



Portfolio diversification and ESG criteria:

Must responsible investments really
be poorly diversified?

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Summary

- In 1981, Andrew Rudd came to the “*inescapable conclusion*” that the integration of environment, social or governance (ESG) criteria in investment processes *must* worsen portfolio diversification
 - His conclusion appears to have become widely cited academic wisdom to date, BUT is it right?
 - We argue that it is wrong. Mathematically, ESG criteria can worsen but can also improve portfolio diversification.
- We argue that portfolio diversification is driven by 3 factors: (i) number of stocks (variance term), (ii) weighted average correlation of stocks, (iii) weighted average specific risk of stocks
- Recently, robust evidence suggests a negative relationship between ESG rating and specific risk (Bauer et al. 2009, Boutin-Dufresne and Savaria, 2004; Lee and Faff, 2009)
- While ESG integration likely worsens portfolio diversification via driver (i) & (ii), it similarly likely improves portfolio diversification through driver (iii)
- Implications: Professionals and academics might be interested to open a debate, if ESG integration really must worsen portfolio diversification

Responsible investment's (RI) diversification penalty: nearly 30 years of academic consent



- Rudd (1981: 57) arrived at “[t]he inescapable conclusion .. that the imposition of .. [social responsibility] criteria increases investment risk. The increase in investment risk will not be accompanied by a commensurate increase in expected return because it arises solely from moving the portfolio away from its normal position. The increased risk is not the result of an active decision, but a damaging permanent bias.” Rudd (1981: 59) was strongly convinced that “[i]n general the impact of social responsibility criteria decreases the level of diversification ... in the portfolio.”
- Many researchers overtook Rudd’s inescapable conclusion in **general** (e.g. Barnett and Salomon, 2006; Bauer et al., 2006; Geczy et al., 2005; Renneboog et al., 2008)
- At most, the economic consequentiality of responsible investment’s diversification penalty has been challenged (e.g. Derwall, 2007)
- The possibility that responsible investments’ diversification penalty is economically inconsequential is also used by empirical studies to explain, why they cannot find RI’s diversification penalty (Bello, 2005; Renneboog, ter Horst and Zhang, 2007)



The 3 drivers of Portfolio Diversification:

$$\sigma_n = \sqrt{\sum_{j=1}^n w_j^2 \sigma_j^2 + \sum_{j=1}^n \sum_{i=1}^n w_i w_j \rho_{i,j} \sigma_i \sigma_j} \quad \forall \rho_{ij} \sigma_i \sigma_j \neq \rho_{i,j=i} \sigma_i \sigma_j$$

- Variance term diversified away with number of stocks (1st driver)
- Covariance matrix crucial (Covariance_{a,b} = Correlation_{a,b} * Standard Deviation_a * Standard Deviation_b)
 - Weighted average correlation between assets (2nd driver)
 - Weighted average specific risk of assets (3rd driver)
- Tradeoff between 2nd & 3rd driver: In a single covariance term, a reduction of the correlation by 10% has the same effect on portfolio risk than reducing the average standard deviation by 5.13%

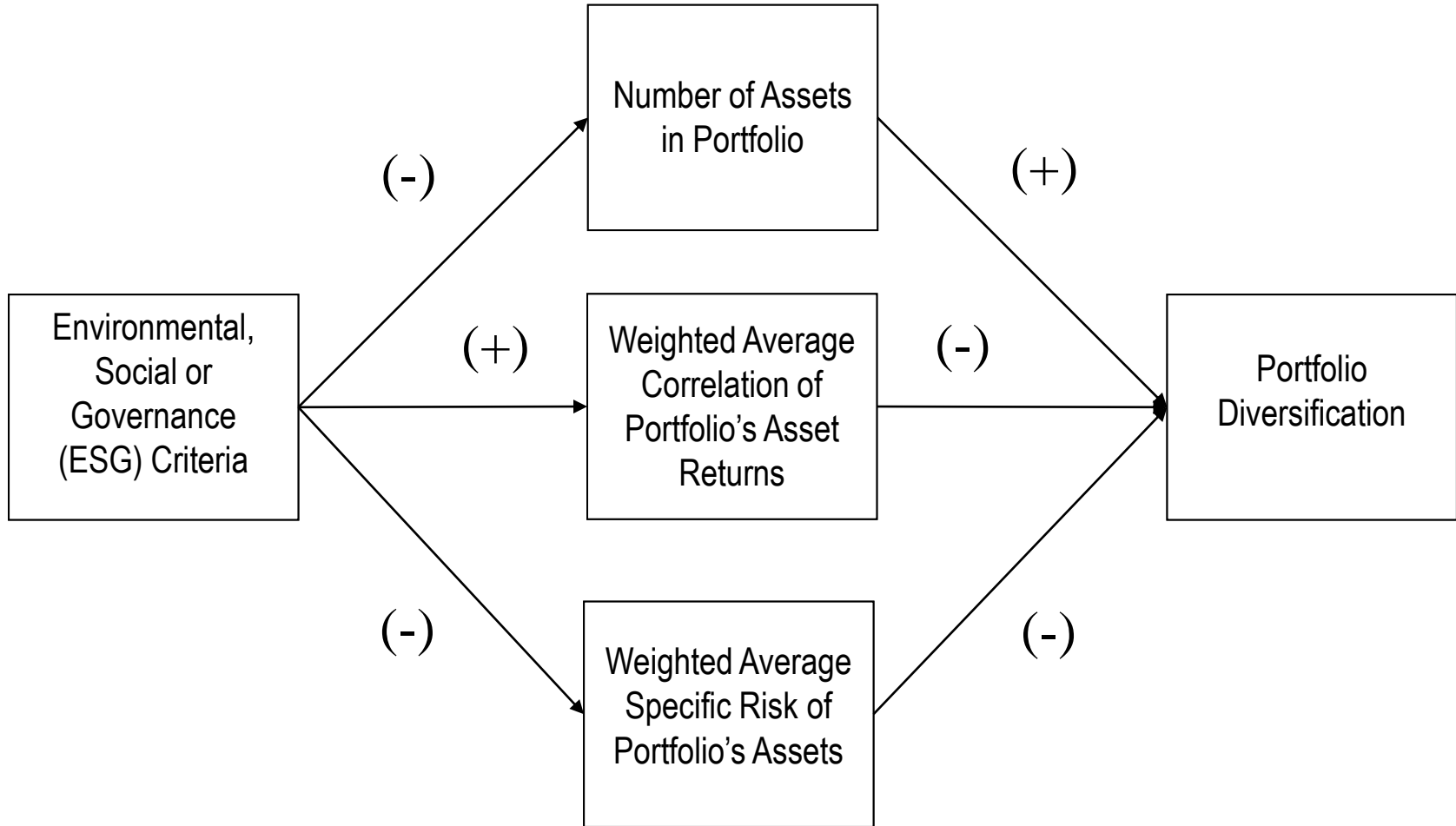
ESG criteria and risk



- Boutin-Dufresne & Savaria (2004): Find Canadian firms in bottom quartile ESG rating to have a 40% higher specific risk than top quartile peers between 1995 and 1999
- Lee and Faff (2009): Find global Dow Jones Sustainability Index (DJSI) members to have a statistically highly significantly 18% lower specific risk than country, industry and size matched non-responsible Dow Jones Global Index members from 1998-2002
- Bauer et al. (2009): Based on sample of 976 US firms from 1995 to 2006 and a comprehensive set of control variables, they find the quality of firm's employee relations to be significantly negatively related to its specific risk.
- Relationship appears robust, because
 - No conflicting empirical results
 - Consistent with theories that corporate ESG consideration reduces firm specific ESG risk (Fombrun, Gardberg & Barnett, 2000; Godfrey, 2005)
 - Godfrey et al. (2009) find corporate ESG actions directed towards the society to generate an insurance like goodwill, which protects firms from overly negative market reactions in incidents of public legal or regulatory actions against them



Portfolio Diversification and ESG criteria: A simple theoretical model



Implications of simple theoretical model



- Especially best-in-box or best-in-class ESG integration (but also positive screening) has a high potential of improving portfolio diversification compared with an otherwise identical portfolio (i.e. same number of stocks)
- Even in case of indices, best in class ESG integration might represent a competitive risk management practices, as the marginal effect of diversifying across numbers of stocks weakens substantially with a rising number of assets in a portfolio
- Empirical findings are consistent with our simple theoretical model:
 - Bello (2005: 43) finds that U.S. “responsible .. funds do not differ significantly from conventional funds in ... the degree of portfolio diversification”.
 - Renneboog et al. (2007) do not observe responsible funds to have a significantly worse diversification than conventional funds.
 - Schröder (2007) observes responsible and conventional investment indices to have comparable Sharpe ratios

Implications of simple theoretical model



- Generally, we aim to open a debate with this paper, if ESG integration really must worsen portfolio diversification.
- Implications for professionals and policy makers:
 - Mainstream active investment managers appear well advised to consider the inclusion of ESG criteria in their portfolio management process to optimise their risk management.
 - Pension funds should at least contemplate about the use of ESG criteria, as an ignorance of ESG criteria could violate their fiduciary risk management duties.
 - Policy makers might want to strengthen their support of ESG criteria in financial markets, as these cannot only decrease the ESG risk but also the financial risk of investment portfolios.
- Implications for academics:
 - A new perspective on the financial utility of ESG investment
 - In ESG investment as in Asset Pricing: “Idiosyncratic risk matters!”
[Title of Goyal & Santa Clara, 2003, Journal of Finance]



Thank you for your attention.

We appreciate
(especially critical)
questions and comments.