# The Cost of Socially Responsible Investing

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Socially responsible investors choose not to invest in companies whose behavior they judge to be at odds with the social good as they perceive it. Moreover, some proponents of socially responsible investing assert that "good" companies—those in harmony with the social good—perform as well or better than "bad" companies—those whose behavior is socially irresponsible. They conclude, therefore, that socially responsible investing is without cost and may even enhance performance. We withhold judgment about this assertion of market inefficiency, but we reject the claim that socially responsible investing is without cost for the following reasons. If investors are motivated to own good companies because they expect higher returns from them, they are not socially responsible investors. They are simply pursuing an active management strategy centered on the belief that good companies generate above average returns and bad companies generate below average returns. This distinction is consistent with Langbein and Posner's [1980] definition of socially responsible investing as "excluding the securities of otherwise attractive companies from an investor's portfolio because the companies are judged to be socially irresponsible, and including the securities of certain otherwise unattractive companies because they are judged to be behaving in a socially laudable way" (p. 73). If we accept this definition, it follows that the exclusion of only one bad company that outperforms its good company substitute imposes a cost, even if good companies, on average, outperform bad companies.

Having argued that socially responsible investing is costly, we do not necessarily oppose it; rather, we argue that investors should be informed of its cost. Suppose, for example, that exclusion of tobacco companies reduces return. Some may argue that this cost is worth incurring because it focuses attention on the issue or because it may influence company behavior. Others might claim that it would be more effective to collect the incremental return and deploy it directly toward treatment of smoking-related illnesses, or toward policies designed to curb smoking. Without knowledge of the expected cost, it would be difficult to evaluate this tradeoff.

## METHODOLOGY

We employ a simulation technique known as Monte Carlo simulation to measure the cost of socially responsible investing. Monte Carlo simulation is a procedure with which we generate possible future outcomes by drawing random numbers from a theoretical distribution with predefined parameters. Stanislaw Ulam and John von Neumann introduced the term Monte Carlo simulation when they worked on the Manhattan Project at the Los Alamos National Laboratory. Ulam invented the procedure of substituting a

sequence of random numbers into equations to solve problems relating to nuclear explosions. In our opinion, this is one of the better examples of why simulation is often preferable to the empirical alternative. In honor of Ulam's relative, who was known to frequent the gambling casinos at Monte Carlo, Ulam and von Neumann used Monte Carlo as a code name for their secret work.[1]

The following steps explain how we employ Monte Carlo simulation to estimate the cost of socially responsible investing:[2]

1. We first draw a random sample of 500 returns from a normal distribution with a mean of 0% and a standard deviation representative of the cross-sectional dispersion of a particular index. We set the mean equal to 0% because we are interested in measuring the impact of socially responsible investing on active returns.
2. We rank the returns from highest to lowest.
3. We then introduce noise to the ranking by randomly selecting return pairs and switching their positions. The number of return pairs we switch is determined by the skill level we wish to simulate.
4. Then we select a subsample of returns, starting at the top of the list and working our way down the list. We calculate the arithmetic average of this subsample, which represents the performance for an investor with imperfect foresight who selects an equally weighted portfolio from an unrestricted universe.
5. We next randomly delete some fraction of the original universe to capture the effect of restricting a universe for purposes unrelated to expected performance. By randomly deleting observations, we assume implicitly that good companies are no more or less likely to outperform bad companies.
6. We again select a subsample comprising the same number of returns starting at the top and working our way down the list. Because we have randomly deleted some of the original returns from the top of the list, we are forced to replace them with lower returns. We calculate the arithmetic average of the subsample, which represents the performance for an investor with imperfect foresight who selects from a restricted universe.
7. We subtract the arithmetic average of the returns selected from the restricted universe from the arithmetic average of the returns selected from the unrestricted universe. This difference is the cost of socially responsible investing for an investor with imperfect foresight.
8. We repeat steps one through seven 10,000 times and compute the average cost.

## RESULTS

We simulate the cost of socially responsible investing under a variety of scenarios. We vary the cross-sectional standard deviation of the underlying distribution to accord with the actual standard deviations in 2007 for four indices: Standard & Poor's (S&P) 500, MSCI EAFE, MSCI World, and MSCI All Country World. We select portfolios of 100 and 250 securities, assuming a variety of skill levels ranging from correctly ranking 50%, 52%, 54%, 56%, 58%, and 60% of the securities in the universes. We estimate the costs associated with excluding 10%, 20%, and 30% of the securities.

Exhibit 1 shows how the fraction of correct rankings corresponds to the information coefficient and the information ratio. An information coefficient is the correlation of an investor's ex ante forecast of returns for a sample of securities with the ex post realization of those securities' returns. If an investor correctly ranks 54% of the securities, her information coefficient equals 7.75%. These values correspond to an information ratio of 1.73%. The information ratio equals active return divided by active risk.

## EXHIBIT 1

**Correspondence of Fraction of Correct Choices to Information Coefficient and Information Ratio**

| | Fraction of Correct Choices | | | | |
|---|---|---|---|---|---|
| | 52% | 54% | 56% | 58% | 60% |
| Information coefficient | 3.86% | 7.75% | 12.02% | 15.64% | 19.82% |
| Information ratio | 0.86 | 1.73 | 2.69 | 3.50 | 4.43 |

Exhibits 2 shows the cost of socially responsible investing for an investor who chooses 100 securities from a universe of 500 securities with cross-sectional dispersion equal to a variety of equity indices.

Exhibit 2 reveals that an investor who correctly ranks 52% of a universe with cross-sectional dispersion similar to that of the S&P 500 Index (35%), and who foregoes investment in 10% of the securities, should expect to give up 0.08% annually to an investor of equal skill who selects securities from an unrestricted universe. This cost rises with the investor's skill level, number of securities excluded from the universe, and cross-sectional dispersion of the universe. For example, an investor who correctly ranks 60% of a universe with cross-sectional dispersion similar to that of the MSCI All Country World Index (64%), and who foregoes investment in 30% of the securities, should expect to give up 2.71% annually to an unrestricted investor. An investor who correctly ranks 50% of the universe has no skill and therefore should not incur any cost by excluding securities. The fact that the reported costs are slightly above or below zero reflects sampling error in the simulations.

Exhibit 3 presents the same information for investors who select portfolios of 250 securities.

Exhibit 3 reveals that the cost of socially responsible investing rises as the number of securities in the portfolio grows. An investor who correctly ranks 54% of a universe with cross-sectional dispersion similar to that of the S&P 500, and who selects 100 securities, incurs a cost of 0.37% by foregoing investment in 20% of the securities. If this investor were to increase the number of securities to 250, her cost would rise to 0.53%. The cost rises because the investor must substitute progressively lower-ranked securities as she expands the number of securities in the portfolio.

Our estimates of the cost of socially responsible investing are expressed as percentages of portfolio value for a single year. Exhibit 4 converts these percentage costs into their cumulative dollar values assuming portfolios of 100 securities, 52% correct choices, 20% exclusion, initial

## EXHIBIT 2

**Cost of Socially Responsible Investing for 100 Stock Portfolios**

| S&P 500 Dispersion (35%) | | | | | | |
|---|---|---|---|---|---|---|
| Fraction of | Fraction of Correct Choices | | | | | |
| Excluded Securities | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | 0.02% | 0.08% | 0.17% | 0.23% | 0.32% | 0.42% |
| 20% | –0.03% | 0.17% | 0.37% | 0.53% | 0.71% | 0.88% |
| 30% | 0.01% | 0.31% | 0.57% | 0.88% | 1.18% | 1.50% |
| MSCI EAFE Dispersion (39%) | | | | | | |
| Fraction of | Fraction of Correct Choices | | | | | |
| Excluded Securities | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | –0.02% | 0.09% | 0.15% | 0.27% | 0.38% | 0.49% |
| 20% | 0.02% | 0.18% | 0.39% | 0.60% | 0.79% | 1.02% |
| 30% | –0.02% | 0.36% | 0.63% | 0.98% | 1.28% | 1.60% |
| MSCI World Dispersion (44%) | | | | | | |
| Fraction of | Fraction of Correct Choices | | | | | |
| Excluded Securities | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | –0.02% | 0.12% | 0.23% | 0.29% | 0.40% | 0.51% |
| 20% | –0.03% | 0.21% | 0.47% | 0.65% | 0.93% | 1.15% |
| 30% | –0.04% | 0.35% | 0.73% | 1.07% | 1.44% | 1.86% |
| MSCI ACWI Dispersion (64%) | | | | | | |
| Fraction of | Fraction of Correct Choices | | | | | |
| Excluded Securities | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | –0.01% | 0.19% | 0.28% | 0.46% | 0.61% | 0.78% |
| 20% | 0.02% | 0.31% | 0.66% | 1.00% | 1.28% | 1.62% |
| 30% | –0.07% | 0.58% | 1.06% | 1.63% | 2.22% | 2.71% |

## EXHIBIT 3

**Cost of Socially Responsible Investing for 250 Stock Portfolios**

| S&P 500 Dispersion (35%) | | | | | | |
|---|---|---|---|---|---|---|
| Fraction of Excluded Securities | Fraction of Correct Choices | | | | | |
| | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | 0.00% | 0.12% | 0.22% | 0.37% | 0.48% | 0.60% |
| 20% | −0.02% | 0.25% | 0.53% | 0.79% | 1.05% | 1.32% |
| 30% | −0.02% | 0.47% | 0.87% | 1.36% | 1.78% | 2.24% |
| **MSCI EAFE Dispersion (39%)** | | | | | | |
| Fraction of Excluded Securities | Fraction of Correct Choices | | | | | |
| | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | −0.01% | 0.12% | 0.29% | 0.39% | 0.53% | 0.66% |
| 20% | 0.01% | 0.27% | 0.58% | 0.87% | 1.19% | 1.47% |
| 30% | −0.03% | 0.49% | 0.99% | 1.48% | 2.00% | 2.49% |
| **MSCI World Dispersion (44%)** | | | | | | |
| Fraction of Excluded Securities | Fraction of Correct Choices | | | | | |
| | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | 0.00% | 0.13% | 0.30% | 0.43% | 0.60% | 0.76% |
| 20% | −0.02% | 0.33% | 0.66% | 1.01% | 1.34% | 1.70% |
| 30% | −0.04% | 0.57% | 1.08% | 1.68% | 2.24% | 2.82% |
| **MSCI ACWI Dispersion (64%)** | | | | | | |
| Fraction of Excluded Securities | Fraction of Correct Choices | | | | | |
| | 50% | 52% | 54% | 56% | 58% | 60% |
| 10% | 0.01% | 0.21% | 0.46% | 0.66% | 0.86% | 1.09% |
| 20% | −0.02% | 0.51% | 0.94% | 1.44% | 1.94% | 2.44% |
| 30% | −0.01% | 0.75% | 1.64% | 2.41% | 3.28% | 4.13% |

## EXHIBIT 4

**Multi-Year Cost of Socially Responsible Investing: 100 Stock Portfolios, 52% Correct Choices, 20% Excluded**

| Years | SP500 | MSCI EAFE | MSCI World | MSCI ACWI |
|---|---|---|---|---|
| 5 | $11,598,976 | $12,203,493 | $14,447,678 | $20,727,416 |
| 10 | $33,950,867 | $35,712,943 | $42,248,023 | $60,481,124 |
| 20 | $145,442,088 | $152,927,717 | $180,635,728 | $257,490,455 |

portfolio value of $1 billion, and underlying market return of 8.0% for periods of 5, 10, and 20 years. Exhibit 5 presents the same information under the same assumptions with the sole exception that the portfolios contain 250 securities.

Exhibits 4 and 5 inject a harsh reality into the debate about socially responsible investing. A socially motivated investor can either exclude bad companies from her portfolio and thereby sacrifice vast sums of wealth through time or invest in an unrestricted fashion and deploy some or all of these funds directly toward reforming those who behave badly or mitigating the consequences of their bad behavior.

## SUMMARY

We summarize our main points as follows:

- We argue that investors should estimate the cost of socially responsible investing in order to ascertain whether it is preferable to restrict their investment choices or to invest without restriction and deploy the savings directly toward social improvement.
- We make no assumption about the relative performance of "good" companies and "bad" companies. We argue, though, that investors who select good companies because they expect them to outperform

## EXHIBIT 5

**Multi-Year Cost of Socially Responsible Investing: 250 Stock Portfolios, 52% Correct Choices, 20% Excluded**

| Years | SP500 | MSCI EAFE | MSCI World | MSCI ACWI |
|---|---|---|---|---|
| 5 | $16,943,637 | $18,545,523 | $21,985,290 | $34,326,625 |
| 10 | $49,504,437 | $54,154,979 | $64,123,854 | $99,695,830 |
| 20 | $211,302,045 | $230,900,314 | $272,765,315 | $420,532,381 |

bad companies engage not in socially responsible investing but rather in active management. Socially responsible investing, by definition, requires investors to avoid bad companies even if they expect them to outperform good companies.

- We observe that socially responsible investing imposes a cost to skilled investors even if good companies, on average, outperform bad companies. If only a single bad company outperforms its good company substitute the investor suffers a cost.
- We employ Monte Carlo simulation to estimate the cost of socially responsible investing. We first simulate the returns for investors with imperfect foresight who select securities from unrestricted universes. We then randomly delete securities from the universe and substitute the next best-ranked securities into the portfolio. The difference in return of the portfolios selected from the unrestricted universes and the restricted universes is the cost of socially responsible investing.
- We show that the cost of socially responsible investing increases with the investor's skill, cross-sectional dispersion of the universe, fraction of the universe that is restricted, and number of securities in the portfolio.
- We illustrate through our simulations that the cost of socially responsible investing is substantial for even moderately skilled investors. For example, an investor with an information ratio of 0.86 who chooses 250 securities from a universe with cross-sectional dispersion similar to that of the MSCI World Index, and for which 20% of the securities are restricted, should expect to sacrifice nearly $273 million over a 20-year period assuming an initial portfolio value of $1 billion and a market return of 8.0%.[3]

## ENDNOTES

[1]See Browne [1993] for an excellent description of Monte Carlo simulation.

[2]See Kritzman, Myrgren, and Page [2008] for an alternative approach to measuring the cost of socially responsible investing.

[3]We thank participants at the "Socially Responsible Investing: Prudent or 'Im'?" Conference, co-sponsored by the National Center on Philanthropy and the Law and the TIFF Education Foundation, for their informative and spirited discussion of this topic.

## REFERENCES

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