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An Approach For Quantifying Sustainable Investments

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ABSTRACT

Asset managers in the investment community are challenged in how to quantify ESG (Environment, Social and Governance), otherwise know as sustainability. This paper shows how sustainability can 1) use forward-looking indicators, 2) mitigate risk factors, and 3) diversify portfolios. These are especially relevant given the higher incidence of financial crisis.

Forward-looking indicators have a better track record in forecasting future asset class returns than historical measures. The latter do not work well because expected returns vary over time (boom-bust cycles). In addition, long run returns for any investment tend to be especially high following adverse events. It is becoming clear that quantifying sustainability will come from a thorough understanding of forward looking (top-down) valuation ratios, in addition to bottom up approaches.

Another central insight is that that an asset's stand alone volatility (risk-return tradeoff) has little to do with returns as is the current paradigm, but rather, has more to do with the risk premium. It is the systemic risk factors that are the source of volatility that needs to be understood. The degree to which sustainability mitigates these risk factors needs to be understood, and from this, the risk premium can be ascertained, and then factored into the risk-return ratio.

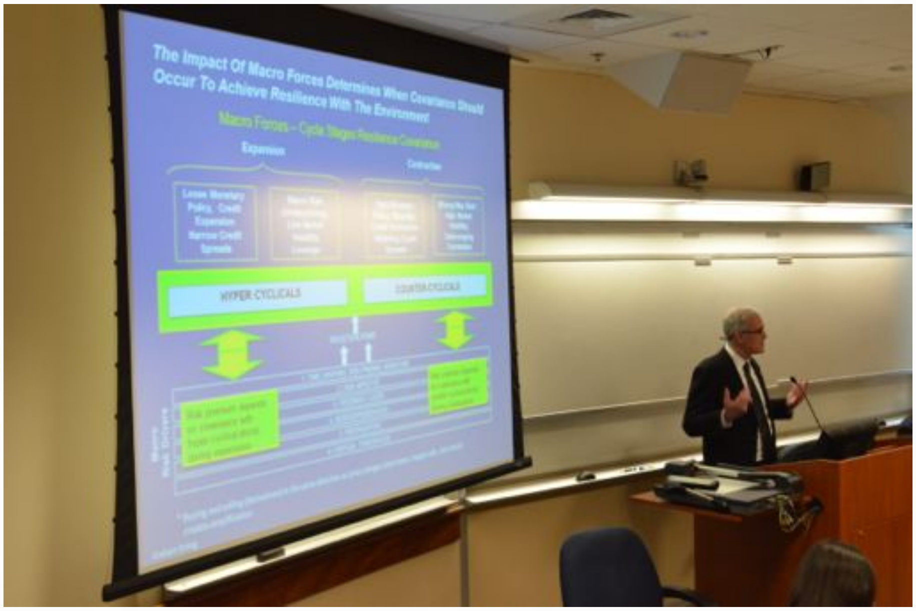
Finally, the need for negatively correlated return sources that fare well in bad times has been amply demonstrated in the last financial crisis. Sustainability ought to smooth portfolio returns during bad times or adverse events and can potentially provide a diversification opportunity.

These and other insights could go along way to quantifying ESG and set in motion an exciting dialogue with the financial community.

1. BACKGROUND

The purpose of this paper is to provide an approach to financial analysis that asset managers can use for determining the investment value of ESG (Environment, Social and Governance). The integration of ESG into investment analysis represents the attempt to attribute financial value by understanding the drivers that impact the underlying business or asset portfolio and to use the same criteria as other investments, namely, lowering risk or increasing returns, which lie at the core of any financial analysis for investment.

Externalities: ESG continues to raise awareness of the externalities that are impacting society, industry and businesses and the need to scan for emerging threats and opportunities. Businesses will need to understand the external forces that will impact them using "strategic analysis" to augment the traditional strategic planning process. This can be summarized in a SWOT analysis framework where opportunities and threats (OT) represent the external environment, and strengths and weaknesses (SW) represent the internal environment. The impact of OT can be scored using a risk landscape map and scenarios incorporating macro risk drivers.



Downside risk: There are many examples of threats (downside risk) and the reinsurance sector has shown that extreme events can be capitalized through healthy balance sheets. Vulnerabilities to those balance sheets can be anticipated before an unexpected event materializes and deficiencies addressed beforehand. ESG issues tend to have similar major impacts to the downside and represent a "fat tail" of extreme outcomes that can have significant influence on the variability of returns. Similarly, during bear market conditions, the degree to which businesses can avoid earnings variability is a key consideration. Investors will demand a higher risk premium for businesses exposed to downside risk.

Earnings variance: A business that is unable to exploit the external environment or is subject to exposures will experience variances in corporate earnings over time as the environment changes. The main hypothesis of this paper focuses on downside risk as it relates to sustainability in bad times or extreme events, costs as they relate to higher prices, and opportunity cost related to making latent business decisions ("decision latency") to invest under changing and uncertain conditions.

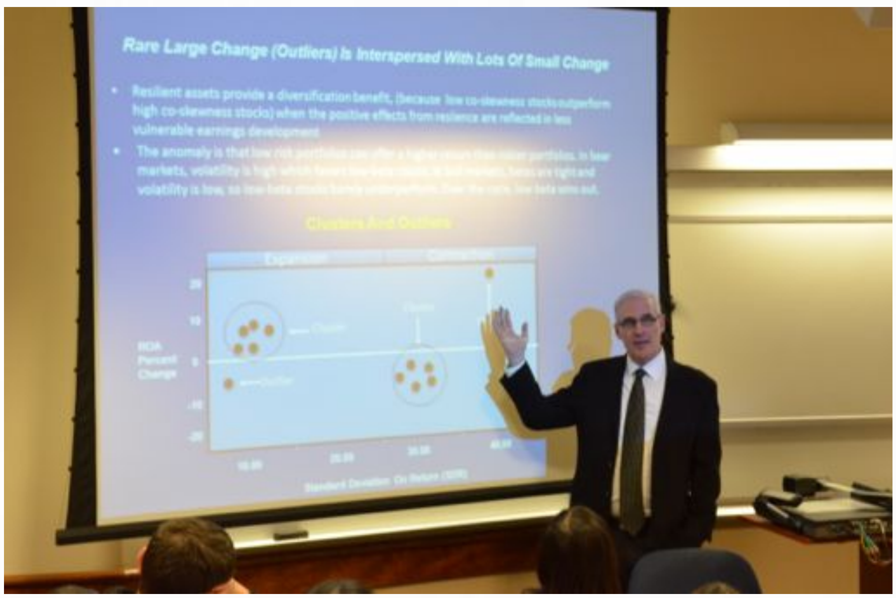
Free Rider Problem: external costs are gradually being forced upon businesses by legislation and societal expectations. The free rider problem in economics refers to when businesses produce more than is optimal of a specific good because external costs are not considered. At some point, these external costs will come back to businesses in the form of external shocks, increasing earnings variability. The problem is that a given negative outcome (say from climate change) is not going to be immediate. The decision to defer making a decision about a far off future event is known as decision latency. To address this common phenomenon, a risk assessment landscape is used that takes a future ready perspective. That is, better long-term sustainability is based on forward looking indicators while also scanning for emerging risks in the short to mid-term.

Standard Deviation on Returns: sustainable investments mitigate emergent environmental risks, resulting in lower earnings variability, and producing a lower standard deviation on returns. Comparisons should be made within industry sectors to control for the potential moderating influences of industry-specific environmental contexts. In the following slides, it will become evident that the risk-return relationship of sustainable investments will be the inverse of current practice (positive relationship), showing that sustainable performance is reflected in a negative risk-return relationship.

Natural (Ecological) Limits: In a classic study on speed limits (feasible growth based on climate change, environmental pollution, scarce natural resources), the supply of total investment returns equals income for all assets, plus growth in the aggregate market value of investable assets minus new issues. If the aggregate value of investable assets is assumed to be a fixed proportion of social wealth, they should in the long run grow at the same speed. The natural limit trend growth of current yield and net new issue data, should guide investor views of sustainable long-run real returns. This is to say that trend growth in GDP is a ceiling for trend earnings growth over the very long term. As the economy encounters natural limits, externalities will increasingly become internalized, challenging businesses to become future ready for adverse consequences arising from shortages, scarcity etc.

Risk landscape mapping refers to the degree to which cause and effect can be determined based on the interaction of complexity and uncertainty. Securities mispricing occurs when cause and effect contain feedback loops. Risk analysis methods need to be suited to a given domain ***(known, knowable, complex, chaos/ uncertain)*** and usually involve a mix of structured and responsive techniques.

Known: cause and effect relations repeat, are perceivable and predictable. Approaches to managing risk can be reduced to best practice guides. The consideration of future instability does not belong to the known domain.



Knowable: cause and effect are separated over space and/or time. Knowable factors correspond to the likelihood of instability over the short to medium term. Analysis is based on systems dynamics or structural modeling. At the macro level, the characteristics of a portfolio that outperforms during a period of deceleration are different from than those of a portfolio that outperforms as leading indicators are accelerating. Incorporating ESG information into the portfolio construction process has the potential for adding alpha and exceeding the returns of an analogous non-ESG portfolio, regardless of the business cycle.

Complex: cause and effect are only coherent in retrospect and do not repeat. Understanding requires monitoring of emerging patterns and flexible response (to ecological limits). At the macro level, methods used for the complex domain (e.g. SWOT analysis) are designed to produce context specific information in a flexible manner to ascertain generic relationships driving instability. The complex domain requires monitoring of emerging patterns and the emergent nature of unstable events, which become more apparent as time horizon gets shorter. Early warning systems seek to flag emerging crisis as early as possible on the basis of recognizable patterns or feedback loops. At the micro level, complex regimes, in which multiple risk factors are interrelated, require dynamic valuation to determine a stock's value relative to its current market price and relative to all other stocks in the universe (e.g. S&P 500 Index).

Chaos: no cause and effect relationships perceivable.

FEEDBACK LOOPS can amplify market movements. Such (procyclical) dynamics are especially powerful when applied to demand/capacity feedback loops and they can be overlaid on the performance of any asset or strategy. Feedback effects from procyclicality make asset returns and risks endogenous, via correlation with resource depletion. Market prices reflect expectations of future capacity based on feedback loops which can result in either a virtuous cycle or vicious cycle. Feedback loops that boost procyclicality include:

• Multiple and interacting factors, including droughts combined with socio-economic pressures, affect human security;

• Increases of average temperature above threshold levels have led to significant human health impacts such as increased incidences of malaria;

• Increased frequency and severity of climatic events, such as floods and droughts, affect both natural assets and human security;

• Accelerating changes of temperature and sea level rise pose a threat to some natural assets and food stocks

• Substantial biodiversity loss and ongoing extinction of species are affecting the provision of ecosystem to support an increasing GDP

Increased demand results in natural resources having varied impacts on the ecological footprint, which pushes resource use in excess of what the planet can sustainably generate.

Given pro-cyclicality, these feedback effects are sufficiently important that in the absence of sufficient sustainability investments, the annual rate of world GDP growth gradually falls from about 2.7 per cent per year in the period 2010– 2020 to 2.2 per cent in the period 2020–2030 and further to 1.6 per cent in the period 2030–2050 (UNEP Report 2012).

RISK ASSESSMENT METHODS attempt to estimate a portfolios vulnerability to instability based on a firm's resiliency to adverse events, thereby being labeled as sustainable. On the basis of knowable risk factors, assessments determine which firms are more or less vulnerable to potential instability. The appropriate transformation between resilient/not resilient, is carried out using ESG risk and return scoring, which separate firms into predicted sustainability.

Establishing the appropriate risk/return is contextual and based on an accurate risk assessment that avoids *type 1 and type 2 errors* where type 1 errors (false positives) occur when sustainable firms are predicted but are in fact unstable, and type 2 errors (false negatives) occur when unsustainable firms are not predicted, but are in fact stable:

- ***Type 1 error*** – sustainable firms are predicted but this is not accurate (false positive)
- ***Type 2 error*** - unsustainable firms are predicted but are resilient (false negative)

False negatives, which result in resilient (sustainable) firms not being selected, are far more costly to a portfolio decision maker, than false positives, because, during downturns, there is no risk mitigation to counteract loss.

Even a 25% success rate in successful identification of sustainable firms would be enough to make significant preventative portfolio loss.

CDS Spreads: CDS spread widen when volatility rises. Losses result as the risk premium at which the stock was purchased, falls short of the risk delivered. Thus returns are poor when volatility rises quickly and in excess of what is priced into the risk premium. The behavior of volatility can change in time. Asset classes have "regimes" of volatility – flat volatility, periods of heightened volatility, periods of depressed volatility. Volatility approximates risk, but is not risk.

Risk assessments that permit comparability between different investment strategies and asset classes provide an important means to prioritize where and when to make investments and to avoid malinvestments. At the macro level, methods that quantify implied volatility will enable a direct comparison. Risk assessment becomes part of a wider decision support system where implied volatility provides an important aspect of assessing the threats and opportunities from externalities. At the micro level, explicit modeling is needed to understand cause and effect relationships, system feedback effects and time delays in information flows.

2. RISK-RETURN RELATIONSHIP

Conventional thinking supports the relationships between risk-return where higher level of risk provide better returns, but studies have shown this is only relevant across asset classes, but not within an asset class. Within an asset class (e.g. renewable energy stocks), the relationship is the inverse, where returns decrease at higher risk levels and therefore there is no trade-off between risk and return (no efficient investment frontier). More stable corporate or project earnings are associated with higher average returns.

Lower Earnings Variability: Ex post analysis studies, analyzing data from firms that operate within specific industry groups shows a negative risk-return relationship where lower earnings variability is associated with higher reported earnings over the same time period. Hence there is an inverse relationship between the standard deviation on returns (SDR) and the average returns (ROA) over the same period (Andersen, Denrell, and Bettis 2007).

Portfolio Construction: an inverse risk-return relationship can be explained by sustainable operations and capabilities where there is an ability to respond appropriately to environmental changes arising from the effects of natural limits. Responsiveness can be inferred from 1) expected return calculation over the coming period, and 2) MSCI ESG data on each security used to calculate the ESG score. Hence, a firm that has this ability to respond appropriately will avoid adverse and unsustainable economic events, and results captured in a lower standard deviation of returns relative to unresponsive competitors.

3. SUSTAINABILITY AND RISING MARKET VOLATILITY (VALUE PROPOSITION)

The interconnectedness between the real economy and the financial system increases as externalities reach and exceed their tipping points as measured by natural (ecological) limits. The investment horizon becomes shorter as the impact of shocks (e.g. shortages) and unexpected events in the real economy increase volatility levels in the financial markets. Investors overpay (asset valuation risk) for high volatility stocks that perform poorly in the long run (*Baker-Bradley-Wurgler. 2010*). Similar patterns exist in the fixed income markets.

Investor behavior: utility maximizing investors seek the most attractive portfolio of risky assets (with the maximum sharpe ratio), and lever this position up or down to reach their volatility target, or if cannot lever up, hold a greater weight in inherently volatile assets, thus reaching for volatility, using high beta stocks as a substitute for a levered portfolio.

The value proposition for sustainability derives from the diversification benefit from sustainable investments in a portfolio of mixed assets classes that offset the effects of volatility. This is particularly the case during downturns, where volatility increases and the marginal utility derived from sustainability at its highest. Volatility levels reflect the impact of externalities on the financial system; as the impact from externalities increase, less resilient businesses will be adversely affected as natural (ecological) limits are reached.

4. FORWARD LOOKING INDICATORS (FUTURE READY)

The environment contains unknowable risk factors and an absence of precise measurable indicators. Understanding the future using scenarios connects the future to the present (future ready). Inferences can be drawn from an assessment of risk-return shift as leading indicators peak and trough. Signals sent through the business cycle show macro trends that can be used to avoid mal-investments and select sustainable stocks instead. Effective investment portfolio construction requires future-oriented analysis of forward looking indicators of asset returns. The investment in sustainable stocks reflects a shift from reactive (quarterly) stock selection, to preventative long-term stock selection.

Long-term: For the long term, a constellation of risk assessment methods is required to provide the requisite level of support to decision makers. The scope of these methods run from future scenarios, risk (premia) regimes shifts across the business cycle, to systems dynamics (feedback loops). The primary mode of analysis for different methods varies with the horizon and should be conducted using a future back workflow using slow moving indicators.

Short-term: The constraints imposed by uncertainty rule out of the possibility of making definitive predictions of the medium to long term. In the short term, risk factors fall along a spectrum of unknown, known unknown, known, and complex. In the immediate short term, it is possible to spot emergent instability in it early stages through the use of high frequency indicators (see next slide) and focused monitoring (EWS)

Phase Transitions: the macro themes suggested from scenarios and inflection points in risk premia regimes (coincident risk factors) are telling signs of a coming reality. Credit spreads are a coincident indicator. When credit spreads rise, it is an indication of risk clarity that is weighed realistically. When spreads explode, it is the moment of panic.   Phase transitions occur when the constituent properties of a system undergo fundamental and abrupt change or reach a tipping point.

A MACRO RISK ASSESSMENT includes an early warning system (EWS) comprised of slow moving and high frequency indicators. The possibility to spot emergent unsustainability in its early stages is enabled by monitoring these indicators closely. This enables decision makers to restrict attention to a subset of high risk (or high potential impact) risk factors. The risk assessment distinguishes among three categories of indicators within a spectrum of measures that can help determine the build-up of sector risks in order to predict potential distress at a reasonable forecast horizon and sufficiently high degree of accuracy:

1. Leading (but slow-moving) indicators that signal in advance rising vulnerabilities but cannot inform the timing of distress (from externalities) or the onset of an impending crisis: movements of various indicators such as demand-supply aggregates/ imbalances and other macroeconomic data and macro trends, signal sector risks with associated systemic implications.

2. Near-coincident indicators that signal that risks are about to materialize (“imminent distress”) but provide some foresight (via forward-looking indicators) well ahead of time that risks are building up (“near-coincidental”) and forewarning of potential dramatic imbalances.

3. Coincident indicators that document the realization of stresses (and provide some measure of possible escalation). The coincidence of different factors, acting simultaneously, can create feedback loops that

can induce systemic, non-linear, non-periodic behavior and phase transitions.

5. THE QUANTIFICATION GAP (RISK PREMIA)

The equity risk premium (ERP) refers to the expected or realized return of a broad equity (sustainable) index in excess over some non-equity index alternative (e.g. riskless asset such as a Treasury bill or long-term treasury bond). The most popular relative value indicator across major asset classes is the spread or ratio between equity market E/P and 10-year Treasury yield. This ratio is high when stocks are expensive vs. bonds. However, shifts in the relative risk of asset classes can reflect a structural change that undermines the usefulness of valuation signals like the yield ratio, particularly when a risk regime change occurs. For this reason, the risk framework outlined previously needs to be operationalized to watch out for risk regime changes resulting from externalities. As externalities in the real economy impact the financial system, trailing moving averages (price, yield, spread) will play an important role in understanding natural limits

Resilience: An important risk indicator is the relation between equity market volatility and subsequent market returns. Equity market volatility reflects two offsetting effects – the average volatility of individual equities and the average correlation among equities. Thus if a sustainable equity class is mildly correlated with the overall market, it will be more resilient. When markets are stressed, resilient stocks are those that carry a high marginal utility (MU) as performance is less impacted relative to other non-sustainable stocks. Risk premia will be higher for more volatile stocks, reducing returns.

RISK PREMIA are higher for assets that fare poorly in bad times whereas safe haven assets (e.g. government bonds) may even have negative risk premia over cash. Sustainable investments, as an asset class, exhibit high marginal utility (MU) during adverse environmental changes. Expected return differentials across assets reflect rational risk premia resulting from market inefficiencies and demand-supply effects arising from natural limits (environmental sustainability).

The expected excess return of a given asset over the riskless rate is often called the ex-ante risk premium of that asset. In a world of uncertainty and time-varying expected returns, ***price = the stochastic discount factor (SDF) times x (cash flow) for a given asset***, where SDF represents the uncertainty in the time-varying discount rates, thus the risk premium for any asset reflects its co-variation with bad times or shocks. Investors are willing to pay more (accept lower expected returns) and therefore require a lower risk premium for assets that do well in bad times or distress from shocks. Conversely, investors require higher risk premia for assets that tend to suffer in bad times or shocks emanating from climate change, shortages, resource degradation etc. Therefore ***the risk premium for an asset = -covariance (asset excess return times SDF)*** with bad times or shocks.

Risk Premia impact: it is estimated that 2/3rds of a stock's performance is explained by macro trends. Investors, therefore, will have a difficult time explaining the performance of stocks in isolation from the macro environment and underestimate the influence of externalities. Top-down environmental analysis shows how stocks are influenced by macro-induced peaks and troughs. Getting the big picture right has become a necessity for a sustaining global economy. The five risk drivers shown can be used to create scenarios around a given "risk premia regime" and determine its impact on expected returns (Antti Ilmanen 2011):

a. Market Frictions: Close inspection of coincident indicators show the potential for feedback loops between the real economy and financial markets. Resilience refers to marginal utility (MU) and how asset prices withstand or recover after a shock. Aftershock illiquidity is the most important market friction and illiquidity-related premia appear to raise the expected returns of certain alternative/ sustainable asset classes, as well as less liquid pockets of traditional asset classes. Illiquid asset (unsustainable) classes have high risk-return ratios precisely because they are prone to dramatic losses in downturns.

b. Systemic Risk Factors (Interconnectedness): if there are several risk factors that generate undiversifiable risk, then a multi-factor relation holds. Thus the risk premium can be described as depending on co-variation with the SDF (bad times, high MU periods) applied to the risk factors – not just the individual assets. These different risk factors create different sources of return uncertainty and can have different market prices. So, either one can view bad times as a meta-concept or one can treat different dimensions of bad times (negative growth, high inflation, financial crisis, illiquidity spiral, high volatility/ correlations etc.) as distinct factors. Together, these factors constitute a set of high MU periods or regimes. Investors who bear these priced factor risks effectively supply insurance to other investors against enduring losses in bad times and earn a systemic risk premium as compensation. Direct inferences between risk drivers and a particular scenario are made possible by understanding causal patterns and relationships (interconnectedness) that explicitly link risk factors to likely (unstable) outcomes.

c. Business Cycle: Returns on assets vary over time with required risk premia being high in bad times such as business cycle troughs, reinforced by boom and busts. A solid understanding of the business cycle is necessary for understanding how the risk-return relationship shifts as leading indicators peak and trough. The characteristics of a portfolio that outperforms during expansion and contraction are different (refer risk premia regimes found on slide 16, showing the four stages of the business cycle).

d. Resource Efficiency: equal or higher growth could be attained with a more sustainable, equitable and resilient (high MU) economy, in which natural resources would be preserved through more efficient use. The key aspect of resource efficiency is not asymmetry in the standalone returns of a given asset but its contribution to the market portfolio's resource efficiency (i.e. the co-skewness of the asset with the resource-efficient market). Investors prefer assets that are positively skewed that tend to earn high returns. Such (sustainable) assets are currently rare. Conversely, investors dislike negative skewness and require extra ex ante reward for holding assets that perform poorly.

e. Demand-Supply Effects: a sudden shortage can cause sharp upward spikes in prices in certain commodity prices. Scarcity becomes a factor where the net supply cannot be increased in response to demand, thus boosting current asset prices and reducing expected returns while abundance may do the opposite. Understanding the fundamentals of the demand and supply for a market is the key to gauging whether or not there is an imbalance. Discrepancies may signal an impending bubble. Macro trends and trailing averages can confirm this and act as a guide to prevent extreme extrapolation from current conditions.

6. SUSTAINABILITY COVARIANCE (VALUATION)

To understand what kind of environments are constituted, it is useful to determine the marginal utility (MU) of the environment, or the MU regime, and how such a regime co-varies with good and bad times. If the covariance of an asset class or strategy is high, they tend to lose money (in bad times). High covariance with bad times produces volatility. Low covariance with bad times produces sustainability.

Generating Risk Premia Regimes (Scenarios): the covariance of risk drivers and the environment produce scenarios that can be used to make investment valuations. As explained elsewhere, low risk investing (low beta, minimum variance or risk weighting) is one of the more enduring sustainable strategies. The anomaly is that low risk portfolios can offer a higher return than riskier portfolios. In bear markets, volatility is high which favors low-beta stocks. In bull markets, betas are tight and volatility is low, so low-beta stocks barely underperform. Over the cycle, low beta wins out.

7. RISK PREMIA REGIMES

Understanding risk premia regimes requires a shift in thinking away from expected asset or strategy returns and to focus on their underlying return drivers (factor risk premia). Each asset or strategy can be viewed as a bundle of relevant factor sensitivities. These underlying characteristics may be priced inconsistently across assets and at times offer exceptionally high or low returns in certain assets at certain times through the business cycle (stages 1 – 4). Growth, inflation, liquidity and tail risk are the four most important regime influencing factors, where tail risk is comprised of volatility, correlation and skew (only two regimes are shown here).

Asset Exposures: risky equity assets have the most growth exposure, commodities benefit from rising inflation, while long Treasuries suffer. All risky assets suffer when market illiquidity or volatility escalates. Different risk factors may each have a different market price of risk, reflecting their different covariance with bad times (marginal utility). Extreme conditions in any risk factor tend to coincide with bad times (cycle stage 3 and 4) during which the trade shifts in favor of companies with more sustainable business models.

Business Cycles: fluctuations related to business cycles are surprisingly important. Stock market returns have been historically low in early to mid-recessionary periods while both stocks and bonds have fared well late in recessions and near the cycle trough. Leading indicators (LDIs) are the most useful tool to distinguish among stages in the cycle. Once LDIs turn down, the risk-return profile of financial markets change dramatically and stability over cyclicality becomes the preferred sector positioning (counter-cyclical sectors outperform when LDIs decline). Returns during the waxing and waning of the business cycle are almost the mirror image where counter-cyclical pick up while cyclical wane as the cycle matures.

8. SUSTAINABLE INVESTMENT QUANTIFICATION FRAMEWORK

Risk Appetite/Tolerance: the use of natural limits reflects a well-informed risk tolerance that specifies the absolute amount of investment that is acceptable. These limits of risk tolerance result in an indicative target to which a portfolio can grow. This risk-limited investment portfolio is smaller in size than the size that leads to maximum value. Portfolio weights are optimized on expected risk and return and ESG score.

Risk-Return Profile: quantitative valuation is one of the most importance aspects of the risk-return profile for sustainability and involves, 1) top down changes in leading indicators that presage a stage shift in the business cycle, and 2) bottom up explicit modeling of cause and effect relationships, systemic feedback effects and time delays in information.

Risk Mapping and Assessment: mapping the frequency and severity of risks can provide the basis for an indicative ranking of risks, thus reducing uncertainty. For example, renewable energy projects are ranked by riskiness as follows – ***1. Wind, 2. Biomass, 3. PV, 4. Hydro. 5. Geothermal, 6. Solar Thermal, 7. Waste-to-energy, 8. Other.*** This ranking is indicative of the risk premium that needs to be applied based on long-term portfolio risk-return characteristics.

Portfolio Risk Management: a *low frequency sustainability stress index (LSSI)* is used to manage medium-term risk and a *high frequency systemic stress index (HSSI)* is used to manage short-term risk. This latter includes variance (implied volatility, skew, kurtosis, fat tails) risk premia calculation.

Risk Monitoring: refers to monthly re-evaluation and rebalancing based on significant deviations from expected returns. Appropriate thresholds are established, which once breached, trigger some sort of response. These responses can be formalized into contingency plans. In addition, unanticipated emergent risks needs to be identified in situations of increasing uncertainty and volatility. In these circumstances, weak signals and unexpected events need to be sensed using environmental scanning.

9. CONCLUSION

The overarching hypothesis presented above points to a view that sustainability is measured by a higher return on a lower level of risk. Risk is measured as the standard deviation of returns. The argument presented is that effective sustainability practices are evidenced by more stable earnings development. The inverse risk-return relationship can be explained by sustainable capabilities where the ability to respond to changes in the environmental context (externalities) is essential.

Sustainable capabilities: The sustainability investment quantification framework shows the managerial capabilities needed to respond to emerging environmental changes. In times of downside risk, sustainable companies weather the impact better than their competitors by avoiding large losses and being positioned to develop a stream of new business opportunities that will support a steady flow of corporate earnings. We can interpret sustainability as capabilities that enable businesses to obtain a better fit with the prevailing environmental context over time.

Proof-of-concept: the hypothesis needs to be tested using a proof-of-concept (POC) as shown above, developed in association with the key concepts that have been outlined. Securities that are selected for the POC should show an adaptive capacity based on sustainable capabilities suited to their industry sector, where the inverse risk-return outcome holds.

In assessing performance, we will want to understand how risk factors at a macro level (top down) are used for portfolio construction, while using ESG scoring and portfolio optimization (bottom up) to select securities for long-term risk and return performance that avoid excessive downside losses.