

ESG Strategy June 2017

The Dirty Downside: Poor ESG Disclosure and Failure Risk

Courting Controversy Often Ends in Tears

- Arbitrage risk, a metric we use to assess the level of controversy in a stock, has long been a critical component in our Failure model. The idea is to measure the extent to which a stock's returns *can't* be explained by the market's movements and the stock's beta. When arbitrage risk is high it's often because the stock is embroiled in some kind of dispute, and more often than not that doesn't end well.
- Meanwhile, since 2014 we've been measuring controversy of a fuzzier sort with our ESG model, that tries to assess the non-financial credentials of a company across a wide range of environmental, social, and governance factors. It turns out the double whammy of high *financial* controversy and mediocre ESG disclosure is a damning combination for future returns. On average stocks that score in the highest quintile of arbitrage risk and the worst quintile of our ESG Disclosure score have underperformed the market by (13) percentage points in the following year. The same applies for stocks with poor ESG disclosure and high downside risk and/or low fundamental stability. The result holds even if we strip out the commodities stocks, which typically have scant ESG disclosure and have of course lagged over the two-and-a-half years we've been running our ESG model.
- Appendix 1 on page 12 lists large-cap stocks that have the yucky combination of weak ESG disclosure *and* a toxic blend of high arbitrage risk, high downside risk, and low fundamental stability. LiLAC Group, National Oil Well Varco, Continental Resources, Cabot Oil & Gas, and Parsley Energy feature, among others. Appendix 2 does the same for small-caps and Appendix 3 has U.K. and European companies.

So What's Everyone Else Doing About It?

- A common theme when discussing ESG with clients is that they all want to know what everyone else is doing. That's to be expected given most managers are in the early stages of deciding how (or if) they incorporate ESG into their investment process. On that note, we came across a couple of academics who just completed a detailed survey on the ESG practices of over 400 senior investment professionals who run "mainstream" strategies, as opposed to dedicated ESG funds. One of the interesting takeaways was that most investors expect ESG to be more useful in understanding the risk profile of stocks rather than as a potential alpha source. The whole survey is worth a look if you're interested in the current status of ESG integration across our industry.
- We also took the opportunity to update our estimate of the size of the ESG industry. On the institutional side we estimate that a fifth of the U.S.-domiciled assets allocated to active equity strategies are now run with at least a nominal ESG overlay. However, most of that growth has come from existing products re-classifying themselves by self-declaring that they incorporate ESG in their process. The assets allocated to dedicated, stand-alone ESG strategies are still well under 1% of the actively-managed pie.

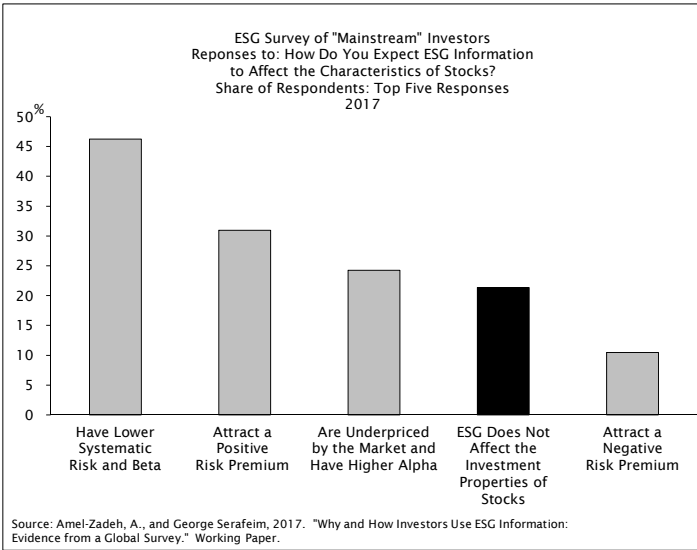
Green Shoots Under the Ivory Tower: The Latest Academic Research on ESG

- Appendix 4 on page 15 presents a collection of recent academic papers on ESG that we think are worth reading. Two in particular stood out to us. The first studied the engagement actions of an anonymous U.K. ESG investor over a decade-long period. Post-engagement the companies singled out by the investor for improvement did indeed show (20)% lower downside risk, suggesting that engagement can nudge firms to improve.
- The second paper showed that country-level drought conditions aren't fully discounted by investors in food stocks in those countries. In other words, investors fail to appreciate the true impact of climate change, presenting an alpha opportunity for those who can model such risks.

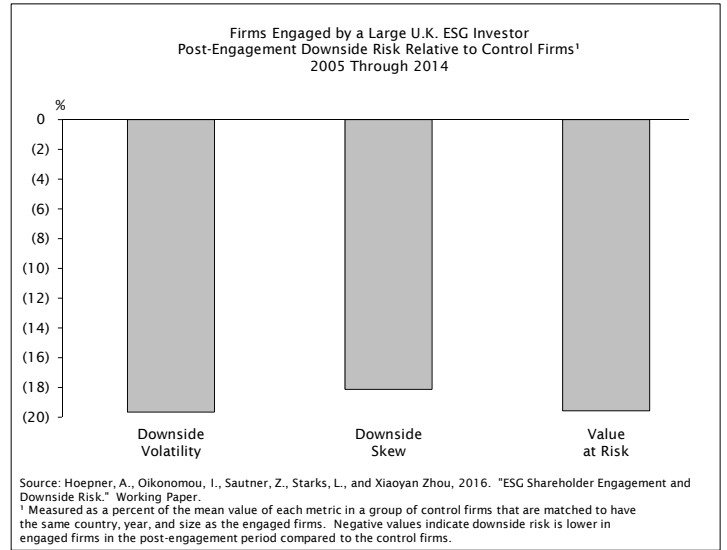
Sungsoo Yang (212) 803-7925 Nicole Price (212) 803-7935 Yi Liu (212) 803-7942 Yu Bai (212) 803-7919 Janai Haynes (212) 803-8005

Conclusions in Brief

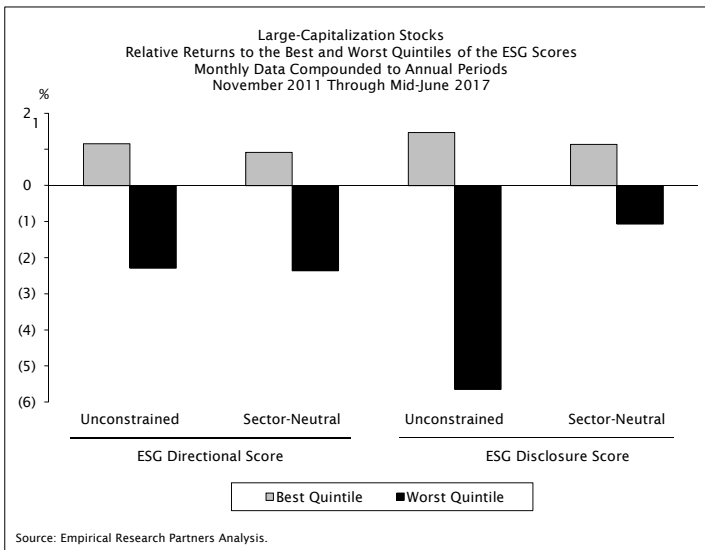
- Mainstream investors believe ESG is most likely to be a risk factor...



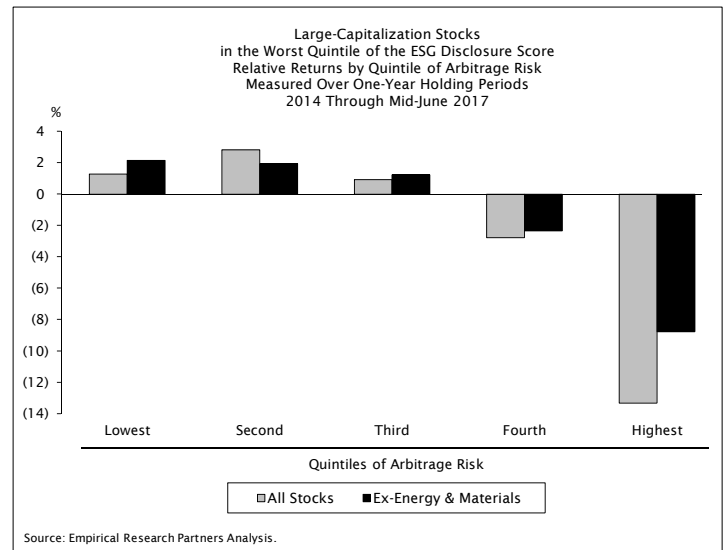
- ...And there's some evidence that engagement helps mitigate downside risk:



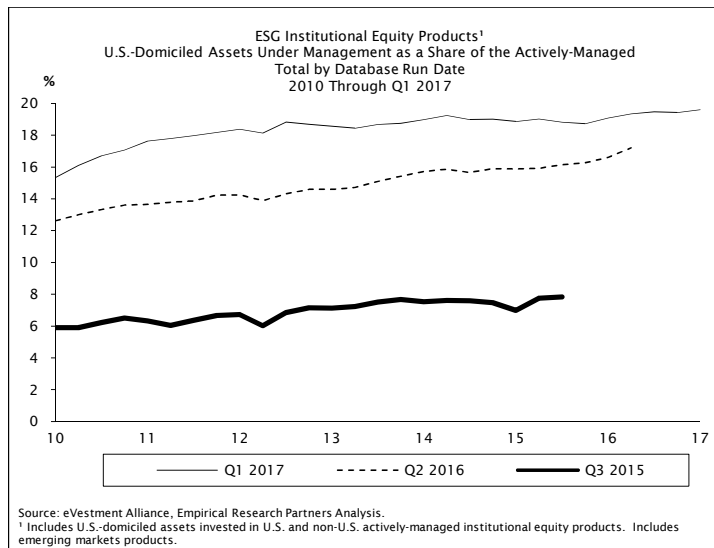
- Our own ESG models have generated alpha out-of-sample:



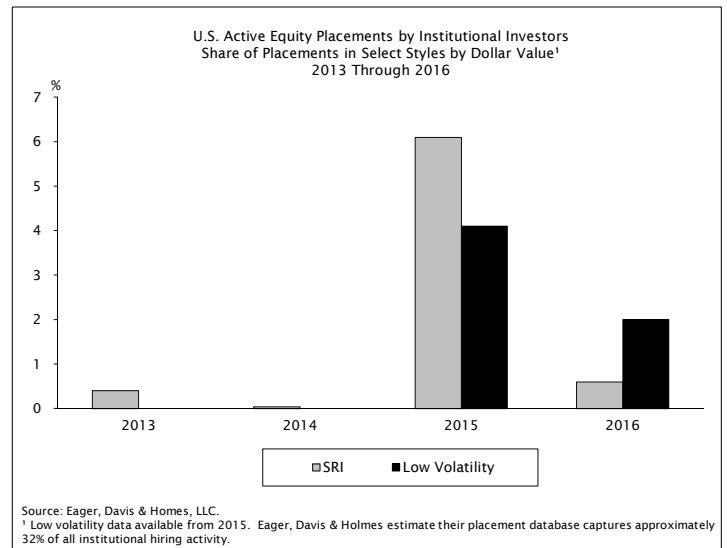
- High arbitrage risk and weak ESG disclosure is a warning sign:



- Most of the growth in ESG assets has come from re-classifying existing strategies...



- ...And mandates awarded to dedicated ESG products have been small:



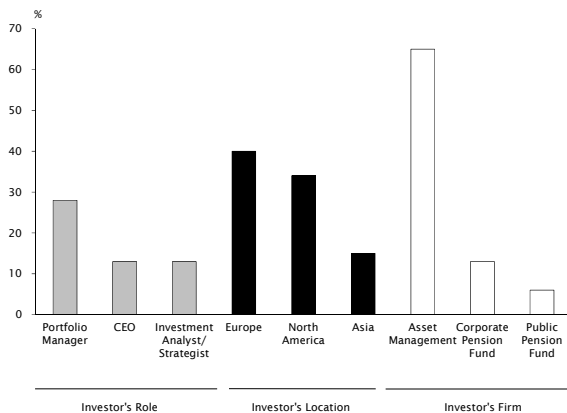
The Dirty Downside: Poor ESG Disclosure and Failure Risk

So What's Everyone Else Doing About It?

When discussing our ESG work with clients a common theme is that they all want to know what everyone else is doing about it. That's understandable given most active equity managers are in the early stages of deciding how (if at all) to incorporate ESG considerations into their investment processes. We have plenty of anecdotes to share of course, but as they always say, the plural of anecdote isn't data. Luckily, a couple of academics from Oxford and Harvard recently completed a comprehensive survey of the ESG practices of "mainstream" investors that sheds light on how non-ESG investors are using ESG inputs.

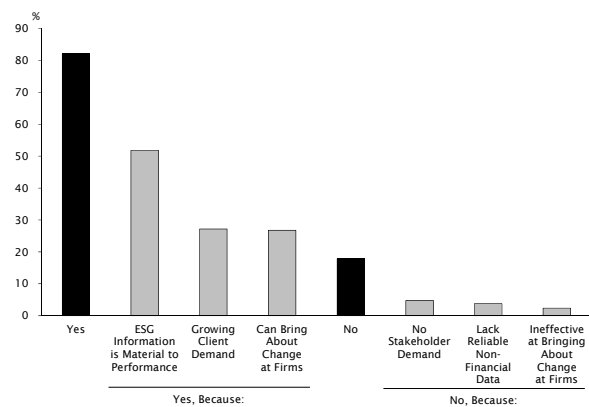
The survey collected responses from over 400 senior investment professionals, drawn mostly from asset management firms (see Exhibit 1). Collectively the firms represented in the survey account for about 43% of global institutional assets under management. The majority of respondents had less than 10% of their assets invested in ESG-specific funds, so the survey mostly captures the use of ESG by investors who don't focus on it day in and day out. It turns out more than 80% of respondents said they consider ESG information important when making investment decisions (see Exhibit 2). Among those who believe ESG is important most do so because they think ESG information is material to performance, with governance-related factor leading the way (see Exhibit 3).

Exhibit 1: ESG Survey of "Mainstream" Investors
Share of Respondents:
Top Three Responses in Each Category
2017



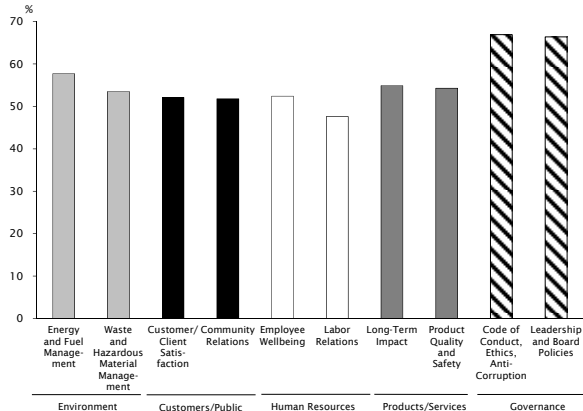
Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

Exhibit 2: ESG Survey of "Mainstream" Investors
Responses to: Do You Consider ESG Information When Making Investment Decisions?
Share of Respondents
2017



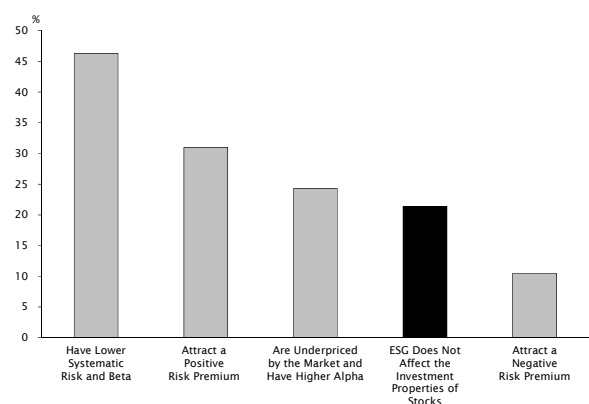
Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

Exhibit 3: ESG Survey of "Mainstream" Investors
Responses to: Which ESG Information About a Company Do You Consider Material to Your Investment Decisions?
Share of Respondents: Top Two Responses in Each Category
2017



Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

Exhibit 4: ESG Survey of "Mainstream" Investors
Responses to: How Do You Expect ESG Information to Affect the Characteristics of Stocks?
Share of Respondents: Top Five Responses
2017

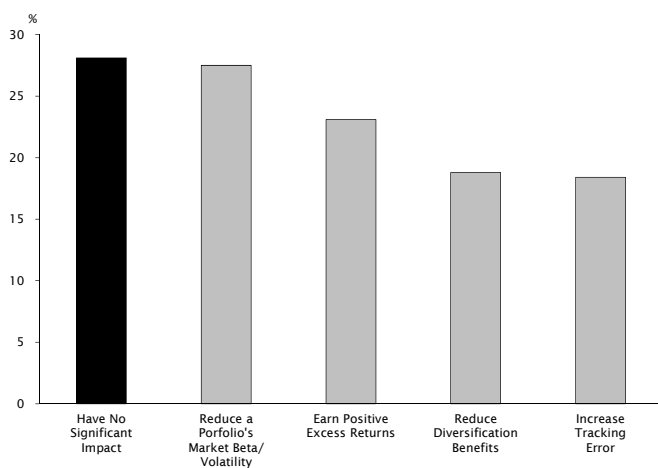


Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

None of that is a huge surprise, after all investors have always scrutinized the strength of firms' management teams, long before ESG became a hot acronym. What's more interesting is what the survey reveals about investors' beliefs at the stock and portfolio level. When asked how ESG influences stocks themselves, the most common answer was that good ESG companies have lower systematic risk (see Exhibit 4 overleaf). Among the other answers, higher alpha only finished in third place. The responses at the portfolio level were similar: for investors who think ESG matters the most common response was that favorable ESG characteristics reduce a portfolio's volatility (see Exhibit 5). In other words, investors tend to believe that ESG is more helpful in risk management than alpha generation.

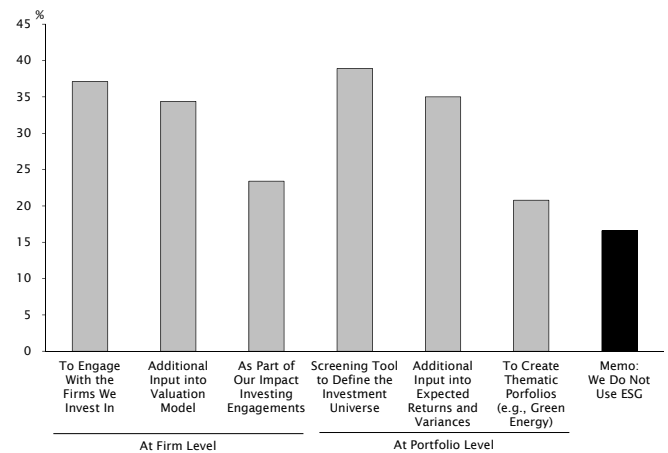
How do investors implement ESG into their investment process? The most common way at the firm level is to engage with companies, trying to nudge them in a more sustainable direction (see Exhibit 6). Does that actually work? Another recent academic study suggests the survey participants might be onto something: greater engagement does appear to lower downside risk at the company level.

Exhibit 5: ESG Survey of "Mainstream" Investors
Responses to: How Do You Expect ESG Information to Affect the Characteristics of a Portfolio Relative to the Benchmark?
Share of Respondents: Top Five Responses
2017



Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

Exhibit 6: ESG Survey of "Mainstream" Investors
Responses to: How Do You Integrate Material ESG Information into Your Investment Process?
Share of Respondents: Top Three Responses in Each Category
2017



Source: Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." Working Paper.

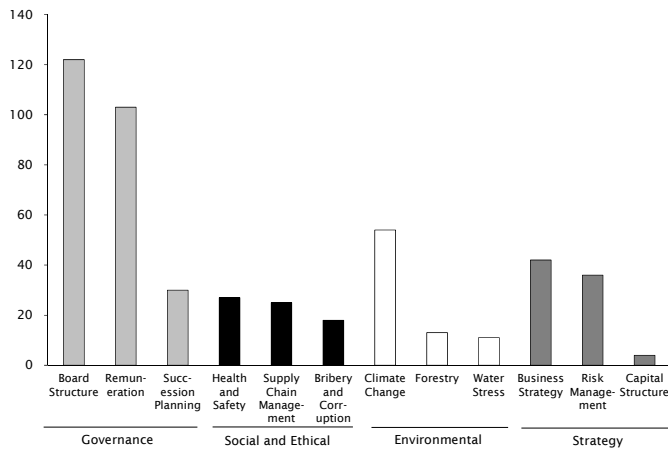
Avoiding the Dirty Downside

The authors of the second study used a proprietary database of engagement actions from a large but anonymous U.K. institutional investor with an ESG bent. In all the researchers studied 682 engagements targeting 296 firms across a range of issues (see Exhibit 7). The success of each engagement was measured on a timeline of milestones, starting when the investor first raised the concern (see Exhibit 8). About 30% of the engagements were eventually concluded successfully, often years after the issue was first voiced. Others fizzled out without a successful resolution.

The crux of the paper was to examine whether downside risk was higher or lower in stocks the investor engaged with, post the initial engagement. Downside risk was defined in three ways: the standard deviation of monthly returns that were below zero, the skewness of those same negative returns, and value at risk. In the post-engagement period the authors compared the downside risk measures for engaged firms to a sample of control firms matched to have the same country, year, and size as the engaged firms. Exhibit 9 shows that on average the engagement actions of the investor paid off: each measure of downside risk was reduced by around (20)% compared to the control firms in the post-engagement period.

Furthermore, the reduction in downside risk was driven mostly by engagements that were resolved successfully (see Exhibit 10). For those engagements that weren't resolved, the grey bars, downside risk was actually higher on two of the metrics, compared to the control sample. That means there probably was a legitimate issue that triggered the engagement, and by not resolving it the companies ultimately suffered elevated downside risk compared to their peers.

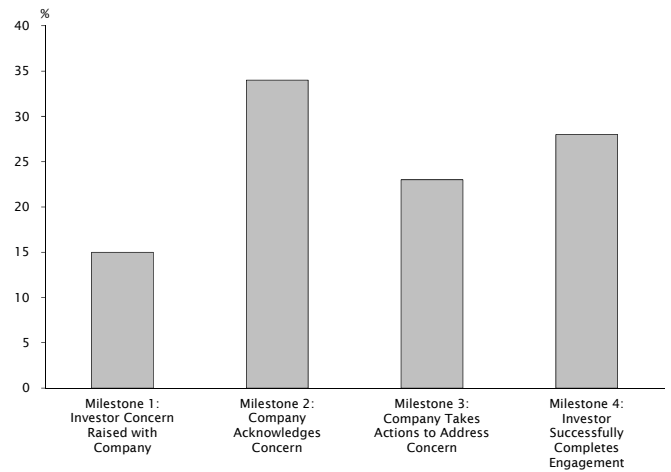
**Exhibit 7: Large U.K. ESG Investor
Number of Engagements by Type:
Top Three in Each Category¹
2005 Through 2014**



Source: Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L., and Xiaoyan Zhou, 2016. "ESG Shareholder Engagement and Downside Risk." Working Paper.

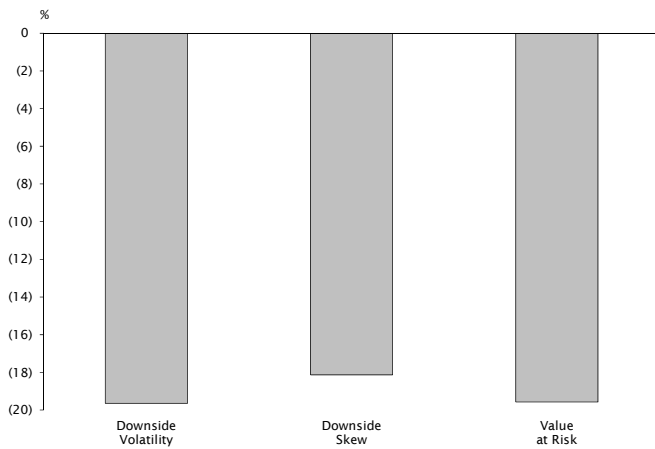
¹ Out of a total of 682 engagement actions targeting 296 firms.

**Exhibit 8: Large U.K. ESG Investor
Share of Engagements Reaching Each Milestone
2005 Through 2014**



Source: Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L., and Xiaoyan Zhou, 2016. "ESG Shareholder Engagement and Downside Risk." Working Paper.

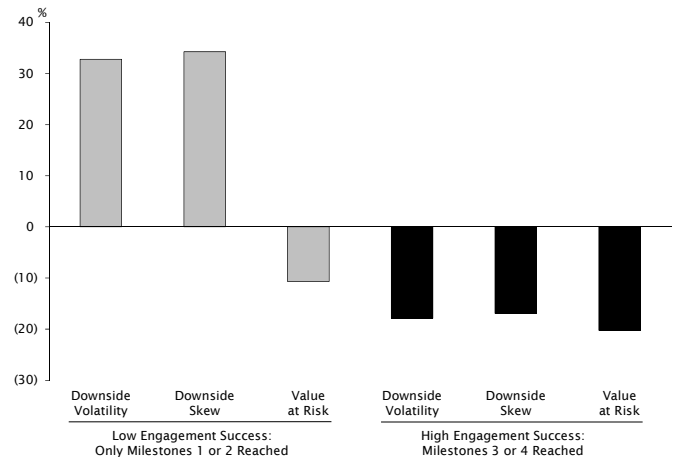
**Exhibit 9: Firms Engaged by a Large U.K. ESG Investor
Post-Engagement Downside Risk Relative to Control Firms'
2005 Through 2014**



Source: Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L., and Xiaoyan Zhou, 2016. "ESG Shareholder Engagement and Downside Risk." Working Paper.

¹ Measured as a percent of the mean value of each metric in a group of control firms that are matched to have the same country, year, and size as the engaged firms. Negative values indicate downside risk is lower in engaged firms in the post-engagement period compared to the control firms.

**Exhibit 10: Firms Engaged by a Large U.K. ESG Investor
Post-Engagement Downside Risk Relative to Control Firms by Engagement Outcome'
2005 Through 2014**



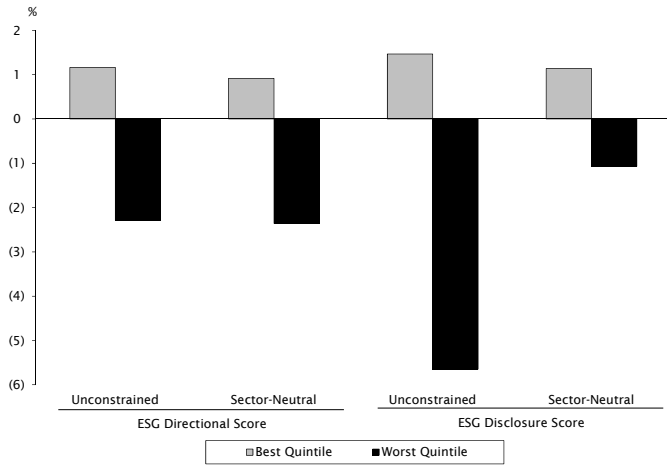
Source: Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L., and Xiaoyan Zhou, 2016. "ESG Shareholder Engagement and Downside Risk." Working Paper.

¹ Measured as a percent of the mean value of each metric in a group of control firms that are matched to have the same country, year, and size as the engaged firms. Negative values indicate downside risk is lower in engaged firms in the post-engagement period compared to the control firms.

These results are intriguing, but the academics only studied engagement outcomes for a single investor so it's hard to know how generalizable the results are. To dig deeper we did some of our own work to study the link between ESG attributes and the risk and return of stocks. Since 2014 we've been running a live ESG ranking model that consists of two scores: a *directional* score that measures how good or bad a company looks relative to its industry peers across about 60 ESG factors, and a *disclosure* score that measures how much ESG data a company publishes.¹ Both scores have delivered alpha in out-of-sample performance, particularly on the downside (see Exhibit 11).

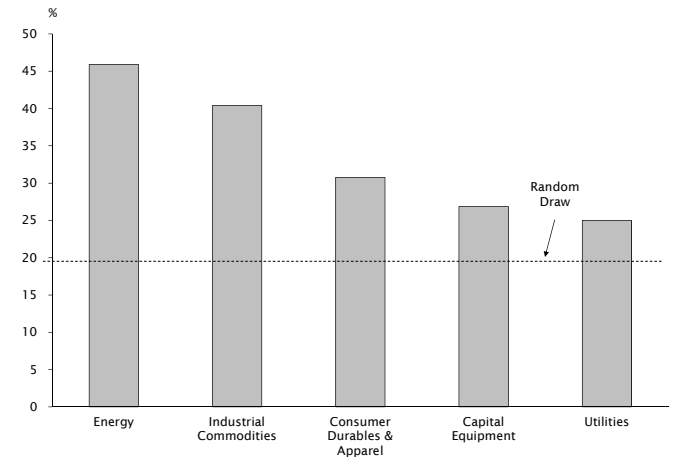
¹ Stock Selection: Research and Results October 2014. "A Toolbox for the Responsible Investor."

Exhibit 11: Large-Capitalization Stocks
Relative Returns to the Best and Worst Quintiles
of the ESG Scores
Monthly Data Compounded to Annual Periods
November 2011 Through Mid-June 2017



Source: Empirical Research Partners Analysis.

Exhibit 12: Large-Capitalization Stocks
Five Sectors with the Highest Share of Stocks in the
Worst Quintile of the ESG Disclosure Score
As of Mid-June 2017

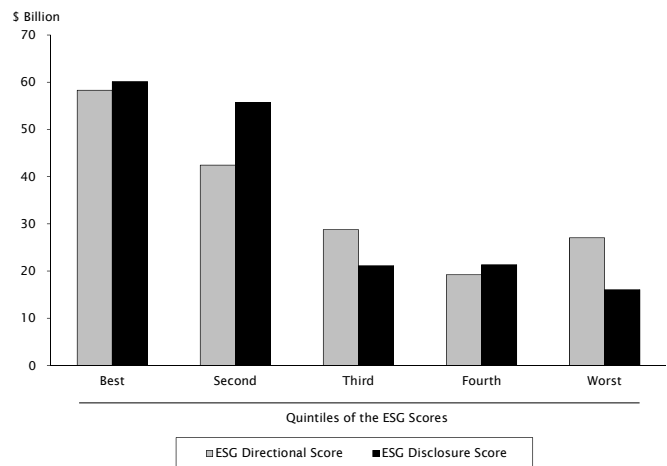


Source: Empirical Research Partners Analysis.

The ESG Directional score is sector-neutral by construction, since stocks are compared only to their industry peers. But the ESG Disclosure score does have a sector tilt, with the extractive industries scoring particularly badly (see Exhibit 12). Part of the underperformance of low-disclosure stocks can be pinned on the collapse in commodity prices since mid-2014, a starting point that coincides with the launch of our ESG model. Both scores also tend to tilt towards the biggest-cap stocks, which are usually mature, global businesses under more scrutiny and with more resources to direct towards managing ESG impacts (see Exhibit 13).

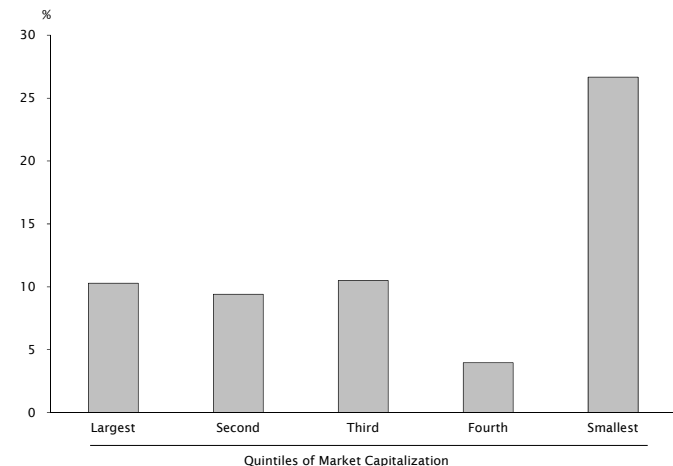
However, even after controlling for the size bias stocks with poor ESG disclosure have underperformed (see Exhibit 14). For this chart we first divided stocks into quintiles based on market capitalization, and then *within* each cap bucket we measured the performance of stocks with high disclosure relative to those with low disclosure. In each cap cohort the high disclosure stocks handily beat the low disclosure stocks. The large number of low-disclosure stocks from the commodity-linked sectors also doesn't fully explain the result: in Exhibit 15 we repeated the analysis after excluding energy and materials issues. In all the cap cohorts except the very largest the stocks with good disclosure still outperformed those with little disclosure.

Exhibit 13: Large-Capitalization Stocks
Average Market Capitalization by Quintile
of the ESG Scores
As of Mid-June 2017



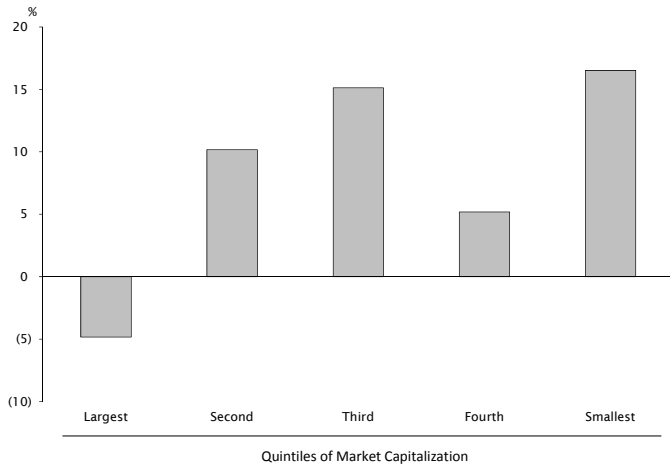
Source: Empirical Research Partners Analysis.

Exhibit 14: Large-Capitalization Stocks
Return Spread Between the Best and Worst Quintile
of the ESG Disclosure Score
by Quintile of Market Capitalization
Measured Over One-Year Holding Periods
2014 Through Mid-June 2017



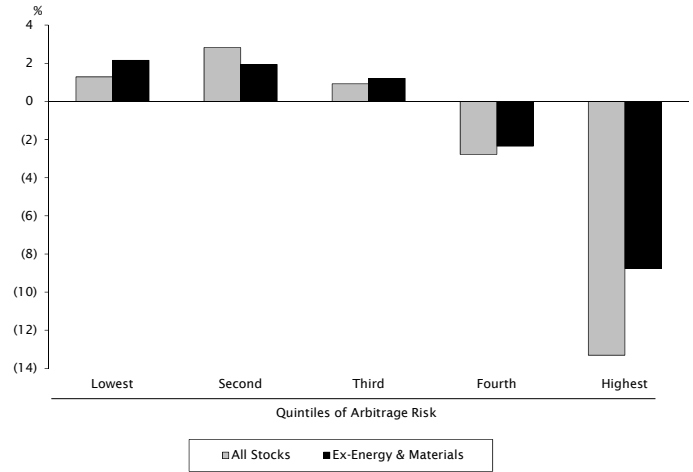
Source: Empirical Research Partners Analysis.

Exhibit 15: Large-Capitalization Stocks (ex-Energy & Materials)
Return Spread Between the Best and Worst Quintile
of the ESG Disclosure Score
by Quintile of Market Capitalization
Measured Over One-Year Holding Periods
2014 Through Mid-June 2017



Source: Empirical Research Partners Analysis.

Exhibit 16: Large-Capitalization Stocks
in the Worst Quintile of the ESG Disclosure Score
Relative Returns by Quintile of Arbitrage Risk
Measured Over One-Year Holding Periods
2014 Through Mid-June 2017



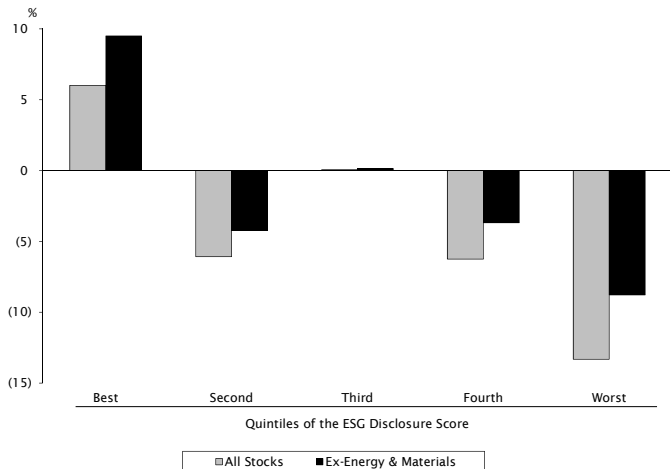
Source: Empirical Research Partners Analysis.

Arbitrage Risk and Poor Disclosure: A Yucky Combination

We then turned to arbitrage risk, a measure of the volatility in a stock that can't be explained by the market's moves and the stock's beta. In our work arbitrage risk is a critical measure of the level of dispute or controversy surrounding a stock, and it's a key ingredient in our Failure model. Generally high arbitrage risk, when combined with other preconditions like lofty valuations and/or excessive spending, is a bad omen for future returns. It turns out that the combination of poor ESG disclosure and high arbitrage risk is a particularly yucky combination (see Exhibit 16). In out-of-sample performance stocks in the highest quintile of arbitrage risk and the worst quintile of ESG disclosure have lagged the market by (13) percentage points over the following year, or (9) if we strip out energy and materials, see the right-hand bars in the chart.

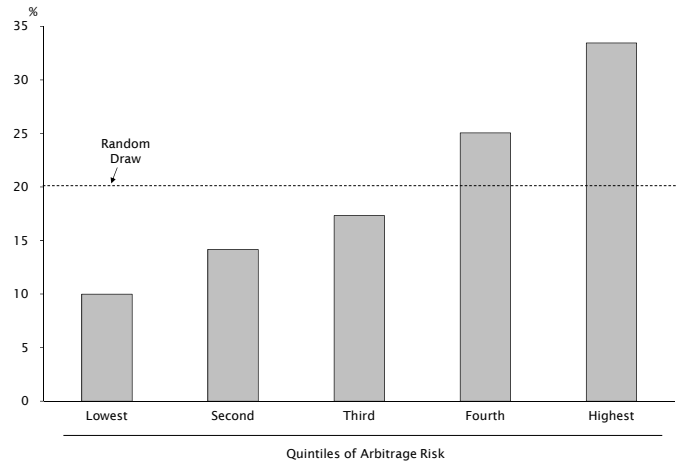
Exhibit 17 comes from the other direction and looks at how stocks with high arbitrage risk have fared, contingent on their ESG disclosure score. Most high arbitrage risk stocks have lagged, but those with the very-best ESG disclosure have actually outperformed, see the left-hand bars.

Exhibit 17: Large-Capitalization Stocks
in the Highest Quintile of Arbitrage Risk
Relative Returns by Quintile of the ESG Disclosure Score
Measured Over One-Year Holding Periods
2014 Through Mid-June 2017



Source: Empirical Research Partners Analysis.

Exhibit 18: Large-Capitalization Stocks
in the Worst Quintile of the ESG Disclosure Score
Share of Stocks in Each Quintile of Arbitrage Risk
2014 Through Mid-June 2017

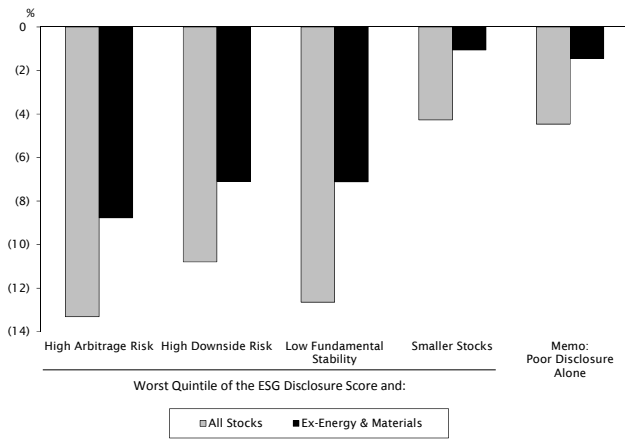


Source: Empirical Research Partners Analysis.

It's also worth noting that stocks with poor ESG disclosure are more likely to have high arbitrage risk to begin with (see Exhibit 18 overleaf). So the poor performance of high arbitrage risk/low ESG disclosure stocks isn't being driven by just a handful of stocks: it's actually a combination that shows up much more frequently than one would expect due to random chance.

Expanding the analysis, we also studied other measures of risk, such as downside risk, a measure of the volatility of stock returns when the stock is underperforming, and low fundamental stability, a screen that captures the stability and predictability of earnings growth. As with arbitrage risk, the combination of high downside risk or low fundamental stability and weak ESG disclosure is damning, even if the commodities complex is excluded (see Exhibit 19). The underperformance of such stocks is also much more severe than what is found in smaller-cap stocks or those with poor ESG disclosure alone.

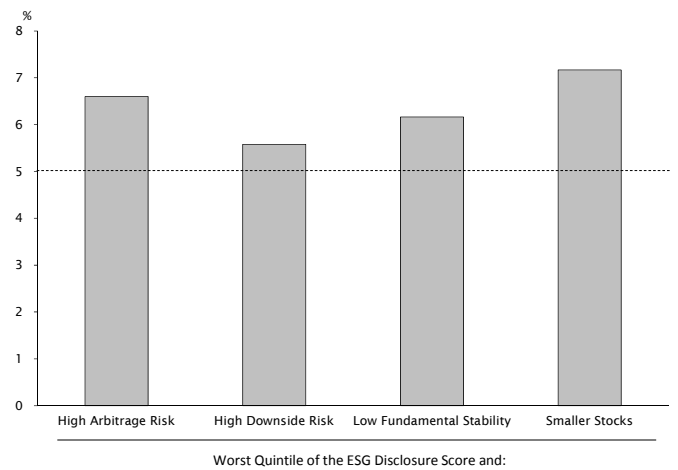
Exhibit 19: Large-Capitalization Stocks in the Worst Quintile of the ESG Disclosure Score
Relative Returns by Highest or Lowest Quintile of Select Factors¹
Measured Over One-Year Holding Periods 2014 Through Mid-June 2017



Source: Empirical Research Partners Analysis.

¹ Smaller stocks refers to the smallest quintile of market capitalization within the large-cap universe.

Exhibit 20: Large-Capitalization Stocks Share of Stocks in the Worst Quintile of the ESG Disclosure Score and the Highest or Lowest Quintile of Select Factors¹
2014 Through Mid-June 2017



Source: Empirical Research Partners Analysis.

¹ Smaller stocks refers to the smallest quintile of market capitalization within the large-cap universe.

It's also true that stocks with sparse ESG disclosure are disproportionately likely to also have high downside risk and low fundamental stability; exactly the same as what we found for arbitrage risk (see Exhibit 20). Putting it all together, our work is consistent with what the academics found: poor ESG credentials are associated with higher risk. But we can also go one step further: the combination of weak ESG disclosure and high risk is a warning sign for future returns.

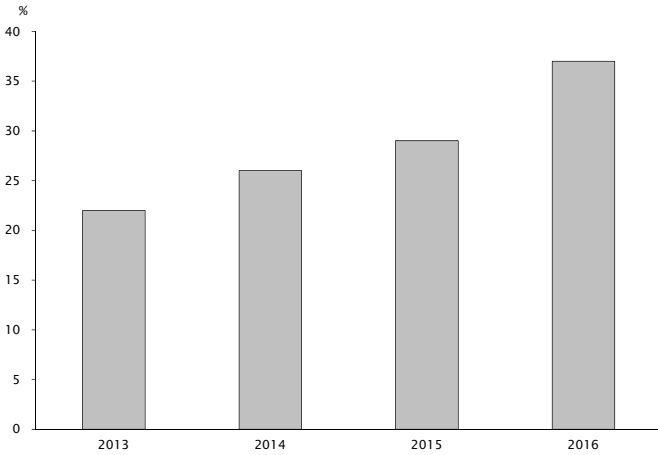
Appendix 1 on page 12 lists large-cap stocks in the worst quintile of our ESG Disclosure score that also score badly on a blend of arbitrage risk, downside risk, and fundamental stability. Appendix 2 on page 13 does the same for small-caps and Appendix 3 on page 14 has U.K. and European stocks.

ESG Growth: Real or Re-Classification?

Has any of this resonated with asset owners? If surveys are to be believed: yes (see Exhibit 21). Callan, a consultant, has surveyed U.S. asset owners on whether they incorporate ESG for four years now and each year the number claiming they do has gone up. That's been mostly driven by endowments and foundations so far (see Exhibit 22).

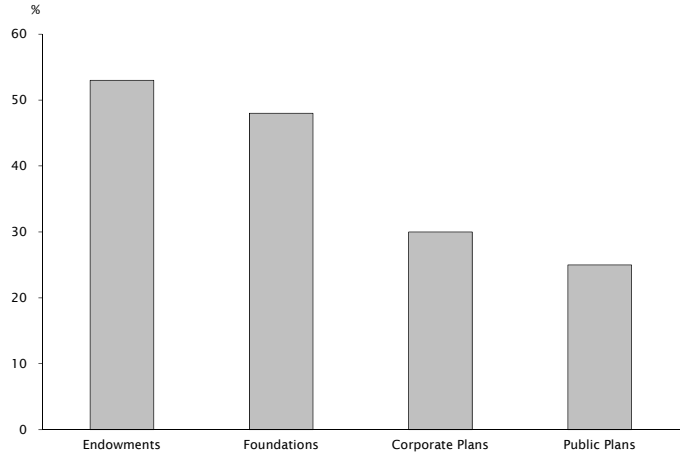
To try to assess if they're putting their money where their mouth is we repeated an exercise we've done before where we aggregate from the bottom-up the assets that U.S.-domiciled asset owners have parked in actively-managed equity products with at least some ESG flavor (see Exhibit 23). Currently about 20% of actively-managed equity assets are managed with some kind of self-declared ESG overlay. However, the vast majority of those assets are in strategies that only use ESG in a peripheral way, for example a simple exclusionary screen. Dedicated ESG products, where the primary focus is ESG, are still a tiny drop in the bucket, amounting to less than \$100 billion, or just a few basis points of the total actively-managed pie (see Exhibit 24).

Exhibit 21: U.S. Asset Owners
Share of Respondents Incorporating ESG Factors
into Their Investment Decisions
2013 Through 2016



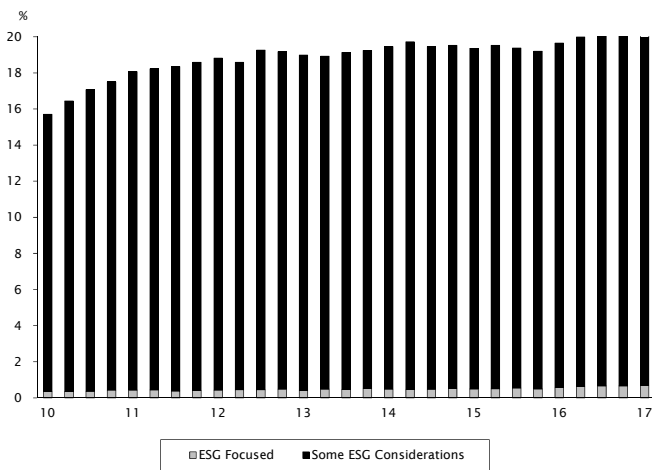
Source: Callan ESG Interest and Implementation Survey.

Exhibit 22: U.S. Asset Owners
Share of Respondents Incorporating ESG Factors
into Their Investment Decisions by Type of Fund
2016



Source: Callan ESG Interest and Implementation Survey.

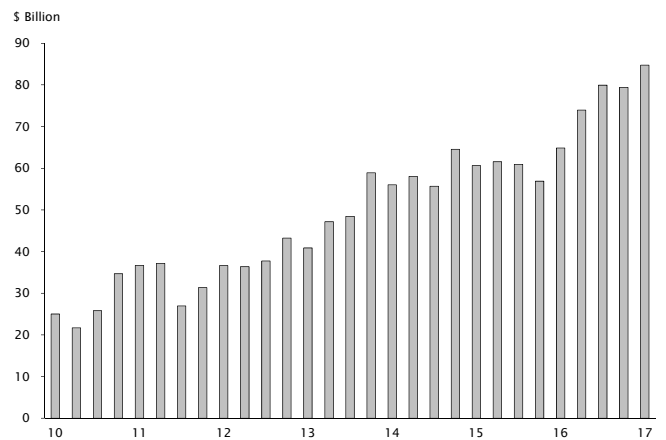
Exhibit 23: ESG Institutional Equity Products¹
U.S.-Domiciled Assets Under Management
as a Share of the Actively-Managed Total
2010 Through Q1 2017



Source: eVestment Alliance, Empirical Research Partners Analysis.

¹ Includes U.S.-domiciled assets invested in U.S. and non-U.S. actively-managed institutional equity products. Includes emerging markets products.

Exhibit 24: ESG Institutional Equity Products¹
U.S.-Domiciled Assets Under Management
2010 Through Q1 2017



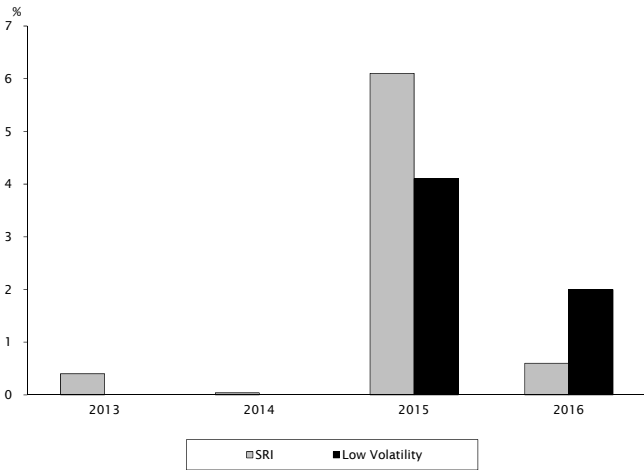
Source: eVestment Alliance, Empirical Research Partners Analysis.

¹ Includes U.S.-domiciled assets invested in U.S. and non-U.S. actively-managed institutional equity products. Includes emerging markets products.

That level of interest in pure-ESG strategies is consistent with placement data, that suggests less than 1% of active equity mandates awarded in the U.S. last year targeted dedicated SRI products (see Exhibit 25). For comparison that was below the level of interest shown in low volatility strategies last year.

That means that most of the growth in ESG has been driven by the incorporation of ESG into *existing* strategies rather than the launch of pure-play ESG products. That's evident each time we hit refresh on our database of institutional ESG products (see Exhibit 26). This is the third time we've tallied up ESG assets from the ground up and each time we've done so the share of products that have checked the ESG box goes up. That doesn't necessarily mean managers are being disingenuous; most investors can legitimately claim to use some facets of ESG in their analysis even if they haven't historically called it ESG. But it does mean that growth in ESG is largely driven by the infusion of ESG ideas into mainstream investment products rather than the creation of a dedicated ESG silo in the asset allocation decision.

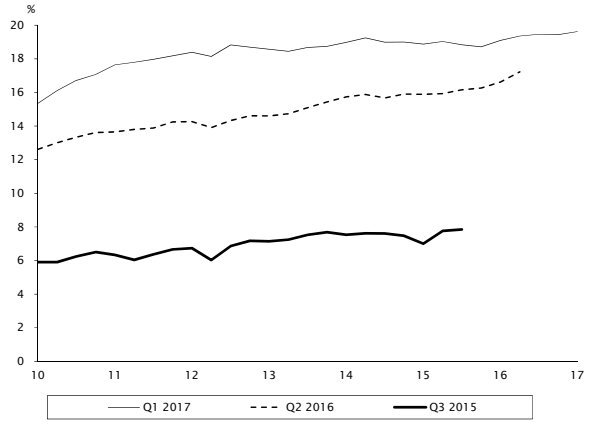
Exhibit 25: U.S. Active Equity Placements by Institutional Investors
Share of Placements in Select Styles by Dollar Value¹
2013 Through 2016



Source: Eager, Davis & Homes, LLC.

¹ Low volatility data available from 2015. Eager, Davis & Holmes estimate their placement database captures approximately 32% of all institutional hiring activity.

Exhibit 26: ESG Institutional Equity Products¹
U.S.-Domiciled Assets Under Management
as a Share of the Actively-Managed Total
by Database Run Date
2010 Through Q1 2017



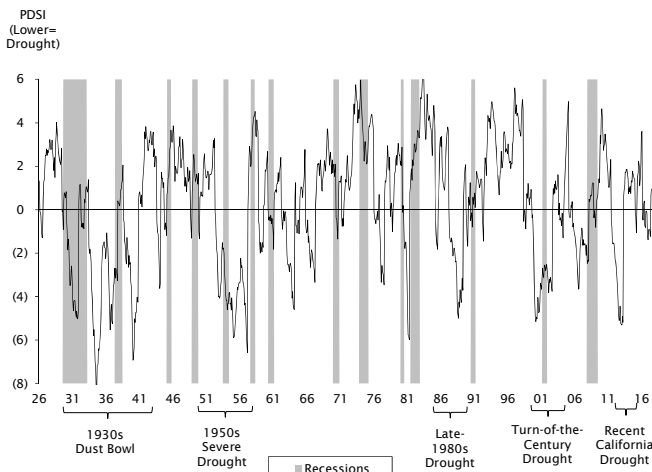
Source: eVestment Alliance, Empirical Research Partners Analysis.

¹ Includes U.S.-domiciled assets invested in U.S. and non-U.S. actively-managed institutional equity products. Includes emerging markets products.

Green Shoots Under the Ivory Tower

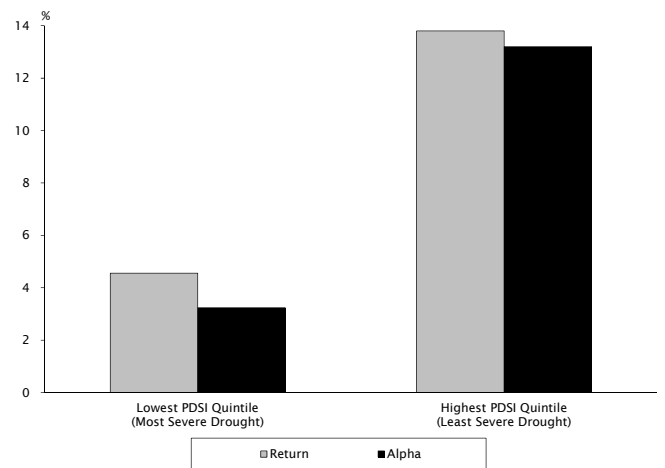
In addition to the papers mentioned above, Appendix 4 presents some other recent ESG papers that we think are worth reading. One in particular struck us as quite interesting because it suggested there might be an alpha opportunity created by investors' underreaction to climate change. Specifically the authors studied a measure of drought severity called the Palmer Drought Severity Index (PDSI). The index assesses things like temperature and soil moisture and is available over fairly long histories for most major countries. For example, Exhibit 27 shows the PDSI for the U.S., which is available back to at least the Great Depression.

Exhibit 27: The U.S.
Palmer Drought Severity Index
(Lower=Drought)
1926 Through May 2017



Source: National Oceanic and Atmospheric Administration, National Bureau of Economic Research.

Exhibit 28: Country-Level Food Sector Portfolios
Annualized Returns and Alphas to the Lowest
and Highest Quintiles of PDSI¹
Measured Over One-Year Holding Periods
1985 Through 2015



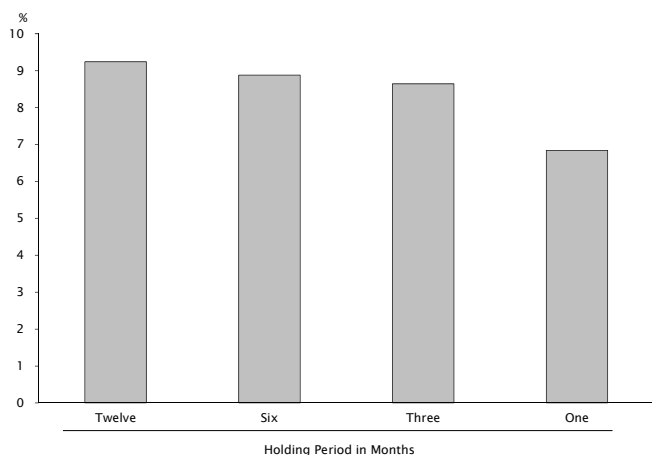
Source: Hong, H., Li, F.W., and Jiangmin Xu, 2016. "Climate Risks and Market Efficiency." NBER Working Paper No. 22890.

¹ Country-level food sector portfolios are sorted on the three-year trailing average of each country's PDSI. Returns are equally-weighted average of the food sector portfolios from the countries in each quintile. Alphas are computed relative to a global factor model that controls for the global market, size, book-to-market, and momentum. All returns are in USD.

The actual study first sorted countries based on their PDSI at the time and then looked at the performance of food industry stocks in each country over the following year. It turns out that food stocks in countries suffering from the worst droughts actually performed significantly worse than the food stocks from countries not suffering from drought (see Exhibit 28 overleaf). The results couldn't be explained by the country returns themselves, meaning countries experiencing drought don't necessarily underperform drought-free countries but food stocks within those countries do. Furthermore, the alpha persists, and is in fact strongest, at longer holding periods (see Exhibit 29). The authors conclude, quite plausibly, that investors don't fully discount the extent to which the climate in a country will impact climate-sensitive stocks in that country.

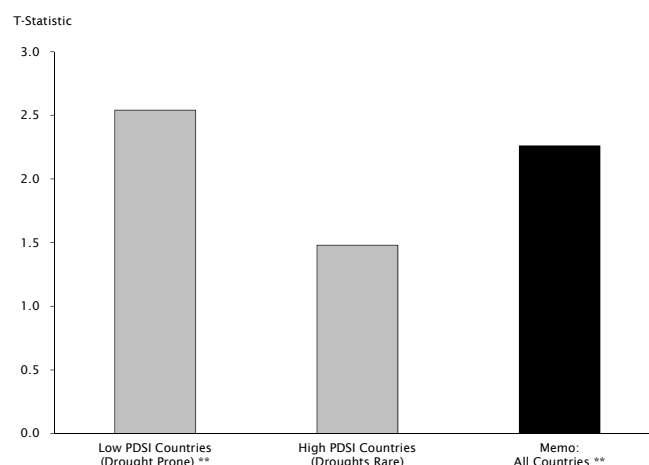
It's telling that the predictive power of the PDSI index is strongest in countries that don't usually experience droughts, meaning that when investors have little first-hand experience to draw on they're more likely to gloss over the impact of climate change when pricing stocks (see Exhibit 30). That's a particularly important finding because if the climate does change in the future then past experience will be of little use and proactive research on the likely impact could give forward-thinking investors an alpha edge.

Exhibit 29: Country-Level Food Sector Portfolios
Annualized Return Spread Between the Lowest and Highest Quintiles of PDSI by Holding Period Measured Over One-Month to One-Year Holding Periods 1985 Through 2015



Source: Hong, H., Li, F.W., and Jiangmin Xu, 2016. "Climate Risks and Market Efficiency." NBER Working Paper No. 22890.

Exhibit 30: Country-Level Food Sector Portfolios
PDSI's Predictive Power in Forecasting Future Returns by Drought Propensity of Each Country¹ Measured Over One-Year Holding Periods 1975 Through 2015



Source: Hong, H., Li, F.W., and Jiangmin Xu, 2016. "Climate Risks and Market Efficiency." NBER Working Paper No. 22890.

** Statistically significant at the 5% level.

¹ Drought propensity measured using average PDSI for each country over entire sample. Regression controls for lagged food sector returns, market returns, inflation rate, food sector price-to-book ratio and dividend yield, and market volatility.

Conclusion: Not Just for Greenies

Putting everything together, there's some emerging empirical evidence that ESG has implications for the future risk and return profile of stocks. Most mainstream investors find the link between poor ESG characteristics and downside risk more intuitive, and acknowledge as much in surveys, so that's a natural place to start incorporating ESG into an existing investment process. The combination of poor ESG disclosure and high arbitrage risk, high downside risk, and low fundamental stability is particularly useful for spotting stocks with elevated odds of failing over the next year.

One of the hurdles to adopting ESG that we see time and time again when talking with clients is that ESG metrics seem to be held to a higher standard than other potential factors: investors demand incontrovertible evidence that ESG adds alpha before they'll consider adding it to their process. In our view it's unlikely we'll ever find that, after all investors are still debating whether there's a value premium, and that debate will probably never be fully settled. That's not because investors are overly dogmatic, it's just that nothing works all the time and to expect ESG to be any different is wistful thinking. In the real world the good guys don't always win, but neither do growth stocks, value stocks, quality stocks, or any other rule-of-thumb group. Investing is about judiciously deploying the right tools at the right time and identifying areas where they can shade the odds a little in your favor. ESG deserves a place in the toolbox but don't expect it to single-handedly save the day.

Appendix 1: Large-Capitalization Stocks
The Worst Quintile of the ESG Disclosure Score
Sorted by the Average of Arbitrage Risk, Downside Risk, and Fundamental Stability
As of Late-June 2017

Symbol	Company	Price	Quintile Ranks (1=Best; 5=Worst)					Average of the Three (5=Worst)	Memo:			YTD Return	Market Capitalization (\$ Billion)	
			ESG Factors		Downside Risk Metrics				Core Model Rank	Failure Model Rank	Forward-P/E Ratio			
			Directional Score	Disclosure Score	Arbitrage Risk (5=Highest)	Downside Risk (5=Highest)	Fundamental Stability (5=Lowest)							
LILA	LIBERTY GLOBAL PLC LILAC GRP	\$20.71	5	5	5	5	5	5	5	32.4	x	(5.7)	%	\$28.5
NOV	NATIONAL OILWELL VARCO INC	32.13	4	5	5	5	5	5	3	3	NM	(13.9)		12.2
CLR	CONTINENTAL RESOURCES INC	30.39	4	5	5	5	5	5	4	4	89.7	(41.0)		11.4
COG	CABOT OIL & GAS CORP	22.35	3	5	5	5	5	5	3	5	30.8	(4.0)		10.4
PE	PARSLEY ENERGY INC	26.11	4	5	5	5	5	5	5	5	37.3	(25.9)		7.2
EEP	ENBRIDGE ENERGY PARTNERS -LP	15.05	4	5	5	5	5	5	3	2	19.2	(37.9)		6.6
SINA	SINA CORP	91.93	4	5	5	5	5	5	1	1	32.8	63.9		6.6
HDS	HD SUPPLY HOLDINGS INC	32.19	3	5	5	5	5	5	5	4	11.8	(24.3)		6.5
CF	CF INDUSTRIES HOLDINGS INC	26.70	3	5	5	5	5	5	2	2	NM	(13.5)		6.2
RRC	RANGE RESOURCES CORP	21.22	4	5	5	5	5	5	4	4	27.8	(38.1)		5.3
TRQ	TURQUOISE HILL RESOURCES LTD	2.51	3	5	5	5	5	5	5	2	NM	(22.3)		5.1
RSPP	RSP PERMIAN INC	30.58	5	5	5	5	5	5	5	5	32.1	(31.5)		4.8
EGN	ENERGEN CORP	47.39	3	5	5	5	5	5	4	5	75.0	(17.8)		4.6
HFC	HOLLYFRONTIER CORP	25.87	4	5	5	5	5	5	2	1	19.1	(19.1)		4.6
MUR	MURPHY OIL CORP	24.65	3	5	5	5	5	5	1	1	133.8	(19.4)		4.3
RAD	RITE AID CORP	3.19	2	5	5	5	5	5	5	3	NM	(61.3)		3.4
SWN	SOUTHWESTERN ENERGY CO	5.50	2	5	5	5	5	5	3	1	7.7	(49.2)		2.8
ESV	ENSCO PLC	5.07	4	5	5	5	5	5	2	1	NM	(47.7)		1.5
BABA	ALIBABA GROUP HLDG	143.29	5	5	5	5	4	4	3	5	24.6	63.2		362.4
TSLA	TESLA INC	376.40	5	5	5	4	5	5	5	4	NM	76.1		61.8
COTY	COTY INC	18.98	5	5	5	5	4	4	4	4	21.3	5.0		14.2
VIAB	VIACOM INC	34.57	4	5	5	5	4	4	3	2	8.7	(0.5)		14.1
PANW	PALO ALTO NETWORKS INC	132.94	5	5	5	5	4	4	5	5	43.6	6.3		12.2
LNG	CHENIERE ENERGY INC	46.65	5	5	4	5	5	5	5	5	80.3	12.6		11.1
QRVO	QRVO INC	71.18	3	5	5	4	5	5	5	1	11.0	35.0		9.0
XEC	CIMAREX ENERGY CO	92.32	4	5	4	5	5	5	5	5	19.9	(32.0)		8.8
TRGP	TARGA RESOURCES CORP	40.68	5	5	5	4	5	5	5	4	NM	(25.1)		8.8
HLF	HERBALIFE LTD	72.62	5	5	5	5	4	4	2	2	15.8	50.9		6.8
HP	HELMERICH & PAYNE	51.92	5	5	5	4	5	5	4	4	NM	(31.4)		5.6
RIG	TRANSOCEAN LTD	7.79	5	5	5	4	5	5	1	1	NM	(47.2)		3.0
CHTR	CHARTER COMMUNICATIONS INC	333.88	3	5	4	4	5	5	4	4	78.1	16.0		90.0
CXO	CONCHO RESOURCES INC	114.79	5	5	4	4	5	5	3	4	68.5	(13.4)		17.0
KLAC	KLA-TENCOR CORP	98.01	4	5	4	5	4	4	1	2	15.0	26.0		15.4
FNFV	FIDELITY FINL FNFV GROUP	15.35	4	5	4	4	5	5	5	5	NM	12.0		13.0
JAZZ	JAZZ PHARMACEUTICALS PLC	154.26	4	5	5	5	3	3	2	2	13.9	41.5		9.3
WPM	WHEATON PRECIOUS METALS CORP	19.60	2	5	5	5	3	3	5	5	29.6	2.1		8.7
TEAM	ATLASSIAN CORP PLC	34.80	5	5	4	5	4	4	5	5	75.1	44.5		7.8
UHAL	AMERCO	342.33	4	5	5	5	3	3	5	2	NM	(7.1)		6.7
MSCC	MICROSEMI CORP	48.55	3	5	5	3	5	5	2	3	12.1	(10.0)		5.6
ARRS	ARRIS INTERNATIONAL PLC	28.25	1	5	4	4	5	5	1	1	11.2	(6.2)		5.4
ACM	AECOM	31.93	4	5	4	4	5	5	3	1	10.5	(12.2)		5.0
AN	AUTONATION INC	39.39	2	5	5	5	3	3	4	1	10.1	(19.0)		4.0
PXD	PIONEER NATURAL RESOURCES CO	155.03	3	5	4	3	5	5	4	5	96.0	(13.9)		26.4
WMB	WILLIAMS COMPANIES INC	27.85	3	5	4	3	5	5	3	1	33.7	(8.7)		23.0
FWONA	LIBERTY MEDIA CP MEDIA GROUP	33.65	5	5	4	3	5	5	5	5	NM	7.3		21.7
VMC	VULCAN MATERIALS CO	128.17	5	5	4	4	4	4	4	5	30.6	2.8		16.9
FDX	FIRST DATA CORP	18.32	4	5	3	4	5	5	1	1	12.0	29.1		16.8
LVNVA	LIBERTY VENTURES	51.79	5	5	5	2	5	5	3	4	27.0	40.5		15.2
ARNC	ARCONIC INC	25.32	5	5	4	3	5	5	2	1	22.3	37.2		11.2
DISCA	DISCOVERY COMMUNICATIONS INC	25.58	5	5	4	4	4	4	1	1	11.2	(6.7)		9.7
YNDX	YANDEX N.V.	26.78	4	5	5	2	5	5	4	3	0.5	33.0		8.7
FANG	DIAMONDBACK ENERGY INC	86.75	4	5	5	2	5	5	5	5	18.0	(14.2)		8.5
STLD	STEEL DYNAMICS INC	33.25	4	5	5	3	4	4	1	1	11.4	(6.1)		8.1
ST	SENSATA TECHNOLOGIES HLDG NV	42.60	5	5	4	4	4	4	5	4	13.4	9.4		7.3
AR	ANTERO RESOURCES CORP	20.17	4	5	5	2	5	5	3	1	38.2	(14.7)		6.4
CQH	CHENIERE ENERGY PTNRS LP LLC	25.43	5	5	3	5	4	4	3	5	28.9	13.9		5.9
SIX	SIX FLAGS ENTERTAINMENT CORP	59.53	3	5	4	5	3	3	4	4	28.9	1.4		5.4
MU	MICRON TECHNOLOGY INC	32.01	2	5	5	1	5	5	3	2	6.7	46.0		35.4
QSR	RESTAURANT BRANDS INTL INC	61.85	3	5	3	4	4	4	4	4	32.8	30.6		29.5
WDC	WESTERN DIGITAL CORP	91.03	2	5	5	1	5	5	3	1	7.7	34.8		26.5
LSXMA	LIBERTY MEDIA SIRIUSXM GROUP	40.24	5	5	4	2	5	5	4	4	24.5	16.6		21.7
RACE	FERRARI NV	89.18	3	5	4	3	4	4	2	2	34.0	54.8		16.9
LBRDK	LIBERTY BROADBAND CORP	86.27	5	5	3	3	5	5	5	5	122.9	16.5		15.7
MLM	MARTIN MARIETTA MATERIALS	227.09	4	5	4	4	3	3	4	4	27.1	2.9		14.3
LEA	LEAR CORP	138.50	3	5	4	4	3	3	1	1	8.6	5.3		9.5
QGEN	QIAGEN NV	34.83	4	5	2	5	4	4	4	4	28.0	24.3		7.9
PHM	PULTEGROUP INC	24.28	3	5	4	3	4	4	1	4	11.0	33.1		7.7
AER	AERCAP HOLDINGS NV	44.98	5	5	3	3	5	5	2	1	7.7	8.1		7.6
LULU	LULULEMON ATHLETICA INC	53.29	4	5	5	5	1	1	4	5	20.0	(18.0)		7.3
MIDD	MIDDLEBY CORP	120.77	3	5	3	4	4	4	4	4	20.9	(6.2)		6.9
SPR	SPIRIT AEROSYSTEMS HOLDINGS	57.22	4	5	4	2	5	5	1	1	11.9	(1.6)		6.9
NDSN	NORDSON CORP	118.67	4	5	4	4	3	3	4	4	21.6	6.4		6.8
TOL	TOLL BROTHERS INC	39.04	5	5	3	4	4	4	2	2	12.1	26.2		6.4
BKFS	BLACK KNIGHT FINANCIAL SVCS	39.55	4	5	4	3	4	4	5	5	28.8	4.6		6.1
SMG	SCOTT'S MIRACLE-GRO CO	88.61	3	5	4	5	2	2	4	3	20.5	(6.2)		5.3
AVT	AVNET INC	38.10	2	5	4	5	2	2	4	4	11.8	(19.3)		4.8
KMI	KINDER MORGAN INC	18.51	4	5	3	3	4	4	2	2	28.1	(9.6)		41.3
DISH	DISH NETWORK CORP	63.24	4	5	4	2	4	4	1	2	23.3	9.2		29.5
VLO	VALERO ENERGY CORP	64.68	2	5	3	3	4	4	1	1	13.7	(3.3)		28.9
BATRA	LIBERTY MEDIA BRAVES GROUP	22.99	5	5	4	1	5	5	5	4	NM	12.2		21.7
NUE	NUCOR CORP	55.97	3	5	4	2	4	4	3	2	13.0	(5.4)		17.9
WRK	WESTROCK CO	56.98	4	5	4	2	4	4	1	1	19.4	13.9		14.3
MBLY	MOBILEYE NV	62.67	5	5	1	5	4	4	4	4	58.3	64.4		13.9
LEN	LENNAR CORP	53.25	5	5	3	4	3	3	5	5	12.4	24.2		12.5
FTI	TECHNIPFMC PLC	26.49	4	5	5	3	2	2	3	1	14.6	na		12.4
FAST	FASTENAL CO	42.71	3	5	5	4	1	1	5	4	22.7	(7.9)		12.4
HII	HUNTINGTON INGALLS IND INC	186.58	2	5	4	4	2	2	3	2	16.9	1.9		8.6
WLK	WESTLAKE CHEMICAL CORP	62.74	5	5	4	2	4	4	2	2	13.9	12.7		8.1
ALLE	ALLEGION PLC	81.51	4	5	2	4	4	4	4	5	21.9	27.9		7.8
RPM	RPM INTERNATIONAL INC	55.27	5	5	2	4	4	4	5	5	18.6	3.9		7.4
MIC	MACQUARIE INFRASTRUCTURE CP	76.37	5	5	1	4	5	5	5	5	32.4	(3.3)		6.3
USFD	US FOODS HOLDING CORP	27.95	5	5	3	3	4	4	3	2	20.6	1.7		5.2
RS	RELIANCE STEEL & ALUMINUM CO	70.47	4	5	4	3	3	3	2	1	12.8	(10.4)		5.1

Source: Empirical Research Partners Analysis.

Appendix 2: Small-Capitalization Stocks

The Worst Quintile of the ESG Disclosure Score
Sorted by the Average of Arbitrage Risk, Downside Risk, and Fundamental Stability
As of Late-June 2017

Symbol	Company	Price	Quintile Ranks (1=Best; 5=Worst)					Memo:			YTD Return	Market Capitalization (\$ Million)		
			ESG Factors	Disclosure Score	Arbitrage Risk (5=Highest)	Downside Risk (5=Highest)	Fundamental Stability (5=Lowest)	Average of the Three (5=Worst)	Core Model Rank	Failure Model Rank			Forward P/E Ratio	
NTNX	NUTANIX INC	\$18.34	5	5	5	5	5	5	5	5	NM	(30.9)	\$2,779	
CZZ	COSAN LTD	5.69	5	5	5	5	5	5	5	1	1.7	(23.6)	1,506	
HOME	AT HOME GROUP INC	22.83	5	5	5	5	5	5	5	2	24.0	56.0	1,378	
TGH	TEXTAINER GROUP HOLDINGS LTD	13.35	5	5	5	5	5	5	5	1	197.1	79.2	758	
HTZ	HERTZ GLOBAL HOLDINGS INC	8.70	2	5	5	5	5	5	5	3	1	NM	(59.6)	728
GOGL	GOLDEN OCEAN GROUP	6.20	4	5	5	5	5	5	5	4	2	NM	31.6	710
EDIT	EDITAS MEDICINE INC	16.91	5	5	5	5	5	5	5	2	5	NM	4.2	699
REN	RESOLUTE ENERGY CORP	28.62	4	5	5	5	5	5	5	4	2	16.0	(30.5)	643
SXC	SUNCOKE ENERGY INC	9.56	2	5	5	5	5	5	5	1	1	NM	(15.7)	615
NAT	NORDIC AMERICAN TANKERS LTD	6.02	4	5	5	5	5	5	5	2	1	NM	(24.6)	614
TMST	TIMKENSTEEL CORP	12.97	3	5	5	5	5	5	5	1	2	NM	(16.2)	576
NTRA	NATERA INC	10.78	3	5	5	5	5	5	5	5	5	NM	(7.9)	570
BAS	BASIC ENERGY SERVICES INC	21.49	4	5	5	5	5	5	5	4	5	NM	(39.2)	559
SBLK	STAR BULK CARRIERS CORP	8.61	5	5	5	5	5	5	5	3	2	NM	68.5	543
SALT	SCORPIO BULKERS	6.15	4	5	5	5	5	5	5	4	4	NM	21.8	463
FRTA	FORTERRA INC	7.06	5	5	5	5	5	5	5	3	4	19.0	(67.4)	453
LBIO	LION BIOTECHNOLOGIES INC	6.65	2	5	5	5	5	5	5	5	5	NM	(4.3)	415
YRCW	YRC WORLDWIDE INC	9.93	3	5	5	5	5	5	5	3	1	18.4	(25.2)	333
SND	SMART SAND INC	8.04	5	5	5	5	5	5	5	2	1	16.8	(51.4)	324
RYI	RYERSON HOLDING CORP	8.65	3	5	5	5	5	5	5	4	5	6.1	(35.2)	322
WTI	W&T OFFSHORE INC	1.91	4	5	5	5	5	5	5	1	1	3.7	(31.0)	263
NOVN	NOVAN INC	4.01	5	5	5	5	5	5	5	5	4	NM	(85.2)	64
TWLO	TWILIO INC	28.32	4	5	5	5	5	4	4.7	5	5	NM	(1.8)	2,562
AVXS	AVEXIS INC	76.13	5	5	5	4	5	4	4.7	4	4	NM	59.5	2,116
UPL	ULTRA PETROLEUM CORP	10.32	2	5	4	5	5	5	4.7	1	1	3.9	na	2,034
CJ	C&J ENERGY SERVICES INC	30.37	4	5	5	4	5	5	4.7	5	5	NM	na	1,922
COUP	COUPA SOFTWARE INC	31.06	5	5	5	5	5	4	4.7	5	4	NM	24.2	1,646
FRAC	KEANE GROUP INC	13.81	5	5	5	5	5	4	4.7	5	5	NM	na	1,424
DO	DIAMOND OFFSHORE DRILLING INC	10.28	3	5	5	4	5	4	4.7	4	1	13.4	(41.9)	1,411
GBT	GLOBAL BLOOD THERAPEUTICS	30.75	4	5	5	5	4	5	4.7	3	4	NM	112.8	1,341
EPE	EP ENERGY CORP	3.45	4	5	5	4	5	5	4.7	1	1	NM	(47.3)	882
STNG	SCORPIO TANKERS INC	3.62	4	5	4	5	5	5	4.7	2	1	NM	(19.7)	813
LKSD	LSC COMMUNICATIONS INC	21.01	5	5	5	4	5	4	4.7	2	1	9.0	(27.8)	712
CMRE	COSTAMARE INC	6.52	4	5	5	4	5	4	4.7	2	1	7.3	20.1	690
BETR	AMPLIFY SNACK BRANDS	8.99	3	5	5	5	4	4	4.7	5	5	21.1	2.0	690
PRTK	PARATEK PHARMACEUTICALS INC	23.55	5	5	5	4	5	4	4.7	5	4	NM	52.9	647
LJPC	LA JOLLA PHARMACEUTICAL CO	29.06	4	5	5	5	4	5	4.7	5	4	NM	65.8	643
EGCR	ECLIPSE RESOURCES CORP	2.31	5	5	5	4	5	4	4.7	2	4	94.3	(13.5)	607
HK	HALCON RESOURCES CORP	3.85	2	5	5	4	4	4	4.7	1	1	12.8	(58.8)	574
PVAC	PENN VIRGINIA CORP	37.14	4	5	5	5	4	4	4.7	2	3	12.1	(24.2)	557
JNCE	JOUNCE THERAPEUTICS INC	15.74	5	5	5	5	4	4	4.7	2	1	na	na	506
GNRT	GENER8 MARITIME INC	5.68	4	5	5	4	5	4	4.7	1	1	44.0	26.8	471
MPVD	MOUNTAIN PROVINCE DIAMONDS	2.90	5	5	5	4	5	4	4.7	5	4	NM	(42.6)	468
TRNC	TRONC INC	12.55	3	5	4	5	5	4	4.7	1	2	58.4	(9.5)	412
CRHM	CRH MEDICAL CORP	5.50	5	5	5	5	4	4	4.7	1	2	45.6	4.8	409
NVGS	NAVIGATOR HOLDINGS LTD	7.30	5	5	5	4	4	4	4.7	2	1	12.0	(21.5)	405
GPRK	GEOPARK LTD	6.55	5	5	5	4	5	4	4.7	1	1	23.2	52.0	393
NERV	MINERVA NEUROSCIENCES INC	9.70	2	5	5	4	5	4	4.7	5	5	NM	(17.4)	356
CRBP	CORBUS PHARMACEUTICALS HLDGS	5.95	5	5	5	4	5	4	4.7	5	5	NM	(29.6)	299
MPO	MIDSTATES PETROLEUM CO INC	11.77	2	5	4	5	5	5	4.7	1	1	4.9	(43.2)	295
ERN	ERIN ENERGY CORP	1.35	3	5	5	4	5	4	4.7	5	4	NM	(55.7)	288
ANW	AEGEAN MARINE PETROLM NETWK	5.30	5	5	5	5	4	4	4.7	1	5	8.7	(47.5)	209
PES	PIONEER ENERGY SERVICES CORP	1.90	3	5	5	4	5	4	4.7	5	4	NM	(72.3)	147
LITE	LUMENTUM HOLDINGS INC	62.50	4	5	5	5	3	3	4.3	4	2	25.0	61.7	3,822
WIX	WIX.COM LTD	72.30	3	5	5	3	5	3	4.3	4	4	175.3	62.3	3,287
HL	HECLA MINING CO	5.19	3	5	4	4	4	5	4.3	3	2	34.1	(0.9)	2,055
ONCE	SPARK THERAPEUTICS INC	64.47	4	5	4	5	4	4	4.3	5	5	NM	29.2	2,007
BPMC	BLUEPRINT MEDICINES CORP	46.02	5	5	5	5	3	3	4.3	4	4	NM	64.1	1,796
ATI	ALLEGHENY TECHNOLOGIES INC	15.93	1	5	4	4	5	4	4.3	4	5	21.2	-	1,734
ACIA	ACACIA COMMUNICATIONS INC	40.99	4	5	5	5	3	3	4.3	4	5	19.2	(33.6)	1,584
CDE	COEUR MINING INC	8.39	3	5	4	4	5	4	4.3	4	4	47.7	(7.7)	1,524
ATKR	ATKORE INTL GROUP INC	22.38	5	5	4	5	4	4	4.3	3	3	13.7	(6.4)	1,419
AG	FIRST MAJESTIC SILVER CORP	7.89	4	5	5	5	3	3	4.3	4	4	67.2	3.4	1,302
REV	REVLON INC -CL A	23.45	5	5	5	5	3	3	4.3	4	5	22.3	(19.6)	1,239
CENX	CENTURY ALUMINUM CO	13.55	3	5	5	3	5	3	4.3	2	4	23.9	58.3	1,182
GPRO	GOPRO INC	7.70	3	5	3	5	5	5	4.3	5	5	NM	(11.6)	1,108
WRD	WILDHORSE RES DVLPT	11.31	5	5	5	5	3	3	4.3	5	5	19.5	(22.5)	1,063
AKAO	ACHAOGEN INC	23.40	4	5	5	4	4	4	4.3	3	4	NM	79.7	956
PDS	PRECISION DRILLING CORP	3.20	2	5	4	4	5	4	4.3	5	2	NM	(41.3)	938
GPRE	GREEN PLAINS INC	19.20	2	5	4	5	4	4	4.3	1	1	15.0	(30.3)	768
RUN	SUNRUN INC	6.52	4	5	4	4	5	4	4.3	4	5	8.8	22.8	688
NVDQ	NOVADAQ TECHNOLOGIES INC	11.82	5	5	5	5	3	3	4.3	5	5	NM	66.7	684
RYAM	RAYONIER ADVANCED MATERIALS	15.06	3	5	5	4	4	4	4.3	1	1	16.8	(1.7)	652
SSW	SEASPAN CORP	5.91	4	5	5	5	3	3	4.3	2	1	8.2	(31.8)	648
VSLR	VIVINT SOLAR INC	5.40	5	5	5	4	4	4	4.3	2	5	NM	111.8	597
REI	RING ENERGY INC	11.25	5	5	5	4	4	4	4.3	4	5	43.5	(13.4)	553
NH	NANTHEALTH INC	4.44	5	5	5	4	3	3	4.3	5	4	NM	(55.3)	540
NTLA	INTELLIA THERAPEUTICS INC	14.94	5	5	5	4	4	4	4.3	5	5	NM	14.0	538
BW	BARBOCK & WILCOX ENTERPRISES	10.90	1	5	4	5	4	4	4.3	5	5	14.1	(34.3)	532
FTK	FLOTEK INDUSTRIES INC	7.95	3	5	5	5	3	3	4.3	5	5	26.3	(15.3)	455
MYOK	MYOKARDIA INC	13.70	5	5	4	5	4	4	4.3	5	5	NM	5.8	431
HZN	HORIZON GLOBAL CORP	13.92	4	5	3	5	5	3	4.3	5	5	13.7	(42.0)	356
COLL	COLLEGIUM PHARMACEUTICAL INC	11.91	4	5	5	5	3	3	4.3	5	5	NM	(23.5)	351
EDGE	EDGE THERAPEUTICS INC	10.30	4	5	4	5	4	4	4.3	4	5	NM	(17.6)	317
PTGX	PROTAGONIST THERAPEUTICS INC	12.11	5	5	5	5	3	3	4.3	5	5	NM	(44.9)	204
TESO	TESCO CORP	3.75	3	5	5	5	3	3	4.3	5	4	NM	(54.5)	175
PSTG	PURE STORAGE INC	12.86	5	5	5	4	3	3	4.0	5	5	NM	13.7	2,685
TRTN	TRITON INTERNATIONAL LTD	33.12	4	5	4	3	5	5	4.0	2	1	NM	116.7	2,467
XOG	EXTRACTION OIL & GAS INC	12.96	5	5	4	3	5	5	4.0	5	5	NM	(35.3)	2,227
AERI	AERIE PHARMACEUTICALS INC	54.00	3	5	5	3	4	4	4.0	4	5	NM	42.7	1,910
PRTY	PARTY CITY HOLDCO INC	15.35	4	5	4	3	5	5	4.0	3	2	12.1	8.1	1,835
EVH	EVOLVENT HEALTH INC	26.75	4	5	4	5	3	3	4.0	5	5	NM	80.7	1,818
CRS	CARPENTER TECHNOLOGY CORP	35.68	3	5	3	5	4	4	4.0	2	3	19.3	(0.5)	1,668
IPHI	INPHI CORP	37.52	4	5	4	4	4	4	4.0	5	5	22.3	(15.9)	1,583
FLOW	SPX FLOW INC	35.74	1	5	2	5	5	5	4.0	1	4	19.5	11.5	1,512
XPER	XPERI CORPORATION	30.25	3	5	3	5	4	4	4.0	3	4	116.8	(30.8)	1,495

Source: Empirical Research Partners Analysis.

**Appendix 3: Large- and Mid-Capitalization Stocks: U.K. and Continental Europe
The Worst Quintile of the ESG Disclosure Score
Sorted by the Average of Arbitrage Risk and Fundamental Stability
As of Late-June 2017**

Symbol	Company	Price (Local)	Quintile Ranks (1=Best; 5=Worst)					Average of the Two (5=Worst)	Memo:			YTD Return (USD) %	Market Capitalization (USD Million)
			ESG Factors		Downside Risk Metrics				Core Model Rank	Failure Model Rank	Forward- P/E Ratio		
			Directional Score	Disclosure Score	Arbitrage Risk (5=Highest)	Fundamental Stability (5=Lowest)	Average of the Two (5=Worst)						
UTDI GY	United Internet AG	49.57	2	5	5	5	5.0	4	3	21.2	x	43.7	\$11,436
AMS SW	ams AG	66.50	4	5	5	5	5.0	5	5	37.9		141.8	5,865
LIGHT NA	Philips Lighting NV	34.96	4	5	5	5	5.0	1	1	13.5		63.5	5,814
AKERBP NO	Aker BP ASA	121.00	2	5	5	5	5.0	2	4	15.6		(18.9)	4,820
SZU GY	Suedzucker AG	19.79	5	5	5	5	5.0	3	5	15.1		(7.7)	4,571
OCI NA	OCI NV	19.19	4	5	5	5	5.0	5	5	17.3		22.4	4,496
GLPG NA	Galapagos NV	70.72	5	5	5	5	5.0	3	3	NM		22.8	4,037
RKET GY	Rocket Internet SE	20.98	4	5	5	5	5.0	5	4	NM		16.0	3,943
MTRO LN	Metro Bank Plc	36.65	4	5	5	5	5.0	5	5	122.6		28.4	3,750
FIM FP	Fimalac SA	131.00	4	5	5	5	5.0	4	3	44.5		38.2	3,612
AKER NO	Aker ASA Class A	278.00	4	5	5	5	5.0	2	1	10.8		(8.2)	2,443
ALPH SW	Alpiq Holding Ltd	82.20	4	5	5	5	5.0	5	5	60.3		1.7	2,357
CBI US	Chicago Bridge & Iron Co. NV	13.53	3	5	5	5	5.0	2	4	3.8		(57.1)	1,400
FINGB SS	Fingerprint Cards AB Class B	33.15	5	5	5	5	5.0	5	5	9.2		(45.1)	1,211
ATC NA	Altice NV Class A	22.45	4	5	4	5	4.5	2	2	30.3		26.1	39,785
TEN IM	Tenaris S.A.	13.47	4	5	4	5	4.5	5	4	49.3		(14.6)	17,954
GEN DC	Genmab A/S	1,476.00	4	5	5	4	4.5	5	5	72.8		33.1	13,756
ZAL GY	Zalando SE	42.57	3	5	5	4	4.5	5	5	60.2		24.1	11,858
DUFN VX	Dufry AG	162.10	4	5	4	5	4.5	2	1	17.7		33.4	9,224
UN01 GY	Uniper SE	17.58	4	5	4	5	4.5	1	1	9.0		46.3	7,329
SAZ GY	STADA Arzneimittel AG	63.29	4	5	5	4	4.5	2	5	19.5		36.1	4,375
SUBC NO	Subsea 7 S.A.	107.00	4	5	5	4	4.5	1	1	15.8		3.0	4,101
G24 GY	Scout24 AG	33.50	4	5	5	4	4.5	3	3	24.0		5.7	4,076
NETS DC	Nets A/S	131.90	4	5	4	5	4.5	5	5	15.5		12.9	3,924
ASM NA	ASM International N.V.	52.91	3	5	4	5	4.5	2	1	15.5		32.9	3,768
EKTAB SS	Elekta AB Class B	81.55	5	5	5	4	4.5	4	4	21.3		5.6	3,291
ARYN VX	Aryzta AG	32.70	3	5	5	4	4.5	3	5	12.6		(22.2)	3,222
PAYS LN	Paysafe Group Plc	5.18	1	5	4	5	4.5	4	4	13.9		42.9	3,221
BEKB BB	Bekaert SA	43.86	4	5	5	4	4.5	3	2	14.3		22.5	2,924
ALM SM	Almirall SA	14.98	5	5	4	5	4.5	5	5	24.6		8.4	2,906
TOM2 NA	TomTom International B.V.	8.83	1	5	4	5	4.5	3	3	35.6		9.2	2,328
GAM SW	GAM Holding AG	13.70	3	5	5	4	4.5	1	4	20.1		27.9	2,284
RACE IM	Ferrari NV	80.40	4	5	4	4	4.0	2	1	31.0		55.2	17,826
SFR FP	SFR Group SA	32.14	4	5	3	5	4.0	4	2	36.1		26.7	16,303
OSR GY	OSRAM Licht AG	72.70	5	5	4	4	4.0	4	3	22.2		57.0	8,692
MELK SS	Melker Schorling AB	569.00	3	5	3	5	4.0	5	5	NM		10.8	7,887
OERL SW	OC Oerlikon Corporation Inc. Pfaeffikon	12.75	3	5	4	4	4.0	3	2	32.3		37.1	4,528
SOBI SS	Swedish Orphan Biovitrum AB	140.60	4	5	3	5	4.0	5	5	34.1		37.1	4,494
SPIE FP	SPIE SA	25.08	4	5	4	4	4.0	3	1	16.4		35.4	4,339
RPC LN	RPC Group Plc	7.21	3	5	5	3	4.0	5	5	9.7		(25.7)	3,847
ACX SM	Acerinox SA	11.91	2	5	4	4	4.0	4	5	14.3		(0.1)	3,716
VNA GY	Vonovia SE	35.40	3	5	2	5	3.5	2	4	17.8		25.1	19,048
HEXAB SS	Hexagon AB Class B	417.40	5	5	2	5	3.5	4	4	23.8		35.0	17,406
KGX GY	KION GROUP AG	70.10	4	5	2	5	3.5	5	5	18.6		42.0	9,462
RCF FP	Teleperformance SE	117.10	5	5	4	3	3.5	4	2	19.5		30.0	7,718
VOE AV	voestalpine AG	39.09	3	5	4	3	3.5	3	2	10.3		10.9	7,498
ETL FP	Eutelsat Communications SA	24.52	2	5	4	3	3.5	1	1	18.1		41.0	6,513
LEG GY	LEG Immobilien AG	85.42	5	5	2	5	3.5	1	4	8.4		26.6	6,106
ALATP FP	Aroundtown Property Holdings Plc	4.80	4	5	2	5	3.5	4	5	6.8		18.9	4,722
LNZ AV	Lenzing AG	159.10	3	5	5	2	3.5	1	2	15.2		50.0	4,683
SFSN SW	SFS Group AG	113.10	5	5	4	3	3.5	2	1	22.6		44.8	4,397
DIA SM	Distribuidora Internacional de Alimentacion SA	5.49	3	5	3	4	3.5	1	4	12.7		24.4	3,799
CFEB BB	Compagnie d'Entreprises CFE SA	129.60	5	5	3	4	3.5	3	4	18.2		34.0	3,710
SRCG SW	Sunrise Communications Group Ltd.	76.45	3	5	2	5	3.5	4	2	46.6		24.7	3,582
LSG NO	Leroy Seafood Group ASA	47.43	3	5	5	2	3.5	2	4	9.0		2.9	3,394
SAX GY	Stroer SE & Co. KGaA	53.92	4	5	3	4	3.5	2	2	16.9		39.5	3,338
PWTN SW	Panalpina Welttransport (Holding) AG	135.80	3	5	4	3	3.5	5	5	34.4		14.8	3,307
NOS PL	NOS SGPS SA	5.48	3	5	3	4	3.5	3	3	23.8		6.6	3,189
TUB BB	Financiere de Tubize S.A.	60.90	4	5	5	2	3.5	3	4	NM		9.2	3,030
UNBI FP	UNIBEL SA	990.00	4	5	4	3	3.5	4	5	NM		12.4	2,567

Source: Empirical Research Partners Analysis.

Appendix 4: Recent Academic Papers on ESG Investing

Pyo, U., and Yameenul Abedin, 2017. "Equity-Based Compensation for Firm Performance." SSRN Working Paper, available at <https://ssrn.com/abstract=2918553>.

Abstract: The paper finds evidence that the equity-based compensation is positively related to firm performance and risk-taking. Both stock price and operating performance as well as firm's risk-taking increase with incentives provided by CEO stock options and stock holdings. The pay-performance sensitivity can explain stock returns better as an additional factor to the Fama-French 3-factor model. When CEOs are compensated with the higher PPS, firms experiences the higher return on asset. The higher pay-volatility sensitivity also leads to the higher risk-taking. While CEO incentive compensation has been perceived mixed on its effectiveness, this study provides support to the equity-based CEO compensation in reducing agency conflicts between CEOs and shareholders.

Nadarajah, S., Liu, B., Huang, A., and Searat Ali, 2017. "Gender Diversity and Default Risk: A Global Perspective." SSRN Working Paper, available at <https://ssrn.com/abstract=2954853>.

Abstract: We are the first to investigate the effect of board gender diversity on default risk across countries, largely focusing on various aspects of institutional setting at country-level. Intuitively, board gender diversity is likely to influence default risk as women on the board improves the board effectiveness and mitigates information asymmetry between management and shareholders. Using a large panel of non-financial firms in 48 countries over the period 2004–2015, we find a significantly negative relationship between women on the board and default risk. This finding is statistically significant, economically meaningful and robust to a range of alternative proxies, to additional tests, and to a natural experiment setting. Moreover, we find that the negative effect of board gender diversity on default risk is more pronounced in countries with strong institutional setting. These findings not only have profound implications for the stakeholders of the firm but also are useful to the countries where government increasingly expect board gender diversity policies.

Serafeim, G., and Jyothika Grewal, 2017. "The Value Relevance of Corporate Sustainability Disclosures: An Analysis of a Dataset from One Large Asset Owner." SSRN Working Paper, available at <https://ssrn.com/abstract=2966767>.

Abstract: Corporate environmental and social reporting lacks the comparability across companies that is a characteristic of financial information. To address this weakness, Norges Bank Investment Management (NBIM) created analytical frameworks to measure the quality and scope of reporting relating to three focus areas: climate change, water and children's rights. By translating information published by a global set of companies into standardized data, NBIM has constructed a dataset that can be used for analyzing and comparing companies across time and within sectors.

Bebchuk, L., Cohen, A., and Scott Hirst, 2017. "The Agency Problems of Institutional Investors." SSRN Working Paper, available at <https://ssrn.com/abstract=2982617>.

Abstract: We analyze how the rise of institutional investors has transformed the governance landscape. While corporate ownership is now concentrated in the hands of institutional investors that can exercise stewardship of those corporations that would be impossible for dispersed shareholders, the investment managers of these institutional investors have agency problems vis-à-vis their own investors. We develop an analytical framework for examining these agency problems and apply it to study several key types of investment managers. We analyze how the investment managers of mutual funds - both index funds and actively managed funds - have incentives to under-spend on stewardship and to side excessively with managers of corporations. We show that these incentives are especially acute for managers of index funds, and that the rise of such funds has system-wide adverse consequences for corporate governance. Activist hedge funds have substantially better incentives than managers of index funds or active mutual funds, but their activities do not provide a complete solution for the agency problems of institutional investors. Our analysis provides a framework for future work on institutional investors and their agency problems, and generates insights on a wide range of policy questions. We discuss implications for disclosure by in-

stitutional investors; regulation of their fees; stewardship codes; the rise of index investing; proxy advisors; hedge funds; wolf pack activism; and the allocation of power between corporate managers and shareholders.

Steven Kaplan, 2017. "Are U.S. Companies Too Short-Term Oriented? Some Thoughts." SSRN Working Paper, available at <https://ssrn.com/abstract=2972117>.

Abstract: U.S. companies are often criticized for being overly short-term oriented. This paper documents that those criticisms have a long history, going back at least thirty-five years. The paper then considers the implications of sustained short-termism for corporate profits, venture capital investments and returns, private equity investments and returns, and corporate valuations. The paper finds little long-term evidence that is consistent with the predictions of the short-term critics.

John Kim, 2017. "Corporate Financial Performance, Corporate Social Responsibility, and Credit Rating." SSRN Working Paper, available at <https://ssrn.com/abstract=2957165>.

Abstract: A credit rating evaluation is a very important tool to investors as well as to a society because it provides a valuation of an entity's ability to pay its financial burdens. In order for firms to meet their financial responsibilities, they need to generate enough revenues or to have good financial performances. The ability to pay financial responsibilities is referred to as "creditworthiness." Credit rating agencies release the credit evaluation results for investors to reflect in their decision-making based on firms' financial reports, hence; firms' financial performances. Corporate Social Responsibility (CSR) is the voluntary actions undertaken by a company to operate in an economic, social, and environmentally sustainable means. This paper involves the relationship among credit rating, CSR rating, and corporate financial performance (CFP), and how each of these variables affect one another. Employing the sample firms in North America, I have found that the regression coefficient of CFP is negatively related to the credit rating after controlling for various firm characteristics.

Dalia Marciukaityte, 2017. "Labor Laws and Firm Performance." SSRN Working Paper, available at <https://ssrn.com/abstract=2972617>.

Abstract: U.S. labor laws impose higher costs on unionized firms in states without right-to-work (RTW) laws. I find that these firms experience poor stock performance. The difference-in-differences analysis comparing the effect of RTW laws on unionized and nonunionized firms shows that unionized firms in states without RTW laws underperform by about seven percentage points per year. I find further evidence of underperformance using alternative methodologies to estimate abnormal stock performance, examining a natural experiment, showing expected cross-sectional patterns, as well as examining profitability and the market reaction to earnings announcements.

Capelle-Blancard, G., Crifo, P., Diaya, M., Scholtens, B., and Rim Oueghlissi, 2016. "Environmental, Social and Governance (ESG) Performance and Sovereign Bond Spreads: An Empirical Analysis of OECD Countries." SSRN Working Paper, available at <https://ssrn.com/abstract=2874262>.

Abstract: What are the determinants of borrowing cost in international capital markets? Apart from macroeconomic fundamentals, are there any qualitative factors that might capture sovereign bond spreads? In this paper we consider to what extent Environmental, social and governance (ESG) performance can affect sovereign bond spreads. First, countries with good ESG performance tend to have less default risk and thus lower bond spreads. Moreover, the economic impact is stronger in the long-run, suggesting that ESG performance is a long-lasting phenomenon. Second, we examine the financial impact of separate ESG dimensions, and find that the environmental dimension appears to have no financial impact whereas governance weighs more than social factors. Third, we examine cross-countries differences and show that ESG performance has a more significant and stronger impact in the Eurozone than elsewhere in OECD countries. Fourth, we include evidence from the global financial crisis and find stronger influence of country sustainability performance during crisis period.

Ferrari, G., Ferraro, V., Profeta, P., and Chiara Pronzato, 2016. "Gender Quotas: Challenging the Boards, Performance, and the Stock Market." CESifo Working Paper Series No. 6084, available at <https://ssrn.com/abstract=2866376>.

Abstract: In 2011, Italy introduced gender quotas for boards of directors of companies listed on its stock market. Comparing before and after the reform within firms, we find that quotas are associated with a higher share of female board directors, higher levels of education of board members, and a lower share of older members. We then use the reform period as an instrument for the share of female directors and find no significant impact on firms' performance. Interestingly, we find that the share of female directors is associated with a lower variability of stock market prices. We also run event studies on the stock price reaction to the introduction of gender quotas. A positive effect of the quota law on stock market returns emerges at the date of the board's election. Our results are consistent with gender quotas giving rise to a beneficial restructuring of the board, which is positively received by the market.

Graham, J., Harvey, C., Popadak, J., and Shivaram Rajgopal, 2017. "Corporate Culture: Evidence from the Field." NBER Working Paper No. w23255, available at <https://ssrn.com/abstract=2937525>.

Abstract: Does corporate culture matter? Can differences in corporate culture explain why similar firms diverge with one succeeding and the other failing? To answer these questions, we use a novel survey and interview-based analysis of 1,348 North American firms. Over half of senior executives believe that corporate culture is a top-three driver of firm value and 92% believe that improving their culture would increase their firm's value. Surprisingly, only 16% believe their culture is where it should be. Executives link culture to ethical choices (compliance, short-termism), innovation (creativity, taking appropriate risk), and value creation (productivity, acquisition premia). We assess these links within a framework that implies cultural effectiveness depends on interactions between cultural values, norms, and formal institutions. Our evidence suggests that cultural norms are as important as stated values in achieving success.

Amel-Zadeh, A., and George Serafeim, 2017. "Why and How Investors Use ESG Information: Evidence from a Global Survey." SSRN Working Paper, available at <https://ssrn.com/abstract=2925310>.

Abstract: Using survey data from a sample of senior investment professionals from mainstream (i.e. not SRI funds) investment organizations we provide insights into why and how investors use reported environmental, social and governance (ESG) information. The primary reason survey respondents consider ESG information in investment decisions is because they consider it financially material to investment performance. ESG information is perceived to provide information primarily about risk rather than a company's competitive positioning. There is no one size fits all, with the financial materiality of different ESG issues varying across sectors. Lack of comparability due to the lack of reporting standards is the primary impediment to the use of ESG information. Most frequently, the information is used to screen companies with the most often used method being negative screening. However, negative screening is perceived as the least investment beneficial while full integration into stock valuation and positive screening considered more beneficial. Respondents expect negative screening to be used less in the future, while positive screening and active ownership to be used more.

Dunbar, C., Li, Z., and Yaqi Shi, 2016. "Corporate Social Responsibility and CEO Risk-Taking Incentives." SSRN Working Paper, available at <http://ssrn.com/abstract=2828267>.

Abstract: In this paper, we explore how firms adjust CEO compensation incentives in response to corporate social responsibility (CSR) standing. Specifically, we focus on the effect of CSR standing on CEO's risk-taking incentives. We hypothesize that because firms possessing better social performance generate insurance-like moral capital that protects managers from market discipline, risk averse managers tend to take less risk than is optimal for shareholders. Firms should respond to this agency problem by offering greater risk-taking incentives to managers. Employing a large sample of the US firms from 1992 to 2010, we find strong empirical evidence to support our hypothesis. Indeed, CSR standing is positively related to CEO pay-risk sensitivity (Vega), and this association is driven by CSR strengths rather than CSR concerns. Further, we provide evidence that firm overall risk and idiosyncratic risk negatively moderate the association between CSR and Vega.

Rego, S., Williams, B., and Ryan Wilson, 2017. "Who Invests in Corporate Tax Avoiders?" SSRN Working Paper, available at <https://ssrn.com/abstract=2919004>.

Abstract: We use detailed data on individual investors' stock holdings to investigate whether corporate tax avoidance affects the willingness of individual investors to own stock. Consistent with corporate tax avoidance increasing both the perceived risk of owning stock and the costs of processing financial information, we provide robust evidence that individual investors own less stock of firms with low effective tax rates, our proxy for corporate tax avoidance. We then examine whether investor sophistication and investment strategies impact individuals' willingness to own stock in firms with low effective tax rates. Our results suggest that more sophisticated investors and investors with shorter investment horizons own more stock in high tax avoidance firms, while more conservative investors own less. We also demonstrate that individual investors that own more stock in firms with low effective tax rates earn significantly higher abnormal stock returns than individual investors that own less such stock. Our results are robust to numerous control variables (including financial statement disclosure quality, as investigated in Lawrence 2013) and to an alternative measure of corporate tax avoidance. Overall, our findings suggest that less sophisticated and more conservative investors are less willing to own stock in corporate tax avoiders and thus, are at a disadvantage relative to other individual investors.

Gao, L., He, J., and Juan Wu, 2016. "Standing out from the Crowd via Corporate Goodness: Evidence from a Natural Experiment." SSRN Working Paper, available at <http://ssrn.com/abstract=2830742>.

Abstract: We study firms' incentives to engage in corporate social responsibility (CSR) activities by using the natural experiment of Regulation SHO, which relaxes short sale constraints and increases short selling pressure for a group of randomly selected firms. We find that firms experiencing an exogenous increase in their exposure to short sales significantly raise their CSR relative to control firms. The results are more prominent for firms with stronger signaling abilities (higher profitability and fewer financial constraints), and those with stronger signaling needs (more non-fundamental-driven short selling, higher information uncertainty, and more product market competition). Further, firms that indeed increase their CSR after the regulatory shock experience a larger price reversal relative to those that do not. These findings support the argument that CSR is a device actively used by firms to signal their quality.

Gosh, C., Petrova, M., Sun, L., and Yihong Xiao, 2016. "Increasing Gender Diversity in Corporate Boards: Are Firms Catering to Investor Preferences?" SSRN Working Paper, available at <https://ssrn.com/abstract=2870077>.

Abstract: We examine the drivers of increasing women's representation on boards in American firms. During 1998-2014, the proportion of firms with female directors on their boards almost doubled to approximately 78%, while the percentage of female directors increased almost five-fold to a share of 15%. Our analysis shows that the documented increase in female representation on corporate boards is driven by the increasing propensity of firms to add more female directors, rather than changing firms' characteristics. We use the catering theory to explain firms' propensity to increase (or decrease) their board gender diversity, and show that when the premium to have women on board is positive (negative), firms are more likely to add (replace) female directors. We further find that firms with more women on their boards are historically associated with higher valuation premium. Finally, we observe that the magnitude of board gender diversity changes is positively related to the change in the lagged gender diversity premium. Our results indicate that board gender diversity can increase value in firms, catering to the demand of investors for gender-diversified boards.

Hong, H., Li, F., and Jingmin Xu, 2016. "Climate Risks and Market Efficiency." NBER Working Paper No. w22890, available at <https://ssrn.com/abstract=2880328>.

Abstract: We investigate whether stock markets efficiently price risks brought on or exacerbated by climate change. We focus on drought, the most damaging natural disaster for crops and food-company cash flows. We show that prolonged drought in a country, measured by the Palmer Drought Severity Index (PDSI) from climate studies, forecasts both declines in profitability ratios and poor stock returns for food companies in that country. A portfolio short food stocks of countries in drought and long those of countries not in drought generates a 9.2% annualized return from 1985 to 2015. This excess predictability is larger in countries having little history of droughts prior to the

1980s. Our findings support regulatory concerns of markets inexperienced with climate change underreacting to such risks.

Bajic, S. and Burchin Yurtoglu, 2016. "CSR, Market Value, and Profitability: International Evidence." SSRN Working Paper, available at <https://ssrn.com/abstract=2848099>.

Abstract: Three problems pose severe challenges to identify the impact of corporate social responsibility (CSR) on firm value and performance. These are construct validity, limited data, and endogeneity. To deal with them we use a broad composite measure of CSR and panel data with firm fixed and random effects, plus extensive covariates. We analyze a unique sample drawn from 35 countries over 2003-2012 and find an economically significant relationship between the overall CSR measure and firm value, but little impact of CSR on profitability. The results are driven by the social subscore of our CSR measure. We show that both omitted firm characteristics and omitted aspects of CSR can lead to omitted variable bias and that studies focusing on a single aspect of CSR, such as employee relations or toxic emissions face severe omitted variables bias. These problems are exacerbated in models which use limited controls and ignore firm level heterogeneity.

Cheng, Q., Ranashinghe, T., and Sha Zhao, 2016. "High CEO Pay Ratios: Governance Failure or Superior Performance?" SSRN Working Paper, available at <https://ssrn.com/abstract=2861680>.

Abstract: The ratio of CEO to average worker compensation (CEO pay ratio) in the U.S. has risen rapidly in recent years. There is an intense debate over whether high CEO pay ratios reflect managerial rent extraction and corporate governance failures, or firms' ability to secure superior CEO talent, which is in short supply. To shed light on this debate, this study examines the relationship between CEO pay ratio and firm value/performance. We find that industry-adjusted CEO pay ratios are positively associated with both firm value and performance. In addition, firms with high CEO pay ratios are more likely to engage in value-enhancing acquisitions and exhibit stronger CEO turnover-performance sensitivity. Together, our results suggest that on average, high CEO pay ratios indicate firms' success in securing scarce CEO talent, not a failure in corporate governance.

Hoepner, A., Oikonomou, I., Sautner, Z., Starks, L., and Xiaoyan Zhou, 2016. "ESG Shareholder Engagement and Downside Risk." SSRN Working Paper, available at <https://ssrn.com/abstract=2874252>.

Abstract: Direct institutional shareholder engagement on environmental, social and governance (ESG) issues has become increasingly important. We show that ESG shareholder engagement reduces downside risk, measured using lower partial moments and value at risk. We document this effect by exploiting proprietary access to the complete engagement database of one of the world's largest institutional shareholder activist. We document a risk-reduction effect only for engagements where portfolio firms respond with real actions to the investor's demands. The risk effect of ESG engagement varies across engagement themes. It is effective when governance or strategy & risk topics are addressed, and if changes in firms' environmental policies are coupled with governance improvements.