACROSS PORTFOLIO MANAGEMENT STYLES

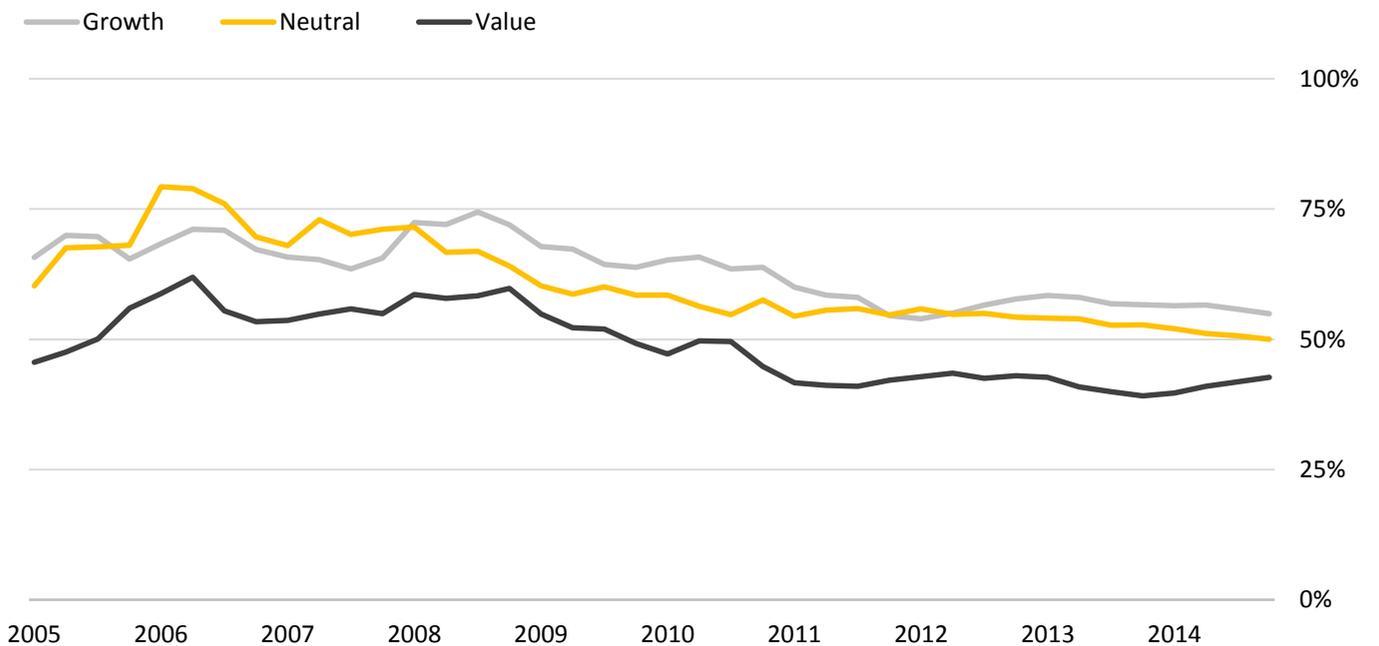
Managers with value-oriented styles turn over their portfolios less often than those focused on growth. The hierarchy of turnover results by style is as expected. Neutral strategies (which will tend to include quantitative strategies) post the highest average portfolio turnover numbers though have similar levels of name turnover to Growth oriented strategies. Value strategies tend to be lower than other style categories as respects both portfolio and name turnover. Based upon additional analysis Quality and Income strategies tend to exhibit the lowest turnover with Momentum strategies tending to be the highest since, similar to Neutral strategies, they typically exhibit a quantitative bent.³⁰

Figure 22: Average Annual Portfolio and Name Turnover of Strategies by Primary Style



Source: Mercer GIMD

Figure 23: Average Annual Name Turnover by Primary Style



Source: Mercer GIMD

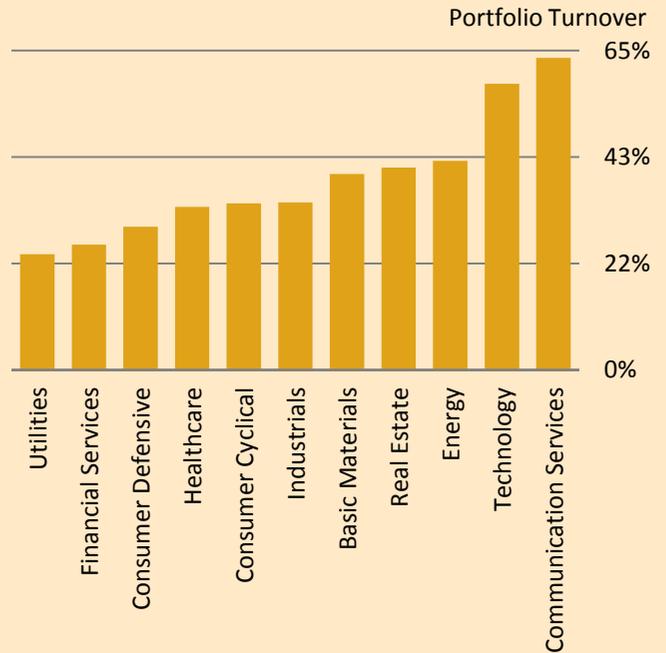
2° INVESTING INITIATIVE INSIGHT

Turnover can vary by sector. In a smaller sample of the top 40 US mutual funds by Assets Under Management, 2°ii found that that turnover varied by sector during from 2015 to 2016. Over this time period, managers turned over less than 26% of their Financial Services and Utilities shares while turning over more than 50% of their Technology and Communication Services (see Fig. 24). 7 of 10 sectors fell within one standard deviation of the mean, suggesting a low degree of variance.

This sample suggests an interesting relationship between time horizon and turnover level. Sector focus bears a direct relationship on time horizons because each sector has a different business cycle. This finding relates to Peters' finding of the different business cycles between sectors (see page 15). Utilities have the longest business cycle while Technology has the shortest business cycle. Interestingly, in our sample and over the time period assessed, Utilities and Technology were also at the extremes of turnover.

Risk premiums may drive turnover. Intuitively, the data show a strong positive relationship between risk premiums and sector turnover. Using the equity risk premiums from Morningstar Discounted Cash Flow models in 2016, we assessed the correlation between risk premiums, a measurement of volatility, and turnover. The coefficient of correlation is .426, suggesting a strong, but not causal, positive relationship between the two variables (see Fig. 25). This is consistent with Mercer's previous observation of the correlation between volatility and turnover (see page 23). But further, this finding suggests that the relationship holds at the sector level.

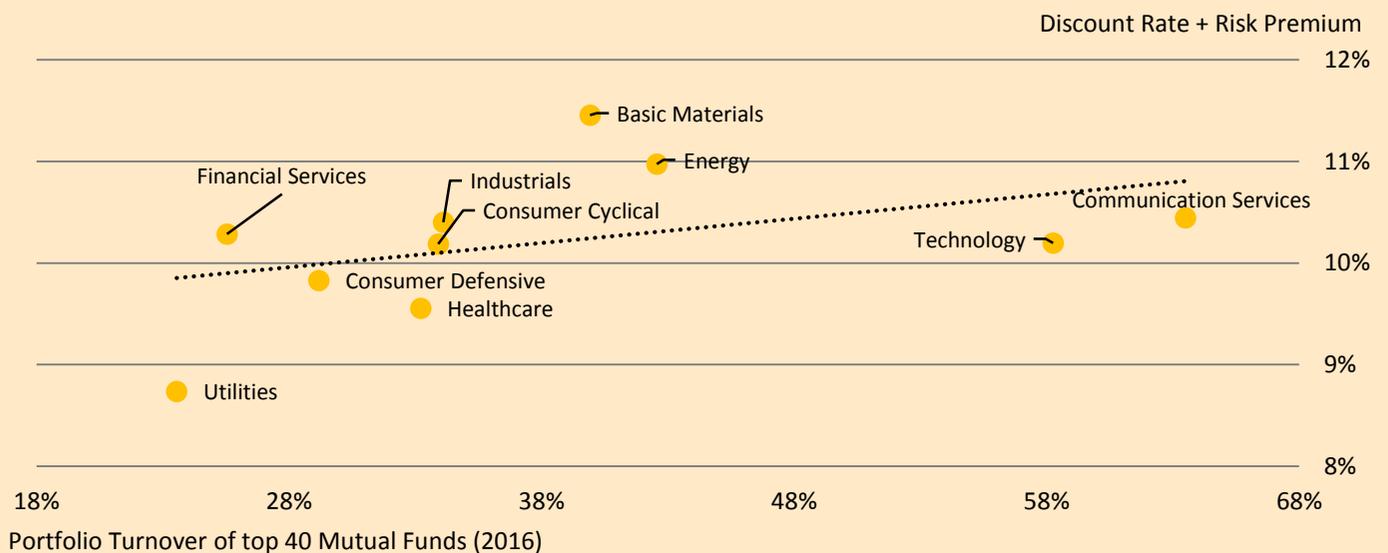
Figure 24: Turnover by Sector Among the top 40 US Mutual Funds by AUM, 2015-2016



Source: Morningstar Direct, 2016

Given the sample and time period used in this study, we cannot conclusively determine a relationship between risk premiums and turnover but can suggest that risk analysis creates differential trading strategies between sectors. If all sectors had the same risk/return profiles, then we would expect to see the same turnover in all sectors. And indeed, sectors are bunched around the mean level of turnover. However, the outlier sectors suggests that time horizon can affect turnover. Intuitively, higher volatility in a sector with a shorter business cycle time horizon can drive higher turnover in that sector.

Figure 25: Mutual Fund Portfolio Turnover Correlation with Equity Risk Premiums



Source: Morningstar Direct, 2016

3.7 MANAGERS GENERALLY MEET EX ANTE TURNOVER EXPECTATIONS

Whether or not managers are aware of the repercussions of excess turnover, they certainly exhibit an awareness of the amount of turnover within their portfolios. Overall our results, using estimated turnover, show that managers have been quite good at hitting their target turnover ratios when examined over the past decade. Roughly half of the managers exceeded their targets and half fell below their target with limited variation in this theme across strategy types (see Figure 26 at right and Figure 27 on next page). This is quite different from our 2011 analysis of this subject which found that 65% of the strategies sampled for the much shorter period 2006-2009 exceeded their *ex ante* turnover expectations.³⁰

Turnover expectations are more likely to be met when volatility is low. This prior result again suggests a time-specific variation related to the heightened volatility of the economy and markets leading up to and around the GFC. Whereas the results from this study indicate that over time managers broadly succeed at meeting expectations. Thus episodic (e.g. rolling three-year) *ex post* versus *ex ante* turnover may be another indicator to consider when reviewing individual strategies or when looking to identify broader market trends.

Asset owners can verify that managers are meeting their turnover expectations. While most managers we interviewed indicated that asset owners don't often ask about turnover directly, investors could consider asking for historical data to ensure that the targeted level of turnover has been met over time and that the turnover rate was warranted by outperformance (e.g. comparing actual performance against the hypothetical 'buy-and-hold' performance of the portfolio over a given period). This can help to ensure rational trading patterns.

Figure 26: Strategies below and above turnover expectation

Number of strategies with expected turnover data	1448
Number of strategies ex-post > ex-ante	725
Strategies ex post > ex-ante, exceed by an average of...	18%
Average turnover of strategies with ex-post > ex-ante	59%
Number strategies where ex-post < ex-ante	723
Average turnover of strategies with ex-post < ex-ante	56%
Strategies ex-post < ex-ante, are lower by average of...	21%

Source: Mercer GIMD, 2013-2015

GLOBAL GROWTH MANAGER:

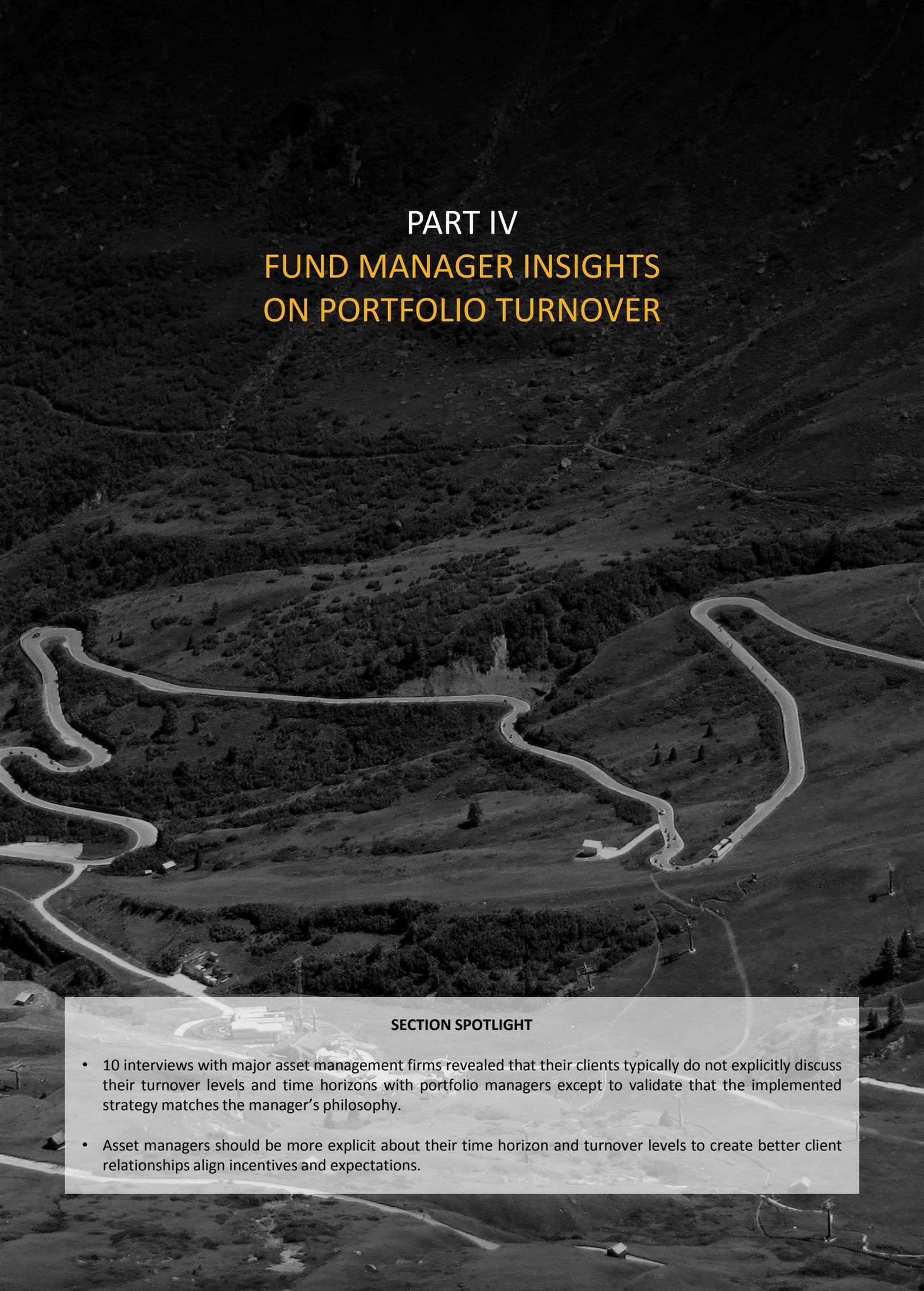
“Client interest in turnover and time horizon will typically come up in this manner - where clients are seeking to validate that the portfolio management team's implementation of the strategy is in line with the stated philosophy”

Managers with growth and value strategies tend to meet their expected turnover except when they make decisions based on unexpected events or sell as soon as the stock price reaches their predetermined intrinsic value. In these cases, even professed long-term managers can trade more frequently than they expect.

Figure 27: Ex Ante Expected vs. Ex Post Realized Portfolio Turnover for Various Fund Categories

Ex Ante vs. Ex Post Turnover Results by Category	Number of Observations	Percentage of strategies with higher actual turnover than expected	Average amount that actual turnover exceeds expected turnover
Fundamental	733	50.2%	-1.6%
Quantitative	139	44.6%	-3.2%
Blend	123	45.5%	-5.5%
Non-SRI	1359	49.5%	-1.6%
SRI	89	52.8%	0.4%

Source: Mercer GIMD

An aerial photograph of a winding road through a forested valley. The road is light-colored and curves through the dark, dense forest. The terrain is hilly and the overall scene is in black and white.

PART IV

FUND MANAGER INSIGHTS ON PORTFOLIO TURNOVER

SECTION SPOTLIGHT

- 10 interviews with major asset management firms revealed that their clients typically do not explicitly discuss their turnover levels and time horizons with portfolio managers except to validate that the implemented strategy matches the manager's philosophy.
- Asset managers should be more explicit about their time horizon and turnover levels to create better client relationships align incentives and expectations.

4.1 INDIVIDUAL INVESTOR PERSPECTIVES OFFER KEY INSIGHTS

To support the quantitative analysis described above interviews with ten portfolio managers from a diverse array of investment funds were arranged to obtain direct views of turnover causes and effects from the individuals making final buy and sell decisions. These interviews were turned into ten case studies the results of which are detailed in the Appendix. The aim of the case studies was to augment the quantitative analysis to better understand how portfolio managers approach the issue of time horizon and turnover in the context of their investment philosophies and processes. In particular, the case studies examined the following:

1. What are the main determinants of the time horizon of the investment strategy in question? How does the management of turnover factor into overall decision-making?
2. How does the portfolio management team approach trading decisions and the management of trading related expenses?
3. To what extent are time horizon, turnover and transaction costs identified as important considerations by clients in manager due diligence and ongoing monitoring activities?
4. To what extent – if at all - does the manager observe short-termism in capital markets or within their client base? To what extent has this altered the manager’s strategy in the past?
5. How is employee compensation designed to give consideration to time horizon – if at all?

As summarized in the table below, the ten case studies sought out a diverse sample of strategies in terms of their philosophies and process which exhibited varying levels of turnover, both in absolute terms and relative to their expected turnover figures.

Figure 28: Overview of Case Study Participants

Source: Mercer GIMD

Case study	Region	Investment Strategy Category / Principal Security Selection Technique	Expected turnover (%) in GIMD	Turnover (%) (weight) ³²	Turnover (%) (name) ³³
1	US	Large Cap Value – Fundamental	25 ³⁴	35	19
2	Global	Growth – Fundamental	20	27	22
3	Global	Growth – Fundamental	25	40	20
4	US	Large Cap Core – Fundamental	200	167	106
5	Global	Core – Quantitative	80	76	57
6	Emerging Markets	Core – Fundamental	25	31	17
7	Emerging Markets	Core – Fundamental	55	70	29
8	Global	Core (SRI) – Quantitative	110	105	49
9	Global	Core – Quantitative	75	134	121
10	Global	Core - Fundamental	75	127	89

This section summarizes the themes as they emerged in the course of the interviews in terms of:

- Main determinants of the time horizon of the investment strategy / drivers of turnover.
- How the manager approaches trading execution and the management of trading-related expenses.
- Manager perceptions of client interest in – and importance assigned to – turnover and trading-related practices.
- How time horizon is addressed in the design of employee compensation and incentive systems.

Figure 29: Summary of Key Insights from Case Studies

Source: Authors

Case study	Region	Investment Strategy Category / Principal Security Selection Technique	Expected turnover (GIMD) ³⁶	Turnover (weight) calc by Mercer	Turnover (name) calc by Mercer	Insights
1	US	Large Cap Value Fundamental	25 ³⁷	35	19	As a value-oriented strategy the manager aims to identify high-quality, dividend-paying companies which are likely to exhibit strong and steady growth in their earnings and free cash flow over a 3-5 year time frame. While turnover is not an explicit target the fund management process results in turnover broadly in line with the team’s 5-year prospective discounted cash flow modeling period. The manager believes fundamental strategies make money by being long term and acting counter-cyclically to short term trends.
2	Global	Growth Fundamental	20	27	22	In the team’s opinion, an investor’s starting point should be “Will this company be thriving in ten years? Why or why not?” The team believes that the status quo presents dangers in the way people think about risk, i.e. looking for lower volatility in the short term. In the team’s opinion, a fund manager’s desire to show that they are in control of a situation can lead them to make short term decisions, and these impulses must be fought every day. The team expressed the view that many changes need to take place in the fund management industry to effectively shift the mindset to a longer time horizon. In the team’s opinion, encouraging company ‘investor days’ would be useful to support such dialogue, and too few companies are taking this approach.

Case study	Region	Investment Strategy Category / Principal Security Selection Technique	Expected turnover (GIMD)	Turnover (weight) calc by Mercer	Turnover (name) calc by Mercer	Insights
3	Global	Growth Fundamental	25	40	20	The portfolio manager views the turnover ratio statistic as an outcome of process (not an input or an end sought). The portfolio manager does not see a particular need for changes or interventions in the market to promote a more long-term orientation. Rather, the portfolio manager sees short term volatility as part of functioning markets and as sources of liquidity. Indeed, the portfolio manager believes a preoccupation with the short-term by some in the markets can create attractive buying opportunities for long-term investors where stocks can be purchased at a price that is farther from their fair market value.
4	US	Large Cap Core Fundamental	200	167	106	The portfolio manager does not believe short-termism in markets is necessarily a negative given their philosophy and ability to identify opportunities is based on a belief that when markets are short-term oriented, it can result in pricing dislocations that present opportunities. The time horizon employed by the portfolio manager will vary by the type of event.
5	Global	Core Quantitative	80	76	57	Expected long-term turnover is a by-product of the underlying style factor exposures and managing a portfolio to reflect their team's views. When thinking about market volatility, the portfolio managers make a key distinction between the kinds of volatility that may be present in markets. For example, in instances where there is significant volatility in markets but all stocks are moving up and down together, this is patently different from cross-sectional volatility – where stock prices are moving a lot but moving in different directions relative to each other. The primary driver of turnover for the strategy is based on these cross-sectional changes in stock prices or company fundamental data.
6	Emerging Markets	Core Fundamental	25	31	17	The portfolio managers believe there is an issue with short-termism in markets. For example, the portfolio manager commented that during the Global Financial Crisis the team traded too much, focusing on macro headlines which resulted in increased turnover to 50% from 20-25%.

Case Study	Region	Strategy	Expected Turnover	Actual Portfolio Turnover	Actual Name Turnover	Insights
7	Emerging Markets	Core Fundamental	33	70	29	The manager describes their approach as that of a private equity investor in that when they buy a company, they like to think of it as a partnership with a minimum time horizon of 3 to 5 years. The portfolio management team views management – and management’s ability to manage their business through various crises – as the single biggest risk to be managed. A company will be sold if the corporate situation deteriorates – in particular where there are governance concerns, the stock becomes over-valued or there is a perceived change in the business environment.
8	Global	Core (SRI) Quantitative	110	105	49	Transaction costs, in their opinion, must be balanced against alpha expectations as well as risk management needs. From the portfolio manager’s perspective, consistency and implementation of the process is more important than interpreting a turnover ratio in an absolute sense. In their opinion, an investment strategy and associated philosophy, implemented consistently, should result in relatively stable turnover.
9	Global	Core Quantitative	75	134	121	Stocks are purchased and sold based on the alpha signal of the bottom-up and top-down models and as a function of the firm’s optimization and risk models. Since portfolio management in the firm’s equity strategies is a team approach, investment team members’ compensation is not linked to the performance of specific portfolios but rather to the individual’s overall contribution to the success of the team and the firm’s profitability.
10	Global	Core Fundamental	75	127	89	While time horizon is a standard question asked by many clients and field consultants, the firm’s sense is that beyond seeking a better understanding of the buy-sell discipline of the portfolio manager, the preoccupation is often shorter-term performance considerations. The firm has made explicit efforts to align the compensation of portfolio managers with the mid-term time horizon of the investment strategy by basing the variable pay component on a rolling 3 year performance record that is assessed relative to peers.

4.2 SUMMARY OF INTERVIEW FINDINGS

Key insights gleaned from our interviews include that managers commonly view the turnover ratio statistic as:

- **an outcome of their process** (not an input or an end sought), and;
- **a reflection of the manager's investment time horizon and execution of the stated philosophy** which can be monitored alongside other measures (such as style factor exposures) to confirm the manager is executing their stated philosophy.

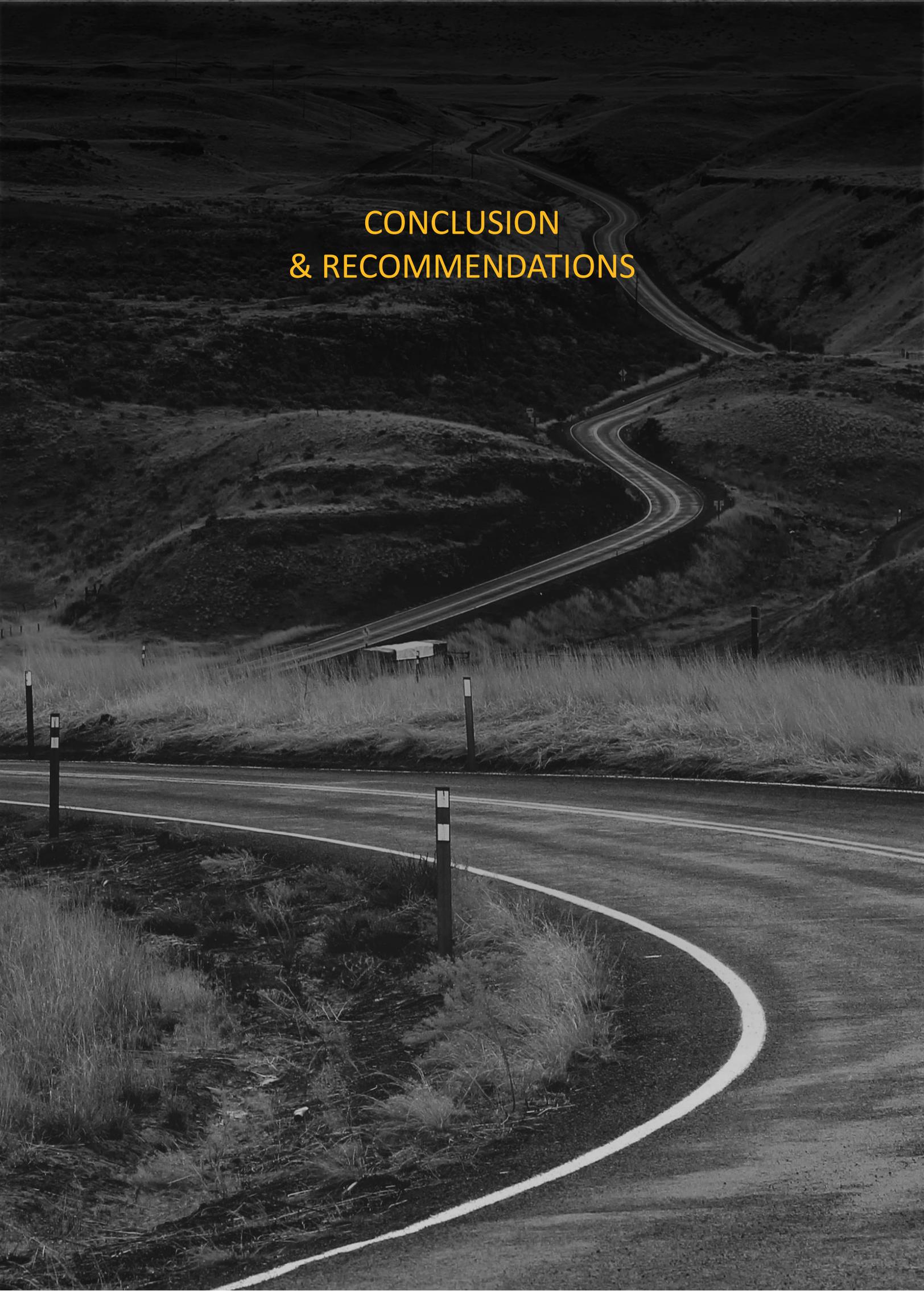
We also note that:

- **Trading costs and impact costs are typically monitored quarterly and are an active consideration in portfolio construction among a majority of managers interviewed.** While there is a recognized (potential) trade-off between alpha and trading costs, managers were generally expressed that trading activities are influenced by return expectations, risk management considerations and transaction costs – all of which are changing over time.
- **Managers expressed the need to balance ongoing management of the portfolio to implement the strategy and manage risk with the associated transaction costs that serve as a drag on returns.** In practice, the extent to which managers actively quantify and continually monitor these costs can vary significantly. **Managers noted that client preoccupation with short-term performance results and general aversion to short term volatility has led them to make sub-optimal decisions in the past.** For example, one manager we interviewed has altered their portfolio construction process to invest in a wider number of stocks beyond their 'top picks' in order to dampen shorter-term volatility. The manager's perspective was that this had the potential of eroding long-term alpha generation.
- **A majority of those interviewed have sought to explicitly align a portion of employee compensation with the time horizon of the strategy's philosophy.** In particular, for longer-term oriented, lower-turnover investment strategies, longer term performance (e.g. 3 and in some cases 5 years) often influences the calculation of an employee's total compensation.

- **Managers of longer-term oriented, lower turnover investment strategies often commented that short-term volatility can create attractive buying opportunities to be exploited.** For example, a number of portfolio managers we interviewed believe that a disproportionate focus on the short-term (e.g. 0 to 12 months) by traders and the sell-side analyst community can create inefficiencies and opportunities for patient investors with longer time horizons that have a differentiated view on the company's earnings potential compared to the market.

On the basis of this last point many of the fund managers interviewed did not see a particular need for changes or interventions in markets to promote a more long-term orientation because of the alpha opportunity this disconnect presents for investors with longer horizons. Equity managers may thus be unwilling to advocate for an overall change in market behavior if they don't see a direct benefit to so doing (or may indeed see a drawback). This runs contrary to prevailing wisdom described earlier (see Foreword) which points to the benefits – both to society and markets – of longer holding periods in general. Investors may be gradually aligning their incentives with asset managers over time. Regulators can accelerate this process through requiring transaction cost disclosure. Again, the relationship between market actors (e.g. buy-side and sell-side/high-frequency traders) should be explored further to better understand related dynamics and how they contribute to or detract from the broader goal of promoting long-termism.

CONCLUSION & RECOMMENDATIONS



CONCLUSION AND RECOMMENDATIONS

The potential mismatch between the time horizons of actors in the investment chain is an important issue with potentially adverse impacts on the financial system and society at large. Additionally, turnover-related transaction costs can be an important indicator of manager/strategy efficiency and can elevate outperformance hurdles in particular for active investment strategies. For both these reasons, the turnover of active equity funds – by both portfolio and name – can be a useful input for investors looking to assess manager time horizons and the costs of implementing a given strategy.

Asset owners may wish to pay more attention to turnover and use it as a means of broaching productive discussions with managers regarding their time horizons and shifts in their portfolios. As better informed clients, asset owners can then be in a position to judge whether turnover levels seem reasonable given the objectives of the strategy. Such conversations will need to be investor and manager-specific as providing general guidance on optimal turnover levels is not straightforward, particularly across a diversity of styles, regions and approaches.

The “right” level of turnover will depend on the nature of the strategy (e.g. its alignment with the investment manager’s philosophy and that of its clients) and the nature of the economic/market environment. For instance, if the pace of economic change accelerates, precipitated perhaps by a step-change in technology in a given industry, then investors may very well want their managers to increase turnover to reflect the fact that some of the companies they hold today simply will not survive in the future. On the other hand, over the long-term, lower turnover can serve to unlock value by allowing the compound earning power of quality companies to shine through and by reducing transaction costs.

For asset managers, perceived pressure from clients to provide stable returns over the short-run can be a driver of short-termism in investment management. This came through repeatedly in our interviews underpinning the qualitative portion of this research. While many asset owners are supportive of long-term investing and indeed favor lower-turnover strategies in general, such support does not seem to filter through to monitoring practices. To address this, asset fund managers should be careful when selecting clients and make sure their time horizon expectations are understood and aligned particularly when managing long term-oriented portfolio.

“Investors should pay more attention to turnover”

While time horizon is a standard question asked by many clients and field consultants, beyond seeking a better understanding of the buy-sell discipline of the portfolio manager, the preoccupation is often shorter-term performance considerations. Several portfolio managers interviewed, for example, commented that short-term underperformance (e.g. 12 months) will result in heightened scrutiny of a strategy from clients and consultants. This can result in incentives to target shorter-term performance pay-offs in designing and implementing the investment strategy. In response, several of those interviewed spoke of the need – from their perspective – to spend more time cultivating client relationships. In terms of developing positive relationships with clients, one fund manager cited the benefit of ensuring expectations are aligned on time horizon and the period over which the strategy is expected to outperform.

Managers should consider the long-term trends observed in the equity fund management industry when exploring new fund launches or shifts in existing strategies. Asset-weighted average portfolio turnover of funds in this study comes in at 44% (below arithmetic average turnover) and very few assets are in strategies with > 100% portfolio turnover (see Figure 16 on page 26 and associated commentary). It appears that fund managers have been exhibiting a long-term structural shift towards lower average turnover strategies over both ~10 and ~30 year periods (see Figures 13 and 15).

For policymakers and regulators, the growing disconnect between turnover amongst professional equity fund managers and in underlying stock markets is potentially troublesome. While it is beyond the scope of this paper to diagnose all of the potential consequences of these countervailing trends this is definitely a subject warranting further research. Given the social benefit of encouraging long-term capital allocation, a limit on trading activity by short-term traders could have benefits to the investment “value circle” and ultimately society more broadly. Additionally encouraging greater transparency and disclosure amongst institutional equity fund managers may serve to facilitate better analysis of the impacts of turnover on fund performance and increase conversations between asset owners and asset managers regarding fund time horizons and holding periods.

2° INVESTING INITIATIVE

INTERPRETATION OF THE FINDINGS

- 1. The findings suggest that the demand for long-term risk analysis in equity markets is limited to nonexistent.** Long-only equity fund managers turn over their portfolios on average 1.7 years and 90% of them do so within 3 years. In this context, the demand for long-term risk analysis (risks likely to materialize after 5-10 years) is likely to be nonexistent given that other investors are even more short-term focused. This lack of demand was highlighted as a major cause of short-termism in equity research in our sister study “All Swans are Black in the Dark.” Although this study was mostly focused on the sell-side, we did not find any evidence of, nor a strong rationale for, the existence of a significantly longer focus in buy-side analysis.
- 2. Investment horizons have gotten longer but might still be sub-optimally short.** The turnover of long-only investors has decreased since the Global Financial Crisis, and asset managers now prove to be good at meeting their turnover expectations. However, Mercer’s review of academic literature suggests that the current average turnover rate is still twice as high as the hypothetical ‘optimal’ turnover rate from a risk-return perspective. Even though it is technically possible, we did not find asset managers who back tested their portfolio to understand what would be the optimum level of turnover for a given strategy. Further research would be needed to come up with conclusive findings on this question.
- 3. In order to increase transparency, asset managers should disclose performance before and after transaction costs.** Turnover serves as a proxy for transaction costs. Transaction costs can amount to 1.4% of net asset value and are a drag on equity fund performance. Currently, managers are not fully transparent about the costs they incur through trading, disclosing their gross performance, which is net of transaction costs, but not the costs themselves. This situation might call for changes in financial regulation, especially in an environment where costs are driven down by passive investment and the development of robot advisors.
- 4. Is the SRI risk-based narrative consistent with 2.5 year investment horizons?** SRI fund managers turn over their portfolios less than average, or every 2.5 years. This longer horizon is consistent with the common view that the integration of ESG criteria into portfolio management is a way to better manage certain financial risks that are likely to materialize in the long term, when more stringent environmental policies get introduced, new technologies emerge and social standards increase regarding certain ethical issues. However, the ‘materiality window’ for many if not most ESG issues (such as exposure to climate-related risks and resource depletion, still appears significantly longer than the investment horizon of SRI fund managers. This would suggest that SRI strategies based on a risk management narrative (vs. ethical) would benefit from longer horizons, at least in terms of consistency of the narrative.

APPENDICES

APPENDIX A: METHODOLOGY

The data used to support the research in this report was sourced from investment managers themselves as input into **Mercer's proprietary Global Investment Manager Database (GIMD)**.³⁸ Key statistics regarding the data sourced follow:

- For portfolio turnover:
 - 3544 individual public equity strategies were analyzed
 - 61 quarterly timepoints analyzed, giving us 60 timepoints of turnover calculation
 - over 66,000 quarterly strategy-level data points
- For the name turnover data:
 - 3521 unique public equity strategies were analyzed
 - 60 quarterly timepoints analyzed, giving us 59 timepoints of turnover calculation
 - over 54,000 quarterly strategy-level data points

The expected annual turnover is provided directly to GIMD by the fund managers themselves. The language of the request defines it as:

The lesser of purchases and sales divided by the average market value, excluding cash rollovers.

In contrast to actual annual turnover, which, as noted, was calculated for the purposes of this study, the expected turnover is provided in GIMD by the fund managers and updated by them.

This study did not independently verify the portfolio holdings data in GIMD, as provided by the fund managers. However, we undertook a degree of “data cleaning” where errors in data inputting appeared to be obvious (such as large spikes in turnover by quarter or missing observations over time).

Calculation Methodology

Within industry and academic literature there does not appear to be a consistent methodology used to calculate turnover. The SEC uses the following definition for portfolio turnover for time t , which is usually a one-year period:³⁹

- $\text{Min}(\text{Purchases}, \text{Sales}) / (\text{Average Portfolio Value over the Period})$

Other publications use slight variations of this formula including altering the numerator (e.g. $\text{Max}(\text{Purchases}, \text{Sales})$) or using end period portfolio value in the denominator rather than average. Name turnover is rarely used or calculated.

In this study the following calculation methods were applied to compute portfolio and name turnover:⁴⁰

- Portfolio: For each portfolio sourced prices (local and USD), and exchange rates for periods t and $t-1$
- Calculate “passive weight” at t as $(t-1 \text{ weight} * \text{USD price return over period})$
- Normalize passive weights to sum to 100%
- Calculate Buys/Sells as $\text{ABS}(\text{Current Weight} - \text{Passive Weight})$
- Calculate portfolio turnover as $(\text{Sum of Buys/sells}) /$
- Name: $\text{Min}(\text{New Names Added}, \text{Existing Names Subtracted}) / (\# \text{ of Names at End of Period})$

For both methodologies, please note the following:

- Cash was removed as this has not been treated consistently across time periods or strategies.
- Rolling quarterly data was used to estimate annual turnover figures. This results in potential underestimation bias since we are not basing our calculations on continuous trade data. This means our data is internally consistent, but should not be used for comparison against other turnover analyses without fully understanding the turnover calculation methodologies used. Also as turnover increases, the degree of this underestimation increases relatively speaking.⁴¹

Once turnover values were calculated for individual quarters and strategies, these values were summed on a rolling four-quarter basis to obtain annual turnover values at each quarter end date. These rolling annual figures formed the basis of subsequent analysis. For each strategy time series, means, medians and other values were computed though arithmetic averages of turnover were relied on primarily.

Alternative turnover measurement methods were considered but ignored for various reasons. For instance, some literature points to the merits of using asset-weighted vs. arithmetic average turnover for industry analysis to identify those funds in which shareholders are most heavily invested.⁴² We tend to agree though due to gaps, delays and discrepancies in manager self-reported AUM figures in our original dataset we chose to rely instead on simple averages. We also considered using medians instead of averages. Though trends and relativities held regardless of which measurement was used (see right) and we felt the skewness of each distribution could be underscored elsewhere.

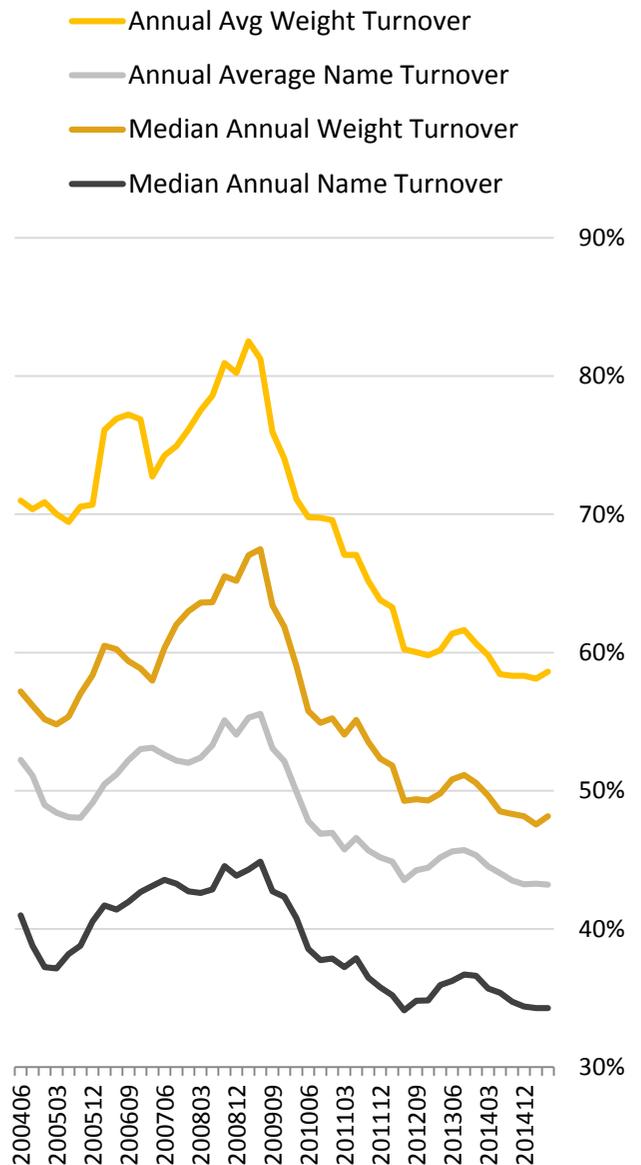
UNCONSTRAINED VS CONSTRAINED ANALYSIS

The complete dataset obtained for this analysis (see Data Used) included extensive historical information for thousands of equity investment strategies. However, not every strategy included consistently reported information over the time period sampled. To control for this, in addition to the long-term unconstrained dataset, we tested the impact of a variety of different time frame constraints on the integrity of the sample. These constraints are described as follows:

- Include only strategies with 12Q or more of data irrespective of order (“Only if 12Q of Data”);
- Include only strategies with 4Q of consecutive data ending 9/30/15 (“1 Year Consecutive”).
- Include only strategies with 12Q of consecutive data ending 9/30/15 (“3 Year Consecutive”)
- Include only strategies with 20Q of consecutive data ending 9/30/15 (“5 Year Consecutive”).

The effects of these can be seen below.

Long-term Mean and Median Portfolio and Name Turnover in Unconstrained Dataset



Results of Time Frame and Integrity Constraints on Full Dataset

		Average Annual (Unconstrained)	Average Annual (Only if 12Q of Data)	Average Annual (1 Year Consecutive)	Average Annual (3 Years Consecutive)	Average Annual (5 Years Consecutive)
Portfolio Turnover	Average	63.9%	66.1%	57.9%	57.9%	57.5%
	Median	56.6%	59.8%	49.6%	50.9%	50.5%
	Observations	3544	1992	3185	1709	696
	StDev	49.2%	35.1%	50.2%	32.3%	32.4%
Name Turnover	Average	44.5%	47.2%	45.2%	50.4%	50.5%
	Median	37.9%	41.7%	38.1%	45.0%	46.7%
	Observations	3519	1721	2215	1026	336
	StDev	30.1%	27.9%	30.8%	29.2%	25.4%
Absolute Difference Percent Difference	Average	19.4%	18.8%	12.8%	7.5%	7.0%
	Average	30.3%	28.5%	22.0%	12.9%	12.2%

UNCONSTRAINED VS CONSTRAINED ANALYSIS

The complete dataset obtained for this analysis (see Data Used) included extensive historical information for thousands of equity investment strategies. However, not every strategy included consistently reported information over the time period sampled. To control for this, in addition to the long-term unconstrained dataset, we tested the impact of a variety of different time frame constraints on the integrity of the sample. These constraints are described as follows:

- Include only strategies with 12Q or more of data irrespective of order (“Only if 12Q of Data”);
- Include only strategies with 4Q of consecutive data ending 9/30/15 (“1 Year Consecutive”).
- Include only strategies with 12Q of consecutive data ending 9/30/15 (“3 Year Consecutive”)
- Include only strategies with 20Q of consecutive data ending 9/30/15 (“5 Year Consecutive”).

The effects of these constraints on the sample can be seen in Figure 20.

The difference in average portfolio and name turnover across the sample tends to decrease as the restrictions around inclusion in the sample set tighten. Consecutive quarterly data requirements (rightmost three columns in table) narrow the difference versus the unconstrained sample set. The farther back in time we go with consecutive data requirements (1 v 3 v 5 years) the more the differences narrow as well. In the end we selected the 3-year consecutive data sample for further analysis. The reasons for this include the size and timeliness of the sample; the sample set remains robust at over 1700 strategies with qualifying data and the data is not tarnished by gaps in recent history or erstwhile strategies.

Results of Time Frame and Integrity Constraints on Full Dataset

		Average Annual (Unconstrained)	Average Annual (Only if 12Q of Data)	Average Annual (1 Year Consecutive)	Average Annual (3 Years Consecutive)	Average Annual (5 Years Consecutive)
Port	Average	63.9%	66.1%	57.9%	57.9%	57.5%
	Median	56.6%	59.8%	49.6%	50.9%	50.5%
	Observations	3544	1992	3185	1709	696
	StDev	49.2%	35.1%	50.2%	32.3%	32.4%
Name	Average	44.5%	47.2%	45.2%	50.4%	50.5%
	Median	37.9%	41.7%	38.1%	45.0%	46.7%
	Observations	3519	1721	2215	1026	336
	StDev	30.1%	27.9%	30.8%	29.2%	25.4%
Absolute Difference Portfolio vs. Name	Average	19.4%	18.8%	12.8%	7.5%	7.0%
	Percent Difference	30.3%	28.5%	22.0%	12.9%	12.2%

APPENDIX B: STATISTICAL ANNEX

Statistical Annex – Constrained Analysis

Portfolio Turnover by Strategy

Breakdown of strategy styles and types within sample	# of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Min	Max	Percentage with AUM exceeding the sample average
Number of neutral strategies	210	13.8%	65.5%	11.9%	169.0%	23.8%
Number of growth strategies	341	14.7%	62.3%	11.4%	225.4%	24.8%
Number of value strategies	350	6.3%	50.4%	10.0%	199.3%	26.6%
Number of strategies with varying style	319	10.0%	56.3%	10.0%	179.3%	30.7%
Number of Non-SRI branded strategies	1578	11.8%	59.0%	9.1%	225.4%	23.2%
Number of SRI branded strategies	104	0.0%	44.3%	11.9%	96.3%	12.5%

Name Turnover By Strategy

Breakdown of strategy ESG Rating within sample	# of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Min	Max	Percentage with AUM exceeding the sample average
Number of fundamental strategies	789	6.2%	50.7%	9.8%	170.9%	29.6%
Number of quantitative strategies	150	32.7%	84.7%	14.9%	199.3%	16.0%
Number of blend strategies	129	10.9%	59.4%	10.6%	143.4%	16.3%

STATISTICAL ANNEX – CONSTRAINED ANALYSIS

By Region

Breakdown of regions within sample	Number of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Minimum	Maximum	Percentage with AUM exceeding the sample average
Asia/Pacific	91	7.7%	61.3%	12.7%	191.3%	12.9%
Australia/New Zealand	138	9.4%	57.4%	9.3%	201.4%	2.3%
Canada	110	7.3%	47.0%	10.0%	225.4%	8.4%
Japan	77	23.4%	73.0%	12.3%	213.4%	22.4%
Europe	85	10.6%	56.6%	10.0%	146.6%	10.6%
International/Global/ Multi-Region	441	11.8%	60.1%	11.9%	199.3%	29.4%
United Kingdom	41	2.4%	40.3%	9.8%	120.3%	29.3%
Emerging Markets	83	12.0%	63.8%	16.5%	154.6%	37.8%
United States	616	11.0%	57.1%	9.1%	172.5%	24.9%

By Strategy

Breakdown of strategy styles and types within sample	Number of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Minimum	Maximum	Percentage with AUM exceeding the sample average
Number of neutral strategies	163	8.0%	52.2%	8.2%	144.0%	24.5%
Number of growth strategies	235	9.4%	56.6%	9.1%	221.3%	22.6%
Number of value strategies	197	3.0%	41.7%	10.6%	127.3%	24.9%
Number of strategies with varying style	175	6.3%	47.5%	7.8%	165.8%	30.8%
Number of Non-SRI branded strategies	958	7.4%	51.7%	5.4%	221.3%	22.6%
Number of SRI branded strategies	49	0.0%	31.4%	10.1%	74.4%	14.3%

STATISTICAL ANNEX – CONSTRAINED ANALYSIS

By Style

Breakdown of strategy ESG Rating within sample	Number of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Minimum	Maximum	Percentage with AUM exceeding the sample average
Number of fundamental strategies	459	3.7%	44.0%	9.7%	150.7%	29.5%
Number of quantitative strategies	121	20.7%	68.9%	7.8%	144.0%	15.7%
Number of blend strategies	90	3.3%	52.6%	15.0%	127.5%	13.3%

By Region

Breakdown of regions within sample	Number of Observations	Percentage with average annual turnover that exceeds 100%	Average Turnover	Minimum	Maximum	Percentage with AUM exceeding the sample average
Asia/Pacific	46	8.7%	49.8%	16.5%	178.5%	11.1%
Australia/New Zealand	70	2.9%	48.4%	10.3%	117.5%	1.6%
Canada	52	7.7%	52.2%	10.1%	221.3%	9.8%
Japan	52	13.5%	65.4%	5.4%	193.1%	17.4%
Europe	40	10.0%	52.7%	11.8%	133.6%	15.0%
International/Global/ Multi-Region	275	7.3%	50.8%	7.8%	165.8%	25.9%
United Kingdom	20	0.0%	39.6%	10.1%	90.2%	25.0%
Emerging Markets	58	1.7%	45.9%	7.8%	127.5%	41.4%
United States	394	7.4%	50.1%	9.1%	155.1%	24.1%

APPENDIX C: INVESTMENT MANAGER CASE STUDIES

Case study #1	
Region	U.S.
Investment Strategy Category	Value
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$36 billion
Inception	1988
Client base	Retail
Brief description of the style / process / philosophy for the strategy	The manager seeks to balance current income with capital appreciation by investing in high-quality, dividend-paying companies at reasonable prices with the expectation that a portfolio of these companies will typically outperform the market over the long term.
Expected or Estimated annual turnover	25%
Actual annual turnover calculated by Mercer	35%

The investment team's research focuses on identifying companies with strong balance sheets, consistent strategy, stable revenues and earnings, future earnings power, dividend growth and sustainability, and a catalyst for earnings growth and multiple expansion. Stocks are sold when fundamentals deteriorate at the company level, valuation is fully realized, or when the team identifies a more attractive opportunity. Long-term expected turnover is estimated at approximately 25%.

The manager has had account turnover which could in some cases be attributed to 3 and 5 year relative performance. Five years is the outer bound in terms of their internal analysis and client performance measurement. According to the portfolio manager if they felt permitted by clients to target longer-term outcomes the only difference to the portfolio might be a greater degree of concentration in fewer names. Having a more diversified portfolio serves to mute short-term volatility which is difficult for clients to tolerate.

More specifically the interviewees said if they received a 7-10 year mandate they would rank their top 80 names and only buy the top 40. Right now they buy all 80. They do this to dampen short term volatility but may give up some upside as a consequence.

The team does not manage explicitly to a level of turnover nor has turnover or time horizon ever been mentioned explicitly in investment management agreements with clients. Rather turnover is viewed (internally and by clients) more as a fallout from the investment style and market opportunity set than an aim in itself. The strategy targets high quality companies that the team thinks over the next 3-5 years will be able to grow dividends through better earnings and free cash flow growth. They cap their forecast cash flow assessments at 5 years based on the uncertainty of forecasts beyond that time frame.

The team has developed a cash flow model template (earnings, cash flow and balance sheet) which looks back 10 years and forward 5 years. While this model is an important input into buy and sell decisions the team's independent judgment is what enables the strategy to add value, where their opinion is different from consensus.

The team does not have much use for sell side research in part because of the time horizon mismatch. Sell-side analysts typically look out to a 1 year horizon or at most 2 years. Focusing on high-quality earnings compounders as the manager does, the farther out you go the more these shine as they are better able to generate a high return on capital over time.

The strategy is largely bottom-up driven with very limited sector-based constraints (max industry exposure is 25%).

This means the strategy will exhibit large overweights to sectors at times. The team does consider long-term sustainability themes in its assessments of companies qualitatively, but tries not to get overly focused on them – they cited Tobacco as an example where social sentiment has been highly negative for 40 years but returns have been excellent during this time frame.

In terms of portfolio-level stress testing, the team meets with the separate risk and quantitative group every 1.5 months to review factor exposures and exposure to shocks. These are primarily economic in nature (e.g. sudden interest rate move, Brexit, sudden oil price shift) and do not appear to contemplate secular shifts in markets. The focus of these exercises is on correlation and the potential for impact across the strategy’s time horizon

The team believes its portfolio of quality stocks is resilient to most shocks. Extreme factor risk in the short run can pose a significant loss, though the portfolio’s dividend yield and healthy balance sheet helps to mitigate such short term risk. Quality business will keep compounding earnings over time and strong balance sheet can support them during downturn, so this also offers long-term protection.

The nature of the strategy which exhibits below average turnover makes trading execution fairly straightforward. Most trades aren’t urgent as they are the result of an upgrade in an existing name. The portfolio managers give traders leeway so they can exceed an order size if makes sense. Trading costs are monitored quarterly.

On a sector-specific basis the team mentioned that it has been trading a lot in the energy sector recently and less in materials because of the opportunity set in each. The Consumer Staples sector is probably lower turnover over time just due to sector dynamics.

The interviewees said that fundamental managers make money by being long term and acting counter-cyclically to short term trends. At the time of the interview the manager was taking cash down in funds in response to Brexit – this was offered as an example of being countercyclical. Incentive compensation at the firm is measured based on 3, 5 and 1 year results for the strategy (weighted in that order). Return is the only metric used to determine compensation. Clients have left based on 3 and 5 year relative results though they could not think of no examples of clients leaving after a 1-year underperformance period.

Case study #2	
Region	Global
Investment Strategy Category	Growth
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$31 billion
Inception	2003
Client base	Institutional
Brief description of the style / process / philosophy for the strategy	The team believes that the shares of companies with sustainable competitive advantages that grow their earnings faster than the market will outperform the market over the long term (5 years+) provided the shares are purchased at a reasonable price.
Expected or Estimated annual turnover	20%
Actual annual turnover calculated by Mercer	27%

The approach to picking stocks is to find those expected to have sustainable future earnings and cash flow growth above that of the market average; the team must be able to understand and articulate why the market has misinterpreted the company's growth prospects. If they cannot outline the reason for the market mispricing, then they will not buy the stock. Turnover is expected to average out at less than 25% per annum. There are four

situations that can result in a sell decision; an adverse change in business fundamentals, a loss of confidence in management, valuation, and for portfolio construction reasons.

The team expressed the view that many changes need to take place in the fund management industry to effectively shift the mindset to a longer time horizon. A symptom of this in the opinion of the team are quarterly earnings calls that focus on a 3 to 6 month timeframe with little to no focus on the longer-term strategic advantages of the company. In the team’s opinion, encouraging company ‘investor days’ would be useful to support such dialogue, and too few companies are taking this approach.

In the team’s opinion, a fund manager’s desire to show that they are in control of a situation can lead them to make short term decisions, and these impulses must be fought ever day. To that end, implementing this philosophy is the key cultural challenge they believe they face. To emphasize a focus on a longer time horizon, employees are compensated on five year performance. In terms of developing positive relationships with clients, their best case study was with a new client where the performance hadn’t been strong for the first year. During the first meeting, the client said “we’re pleased with you, you did exactly what you’d said you would do – it’s just not been a market period over which your strategy worked’.

Case study #3	
Region	Global
Investment Strategy Category	Growth
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$13.5 billion
Inception	2008
Client base	Institutional with some retail.
Brief description of the style / process / philosophy for the strategy	A bottom-up, growth manager that builds a concentrated portfolio of companies that are expected by the team to lead and dominate attractive growth industries over a 5+ year investment horizon.
Expected or Estimated annual turnover	20-35%
Actual annual turnover calculated by Mercer	40%

The strategy invests primarily in large cap names and the manager essentially follows a buy and hold philosophy with low turnover. The portfolio management team’s valuation models are constructed using a 5-7 year investment horizon and they explicitly focus on longer-term, strategic issues when analyzing a firm’s competitive positioning. By targeting a long-term investment horizon, the investment manager seeks attractive risk-adjusted returns from companies that realize long-term business opportunities. Long-term turnover is estimated to average between 20 – 35%. The portfolio manager views the turnover ratio statistic as an outcome of process and a reflection of the manager’s investment time horizon and execution of the stated philosophy. Turnover will typically arise as a result of position trimming, where for example, valuations have run or as a result of macroeconomic changes.

Client interest in turnover and time horizon will typically come up in this manner - where clients are seeking to validate that the portfolio management team’s implementation of the strategy is in line with the stated philosophy. In developing client relationships, the manager seeks out clients that understand the strategy’s longer-term perspective and philosophy that can result in short-term deviations relative to the benchmark that can be quite significant. The firm has sought to explicitly align a portion of employee compensation with longer-term performance metrics. A significant portion of variable pay (bonus) is determined based on the relative performance of the strategy against its benchmark on a 1, 3 and 5 year rolling period. Longer-term performance (3 and 5 year) has greater influence on a team member’s total compensation (35% weighted to 3 year and 50% to 5 year).

The manager views sell-side research as reporters and quantifiers of news but tending to focus on short-term developments - either developments that have just occurred or predictions over a short, 3 to 6 month timeframe.

The portfolio manager does not see a particular need for changes or interventions in the market to promote a more long-term orientation. Rather, the portfolio manager sees short term volatility as part of functioning markets and as sources of liquidity. Indeed, the portfolio manager believes a preoccupation with the short-term by some in the markets can create attractive buying opportunities for long-term investors where stocks can be purchased at a price that is farther from their fair market value. When engaging with a company's management, the portfolio manager believes their emphasis on longer-term (3 to 5 year as well as 5+ year) strategic issues is a welcomed change from the perspective of senior management. They view themselves as more aligned with management's perspective - thinking about the companies as businesses and not simply as stocks to be traded.

Case study #4	
Region	U.S.
Investment Strategy Category	Large Cap Core
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$3.7 billion
Inception	1996
Client base	Retail with some institutional.
Brief description of the style / process / philosophy for the strategy	The portfolio management team believes that corporate and global events result in short-term pricing inefficiencies from which opportunities can be capitalized and that markets are efficient in valuing change over the long term.
Expected or Estimated annual turnover	200%
Actual annual turnover calculated by Mercer	167%

The portfolio management team believes that corporate and global events tend to result in short-term pricing inefficiencies in markets and that markets are efficient in valuing change over the long term. Through fundamental, bottom-up research, the team attempts to invest in companies that are experiencing an event (e.g., merger or acquisition, financial or operational restructuring, and/or management change) and that exhibit compelling free cash flow, franchise, and return on capital characteristics.

The strategy employs a concentrated, benchmark-agnostic approach to portfolio construction and name turnover is typically below 50% per annum. The team looks to actively balance the portfolio's risk/reward characteristics through frequent trading around existing positions based on event-specific and valuation considerations, resulting in expected dollar turnover of approximately 200% per year. A stock is trimmed or sold if it reaches the team's assessment of intrinsic value; the value proposition has changed for the negative; or it is experiencing deteriorating fundamentals. The team's inability to rationally understand a decline in stock price may also trigger a trim or sell. A stock is trimmed or sold if it reaches the team's assessment of intrinsic value; the value proposition has changed for the negative; or it is experiencing deteriorating fundamentals.

The portfolio manager does not believe short-termism in markets is necessarily a negative given their philosophy and ability to identify opportunities is based on a belief that when markets are short-term oriented, it can result in pricing dislocations that present opportunities. The time horizon employed by the portfolio manager will vary by the type of event. For example, opportunities around an announced acquisition could be days or weeks while operational re-structurings may have a time horizon of 2 to 3 years. In most cases, the team is working on a view of a company's value in the next 18 to 24 months. The portfolio manager views transaction costs as a relatively immaterial consideration given the focus on larger capitalization, highly liquid stocks.

Incentive compensation for employees is based on the investment performance and profitability of the specific product category. Performance is measured primarily on the overall strategy's performance each calendar year,

although an individual analyst’s contributions are also considered. The seven members of the US Equity team, including the two dedicated traders, also have equity ownership in the firm.

In developing relationships with their clients, the manager emphasizes that clients must be willing to accept performance volatility and higher tracking error due to the portfolio’s concentration of stocks and loose sector constraints. While the team's focus on free cash flow, franchise value, and minimizing deal risks should help provide some downside protection, the strategy is viewed as a satellite rather than core equity portfolio. The portfolio manager and client service representative were unaware of client questions related to turnover or trading practices.

Case study #5	
Region	Global
Investment Strategy Category	Core
Principal Security Selection Technique	Quantitative
AUM (US\$)	\$4.5 billion
Inception	2003
Client base	Institutional
Brief description of the style / process / philosophy for the strategy	The manager employs a purely quantitative, disciplined approach emphasizing bottom-up security selection decisions. The team uses separate models to analyze stocks within industries and across industries. The investment philosophy is based on the fundamental concepts of value (buying securities that are cheap and selling those that are expensive) and momentum (buying securities that are getting better and selling those that are getting worse) investing. The firm applies both concepts through the use of numerous proprietary indicators across many markets, while generally giving more weight to value than momentum. Stocks are sold based on their rankings within the stock selection models, subject to tracking error constraints.
Expected or Estimated annual turnover	80%
Actual annual turnover calculated by Mercer	76%

The firm employs a disciplined approach emphasizing bottom-up security selection decisions. The team uses separate models to analyze stocks within industries and across industries. Approximately 85% of the process is stock selection and 15% industry selection. The following major themes representing multiple factors are employed in the stock selection model: Valuation, Momentum, Earnings Quality, Investor Sentiment, and Sustainable Growth. The firm uses the same factors for stocks in every industry but factor weights may differ depending on the industry. The industry selection model uses the valuation and momentum factors to determine the attractiveness of industries versus one another. Momentum receives the majority of the weight in the model due to the better comparability of momentum when looking across industries.

Baseline portfolios are constructed by rank ordering the underlying assets on each factor and then standardizing the ranks. The team then constructs expected returns for each stock. Given these implied expected returns, the team uses an optimization process that considers trading costs, liquidity and investment constraints to arrive at trading decisions. Stocks are sold based on their rankings within the stock selection models, subject to tracking error constraints. Expected long-term turnover is approximately 80% and in it is the view of the portfolio managers that turnover is a byproduct of the underlying style factor exposures and managing a portfolio to reflect their team’s views. Some strategies that the firm offers that target, for example, stocks with defensive characteristics will naturally experience lower turnover given that companies rarely go from having defensive fundamentals to the other extreme in a short period of time. As a strategy seeks to target styles that move away from defensive characteristics towards factors such as momentum that change more frequently, turnover will increase.

When thinking about market volatility, the portfolio managers make a key distinction between the kinds of volatility that may be present in markets. For example, in instances where there is significant volatility in markets but all stocks are moving up and down together, this is patently different from cross-sectional volatility – where stock prices are moving a lot but moving in different directions relative to each other. The primary driver of turnover for the strategy is based on these cross-sectional changes in stock prices or company fundamental data.

Employee compensation for the firm’s investment staff is not based on specific strategy’s performance in the belief that the kinds of investment ideas that they base portfolios on are meant to work over long horizons and in that sense, strategy performance from year to year can be ‘noisy.’ In addition, the firm believes that basing compensation on strategy performance initiates undesirable incentives. For example, if the only way for an employee to be compensated is to have an investment strategy that has been implemented and has performed well, then there is little incentive for the employee to work on new ideas. The firm seeks to incentivize research and the continuous refinement of their process through collaboration and believes that compensation based purely on the performance of a strategy can create disincentives for the sharing of information.

The portfolio managers commented that clients and consultancies tend to react to short-term performance and periods of underperformance over a 1 to 3 year period. This can result in incentives to target shorter-term performance pay-offs in designing and implementing the investment strategy.

Case study #6	
Region	Emerging Markets Equity
Investment Strategy Category	Core
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$3.0 billion
Inception	1998
Client base	Institutional
Brief description of the style / process / philosophy for the strategy	The process seeks to identify well managed companies, with strong balance sheets, which are likely to generate a high return on invested assets over the course of a business cycle, and are trading at an attractive valuation on the basis of free cash flow (FCF), earnings or assets. Portfolios are managed with a focus on absolute returns and will be concentrated.
Expected or Estimated annual turnover	25%
Actual annual turnover calculated by Mercer	31%

The strategy’s philosophy is to build portfolios consisting of well managed companies that are likely to generate a high return on invested assets over the course of a business cycle and are trading at an attractive valuation on the basis of free cash flow, earnings or assets. The strategy is managed with a focus on absolute returns and is benchmark unaware, tracking error can also be high and they can hold zero weights in sectors. When a stock reaches its price target the investment thesis is reassessed. A review is undertaken if any position falls by 15% relative to the market. Stocks will also be sold if there is a change in management, the macro-economic background changes or there is company specific bad news. Expected turnover is low at 25%.

Portfolios will comprise two key constituents, which the team term core and satellite holdings. The former consists of high quality, stable businesses where the team have confidence they will deliver consistently high FCF and a strong return on assets over the long-term. The latter comprises what the team believe to be high quality companies that are either out of favor with investors or are experiencing a trough in earnings, typically due to

cyclical factors but this could also be caused by 'one-off events'. When a stock reaches its price target the investment thesis is reassessed. A review is undertaken if any position falls by 15% relative to the market. The team will also look to trim a stock if it went above a 5% position in the portfolio in order to control the overall risk exposure. Stocks will also be sold if there is a change in management, the macro-economic background changes or there is company specific bad news.

Fundamental research and company visits are critical to the process and are undertaken by the analysts and managers. Bottom up research is focused on the sustainability of earnings and free cash flows over the course of a business cycle, balance sheet and management strength, and operational efficiency. The portfolio management teams group the stock characteristics they look to analyze into three factors, which they term 'risks'. They are valuation risk, business risk and financial risk. Business risk emphasizes the ability of a company to deliver strong and sustainable performance in terms of free cash flow margins and profitability (i.e. ROA, ROC, and ROE). The focus of financial risk is on balance sheet leverage. Although DCF analysis is used, valuation is focused on trailing metrics such as earnings and FCF yield and whether companies are attractive on an absolute or relative basis. Price to book multiples are considered when the team are considering taking positions in high quality cyclicals where earnings and FCF measures are a less reliable indicator of value. Trailing multiples are used because the team do not believe they have a competitive advantage in forecasting future earnings.

The portfolio managers believe there is an issue with short-termism in markets in that key conduits of market activities – brokers and fund managers – often are incentivized by shorter-term metrics that may result in short-term volatility and overreactions by market participants. The portfolio management team commented that while short-term volatility does present opportunities to long-term investors it can be difficult to navigate in periods of significant drawdowns. For example, the portfolio manager commented that during the Global Financial Crisis the team traded too much, focusing on macro headlines which resulted in increased turnover to 50% from 20-25%.

Case study #7	
Region	Emerging Markets Equity
Investment Strategy Category	Core
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$2.0 billion
Inception	1992
Client base	Split between institutional and retail.
Brief description of the style / process / philosophy for the strategy	The team uses a series of screens and qualitative judgements to identify well run and shareholder friendly businesses that enjoy dominant market share and have good quality franchises which cannot be easily attacked by competitors. Particular attention is paid to the experience and integrity of management.
Expected or Estimated annual turnover	55%
Actual annual turnover calculated by Mercer	70%

The manager describes their approach as that of a private equity investor in that when they buy a company, they like to think of it as a partnership with a minimum time horizon of 3 to 5 years. The team uses a series of screens and qualitative judgements to identify well run and shareholder friendly businesses that enjoy dominant market share and have good quality franchises which cannot be easily attacked by competitors. Particular attention is paid to the experience and integrity of management. A critical input to that research is company visits and meetings with management. A company will be sold if the corporate situation deteriorates, the stock becomes over-valued or there is a perceived change in the business environment. Expected turnover is approximately 55% although name turnover will be materially lower.

The portfolio management team views management – and management’s ability to manage their business through various crises – as the single biggest risk to be managed. A company will be sold if the corporate situation deteriorates – in particular where there are governance concerns, the stock becomes over-valued or there is a perceived change in the business environment. Regional, country and sector positions arise from the stock selection process but adjustments will be made to ensure satisfactory diversification, across a broad range of sectors and countries.

The firm take the view that they want to be longer-term investors and they think their clients have a minimum 3-5 time horizon. Alongside an annual salary, an annual bonus is predominantly based on performance measured over a 3 and 5year time horizon. No consideration is given to short-term (1 year) performance. Performance calculations are based on every fund run by the firm. For example, the Global Emerging markets All Cap manager is assessed based on that strategy as well as the firm’s Frontier markets strategy in the belief that all employees should have an interest in the best ideas going into portfolios. An additional component of compensation is a profit pool granted to employees as a long term incentive scheme. A minimum of 50% of this reward needs to be invested back into the firm’s strategies.

Case study #8	
Region	Global
Investment Strategy Category	Core
Principal Security Selection Technique	Quantitative
AUM (US\$)	\$540 million
Inception	1998
Client base	Split between institutional and retail.
Brief description of the style / process / philosophy for the strategy	The universe generated by the SRI analysis process is transmitted to the quantitative equity management team who uses a bottom-up stock-picking approach to construct the final portfolio. The strategy looks to identify the most attractive stocks based on a sector-specific weighted combination of alpha factors that result from an in-house developed optimization and risk management framework.
Expected or Estimated annual turnover	110%
Actual annual turnover calculated by Mercer	105%

Turnover has not been a significant issue for discussion with clients historically though the portfolio manager indicates that for some consultants it is a growing focus at meetings. Transaction costs, in their opinion, must be balanced against alpha expectations as well as risk management needs. From the portfolio manager’s perspective, consistency and implementation of the process is more important than interpreting a turnover ratio in an absolute sense. In their opinion, an investment strategy and associated philosophy, implemented consistently, should result in relatively stable turnover.

The investable universe is first defined according to the strategy’s socially responsible investing (SRI) criteria wherein companies are assessed according to six ‘sustainability’ challenges. The universe generated by the SRI analysis process (e.g. approximately 40 to 45% of the unconstrained broad market benchmark index) then forms the universe for security selection by the quantitative equity management team who uses a bottom-up, quantitative stock-picking approach to construct the final portfolio.

The strategy looks to identify the most attractive stocks based on a sector-specific weighted combination of alpha factors that result from an in-house developed optimization and risk management framework. Based on

companies' published financial data, analyst information and market-related data, the quant team has built a database of proprietary alpha factors resulting from several years of empirical research. These alpha factors are employed to develop an optimal tailor-made stock selection strategy for each sector within each region that takes into account its specific economics and structural characteristics. The quant team then constructs a region and sector neutral portfolio that is tilted towards the most attractive stocks based on a sector-specific weighted combination of alpha factors that results from an in-house developed optimization and risk management framework. Estimated expected turnover is approximately 110% while name turnover is typically significantly lower. Certain sectors have qual / value style tilts and longer horizon, lower turnover. As alpha factors are sector and region-specific, certain sector models are dominated by quality or value style tilts which tend towards a longer-horizon and lower turnover approach. Other sectors the team highlights, however, may integrate growth and momentum styles more heavily which tend to experience higher turnover. Estimated expected turnover is approximately 110% while name turnover is typically significantly lower.

Case study #9	
Region	Global
Investment Strategy Category	Value
Principal Security Selection Technique	Quantitative
AUM (US\$)	\$11.7 billion
Inception	1992
Client base	Institutional with some retail.
Brief description of the style / process / philosophy for the strategy	The portfolio management team believes that market participants behave emotionally and that markets are adaptive, with risk/reward relationships changing over time. The strategy applies a combination of bottom-up stock factors and top-down country factors to arrive at a portfolio of securities. The strategy is index sensitive, with portfolio holdings reflecting the models' recommendations as well as managing benchmark risk.
Expected or Estimated annual turnover	75%
Actual annual turnover calculated by Mercer	134%

The portfolio managers believe that market participants behave emotionally and that markets are adaptive, with risk/reward relationships changing over time. To exploit this environment, the manager applies a quantitative approach to a combination of bottom-up stock factors and top-down country factors to arrive at a portfolio of securities. From the universe of securities, the firm's process applies two components, a bottom-up model and a top-down model, to arrive at a stock's overall rating. The bottom-up stock model includes four broad factor categories: value, growth, quality and technical. Within each factor category lie many sub-factors and sub-factor groups. For instance, the valuation category includes indicators such as price-to-intrinsic-value, price-to-earnings and cash flow value. This model is applied to stocks classified on a country group framework. The top-down country model includes five broad factor categories: value, growth, macroeconomic, risk and technical. The firm's models dynamically weight factor categories to reflect the current market environment, such that a factor's weight may change over time. Data typically spans fifteen years, with more recent information being assigned a larger weight. Alpha forecasts and factor scores are updated daily while factor weights are updated monthly. The result of blending the bottom-up and top-down models delivers a stock's overall relative return forecast. A portfolio optimization process is run daily to structure the portfolio according to the stock return forecasts and country/currency decisions. The process also quantifies all aspects of the client mandate, including benchmark, risk target, estimated transaction costs, security correlations, and any client restrictions. The goal of the optimization process is to construct an optimal portfolio while keeping benchmark-relative risk at the desired level. Stocks are purchased and sold based on

the alpha signal of the bottom-up and top-down models and as a function of the firm's optimization and risk models. The more volatile a stock, for example, the tighter the active weight will be. Annual turnover ranges from 50 - 100%.

An optimization process is run daily to structure the portfolio according to the stock return forecasts and country/currency decisions. The process also quantifies all aspects of the client mandate, including benchmark, risk target, estimated transaction costs, security correlations, and any client restrictions. Stocks are purchased and sold based on the alpha signal of the bottom-up and top-down models and as a function of the manager's optimization and risk models. While return expectations are the single greater contributor to trading activity, trading impacts and transaction costs are an explicit consideration of the model. The firm has an explicit policy of not taking any more than 20% of stock's volume on any given day as they have found that above this threshold, estimates of how much a trade may impact market pricing lose considerable accuracy.

Bonuses are tied directly to the individual's contribution and performance during the year, with members of the investment team evaluated on such factors as their contributions to the investment process, account retention, asset growth, and overall firm performance. Since portfolio management in the firm's equity strategies is a team approach, investment team members' compensation is not linked to the performance of specific portfolios but rather to the individual's overall contribution to the success of the team and the firm's profitability.

Case study #10	
Region	Global
Investment Strategy Category	Core
Principal Security Selection Technique	Fundamental
AUM (US\$)	\$1.5 billion
Inception	1994
Client base	Retail with some institutional.
Brief description of the style / process / philosophy for the strategy	The portfolio manager believes stock price movement is the result of changes in earnings estimates and volatility is exacerbated because much of the market is short-term oriented. The manager believes that those with a differentiated view on a company's earnings potential, combined with a multi-year investment horizon, can potentially achieve meaningful outperformance by investing in stocks that become mispriced.
Expected or Estimated annual turnover	75%
Actual annual turnover calculated by Mercer	127%

The approach seeks to outperform the benchmark by investing in stocks that the firm's analysts predict will have mid-term (e.g. 18 to 36 month) earnings surprises. The portfolio manager believes stock price movement is the result of changes in earnings estimates and volatility is exacerbated because the marginal investor is short-term oriented or overreacts to events that otherwise do not materially change the longer-term supply and demand dynamics at a company or industry level. The portfolio manager focuses on the medium-term with the belief that much of energy and brainpower of other investors is focused on the short-term. It is the view of the portfolio manager that this results in limited upside potential from accurately forecasting earnings over the short-term. However, the portfolio manager believes that a disproportionate focus on the short-term (e.g. 0 to 12 months) can create inefficiencies and opportunities for patient investors with longer-time horizons that have a differentiated view on the company's earnings potential compared to the market. The portfolio manager believes that forecasting earnings with a high degree of confidence and consistency beyond a three year time horizon is challenging.

REFERENCES AND NOTES

FOREWORD

^{12°} Investing Initiative & the Generation Foundation, “All Swans are Black in the Dark: How the Short-term Focus of Financial Analysis Does Not Shed Light on Long Term Risks,” 2017.

²Ibid.

³Ibid

EXECUTIVE SUMMARY

⁴See Constrained Results on page 45 for details

PART I: AN OPTIMAL LEVEL OF TURNOVER FOR LONG-TERM INVESTORS?

⁵<http://www.fclt.org/en/ourthinking/ourthinking/Aroadmapforfocusingcapitalonthelongterm.html>

⁶Bachher, Jasdeep Singh et. Al, The New Frontier Investors: How Pension Funds, Sovereign Funds, and Endowments are Changing the Business of Investment Management and Long-Term Investing, 2016.

⁷Cremers, Martijn and Pareek, Ankur, Patient Capital Outperformance: The Investment Skill of High Active Share Managers Who Trade Infrequently (December 1, 2015). Journal of Financial Economics (JFE), Forthcoming.

⁸Source: MercerInsight, gross of fee returns in USD, Global Equity universe, excess return taken against MSCI World Free Index. Please note that this analysis was only undertaken in one universe (global equity) and one time period (20 years). Additional analysis would be necessary to draw a more definitive conclusion.

⁹Dow, Clifford, “Portfolio Turnover and Common Stock Holding Periods,” Dow Publishing Company, 2007.

¹⁰Peters, Edgar; “Chaos and Order in Capital Markets” (1996) and “Fractal Market Analysis: Applying Chaos Theory to Investment & Economics” (1994).

¹¹S&P LTVC Global Index Methodology; June, 2016. Emphasis added.

¹² S&P Dow Jones Indices, “Frequently Asked Questions: S&P LTVC Global Index,” 2016.

¹³Harford, Jarrad, et al; Do Long-Term Investors Improve Corporate Decision Making?; February, 2015.

^{142°} Investing Initiative & the Generation Foundation.

¹⁵UNEP Inquiry; Aligning the Financial System with Sustainable Development; 2014.

PART II: TURNOVER DRIVES HIDDEN COSTS

¹⁶While a detailed discussion of the tax consequences associated with turnover is beyond the scope of this report, these can be significant and exacerbated by high turnover. See the following articles for examples of the impact of taxes on long-term returns:

<http://individual.troweprice.com/retail/pages/retail/applications/investorMag/2014/march/take-note-cover-story/index.jsp> and <https://anchorcapital.com/low-turnover-tax-efficiency/>

¹⁷For more detail on the vicissitudes of calculating implicit transaction costs such as bid-ask spreads and price impacts see: Keim, D & et al; The_Cost_of_Institutional_Equity_Trades; Financial_Analysts_Journal;_July/August_1998; Pages_50-69

¹⁸Ibid, 9.

¹⁹Ibid 9.

²⁰<https://www.imercer.com/products/global-asset-manager.aspx>

²¹Phillips, Don. Mutual Fund Urban Myths (2013); MorningstarAdvisor.

Bogle, John C. The Arithmetic of “All-In” Investment Expenses (2014); Financial Analysis Journal, Vol 70 No 1.

Karceski, Jason, et al. “Portfolio Transactions Costs at U.S. Equity Mutual Funds” (2004); Study for the Zero Alpha Group.

Edelen, et al; “Shedding Light on “Invisible” Costs: Trading Costs and Mutual Fund Performance”; 2013.

²²See for example: Livingston, Miles and O’Neal, Edward S; Mutual Fund Brokerage Commissions; Journal of Financial Research, Vol. 19, No. 2 (Summer 1996): 273-92

PART III: THE TREND TOWARD LOWER TURNOVER

²³While name turnover is a useful metric, we should not that it does not necessarily imply a long term outlook if portfolio turnover is high. This approach may be valid and may add value, but it does not necessarily reflect long term behavior.

²⁴Momentum strategies are focused on a factor which by definition tends to shift frequently. They thus lend best to quantitative approaches and sell shares frequently to maintain strategic focus on their style.

²⁵This is also supported by Paul Schultz (Schultz; The Change Relation Between Stock Market Turnover and Volatility; 2006) who concludes that volatility only partially explains the turnover of stock markets.

²⁶https://www.ici.org/pdf/2014_factbook.pdf

²⁷<http://data.worldbank.org/indicator/CM.MKT.TRNR>; Turnover ratio is the value of domestic shares traded divided by their market capitalization. The value is annualized by multiplying the monthly average by 12.

²⁸According to Capgemini analysis, high frequency trading represented nearly 60% of all trading activity in the US market up significantly from 21% in 2009: https://www.capgemini.com/resource-file-access/resource/pdf/High_Frequency_Trading_Evolution_and_the_Future.pdf

²⁹In this context, managers self-identified their strategies as being “SRI branded”. The breadth of the self-identified sample captures strategies employing various ESG investment techniques including: negative screening; positive screening; ESG integration; sustainability-themed investing; etc. This is most consistent with the term, Sustainable and Responsible Investment though the acronym SRI is most often associated with the term Socially Responsible Investment, an approach to investment which utilizes negative screening based on ESG factors as its primary tool alongside active ownership to achieve environmental or social objectives.

³⁰Note, data is not shown in the associated style charts for Quality, Income and Momentum strategies due to the low number of historical observations in these style categories.

³¹[http://www.irrcinstitute.org/wp-](http://www.irrcinstitute.org/wp-content/uploads/2015/09/IRRCMercerInvestmentHorizonsReport_Feb20101.pdf)

[content/uploads/2015/09/IRRCMercerInvestmentHorizonsReport_Feb20101.pdf](http://www.irrcinstitute.org/wp-content/uploads/2015/09/IRRCMercerInvestmentHorizonsReport_Feb20101.pdf)

PART IV: EQUITY FUND MANAGER INSIGHTS ON PORTFOLIO TURNOVER

³²Turnover values in this table (and as repeated subsequently in this section and in the Appendix) reflect long term averages calculated by Mercer based upon available data. In some cases this results in noticeable differences versus expected turnover due to changes in portfolio management strategy over time. For instance strategy #10 had turnover of only 69% in the most recent four quarters of data available but a long-term average over 100%.

³³ Ibid

³⁴ Not available in GIMD. Sourced from fund materials.

See page 2-3 of SEC form N-1A for a definition of turnover: <http://www.sec.gov/about/forms/formn-1a.pdf>

³⁵ Strategies researched received an ESG1 or ESG2 rating from Mercer. To learn more about Mercer’s ESG rating visit <http://www.mercer.com/our-thinking/mercer-esg-ratings.html>.

³⁶Expected or estimated turnover figures in the case studies were obtained from Mercer’s Global Investment Manager Database (GIMD™) and our conversations with portfolio managers. In some cases managers do not have a specified expected turnover for the strategy.

³⁷ From fund marketing documentation, not GIMD.

APPENDICES

³⁸ GIMD is a global database on investment managers for institutional investors. The information in this database supports Mercer's global research on investment managers and the manager searches that we perform for our clients. Investment managers can submit information into the database, provided that they have previously been issued with a user id and password. There is no fee associated with data entry. www.mercergimd.com

³⁹ See page 2-3 of SEC form N-1A for a definition of turnover: <http://www.sec.gov/about/forms/formn-1a.pdf>

⁴⁰For portfolio turnover, Portfolio Value represents the start of period weight, adjusted for the USD\$ price movement, subtracted from the end of period weight to give a change in stock weight. These values were summed across positions.

⁴¹ All things considered and based upon some empirical testing we do not believe this underestimation bias is significant.

⁴² https://www.ici.org/pdf/2014_factbook.pdf



2°ii and The Generation Foundation welcome comment and discussion on this study. For more information please visit www.tragedyofthehorizon.com

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