THE S FACTOR: PUTTING SUSTAINABILITY INTO CREDIT RATINGS

March 2012

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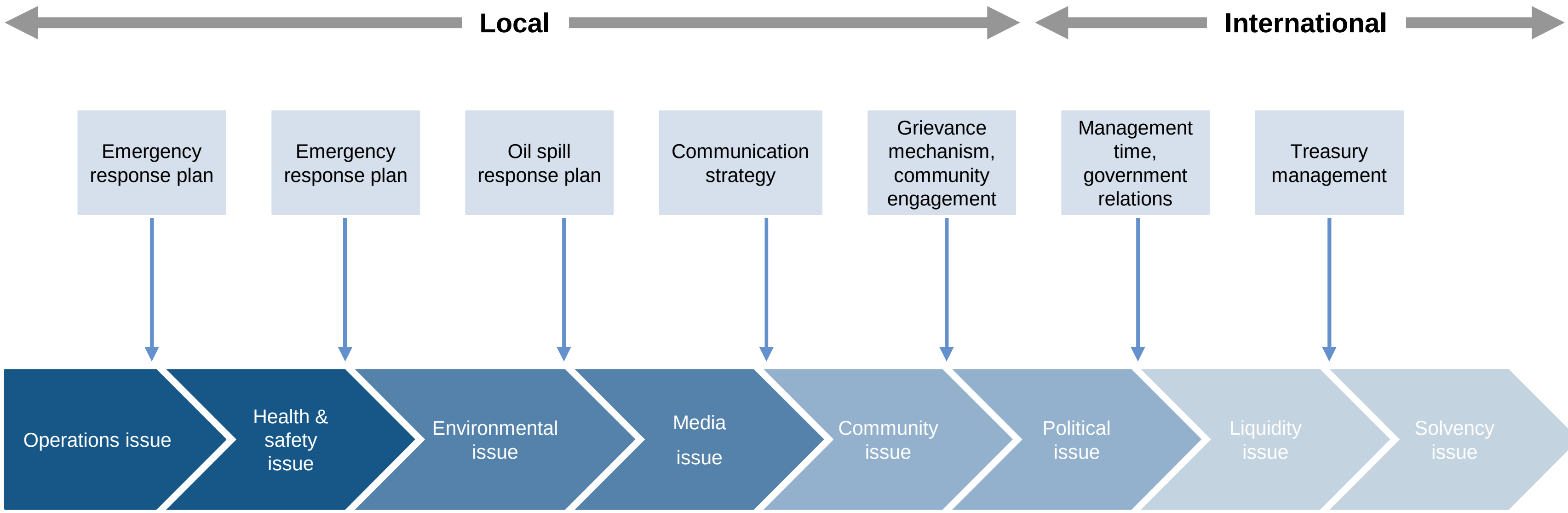
Timeline

1980	Superfund created in the USA
1982	First major multi generator settlement – Bluff Road
1984	Bhopal – led to the 'Right-to-know' Act under the 1986 Superfund Amendments
1989	Exxon Valdez spill, raising public consciousness for both Superfund and oil spill planning and response
1989	EPA creates Enforcement First, requiring responsible parties to clean up the problems they created
1990	Oil Pollution Act, Pollution Prevention Act
1992	Superfund Accelerated Cleanup Model launched to streamline Superfund Responses
1994	OSWER Environmental Justice Task force to address concerns over unequal distribution of environmental threats in disadvantaged and minority communities
1996	Superfund cost recovery settlements exceed $2 billion
2004	Love Canal site delisted from Superfund following pollution containment
2009	ASARCO mining company bankruptcy, $1.79 billion, largest environmental bankruptcy in US history
2010	BP Deepwater Horizon Oil Spill, EPA involved in cleanup with OSWER, costing $43bn in cleanup, fines and compensation

Source: US EPA

It’s not external, it’s internal: When companies are forced to pick up the tab



Current ratings do not adequately capture environmental and social risk

- Ongoing
- Retrospective
- Social

Current ratings do not adequately capture environmental and social risk

- A correctly adjusted ratings system would take these elements fully into account
  - Water
    - Efficiency, recycling, de-salinsation, watershed and demand dynamics, reliance on water, supply chain water risks, pollution, water quality, water quantity
  - Carbon emissions and climate change
    - Severe rain, flooding, drought, extreme weather events causing disruptions to business operations.

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  - Pollution
    - Air, ground and water emissions can have wide ranging effects on ecosystems, human health and business
    - Pollution regulation and compliance costs
    - This is starting to be ‘valued’ financially, eg Total and sinking of Erika and compensation claims valued against environmental damage by courts
    - Protests, shutdowns and permits being revoked, caused by upsetting a population due to pollution issues

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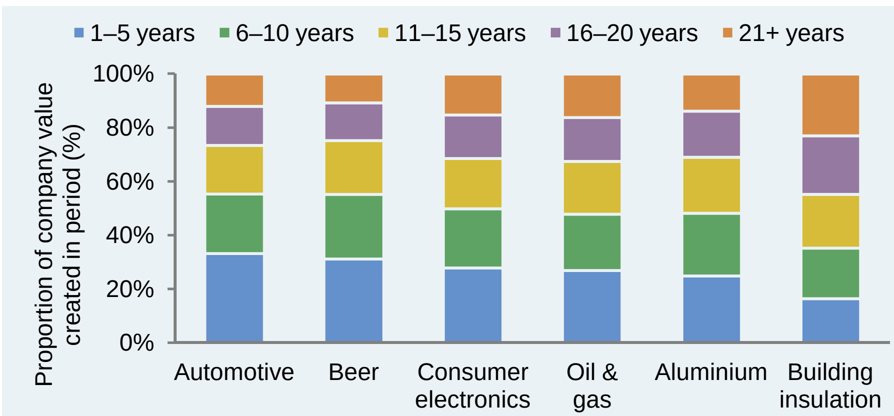
  - Oil, gas and coal reserves: Forward-looking carbon emissions
    - Governments and global markets are currently treating as assets reserves equivalent to nearly five times the carbon budget for the next forty years

Proportion of company value due to cash flows generated in the next 5, 10, 15 and 20 years



Source: Carbon Trust and McKinsey & Co. analysis
Note: Analysis based on discounted cash flow valuations of hypothetical but typical companies, using typical company discount rates

Current ratings do not adequately capture environmental and social risk

- A correctly adjusted ratings system would take these elements fully into account
  - Asset retirement obligations (ARO): Cleaning up the environment
    - Raft of studies which show shortcomings in the amount of funds provisioned and the discount factor used.
    - Issues with ARO have been flagged as a problem by Standard & Poor's
    - Even Rio Tinto, the gold standard in treatment of ARO's, disclosed potential variance of USD3 billion in their ARO provisions in 200X

The link between environmental and financial performance: academic literature relating to the link between environmental and financial performance

[OPTION 1]

- Most academic literature on the relationship between sustainability and financial performance has focused on equities
- Jury is out – some found there is a correlation, others found not
- For those that did find a correlation, this was focused mainly in US markets, where there is more transparency around environmental liabilities due to Superfund
- For equity related studies, several confirm that environmental performance is associated with higher profitability market capitalisation (e.g. Klassen, and McLaughlin, Russo and Fouts, and Konar, and Kohen)
- Companies with poor environmental performance 'are more likely to experience financial distress' (Goss and Roberts)

The link between environmental and financial performance: Academic literature relating to the link between environmental and financial performance

- Syndicated loan markets are more efficient than bond markets, with the loan market reflecting the probability of default before the bond markets (Allen)
- Negative earnings announcements are anticipated by the loan market before they are reflected in the equity market. The author summarised that this is because banks have equipped themselves to assess the impact of environmental risks
- Environmental performance and debt relationship is stronger for the highest and lowest rated bonds' and also for those with longer periods to maturity (Oikonomou, Brooks and Pavelin)
- Firms with a better CSR score exhibit lower cost of equity capital (Ghoul)
- Firms that have net environmental concerns (defined as more environmental concerns than environmental strengths) are charged a higher interest rate on their bank loans
- Those companies 'have a lower percentage of institutional ownership and fewer institutional owners hold their shares and firms with hazardous waste and climate change concerns have significantly lower institutional ownership
- Fewer banks participate in the loan syndicate of borrowers with environmental concerns and pay 'almost 20% higher loan interest rate (Chava)

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The link between environmental and financial performance: Academic literature relating to the link between environmental and financial performance (cont'd)

- For mid-and-very-good range sustainability performers, yields tend to be lower and for very high sustainability performers, credit yields are impacted. The reason for this could be because the market perceives that the companies are over spending on sustainability (Goss, A., 2009/2011)
- Sharfman and Fernando (2008) found that corporations with sound environmental performance faced higher bond yields but also were afforded higher levels of leverage and they had easier access to debt finance.

Superfund: Transparency around environmental liabilities equal higher yields

- In the US real estate market, credit markets factor environmental liabilities into bond pricing and a company being identified as potentially responsible party for Superfund liabilities results in a significant deterioration of its bond ratings
- Yields and ratings for bonds are highly correlated to the amount of times a company is named and how many notice letters it has received in relation to having Superfund liabilities
- Frequency of disclosure and severity of a company's liabilities are positively associated with risk premiums for that company's publicly traded debt
- For high yield bonds that subsequently went into default, those with large liabilities remained in default for longer than companies without

A host of emerging environmental issues is further complicating poorly-understood company consequences and risks

Academic research:

Part I: Trucost and Moody's

- Integrating Trucost's externalities costs into Moody's 2010 credit ratings for mining and integrated oil and gas firms
- Trucost calculates carbon, waste and water impacts and prices them in financial terms
- Does it change ratings? By how much?
- Does it change the median or middle score?
- Does it change the rank of the companies?

Part II: Bloomberg and Moody's

- Refining environmental cost projections, using Bloomberg's ESG Valuation Tool and adjusting Moody's 2010 credit ratings for mining and integrated oil and gas firms
- Bloomberg's ESG Valuation Tool looks at actual historical environmental consumption (for power, carbon, waste and water) and forecasts savings from changes in efficiency
- Does it change ratings? By how much?
- Does it change the median or middle score?
- Does it change the rank of the companies?

- NB: the tool also analyses and social and governance factors, but for the purposes of this study in comparing against Trucost, only environmental factors have been used in the analysis

Two examples

Trucost: externalities

RASPADSKAYA
RASPADSKAYA OJSC

- Russian coal mining company Raspadskaya, rated by Moody's methodology in 2010 as **A2**
- After adding in Trucost's external environmental costs (carbon, waste, water), to Moody's Mining methodology, costing USD282mm, their rating moves three grades to **Ba1**
- Raspadskaya also moves from being ranked as 4th highest ranked mining in my sample to company to 10th, out of a total of 20 companies evaluated

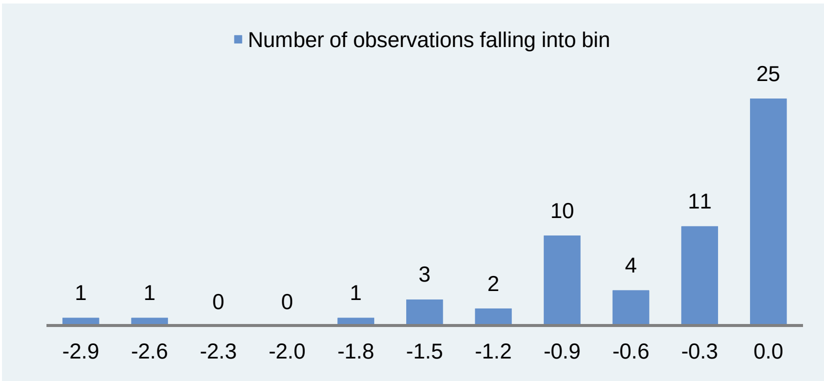
Bloomberg ESG valuation tool: Actual environmental costs and efficiencies

秦發集團
QINFA GROUP

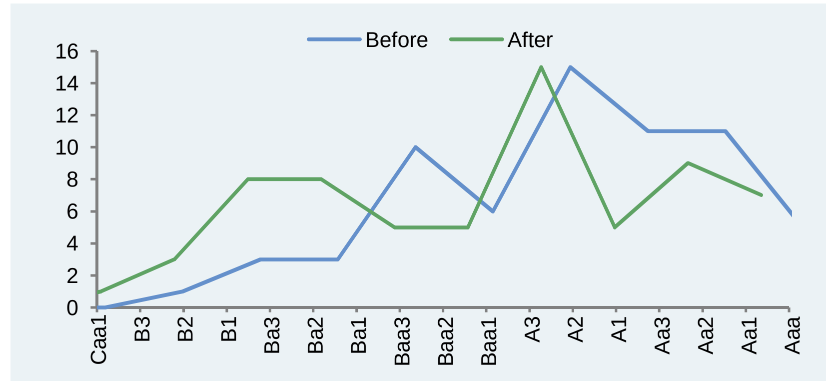
- China Quinfa is a Hong Kong listed coal mining company, rated by Moody's methodology in 2010 as **Ba3**
- Disaggregating their environmental costs (power, water, carbon), using Bloomberg's ESG Valuation Tool, China Quinfa, are becoming less efficient each year, compared against EBITDA. This trend analysis should adjust their cost forecasts up by USD129mm
- Adjusting for the costs of this change in efficiency, the rating is adjusted and goes down 4 grades to **Baa2**

CRAs need to update ratings methodologies to address the sustainability blind spot

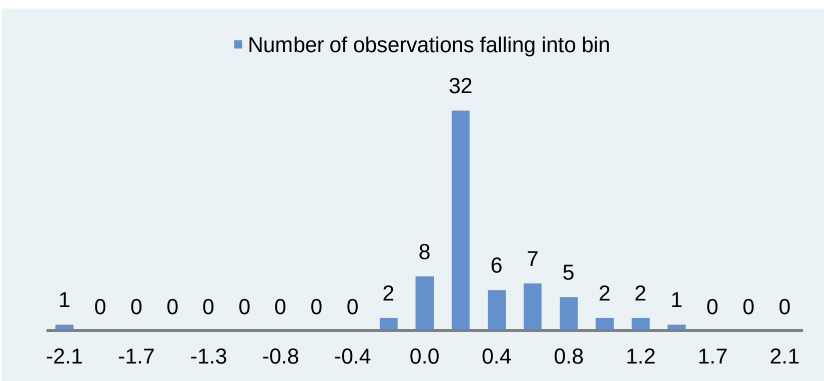
Histogram of difference in ratings scores after Trucost integration



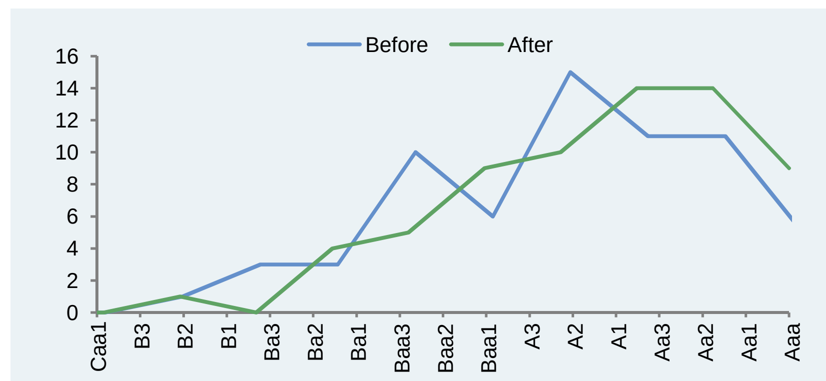
Differences in ratings after Trucost



Histogram of differences in ratings scores after Bloomberg integration

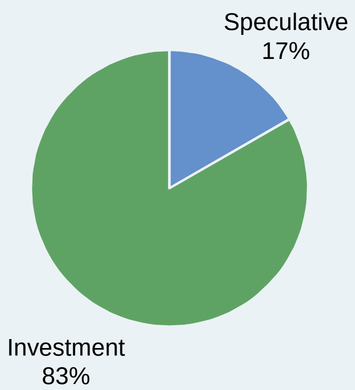


Differences in ratings after Bloomberg

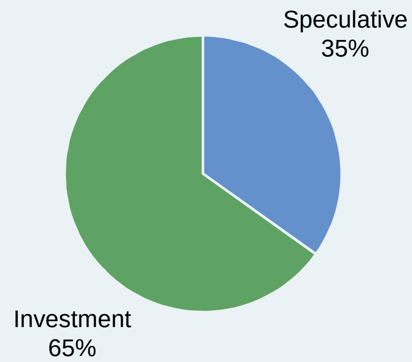


Investment and speculative grade changes

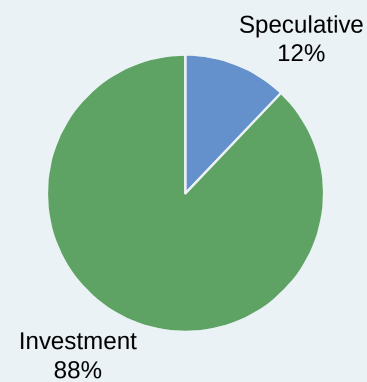
Before



After Trucost

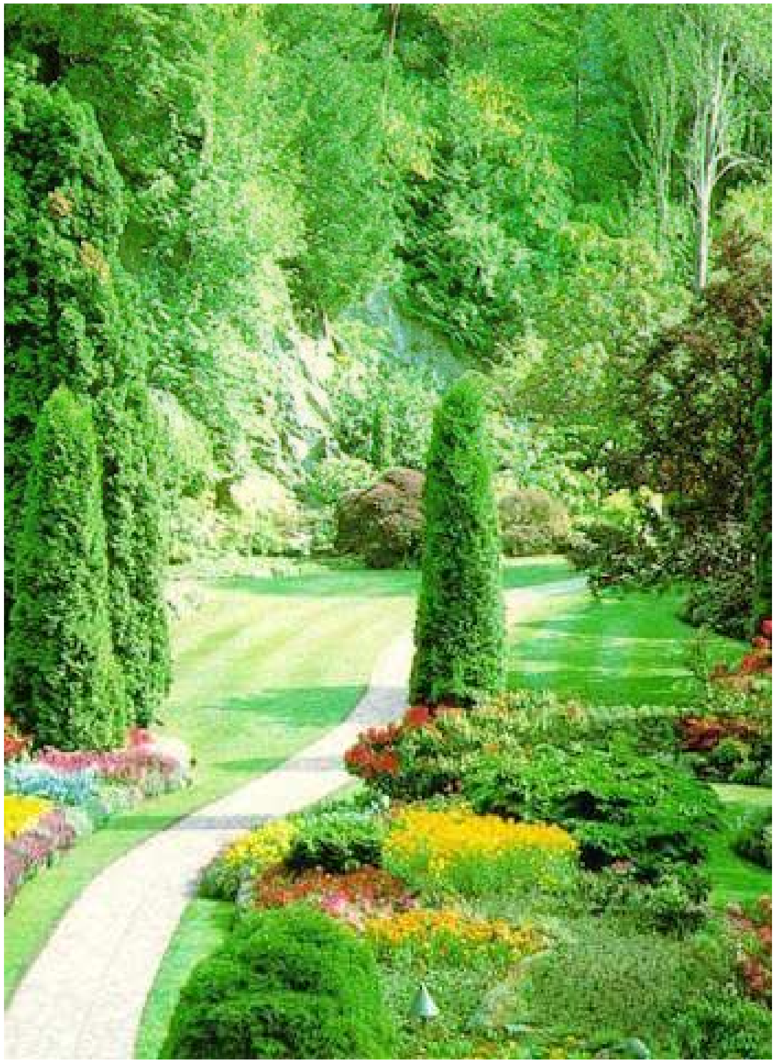


After Bloomberg



The response to the new environment: The new guard innovates

- The Economics of Ecosystems and Biodiversity
- Kroll bond ratings
- Rio Tinto’s Asset Retirement Obligation approach: Correctly adjusted future liabilities
- Trucost: Externalities
- Environmental accounting
- Puma: Environmental profit and loss statement
- Osmosis Model Of Resource Efficiency (MoRE)
- Unicredit Bank, The Halo’s Creed: Efficiency makes money
- Bloomberg’s ESG Earnings Valuation Tool: The Halo’s Creed goes global



The S Factor needed: Innovative newcomers price environmental risks

Developing analytics capabilities to fully assess the following as they relates to credit:

Integration into methodology:

- Climate change business risks
- Externalities profile and trend towards internalisation
- Reserves for fossil fuels, taking account of climate science
- Environmental performance, efficiencies and their costs
- Event risk and the ability for a company to respond
- Commitment, capacity and track record for environment and social metrics, benchmarked against peers
- Robust accounting for asset retirement obligations

I would also encourage CRAs:

- Strengthening governance and oversight for identifying and addressing emerging risks that could impact credit
- Encourage companies to improve disclosure of material environmental metrics such as Mwh of power, cubic metres of water, barrels of oil/fuel, waste
- Help debt investors understand sustainability risks

Questions…..