

The Long and Short of It: Are We Asking the Right Questions?

Modern Portfolio Theory and Time Horizons

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The heavy shadow of modern portfolio theory (MPT) has had a massive impact on everything from market structure, investment philosophy, and investor behavior, to the research that examines those disciplines. Researchers believe that they are casting light onto investment issues (including, for this purpose, specifically investor time horizons), but generalized acceptance of MPT allows it to continue to darken what should be enlightened.

As a result, we contend that investors and researchers (both practitioners and academics) focus on and measure the wrong time frames. MPT focuses investment activity towards alpha-seeking activity and index replication, rather than trying to improve beta. We use beta in this context to mean the risk and return of the market as a whole, not a specific stock's volatility in relation to market volatility. Beta, which is the systemic or non-diversifiable risk of a portfolio, is widely regarded—wrongly—as exogenous and rarely impacted by portfolio investment. As a result, research into investor time horizons primarily examines trading time frames around security or asset selection whose purpose is to seek alpha and/or diversify idiosyncratic risk, rather than examine the time and level of exposure to beta, or to impact beta, even though that is more impactful and explanatory. In addition, investors tend towards thinking of themselves and acting as if they have shorter investment horizons than they do in reality, partially because of MPT's (and the asset management

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industry's) focus on security selection and alpha-seeking, and partially because of systemic hyper-discounting.¹

The contextual argument is this: MPT, as practiced, views systemic risk and return (beta or in the jargon of the investor, “the market”) as exogenous to, and not impacted by, investor decisions and behavior, either by one market actor or by implication (though usually unwritten and typically not considered) groups of market actors. MPT accepts that some risks are systemic and non-diversifiable: Those are the risks that contribute to beta. Those risks can be financial (e.g., global financial crisis), environmental (e.g., climate change), or social (e.g., income inequality or political stability), but the focus of MPT is to create an efficient mean-variance portfolio within that systematic risk framework by diversifying idiosyncratic risk (or as alpha seekers do, by seeking some idiosyncratic risks and avoiding others). The remaining systemic risk constitutes beta, and the investor is exposed to it. There is no consideration that investment decisions themselves—whether intentionally or accidentally—can affect systemic risk.

It is a central point of our argument that while some risks are systemic and non-diversifiable, that does not suggest that they are immune from mitigation. They can be addressed in a number of ways, which we discuss below. Indeed, the fact that these risks are not diversifiable should increase the urgency and rationale of addressing them directly but not through directly buying and selling securities.

Investors, in mainstream MPT thinking, either focus on the search for alpha or, in attempting to maximally diversify idiosyncratic risk, gain exposure to beta through passive investment.

Contrary to that mainstream view, we assert that there are feedback loops between portfolio investment and the environmental, social, and financial systems;² thus, investors can and do affect beta. However, researchers' analyses rarely focus on how portfolio investment affects beta and focus even less frequently on the time to impact beta since traditionalists continue to view beta as exogenous to portfolio investment decisions. We suggest that this perspective has everything to do with the misunderstanding of investors' actual time horizons.

1. Andrew G. Haldane & Richard Davies, *The Short Long*, Speech Before the 29th Société Universitaire Européenne de Recherches Financières Colloquium: New Paradigms in Money and Finance? (May 2011), <http://www.bankofengland.co.uk/archive/Documents/historicpubs/speeches/2011/speech495.pdf> [<https://perma.cc/37BC-7WAN>].

2. See generally William Burckart et al., *Tipping Points 2016: Summary of 50 Asset Owners' and Managers' Approaches to Investing in Global Systems*, IRRC INST. (Nov. 7, 2016), https://irrcinstitute.org/wp-content/uploads/2016/11/TIIP-and-IRRCi_State-of-Industry_Nov-2016.pdf [<https://perma.cc/CJV9-82HA>].

Specifically, we make six relevant observations about MPT, which provide context for—and a direct challenge to—how we measure investors' time horizons:

1. MPT has become a victim of its own success given the institutional ownership revolution in the last forty years;

2. Portfolio investment, whether active alpha-seeking or passive beta-matching, can impact systemic risk, changing beta. In other words, systemic risk (and therefore beta) is not exogenous to portfolio investment;

3. Alpha and beta are not distinct and disjointed but intimately linked along a continuum of market recognition and acceptance.

4. MPT has focused on alpha-seeking as a way to extract value, leading to increased short-term (i.e., “the long short”) trading activity, even though seeking a “better beta” might be a more impactful way to create value, both in terms of portfolio returns and the economy as a whole. Ironically, MPT has created the intellectual and practical framework for indexation, but as most indexes are capitalization-weighted-based, alpha-seeking investors thus have a tendency to wag the passive beta dog;

5. The alpha–beta dynamic tends to speed up time frames irrationally;

6. The prior five observations lead us to a crucial observation: There is a need for better measures of time frames. Those metrics should be designed for a purpose rather than be a “one metric measures all” investment objective. They should be designed specifically to measure time horizons for alpha-seeking investors and beta-exposure investors and for measuring the time of the feedback loop between portfolio investment and beta.

Observation 1: MPT and the Ownership Revolution

Fundamentally, nothing less than an equity ownership revolution (and indeed an investing revolution across most all asset classes) has changed capital markets since the 1950s when Markowitz first developed MPT.³ Institutions owned about 8% of the U.S. equity market in the 1950s.⁴ Today, they own more than 78% in the United States (and higher in some countries).⁵ This is a game changer. But MPT, investment's guiding light, has not adequately understood the implications of the

3. Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952).

4. Luis A. Aguilar, Commissioner, Sec. & Exch. Comm'n, Speech to Georgia State University, J. Mack Robinson College of Business (Apr. 19, 2013), <https://www.sec.gov/news/speech/2013-spch041913laahtm> [<https://perma.cc/S657-SWGL>].

5. Charles McGrath, *80% of Equity Market Cap Held by Institutions*, PENSIONS & INV. (Apr. 25, 2017), <http://www.pionline.com/article/20170425/INTERACTIVE/170429926/80-of-equity-market-cap-held-by-institutions> [<http://perma.cc/Y5K6-H3B5>].

radically changed market structure, which is somewhat a result of its success. Ironically, while indicative of MPT dominance, the concentration of ownership within large institutions has the seeds of proving central parts of MPT flawed.

In a fragmented ownership market dominated by individual ownership, such as the one Markowitz observed in 1952, MPT functioned in a decentralized manner. A plethora of decision-makers made individual decisions about individual securities. There were no large index funds and no exchange-traded funds. There were few large investors at all. As a result, any systemic impacts of any specific investor's investment decisions, or even a group of investors' decisions, were imperceptible. Let us call this the gravity conundrum. You and I have a gravitational effect on the moon. When we walk across the room, we affect the moon's orbit. But, with the possible exception of theoretical geophysicists, no one cares or notices. It is simply too small to measure or to even take into account. And, of course, various people are walking in various directions all over the world at any one time, largely canceling out each other's tiny lunar impact. That was the equivalent of Markowitz's world in 1952. No investor or group of investors was large enough to affect beta in an observable manner.

Compare that to the current U.S. market with its huge concentration of institutional equity ownership. The top five owners of any individual company (e.g., BlackRock, Vanguard, State Street, etc.) often own upwards of 15% of equity, while the top twenty-five institutions can own upwards of 50%.⁶

Observation 2: Portfolio Investment: Whether Alpha-Seeking or Passive Beta-Matching Can Impact Systemic Risk, Thereby Changing Beta.

As a result, there is a set of powerful institutions controlling a large portion of the market, unlike the decentralized market of Markowitz's time. At the same time, MPT drives these owners' investment decisions to become radically centralized, often resulting in de facto "super portfolios," which result in the co-movement of numbers of portfolios in the same direction; they are linked by investment philosophy and technique (MPT) to respond similarly—if not identically—to various indicators and developments.⁷

6. Aguilar, *supra* note 4.

7. Jeffrey Wurgler, *On the Economic Consequences of Index-Linked Investing* (Nat'l Bureau Econ. Research, Working Paper No. 16376, 2010), <http://www.nber.org/papers/w16376>.

As an example of how this occurs and the effects of the phenomenon, consider the growth of index funds, which now account for more than one third of the U.S. stock market by capitalization.⁸ Passive investing through index funds does not try to “beat the market” but to match it, at least as measured by popular indices such as the S&P 500 or the Russell 3000.

Conceptually, MPT provides a powerful rationale for passive investing. Capitalization-weighted indices are supposed to represent the cumulative “wisdom” of “the market,” the result of thousands, or even millions, of independent investment decisions. This is, effectively, the efficient market hypothesis at work.

It certainly is true that indexation and passive investing have brought material benefits to investors by allowing low-cost diversified exposure to what is, in theory, the market’s best estimate of the most efficient mean-variance portfolio. But, indexation is also an important example of MPT not recognizing how investors’ decisions, amplified by the growth of large institutional investors and by MPT’s own institutional and ideological success, can affect beta.

One of the dynamics of this nonrecognition is the super-portfolio phenomenon. Wurgler shows that indexed-based investing strategies and products have risen rapidly over the last few decades.⁹ However, the efficient market view, as MacKenzie puts it, seems to have created an anomaly itself as index members are subject to an evident mispricing. Indices have become so popular that their members’ price movements are not entirely due to new information around the underlying securities comprising the index (either individually or cumulatively); rather, the market demand for investing in the indices themselves can move them independently.¹⁰

Wurgler counts two impacts that index inclusion brings for a stock. The first is initial inclusion impact; the second is the continuation in inclusion impact.¹¹ The increase in price followed by the inclusion of a stock in a major index is not the result of new information about the stock’s value (fundamentals) but a result of index inclusion causing the increase in demand for that stock by investors. This impact is documented in several studies.¹²

Wurgler argues that the mispricing is not limited to the time of inclusion. After inclusion stocks start co-moving with other index

8. Madison Marriage, *Passive Funds Take Third of US Market*, FIN. TIMES (Sept. 11, 2016), <https://www.ft.com/content/4cdf2f88-7695-11e6-b60a-de4532d5ea35>.

9. *Id.*

10. DONALD MACKENZIE, AN ENGINE, NOT A CAMERA: HOW FINANCIAL MODELS SHAPE MARKETS 259 (2006).

11. Wurgler, *supra* note 7.

12. *Tracking Error*, INVESTOPEDIA, <http://www.investopedia.com/terms/t/trackingerror.asp>.

participants, index members, resultantly, can start slowly drifting away from the rest of the market. This phenomenon has an important and real implication for the market. As fund managers face the pressure of evaluation based on a benchmark, or chasing an index return, the resultant growth in demand to include an index in their portfolio creates a feedback loop that exacerbates index members' detachment from the rest of the market. Therefore, rather than be a representative of a market, an index (to the degree that it is adopted and mirrored by others) can become a super-portfolio whose movement is not related to the fundamentals and, therefore, exposes its holders (and others) to an enormous systematic risk.

Sullivan and Xiong also find that the growth of indexation has affected equity market risk: "Such trading commonality then gives way to a rise in systematic fluctuations in overall demand, which, in turn, leads to a fundamental impact on the overall market and investors' portfolios. In short, the growth in trading of passively managed equity indices corresponds to a rise in systematic market risk."¹³

The super-portfolio effect affects non-index, or fundamental, active equity managers as well; they do not want to be left behind. Such managers often have tracking error targets; they seek returns within a predetermined performance range of the chosen index benchmark.¹⁴ To do that, they carefully understand their underweight and overweight stock selections relative to the index. While most understand that this means they often hold index component stocks as tracking error risk control mechanisms, few make the link back to MPT. These investors are not making fundamental decisions but are buying or selling merely to control risk against an index, which MPT theorizes is supposed to represent the wisdom of the market, which further amplifies Wurgler's index effects and begins the cycle anew.

In effect, MPT's goal of an efficient mean-variance portfolio, combined with the underlying efficient market hypothesis and operationalized by the ability to create index funds, creates an MPT tautology: The capital linked to the index itself becomes the justification for the index being efficient, thus attracting more capital.

13. Rodney N. Sullivan & James X. Xiong, *How Index Trading Increases Market Vulnerability*, 68 FIN. ANALYSTS J. 70, 82 (2012).

14. For a general discussion of benchmarks, see David Blake & Allan Timmermann, *Performance Benchmarks for Institutional Investors: Measuring, Monitoring and Modifying Investment Behaviour*, in PERFORMANCE MEASUREMENT IN FINANCE: FIRMS, FUNDS AND MANAGERS 108, 108–41 (John Knight & Stephen Satchell eds., 2002). For a discussion of extreme examples of how "active managers" pay such close attention to the index that they become "closet indexers," see Mathieu Caquineau, *Watch Out for Closet Index Funds*, MORNINGSTAR (Mar. 11, 2016, 10:14 AM), <http://www.morningstar.co.uk/uk/news/147931/watch-out-for-closet-index-funds.aspx>.

Other studies also support the idea that index inclusion in and of itself can have fundamental impacts, even beyond market price, on the individual companies that comprise the index. For instance, Appel, Gormley, and Keim demonstrate that index inclusion results in fundamental corporate governance changes at the company due to a change in share ownership to large, institutional investors, such as Vanguard and Blackrock, which have specific governance preferences.¹⁵ Cremers, Pareek, and Sautner note that index inclusion can drive a reduction in research and development expenses at companies because new investors are perceived to have short-term horizons.¹⁶

Of course, amidst all this index effect and price movement, the ultimate irony is that if everyone accepted MPT's cogent argument for passive investment vehicles and the efficient market and indexed their investments, there would be no individual stock selection decisions and, therefore, no price discovery, leading to a frozen market with no price movement. Thankfully, even with one third of the market linked to indices,¹⁷ that remains a theoretical rather than a practical issue. But, it does suggest that the more there is a switch from individual decision-makers creating mean-variance efficient portfolios to passive investors and super-portfolios effects, the less resistance there will be to the index effects.

However, a more recent market development, the rise in popularity of exchange-traded funds (ETFs),¹⁸ demonstrates that this may not be that theoretical of a concern, at least in some niche parts of the market. While ETFs are technically a market structure, not an investment methodology or vehicle, the preponderance are passive, designed to track an index. While some track broad market indices, many track sector indices. Like the broad market indices, those sector indices are often capitalization-weighted, consistent with MPT and the efficient market hypothesis. Many, if not most, of the investors in ETFs regard those indices as "the market" for that sector of the market, or at least as the metric that measures the risk and return of the beta of "the market." But, as we know, ETFs do not track their underlying components under a number of conditions.¹⁹

15. Ian Appel et al., *Passive Investors, Not Passive Owners*, 121 J. FIN. ECON. 111 (2016).

16. Martijn Cremers et al., *Short-Term Institutions, Analyst Recommendations, and Mispricing* 20 (Mar. 10, 2017) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2190437&rec=1&srcabs=2285470&alg=1&pos=8.

17. Marriage, *supra* note 8.

18. Valarie Chaille, *ETFs Are Getting More Popular—and More Complex*, WALL ST. J. (Sept. 20, 2015, 10:02 PM), <https://www.wsj.com/articles/etfs-are-getting-more-popularand-more-complex-1442800945>.

19. Gerasimon G. Rompotis, *Predictable Patterns in ETFs' Return and Tracking Error*, 28 STUDIES ECON. & FIN. 14 (2011); Sangheon Shin & Gökçe Soydemir, *Exchange-Traded Funds*,

The narrower investment universe represented by the sector indices means that the impact of investors' portfolio decisions is less diluted. To put another way, the "index effect" is more noticeable; it functions as an index multiplier. As the ETF grows, relative to the index, the tension grows. Consider, for example, the recent decision by VanEck to change the index of its VanEck Junior Gold Miners ETF (GDXJ).²⁰ From 2016 to 2017, the ETF grew its assets from slightly more than \$1 billion to \$5.4 billion. The index tracked focused on smaller gold mining stocks, but the rapid growth in assets meant it was unable to invest solely in the stocks in the index without falling afoul of various market regulations, such as the Canadian rules that would require it to make a takeover offer for a company if it owned more than 20% of its shares.²¹ The solution is to change the index to include larger capitalization companies.²² In this case, investors wanted the systemic risk of smaller gold mining stocks. But, by buying in bulk, they changed the ability to invest in smaller companies, forcing the ETF to go up the capitalization rankings, thereby changing the beta of the ETF.

In sum, MPT provides the intellectual underpinning of indexation but never considers that widespread adoption of indexation could have systemic impacts. Most MPT practitioners and other analysts regard beta as exogenous; MPT theory just does not consider that portfolio investments and beta are linked into a feedback loop.²³ Reality has no such constraints.

Observation 3: Alpha and Beta Are Not Distinct and Disjoint but Are Intimately Linked Along a Continuum of Market Recognition and Acceptance.

The logical extension of the idea that portfolio investments affect beta is that, contrary to accepted MPT precepts, alpha and beta are not

Persistence in Tracking Errors and Information Dissemination, 20 J. MULTINAT'L FIN. MGMT. 214 (2010); Ayan Bhattacharya & Maureen O'Hara, *Can ETFs Increase Market Fragility? Effect of Information Linkages in ETF Markets* (Sept. 3, 2017) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2740699.

20. Co-author Jon Lukomnik is a trustee on the board of affiliated VanEck funds.

21. Sumit Roy, *How an ETF Gets Too Big for Its Index*, ETF.COM (Apr. 10, 2017), <http://www.etf.com/sections/features-and-news/how-etf-gets-too-big-its-index?nopaging=1> [<https://perma.cc/2WLQ-T6ZX>].

22. See Sumit Roy, *Popular Gold Miner ETF to Change Dramatically*, ETF.COM (Apr. 17, 2017), <http://www.etf.com/sections/features-and-news/popular-gold-miners-etf-change-dramatically> [<https://perma.cc/84UV-2BEY>].

23. See generally THE ROUTLEDGE HANDBOOK OF RESPONSIBLE INVESTMENT (Tessa Hebb et al. eds., 2016).

disjoint but rather a bit like conjoined twins: When one moves in certain ways, it can impact the other. It is a two-way street, symbiotic and dialectic. This conceptualization challenges MPT's fundamental belief that beta is fixed and exogenous to a portfolio and that one can only create positive or negative alpha, as opposed to affecting the market's beta.

An important recent example of this is the attention paid to environmental, social, and corporate governance (ESG) factors in investing. Indeed, there has been significant attention paid by practitioners and academics as to whether alpha can be found in ESG factors.²⁴ An increasing number of robust studies using a variety of datasets and methods suggest: Yes, it can be (using traditional MPT definitions).²⁵ Various uses of ESG factors, for example, from factor exposure tilts to short-term ESG momentum portfolios that focus on improvement in ESG ratings, have outperformed various traditional benchmarks in the last ten or so years.²⁶ Recently, a number of influential studies focused on Sustainability Accounting Standard Board (SASB) defined materiality aspects of ESG for specific sectors and found potential fundamental reasons for this outperformance. For example, the cost of capital—whether debt or equity—is lower for firms with strong materiality in E and/or S and/or G factors.²⁷ “To the degree that real-world benefit enables such firms to outperform various benchmarks an ESG alpha may be embedded in their valuation.”²⁸ In theory, this cost of capital advantage exists because it “is not widely recognized and may be ‘found’ by early movers.”²⁹

24. See TruValue Labs, *10 Studies That Show How and Why ESG Investing Works*, THOMSON REUTERS (July 10, 2017), <http://lipperalpha.financial.thomsonreuters.com/2017/07/10-studies-that-show-how-and-why-esg-investing-works/> [<https://perma.cc/47RV-9EBV>].

25. *Id.*

26. See, e.g., Remy Briand, *Can ESG Add Alpha?*, MSCI, <https://www.msci.com/www/blog-posts/can-esg-add-alpha-/0182820893> [<https://perma.cc/F242-MTVB>]; Linda-Eling Lee, *Can ESG Add Alpha?*, FACTSET (Sept. 10, 2015), <https://insight.factset.com/can-esg-add-alpha/#.V5pt55ODGko> [<https://perma.cc/HYX5-ZNTD>].

27. See Mozaffar N. Khan et al., *Corporate Sustainability: First Evidence on Materiality* (Harvard Bus. Sch., Working Paper No. 15-073, 2015), <https://dash.harvard.edu/bitstream/handle/1/14369106/15-073.pdf?sequence=1> [<https://perma.cc/W4UN-7F5K>]; *The Financial and Societal Benefits of ESG Integration: Focus on Materiality*, CALVERT (Jan. 3, 2017), <https://www.calvert.com/calvert-serafeim-series-report-materiality.php> [<https://perma.cc/WU62-SFZ6>]; Emily Kaiser et al., *The Role of the Corporation in Society: Implications for Investors*, CALVERT (Sept. 2015), <https://www.calvert.com/includes/loadDocument.php?embed&fn=24319.pdf&dt=fundPDFs> [<https://perma.cc/C2RT-XUMK>].

28. James Hawley & Jon Lukomnik, *The Alpha-Bet(a) Soup: What to Make of Alpha Seeking and ESG?*, MEDIUM BLOG (Aug. 23, 2016), <https://blog.insight360.io/the-alpha-bet-a-soup-what-to-make-of-alpha-seeking-and-esg-5df59f272503> [<https://perma.cc/727L-BRBA>].

29. *Id.*

Ironically, traditional market theory suggests that the early-mover source of alpha will eventually be arbitrated away.

Thus, while the cost of capital may provide a source of “alpha” for early adopters, over time it should become part of the systemic factors that determine the “beta” of the market. In other words, to the degree that over time ESG factor out-performance is recognized by the larger market alpha fades (it regresses to the mean), and ESG’s systemic impact becomes embedded in equity (and bond) pricing, meaning it becomes part of market beta.³⁰

At a minimum, it becomes recognized as a systemic risk or source of “alternative beta” much the same way that capitalization range (i.e., small cap v. large cap), style (i.e., value, growth), illiquidity, and other factors have moved from sources of alpha for those early adopters who recognized them, to systemic risk exposures as they have become widely recognized by the majority of investment capital.³¹

Similarly, while we currently consider ESG-tilts (such as ESG “smart beta” strategies) and ESG-momentum strategies as sources of alpha, they are actually systemic. How soon until ESG factors are also considered systemic risks incorporated into beta, rather than non-systemic alpha generators? Likely sooner than later: “smart ESG beta” is transitional to ESG becoming embedded in the market. As the more than half a million internet citations for the phrases “alternative beta” and “smart beta” suggest, this realization is becoming widespread.³² Indeed, there is now an “ESG Beta Quality Fund” ETF,³³ an early indication that this transformation from alpha to beta has already begun.

The existence of “smart/alternative beta” or “factor” impact is a major challenge to the traditional framework of MPT, as it suggests that alpha and beta are intimately linked in a host of ways. One way to view beta is as the sum of market participants’ internalization of the expected returns and expected risks (and correlations) of all the securities in the marketplace. Therefore, the more the distinguishing factors of any security or set of securities are recognized by the participants, the more those factors become part of market beta. The less recognized, the more those factors can be considered alpha. Unless one postulates that market

30. *Id.*

31. See generally *Pursue Investment Outcomes with Factors*, BLACKROCK, <https://www.blackrock.com/investing/investment-ideas/what-is-factor-investing> [<https://perma.cc/8Q7N-KR5V>].

32. Google search performed on June 26, 2017.

33. *PAX ESG Beta Quality Fund*, PAX WORLD MGMT., <http://paxworld.com/funds/pax-esg-beta-quality-fund/> [<https://perma.cc/C6RY-HJSV>].

participants all reach the same analytical conclusions instantaneously, and thus, the factor under analysis switches from alpha to beta instantaneously, then alpha and beta are actually on a continuum, with the point on the continuum determined by the amount of market capital that considers those factors. That continuum continuously changes over time, as those factors wax and wane in acceptance.

Some practitioners do intuitively understand the feedback mechanisms between alpha and beta. These investors practice what we term “intentional beta activism” in an attempt to change the undiversifiable systemic risk of the market.³⁴

Remember the gravitational conundrum? Today’s investors are large enough to affect beta directly.³⁵

The New York City proxy access initiative demonstrates the gravitational force that a single large investor can have.³⁶ Proxy access is a technical procedure that makes it easier and less costly for investors to place their nominees for a company’s board of directors directly onto the company’s election ballot, in certain circumstances.³⁷ While that right exists in various forms as a matter of law in various jurisdictions, it does not in the United States.³⁸ Proxy access in the United States must be adopted by each firm, and firms can legally refuse to do so.³⁹ As a result, until very recently virtually no public companies allowed proxy access. However, in 2014, New York City Comptroller Scott Stringer, on behalf of the City’s pension funds with assets of some \$175 billion, decided to change that and sponsored proxy proposals at seventy-five large U.S. public companies to force them to adopt proxy access.⁴⁰ He followed up in 2015 and 2016 with more proposals and has announced that the

34. See James Hawley & Jon Lukomnik, *RI Quarterly: Beyond Modern Portfolio Theory—How Investors Can Mitigate Systemic Risk Through the Portfolio*, PRI, <https://www.unpri.org/page/ri-quarterly-beyond-modern-portfolio-theory-how-investors-can-mitigate-systemic-risk-through-the-portfolio> [https://perma.cc/C6RY-HJSV].

35. Certainly, there were influential investors who moved markets, even in Markowitz’s time, but the mechanism was information and influence, not size. So, MPT was able to consider these market-moving events “new information,” which fit nicely into the efficient market hypothesis that underlies much of MPT.

36. *Boardroom Accountability Project 2.0*, OFF. N.Y.C. COMPTROLLER, <https://comptroller.nyc.gov/services/financial-matters/boardroom-accountability-project/overview/> [https://perma.cc/AKC7-YXGP].

37. See *id.*

38. See Kobi Kastiel, *Proxy Access, SEC Uncertainty and Related Issues in 2015*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG., <https://corpgov.law.harvard.edu/2015/02/24/proxy-access-sec-uncertainty-and-related-issues-in-2015/> [https://perma.cc/9BA9-DMAQ].

39. See *id.*

40. See *supra* note 36.

campaign will continue this year.⁴¹ As of 2017, more than half of S&P 500 companies have adopted proxy access, and most observers think the trend is for further adoptions and for proxy access to spread to smaller companies.⁴² The New York City proxy access initiative is an attempt at beta activism, changing market standards and therefore beta—not just changing a particular company.

Even certain governance actions directed in a single firm or a small set of firms to improve governance (or E and S factors) may be beta activism if, as former CalPERS CEO Dale Hansen once said, it “moves the herd.”⁴³ That is, the way you herd cattle is to move the outliers into the center, thereby changing the herd’s direction. For markets, the same holds: Beta activism can define acceptable behavior as well as what the market considers relevant (material) factors, as Hawley has discussed in several blogs.⁴⁴

The signaling effect of beta activism can even affect such sources of non-diversifiable systemic risk as political risk and regulation. Consider, for example, how CalPERS changed a nation’s financial regulation. In 2002, the pension fund announced that the laws governing investment into the Philippines were not adequate and that it would therefore pull its investments in that country’s stock market.⁴⁵ The Manila index declined 3.3% in a day.⁴⁶ The Philippine government sent a delegation to Sacramento to meet with CalPERS and within two years announced changes to its laws and regulations sufficient to reverse CalPERS’s

41. *Id.*

42. *Shareholder Proposal Developments During the 2016 Proxy Season*, GIBSON DUNN (June 28, 2016), <http://www.gibsondunn.com/publications/Documents/Shareholder-Proposal-Developments-2016-Proxy-Season.pdf> [<https://perma.cc/DHS9-VF9N>].

43. See generally James P. Hawley, *Political Voice, Fiduciary Activism, and the Institutional Ownership of U.S. Corporations: The Role of Public and Noncorporate Pension Funds*, 38 SOC. PERSP. 415 (1995).

44. *ESG Materiality Without (Comparable) Metrics? Back to the Future of Financial Reporting?*, TRUVALUE LABS (Apr. 11, 2016), <https://blog.insight360.io/esg-materiality-without-comparable-metrics-back-to-the-future-of-financial-reporting-fda6d1349c00#.hb43h6cxi> [<https://perma.cc/28H3-3K2W?type=image>]; *Fiduciary Duty & ESG: Why Materiality Matters*, TRUVALUE LABS (May 13, 2016), <https://blog.insight360.io/fiduciary-duty-esg-why-materiality-matters-81fe84d00912#.p9nvn34g1> [<https://perma.cc/2ZWE-9XAY>]; *Is ‘Materiality’ in the Eye of the Beholder? (Part I)*, TRUVALUE LABS (Feb. 25, 2016), <https://blog.insight360.io/is-materiality-in-the-eye-of-the-beholder-part-i-199399441f0#.43w13n4nq> [<https://perma.cc/UPA3-9T3W>]; *Is ‘Materiality’ in the Eye of the Beholder? (Part II)*, TRUVALUE LABS (Mar. 3, 2016), <https://blog.insight360.io/is-materiality-in-the-eye-of-the-beholder-part-ii-57ac2843736#.q9tilbl0v> [<https://perma.cc/LQS4-P8T8>].

45. STEPHEN DAVIS ET AL., *THE NEW CAPITALISTS: HOW CITIZEN INVESTORS ARE RESHAPING THE CORPORATE AGENDA* 9 (2006).

46. *Id.*

boycott decision.⁴⁷ CalPERS directly affected the beta of the Philippine market, but also its systemic health.

Looked at through that analytical lens, recent activity by various investors represents a plethora of attempts at beta activism and some at changing systemic risk, or put positively and normatively, improving system health. Some of the investors undertaking them are large enough to act on their own, such as the efforts of Larry Fink, CEO of Blackrock—the world’s largest investor, with \$4.6 trillion under management—to encourage public companies to invest for long-term revenue and productivity growth.⁴⁸

It is not an accident that the examples above include two of the largest pension funds in the world and the largest asset manager. There are costs to beta activism and attempting to ensure system health. Those costs are borne by the investors taking action, but the benefits are market-wide (since they are systemic), leading some to eschew those efforts because of a “free rider” issue.⁴⁹ Moreover, the gravitational conundrum suggests that more assets are more effective at affecting beta and systems.

However, the free rider issue experienced by large beta activists can be, and is, partially offset as various types of coalitions composed of smaller investors are formed to lower the cost collective actions. Ceres in the United States and Hermes in the United Kingdom have long organized groups of smaller funds to act together, thereby both mobilizing funds that otherwise would not be able to act individually due to high costs.⁵⁰ Additionally, such coalitions reduce the free rider effects for the largest beta activist funds, but of course, come nowhere near eliminating them.

Increasingly, institutional investors are coming to understand that to be an effective beta activist you need significant assets under management (either individually or collectively, as in the Hermes and Ceres examples), and the more the better. Thus, coalitions of some of the largest investors are also forming. At least in theory, that should minimize the cost to any individual institution, somewhat mitigating the free rider issue, while making the activism more effective.

47. *Id.*

48. Matt Turner, *Here Is the Letter the World's Largest Investor, BlackRock CEO Larry Fink, Just Sent to CEOs Everywhere*, BUS. INSIDER (Feb. 2, 2016), <http://www.businessinsider.com/blackrock-ceo-larry-fink-letter-to-sp-500-ceos-2016-2> [<https://perma.cc/5S55-BWW3>].

49. This is similar to the issue of alpha activism, which activist hedge funds have dealt with by amassing outsized positions in the corporate targets of their activism. It does not eliminate the free rider issue but does minimize it by allowing the hedge fund to capture more of the economic benefit it hopes to create.

50. See generally *Ceres Non-Profit Network Members*, CERES, <https://www.ceres.org/about-us/ceres-coalition/members> [<https://perma.cc/K63K-2ZWM>]; HERMES INV. MGMT., <https://www.hermes-investment.com/us/> [<https://perma.cc/AV8F-76HD>].

For example, on January 31, 2017, sixteen large institutional investors—with \$17 trillion in assets under management—launched an ambitious attempt at beta activism.⁵¹ These investors promulgated a combined corporate governance and stewardship code to take effect on January 1, 2018.⁵² The initial signatories included major asset managers (BlackRock, State Street Global Advisors, Vanguard, and T. Rowe Price), asset owners (the California State Teachers' Retirement System and the Florida State Board of Administration), and international institutions (GIC Private Limited [Singapore's Sovereign Wealth Fund], PGGM [the second largest pension fund in the Netherlands], and Royal Bank of Canada).⁵³ Their intention to change beta is manifest; the second headline of the press release announced the group as “[u]nveil[ing] [a] Framework of Guiding Principles with Expectation of Long-Term Value Creation”⁵⁴

The Investor Stewardship Group largely focused on the “G” of ESG, but investor coalitions are not limited to only that focus. By contrast, Ceres is an investor-led coalition which works on the “E” to, in its words,

engage and collaborate on environmental, social, and governance issues to advance leading investment practices, corporate engagement strategies and policy solutions through working groups and shared learning opportunities, such as webinars and events. Ceres works with investors specifically to better manage carbon, water and supply chain risks, and ramp up global investments in clean energy and sustainable food and water systems.⁵⁵

The need for large assets to move the market is manifest to Ceres; one of its initiatives involves an investor-led coalition, the Investor Network on Climate Risk, which features more than 130 institutional investors with more than \$17 trillion in assets, all of whom have pledged to invest so as to affect the systemic risk of climate change.⁵⁶ Some have created low-carbon index funds; others have clean tech portfolios, and still others engage with petrochemical companies over the risk of “stranded

51. Investor Stewardship Grp., *Leading Investors Launch Historic Initiative Focused on U.S. Institutional Investor Stewardship and Corporate Governance*, BUS. WIRE (Jan. 31, 2017, 11:26 AM), <http://www.businesswire.com/news/home/20170131005949/en/Leading-Investors-Launch-Historic-Initiative-Focused-U.S.> [<https://perma.cc/6UKC-WBEL>].

52. *Id.*

53. *Id.*

54. *Id.*

55. *Ceres Investor Network on Climate Risk and Sustainability*, CERES, <https://www.ceres.org/investor-network> [<https://perma.cc/FC8B-EUE6>].

56. *Id.*

assets” (carbon-based natural resources that may never be burned due to climate impact).⁵⁷ Read in terms of beta, this means making the market recognize such factors as “material,” that is, necessary as value added for a sustainable low carbon economy.⁵⁸ In some ways, that fits into the MPT construct as “new information,” but it is distinguished by being information provided by investors and by the investors themselves attempting to move markets through capital allocation. Such actions were symbiotically related to a series of downgrades of coal companies by Moody’s and Fitch in the fall of 2015.⁵⁹

Turning to temporal issues, none of these initiatives show any evidence of being time-limited. To the extent that they have time frames, they are linked to the liabilities the investors are trying to offset; pension funds have liabilities that are infinite if the fund remains open for enrollment. BlackRock has often stated that, as the largest asset manager in the world, it anticipates having market exposure forever,⁶⁰ so the long-term health of the system matters to it. The coalitions see themselves as trying to effect permanent change. The time horizon of any specific action can be limited, but the impact of this type of beta activism is forever, in that at least in theory, it seeks to change the systemic risk profile permanently. As we will discuss in Observation 4, below, alpha-seeking investors measuring relative returns over short periods appear to hyper-discount future cash flows. Beta activists, however, appear to have a very low discount rate indeed. As permanent market participants with continual beta exposure, they see themselves benefiting from the changed systemic risk profile forever. Thus, we do not believe that the holding periods related to securities selection of these investors or groups of investors is at all relevant to their goal of achieving a better beta.

While recent years have seen the partial beta activist mobilization of large mutual funds (in the United States), this is overwhelmingly to date a top-down activism, however important it is. At the level of many portfolio managers within these huge firms, seeking alpha and beating benchmarks

57. *Unburnable Carbon 2013: Wasted Capital and Stranded Assets*, CARBON TRACKER INITIATIVE (Apr. 2013), <http://www.carbontracker.org/report/unburnable-carbon-wasted-capital-and-stranded-assets/> [<https://perma.cc/5G9X-T5TM>].

58. *Ceres Non-Profit Network*, CERES, <http://www.ceres.org/about-us/coalition> [<https://perma.cc/K5K4-X6VV>].

59. *Fitch: Higher Default Rates Expected for US Coal Sector*, FITCH RATINGS, INC. (Oct. 15, 2015, 12:37 PM), <https://www.fitchratings.com/site/pr/992355> [<http://perma.cc/367C-3L25>]; *Rating Action: Moody's Downgrades Westmoreland Coal Company's CFR to Caa1; Outlook Stable*, MOODY'S INV. SERV. (Feb. 29, 2016), https://www.moodys.com/research/Moodys-downgrades-Westmoreland-Coal-Companys-CFR-to-Caa1-outlook-stable--PR_344844 [<https://perma.cc/M35U-NC97>].

60. Michelle Edkins, Glob. Head of Inv. Stewardship, Blackrock, Statement at Council of Institutional Investors Fall 2017 Conference (Sept. 14, 2017).

still drive strategies and actions. This is also the case with the creation of new ESG investment products, especially ETFs, which are typically constructed and measured against benchmarks that by definition aim to ‘beat the market.’ The full integration of ESG into investment strategies needs to involve a clear recognition that beta activism offers longer term value creation than benchmarks to beat the market.

Observation 4: MPT Has Focused on Alpha-Seeking as the Way to Create Value, Even Though Seeking a “Better Beta” Is More Impactful. Internal Rate of Return (IRR) May Be a Better Metric than Holding Periods and Turnover Rates.

Our contention that investors can affect beta is largely heterodox. MPT emphasizes investors’ ability to seek alpha, not affect beta. Most investors and observers judge skill by focusing on return versus benchmark indices over various time periods; assets flow to managers who “beat” their indices.⁶¹ Consultants present asset owners (both institutional and retail) with reports showing their portfolio returns compared to benchmarks, sorted by asset class or styles of management, typically on a quarterly, one-, three-, and five-year basis.

There is a double irony in MPT’s massive conceptual influence. The first, as above, is that while MPT provides the reasonable justification for passive indexation, it simultaneously provides justification for active managers to beat those indices and often on a very short-term metric (e.g., quarterly). There is of course a logic to this: price discovery is clearly essential to all markets. Yet, by maintaining the absolute separation of idiosyncratic and systemic risk, MPT *a priori* precludes consideration of beta activism, including much that is by its nature long(er)-term.

The second, and we argue crucial, irony is that beta dwarfs alpha in terms of total return effect. Brinson, Hood, and Beebower suggest that more than 90% of the variation in return is explained by asset allocation, not security selection.⁶² However, since MPT postulates that beta is a given and cannot be affected by individual portfolio managers, it is logical that investors would focus on what they can affect, namely alpha—hence, the MPT alpha/beta paradox: MPT postulates that what you can affect matters less than what you can’t.

61. MORNINGSTAR MANAGER RESEARCH, 2014 GLOBAL ASSET FLOWS REPORT 8–9 (2015), <http://corporate.morningstar.com/us/documents/Commentary/2014%20Global%20Asset%20Flows%20Report.pdf> [https://perma.cc/46VS-VGSG].

62. Gary P. Brinson et al., *Determinants of Portfolio Performance*, FIN. ANALYSTS J., Jan.–Feb. 1995, at 133.

The focus on alpha rather than beta results in pressure on active managers to try to differentiate themselves through trading as a way to seek alpha different than, and more positive than, other competing managers. The measuring of returns versus indices over short-term periods means that differentiation can occur over periods as short as one calendar quarter.⁶³ As one study demonstrated, the majority of money managers trade more than they intend, even though “they were aware that excessive turnover was potentially harmful to their clients.”⁶⁴ “[E]xcessive trading may be caused by the *don’t just sit there, do something* imperative. That imperative states that portfolio managers and traders must do something to justify their existence and compensation, even when doing nothing might be the better choice.”⁶⁵

The result has been well-documented: We have become a nation of fairly short-term traders, rather than long-term investors, at least when it comes to the public equity market. According to The World Bank, the annual turnover of the U.S. public equity market increased from 19.6% in 1976 to 154.8% in 2016,⁶⁶ meaning that an average investor will turn over its portfolio entirely in less than eight months. Some would argue that data is inflated because of high-frequency trading, but even alternative measures of stock duration suggest that investors hold their specific portfolios for little more than a year.⁶⁷

What all these measures have in common is that they look at the rate of change of specific stocks within an investor’s portfolio. That is not surprising: Investigators are following the *modus operandi* of the industry when they focus on the time frame surrounding trades rather than market (beta) exposure over time.

Such trading also affects cap-weighted indices. At first you would think that the growth in indexation is indicative of investors lengthening time horizons and focusing on beta exposure. Yes, the growth in indexation shows some material portion of the marketplace understands (and has decided to stop playing) the short-term, beat-some-benchmark game. Some proponents of MPT in fact argue this. However, looking through the index fund to its holdings—the individual company stocks—reveals that the only difference between index fund trading and

63. There has long been discussion as to what are the parameters of “short-term.” While often quite involved, one indicator of “short-term” is that for three years there is a downside deviation from the benchmark. This constitutes trouble for managers, who may see assets removed from them. But note: this is a different dimension of “short-term” than holding or turnover periods.

64. Danyelle Guyatt & Jon Lukomnik, *Does Portfolio Turnover Exceed Expectations?*, 3 ROTMAN INT’L J. PENSION MGMT. 40, 40 (2010).

65. *Id.* at 44.

66. *Stocks Traded, Turnover Ratio of Domestic Shares (%)*, WORLD BANK, <http://data.worldbank.org/indicator/CM.MKT.TRNR> [<https://perma.cc/Z6H6-YLSY>].

67. Cremers et al., *supra* note 16.

fundamental investor trading is that the index funds trade on autopilot rather than by human or algorithmic decision-making. Their weightings (other than changes to the index constituents by the index provider) are the sum of the active, non-index, alpha-seeking market participants' trades. Given the market pressure to trade, cap-weighted passive portfolios reflect this trading activity. There is a tendency for the alpha tail to wag the beta dog.

Thus, the index investor is exposed to short-term, relative-return thinking via the index construction rules that reflect the market's trading activity. Indeed, some have called capitalization-weighted indices covert "momentum" style vehicles, as a price gain for a stock (disproportionate to the rest of the index universe) increases its weight in the index.⁶⁸ Cap-weighted indices are, effectively, price takers. If (too many) price makers are short-term, then price takers/indices reflect this (and perhaps magnify it due to the index effect). The irony here is that dedicated long-term passive owners may own long-term, but do not determine or influence capitalization of what they own. Short-term alpha-seeking sets the parameters for these beta-trackers. From the market point of view, the index investment does not offset short-term (relative return alpha trading) but may, in fact, amplify it.

If it is market exposure that determines the vast majority of return and risk, is the holding period of individual securities optimal in determining how time frame affects risk and return? In effect, holding periods (or their variants) measure the inputs into alpha-seeking activity or the turnover in a portfolio but not the time dimension of beta exposure. In fact, virtually all investors, whether alpha-seeking traders or beta-tracking ones, have permanent exposure to beta.⁶⁹ It does not matter if actively-managed mutual fund X has a one-day, one-month, or one-year average holding period. Whatever dollar value of stock is sold will soon be replaced with stock(s) that is bought. This series of sequential "alpha" trades results in permanent beta exposure. But, of course, flows into the fund will vary the amount of beta exposure as the individual account holders put money into, or take money out of, the market. So, the mutual fund may have effectively permanent beta exposure, but the individual investors will experience a variance in their beta exposure.

68. See, e.g., Noel Amenc & Lionel Martellini, *Alternatives to Cap-Weighted Indices*, FIN. TIMES (Nov. 21, 2010), <https://www.ft.com/content/20d60b6c-f40c-11df-886b-00144feab49a> [<https://perma.cc/946H-BFA7>].

69. Whether high frequency traders are meaningfully exposed to beta (rather than arbitrageurs of nano-second inefficiencies) is beyond the scope of this Article but is an important question.

This is consistent with the academic and practitioner research that beta exposure for an investor is different than the beta of the market as typically measured. As long ago as 2004, Ilia Dichev noted that dollar-weighted returns, which consider the timing of investment decisions, “are systemically lower than buy-and-hold returns.”⁷⁰ That difference was 1.3% annualized for NYSE/AMEX listed stocks from 1929–2002 and 1.5% annualized for nineteen international stock markets from 1973–2004.⁷¹ Investors, it seems, tend to get in and out of the market, often at the wrong times.

Notwithstanding that finding, asset management firms have commercialized “tactical asset allocation” products that attempt to time the market. Today, there are more than two-hundred long-only such funds in the United States, which try to time the market.⁷²

Thus far, the results have not demonstrated that “timing the market” is a winning investment strategy. Indeed, one study suggested that not a single one of the fifty-seven tactical asset allocation funds with a five-year record ended July 2016 outperformed a passive 60% stock/40% bond index.⁷³

Other studies have suggested that a “cash drag” might be a primary cause of why retail investors underperform mutual funds, which, in turn, underperform the market.⁷⁴ On average, retail investors hold 24% of their portfolios in cash, and mutual funds hold 3.5% in cash. Cash, of course, decreases equity market exposure but has no effect on security selection. So, all other things being equal, cash would hinder returns in an up market and benefit investors in a down market. Perhaps what is needed is not the time horizon or holding period of a trade measure but a dollar-weighted holding period of underinvestment (or, in the case of a leveraged investor, overinvestment) metric.

In other words, temporal measures need to be combined with a quantitative measure of “how much” is being affected by that time measure. What these studies suggest, when looked at cumulatively, is that at a minimum, we need to dollar-weight investors’ returns as well as the

70. Ilia D. Dichev, What are Stock Investors’ Actual Historical Returns? Evidence from Dollar-Weighted Returns 2 (Dec. 2004) (unpublished manuscript), <https://ssrn.com/abstract=544142>.

71. *Id.*

72. *Tactical Allocation: Total Returns*, MORNINGSTAR, [http://news.morningstar.com/fund-category-returns/tactical-allocation/\\$FOCASTV.aspx](http://news.morningstar.com/fund-category-returns/tactical-allocation/$FOCASTV.aspx) (last visited Apr. 24, 2017).

73. Luke F. Delorme, *How “Tactical Allocation” Mutual Funds Fared Over the Last Five Years*, ADVISOR PERSP. (Aug. 9, 2016), <https://www.advisorperspectives.com/articles/2016/08/09/how-tactical-allocation-mutual-funds-fared-over-the-last-five-years> [https://perma.cc/35JM-X2QQ].

74. Cullen Roche, *Why Do Retail Investors Underperform?*, PRAGMATIC CAPITALISM (June 22, 2015), <http://www.pragcap.com/why-do-retail-investors-underperform/> [https://perma.cc/KU5T-44NY].

benchmarks against which they are traditionally measured rather than just time-weight them. So, we need to include time, alpha-seeking activity, and beta impact. This moves us more towards a comparative Internal Rate of Return (IRR) type of calculus than the traditional and simple time-weighted-return-versus-benchmark comparison.

There are investors who are exceptions to this semi-permanent exposure to beta. Hedge funds can short stocks or baskets of stocks or even the indices themselves, and so have variable exposure to beta. Indeed, gross and net market exposures are standard risk measures for hedge fund investors.⁷⁵ Similarly, there are a series of long-flat indices that alternate between market-level beta exposure and zero beta by converting market securities to cash based on certain technical signals.⁷⁶

But, the vast majority of investors hold primarily, if not exclusively, long-only exposures, whether active or passive. The holding period that matters for them is not the average of their trades at any point in time, but the sum of their trades over time. Nonetheless, because of our MPT mindset and worldview, we measure time frames wrong; or, more exactly, we measure the wrong time frames. We measure them as holding periods for individual trades (the inputs to seeking alpha) rather than the duration of exposure to the market (beta) and with consideration of the amount of beta exposure and alpha effect. For most investors, there is a large difference between the duration of its beta exposure and the duration of its individual trades. The former is far more important to long-term return.

Here is one other piece of evidence that the time frame of beta exposure matters much more than any investor's holding period or ex-ante time horizon for a trade:

Time Period (Rolling, 1926-2014)	1 Year	3 Years	5 Years	10 Years	20 Years
Best	166.9	42.1	35.6	21.5	18.4
Worst	(69.1)	(43.7)	(19.4)	(6.2)	1.2
Total Spread	236.0	85.8	55.0	27.7	17.2

75. See, e.g., *Net Exposure*, INVESTOPEDIA, <http://www.investopedia.com/terms/n/net-exposure.asp> [https://perma.cc/M75K-XH2V].

76. See, e.g., *Morningstar Long Flat Commodity Index*, MORNINGSTAR, <http://www.morningstar.com/invGLOSSARY/morningstar-long-flat-commodity-index.aspx> [https://perma.cc/D5RL-Y88C].

According to CRSP data, the best one-year U.S. stock market return was 166.9%; the unfortunate investor who picked the worst year would have lost 69.1%. The spread between those best and worst one-year periods was 236%. However, time dampens volatility. The spread between the best and worst three-, five-, ten-, and twenty-year rolling periods in terms of annualized returns was 85.8%, 55.0%, 27.7% and 17.2%. In fact, by the time you hold for twenty years, there is no possible time period in which you would have lost money (nominally).⁷⁷ What the data suggests is not what was for most or even some investors but rather what it could have meant to hold for various time periods, which would mitigate “shorter” holding periods’ volatility.

Observation 5: The Alpha–Beta Dynamic Tends to Speed Up Time Frames Irrationally.

The preceding discussion sets the stage for our discussion of short-termism. Simply put, the alpha–beta dynamic tends to speed up time irrationally.

Perhaps the focus on alpha-seeking investors’ trading could be acceptable if there were evidence that the trading adds value. But, alpha is, by definition, a zero-sum pursuit. Moreover, there is evidence that investors hyper-discount—the systematic over-discounting of future cash flows, or what Bank of England Chief Economist Andrew Haldane has identified as the (too) “short long.”⁷⁸ Hyper-discounting combined with MPT’s incorrect view of holding periods contributes to investors (including “long-term” ones) having irrationally short-term horizons. Therefore, though they think of themselves as long-term investors, sequential investors add to the economic short-termism. Somewhat parallel with our idea that absolute-return benchmarking (or liability benchmarking) is better than relative-return benchmarking, Haldane writes:

Imagine instead that an investor w[as] making choices based on average payback periods, rather than NPV. Under rational discounting, the project has a payback period of nine years. Under myopic discounting, the payback period rises to 15 years. An investor might now

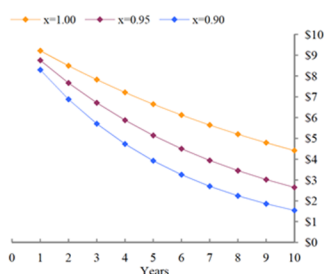
77. *Time and Risk*, CTR. RESEARCH SEC. PRICES, http://www.crsp.com/files/investments_illustrated/BP_h_2015_crsp_us-en.pdf. [<https://perma.cc/SPBU-8RSP>].

78. Haldane et al., *supra* note 1.

think twice before investing their money, for their money is committed for almost twice as long.⁷⁹

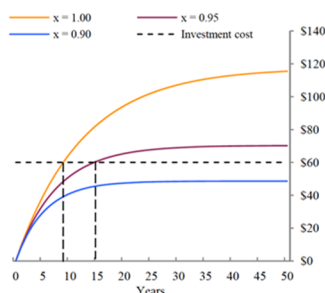
Haldane presents two NPV examples using ‘rational discounting’ ($x=1.00$), myopic (between $x=0.95$ and $x=0.90$)⁸⁰:

Chart 6: Present value of future cash-flows



Notes: The chart assumes \$10 is paid at the end of each year. The rational discount rate used is 1.085.

Chart 7: Cumulative present value of future cash-flows



Notes: The cumulative NPV of \$10 cash-flows rises to \$61 in year 9 under rational discounting. With mild myopia ($x=0.95$) it only passes \$60 at year 15. With severe myopia ($x=0.90$) the investor calculates that payback is not achieved.

The implications of these assumptions are stark: at an extreme, an NPV over fifty years falls from \$56 to minus \$11. Haldane’s point: the short long.⁸¹ As he notes, the market values cash flows that are five years away as if they were eight years away, and cash flows that are thirty years away are given no value by the market.⁸²

Hyper-discounting is the seasoning that makes an MPT stew of short-termism even more so. Here is the recipe: Combine the focus on alpha-seeking trading as a way to differentiate a track record and the hyper-discounting of future cash flows in those trades. Allow those hyper-discounted trades to determine the components and weightings of indices. Move lots of money into passive strategies that track those indices, which are, of course, calculated based off those hyper-discounted trades. Then emphasize tracking error against those indices so that even more money is linked to them.

The effects impact far more than just the equity markets. They also influence the real economy and, perhaps, dampen the inputs into

79. *Id.*

80. *Id.* at 13.

81. *Id.* at 13–24.

82. *Id.*

productivity improvement, resulting in slower-than-possible economic growth. For example, Cremers, Pareek, and Sautner argue that inclusion in the popular Russell 2000 index causes companies to reduce long-term investments, such as research and development spending, to accommodate new, short-term-focused investors.⁸³

Over-discounting of the future can have very real effects. For example, the U.S. government uses a 3% discount rate on the social cost of carbon, resulting in an implied cost of carbon emissions of \$36 a ton.⁸⁴ Decreasing the discount rate to 2.5% would hike the price to \$56 a ton. By contrast, increasing the discount rate to 5% would reduce that cost to \$11 a ton. A member of the Trump environmental transition team has suggested 7%—a rate that suggests that we may have a dead planet in a millennium for about a dollar.⁸⁵

We suggest that the idea that the long-run is a series of short-runs is an MPT failure, much the way that over-discounting the social cost of carbon will result in a system failure and the end of human dominance of the world, rather than a summation of the “normal” series of short-terms that precede it.

To assume that the long-run is a series of short-runs—and that the current systemic risk context will remain in place and acceptable—assumes that people act in responsible ways for the long-run to protect the essential systems that allow capital markets to function. Behavioral finance and other approaches have proved this empirically false. Indeed, MPT itself relies on arguing that idiosyncratic risk is managed via diversification and that investing has no impact on systemic risk. In turn, this suggests that market participants have no particular interest in either mitigating or exacerbating—or even affecting—systemic risk in any way at all. The inference is that systems will maintain.

The global financial crisis suggests otherwise. Numerous analyses have suggested that a mass reduction in underwriting standards on individual loans (idiosyncratic risk) added up to a systemic risk over time.⁸⁶ That is consistent with our view that alpha (related to idiosyncratic

83. See Cremers et al., *supra* note 16.

84. *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*, INTERAGENCY WORKING GRP. SOC. COST GREENHOUSE GASES, U.S. GOV'T 4 (Aug. 2016), https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf [<https://perma.cc/BK6J-5JX7>].

85. Chelsea Harvey, *Economists Expect Fight Over Climate Change Cost*, WASH. POST (Dec. 27, 2016), <https://www.pressreader.com/usa/the-washington-post/20161227/281565175422654>.

86. See, e.g., Laurence Wilse-Samson, *The Subprime Mortgage Crisis: Underwriting Standards, Loan Modifications and Securitization* (Feb. 2010) (unpublished manuscript), http://www.columbia.edu/~lhw2110/Subprime_survey_Samson.pdf.

risk) and beta (related to systemic risk) are not disjointed but rather points along a continuum, and actions designed to affect one can affect the other. If too few people think in terms of systems, each “short-run” period changes the systemic risk profile for the next “short-run” period. Perhaps this is not enough to notice if your investment horizon is six months. But, many people invest for retirement, perhaps over fifty years, and economic historians look at centuries. The system in which you invest for the first six-month period is unlikely to be anything like the system in which you invest for the 100th sixth-month period (witness the discussion of the U.S. public equity market in Markowitz’s time versus today, above).⁸⁷ We argue that systems are somewhat path dependent, with the next evolution of the system dependent on its current state rather than somehow mean regressing to a normal or standard state. Put somewhat differently, the long-term is not simply additive short-term intervals, each of which is unrelated to the previous and the next. Rather, it is the linkages of various past and current events to future ones; for example, post-financial crisis discussions of tail risk clearly recognize this.⁸⁸

The focus on alpha and the measures of stock trading, such as holding periods, turnover, and duration, all fail to contemplate this dynamic.

The heterodox views expressed above beg two questions:

1. If alpha and beta are intertwined, beta is not immutable, and beta is more impactful on wealth generation than alpha, how should investors invest?
2. If investors effectively have permanent exposure to beta, yet they over-discount the future of individual positions created by alpha-seeking, how should they view their investment time horizon?

The answer to both questions is that investors today need to be aware of risks and opportunities at the security level (alpha), market level (beta), and systems level. And they are beginning to do so. But, our current temporal measures assume that alpha-seeking is the dominant driver of investment decisions, despite the fact that beta has more impact on investment risk and return.

87. Markowitz, *supra* note 4 and accompanying text.

88. E.g., Lee Cohen et al., *Bank Earnings Management and Tail Risk During the Financial Crisis*, 46 J. MONEY CREDIT & BANKING 171 (2014); Stefan Straetmans & Sajid Chaudhry, *Tail Risk and Systemic Risk of US and Eurozone Financial Institutions in the Wake of the Global Financial Crisis*, 58 J. INT’L MONEY & FIN. 191 (2015); *Understanding Tail Risk*, PIMCO, <https://www.pimco.com/en-us/resources/education/understanding-tail-risk/> [<https://perma.cc/R9NV-YGHK>].

Observation 6, and Future Directions and Questions: There Is a Need for Better Measures of Time Frames. Those Metrics Should be Designed for Purpose Rather than Be a “One Metric Measures All.”

Current metrics, such as holding period, stock duration, and turnover, are adequate to measure the time horizon for stock picking and to use in combination with other measures to suggest stock-picking skill as the key input to what is traditionally termed “alpha.” However, acknowledging the alpha–beta dynamic complicates the nature of the metrics needed to measure the time horizons of investment.

Traditional temporal measures are not useful to illustrate the realities of today’s investment world, which is some combination of alpha-seeking, beta-matching, and alpha–beta feedback loops. For instance, holding period is not a helpful metric in understanding the duration of a series of sequential alpha trades resulting in quasi-permanent beta exposure. Nor do they illuminate the specific time periods of beta exposure created by those sequential trades that aggregate alpha-seeking trades into semi-permanent beta exposures. A time line of beta exposure and of cash drag might be a place to start.

An even more difficult job will be to find temporal measures relative to the feedback loops between an investor’s, or group of investors’, portfolio investment and the resultant effect on beta, whether that effect is intentional or incidental. This type of question is an important element in the work of The Investment Integration Project, among others.

Perhaps one idea to illuminate some aspects of the issue would be to infer an investor’s discount rate. Knowing that, it would be possible to back into the time horizon of investors not just for individual security trades but also for actions designed to affect beta. Such an inverted, inferred discount rate (IIDR) would have the advantage of being comparable across alpha-seeking, beta-matching, and beta-affecting investors and would suggest which investors or investment vehicles have shorter or longer term investment philosophies. It might also have a secondary, salutary effect by making discount rates explicit. If it is true that “what gets measured gets managed,” then such a metric would be a first step towards investors understanding, and then correcting, their tendency to hyper-discount, and could thereby counter the current “short long.” If combined with a dollar-weighted returns metric (as discussed above), these metrics begin to measure today’s complex investment strategies.

Another likely complementary starting point would be development of multiple absolute metrics, as some factor investing strategies would imply. Such metrics would need to have both temporal and exposure axes.

The advantage of such metrics is that they can be temporal metrics of exposure not to just beta but also to factors, whether E, S, and G factors, or to more traditional factors (e.g., value, size, momentum, volatility, term, credit, and market (beta)).⁸⁹

Some or all of these new metrics likely have implications for current law and regulations in various jurisdictions. A discussion of what these might mean is beyond the scope of this Article, but a parallel with MPT is apt. As MPT came to the fore in both market practice and academic theory in the 1960s and 1970s, its impact was dramatically felt in the revisions of U.S. law and regulation, specifically in the formulations of the 1974 Employment Retirement Income Security Act (ERISA),⁹⁰ which focused on defining risk on a portfolio rather than an individual security basis.

Future work will have to confront the challenges of developing both the concepts and practical metrics for such measurements, as well as what the legal and regulatory implications of such metrics are. Such a reconceptualization of metrics would not only confront the “short long” but would directly link the role of finance to what we consider its proper place: as an intermediary to rationally foster and facilitate non-financial capital investment, unaffected by either the blind spots of MPT or the tendency to hyper-discount long-term investment returns.

89. See Scott N. Pappas & Joel M. Dickson, *Factor-Based Investing* 8 VANGUARD (Apr. 2015), <https://www.vanguardcanada.ca/documents/factor-based-investing-research-tlrv.pdf> [https://perma.cc/4TJ4-99Q6].

90. See generally Daniel Kintzel, *Portfolio Theory, Life-Cycle Investing, and Retirement Income*, SOC. SEC. ADMIN. OFF. POL'Y (Oct. 2007), <https://www.ssa.gov/policy/docs/policybriefs/pb2007-02.html> [https://perma.cc/73TA-6V6R].