# Responsible investing: upside potential and downside protection?

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# Related Literature and Research Question (1/2)

"*Institutional investors and professional asset managers seek to use ESG primarily to compete for enhanced long-term returns and eliminated investment risks.*" (BNP Paribas, 2019)

1. Responsible investors & their dual aims:
   - **Enhance upside potential**: ESG opportunities and promising financial performance potential for firms and investors (Derwall et al., 2005; Edmans, 2011; Kempf and Osthoff, 2007; Nofsinger and Varma, 2014)
   - **Protect from downside risk**: ESG risks and downside risk mitigation (Diemont et al., 2016; Hoepner et al., 2021; Ilhan et al., 2021; Jagannathan et al., 2017)

⇒ Investors' **asymmetric preferences** for positive and negative deviations

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# Related Literature and Research Question (2/2)

Markowitz (1959) commented on risk that "*Variance considers extremely high and extremely low returns equally undesirable*." (p.193).

2. Technical challenge:
   - Symmetric risk preferences assumption
   - Conventional risk proxies & Risk-adjusted returns

$\Rightarrow$ Jointly measure upside potential and downside risk

3. Research Question:
   - Can responsible investors who incorporate ESG risks and opportunities into their investments achieve the dual objectives?


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# Research Design (1/2)

1. To separately measure upside potential and downside risk:
   - Utilise a non-symmetric option pricing research design
   - Relaxes the symmetric assumption

2. Sample, Data & Measures
   - All financial services companies listed in the S&P 500
   - Option price data from OptionMetrics:
     - Good volatility (orthogonalised): Idiosyncratic upside potential
     - Bad volatility (orthogonalised): Idiosyncratic downside risk
     - Joint volatility: Total risk
   - To identify responsible investors:
     - Responsible Investment (RI) ratings from MSCI ESG Stats
     - Principles for Responsible Investment (PRI) signatories' status
   - 46 US financial institutions (2016–2019)


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# Research Design (2/2)

3. Baseline Method: Panel regression analysis with FE & Two-way clustering error

$$Volatility_{i,w,t} = \beta_0 + \beta_1 Responsible\ Investment_{i,t-1} + \beta_2 Controls_{i,t-1} + \beta_3 Firm\ FE_i + \epsilon_{i,w,t} \quad (1)$$

$Volatility_{i,w,t}$ (firm $i$ in week $w$ and year $t$):

- *Idiosyncratic upside potential*
- *Idiosyncratic downside risk*
- or *Total volatility*

$Responsible\ Investment_{i,t-1}$ (firm $i$ and year $t-1$):

- MSCI RI Score
- MSCI RI Management Score (for robustness test)
- or PRI membership dummy

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# Main Findings: RI Performance (MSCI) & Volatilities

Main Results of RI Performance on Volatilities

| | (1) Idiosyncratic upside | (2) Idiosyncratic upside | (3) Idiosyncratic downside | (4) Idiosyncratic downside | (5) Total volatility |
|---|---|---|---|---|---|
| RI Score | **0.0854***** | **0.111***** | **-0.0834***** | **-0.131***** | **0.443** |
| | (4.18) | (4.26) | (-3.49) | (-3.69) | (0.85) |
| Controls | V1 | V2 | V1 | V2 | V1 |
| Firm FE | YES | YES | YES | YES | YES |
| Clustering | Firm&Week | Firm&Week | Firm&Week | Firm&Week | Firm&Week |
| Observations | 3737 | 3737 | 3737 | 3737 | 3737 |
| Adj. R-squared | 0.358 | 0.345 | 0.200 | 0.169 | 0.598 |

V1: full controls. V2: Controls without monthly stock return volatility. The numbers in parentheses are t-statistics.

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# Main Findings: PRI Membership & Volatilities

Regression of PRI Membership on Upside Potential & Downside Risk

| | (1) Idiosyncratic upside (bps) | (2) Idiosyncratic downside (bps) |
|---|---|---|
| PRI | **-0.0458** | **0.174** |
| | (-0.31) | (1.66) |
| Controls | YES | YES |
| Firm FE | NO | NO |
| Clustering | Firm&Week | Firm&Week |
| Observations | 7306 | 7306 |
| Adj. R-squared | 0.0387 | 0.0556 |

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# Robustness: RI Management Performance (MSCI) & Volatilities

Robustness Test: Regression Results of RI Management on Volatilities

| | (1) Idiosyncratic upside | (2) Idiosyncratic upside | (3) Idiosyncratic downside | (4) Idiosyncratic downside | (5) Total volatility |
|---|---|---|---|---|---|
| RI Management Score | **0.101**$^{***}$ | **0.135**$^{***}$ | **-0.116**$^{***}$ | **-0.181**$^{***}$ | **-0.0314** |
| | (4.55) | (5.56) | (-5.51) | (-6.52) | (-0.05) |
| Controls | V1 | V2 | V1 | V2 | V1 |
| Firm FE | YES | YES | YES | YES | YES |
| Clustering | Firm&Week | Firm&Week | Firm&Week | Firm&Week | Firm&Week |
| Observations | 3737 | 3737 | 3737 | 3737 | 3737 |
| Adj. R-squared | 0.360 | 0.351 | 0.204 | 0.181 | 0.597 |

V1: full controls. V2: Controls without monthly stock return volatility. The numbers in parentheses are t-statistics.

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# Placebo Tests: Social Controversy (risks only)

Regression of Social Controversy on Upside Potential & Downside Risk

| | (1) Idiosyncratic upside | (2) Idiosyncratic downside |
|---|---|---|
| Social Controversy Score | **-0.0219** | **0.0187** |
| | (-1.35) | (0.90) |
| Controls | YES | YES |
| Firm FE | YES | YES |
| Clustering | Firm&Week | Firm&Week |
| Observations | 7306 | 7306 |
| Adj. R-squared | 0.257 | 0.136 |

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# Placebo Tests: Governance Controversy (risks only)

Regression of Governance Controversy on Upside Potential & Downside Risk

| | (1)<br>Idiosyncratic upside | (2)<br>Idiosyncratic downside |
|---|---|---|
| Governance Controversy Score | **-0.00765** | **0.00548** |
| | (-0.45) | (0.30) |
| Controls | YES | YES |
| Firm FE | YES | YES |
| Clustering | Firm&Week | Firm&Week |
| Observations | 7306 | 7306 |
| Adj. R-squared | 0.255 | 0.135 |

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# Deal with Reverse Causality

Granger-style reverse causality minimisation method (Godfrey et al., 2020):

1. Orthogonalisation to remove correlation

$$\begin{aligned} RI\ Score_{i,t} &= \beta_0 + \beta_1 Idiosyncratic\ upside_{i,t-1} + \beta_2\ Controls_{i,t-1} + \epsilon_{i,t} \\ RI\ Score_{i,t} &= \beta_0 + \beta_1 Idiosyncratic\ downside_{i,t-1} + \beta_2\ Controls_{i,t-1} + \epsilon_{i,t} \end{aligned} \tag{2}$$

2. To separate the RI Score into two components:
   - The one driven by the idiosyncratic upside (RIDIU) or idiosyncratic downside (RIDID)
   - The one that is uncorrelated to the idiosyncratic upside (RIUIU) or idiosyncratic downside (RIUID)


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# Causality-minimised Main Results: Uncorrelated Component

Causality-minimised RI Performance on Upside Potential & Downside Risk

| | (1) Idiosyncratic upside (bps) | (2) Idiosyncratic downside (bps) |
|---|---|---|
| RIUIU | **0.0717*** | |
| | (2.03) | |
| RIUID | | **-0.124**** |
| | | (-2.55) |
| Controls | YES | YES |
| Firm FE | YES | YES |
| Clustering | Firm&Week | Firm&Week |
| Observations | 3220 | 3220 |
| Adj. R-squared | 0.366 | 0.223 |

0.0717*: p-value, 5.5%

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# Sensitivity Analysis: Correlated Component

Regression of RIDIU and RIDID on Upside Potential & Downside Risk

| | (1) Idiosyncratic upside (bps) | (2) Idiosyncratic downside (bps) |
|---|---|---|
| RIDIU | -0.172* | |
| | (-2.00) | |
| RIDID | | 0.298** |
| | | (2.45) |
| Controls | YES | YES |
| Firm FE | YES | YES |
| Clustering | Firm&Week | Firm&Week |
| Observations | 6320 | 6320 |
| Adj. R-squared | 0.336 | 0.216 |

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# Key Takeways

1. Responsible investment performance is positively associated with idiosyncratic upside potential
2. Responsible investment performance is negatively associated with the idiosyncratic downside risk
3. Responsible investment is not associated with the total volatility risk (includes both upside and downside)
4. The quality of responsible investment measures mediates the effect
   - There is no effect of being PRI signatories on the upside and downside deviations
   - Investors with highly and comprehensively rated responsible investment processes (i.e., MSCI RI ratings) show a significant impact

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# Contributions

1. Conceptually: reorients SRI research from performance and risk analysis to considering investors' risk preferences and investment objectives
2. Methodologically: the first study provides a purely financial measurement for the upside potential and downside risk of responsible investing

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# Appendix I

Quality of responsible investing measure matters:
1. The efficacy of ESG integration is important (Cappucci, 2018; Eccles and Kastrapeli, 2019)

2. Only full ESG integration has the potential to deliver on the goal of sustainable value creation for investors (Amel-Zadeh and Serafeim, 2018)

3. Quality/comprehensiveness of responsible investment measures
$\Rightarrow$ The degree of ESG integration by investors

4. RI Measures (MSCI RI vs. PRI):

- Full integration (MSCI RI ratings):
  - Explicit inclusion of ESG risks and opportunities in investment
- Criticism on PRI:
  - Could be a misleading indicator of the actual level of ESG integration
  - Signatories might not putting commitments into practice

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# Appendix II


Amel-Zadeh, A. and Serafeim, G. (2018). Why and How Investors Use ESG Information: Evidence from a Global Survey. *Financial Analysts Journal*, 74(3):87–103.

BNP Paribas (2019). The ESG Globla Survey. Technical report, BNP Paribas.

Cappucci, M. (2018). The ESG Integration Paradox. *Journal of Applied Corporate Finance*, 30(2):22–28.

Derwall, J., Guenster, N., Bauer, R., and Koedijk, K. (2005). The Eco-Efficiency Premium Puzzle. *Financial Analysts Journal*, 61(2):51–63.

Diemont, D., Moore, K., and Soppe, A. (2016). The Downside of Being Responsible: Corporate Social Responsibility and Tail Risk. *Journal of Business Ethics*, 137(2):213–229.

Eccles, R. G. and Kastrapeli, M. D. (2019). The Investing Enlightenment. Technical report, State Street Corporation.

Edmans, A. (2011). Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices. *Journal of Financial Economics*, 101(3):621–640.


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# Appendix III


Godfrey, C., Hoepner, A. G. F., Lin, M.-T., and Poon, S.-H. (2020). Women on Boards and Corporate Social Irresponsibility: Evidence from a Granger Style Reverse Causality Minimisation Procedure. *The European Journal of Finance*, pages 1–27.

Hoepner, A. G. F., Oikonomou, I., Sautner, Z., Starks, L. T., and Zhou, X. (2021). ESG Shareholder Engagement and Downside Risk. *European Corporate Governance Institute – Finance Working Paper No. 671/2020*.

Ilhan, E., Sautner, Z., and Vilkov, G. (2021). Carbon Tail Risk. *The Review of Financial Studies*, 34(3):1540–1571.

Jagannathan, R., Ravikumar, A., and Sammon, M. (2017). Environmental, Social, and Governance Criteria: Why Investors are Paying Attention. *NBER Working Paper No. w24063*.

Kempf, A. and Osthoff, P. (2007). The Effect of Socially Responsible Investing on Portfolio Performance. *European Financial Management*, 13(5):908–922.

Markowitz, H. M. (1959). *Portfolio Selection: Efficient Diversification of Investments*. Yale University Press.


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# Appendix IV

Nofsinger, J. and Varma, A. (2014). Socially Responsible Funds and Market Crises. *Journal of Banking & Finance*, 48:180–193.

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