

ESG: The 'equity vaccine' during the COVID-19 induced market downturn?

In the aftermath of the COVID-19 crash in March this year, many were quick to point towards the superior performance of stocks that also had good Environmental, Social, Governance (ESG) profiles.¹ While we are strong advocates of sustainable and responsible corporate behaviour, one has to ask, was the enthusiasm about ESG as an 'equity vaccine' premature?²



Summary

- The academic literature on the performance of firms with good ESG profiles during the COVID-19 market turmoil is mixed.
- ESG scores are not designed to identify investment opportunities, but rather to provide a holistic picture of firms as corporate citizens, making the identification of a link to financial performance difficult.
- Osmosis' factor of Resource Efficiency was developed as an investment signal. After accounting for other drivers of stock returns, Resource Efficiency was rewarded during the period from February 17th 2020 to March 27th 2020 and acted as an independent driver of risk-adjusted excess returns (alpha).

¹ See, for example:

- Polman, P. 2020. The coronavirus pandemic may be a turning point for responsible business. In Fortune. <https://fortune.com/2020/04/14/coronavirus-responsible-business-leadership-covid-19/>
- Darbyshire, M. 2020. ESG funds continue to outperform wider market. In Financial Times. <https://www.ft.com/content/46bb05a9-23b2-4958-888a-c3e614d75199>
- McCabe, C. 2020. ESG Investing Shines in Market Turmoil, With Help From Big Tech. In Wall Street Journal. <https://www.wsj.com/articles/esg-investing-shines-in-market-turmoil-with-help-from-big-tech-11589275801>
- Jolly, J. 2020. Investing in firms with better record on social issues pays, study finds. In The Guardian. <https://www.theguardian.com/business/2020/may/18/investing-in-firms-with-better-record-on-social-issues-pays-study-finds>

² Willis, A. 2020. ESG as an Equity Vaccine. In Morningstar Market Insights. <https://www.morningstar.ca/ca/news/201741/esg-as-an-equity-vaccine.aspx>

Introduction

Presented with a unique setting to analyse the relationship between ESG and stock price movements, academics seized the opportunity and produced a myriad of interesting insights on the role sustainability played during the COVID-19-induced market downturn. So far, the difficulty in answering whether it is possible to 'do well by doing good' lies in identifying the direction of causality: Are firms with already strong financial performance in a position that they afford to care about ESG, or do ESG considerations lead to better financial performance? The COVID-19 market downturn provides a useful tool in addressing the question of causality. The crash is an unpredictable event that affected the economy and thus allows us to study the question of whether firms' existing conditions, including ESG efforts, are beneficial or detrimental to financial performance.

As is often the case, part of the academic literature highlights that ESG had a positive effect on stock prices during the market downturn, while others find no material link between ESG and stock price reactions. We start by providing an overview of the academic findings.

Thereafter, given Osmosis' proprietary measure of corporate Resource Efficiency and its distinct nature as an environmental investment signal, we analyse its performance during the COVID crash and disentangle its return contribution from traditional measures of corporate quality and financial resiliency.



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Did ESG immunise stocks against the COVID-19 market crash?

On the one hand, Albuquerque and co-authors³ contrast the daily return behaviour of firms with good environmental and social (ES) performance to their peers with poorer ES performance. The results show that until the end of February no return differences could be identified, but thereafter high ES stocks steadily outperformed low ES stocks with the effect plateauing in mid-March. The study also reported lower return volatility for high ES stocks. Potential channels explaining the performance differential are better operating performance and higher customer loyalty for high ES firms. The authors conclude that ES stocks were more resilient during the COVID-19 market crash.

In a similar vein, Ding and co-authors⁴ find that drops in stock prices are less severe for firms with more robust ex-ante finances, less exposed supply chains, but also higher pre-pandemic ESG performance that strengthens the relationships with key stakeholders such as employees, customers, and suppliers.

A separate study⁵ found that the stock prices of companies that were perceived as having a more adequate response to the impact of COVID-19 on employees, suppliers, and customers, as measured by positive public sentiment to those corporate responses, were hit less hard than companies that had

³ Albuquerque, R., Koskinen, Y., Yang, S. and Zhang, C., 2020. Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies*.

⁴ Ding, W., Levine, R., Lin, C. and Xie, W., 2020. Corporate immunity to the COVID-19 pandemic (No. w27055). National Bureau of Economic Research.

⁵ Cheema-Fox, A., LaPerla, B.R., Serafeim, G. and Wang, H.S., 2020. Corporate Resilience and Response During COVID-19. Available at SSRN 3578167.

a negative sentiment. This is especially true for industries where the type of response is particularly relevant, for instance, when requiring physical labour or when particularly impacted by measures such as travel bans.



Ding and co-authors find that drops in stock prices are less severe for firms with more robust ex-ante finances, less exposed supply chains, but also higher pre-pandemic ESG performance

Studying investment funds in the United States directly, Pastor and Vorsatz⁶ find that as a whole active funds underperformed passive benchmarks during the COVID-19 crisis. However, there is a lot of variation between funds and those with high Morningstar sustainability ratings have higher benchmark-adjusted returns; a result largely driven by the environmental rating component.

On the other hand, Demers and co-authors⁷ find that superior ESG performance didn't protect stocks during the COVID-19 market crash. Contrary to widespread claims, ESG was not an important driver of returns during the COVID-19 market downturn and was also not an indicator of share price resilience, protecting against downside risk. In fact, characteristics that capture firms' financial flexibility, such as liquidity and leverage, were much better return predictors.

In a study, focusing on the United States, Glossner and co-authors⁸ find that contrary to anecdotal evidence, institutional investors did not tilt their portfolios towards stocks with superior environmental and social performance, but preferred firms with strong traditional financial characteristics such as low leverage and high cash holdings. Overall, institutional investors showed a preference for traditional 'hard' measures of firm resilience over 'soft' alternatives.



Demers and co-authors find that superior ESG performance didn't protect stocks during the COVID-19 market crash

As has often been the case in the past, the findings on ESG and stock market performance are ambiguous. While possible explanations point to the diverse study settings, differing geographical focuses, and distinct methodological approaches, another explanation stands out. The overarching issue is that ESG scores differ significantly between different ESG vendors⁹ and, importantly, are not designed to identify financial outperformance, but rather to provide a holistic picture of firms as corporate citizens.

⁶ Pastor, L. and Vorsatz, M.B., 2020. Mutual fund performance and flows during the COVID-19 crisis (No. w27551). National Bureau of Economic Research.

⁷ Demers, E., Hendrikse, J., Joos, P. and Lev, B., 2020. ESG Didn't Immunize Stocks Against the Covid-19 Market Crash.

⁸ Glossner, S., Matos, P., Ramelli, S. and Wagner, A.F., 2020. Where do institutional investors seek shelter when disaster strikes? Evidence from COVID-19.

⁹ Berg, F., Koelbel, J.F. and Rigobon, R., 2020. Aggregate confusion: the divergence of ESG ratings. Available at SSRN 3438533.

Osmosis' factor of Resource Efficiency has been developed as an investment signal to identify financial outperformance while delivering material reductions in carbon emissions, waste generation, and water usage. Studying Resource Efficiency during the COVID-19 downturn will thus add a new angle to the debate currently ongoing in the investment and ESG communities.

Resource efficient companies display greater financial flexibility

Osmosis builds sustainable investment strategies based on the concept of Resource Efficiency—a focused and objective measure of corporate environmental performance. Resource Efficiency is defined at the company level, using Osmosis' proprietary environmental database measuring the carbon emission generated, the water used, and waste created to produce one unit of revenue. Stocks with a high Resource Efficiency score are those which most efficiently use limited resources to create economic value.

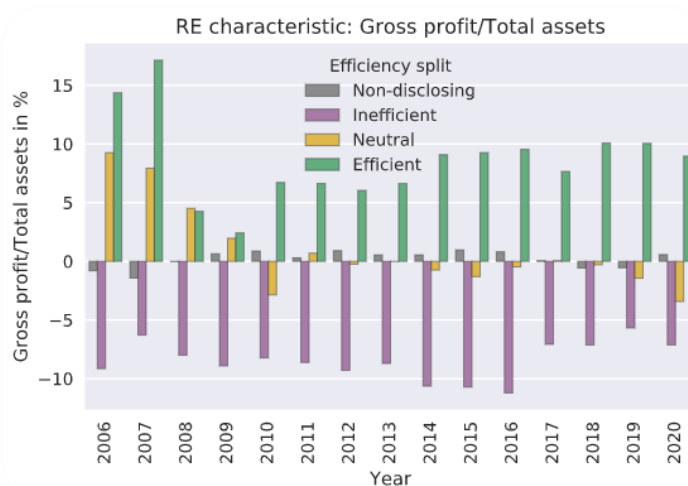


Figure 1. Note: This figure shows the gross profitability of firms relative to the average of firms in the MSCI World in a given sector and year. Source: Osmosis IM, Bloomberg, S&P. Data as at end May 2020.

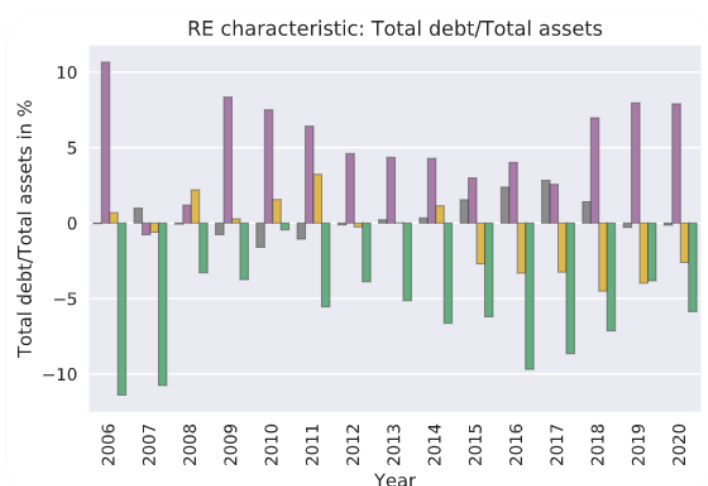


Figure 2. Note: This figure shows the leverage of firms relative to the average of firms in the MSCI World in a given sector and year. Source: Osmosis IM, Bloomberg, S&P. Data as at end May 2020.

We split the MSCI World universe into three hypothetical research portfolios: The Efficient (green) portfolio contains firms that rank in the top third of Resource Efficiency in each sector in a given year. The Neutral (yellow) portfolio is formed by the firms in the middle third of the sectoral Resource Efficiency distribution, and the Inefficient (red) portfolio comprises the bottom third, i.e., the most resource intensive companies in each sector. The Non-disclosing portfolio contains firms for which we do not have complete data on carbon emissions, water usage, and waste generation.

Historically, resource efficient firms have shared the so-called 'hard' financial characteristics highlighted in the academic literature. For example, in Figure 1, looking at profitability as a measure of corporate quality, resource efficient firms were about 5-10% more profitable between 2005 and 2020 than the MSCI World sector-year average while resource inefficient firms were less profitable. This pattern has been consistent over time.



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A similar pattern is observed for leverage in Figure 2, measured as total debt over total assets, where again resource efficient firms are less levered compared to the sector average in a given year, while resource inefficient firms are more highly levered than their sector average.

We corroborate the visual evidence by running a Probit model in Table 1, where the dependent variable can only take two values. Using data from 2006 to 2020, the dependent variable takes the value 1 if a firm ranks in the top third of Resource Efficiency in its sector in a given year and 0 if it ranks in the bottom third. The purpose of the model is to estimate the probability that a firm with certain characteristics is resource efficient or resource inefficient. In line with earlier results, we confirm that a firm is significantly more likely to be resource efficient if it is more profitable or has lower leverage. Market capitalisation or return on capital do not help to distinguish between resource efficient and resource intensive firms. The above holds true while controlling for sector- and year-specific heterogeneity.

We conclude that, in general, resource efficient firms share hard financial characteristics that should help them to fare relatively well during periods of market turmoil. The question is, does Resource Efficiency contribute to returns over and above the 'hard' measures of financial resilience?

Table 1. Do resource efficient stocks have desirable financial characteristics?

| | <i>Dependent variable:</i> |
|-----------------------|----------------------------|
| | Efficiency dummy |
| Market cap | 0.01 (0.49) |
| Return on capital | 0.01 (0.01) |
| Gross profitability | 0.45*** (0.17) |
| Debt to assets | -0.10*** (0.03) |
| Liabilities to assets | -0.04 (1.09) |
| Year fixed effects | Yes |
| Sector fixed effects | Yes |
| Observations | 4,497 |

Note: *p<0.1; **p<0.05; ***p<0.01
Probit model. The dependent variable is a dummy taking the value 1 if the firm is resource efficient and 0 if the firm is resource intensive. Financial characteristics are measured in the year following the measurement of resource efficiency. The independent variables are the firm's market capitalisation (log), return on capital, gross profitability (log), debt to assets (log), and liabilities to assets (log) respectively. Standard errors are clustered by sector.

Resource Efficiency generated risk-adjusted excess returns during the COVID-19 crash

In the early stages of the COVID-19 pandemic, global equity prices declined sharply due to uncertainty about the potential economic disruptions from the disease. During the initial phase of market reaction to the pandemic, investors were naturally looking for companies that would protect them on the downside from the economic turmoil caused by the spread of COVID-19. We analyse the performance of Resource Efficiency during this period of market distress by studying; 1) the crash period from February 17th 2020 to March 27th 2020, and 2) the recovery period from March 30th 2020 to May 29th 2020.

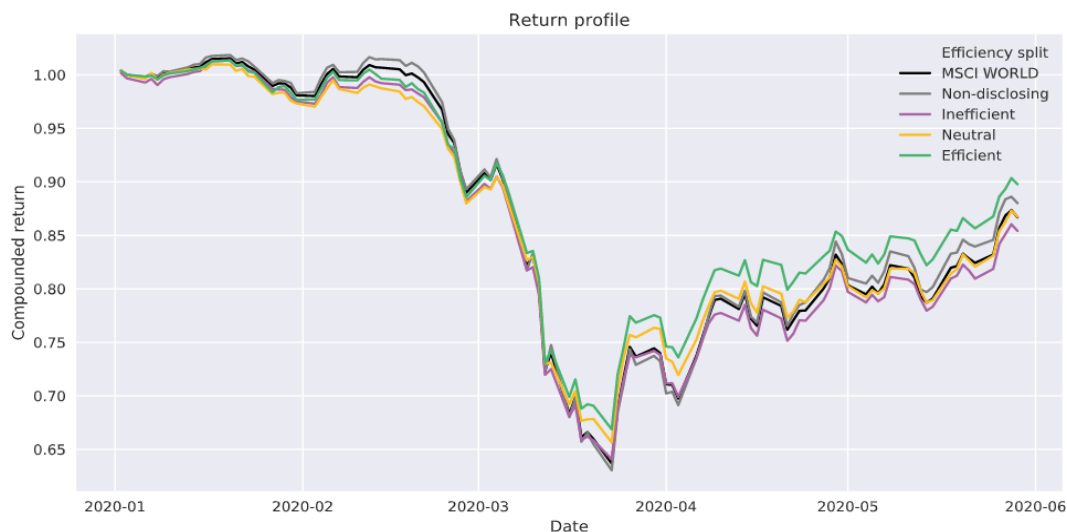


Figure 1. Note: This figure shows the gross compounded returns from 01/01/2020 to 29/05/2020 with dividends reinvested. Returns for all hypothetical portfolios as well as the MSCI World Index are equal-weighted with sector weights being proportional to those of the benchmark. Source: Osmosis IM, Bloomberg, S&P. Data as at end May 2020. Past performance is not an indication of future performance.

Resource Efficiency tends to be correlated with other forms of cost efficiency and business resilience. As a group, resource efficient companies have higher profitability and lower leverage than peers. From the outset, one would assume that those characteristics bestow resource efficient firms with more financial flexibility than their inefficient peers, a competitive advantage which becomes increasingly more valuable in times of uncertainty. It is not surprising, then, that resource efficient companies outperformed during the COVID-19 market sell off from late February to late March (see Figure 3).

The downside protection afforded by Resource Efficiency is evident in Figure 4, demonstrating that the average loss of resource efficient stocks, as measured by the average compounded stock return from February 17th 2020 to May 29th 2020 (i.e., covering the crash and recovery periods) amounted to about -10%. In comparison, stocks in the Neutral portfolio lost 12% on average, while the Inefficient stocks lost an additional 2% ending up at about -14%.

What is less evident is whether Resource Efficiency, by itself, has been a performance contributor during the COVID-19 sell-off. In order to examine this, the returns that can be attributed to traditional measures of business quality need to be disaggregated from those that resulted from resource efficiency alone. Such an analysis can be challenging given that resource efficient companies also rate highly on traditional forms of financial resilience and flexibility.

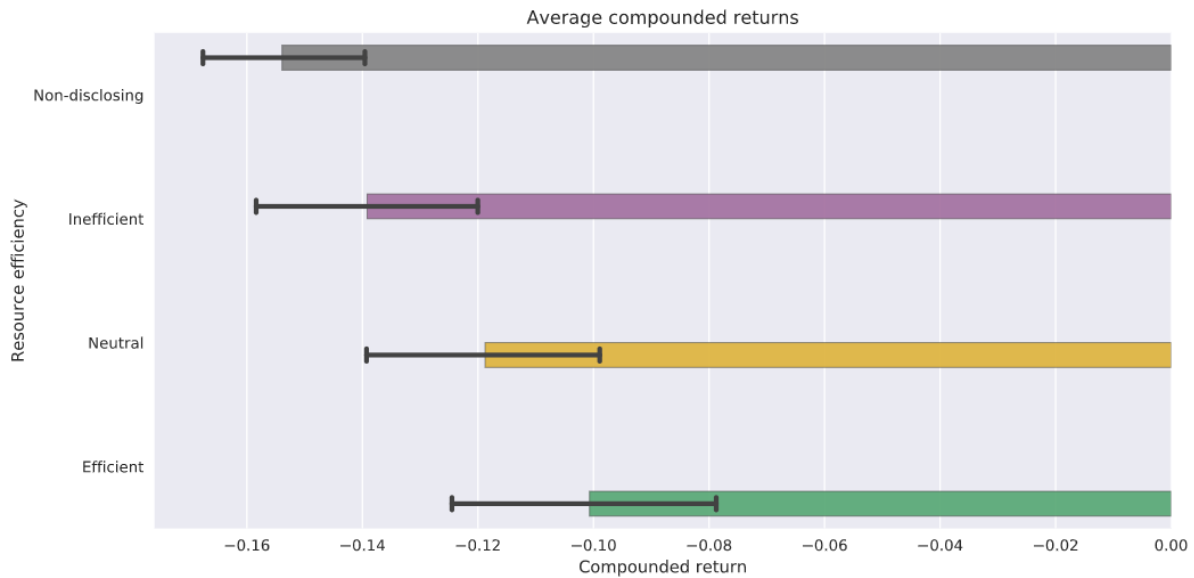


Figure 2. Note: This figure shows the average stock returns compounded from 17/02/2020 to 29/05/2020 with dividends reinvested. Source: Osmosis IM, Bloomberg, S&P. Data as at end May 2020. Past performance is not an indication of future performance.

Business quality and financial resilience are captured by the Fama-French profitability and investment factors. The profitability factor measures the relative stock price performance between high and low profit margin companies; contrasting those firms with the most productive assets against those with unproductive asset use. Similarly, the investment factor measures the return difference between low asset growth, also called conservative companies, and high asset growth or aggressive companies. The investment factor thus captures the annual change in gross property, plant, and equipment as well as inventories relative to assets. Tracking the performance of these factors should capture the impact of investor preference for stocks with better financial resilience.

Table 2. Is there alpha in resource efficiency? An analysis during the Covid-19 market crash from 17 February 2020 to 27 March 2020

| | <i>Dependent variable:</i> | | |
|-------------------------|------------------------------------|---------------------------------------|-----------------------------|
| | Excess return | | |
| | Efficient (green) portfolio (1) | Inefficient (purple) portfolio (2) | Long/short portfolio (3) |
| Market | 1.08*** (0.02) | 1.02*** (0.03) | 0.06** (0.02) |
| Size | 0.23*** (0.07) | 0.34*** (0.06) | -0.11* (0.06) |
| Value | -0.66*** (0.05) | -0.03 (0.08) | -0.64*** (0.08) |
| Profitability | -0.10 (0.10) | 0.12 (0.08) | -0.22** (0.09) |
| Investment | 0.51** (0.24) | 0.09 (0.08) | 0.42* (0.22) |
| Momentum | -0.39*** (0.14) | -0.15* (0.08) | -0.24 (0.16) |
| Constant | 0.001** (0.0005) | 0.0004 (0.0004) | 0.001* (0.0004) |
| Observations | 30 | 30 | 30 |
| R ² | 0.99 | 1.00 | 0.65 |
| Adjusted R ² | 0.99 | 1.00 | 0.56 |

Note: *p<0.1; **p<0.05; ***p<0.01
 Ordinary least squares multiple regressions. The dependent variable is the resource efficient portfolio return, the inefficient portfolio return, or the long/short (efficient minus inefficient) portfolio return respectively. The independent variables are the returns on the market, size, value, profitability, investment, and momentum factors. Newey-West standard errors are corrected for heteroskedasticity and autocorrelation. Frequency: daily.

The study period for the COVID-19 market crash is defined as February 17th, 2020 to March 27th, 2020. In order to increase the number of days used in the analysis to 30 trading days, this period begins two days before the start of the market decline and concludes a few days after the Federal Reserve Board announcement on March 23rd. During this period, the portfolio defined as the top third of companies ranked on Resource Efficiency generated returns that correlate significantly with the returns from the Fama-French investment factor (see Column 1 in Table 2).

This is not surprising since, during a sharp market downturn, investors are more likely to seek refuge in conservative companies that carefully manage their capital investments. Surprisingly, however, the Resource Efficiency portfolio returns were not correlated with returns from the Fama-French profitability factor during the COVID-19 market crash; a co-movement between resource efficient and profitable portfolios could have been expected given the earlier results on long-term financial resilience. The fact that the profitability factor does not explain the returns of the Resource Efficiency portfolios can have several reasons. First, while Figure 2 uses gross profit relative to the sector-year average and the Probit model controls for sectoral differences in profitability, the Fama-French factor is not sector neutral. Second, the present analysis focuses on a short time period characterised by tumultuous trading.

Table 3. Is there alpha in resource efficiency? An analysis during the Covid-19 market recovery from 30 March 2020 to 29 May 2020

| | <i>Dependent variable:</i> | | |
|-------------------------|-----------------------------|--------------------------------|----------------------|
| | Excess return | | |
| | Efficient (green) portfolio | Inefficient (purple) portfolio | Long/short portfolio |
| | (1) | (2) | (3) |
| Market | 0.98*** (0.04) | 1.02*** (0.08) | -0.05 (0.06) |
| Size | 0.19*** (0.07) | 0.23* (0.12) | -0.04 (0.11) |
| Value | -0.08 (0.13) | -0.11 (0.11) | 0.02 (0.16) |
| Profitability | 0.19 (0.16) | 0.37*** (0.17) | -0.18 (0.26) |
| Investment | 0.29 (0.18) | 0.58*** (0.17) | -0.29 (0.23) |
| Momentum | 0.13 (0.08) | 0.04 (0.09) | 0.10 (0.09) |
| Constant | -0.0001 (0.0004) | -0.0003 (0.0003) | 0.0002 (0.001) |
| Observations | 45 | 45 | 45 |
| R ² | 0.98 | 0.98 | 0.37 |
| Adjusted R ² | 0.97 | 0.98 | 0.27 |

Note: *p<0.1; **p<0.05; ***p<0.01
 Ordinary least squares multiple regressions. The dependent variable is the resource efficient portfolio return, the inefficient portfolio return, or the long/short (efficient minus inefficient) portfolio return respectively. The independent variables are the returns on the market, size, value, profitability, investment, and momentum factors. Newey-West standard errors are corrected for heteroskedasticity and autocorrelation. Frequency: daily.

Regression analysis of the co-movement between the returns from Resource Efficiency and the performance from the Fama-French factors reveals whether Resource Efficiency generated excess returns independent from characteristics such as size, value, profitability, investment, and momentum, known to largely explain the behaviour of stock returns. The results support the conclusion that Resource Efficiency delivered compensation for investor risk in excess of that provided by the traditional factors. While recognising the small sample size of only 30 trading days, the positive and significant constant from the regression suggests that Resource Efficiency was, in fact, an independent source of alpha during the COVID-19 crash (see the significant Constant in Column 1 of Table 2). Importantly, during the same time period, the Inefficient portfolio did not deliver alpha as its return variations are explained by the traditional factors alone (as shown by the insignificant Constant in Column 2). Looking at the long-short portfolio, defined as the difference between the hypothetical Efficient and Inefficient portfolios, resource efficient stocks significantly outperformed resource inefficient stocks.

After the initial market sell-off, global stock prices rebounded significantly from the end of March to the end of May. The market recovery reflected increasing investor optimism about the containment of the spread of COVID-19, the long-term economic impact of the disease, and the quick and forceful government response.



The results support the conclusion that Resource Efficiency delivered compensation for investor risk in excess of that provided by the traditional factors

Applying the same regression analysis that was used for the market sell-off to the period from March 30th 2020 to May 29th 2020, however, there is no evidence to support the conclusion that Resource Efficiency was an independent and significant source of alpha during the recovery period (see the insignificant Constant in Column 1 of Table 3). The Resource Efficiency portfolio delivered market returns and did not exhibit significant biases to the traditional quality factors. Interestingly, and in opposition to what we would have expected, the portfolio of inefficient firms was positively related to return movements by conservative and profitable companies. However, in line with earlier results, the Inefficient portfolio was also unable to deliver excess returns during the recovery period. Still, looking at a portfolio going long efficient firms and short inefficient firms, we find no significant exposure differences to the traditional factors suggesting that both the efficient and inefficient firms behaved relatively similar during the recovery period.

Conclusion

While evidence about ESG as an equity vaccine is mixed, we find that Resource Efficiency—a factor that is designed to capture corporate environmental operational efficiency in order to identify investment opportunities—generated risk-adjusted excess returns during the COVID-19 market turmoil.

What differentiates Resource Efficiency from traditional ESG scores used in academic studies is that the factor has been developed as an investment signal. As such, Resource Efficiency consistently identifies companies, across sectors and over time, that not only have lower environmental impact but also have superior financial performance. Resource efficient companies tend to be higher quality companies with better cost structures and business resilience than their competitors. While these attributes are favoured by investors over the long run, they were unable to explain the return behaviour of a portfolio of resource efficient firms during the COVID-19 market crash.

Nonetheless, firms with superior environmental operational efficiency outperformed inefficient firms substantiating during this period of market distress that Resource Efficiency is a source of alpha that is independent of other drivers of stock returns.

We can be certain that sharp market drawdowns, in the manner of Q1 2020 will return. Investors looking to create natural resilience within their equity portfolios would do well to apply a resource efficient filter.



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