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## ESTABLISHING ESG AS RISK PREMIA

Julia L. Pollard<sup>a</sup>, Matthew W. Sherwood<sup>a</sup> and Ryan Grad Klobus<sup>b</sup>

*This seminal research provides statistically significant evidence for the empirical identification of Environmental, Social and Governance (ESG) as a factor of risk premium when integrated within an equity portfolio. This study purposes to establish that the conceptual development, adoption and population of ESG research-based strategies are leading to the documentation and acceptance of ESG risk premium as an intuitively and measurably independent risk premia. This study has demonstrated empirically, through a cross-sectional analysis of increasingly developed ESG research, that ESG premia geographically and longitudinally provides excess returns. Furthermore, this study presents the potential for ESG premia to take its place alongside other well-documented risk premia such as momentum, volatility, carry, size, value, and liquidity across asset classes.*



### 1 Introduction

Within the past two decades, Environmental, Social and Governance (ESG) research has evolved and expanded geographically and longitudinally, becoming a common factor widely incorporated within investment strategy.<sup>1</sup> This study presents an argument built upon the conceptual development, adoption, and population of risk premia identified by Eugene Fama and

Kenneth French, which lead to the documentation and acceptance of intuitively and measurably independent risk premia such as value, market, size, profitability, and investment.<sup>2</sup> Other research, founded on Fama and French's methodology, established momentum and liquidity as risk premia as well.<sup>3</sup> In the same way, the conceptual development of ESG factors should lead to the documentation and acceptance of ESG as risk premium.<sup>4</sup> To make this claim, this study documents the existence of ESG risk premium within global equity portfolios both geographically and longitudinally, using empirical methods through a cross-sectional analysis of increasingly developed ESG research provided by independent ESG rating agencies. In this way, this study demonstrates that ESG risk premium provides

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<sup>a</sup>The King's College, 56 Broadway, New York, NY 10006, USA. Tel: (774) 238-2735. E-mail: julia.pollard@tkc.edu.

<sup>b</sup>The Wharton School, University of Pennsylvania, 3620 Locust Walk, Philadelphia, PA 19104, USA. Tel: (516) 673-7998. E-mail: rklobus@wharton.upenn.edu; Tel: (516) 591-9772. E-mail: msherwood@tkc.edu.

increased insight into the probability distribution of assets and subsequently higher risk-adjusted return, independent of other established risk premia. This study further purposes to lay the foundation for further statistically significant data discovery on the subject matter of ESG factors providing independent and measurable risk premium. Such a conclusion would suggest that ESG factors should be considered not solely an implementation of policy or social responsibility, but an actual quantifiable metric that can be integrated with other proven investment strategies within a diversified portfolio to generate alpha. Establishing ESG as risk premium is useful both academically and practically, as such a factor may, once established as risk premium, be applied to yield higher long-term expected investment returns.

This study is organized as follows. In Section 2, literature relevant to empirically proving risk premia through geographically and longitudinal breadth is discussed. This section serves as the foundation for Sections 3 and 4, which provide the methodology used to suggest ESG risk premium and the data resulting from the methodology, respectively. Section 5 discusses the implications of the data cited in Section 4 as well as the larger implications of the existence of ESG as an independent risk premia. Section 6 provides a conclusion for the study. This study concludes that ESG factors should be considered as an independent risk premia, as they have been proven geographically and longitudinally to positively impact financial returns.

## 2 Literature review

### 2.1 Risk premia and asset probability distributions

In a 2015 quantitative exploratory study entitled “A Five Factor Asset Pricing Model”, Eugene Fama and Kenneth French developed

their five-factor factor model, which measured the extent to which investment risk premium, market risk premium, size risk premium, profitability risk premium, investment risk premium, and value risk premium explain the probability distributions in average stock returns.<sup>5</sup> Fama and French conclude that this five-factor model effectively explains return distributions, by quantifying and organizing cross-sectional data. Pástor and Stambaugh (2003) added to the list of established risk premia in their quantitative study entitled “Liquidity Risk and Expected Stock Returns”, in which they investigated the relationship between asset pricing and market-wide liquidity, using cross-sectional data relating the sensitivities of returns to fluctuations in aggregate liquidity.<sup>6</sup> In doing so, Pástor and Stambaugh establish liquidity as a risk premium by demonstrating its efficiency in predicting the probability distribution of returns for a particular asset. Ya-Wen Lai supports the empirical validity of the Fama and French (2014) five-factor analysis model and further risk premia models for identifying risk premia, and affirms the practical implications of cross-sectional data at fostering informational insight on risk premia in a 2017 quantitative study entitled “Macroeconomic factors and Index Option Returns”.<sup>7</sup> Lai’s study established the existence of a correlation between stock returns and the existence of risk premia.

In establishing the existence of risk premia, Fama and French provide a modern, empirically-tested, base model that can be modified to use to assess the validity of ESG risk premium, by analytically testing ESG as a factor for producing a higher long-term average expected return distribution, regardless of geography or time period. This test should theoretically evaluate the efficacy of ESG as risk premium. Bender *et al.* (2014) analyzed whether incorporating risk premia as part of the portfolio construction process actually impacts the performance of a portfolio, in

their quantitative study entitled “Can Alpha Be Captured by Risk Premia”.<sup>8</sup> The results of this research indicated that 80% of alpha generated from an equity portfolio are directly attributable to factors of risk premia. These findings illustrate the impact that risk premia have on generating alpha in equity investments, and also emphasize the fact that no single risk premia can exist as a constant through time. Furthermore, the results of this study indicate that additional risk premia may exist outside of currently established risk premia.

It is reasonable to assume that if risk premia provides insight into the probability distribution of an asset, as per Fama and French’s (2014) conclusions, supported by Pástor and Stambaugh’s research, and if additional risk premia exists that is currently not identified as such, as per the research of Bender *et al.* (2014), then it stands to reason that one proof of the validity of ESG risk premium would evidence that said risk premia improves insight into an asset’s probability distribution. In a 2016 quantitative study entitled “Skewness in Expected Macro Fundamentals and the Predictability of Equity Returns: Evidence and Theory”, Ricardo Colacito, Eric Ghysels, Meng Jinghen, and Wasin Shwasarit analyzed whether the GDP forecasts by professional forecasters can have a material impact on the predictability of the equity return distribution.<sup>9</sup> They found that the professional forecasting of macro fundamentals provides cross-sectional data that is useful for predicting the probability distribution of expected stock returns (see also: Polbennikov *et al.*, 2016<sup>10</sup>). This study demonstrates that professional forecasting can provide meaningful insight into the expected returns of assets. In the same way, our study seeks to prove that the professional forecasting displayed through ESG research and cross-sectional ratings may yield significant insight into the probability distribution of long-term risk-adjusted equity returns, establishing it as independent risk premia.

## 2.2 *Investor sentiment and risk premia*

In a 2016 quantitative case study entitled “Correlated Beliefs, Returns, and Stock Market Volatility”, Joel David and Ina Simonovska analyzed whether analysts’ correlated beliefs about the financial performance of publicly traded companies had an impact on the patterns of stock returns, apart from what was predictable through fundamental analysis of those companies.<sup>11</sup> Their research more broadly investigated whether correlated beliefs can have an impact on the actual equity return distribution of a forecasted stock. David and Simonovska found that analysts’ correlated beliefs about the future path of a stock were 63% correlated to the actual path of that stock. Furthermore, 44% of cross-sectional aggregate stock market volatility was attributed to correlated beliefs alone. These conclusions were affirmed across multiple countries and regions, and are significant because they illustrate that correlated beliefs on a firm’s future can have a direct impact on the actual future path of the stock. Research performed by Wu *et al.* (2016) in a quantitative case study entitled “Re-examining Risk Premiums in the Fama-French Model: The Role of Investor Sentiment” support this conclusion by analyzing the Fama-French factor analysis through the lens of investor sentiment by using panel smooth transition regression analysis.<sup>12</sup> They found that most risk premia are attributable to investor sentiment, particularly when investors are extremely pessimistic or opportunistic. These findings strengthen the case for ESG risk premium, as they indicate that a consensus amongst analysts on cross-sectional ESG ratings can have a direct impact on the return distribution.

## 2.3 *The integration of ESG risk premium in portfolio management*

In a 2016 quantitative experimental study entitled “Can ESG Add Alpha? An Analysis of ESG Tilt and Momentum Strategies”, Zoltan

Nagy, Altaf Kassam, and Linda-eling Lee compared two ESG-integration strategies: a tilt-based and a momentum-based equity portfolio, with the broader market in order to test if ESG-based strategies hinder institutional investors' performance.<sup>13</sup> Nagy *et al.* (2016) found that both the ESG tilt-based strategy and the ESG momentum-based strategy outperformed the MSCI World Index from 2008 to 2016. These findings illustrate that ESG equity portfolios that incorporate cross-sectional ESG data can deliver alpha longitudinally, and demonstrate the characteristics of other independent risk premia in alpha generation.

Similarly, Kotsantonis *et al.* (2016), in their study, "ESG-Integration in Investment Management: Myths and Realities", found that the data provided by ESG research and independent ESG ratings' firms has evolved dramatically since the early 1990s and is now quite efficient for purposes of fundamental analysis.<sup>14</sup> They attribute this increased efficiency to the populating effect of ESG data since the early 1990s, which has led to the creation of tremendous cross-sectional insight into the fundamentals of a company, and thus the probability distribution of an asset. Dorfleitner *et al.* (2015) affirm this populating effect in their article entitled "An Empirical Comparison of Different ESG Rating Approaches".<sup>15</sup> This article analyzed the correlation between the ESG ratings and financial performance of companies worldwide. This study used data from three independent ESG ratings agencies, and found that though the ESG rating from a single service provider does not always have a clear correlation to the financial performance of the company, the triangulation of ESG rating data from multiple ESG rating agencies provides higher correlations to financial performance. These findings suggest that the greater the ESG research coverage from various ESG research and rating providers, the more effective and valid the ESG data is

at serving as cross-sectional data for ESG risk premium insight. These findings further suggest that ESG is a risk premia factor that can influence the long-term expected return of an asset. Kotsantonis *et al.* (2016) also note that ESG factors are not currently well-integrated investment portfolios, although companies with high ESG scores offer better long-term stock returns due to lower risks, lower cost of capital, superior operating efficiency, and rapid expansion compared to competitors.

The correlation between financial performance and ESG ratings has been studied in many different lights. In one notable, quantitative comparative entitled "Do Socially Investment Policies Add or Destroy European Stock Portfolio Value", Auer (2016) compared the ESG ratings of companies listed on the European stock market with the financial performance of those companies in order to measure the correlation between fluctuations in financial performance and fluctuations in the ESG ratings of equities over time within a diversified equity investment portfolio.<sup>16</sup> In this way, Auer was able to test the effectiveness with which ESG ratings predict stock return distributions and risk. The results from Auer's study indicated that a diversified European equity portfolio of highly ESG-rated equities outperforms an associated benchmark portfolio of similar diversified equities, and a negatively ESG-rated diversified equity portfolio underperforms the same benchmark. These results allude to the notion that ESG is in fact a risk premia and that ratings of companies on ESG can provide effective cross-sectional data for ESG risk premium to exist longitudinally.

### 3 Methodology

#### 3.1 Research method

This study employed a causal-comparative research design, aiming to measure the effect

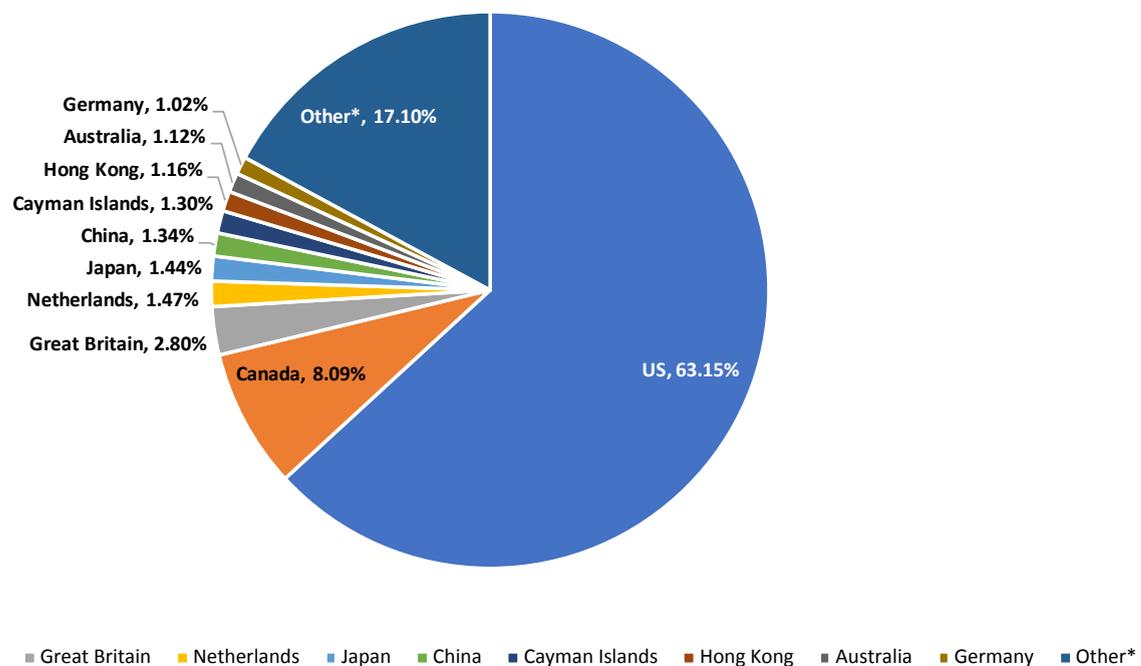
of integrating quantitative ESG ratings data provided by independent rating agencies on the overall risk-adjusted return of a global equity portfolio.

### 3.2 Sample

The primary data used in this analysis was procured from the ESG ratings developed by MSCI Inc. from January 2007 to January 2017, as well as the historical equity prices of these equities. These ESG ratings comprise 6,400 companies globally. The companies included in this dataset span 85 countries and 128 industries, minimizing the probability of any geographic or industry-specific tilt or bias in the ESG ratings, beyond those tilt

or bias's inherent in any measurement of risk premia such as momentum or investment. Amenc *et al.* (2016), in their study entitled “Diversified or Concentrated Factor Tilts”, refer to these inherent tilts as “unrewarded risks” within concentrated factor-tilt strategies. Figure 1 displays the distribution of the ratings incorporated into this study geographically.

MSCI analysts score companies based on a research process built on four main value pillars. The first pillar is referred to as the MSCI ESG Intangible Value Assessment. Here, analysts first identify major industry-specific factors related to the specific company being rated that may affect investor sentiment or financial



The “Other” category includes Brazil, France, Luxembourg, India, South Africa, Ireland, Italy, Taiwan, Spain, Switzerland, Mexico, Bermuda, New Zealand, Indonesia, Korea, Singapore, Thailand, Sweden, Russia, Chile, Austria, Virgin Islands (Great Britain), Jersey, Turkey, Philippines, Norway, Belgium, Poland, Denmark, Columbia, Israel, Peru, Finland, Malaysia, Argentina, United Arab Emirates, Puerto Rico, Portugal, Curaçao, Congo, Czech Republic, Slovakia, Kazakhstan, Panama, Nigeria, Isle of Man, Greece, Hungary, Egypt, Macao, Mauritius, Bahamas, Qatar, Cyprus, Morocco, Pakistan, Paraguay, Barbados, Dominican Republic, Iceland, Aruba, Virgin Islands (US), Georgia, Venezuela, Papua New Guinea, Bahrain, Jordan, Bangladesh, El Salvador, Cote D’Ivoire, Jamaica, Zambia, Netherlands Antilles, Tunisia, and Marshall Islands.

**Figure 1** Geographic distribution of MSCI Inc. ESG ratings.

performance. Analysts next evaluate the degree to which the individual company is exposed to those industry-related risks, hereafter referred to as ESG risks, and further assign ratings to the companies based on any unmanaged ESG risk. The second pillar is referred to as the MSCI Impact Monitor, and builds upon the first pillar by assigning company-specific ratings based on relevant ESG-related controversies resulting from unmanaged ESG risk. The third pillar is the MSCI ESG Business Involvement Screening Research, which quantifies to what extent the individual company has incorporated ESG portfolio screening and supported ESG-related company actions. The fourth pillar is referred to as the MSCI ESG Government Rating. This final pillar assesses overall government-related ESG risk exposure and risk management practices, beyond the individual company.<sup>17</sup> These four pillars of ESG research are synthesized into three separate rating values: one aggregate value for all environmental concerns, one aggregate value for all social concerns, and one aggregate value for all governance concerns. These aggregate values are presented on a scale of one to ten, with ten being the highest rating available. In order to present these three values in a consistent manner for each rated company, Environmental, Social, and Governance ratings are weighted by industry, based heavily on the first pillar of ESG research: MSCI ESG Intangible Value Assessment and the key industry issues which have been identified. These scores are updated monthly by MSCI analysts, based on the second pillar of ESG research, which measures the impact of ESG-related controversies on individual companies.<sup>18</sup> The MSCI ESG database has been frequently used to examine the effect of ESG-integration on investment returns, specifically by Hillman and Keim (2001), Mattingly and Berman (2006), Dorfleitner *et al.* (2015), Singal (2014), and Sherwood and Pollard (2017), amongst others.<sup>19</sup>

This study employed the quarterly industry-weighted ESG score for each company rated by MSCI from 2007 to January 2017, in order to measure whether the integration of the industry-weighted ESG score for a company provided improved insight into the probability distribution of that company's stock returns and have the potential to yield statistically significant alpha, establishing it as risk premium.

### 3.3 Measures

The overarching hypothesis tested in this study was that integrating ESG factors into a portfolio management strategy provides potential for risk premia independent of the risk premia already established by Fama and French. In order to establish ESG as an independent risk premium, this study was conducted in the form of a portfolio case study. Using MSCI data, this study constructed two portfolios to be measured from 2007 to 2017: a benchmark (hereafter referred to as the benchmark portfolio) and an ESG-integrated portfolio (hereafter referred to as the ESG portfolio). Both portfolios are inceptioned in 2007, and were comprised of the same 30 randomly selected stocks from the pool of companies rated by MSCI, and where historical return data was available to the public. This study incorporated 30 stocks, as it is widely acknowledged that idiosyncratic risk is diversified by a portfolio of this size.<sup>20</sup> Elton and Gruber (1977), in a study entitled "Risk Reduction and Portfolio Size: An Analytical Solution", conducted a study to measure the relationship between portfolio size and the diversification of idiosyncratic risk. In this study, they discovered that portfolios incorporating approximately 28 securities reduced the total risk of the portfolio to only 20% higher than the minimum total risk (calculated as the variance of the equally-weighted population portfolio).<sup>21</sup> Both of these portfolios employed a quarterly portfolio turnover of 20%.

The difference between the benchmark portfolio and the ESG-integrated portfolio is thus: when the benchmark portfolio, comprised of 30 randomly selected stocks, was turned over, this study measured the absolute quarterly return of each stock, and replaced the six lowest-returning stocks with six randomly selected stocks from the pool of MSCI-rated companies. However, when the ESG portfolio was turned over, the six lowest-performing stocks were replaced with the six stocks with the highest relative ESG rating improvement in industry-weighted ESG rating score for the quarter. This ESG improvement was measured in relative terms, by quantifying the increase in ESG score over that quarter. Firms that delisted between rebalancing periods were excluded from the sample. This was in order to integrate favorable ESG ratings improvements within an equally-weighted portfolio using an MSCI ESG ratings time series. Quarterly returns were computed for each portfolio from January 2007 to January 2017, for the purposes of measuring the effect of integrating ESG ratings into investment strategies. This test was run for three separate iterations, each beginning in 2007 with a different randomly selected portfolio of 30 stocks. Though the selection of firms within the three ESG portfolios was at first random, and then solely based on quarterly increase in ESG score, each of the portfolios maintained a sector weighting with a 71.09% correlation, as measured by the Pearson product-moment correlation coefficient, with the sector weightings of the MSCI World Index. This indicates a finding similar to that discussed in by Benjamin Auer (2016) in his study “Do Socially Responsible Investment Policies Add or Destroy European Stock Portfolio Valuation”, in which he finds that using negative screens to construct Socially Responsible Investing portfolios does not appear to change the representative industry weights of portfolios when compared with the sector weightings of existing portfolios.<sup>22</sup> These portfolios were

further tested using a two-tailed paired *t*-test, and the Sharpe ratio in order to test not only the returns generated by the portfolios, but also the risk-adjusted return potential for ESG-integrated portfolios. The Sharpe ratio was calculated as  $\frac{\bar{r}_p - r_f}{\sigma_p}$ , where  $\bar{r}_p$  represents the expected return of the portfolio,  $r_f$  represents the risk-free rate (in this case, the returns provided by the randomly selected portfolio benchmark), and  $\sigma_p$  represents the cumulative standard deviation of the excess returns of the portfolio. The risk-free rate used to calculate the Sharpe ratio was assumed to be the quarterly returns yielded by the benchmark portfolio, as this would provide the clearest evidence of the impact of ESG-integration on the Sharpe ratio of the ESG portfolios.

#### 3.4 Assumptions and limitations

This study exclusively employed MSCI ratings in order to present consistent methodology for the purposes of building sample portfolios. This is due to MSCI being widely acknowledged to be an industry leader in the population of ESG ratings, as they have the widest range of data both geographically and longitudinally.<sup>23</sup> However, this study acknowledges that it is the cross-sectional population of data, rather than just data presented by one methodology, that truly populates the space and leads to the true establishment of risk premia. Therefore, this study acknowledges itself to be limited to only the companies rated by MSCI Inc. between 2007 and 2017. This study is also limited by the relative recentness of ESG, and the limited amount of publicly available data for measuring its quantitative impact. As MSCI only began rating companies in 2007, this study is limited to 10 years of data. However, based on the rapidity with which ESG analysts are developing ratings, it is reasonable to assume that the data available is sufficient to establish a trend which indicates risk premia, if not a complete granular analysis.<sup>24</sup>

This data was further limited to only including companies with public historical return data. If a randomly selected stock did not have available historical return data for the quarter in which it was selected, that stock was excluded from the portfolio. This resulted in several companies with a high quarterly momentum-increase in ESG ratings being excluded from the portfolio, due to an inability to procure historical pricing data. However, this limitation emphasizes the results of the study showing that ESG-integration provides alpha, as it presents a counter-argument to the claim that narrowing the investment pool to highly-rated ESG stocks limits the return path. This study demonstrates that even when unavailable data presents a limitation to the ESG stocks that could be placed in a portfolio, the ESG portfolio still outperforms the non-ESG benchmark.

#### 4 Results

The results of this analysis clearly establish a trend which is most logically explained by the existence of independent risk premia promulgated by ESG factors. Table 1 reveals that, from 2007 to 2017,

the integration of ESG factors into Portfolio B resulted in consistent alpha generation.

Though each of the three ESG portfolios analyzed was comprised of 30 randomly chosen global stocks, integrating ESG factors consistently provided higher returns than the benchmark portfolio over a 10-year period. Each ESG portfolio rating had an average increase of 3.97, meaning that stocks added to the ESG portfolio between 2007 and 2017 increased in ESG rating approximately 40%.

The Sharpe ratios for each of these portfolios, measuring the risk-adjusted return compared to the benchmark, demonstrate that integrating ESG factors into portfolio management strategies provides risk-mitigation as well as higher expected returns. This then is the crux of the argument for ESG to be established as risk premium: the integration of ESG factors is shown in this study to provide higher returns and lower risk exposure by providing insight into the probability distribution of returns over multiple geographies and over time.

**Table 1**

Year End	ESG Portfolio 1 Cumulative Alpha (%)	ESG Portfolio 2 Cumulative Alpha (%)	ESG Portfolio 3 Cumulative Alpha (%)
12/31/2007	3.15	-1.09	3.77
12/31/2008	8.35	6.46	11.54
12/31/2009	6.96	7.96	6.76
12/31/2010	5.89	9.41	4.33
12/31/2011	-1.14	5.41	0.38
12/31/2012	-0.77	5.81	2.82
12/31/2013	1.86	6.30	15.53
12/31/2014	10.58	12.87	16.55
12/31/2015	7.06	12.45	10.63
12/31/2016	3.74	17.14	8.98
Turnover (Quarterly, %)	20	20	20
Net Increase in ESG Rating	3.97	3.97	3.97
Sharpe Ratio	0.95	1.29	1.43

In order to test whether ESG-integration was accountable for the increased alpha for the ESG portfolios versus the randomly selected benchmark portfolios, a paired  $t$ -test was conducted to compare the cumulative net returns from the ESG-Integrated portfolios and their respective benchmark portfolios. The results of the test demonstrated that there was a significant difference in the cumulative net returns for each of the three ESG-integrated portfolios [ $M = (-15.16, -11.78, -21.46)$ ,  $SD = (0.17, 0.17, 0.14)$ ] and the three corresponding benchmark portfolios [ $M = (-19.08, -18.45, -28.37)$ ,  $SD = (.17, .17, .14)$ ] conditions;  $t(39, 39) = [6.00, 8.17, 9.06]$ ,  $p = [5.10e - 7, 5.62e - 10, 3.86e - 11]$ . The results of these tests affirm the hypothesis that integrating ESG factors into a portfolio provides independent risk premia. It is imperative to note here that this significant difference was consistent across geography, as the initial 30 randomly chosen stocks in each portfolio were chosen irrespective of the geographic or economic condition of the country from which the equity originated. These results were also consistent over a 10-year period, suggesting the presence of ESG risk premium longitudinally.

A Pearson product-moment correlation coefficient was computed to assess the relationship between ESG risk premium and other established forms of risk premia. The risk premia factor returns used in this analysis to test correlation with ESG risk premium were constructed using the six value-weight portfolios formed on size and book-to-market, the six value-weight portfolios formed on size and operating profitability, and the size value-weighted portfolios formed on size and investment. Size risk premium was calculated as average return of nine small stock portfolios, created by integrating value and growth stocks, robust and weak portfolios, and conservative and aggressive investment strategies,

minus the average return of nine large-cap stock portfolios with similar integrations. Value risk premium was calculated as the average return of two value portfolios minus the average return of two growth portfolios. Profitability risk premium was calculated as the average return of two robust operating profitability portfolios minus the average return of two weak operating profitability portfolios. Investment risk premium was calculated as the average return of two conservative investment portfolios minus the average return of two aggressive portfolios, and market risk premium was calculated as the excess return on the market, value-weighted return of all CRSP firms incorporate into the United States and listed on the NYSE, AMEX, or NASDAQ, that have a CRSP share code of 10 or 11 at the beginning of month  $t$ , good shares and price data at the beginning of  $t$ , and good return data for  $t$  minus the one-month Treasury bill rate.<sup>25</sup> There was a low positive correlation between the two variables ESG risk premium and Investment risk premium and Profitability risk premium, [ $r = 0.293, .146$ ], [ $n = 40$ ],  $p = 0.005$ . There was a negative correlation with Market risk premium, Size risk premium, and value risk premium ( $r = -0.168, -0.057, -0.014$ ), [ $n = 40$ ],  $p = 0.005$ . Overall, there were no statistically significant correlations between ESG risk premium and other established risk premia, indicating that the insight into the probability distribution of returns presented by ESG factors is independent of other risk premia.<sup>26</sup>

## 5 Implications

According to the results presented in Section 4, ESG-integration in global equity portfolios provides higher risk-adjusted returns than non-ESG-integrated portfolios selected from the same pool of equities. Using ESG-integration to select investments allows investors to further use factor analysis and risk premia methodologies to

yield higher risk-adjusted returns. Market risk premium, the differential between the market yield and the risk-free rate, size risk premium, the differential between the returns of large and small companies, value risk premium, the differential between high and low book-to-market ratios, profitability risk premium, the differential between the returns of companies with robust operating profitability and weak profitability ratios, and investment profitability, the differential between conservative and aggressive investment strategies have all been proven to provide higher excess returns across geographies and time periods. Liquidity risk premium, found within the differential between the price and yields of liquid and illiquid bond investments, has likewise been proven to provide excess returns. This study likewise has demonstrated that ESG risk premium, the difference in returns between strategies which integrate ESG factors and strategies which ignore these factors, has been shown to positively affect financial returns across geographies and time periods.

Beyond the statistically significant data on ESG-integration as a factor of risk premia, the implications of this study on both the academic and investment communities are significant. Not only does this research lay the foundation for future academic study and practice of investing, but also the results of the study imply the ESG factors and principles provide insight into the financial performance of a company. Furthermore, companies might consider becoming ESG-aware and incorporate ESG issues and techniques into their organizational structures, business models, policies, and initiatives.

## 6 Conclusion

This study has demonstrated first the characteristics needed to establish the existence of independent risk premia (namely the existence of geographic and longitudinal evidence of increased

insight into the return distribution of an asset by a measurable factor), and secondly evidence that ESG factors, as measured by independent rating agencies, fit the characteristics of independent risk premia. In doing so, it has laid the foundation for future statistically significant data analysis establishing ESG factors as providers of independent and measurable risk premia. It has built upon previous academic literature, such as Bansal *et al.*'s (2016) study, "Socially Responsible Investing: Good Is Good, Bad Is Bad", and others who empirically find that changes in socially responsibility ratings have a statistically significant effect on cumulative returns. Future studies on this topic may demonstrate that ESG factors can be quantifiably integrated into investment strategies in much the same way as other risk premia to generate alpha. Recommended future studies might include the study of ESG as a blended risk premium within a multi-factor model. These future studies may also find it advantageous to investigate the implications of ESG-integration within specific regions, within specific industries, and within asset classes beyond just equities. Cross-sectional ESG data provided by independent rating agencies such as MSCI Inc. is increasingly establishing ESG as not only a valid indicator of a company's long-term health, but also a source of insight into the probability distribution of returns. Such a conclusion extends the purpose of ESG factors beyond policy and corporate social responsibility, instating it instead as risk premia comparable to those established by Fama and French, and built upon by Pástor and Stambaugh, Cathcart, and others.

## Acknowledgment

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## Notes

- <sup>1</sup> Cortez *et al.* (2012), Galbreath (2012), and Mănescu (2011).
- <sup>2</sup> Fama and French (1992, 1993, 2012, 2014).
- <sup>3</sup> Pástor and Stambaugh (2003) and Cathcart (1997).
- <sup>4</sup> Auer (2016), Czerwińska and Kaźmierkiewicz (2015), Girerd-Potin *et al.* (2014), and Polbennikov *et al.* (2016).
- <sup>5</sup> Fama and French (2014).
- <sup>6</sup> Pástor and Stambaugh (2003).
- <sup>7</sup> Lai (2017).
- <sup>8</sup> Bender *et al.* (2014).
- <sup>9</sup> Colacito *et al.* (2016).
- <sup>10</sup> Polbennikov *et al.* (2016).
- <sup>11</sup> David and Simonovska (2016).
- <sup>12</sup> Wu *et al.* (2016).
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- <sup>16</sup> Auer (2016).
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- <sup>20</sup> Chen *et al.* (2011).
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