**BSYS ESG Research**

How I Learned to Stop Worrying and Love ESG Research

July 27th 2021

BlackRock

# Introduction to Double Bottomline

# The Dirty Secret of Green

# Many Traditional Alpha Investors Are Still Skeptical about ESG

# Reasons to be Skeptical about ESG Research

## List of Challenges Remains High ….

- **Poorly Defined Research Questions**
- **Assumption Every ESG Idea Will Generate Alpha "In the Future"**
- **Weak Documentation from 3rd Party Data Providers**
  - And little consistency in their ratings
- **Standards Based on Industry Surveys or Expert Opinion**
  - "Materiality" is often a dodge
- **Difficulty Understanding Social Outcomes at Portfolio Level**
- **Is this just Quality? Already priced in?**
- **Etc Etc Etc**

## … Yet the Interest in Improving ESG Remains

OECD BETTER POLICIES FOR BETTER LIVES 60 YEARS

OECD Home | About | Countries | Topics | Coronavirus (COVID-19) | Français

OECD Home › Investment › More efforts needed from governments, regulators and business to unlock full potential of sustainable finance

**More efforts needed from governments, regulators and business to unlock full potential of sustainable finance**

29/09/2020 - Governments and regulators should urgently work together to improve the data used for environmental, social and governance (ESG) investing, according to a new OECD report.

The OECD Business and Finance Outlook 2020 says that ESG investing has grown steadily in recent years, with ESG ratings, indices and other financial products proliferating to meet demand.

Yet market participants across the board are still missing the relevant, comparable and verifiable ESG data they need to properly conduct due diligence, manage risks, measure outcomes, and align investments with sustainable, long-term value.

"Finance has a critical role to play in ensuring a truly sustainable recovery from the COVID-19 crisis that will create better and greener jobs, boost income and lead to more sustainable and resilient growth," said OECD Secretary-General Angel Gurría. "But finance can only deliver better environmental, social or governance outcomes if investors have the tools and information they need."

The Outlook highlights a number of challenges with current ESG-based investment and finance strategies that need to be fixed to support markets in building back better. Close engagement on the part of regulators and policymakers with the industry, including institutional investors and lenders, ratings and index providers, and international standard setters, will be critical.

The different methodologies used vary in scope and tend to have low transparency, with few generally accepted, consistent, comparable and verifiable indicators on which to base assessments. In practice, this means that a company might achieve a high ESG score from one service provider, and a much lower score from another.

This fragmentation and lack of comparability means investors cannot properly assess companies' performance on ESG-related investment goals, such as limiting exposure to carbon emissions. This means that current practices cannot be relied on to manage climate transition risks and to green the financial system, at a time when these are rising priorities for investors and policymakers alike.

Fragmented ESG frameworks and inconsistent disclosure requirements also mean that both institutional investors and corporates cannot properly communicate on their ESG-related decisions, strategies and performance criteria, with beneficiaries and shareholders. This in turn makes it hard for such beneficiaries to assess how their savings are used, and for companies to attract financing at a competitive cost that fully considers ESG factors.

Market supervisors have a big role to play by encouraging greater relevance and clarity in reporting frameworks for ESG disclosures. This includes transparency on how metrics are calculated, weighted and interpreted in the assessments of ESG performance.

Most urgent, according to the Outlook, is the development of a common set of global principles and guidelines for consistent, comparable and verifiable ESG data.

The report also highlights other priorities for boosting ESG investing. These include putting in place guidelines to enable banks to scale up ESG integration and due diligence in their lending; the role state enterprise ownership should play in driving better ESG outcomes; and ensuring fiduciaries such as asset managers and boards better manage material ESG risk, including when investments are exposed to longer-term sustainability risks, as in the case of infrastructure financing.

Also released today by the OECD's New Approaches to Economic Challenges (NAEC) team, The Financial System brings together a range of experts to discuss how to improve financial resilience.

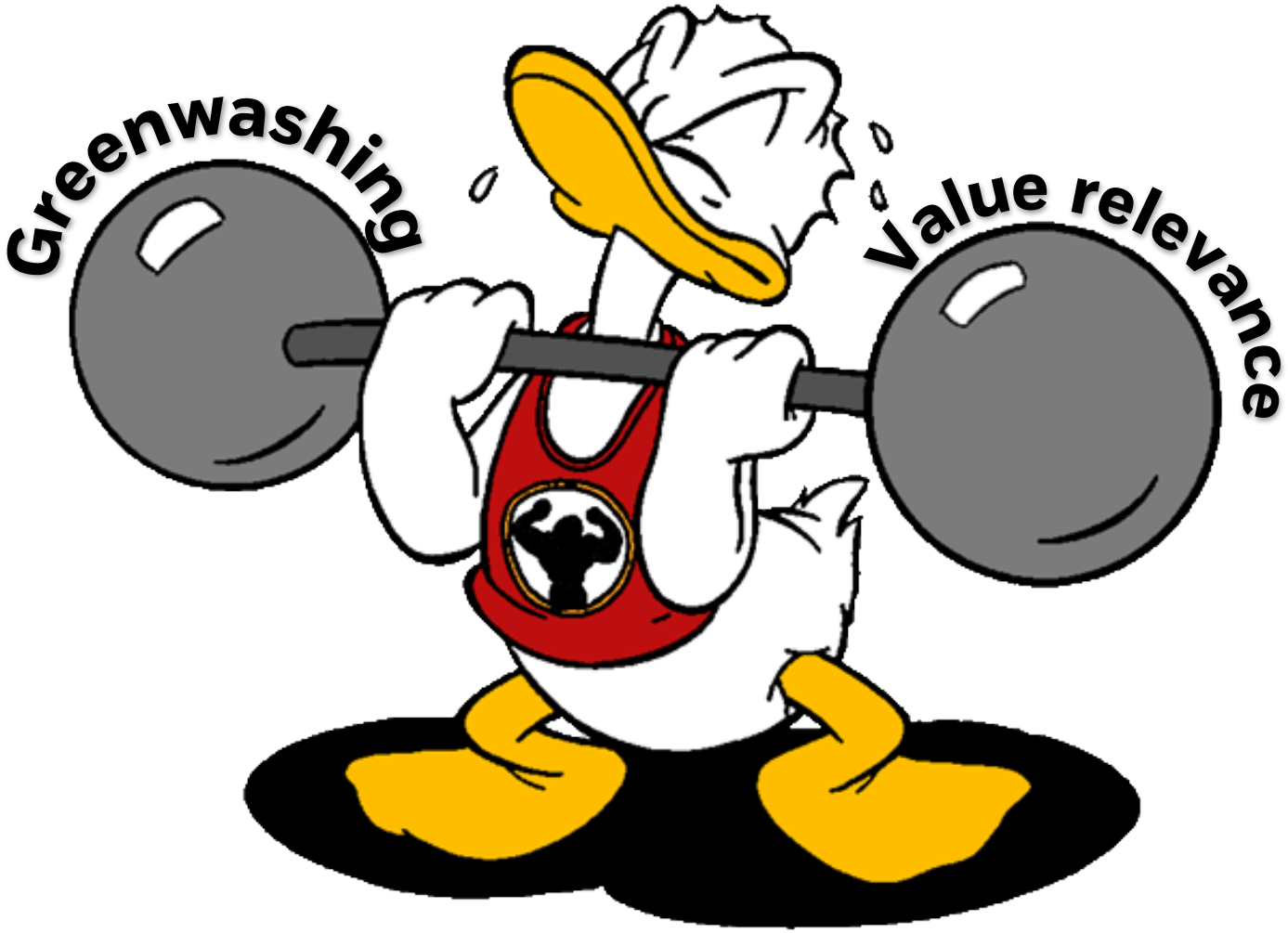
For further information, journalists are invited to contact Spencer Wilson in the OECD Media Office (+33 1 45 24 97 00).

*Working with over 100 countries, the OECD is a global policy forum that promotes policies to improve the economic and social well-being of people around the world.*

**Also Available**

https://www.oecd.org/investment/more-efforts-needed-from-governments-regulators-and-business-to-unlock-full-potential-of-sustainable-finance.htm

# The Twin Problems of ESG



# The Twin Problems of ESG

## Stakeholders

- How do we test whether feature that sounds sustainable delivers the social goods?
- Is there a compelling, evidence driven way to capture this?

## Shareholders

How do we ensure that the feature also drives results for businesses and shareholders ?

How selective should we be when picking features for an ESG portfolio?

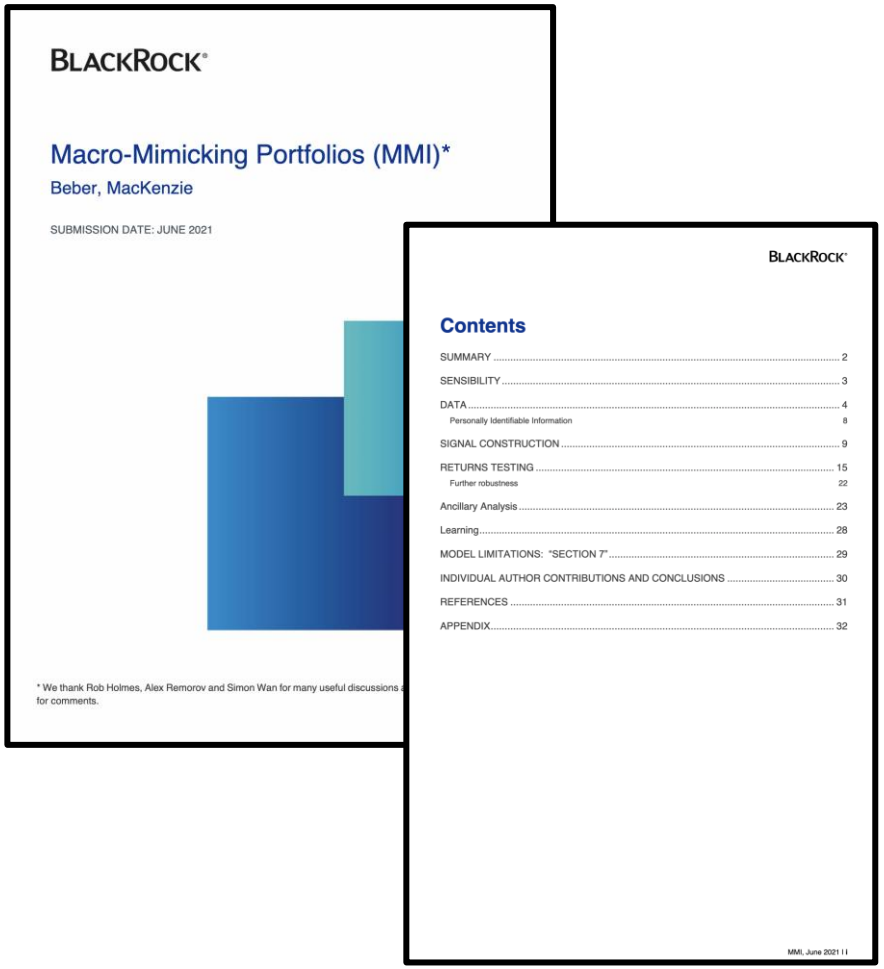
# Solution: Double Bottom Line

# Start with Systematic Research Template

## Table of Contents for ERAB Documents

1. **Sensibility**
   - Alpha Hypothesis
2. **Data Overview**
3. **Signal Construction**
4. **Ancillary Evidence**
   - Alpha Channel?
   - Better understanding
5. **Backtest Results**
   - Alpha IR Returns
6. **Learnings**
7. **Model Limitations**

## Supports Cross-Platform Research



# Insert Double-Bottom Line Requirements

*Sustainable outcomes and alpha drivers*

**Double Bottomline ESG: Additional Requirements to Alpha**

1. **Sensibility**
   - Alpha Hypothesis
   - *Empirical Exploration of Sustainability Issue*
   - *ESG Goals, Standards, and Metrics*
2. **Data Overview**
3. **Signal Construction**
4. **Ancillary Evidence**
   - *Sustainability Feature of Firm*
   - Alpha Channel
5. **Backtest Results**
   - *Sustainability Outcome in Society*
   - Alpha IR Returns
6. **Learnings**
7. **Model Limitations**

# Implications

## Benefits

- Fits Neatly into Systematic Research
- Draws on BSYS Strengths of Data and Modeling
- Evidence Driven for Stakeholders & Shareholders

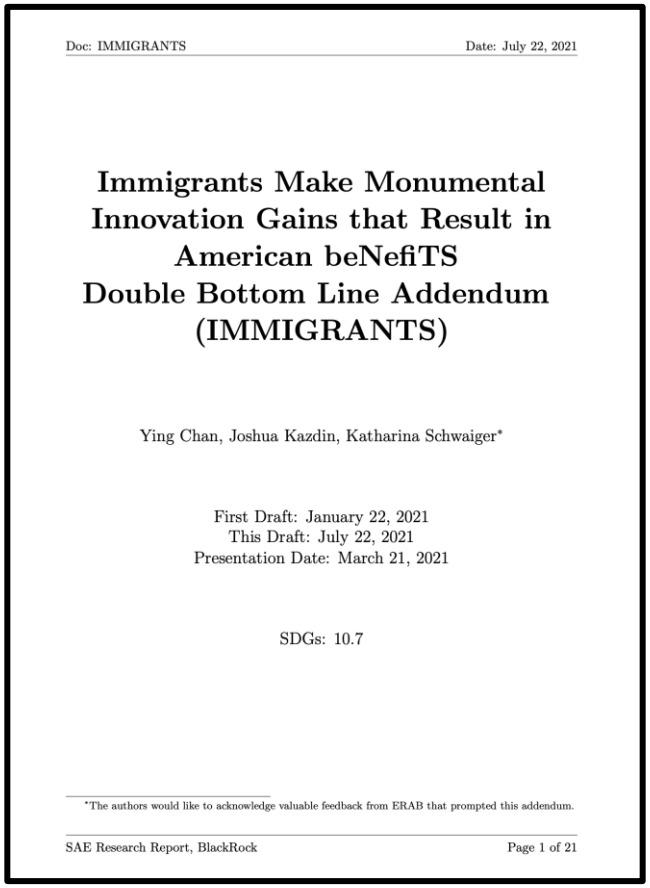
## Drawbacks

- Limits ESG Topics to Issues We Can Measure
- Slows Response in Rapidly Evolving Field
- Investment Thesis Requirement

# Examples from Cross-BSYS

# Alpha Can Lead to ESG Insight & ESG Can Lead to Alpha

Alpha -> ESG



Doc: IMMIGRANTS Date: July 22, 2021

**Immigrants Make Monumental Innovation Gains that Result in American beNefiTS Double Bottom Line Addendum (IMMIGRANTS)**

Ying Chan, Joshua Kazdin, Katharina Schwaiger*

First Draft: January 22, 2021
This Draft: July 22, 2021
Presentation Date: March 21, 2021

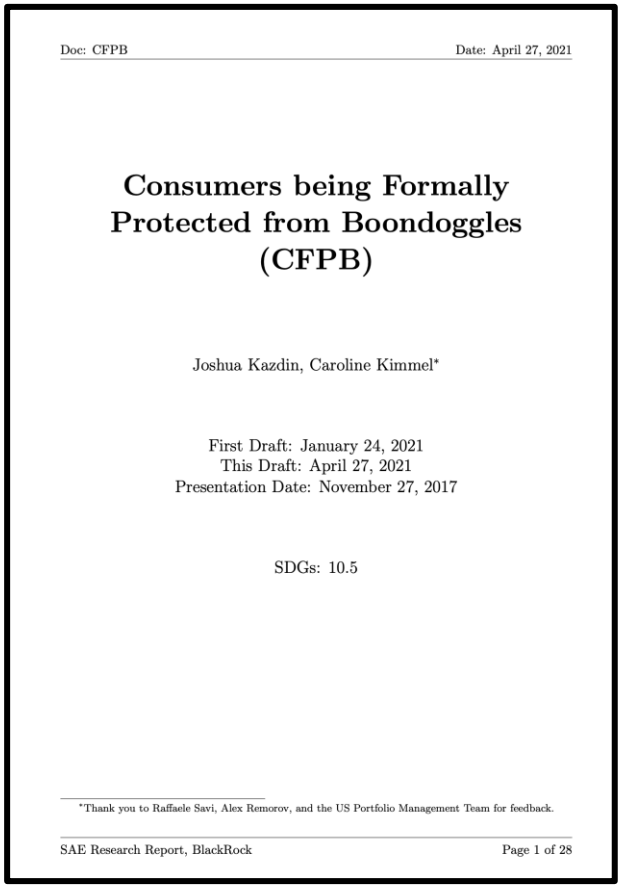
SDGs: 10.7

*The authors would like to acknowledge valuable feedback from ERAB that prompted this addendum.

SAE Research Report, BlackRock Page 1 of 21

FBSG (Chan, Schwaiger) -> SAE (Kazdin)

ESG -> Alpha



Doc: CFPB Date: April 27, 2021

**Consumers being Formally Protected from Boondoggles (CFPB)**

Joshua Kazdin, Caroline Kimmel*

First Draft: January 24, 2021
This Draft: April 27, 2021
Presentation Date: November 27, 2017

SDGs: 10.5

*Thank you to Raffaele Savi, Alex Remorov, and the US Portfolio Management Team for feedback.

SAE Research Report, BlackRock Page 1 of 28

SAE (Kimmel, Kazdin)

Equities -> Fixed Income

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**Benefits Count Signal (BCS)**

Awate, Garvey, Mukund

SUBMISSION DATE: AUGUST 31, 2018

SSRM/FARM/FERMI DATE: JUNE 13, 2018

SAE (Awate, Garvey, Mukund) -> SFI (Kaul)

# Finding the Double-Bottom Line

*Sustainable outcomes and alpha drivers*

10 REDUCED INEQUALITIES

## Immigrants Make Monumental Innovation Gains that Result in American beNefiTS (IMMGRANTS)

*Data for Companies from US Department of Labor*

*Tested for Society using Bureau of Labor Statistics Occupational Employment & Wage Statistics*

***Investment Result.*** *Firms with more H1-B Hiring Have Higher ROA, Gross Profit, and Patent Filings*

***Sustainable Result.*** *High Skilled Immigration is Positively Associated with General Hiring in US Metropolitan areas, not associated with wage compression, and positively associated with diversity metrics at the firm level.*

## More Graduate Students in Engineering are International, but Immigration Remains Challenging


Figure 1: NSF: Percentage of graduate and postdoctoral students in engineering on student visas: 1980–2019

Source: National Science Foundation

## Companies Which Support Immigration Have Higher ROA, Gross Profit, and Patent Filings, Yr+Ind FE, 11-20

| | | | |
|---|---|---|---|
| **Dep. Variable:** | roa | **R-squared:** | 0.4667 |
| **No. Observations:** | 46609 | **Entities:** | 5251 |
| **Time periods:** | 10 | **Log-likelihood** | 6.308e+04 |
| **Cov. Estimator:** | Clustered | **F-statistic (robust):** | 905.62 |

| | Parameter | Std. Err. | T-stat | P-value |
|---|---|---|---|---|
| **Intercept** | -0.0288 | 0.0045 | -6.4231 | 0.0000 |
| **total_h1b_hiring$_{log}$** | 0.0016 | 0.0002 | 7.4979 | 0.0000 |
| **roa$_{lag}$** | 0.6624 | 0.0075 | 88.247 | 0.0000 |
| **total_assets$_{log}$** | 0.0011 | 0.0001 | 9.0804 | 0.0000 |

(a) Return On Assets

Source:

## High Skilled Immigration Is Positively Associated with Broader Labor Market Hiring (10-17) & Diversity (11-20)

| | | | |
|---|---|---|---|
| **Dep. Variable:** | DIVERSE | **R-squared:** | 0.1680 |
| **No. Observations:** | 34113 | **Entities:** | 4251 |
| **Time periods:** | 10 | **Log-likelihood** | 5485.6 |
| **Cov. Estimator:** | Clustered | **F-statistic (robust):** | 156.33 |

| | Parameter | Std. Err. | T-stat | P-value |
|---|---|---|---|---|
| **Intercept** | -0.0888 | 0.0477 | -1.8628 | 0.0625 |
| **total_h1b_hiring$_{log}$** | 0.0522 | 0.0020 | 26.773 | 0.0000 |
| **total_assets$_{log}$** | -0.0234 | 0.0014 | -16.557 | 0.0000 |

(b) Managerial Diversity (DIVERSE)

| | | | |
|---|---|---|---|
| **Dep. Variable:** | overall_hiring | **R-squared:** | 0.1264 |
| **No. Observations:** | 267403 | **Entities:** | 363 |
| **Time periods:** | 8 | **Log-likelihood** | -1.935e+05 |
| **Cov. Estimator:** | Clustered | **F-statistic (robust):** | 1151.7 |

| | Parameter | Std. Err. | T-stat | P-value |
|---|---|---|---|---|
| **Intercept** | -1309.6 | 333.54 | -3.9264 | 0.0001 |
| **h1b_hiring** | 0.1718 | 0.0558 | 3.0768 | 0.0021 |
| **loc_quotient** | 4.6645 | 2.0788 | 2.2438 | 0.0249 |
| **total_employment** | 0.0274 | 0.0030 | 9.1432 | 0.0000 |

(a) Overall Hiring within SOC Codes

Source CFPB, FRBNY Consumer CreditPanel/Equifax, Bureau of Labor Statistics

# Finding the Double-Bottom Line

## *Sustainable outcomes and alpha drivers*

10 REDUCED INEQUALITIES

### Consumers Being Formally Protected from Boondoggles (CFPB)

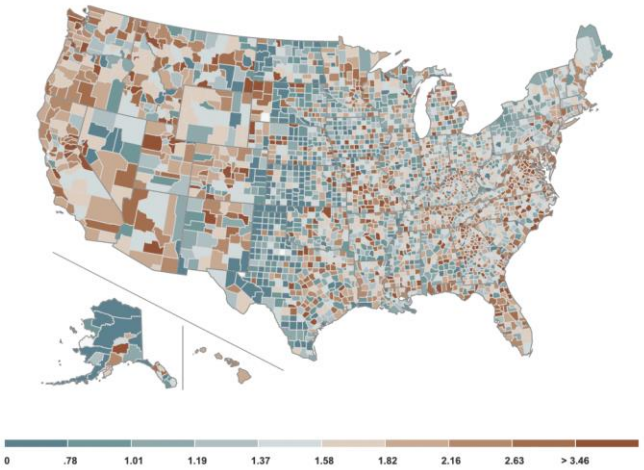
*Data for Companies from Consumer Financial Protection Agency Complaint Database*

*Tested for Society using New York Federal Reserve Quarterly Debt-to-Income Vulnerability Indices*

***Investment Result.*** *Firms with lower complaints tend to have lower non-performing loans to total assets*

***Sustainable Result.*** *States with lower complaints have households in less vulnerable financial positions*

### Federal Reserve Monitors Household Debt-to-Income Since GFC, 2019




Source: FRBNY Consumer CreditPanel/Equifax, Bureau of Labor Statistics

### Betting Against Increases in Non-Performing Assets to Total Assets Regressed on Complaints, 2011-2020

| DNAPA2A | No Fixed Effects | Year/Ind Fixed Effects |
|---|---|---|
| | (1) | (2) |
| Intercept | -1.607 | -0.882 |
| | (-4.441)*** | (-1.185)*** |
| Complaints[a] | -0.053 | -0.055 |
| | (-1.800)* | (-2.029)** |
| Deposits[a] | 0.138 | 0.144 |
| | (5.287)*** | (6.232)*** |
| DNPA2A Lagged | 0.328 | 0.226 |
| | (59.624)*** | (37.085)*** |
| Adj-R2 | 48.0% | 59.3% |
| *df* | 3 | 14 |

[a]Log Adjusted
Number of observations = 3,922
(***$P < 0.01$, **$P < 0.05$, *$P < 0.1$)

Source: SAE, Worldscope, CFPB, FDIC

### Financial Vulnerability Regressed on Financial Product Complaints, 2011-2020

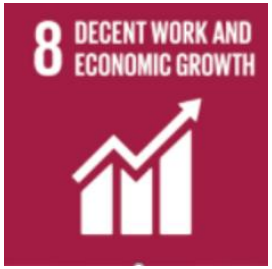
| Mean Debt to Income | No Fixed Effects | State/Year Fixed Effects |
|---|---|---|
| | (1) | (2) |
| Intercept | 0.256 | 1.124 |
| | (25.739)*** | (46.264)*** |
| Complaints[a] | 0.003 | 0.019 |
| | (2.924)*** | (4.489)*** |
| Mean Debt to Income 1Q Lagged | 0.815 | 0.194 |
| | (153.282)*** | (16.903)*** |
| Adj-R2 | 79.8% | 88.7% |
| *df* | 2 | 58 |

[a]Log Adjusted
Number of observations = 5,957
(***$P < 0.01$, **$P < 0.05$, *$P < 0.1$)

Source CFPB, FRBNY Consumer CreditPanel/Equifax, Bureau of Labor Statistics

# Finding the Double-Bottom Line

## *Sustainable outcomes and alpha drivers*




**Syndication of dirty deals. We are defining Dirty Deals as Rated CCC by MSCI's ESG framework, or UNGC violators.**

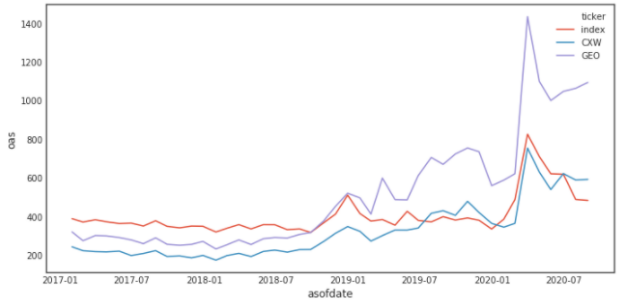
*Data from BLK BCM*

*Tested for Banks within LEH_CORP Index*

***Investment Result.*** *Banks involved with higher % of "dirty deals" generally have lower asset quality and can be a leading indicator for deterioration in asset quality over the next 6 months.*

***Sustainable Result.*** *% of "dirty deals" are generally associated with low esg scores and is a leading indicator of deterioration in esg scores.*

**Private prisons as a case study highlights the sensibility of the insight and pressures controversial names face**




Source: BLK/Bloomberg

**% of "dirty deals" is a leading indicator of deterioration in ESG scores.**

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | esg_score_adj_12m | R-squared: | 0.806 |
| Model: | OLS | Adj. R-squared: | 0.806 |
| Method: | Least Squares | F-statistic: | 1385. |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 7.92e-238 |
| Time: | 12:59:40 | Log-Likelihood: | -731.42 |
| No. Observations: | 668 | AIC: | 1469. |
| Df Residuals: | 665 | BIC: | 1482. |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | 1.0014 | 0.087 | 11.562 | 0.000 | 0.831 | 1.171 |
| esg_score_adj | 0.8662 | 0.017 | 49.798 | 0.000 | 0.832 | 0.900 |
| pct_dirty | -2.9559 | 0.404 | -7.322 | 0.000 | -3.749 | -2.163 |

| | | | |
|---|---|---|---|
| Omnibus: | 34.348 | Durbin-Watson: | 0.322 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 38.264 |
| Skew: | 0.566 | Prob(JB): | 4.91e-09 |
| Kurtosis: | 3.302 | Cond. No. | 68.6 |

**Banks involved with higher % of "dirty deals" can be a leading indicator for deterioration in asset quality over the next 6 months.**

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | qlty_of_mgmt_6m | R-squared: | 0.046 |
| Model: | OLS | Adj. R-squared: | 0.045 |
| Method: | Least Squares | F-statistic: | 37.57 |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 1.40e-09 |
| Time: | 13:07:58 | Log-Likelihood: | -13.182 |
| No. Observations: | 774 | AIC: | 30.36 |
| Df Residuals: | 772 | BIC: | 39.67 |
| Df Model: | 1 | | |
| Covariance Type: | nonrobust | | |

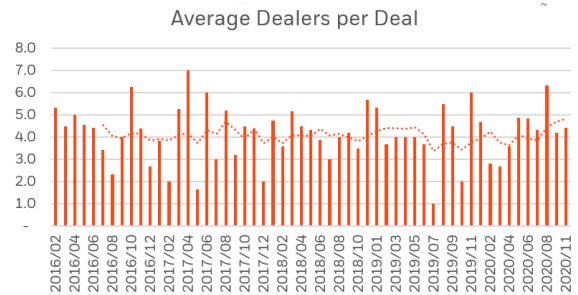
| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | -0.6216 | 0.011 | -58.201 | 0.000 | -0.643 | -0.601 |
| pct_dirty | -0.7256 | 0.118 | -6.130 | 0.000 | -0.958 | -0.493 |

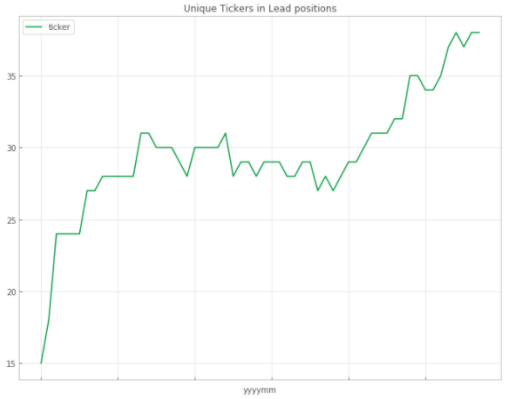
| | | | |
|---|---|---|---|
| Omnibus: | 49.829 | Durbin-Watson: | 0.292 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 51.300 |
| Skew: | 0.589 | Prob(JB): | 7.25e-12 |
| Kurtosis: | 2.552 | Cond. No. | 13.4 |

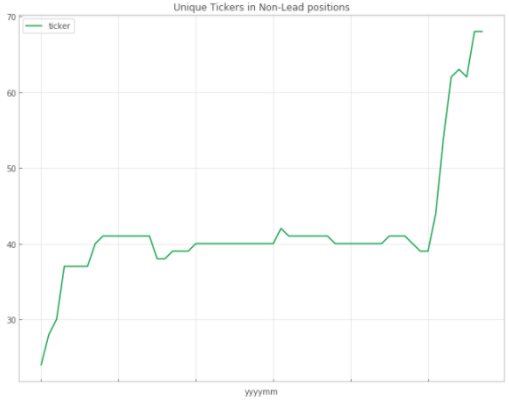
# Data Source, Coverage and Trends

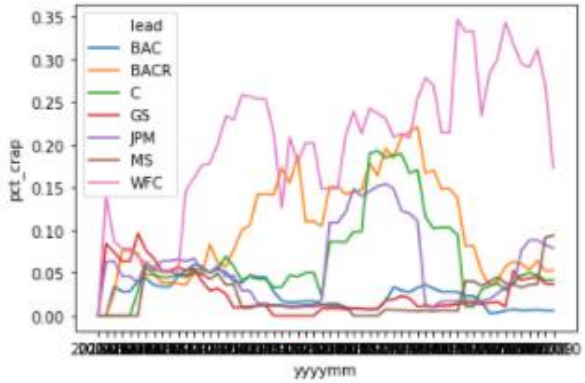
## BlackRock Capital Markets (BCM) compiles data on syndicated deal (IG+HY) on a daily basis.

- This may be a competitive advantage for us given the scale of the firm and lack of competing data source
- BCM has permissioned SFI a database table for this specific project
- We had to clean historical data but it will be maintained in a standard format going forward
- Total $ issuance of UNGC Fails or MSCI CCC companies has not slowed down. Neither has the count of individual companies needi ng financing
- Coverage has improved recently and is fairly robust; there are 70 unique banks in the Investment Grade Index.
- Banks represent ~17.5% of LEH_CREDIT.
- Lead (Broker/Dealers) banks are the focus of our analysis – that list is significantly smaller, and as it turns out, much more meaningful.
- Data goes back to 2016



# Double Bottomline – Ancillaries & Correlations

- Higher % of dirty deals are associated with lower esg scores but also deterioration in esg scores, governance score and higher controversies over the next 12 months.
- Higher % of dirty deals help explain lower npl coverage ratios and quality of management 6M in the future. After adjusting for starting ratios , it still significantly explains quality of management deterioration.
- Signal has a very strong quality tilt wrt spread, bfidef and sigma. Its also positively correlated to good growth suggesting fundamental quality tilt. Finally its also very strongly correlated to sbti signal, which suggests companies that have signed up for reducing their carbon emissions also stay away from syndication of controversial names

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | g_score_12m | R-squared: | 0.757 |
| Model: | OLS | Adj. R-squared: | 0.756 |
| Method: | Least Squares | F-statistic: | 1032. |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 2.03e-204 |
| Time: | 12:59:40 | Log-Likelihood: | -693.29 |
| No. Observations: | 667 | AIC: | 1393. |
| Df Residuals: | 664 | BIC: | 1406. |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | 0.9043 | 0.081 | 11.099 | 0.000 | 0.744 | 1.064 |
| g_score | 0.8357 | 0.019 | 43.802 | 0.000 | 0.798 | 0.873 |
| pct_dirty | -1.0309 | 0.383 | -2.689 | 0.007 | -1.784 | -0.278 |

| | | | |
|---|---|---|---|
| Omnibus: | 59.937 | Durbin-Watson: | 0.387 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 174.583 |
| Skew: | 0.425 | Prob(JB): | 1.23e-38 |
| Kurtosis: | 5.358 | Cond. No. | 59.1 |

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | controversy_score_12m | R-squared: | 0.812 |
| Model: | OLS | Adj. R-squared: | 0.811 |
| Method: | Least Squares | F-statistic: | 1434. |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 7.31e-242 |
| Time: | 12:59:40 | Log-Likelihood: | -806.76 |
| No. Observations: | 668 | AIC: | 1620. |
| Df Residuals: | 665 | BIC: | 1633. |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | 0.1975 | 0.055 | 3.565 | 0.000 | 0.089 | 0.306 |
| controversy_score | 0.8908 | 0.018 | 49.394 | 0.000 | 0.855 | 0.926 |
| pct_dirty | -0.8822 | 0.474 | -1.859 | 0.063 | -1.814 | 0.049 |

| | | | |
|---|---|---|---|
| Omnibus: | 195.760 | Durbin-Watson: | 0.402 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 2122.084 |
| Skew: | 0.978 | Prob(JB): | 0.00 |
| Kurtosis: | 11.510 | Cond. No. | 40.2 |

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | npl_coverage_6m | R-squared: | 0.019 |
| Model: | OLS | Adj. R-squared: | 0.017 |
| Method: | Least Squares | F-statistic: | 11.28 |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 0.000837 |
| Time: | 13:07:57 | Log-Likelihood: | -545.04 |
| No. Observations: | 581 | AIC: | 1094. |
| Df Residuals: | 579 | BIC: | 1103. |
| Df Model: | 1 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | -1.4704 | 0.032 | -45.816 | 0.000 | -1.533 | -1.407 |
| pct_dirty | -1.0494 | 0.313 | -3.358 | 0.001 | -1.663 | -0.436 |

| | | | |
|---|---|---|---|
| Omnibus: | 0.433 | Durbin-Watson: | 0.296 |
| Prob(Omnibus): | 0.805 | Jarque-Bera (JB): | 0.540 |
| Skew: | -0.039 | Prob(JB): | 0.763 |
| Kurtosis: | 2.872 | Cond. No. | 12.2 |

OLS Regression Results

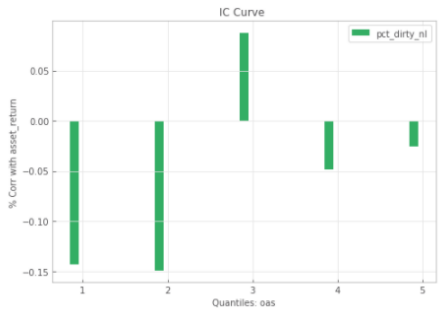
| | | | |
|---|---|---|---|
| Dep. Variable: | qlty_of_mgmt_6m | R-squared: | 0.532 |
| Model: | OLS | Adj. R-squared: | 0.531 |
| Method: | Least Squares | F-statistic: | 435.0 |
| Date: | Sat, 17 Apr 2021 | Prob (F-statistic): | 6.18e-127 |
| Time: | 13:04:46 | Log-Likelihood: | 264.24 |
| No. Observations: | 769 | AIC: | -522.5 |
| Df Residuals: | 766 | BIC: | -508.5 |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

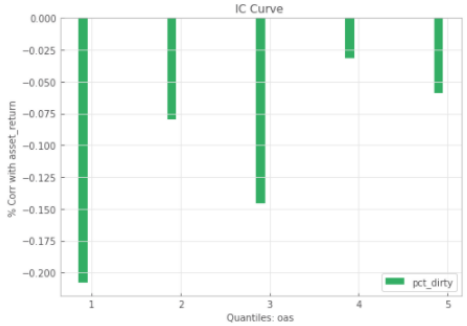
| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | -0.1755 | 0.018 | -10.008 | 0.000 | -0.210 | -0.141 |
| qlty_of_mgmt | 0.7217 | 0.026 | 28.177 | 0.000 | 0.671 | 0.772 |
| pct_dirty | -0.2118 | 0.085 | -2.502 | 0.013 | -0.378 | -0.046 |

| | | | |
|---|---|---|---|
| Omnibus: | 119.413 | Durbin-Watson: | 0.843 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 1031.367 |
| Skew: | 0.392 | Prob(JB): | 1.10e-224 |
| Kurtosis: | 8.619 | Cond. No. | 16.5 |

# US IG Corp Backtest (201601 – 202012)

- The signal does appear to carry some information in it, especially in the higher quality cohorts
- While the fundamental itself has no real information
- Signal for Non-Leads is significantly weaker
- In returns space, the signal has a NTC IR of 0.6 with 12bps of return contribution on ~20% capital allocation in a long only setting. While the low sample size and coverage precludes us from adding to a current model, we think that it has interesting implications for our future esg research, which could perhaps be used to improve current signals.

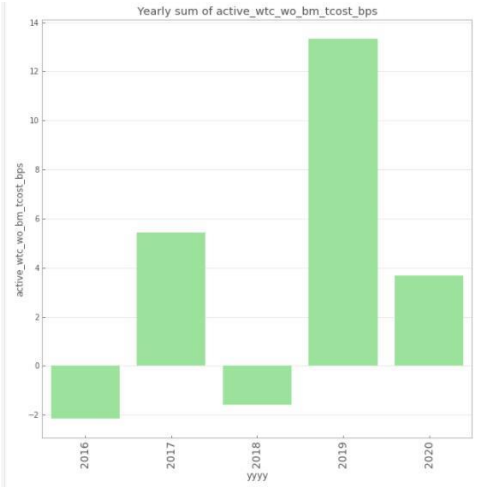



| | |
|---|---|
| **Sensibility** | Companies with higher % dirty deals carry lower asset quality and should underperform. |
| **Signal Construction** | - Rolling 12M % Dirty Deals/ Total Deals |
| **IC** | 9 % |

**STATS OVERALL**

| ann_ret_bps | ann_vol_bps | cumret_bps | ir | max_dd_bps | mean_dd_bps | run |
|---|---|---|---|---|---|---|
| 8.35 | 17.33 | 40.36 | 0.48 | -27.20 | -6.18 | (ex BM turnover tcost) ACTIVE WTC |
| 8.35 | 17.33 | 40.36 | 0.48 | -27.20 | -6.18 | ACTIVE NTC |
| 8.35 | 17.33 | 40.36 | 0.48 | -27.20 | -6.18 | ACTIVE WTC |



# Finding the Double-Bottom Line

## *Sustainable outcomes and alpha drivers*

10 REDUCED INEQUALITIES

### Benefits momentum in Corporates

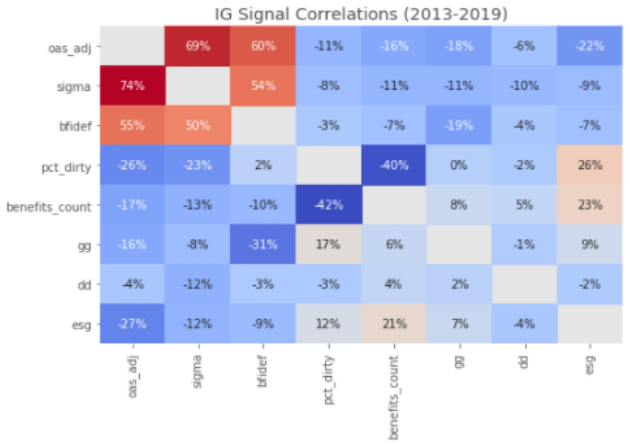
*Data from Axiomatic (SAE). Data sample goes from 201301 to 201908. Coverage steadily increase from 55% to 65% in 2019.*

*Tested for LEH_CORP Index*

***Investment Result.*** *Companies with increasing/decreasing count in benefits see their profitability measures improve/deteriorate over the next 12M*

***Sustainable Result.*** *Higher benefit count is generally associated with positive esg profiles and % benefits change is a leading indicator of deterioration in msci s scores.*

### The number of benefits provided by a firm have a clear credit quality tilt with BBBs providing the lowest amount of benefits.




### Companies with increasing/decreasing count in benefits see their social MSCI scores improve/deteriorate over the next 12M

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | s_score_12m | R-squared: | 0.006 |
| Model: | OLS | Adj. R-squared: | 0.006 |
| Method: | Least Squares | F-statistic: | 73.44 |
| Date: | Sun, 18 Jul 2021 | Prob (F-statistic): | 1.58e-32 |
| Time: | 21:07:41 | Log-Likelihood: | -45775. |
| No. Observations: | 24221 | AIC: | 9.156e+04 |
| Df Residuals: | 24218 | BIC: | 9.158e+04 |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | 4.0079 | 0.028 | 142.877 | 0.000 | 3.953 | 4.063 |
| s_score | 0.0744 | 0.006 | 12.041 | 0.000 | 0.062 | 0.087 |
| d_benefits_count_6 | 0.1914 | 0.094 | 2.038 | 0.042 | 0.007 | 0.375 |

| | | | |
|---|---|---|---|
| Omnibus: | 218.055 | Durbin-Watson: | 1.951 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 292.760 |
| Skew: | 0.131 | Prob(JB): | 2.68e-64 |
| Kurtosis: | 3.470 | Cond. No. | 42.2 |

### Companies with increasing/decreasing count in benefits see their profitability measures improve/deteriorate over the next 12M

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | prof_12m | R-squared: | 0.004 |
| Model: | OLS | Adj. R-squared: | 0.004 |
| Method: | Least Squares | F-statistic: | 111.5 |
| Date: | Mon, 19 Jul 2021 | Prob (F-statistic): | 4.91e-49 |
| Time: | 06:34:59 | Log-Likelihood: | 66087. |
| No. Observations: | 49622 | AIC: | -1.322e+05 |
| Df Residuals: | 49619 | BIC: | -1.321e+05 |
| Df Model: | 2 | | |
| Covariance Type: | nonrobust | | |

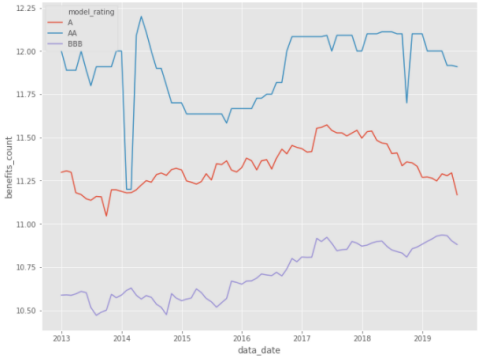
| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| Intercept | 0.0390 | 0.000 | 112.770 | 0.000 | 0.038 | 0.040 |
| prof | 0.0574 | 0.004 | 14.038 | 0.000 | 0.049 | 0.065 |
| d_benefits_count_6 | 0.0086 | 0.002 | 5.077 | 0.000 | 0.005 | 0.012 |

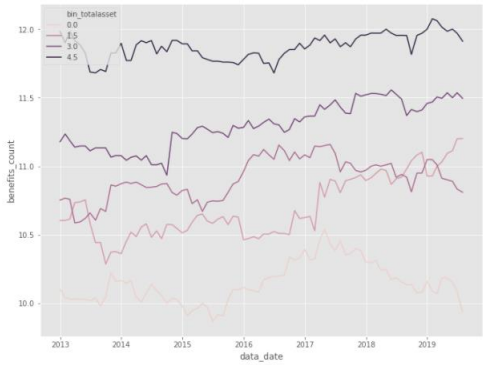
| | | | |
|---|---|---|---|
| Omnibus: | 5315.202 | Durbin-Watson: | 2.022 |
| Prob(Omnibus): | 0.000 | Jarque-Bera (JB): | 41003.322 |
| Skew: | 0.215 | Prob(JB): | 0.00 |
| Kurtosis: | 7.432 | Cond. No. | 14.3 |

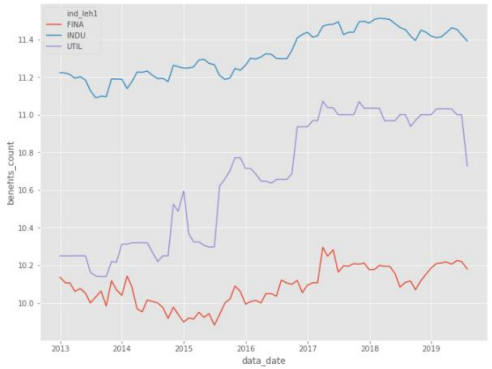
2007-2021. High refinancing risk defined by when MBAVREFI Index > 2000

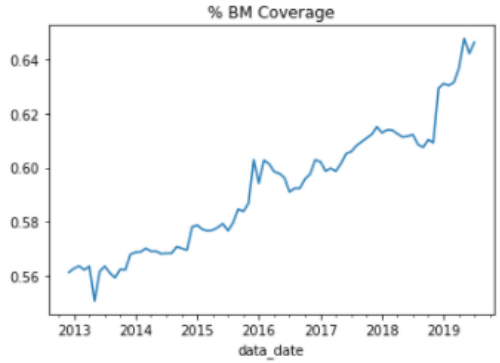
# Data Source, Coverage and Trends

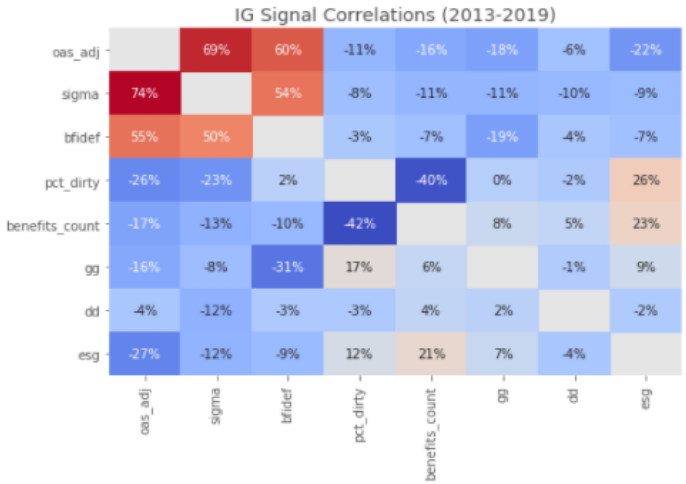
- Coverage steadily increase from 55% to 65% in 2019
- The number of benefits provided by a firm have a clear credit quality tilt with BBBs providing the lowest amount of benefits. Across sectors, financials provide the lowest amount of benefits and industrials the highest.
- As expected, there is also a size bias with bigger companies providing the highest number of benefits.
- Across our signals, it has a strong defensive profile with negative correlations with spread, sigma and bfidef. Interesting, it has a very high correlation with the dirty deals signals. So firms that are involved in syndication of ESG controversial names generally rank low in benefit counts. Benefits also has a high correlation to MSCI esg scores.



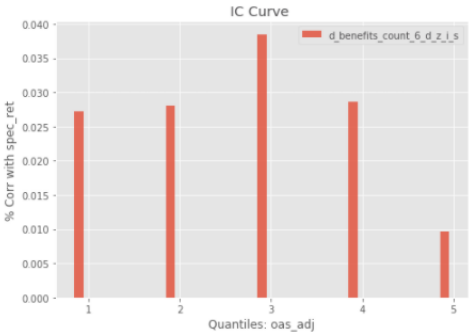



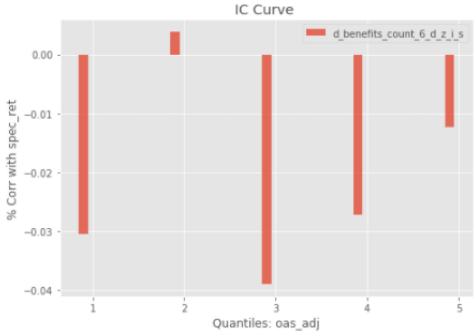



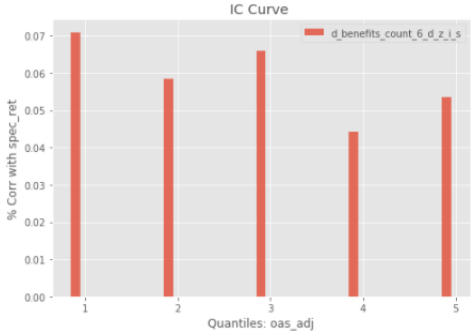
# US IG Corp Backtest (201301 – 201908)

- The signals works better for higher quality firms and works better with negative change in scores which makes it ideal for a screened process. (Alphas capped at 0)
- In a long only setting, using benefits momentum as an alpha signal has a non impressive performance. However, as with priors, a screened version of the alpha works well with a IR of 0.8 and return of 13bps on a 60% asset allocation which translates to 24 bps of returns with a NTC turnover of 100%
- As expected, signal has a defensive profile outperforming in very negative regimes.




Positive Benefits Momentum




Negative Benefits Momentum

| | |
|---|---|
| **Sensibility** | Benefits may be one of the first means for companies to express their future cashflow expectations. |
| **Signal Construction** | 6M % Change in Benefits Count, normalized on standard rating (As, BBBs) and sector buckets. (FIN/INDU/UTIL) |

Alpha Backtest

**STATS OVERALL**

| ann_ret_bps | ann_vol_bps | cumret_bps | ir | max_dd_bps | mean_dd_bps | run |
|---|---|---|---|---|---|---|
| 12.28 | 47.89 | 81.86 | 0.26 | -87.94 | -18.68 | (ex BM turnover tcost) ACTIVE WTC |

| bin_SPX | regime | active_xs_ret_mean |
|---|---|---|
| VN | very negative (< -2%) | 10.0 |
| N | negative (between -2% and 0) | 3.4 |
| P | positive (between 0 and +2%) | 5.2 |
| VP | very positive (> 2%) | -4.4 |

| turnover_pct |
|---|
| 258.1 |

Screened Alpha Backtest

**STATS OVERALL**

| ann_ret_bps | ann_vol_bps | cumret_bps | ir | max_dd_bps | mean_dd_bps | run |
|---|---|---|---|---|---|---|
| 12.95 | 16.97 | 86.37 | 0.76 | -15.52 | -2.51 | (ex BM turnover tcost) ACTIVE WTC |

| bin_SPX | regime | active_xs_ret_mean |
|---|---|---|
| VN | very negative (< -2%) | 7.6 |
| N | negative (between -2% and 0) | 2.8 |
| P | positive (between 0 and +2%) | 2.4 |
| VP | very positive (> 2%) | -1.1 |

| turnover_pct |
|---|
| 110.38 |

# Finding the Double-Bottom Line

## *Sustainable outcomes and alpha drivers*

~~Credit Risk~~ ~~Liquidity Risk~~ Prepayment Risk Interest Rate Risk

10 REDUCED INEQUALITIES

**Expand access to homeownership through Mortgage backed securities**

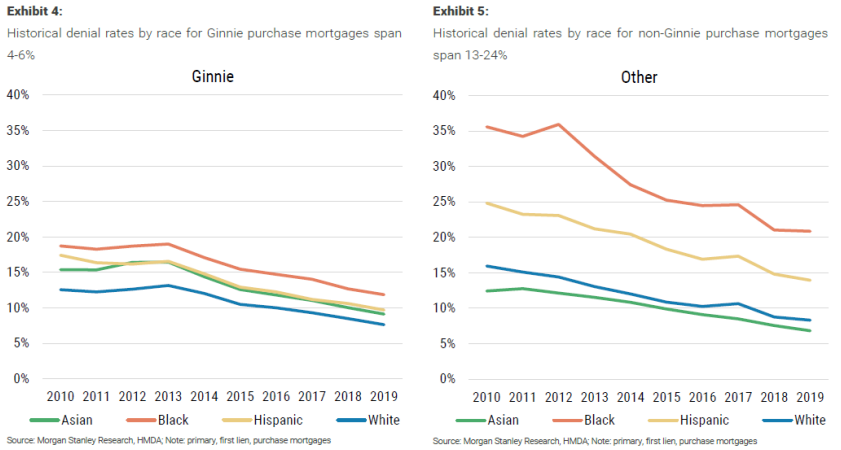
*Data from BLK BCM*

*Tested for LEH_MBS Index*

***Investment Result.*** *Tilting towards credit constrained borrowers during heightened refinancing risk periods reduces prepayment risk*

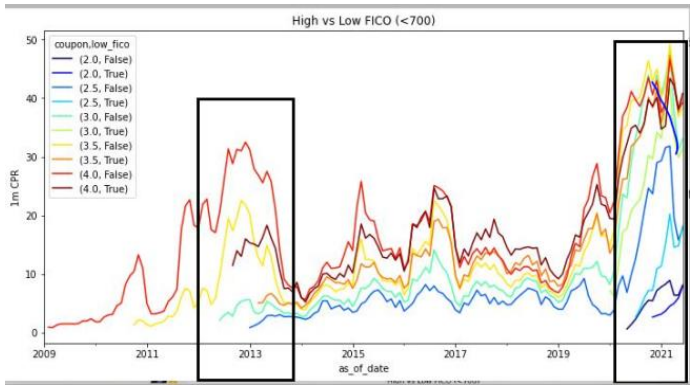
***Sustainable Result.*** *Bias towards Ginnies, particularly at the expense of 15-year conventional mortgages could help lower rate for lower-income borrowers and reduce racial bias in mortgage credit availability*

**Ginnies show a smaller dispersion in denial rates than other, non-Ginnie loans do.**

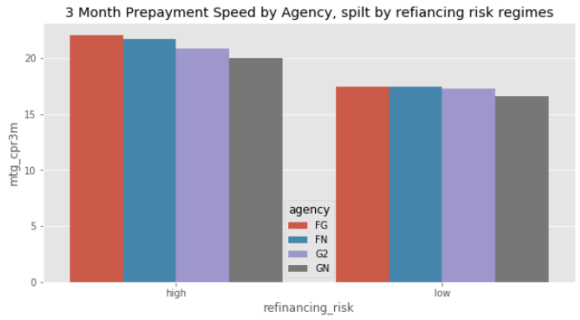



Source: MS, HDMA Data

**Higher FICO pools prepay faster than low FICO for the same coupon when there's a spike in the prepay rate**




**During periods of heightened reinvestment risk, tilting towards credit constrained borrowers can help reduce prepayment risk**




2007-2021. High refinancing risk defined by when MBAVREFI Index > 2000

# Conclusion

# Bringing it Home

- **I have an ESG metric or idea. How can I tell if it is any good?**
  - Sensibility is challenged due to halo effects and wishful thinking

- **Our old-school answer: ancillary tests!**
  - Good news for skeptics: tests fail, sometimes dramatically (see 2017 Contro paper)
  - Most of this preso will be examples
- **Alternatives:**
  - ML on returns.
    - Short histories
    - Slow moving metrics. This is almost an ancillary test (Woolies and BWS)
  - Dodge the question
    - Materiality: Pivot to relative value across industries
      - Not all that valuable even if done well (need to flip the sign)
    - Talk about optimization (AQR, PanAgora)