



Portfolios and Systemic Framework Integration: Towards a Theory and Practice

Steve Lydenberg

Exposure Draft, November 16, 2015

TABLE OF CONTENTS

Executive Summary.....	3
Evolution of Contemporary Finance	4
Limitations of Modern Portfolio Theory	5
Systemic Frameworks	7
Figure 1: Collective Investment Problem: Individual Decisions Put Systemic Frameworks at Risk	9
Measurement Systems.....	10
Portfolios and Systemic Frameworks.....	14
Figure 2: Collective Investment Opportunity: Systemic Frameworks Create Individual Investment Rewards	16
Figure 3: Collective Impact Vs. Individual Impacts	18
The Vocabulary of Financial Reform	18
Toward a Vocabulary of Integrated Investment	20
Figure 4: Integration of Portfolios into Systemic Frameworks.....	21
Figure 5: Integration Reporting Value Chain	21
Conclusion	25
References.....	27

By Steve Lydenberg, Founder and CEO, The Investment Integration Project (TIIP)

All rights reserved by the author

@ Copyright 2015

*Cover Picture licensed by Shutterstock.

Acknowledgements: I would like to thank Geeta Aiyer, Jeb Brooks, William Burckart, Michael Greis, James Hawley, Adam Kanzer, Rob Lake, Chris Pinney, Steve Waddell, Sandra Waddock, Cherie Wendelken, Allen White and David Wood for comments, suggestions, and assistance in the preparation of the exposure draft of this paper and for conversations about its general approach. Their input and support are greatly appreciated.

We need to recognize the tension between pure free market capitalism, which reinforces the primacy of the individual at the expense of the system, and social capital which requires from individuals a broader sense of responsibility for the system. A sense of self must be accompanied by a sense of the systemic.¹

Mark Carney, Governor of the Bank of England

Executive Summary

Investment theory currently encourages financial professionals to consider portfolio-level decisions as if they were without impact on the environmental, societal and financial systems upon which investments are built. Returns attributable to overall market performance are not factored into the measurement of managers’ success because it is assumed that market forces are beyond their influence and control. Under current global conditions, however, this view of the impact of investment decision-making is too limited to help protect asset owners and managers from systemic-level risks or help them realize systemic-level rewards.

This paper argues that the strength or weakness of environmental, societal and financial systemic frameworks substantially impacts the ability of investors to generate returns. Without the smooth function of these systems, returns to all portfolios suffer. Conversely, portfolio managers through their collective investment decisions can disrupt these same systems either negatively or positively—creating instability or enhancing their investment potential. As we enter the heart of the 21st century, investment portfolios and the systemic frameworks that support them will be increasingly interdependent and interrelated.

Efforts are currently underway to integrate environmental, social and governance factors into portfolio-level decision-making and to understand and measure the ability of portfolio investments to solve environmental and social problems. Simultaneously, academics and others assessing the progress and health of societies and environments writ large are incorporating alternatives to purely economic measurements. More work can usefully be done to bridge the gap between the two worlds of investment decision-making and positive or negative developments at the environmental, societal and financial levels.

Asset owners can play a key role in bridging this gap. To do so, they will need to take three concrete steps: acknowledge the connection between investment decision-making and systems-level risks and rewards; determine which systemic frameworks they can most appropriately and usefully focus on; and implement investment practices that allow them to manage systemic-level risks and rewards while simultaneously achieving competitive financial returns in their portfolios.

¹ Mark Carney, “Inclusive Capitalism: Creating a Sense of the Systemic” Speech, Conference on Inclusive Capitalism (London) May 27, 2014: 5.

An integrated understanding of the relationship between portfolio-level decisions and systems-level impacts will require on-going research and the development of new measurement and management tools. With these resources in hand, asset owners can adopt policies and practices that enhance systemic frameworks; communicate the need for this enhancement to their investees and investors; and align their efforts at systemic enhancement with those of governmental and non-governmental organizations.

These are not easy tasks, but confronting their challenge will help assure that finance, in its pursuit of efficiency, does not inadvertently undercut those systemic resources built up over centuries, millennia and eons upon which all investors and their investments depend.

Evolution of Contemporary Finance

Best practice in investment today focuses on risks and rewards at the portfolio level. Best practice in investment does not give equal weight to risks and rewards at a systemic level—that is, in relation to the global environmental, societal and financial frameworks that support all investments and therefore benefit or harm the performance of all portfolios. It should not be surprising that Modern *Portfolio* Theory focuses on *portfolio-level* risks and rewards, since the portfolio is its explicitly stated domain. Just as Modern Portfolio Theory, however, was an important step forward from the previous best practice of *security-level* selection, the increasingly complex world of the 21st century demands an advance in best practice to include the management of *systems-level* risks and rewards.

In the eighteenth, nineteenth and early twentieth centuries, best practice consisted in analyzing individual securities. Buying risky securities was to be avoided by responsible investors. This straightforward conception evolved in part as a result of two spectacular stock market crashes in 1720—that of the Mississippi Company in France and the South Sea Company in Britain—which brought their respective national financial systems to their knees. To prevent such abuses, Britain and the United States subsequently required until the late 19th century legislative approval for the issuance of publicly traded stock. In addition, financial fiduciaries were restricted to “legal lists” of high quality bonds—and the occasional blue-chip stock—until well into the 20th century.²

This conservative, security-specific approach to investment worked well while investment opportunities were relatively limited, assets under management relatively small, and most investors relatively unsophisticated. The mid-20th century, however, saw an explosion of assets under management—especially by pension funds; the availability of new and diverse investment opportunities; the disclosure of relatively reliable financial information; the

² For accounts of these crashes and their repercussions see, among others, Charles P. Kindleberg, *Manias, Panics, and Crashes: A History of Financial Crises, Fourth Edition* (New York: John Wiley & Sons, Inc.) 2000; James Buchan, *Frozen Desire: The Meaning of Money* (New York: Farrar, Straus & Giroux) 1997; John Micklethwait and Adrian Wooldridge, *The Company: A Short History of a Revolutionary Idea* (New York: The Modern Library) 2003.

emergence of powerful information technology; the development of academic theory about innovative investment techniques, particularly risk control; and the emergence of sophisticated institutional investors as the dominant players in the financial markets. As a result of these developments, simply assessing single-security risks and rewards was clearly no longer an investment approach adequate to the times. Management of investments with an eye to the overall risks and rewards of entire portfolios was the next step in the evolution of finance.

Elaborated from 1953 through 1972 and put into practice starting in the late 1970s, Modern Portfolio Theory (MPT) was a true revolution in finance. It supplemented the practice of simply avoiding individually risky securities and with sophisticated disciplines for managing portfolios as a whole, adopting axioms such as the benefits of diversification, the efficiency of markets, and the correspondence of risks taken to rewards received.

MPT also assumed that systemic risks—that is, those inherent in the market or in an asset class as a whole—are beyond the ability of investment professionals to influence or control. Managers therefore should not be penalized, or given credit, for portfolio losses or gains due to the “systematic” rewards or risks of the market as a whole, but only for their own “idiosyncratic” contributions to their portfolios’ performance, positive or negative, relative to that of the market.

The assumption that portfolio decision-making can be treated as independent and disconnected from the markets that these decisions take place within—and by implication, from the world at large—may have been appropriate when finance was a less powerful tool and few investors had adopted the tenets of MPT. As institutional investors throughout the world have come to accept and implement MPT in practice, however, it has become increasingly reasonable to raise questions about their impacts at the systems level.

Limitations of Modern Portfolio Theory

The benefits of Modern Portfolio Theory (MPT) are clear. Rewards at a portfolio level can be increased through diversification in security selection and asset allocation without increasing overall portfolio risk. Risk can be measured by calculating the volatility of securities relative to the market and an adequate level of return calculated for that risk taken. Derivative securities such as options, futures and swaps can be adequately priced and used to reduce portfolio transaction costs. And inefficient markets where securities are mispriced can be exploited through superior data collection and analysis.

Nevertheless, academics and practitioners in the investment community have recognized that MPT is not without its limitations. Its theoretical constructs, assume, for example, that markets operate without transaction costs, have unconstrained liquidity, have a risk-free investment option always available, and are composed of rational actors who consistently act in their own best interest.

Over the years, academics have proposed incremental modifications with more realistic assumptions including the Arbitrage Pricing Theory, the Adaptive Market Hypothesis, and the discipline of behavioral economics with its observation that those in financial markets do not always act in their own best interests. These elaborations did not call into question the basic advances that MPT represented. As Peter Bernstein put it in 2007:

[T]he revolution in theory from 1952 to 1973 transformed the entire practice of investing so profoundly that the world can never go back to where it was before this revolution took place. Every new theoretical notion takes these basic ideas [of MPT] as its starting point.³

The global financial crisis of 2008 shook that faith. How could highly sophisticated, highly compensated, highly educated investors running the largest financial institutions in the world create a situation that resulted in the collapse of Lehman Brothers, the rescue of Merrill Lynch from bankruptcy, and a US government takeover of General Motors, American International Group, Fannie Mae and Freddie Mac? How could such disastrous mistakes have been made?

In a spirited debate that followed pundits identified various factors that had contributed to this systemic crisis—the availability of inexpensive credit, the excessive use of debt, poor risk assessment, and the use of overly complex financial products and investment techniques. Legislators and regulators have since put a number of technical reforms in place with incremental fixes in the hopes of preventing such crises in the future. Others called for a more fundamental reevaluation of MPT and its practices in part because the crisis suggested that its precepts had undermined the stability of the financial markets.

One line of thinking was relatively straightforward: restore judgment to the investment process. MPT’s reliance on sophisticated mathematical models had substituted for judgment in the investment process to a large extent. “The problem on Wall Street at the end of the housing bubble is that all judgment was cast aside. The math alone was never going to be enough,” as the *New York Times* columnist Joe Nocera observed in a 2009 article.⁴ Amar Bhidé argued in his history of banking regulation and reform in the United States that from the 1970s on banks blindly pursued efficiencies that eliminated those personal judgments that were the historical basis for sound finance.⁵

The sophisticated mathematical modeling techniques—such as reversion to the mean, the modeling of the default risks of large pools of assets, and arbitrage based on historical

³ Peter L. Bernstein, *Capital Ideas Evolving* (Hoboken, New Jersey: John Wiley & Sons) 2007: xix. See also Peter L. Bernstein, *Capital Ideas: The Improbable Origins of Modern Wall Street* (Hoboken, New Jersey: John Wiley & Sons) 2005 for an overview of the evolution of the main components of Modern Portfolio Theory.

⁴ Joe Nocera, “Risk Management” *New York Times* January 2, 2009.

⁵ Amar Bhidé, *A Call for Judgment: Sensible Finance for a Dynamic Economy* (Oxford: Oxford University Press) 2010.

market behavior—that had been seen as MPT’s greatest strengths were now held up as its greatest weakness. By eliminating individual, case-by-case judgment, MPT took the human element out of finance and left managers open to the vagaries of poor data inputs (e.g., incompetent credit rating analyses), cons and fraud (e.g., Bernard Madoff), and imprudent lending practices (e.g., the “robo-signing” of mortgage documents). In addition, when institutional investors all used similar mathematical modeling techniques they made similar investment decisions that created “herding” effects in the marketplace.⁶

Although this proposal to return to good old-fashioned finance may be seem sensible, one cannot simply turn back the clock back to a by-gone era. The “legal lists” that limited financial fiduciaries’ investments to the highest rated bonds and an occasional blue-chip stock are clearly impractical and unwise today. Nevertheless, the current situation remains an uncomfortable one. A sense that the overly mechanistic approaches of MPT need modification is widespread, but no coherent alternative exists. “There are competing ideas [to MPT],” Laurence Siegel observed in an article in the *CFA Magazine* in late 2014, “but none of them hangs together as an integrated body of theory. . . . Theoreticians should keep working on alternatives to MPT.”

Systemic Frameworks

As we enter the heart of the 21st century, it is not surprising that the question arises as to whether institutional investors as a group impact, either positively or negatively, the financial, environmental and societal systems within which they operate. This question arises in part because of the growing size of finance relative to the overall economy and in part because of the diminishing role of governments in regulating markets and the financial community.

Financial services companies as a percentage of the Standard & Poor’s 500 stock index rose from a mere 0.77 percent in 1957 to 20.64 percent in 2003.⁷ After the 2008 financial crisis, this figure declined to 8.58 percent but by 2013 had rebounded to 16.11 percent.⁸ Similarly, the cost of financial services to the overall economy, what Thomas Philippon refers to as financial “intermediation”, was at historical highs by 2010.

⁶ Mehdi Meyhaghi and James P. Hawley, “Modern Portfolio Theory and Risk Management: Assumptions and Unintended Consequences” *Journal of Sustainable Finance and Investment* 2013 Vol 3, No. 1. 2013: 17-37.

⁷ Jeremy J. Siegel and Jeremy D. Schwartz “Long-term Returns on the Original S&P 500 Companies” *Financial Analysts Journal* January/February 2006. Vol.26 No.1: 16-31.

⁸ Bespoke Investment Group, “Historical S&P 500 Sector Weightings” March 11, 2013. Available at <http://bespokeinvest.com/thinkbig/2013/3/11/historical-sp-500-sector-weightings.html> Last visited May 31, 2015.

The cost of intermediation grows from 2 percent to 6 percent from 1870 to 1930. It shrinks to less than 4 percent in 1950, grows slowly to 5 percent in 1980, and then increases rapidly to almost 9 percent in 2010.⁹

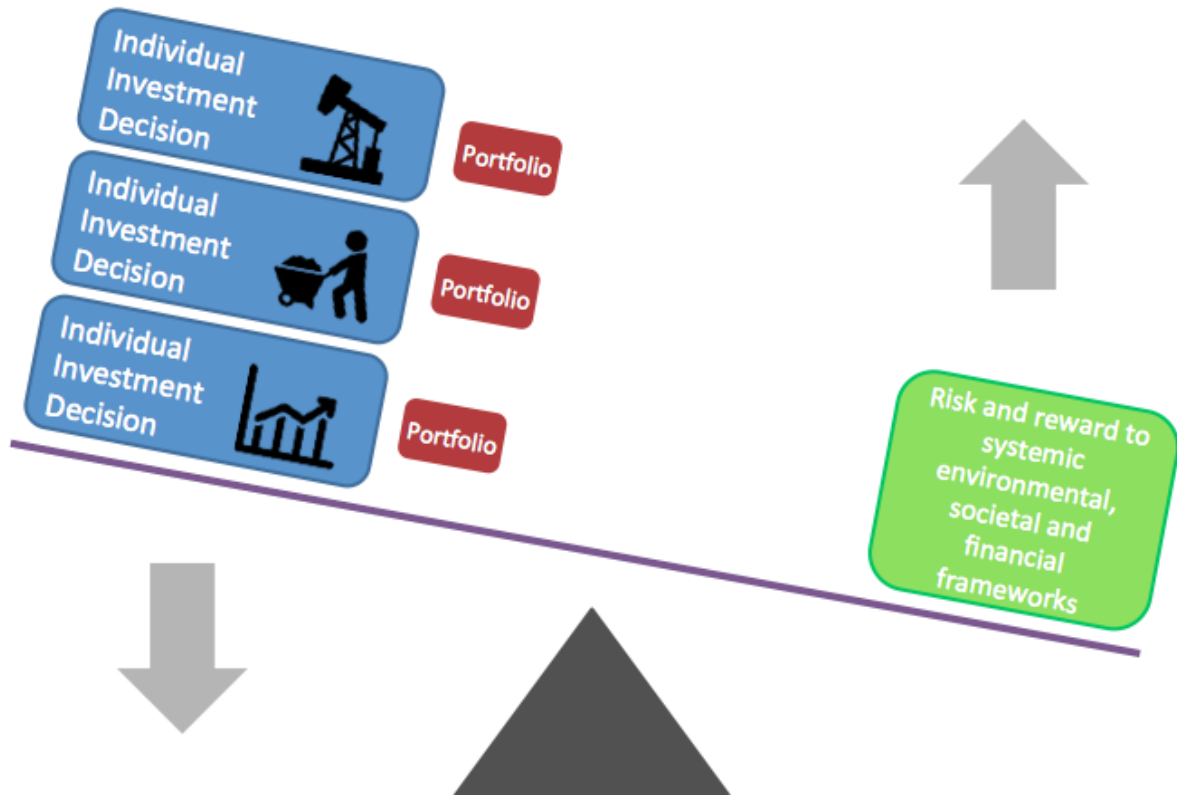
Over this same period, the absolute amount of assets controlled by the financial services industry has also grown to an almost inconceivable size, totaling in an estimated \$294 trillion as of 2014.¹⁰

This substantial size endows the financial services industry with an enormous potential for impact, as Figure 1 below illustrates. The fate of the chemical composition of the Earth’s atmosphere and oceans and the durability of arable soil globally, for example, lies largely in the hands of industry and its financial backers. Conversely, these same institutions could direct their considerable assets toward providing the two billion persons at the bottom of the global economic pyramid with access to financial services, information technology, health care and consumer products that would not only enhance the quality of life for these hundreds of millions but also generate a broad range of new investment opportunities.

⁹ Thomas Philippon, “Finance v. Wal-Mart: Why Are Financial Services So Expensive?” Chapter Nine in Alan S. Blinder, Andrew W. Lo, Robert M. Solow (eds.) *Rethinking the Financial Crisis* (New York: Russell Sage Foundation) 2013: 235-246.

¹⁰ See Wallace Witkowski, “Global Stock Market Cap Has Doubled Since QE’s Start” Market Watch February 12, 2015 Available at <http://www.marketwatch.com/story/global-stock-market-cap-has-doubled-since-qes-start-2015-02-12> Last visited November 13, 2015.

Figure 1: Collective Investment Problem: Individual Decisions Put Systemic Frameworks at Risk



At the same time that the role of finance has grown the relative role of government has diminished. Beginning in the 1980s and 1990s and continuing today, the formerly communist states of China and Russia have moved toward a mixed economy; a wave of privatization has swept through the social democratic countries of Europe, Latin America and elsewhere in the developing world; and regulators in the United States and elsewhere have abandoned price controls, monopoly regulation, oligopoly restrictions and other means of direct influence—including much of the regulation of the financial industry.

Having cut back on *direct* ownership and control, governments are now looking to increase *indirect* control through public policy initiatives that encourage a sense of public responsibility on the part of the financial and corporate communities. With the memory of the systemic disruptions of the 2008 financial crisis still fresh and the prospects of profound systemic changes from global warming looming on the horizon, however, many believe that government should not simply walk away from its obligations to directly monitor and maintain these systemic frameworks. Rob Lake, an advisor to institutional investors on matters of sustainable investment, believes that because institutional investors “have a financial interest in

sustainability and other issues that affect broad economic and market performance”¹¹
government should implement public policy initiatives that assure that sustainability.

Policy reform is critical for aligning institutional investors with sustainable development. Relying on voluntary action and enlightened self-interest by investors will not be sufficient to achieve sustainability goals. Proactive policy intervention is needed both in the real economy and within the financial system.”¹²

Measurement Systems

Finding an effective combination of control by government and voluntary action by the financial and corporate communities is of the essence if we are to preserve the stability and resilience of the systems that investments depend upon. Crucial to achieving that balance will be a set of metrics for measuring environmental, social and governance factors at both the narrow portfolio and at the broader systemic levels. Substantial progress is being made in parallel efforts to develop metrics at both levels today, but little work is being done to document and understand the interrelationship between the two.

Portfolio-level Environmental, Social and Governance (ESG) Measurement. Important progress has been made in the development of tools that help in the incorporation of ESG factors into portfolio-level management. Among these are:

- *Measurement of the ESG performance of companies relative to their peers.* The Dow Jones family of sustainability indexes, for example, includes the top 10 or 20 percent of companies in each industry by ESG score for its major world indexes. This discipline is designed to identify those companies with the strongest ESG records relative to their peers for inclusion in these index portfolios.¹³
- *Measurements of the ESG performance of companies relative to absolute standards or scores.* The FTSE4Good indexes of socially and environmentally responsible companies, for example, exclude those that do not meet certain absolute, industry-specific ESG scoring criteria. If a company does not have an overall ESG score above a certain level, it

¹¹ Rob Lake. “Financial Reform, Institutional Investors and Sustainable Development: A Review of Current Initiatives and Proposals for Further Progress” Inquiry into the Design of a Sustainable Financial System/CalPERS, Working Paper. 2015: 18. (Forthcoming).

¹² Ibid. 5.

¹³ See “Dow Jones Sustainability Indices” October 2015. Available at <http://eu.spindices.com/indices/equity/dow-jones-sustainability-world-index> Last visited November 13, 2015.

is excluded. This discipline is designed to identify those companies with certain absolute levels of ESG performance for inclusion in these index portfolios.¹⁴

- *Measurement of progress toward specific ESG goals.* The Global Reporting Initiative and the Sustainability Accounting Standards Board have developed processes for identifying key ESG factors for industries and companies according to which companies are then encouraged to report. The data in these voluntary company reports are then available to investors to factor into their stock valuations and portfolio construction. Investors are free to assess companies’ performance according to whatever standards or goals seem most appropriate.¹⁵
- *Measurement of outcomes in solving specific problems.* This approach is often employed by microlenders and foundations seeking to quantify the effectiveness of their investments and grants. Economists such as Esther Duflo and Abhijit Banerjee, for example, have conducted randomized controlled trials to assess ESG-related outcomes of microlending programs.¹⁶ These measurements assess the overall effectiveness of a portfolio of companies or non-governmental organizations in addressing a specific challenge. Similarly, the Global Impact Investment Rating System measures the impacts demonstrably achieved by portfolios against their stated social and environment goals.¹⁷

The above are several methods for measuring (or scoring) the ESG characteristics of specific portfolio investments. They can in theory be rolled up to provide an assessment (or score) for individual portfolios. Indeed, Ensogo Analytics launched in 2015 a platform that scores publicly traded mutual funds—using an absolute-standards measurement system—on ESG metrics.¹⁸ Similarly, Morningstar announced plans to launch a sustainability rating system for publicly traded mutual funds.¹⁹ A component potentially missing from these initial forays into portfolio-

¹⁴ See “Index Inclusion Rules for the FTSE4Good Index Series” Version 1.6, June 2015. Available at <http://www.ftse.com/products/downloads/F4G-Index-Inclusion-Rules.pdf> Also “FTSE ESG Ratings: Integrating ESG into Investments and Stewardship” Available at <http://www.ftse.com/products/downloads/FTSE-ESG-Methodology-and-Usage-Summary-Short.pdf?253> Last visited November 13, 2015.

¹⁵ For the processes of these two organizations see Sustainability Accounting Standards Board “Our Process” at <http://www.sasb.org/approach/our-process/> and Global Reporting Initiative “GRI’s Sustainability Reporting Standards” Available at <https://www.globalreporting.org/information/sustainability-reporting/Pages/gri-standards.aspx> Last visited November 13, 2015.

¹⁶ See Esther Duflo and Abhijit Banerjee, *A Radical Rethinking of the Way to Fight Global Poverty* (New York: Public Affairs) 2011.

¹⁷ See the GIIRS Fund Rating Methodology. Available at <http://b-analytics.net/products/giirs-ratings/fund-ratings-methodology> Last visited November 13, 2015.

¹⁸ See the Ensogo Analytics website at <http://www.ensogoanalytics.com/>.

¹⁹ Jeff Benjamin, “Morningstar Shines an ESG Light on All Mutual Funds and ETFs” *Investor News* August 14, 2015. Available at

level ESG ratings for publicly traded mutual funds is an assessment of the overall ESG policies and practices of the firms offering these products—including their intentional actions, or absence thereof, to manage ESG risks and rewards at a systemic level.

Systemic Framework-level Measurement. An analogous set of measurement systems is being developed to assess the strength and resiliency of the broader environmental, societal and financial systems themselves. These systems-level initiatives can potentially prove useful in integrating systemic framework considerations into today’s investment processes.

- *Measurement of national progress in other than economic terms.* The Stiglitz-Sen-Fitoussi Commission on the Measurement of Economic Performance and Social Progress established in 2014 a High-Level Expert Group that has embarked upon a multi-year research program with four themes, one of which is sustainability. As of 2015 it was exploring the use of a “capitals” approach to measuring sustainability, seeking to measure human capital, natural capital and social capital. In addition the Social Impact Investment Task Force, established under the United Kingdom’s presidency of the G8, has created a number of advisory boards including one focused on measuring social and environmental impact outcomes.²⁰

In addition, alternatives to gross domestic product (GDP) as a measure of the health of society have been developed by such organizations as the Social Progress Imperative (Social Progress Index), New Economics Foundation (Happy Planet Index), and the Genuine Progress Project (Genuine Progress Indicator). Similarly, frameworks have been developed for measuring the health of environmental systems by an international coalition of development organizations and developing countries (Wealth Accounting and Valuation of Ecosystem Services), Yale and Columbia Universities (Environmental Performance Index), and the National Institute of Public Health and the Environment (Natural Capital Index).

- *Measurement of progress in societal development and poverty alleviation.* The United Nations Development Program has developed indicators for the measurement of progress at a national level along a range of social and economic factors under the rubric of the Human Development Index.²¹ Similarly the World Bank publishes its assessment of

<http://www.investmentnews.com/article/20150814/FREE/150819944/morningstar-shines-an-esg-light-on-all-mutual-funds-and-etfs> Last visited September 17, 2015.

²⁰ See Joseph E. Stiglitz, Amartya Sen and Jean-Paul Fitoussi. *Report by the Commission on the Measurement of Economic Performance and Social Progress* Available at http://www.insee.fr/fr/publications-et-services/dossiers_web/stiglitz/doc-commission/RAPPORT_anglais.pdf For details on the work of the High-Level Expert Group, see the website of the OECD at <http://www.oecd.org/statistics/measuring-economic-social-progress/workprogramme.htm> Last visited November 13, 2015.

²¹ For details on the Human Development Index see the United Nations Development Program’s website at <http://hdr.undp.org/en/content/human-development-index-hdi>

World Development Indicators—a compilation of social, environmental and economic indicators at a national level—as well as tracking progress of nations in meeting the United Nations’ Millennium Development Goals.²²

In September 2015, the United Nations adopted a set of 17 Sustainable Development Goals under the banner “Transforming Our World: The 2030 Agenda for Sustainable Development.” Their 169 specific targets seek to “balance the three dimensions of sustainable development: the economic, social and environmental” and provide a roadmap for achieving global progress in these three areas over the next 15 years.²³

- *Measurement of the stability of the financial system.* Since the 2008 financial crisis, stress tests for measuring the strength and resilience of large financial institutions and by implications the global financial system have become the watchword of government regulators. In the United States, the Dodd-Frank Act requires large and mid-size banks to undergo such tests, while the European Banking Authority has similarly stepped up its stress-testing requirements. A notably large body of studies by academics, practitioners and regulators has appeared on this topic.²⁴

The above are a variety of methods for measuring the progress at environmental, societal and financial systems levels. The efforts to measure ESG characteristics at the investment portfolio level parallel these systems-level efforts in a number of ways. In both exercises, valuation of non-financial assets or capitals is challenging, with economic and accounting flows serving as the most convenient tool for value measurement; relevant non-economic or accounting data being difficult to define and gather; and the incorporation of this additional data tending to complicate comparability.

Little work has been done to bridge the gap between these two parallel areas of research. Unanswered still are questions such as: What is the relationship between the standards and goals set by investors at portfolio level and the general indicators of progress at systems levels? In what ways and to what extent does the management of portfolio-level risks and rewards translate into systems-level impacts? In what ways and to what extent do systems-level developments affect portfolio-level performance?

²² See the World Bank’s website at <http://data.worldbank.org/data-catalog/world-development-indicators> for more details on their World Development Indicators and at <http://data.worldbank.org/mdgs>

²³ Resolution adopted by the United Nations General Assembly, September 25, 2015. “Transforming Our World: The 2030 Agenda for Sustainable Development.” Available at http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E Last visited November 10, 2015.

²⁴ See for example Jérôme Henry and Cristoffer Kok “A Macro Stress Testing Framework for Assessing Systemic Risk in the Banking Sector” European Central Bank, Occasional Paper Series No. 152, October 2013.

Answering these questions and developing tools that can bridge this gap has the potential to help both investors’ overall financial results and societies’ overall progress.

Portfolios and Systemic Frameworks

The financial crisis of 2008 prompted questions of precisely this sort. It is only to state the obvious that this crisis severely affected the economies of most of the developed and much of the developing world and devastated the portfolios of managers worldwide. The Standard & Poor’s 500 Index fell from a high of 1,565 on October 9, 2007 to a low of 676 on March 9, 2009, and did not recover to the 1,560 range until March 28, 2013.²⁵ By one estimate, the investment losses from the financial crisis globally were in the \$5 trillion to \$15 trillion range depending on the measurement system chosen.²⁶

The crisis also provoked debate about the role of financial institutions as catalytic agents. The U.S. Senate, for example, held hearings on the investment practices of commercial banks such as Washington Mutual, credit-rating agencies such as Moody’s and Standard and Poor’s, and investment banks such as Goldman Sachs, as well as federal regulatory agencies.²⁷ An extensive literature by academics and practitioners has also examined the relative roles of the various factors in contributing to the crisis.²⁸ Among the frequently cited contributing factors attributable to investors were: excessive use of leverage, the creation of an unregulated shadow banking system, the aggressive marketing of complex and inadequately understood financial products, and poor risk management. Portfolio managers relying on these innovations with the rational expectations that they would increase their individual portfolio returns apparently failed to appreciate the overall levels of risk they were introducing into the financial system as a whole.

Macroeconomic factors—such as the availability of easy credit as a result of low-interest policies by central bankers—were also arguably key contributing factors, but the investment community with its highly sophisticated practices played a crucial destabilizing role. Many studies have since been undertaken to address this destabilizing tendency. In October 2015, United Nations’ Environmental Program, for example, published its comprehensive review of reforms necessary for the design of a stable and sustainable financial system, *The Financial*

²⁵ Caroline Valetkevitch “Key Dates and Milestones in the S&P’s History” Available at the Reuters website at <http://www.reuters.com/article/2013/05/06/us-usa-stocks-sp-timeline-idUSBRE9450WL20130506>. Last visited October 19, 2015.

²⁶ Marc Adelson “The Deeper Causes of the Financial Crisis: Mortgages Alone Cannot Explain It” *Journal of Portfolio Management* Spring 2013 Vol. 39 No. 3:16-31.

²⁷For a summary of the findings of these hearings see <http://www.hsgac.senate.gov/subcommittees/investigations/media/senate-investigations-subcommittee-releases-levin-coburn-report-on-the-financial-crisis> Last visited August 29, 2015

²⁸ See among others Alan S. Blinder, Andrew W. Lo, and Robert M. Solow (editors) *Rethinking the Financial Crisis* (New York: Russell Sage Foundation) 2012.

System We Need. Starting from the position that “[a]ligning the financial system with sustainable development requires a systemic approach,” it proposed a series of reforms to “enhance market practice,” “harness public balance sheets,” direct finance through policy,” transform culture,” and “upgrade governance.” It sees a “quiet revolution” on the road to sustainable finance already taking place, particularly in emerging markets, but with much “unfinished business” remaining. Among its various proposals were: the development of broadly accepted principles for sustainable finance; the incorporation of systemic environmental risks within global banking standards; the introduction of guidance for a sustainable insurance market; and the establishment of a green capital markets coalition. It emphasized the crucial role that central banks can play in promoting necessary reforms and highlighted the differing approaches national governments could play—and in certain cases already are playing—to implement reforms tailored to the particular circumstances of their local markets.²⁹

Particularly challenging are debates and proposals that are prospective in nature, such as those currently underway about the interrelationship between investment and climate change. Because the future is inherently unpredictable—it provides no data points—uncertainty characterizes these discussions. In October 2015, for example, Preventable Surprises published *Institutional Investors and Climate-Related Systemic Risk*. The report’s authors, Howard Covington and Raj Thamotheram, found that a systemic risk to all portfolios due to general economic damage from climate change could result in a wide range of losses for institutional investors and that “investors should do what they reasonably can to prevent this outcome now.” Using a “broad-brush view” and recognizing that estimates are highly uncertain of both what the actual increases in global temperatures would be by 2100 and what actual damages to the economy would result as a consequence, the authors found that “detailed analysis . . . suggests that the probability that warming by 2100 will be enough to produce damage of 50% [to the global economy] is 3%.” At that level, they estimated “a portfolio value impairment of around 10%”—or a net overvaluation of \$7 trillion to the world’s equity markets at their current \$70 trillion level. They also estimated the chances of damage to the global economy of 25 percent at 12 percent, with a corresponding overvaluation of all portfolios of five percent—which is, they point out, a material risk. To minimize such possibilities, the authors advocated “forceful stewardship” in order “to change company behavior directly.” Forceful stewards are envisioned as “a group of investors who are willing to take first-mover role, propose resolutions and lobby other investors to support them,” as well as to engage on public policy matters.³⁰

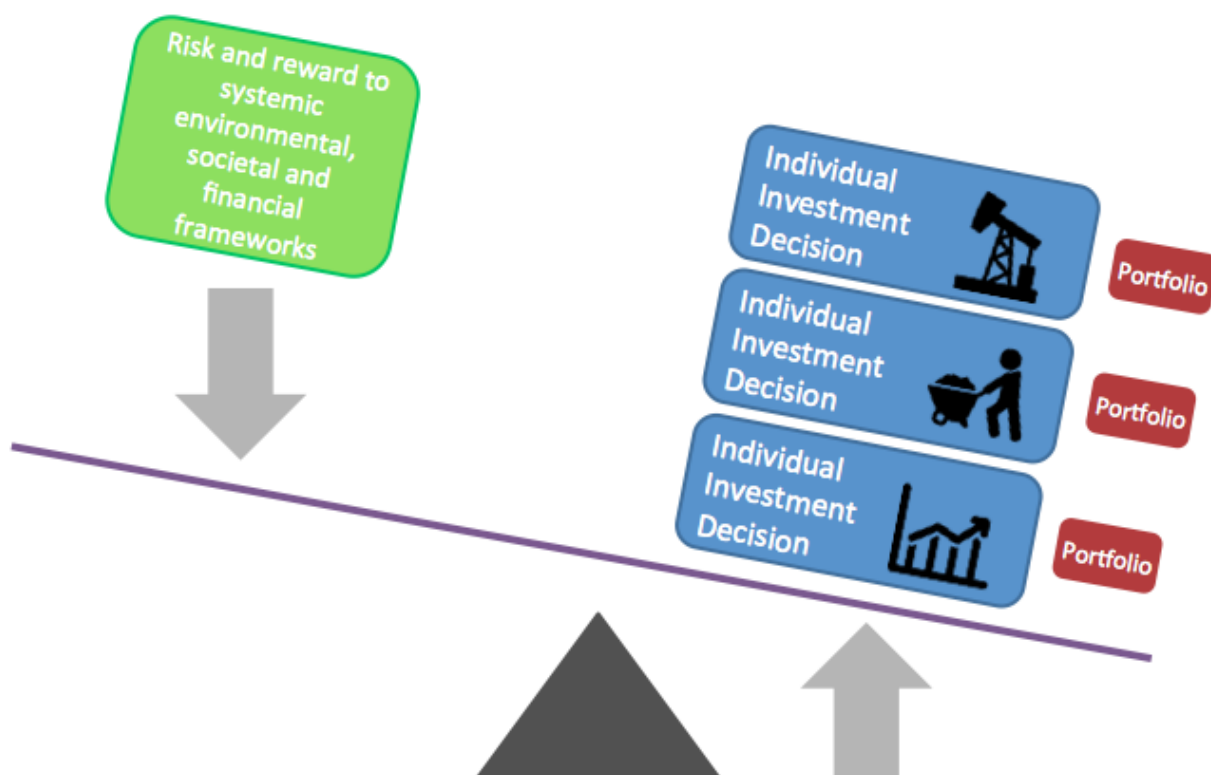
It is not in the environmental arena alone that systemic risks can potentially impact portfolios in the aggregate, as Figure 2 below illustrates. In 2014 the Cambridge Centre for Risk Studies, for example, published a report on the likely effects of social unrest—which it characterized as a systemic risk of increasing likelihood in the 21st century—on economic

²⁹ Mahenau Agha, Nick Robins and Simon Zadek, *The Financial System We Need: Aligning the Financial System with Sustainable Development* (New York: United Nations Environmental Program) 2015.

³⁰ Howard Covington and Raj Thamotheram “Institutional Investors and Climate-Related Systemic Risk” October 2015. Available at https://preventablesurprises.com/wp-content/uploads/2011/03/Preventable-Surprises-October-2015-report_FINAL.pdf (Last visited November 10, 2015).

development and investment performance. Under three different scenarios of increasing severity it projected the effects of social unrest on investment performance by asset class and in different geographic regions over a four-year period. For equity portfolios in the United States it estimated hits of a negative 1.76 percent under the least severe of the three scenarios and of a negative 22.69 percent under the most severe.³¹ "What is different and new about the episodes of civil disorder in the early 21st century" the report stated, "is their *systemic nature*: multiple countries simultaneously expressing dissatisfaction and seeking change." [emphasis added] The report singles out youth unemployment among the millennial generation as a likely source of this systemic unrest. Lack of opportunity for many while small segments of the population accumulate great wealth has prompted high-profile concerns about inequality of income and opportunity around the globe.

Figure 2: Collective Investment Opportunity: Systemic Frameworks Create Individual Investment Rewards



Other broad and overarching issues should also be of concern to asset owners concerned about the health of systemic frameworks and their ability to protect and promote that health. One such issue, addressed by Edward Waitzer and Douglas Sarro in their 2012 paper "The Public Fiduciary: Emerging Themes for Canadian Fiduciary Law for Pension Trustees" is trust in financial fiduciaries. This paper argues that we are entering an era increasingly dominated by fiduciary

³¹ Bowman, G.; Caccioli, F.; Coburn, A.W.; Hartley, R.; Kelly, S.; Ralph, D.; Ruffle, S.J.; and Wallace, J. *Stress Test Scenario: Millennial Uprising Social Unrest Scenario* Cambridge Risk Framework series; University of Cambridge: Centre for Risk Studies. 2014.

relationships, and that financial fiduciaries have an overriding responsibility to preserve trust not only in the particular institutions that they serve but in the institution of the fiduciary itself. This approach implies that the fiduciary obligation to be perceived as ethical goes beyond simply avoiding self-dealing to include not undermining the belief that fiduciaries are ethical in a broader sense of the term—that is, that they are not pursuing the maximization of returns for their particular clients’ portfolios at the cost of destroying fundamental societal and environmental systems, systems that are of benefit to all members of society, and that help produce healthy returns for all portfolios.³²

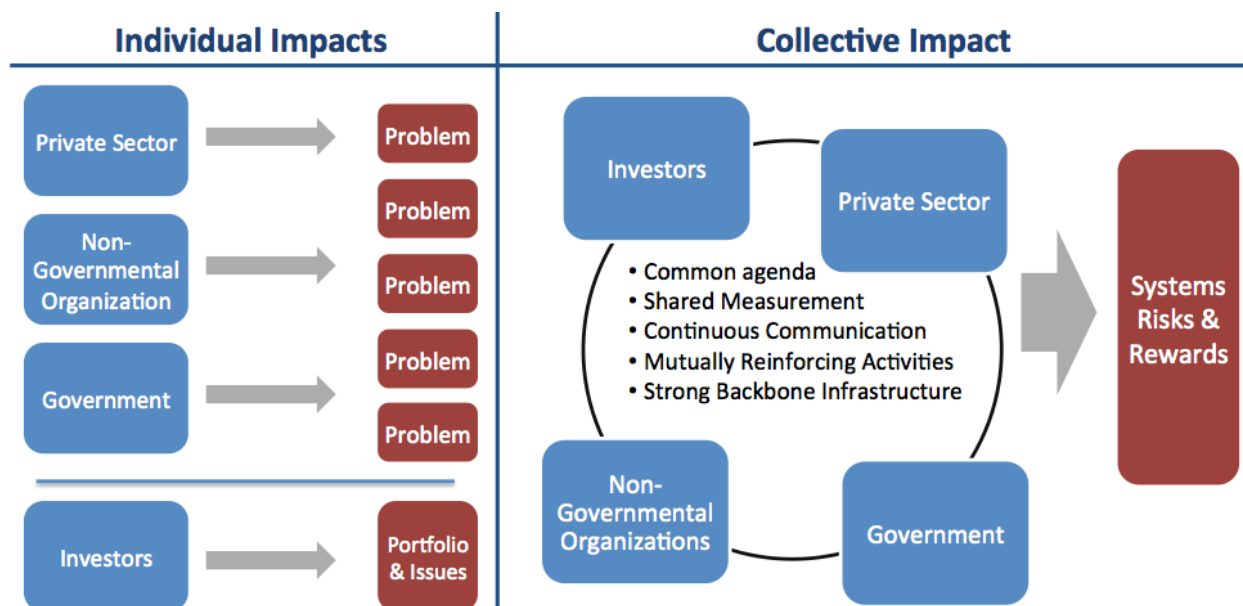
In a similar and parallel argument about the broad responsibilities to our social and economic system, Rebecca Henderson and Karthik Ramanna in their 2015 paper “Do managers have a role to play in sustaining the institutions of capitalism?” pose the question: “In a capitalist system based on free markets, do managers have responsibilities to the system itself?” They consider the responsibility of companies with the ability to influence regulation of the markets they operate in in two different political circumstances: one where information is widely available and public interests are well represented—what they term a “thick” political process—and one where corporations have specialized knowledge not available to others and few political entities represent the public interest, which they describe as a “thin” political process. They then argue that in thin political situations, corporations have a moral obligation to look out for the interests of the system itself as well as their own interests.³³

In addition, a number of other initiatives are focusing on the question of context when it comes to addressing social and environmental challenges. As shown in Figure 3 below, the impact investing community is exploring the concept of “collective impact” through which a network of investors, governmental and non-governmental organizations—referred to as “right eyes”— can confront not just one-off solutions to problems but address the societal contexts that generate these problems. Similarly, corporate consultants such as the Center for Sustainable Organizations have stressed the necessity of measuring the “sustainability context” of environmental and social operations considering the availability and relative demand for the “vital capitals” that are to be sustained.

³² Edward Waitzer and Douglas Sarro (2012) “The Public Fiduciary: Emerging Themes for Canadian Fiduciary Law for Pension Trustees.” *The Canadian Bar Review* Vol.91: 163-209

³³ Rebecca Henderson and Karthik Ramanna “Do managers have a role to play in sustaining the institutions of capitalism?” *Center for Effective Public Management* (Washington, D.C.: Brookings Institution) February 2015.

Figure 3: Collective Impact Vs. Individual Impacts



These broad, contextual, systems-level analyses are important tools for understanding the interrelationship between investor decision-making and the health and well-being of systemic frameworks.

The Vocabulary of Financial Reform

Using the vocabulary of systemic frameworks can help avoid some of the confusing language encountered today in debates about responsible investment and financial system reform. Many responsible investors, for example, advocate consideration of “non-financial” factors in investment decision-making. They assert that certain “non-financial” factors are material and therefore will ultimately become “financial” and occasionally use vocabulary such as “non-traditional financial” or “not currently financial” to describe them—raising the confusing specter of material factors that are simultaneously priced and not priced by the market.

Similarly, current calls for less “short-termism” and more “long-termism” in financial markets are intuitively appealing and address substantial problems in current investment practice. But if by long-term we are referring to holding periods, what do we make of the huge world of passive, index investing where investors buy and hold securities essentially forever without attempting to distinguish those that are overpriced from those that are underpriced. Because index-fund managers continually purchase and sell securities at today’s price with no consideration for their prospects in the long term, Simon Zadek has described them paradoxically as simultaneously both long term and short term. “When pension funds say they are long-term investors, what they mean is that they have rolling investments in largely indexed

linked funds. To speak accurately, this makes them perpetual investors making short-term investments, forever.”³⁴

Part of the problem with the call for long-term perspectives and non-financial considerations is that market participants, because they buy and sell on today’s price, inevitably have, to a certain extent, a short-term perspective. To expect buyers and sellers to completely ignore the short-term implications of the price they are paying or receiving unrealistic. The extent of their long- or short-term perspectives will vary from investor to investor and from market condition to market condition, but as Keynes, an active investor who made and lost several fortunes in the financial markets, observed from personal experience,

In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean is flat again.³⁵

It is all too easy to argue that the financial markets *ought* to be more long term without acknowledging that those in the markets day in and day out are to a certain extent short term with good reason: their financial lives are at stake. The knowledge that an investment theme may or may not work out in the long run will not dissipate the short-term storms that can bankrupt portfolios or at the least cause them to substantially underperform those of their peers.

Acknowledging that short-termism will to a certain extent be part of financial markets is not to deny its potentially serious implications. As Keynes also observed,

Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.³⁶

One implication of this line of reasoning is that to contend with speculation in the markets one needs a vocabulary other than that in which speculators thrive—i.e., that of price—by which to measure investors’ contribution to the “the capital development of a country” or, in the vocabulary of this paper, to the preservation and enhancement of the environmental, societal and financial systemic frameworks that that capital development depends on. To effectively measure the contributions of investors at these systemic levels, to account for “short-termism” and the use of “non-financial” considerations, a vocabulary based on terms other than price is essential. Substantial research will be necessary for its development.

³⁴ Mira Merme and Simon Zadek “Mainstreaming Responsible Investment” (World Economic Forum) 2005: 19.

³⁵ John Maynard Keynes. *A Tract on Monetary Reform* (London: Macmillan & Co. Limited) 1924.

³⁶ John Maynard Keynes. *The General Theory of Employment, Interest, and Money*. (New York: Harcourt, Brace & World) 1936: 159.

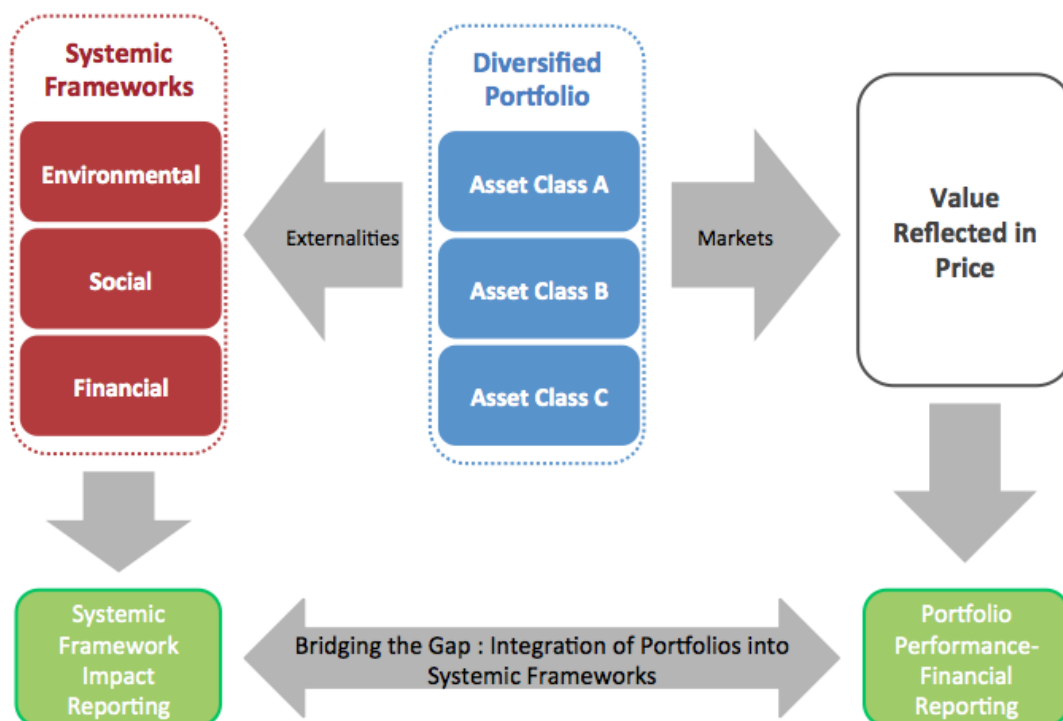
Toward a Vocabulary of Integrated Investment

To tackle the twin goals of managing simultaneously to portfolio returns and to systemic-framework health and integrity, as conveyed in Figure 4 below, a vocabulary that distinguishes between managing risks and rewards at only the portfolio level and at simultaneously both the portfolio and systems levels will be helpful. One might, for example, adopt the “single bottom line” (portfolio only) and “double bottom line” (portfolio and systems) distinction that responsible investors originated in the 1980s; repurpose Henderson’s distinction between “thin” and “thick” to apply respectively to the returns to portfolios only and to both portfolio and systems simultaneously; or invent entirely new vocabulary—such as “weak” for those concerned with portfolio-only returns and “strong” for those seeking returns at both levels.

In this approach to investment, investments that are successful along only one of these parameters are inferior to those that achieve both. For example, an investment in an oil company that enhances portfolio returns but undermines climate stability—or conversely in a start-up solar power company that can help stabilize the climate but becomes unprofitable due to its adoption of an inferior technology—are of lesser overall value to the asset owner than an investment in a cutting-edge photovoltaic cell manufacturer specializing in chips for LED lighting that profitably promotes the improvement in energy efficiency necessary for reductions in carbon dioxide emissions in a sustainable world.

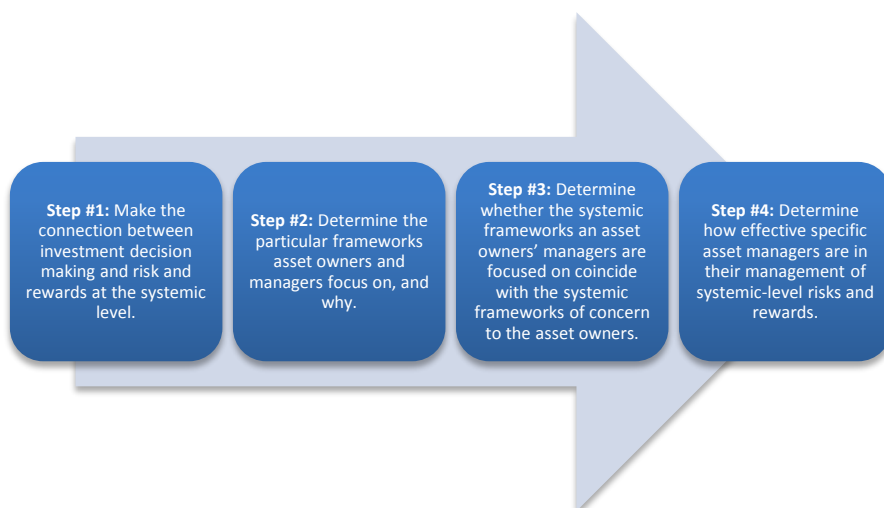
In a world in which the financial community acknowledges the importance of the stability of systemic frameworks along with portfolio returns, asset owners will want to understand how their managers are maximizing value along both parameters. The vocabulary and metrics for assessing portfolio-level performance are well developed and reporting on this half of the equation requires little in the way of further development.

Figure 4: Integration of Portfolios into Systemic Frameworks



Conversely, much work still needs to be done to develop the metrics that enable managers to report on the impact of their investment policies and practices at the systemic-framework level. As Figure 5 below illustrates, a number of key considerations will need to be made by asset managers for reporting along this second parameter to be useful —and the metrics for addressing them developed.

Figure 5: Integration Reporting Value Chain



Each of these steps has a critical role to play in terms of helping asset managers determine how and what to report on.

- *Asset owners need to acknowledge the connection between investment decision-making and risks and rewards at the systemic level.* Once asset owners acknowledge that portfolio-level decisions have implications for risks and rewards at a systemic level, they can begin to cope with questions of how to manage those implications.
- *Asset owners and managers need to determine the particular frameworks they want to focus on and how and why have they chosen to focus on these particular frameworks.* Deciding which issues rise to a level sufficient for legitimate consideration as a systemic framework—and among those issues which are specifically relevant to a particular asset owner—is the next challenge. Certain systemic frameworks will be more relevant than others. Asset owners should identify and seek to enhance the most-relevant systemic frameworks. Strong justification for the appropriateness and legitimacy of the systemic frameworks chosen will be essential.
- *Asset owners and managers need to determine the systemic frameworks of primary focus to an asset manager, and whether they coincide with the systemic frameworks of primary concern to themselves.* Just as asset owners’ goals and missions will lead them to emphasize certain systemic frameworks, so will asset managers’ investment styles and asset-class orientation lead them to focus on certain systemic frameworks. One goal for asset owners in managing their systemic risks and rewards will be to find asset managers who deliver both financial returns commensurate with the owners’ needs and simultaneously manage those risks and rewards of the systemic frameworks with which the asset owners are most concerned.
- *Asset owners need to determine how effective specific asset managers are in their management of systemic-level risks and rewards.* Asset owners will want to compare the relative abilities of their current or prospective asset managers to manage systemic risks and rewards. To do so, they will need to assess how managers:
 - Construct portfolios and allocate assets in ways that minimize risks and maximize rewards at systemic-framework levels.
 - Communicate their concerns about the strength of systemic frameworks to the issuers of the securities in which they invest and engage with these issuers to align their daily practices with and enhancement of those frameworks.

- Communicate publicly their commitments to the management of systemic risks and rewards and how these commitments manifest themselves in their investment practices and policies.
- Collaborate with governmental and non-governmental organizations to help assure the preservation and enhancement of valuable systemic frameworks.

To illustrate the numerous ways in which asset owners might in practice approach enhancing systemic-level frameworks is beyond the scope of this paper. One hypothetical example, however, will provide a general sense of potential approaches.

Various asset owners manage funds related to healthcare systems. Among these are the endowments of hospitals; healthcare-related foundations; life insurance companies; funds dedicated to providing medical benefits to retirees; and public and private pension fund providing benefits to the retired employees of healthcare organizations. These asset owners have a vested interest in the maintenance of effective and smoothly functioning healthcare systems. Put differently, the stability of these systems has the ability to positively or adversely affect the ability of these asset owners to fulfill their mandates—and conversely, their investment policies and practices have the ability to impact these systems for better or worse.

These asset owners might conceive of the healthcare-related systems most crucial to their long-term prospects in a variety of ways. They might adopt as guiding principles the policies of a globally respected healthcare organization—for example, the World Health Organization. They might envision a healthcare system with widely accepted characteristics such as affordability, efficiency, reliability, trustworthiness and accessibility. They might seek to promote widely accepted healthy living practices—for example, preventative medicine, healthy diets and exercise. Whatever the specifics of the framework they adopt, it needs to be based upon widely accepted principles that are in the public interest, and not be so narrowly defined as to promote self-interests or particular political positions on the part of the asset owner.

With an overall framework in mind, the asset owner would then seek to identify asset managers whose policies and practices at a minimum do not destabilize or undermine that framework and ideally succeed in stabilizing and enhancing it. In doing so, the asset owner might seek out managers who have tilted their investments across or within asset classes toward the framework’s enhancement. That might mean equity portfolios favoring companies focusing on healthy products or healthcare cost containment; fixed-income portfolios emphasizing the debt of non-profit hospitals and community healthcare programs; or venture capital firms focusing on emerging healthcare technologies.

In the crucial area of engagement, asset owners might seek to identify equity managers with a record of engagement with companies on the health aspects of their products and services, wellness and preventative healthcare programs, or health and safety in the workplace.

Although few fixed-income managers currently engage with such institutions as hospitals or government agencies funding healthcare facilities, an increasing number will be likely to do so if current trends continue. Similarly an engagement with venture capital firms on the types of investment likely to support affordable, quality healthcare systems could be productive.

Asset owners might also look to asset managers who communicate with their peers in the investment community on how best to strengthen overall healthcare systemic frameworks—and could also themselves communicate with other asset owners along similar lines. Research has shown that in the management of common-pool resources, communications among those dependent upon these resources can result in practices that prevent depletion of these assets and enhance their long-term value for all.³⁷

Finally, asset owners might seek out asset managers who communicate generally on healthcare issues with their clients and the general public, as well as with non-profit organizations and policy makers. Ultimately it is through extensive public debate that the often difficult issues of how best to provide affordable, quality healthcare can best be resolved in the public interest.

A number of forward-looking asset owners are beginning to adopt investment policies and practices with an eye toward systemic perspectives. The Dutch pension-fund manager PGGM states that it is committed to using its investment to promote “a stable financial system that serves the real economy.”³⁸ The investment policy of the California Public Employees’ Retirement System states its belief that “Long-term value creation requires effective management of three forms of capital: financial, physical and human.” This capitals approach implies management and measurement at a systemic framework level.³⁹

In addition the publicly available reports required of asset owners and managers who have endorsed the UN Principles for Responsible Investment (PRI) provide some basic information on policies and practices with systems-level implications. The PRI announced in 2015 that it will conduct a year-long consultation on the possibility of adding a new principle addressing the management of the systemic impacts of signatories’ investment. At the same time the PRI published *Fiduciary Duty in the 21st Century*, which argues that asset owners and managers’ consideration of broad ESG concerns is in fact already part of their mandate.⁴⁰

³⁷ See Elinor Ostrom, “Beyond Markets and States: Polycentric Governance of Complex Economic Systems” Nobel Memorial Prize in Economic Sciences lecture, December 8, 2009.

³⁸ PGGM *Annual Responsible Investment Report 2014*: 31-34. Available at https://www.pggm.nl/english/what-we-do/Documents/Responsible-Investment-Annual-Report_2014.pdf Last visited September 17, 2015.

³⁹ CalPERS “Total Fund Investment Policy” July 1, 2015: 37. Available at <https://www.calpers.ca.gov/docs/total-fund-investment-policy.pdf> Last visited September 17, 2015.

⁴⁰ UN Principles for Responsible Investment *Fiduciary Duty in the 21st Century*. 2015: 20. These recommendations include: publishing of commitments to ESG integration; effective implementation of

A focus on systemic frameworks implies three fundamental changes in asset owners’ practices. First, it implies that they will manage their investments along two parallel, but separate, tracks—with differing metrics for measurement. The measurement of portfolio returns will remain much as it is today—that is, in relation to market price. At the systemic framework level, different measurement will be employed. It will not be price based, but rather directional and qualitative—that is, it will consist of qualitative assessments of the positive or negative impacts on the sustainability and enhancement of specific systemic frameworks.

Second, asset owners will assess not simply the ESG characteristics of a single portfolio offered by a manager, but the firm-wide capabilities and impacts of their managers at a systems level.

Third, a wide spectrum of asset owners will exist with differing concerns that will require that there be an equally wide spectrum of managers thinking and acting at systems levels. An investment landscape will consequently emerge in which numerous asset owners focusing on a wide range of systemic frameworks will choose from a varied field of asset managers with expertise in different aspects of the managing of systemic risks and rewards. The goal here will be the successful matching of asset owners’ concerns with managers’ capabilities at the environmental, societal and financial systems level.

Conclusion

The world of the 21st century will be substantially more wealthy, energy rich, populous, and technologically sophisticated than the century from which we are emerging. It will seek to raise billions from poverty and maintain high standards of living for billions of others. In doing so, it will be powered by an ever more efficient financial system, inextricably bound up with the basic systemic frameworks of society and the environment that underpin a sustainable and resilient economy.

The assumption of economic and financial theory has been that to impact these systemic frameworks positively, investors do not need to consider anything other than their own self-interest, that self-interest leads to optimally efficient capital allocation, and that those who intend to do good often stumble on their way. As the financial crisis of 2008 and the emerging crisis of global climate change have shown, however, the financial tools at our disposal are so pervasive and powerful that employing them in the pursuit of self-interest alone can just as easily jeopardize the stability of our environmental, societal and financial systems as enhance them.

For better or worse, the complexities of the 21st century will require a nuanced consideration of the relationship between the maximization of portfolio returns and the

these commitments; monitoring managers’ implementation of ESG integration; communications with beneficiaries; promoting increased ESG reporting by corporations; and engagement with policy makers.

maintenance of stable and resilient environmental, societal and financial systems. In the mid-20th century it was no longer adequate to consider risks and rewards solely at a security level. The complexities of the 21st century bring to the fore the need to consider risks and rewards at systemic, as well as a portfolio, level. We cannot go back to measuring security-level risks and rewards only, nor are portfolio-level considerations alone any longer sufficient. To adequately address today’s challenges, we must move forward to embrace intelligently and responsibly all three considerations—the risks and rewards to securities, portfolios and systems.

These systems have been built up over the years—sophisticated financial systems have been tried and tested over centuries; elaborate societal norms and standards have evolved over millennia; and rich, stable and resilient ecologies and natural resources have taken eons to create. They are among the key components on which investments depend for current and future rewards and are well worth preserving and enhancing.

Without an awareness of the impacts that investment decision-making has on these systems we run the danger of undermining our prospects for prosperity. It is only with a keen perception of how our investments can produce positive impacts beyond the narrow confines of the portfolio that we will be able to act intentionally to assure that finance helps create the stable and resilient world necessary for successful investments and a prosperous society.

References

- Adelson, Marc. “The Deeper Causes of the Financial Crisis: Mortgages Alone Cannot Explain It” *Journal of Portfolio Management*, Spring 2013 Vol. 39 No. 3:16-31.
- Agha, Mahenau, Nick Robins and Simon Zadek, *The Financial System We Need: Aligning the Financial System with Sustainable Development* (New York: United Nations Environmental Program) 2015.
- Bernstein, Peter L. *Capital Ideas Evolving* (Hoboken, New Jersey: John Wiley & Sons) 2007.
—*Capital Ideas: The Improbable Origins of Modern Wall Street* (Hoboken, New Jersey: John Wiley & Sons) 2005.
- Bhidé, Amar. *A Call for Judgment: Sensible Finance for a Dynamic Economy* (Oxford: Oxford University Press) 2010.
- Blinder, Alan, Andrew W. Lo, and Robert M. Solow (editors) *Rethinking the Financial Crisis* (New York: Russell Sage Foundation) 2012.
- Bowman, G.; Caccioli, F.; Coburn, A.W.; Hartley, R.; Kelly, S.; Ralph, D.; Ruffle, S.J.; and Wallace, J. *Stress Test Scenario: Millennial Uprising Social Unrest Scenario* Cambridge Risk Framework series; University of Cambridge: Centre for Risk Studies. 2014.
- Buchan, James. *Frozen Desire: The Meaning of Money* (New York: Farrar, Straus & Giroux) 1997.
- Carney, Mark. “Inclusive Capitalism: Creating a Sense of the Systemic” Conference on Inclusive Capitalism (London) May 27, 2014.
- Covington, Howard and Raj Thamotheram, “Institutional Investors and Climate-Related Systemic Risk” (London: Preventable Surprises) October 2015.
- Duflo, Esther and Abhijit Banerjee, *A Radical Rethinking of the Way to Fight Global Poverty* (New York: Public Affairs) 2011.
- Henderson, Rebecca and Karthik Ramanna “Do Managers Have a Role to Play in Sustaining the Institutions of Capitalism?” *Center for Effective Public Management* (Washington, D.C.: Brookings Institution) February 2015.
- Henry, Jérôme, and Christoffer Kok. “A Macro Stress Testing Framework for Assessing Systemic Risk in the Banking Sector” European Central Bank, Occasional Paper Series No. 152, October 2013.
- Keynes, John Maynard. *A Tract on Monetary Reform* (London: Macmillan & Co. Limited) 1924
—*The General Theory of Employment, Interest, and Money*. (New York: Harcourt, Brace & World) 1936

Kindleberg, Charles P. *Manias, Panics, and Crashes: A History of Financial Crises, Fourth Edition* (New York: John Wiley & Sons, Inc.) 2000.

Lake, Rob. “Financial Reform, Institutional Investors and Sustainable Development: A Review of Current Initiatives and Proposals for Further Progress” *Inquiry into the Design of a Sustainable Financial System/CalPERS*, Working Paper. 2015:18. (Forthcoming).

Meyhaghi, Mehdi and James P. Hawley, “Modern Portfolio Theory and Risk Management: Assumptions and Unintended Consequences” *Journal of Sustainable Finance and Investment* 2013 Vol 3, No. 1. 2013: 17-37.

Micklethwait, John and Adrian Wooldridge. *The Company: A Short History of a Revolutionary Idea* (New York: The Modern Library) 2003.

Ostrom, Elinor. “Beyond Markets and States: Polycentric Governance of Complex Economic Systems” Nobel Memorial Prize in Economic Sciences lecture, December 8, 2009.

Philippon, Thomas. “Finance v. Wal-Mart: Why Are Financial Services So Expensive?” Chapter Nine in Alan S. Blinder, Andrew W. Lo, Robert M. Solow (eds.) *Rethinking the Financial Crisis* (New York: Russell Sage Foundation) 2013: 235-246.

Siegel, Jeremy J. and Jeremy D. Schwartz “Long-term Returns on the Original S&P 500 Companies” *Financial Analysts Journal* January/February 2006. Vol.26 No.1: 16-31.

Waitzer, Edward and Douglas Sarro (2012) “The Public Fiduciary: Emerging Themes for Canadian Fiduciary Law for Pension Trustees.” *The Canadian Bar Review* Vol.91: 163-209.