Environmental Credit Risk

Presentation to UNEP-FI Workshop

Toronto – June 5, 2006
“We are convinced that in a more globalized, interconnected and competitive world the way that environmental, social, and corporate governance issues are managed is part of the companies’ overall management quality needed to compete successfully.

Companies that perform better with regard to these issues can increase shareholder value.”

Goldman Sachs, Morgan Stanley, et al.  
June, 2004  
“Who Cares Wins” Report
The Investment Thesis

- Traditional financial analysis cannot provide a complete picture of companies’ true competitive risks, value potential, and future performance. Typically, at least 70% of a company’s value is driven by “intangibles”, and by cash flows from beyond Year 5; i.e. long-term¹.

- Management quality is the #1 intangible – the factor most critical to companies’ competitiveness, profitability, and share price performance.

- In spite of this, however, “management quality” is very rarely defined, measured, or analyzed systematically by analysts. It is, therefore, the “Holy Grail” of 21st century investing.

- Investors who can and do develop robust, forward-looking measures of management quality will gain an enormous information advantage – and therefore a financial edge.

- Management quality is increasingly linked to environmental factors².

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A “perfect storm” of catalytic developments:

- Significantly increased societal and customer expectations for companies’ ESG performance.
- Rapid expansion of both investment and industrial competition to emerging markets, where ESG risks are highest.
- Powerful new ESG performance and disclosure legislation for investors – e.g. U.K, European, Australian pension legislation
- Fresh attention from the sell side – Goldman Sachs, UBS, Morgan Stanley, etc.
- Pressure from NGO’s with unprecedented resources, sophistication, communications capability, and influence.
- New legitimacy for ESG issues for fiduciaries – not only permissible but recommended (Mercer, Freshfields reports).
- Dramatic growth in institutional investor activism on ESG issues – Carbon Disclosure Project, Investor network on Climate Risk, IIGCC, etc.
- Concrete actions by leading public funds – ABP, CalPERS, CalSTRS, FRR, PGGM, CPPIB, etc.
What Are the Principal Credit Risks?

- Litigation (eg. climate risk – utilities)
- Project and transaction delays – eg. Three Gorges, BTC pipeline, OCP pipeline
- “Long-tailed” liabilities – eg. Contaminated land/buildings
- Impaired competitiveness and cash flow of obligor (eg. Climate risk)
- Opportunity cost – “missing the boat” on cleantech

- Reputational/brand risk
Where are the Risks?

Across the entire portfolio of banks’ activities:

- Corporate loans
- Project finance
- Investment banking
- Asset management
- Retail products
- Special situations – eg. brownfields
What Makes ESG Leaders Better Credit Risks?

Superior Earnings Growth and Share Price Performance

Differentiation and Competitive Advantage

Stakeholder Relations
Cost / Liability Reduction
Human Capital – Recruitment and Retention

Market Share Growth
Brand Value
Innovation Capacity
Time to Market Reduction

Environmental, Social, and Governance Performance
ESG Risk Varies by Sector

**Pearson Plc**

![Performance Chart](chart1.png)

This matrix situates the four key intangible value drivers along 2 dimensions:
1. How well or poorly the company performs on each of the 4 key factors.
2. How much impact that particular factor has on financial performance in that industry sector; its “alpha intensity”.

**Royal Dutch Shell Plc**

![Performance Chart](chart2.png)

This matrix situates the four key intangible value drivers along 2 dimensions:
1. How well or poorly the company performs on each of the 4 key factors.
2. How much impact that particular factor has on financial performance in that industry sector; its “alpha intensity”.
The Equities Experience is Instructive. . .

. . . Including the latest from SSgA’s Advanced Research Center*

Incorporating Sustainable Alpha™ overlay with financial inputs adds value - (January 1999 to December 2004)

<table>
<thead>
<tr>
<th>Performance Results</th>
<th>Cumulative Return</th>
<th>Annual Return</th>
<th>Cum Ex Return</th>
<th>Annual Ex Return</th>
<th>Tracking Error</th>
<th>Info Ratio</th>
<th>Annual Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>US SAO Overlay</td>
<td>51.21%</td>
<td>7.13%</td>
<td>43.07%</td>
<td>5.88%</td>
<td>4.81%</td>
<td>1.22</td>
<td>102%</td>
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<tr>
<td>Baseline</td>
<td>41.35%</td>
<td>5.94%</td>
<td>33.21%</td>
<td>4.69%</td>
<td>5.48%</td>
<td>0.86</td>
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<tr>
<td>S&amp;P 500 Index</td>
<td>8.14%</td>
<td>1.25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The performance shown does not represent actual performance, but is hypothetical performance created through a back-test. The results shown do not represent the results of actual trading but were achieved by means of the retroactive application of a hypothetical model that was designed with the benefit of hindsight. These hypothetical results should not be considered indicative of the skill of the adviser.

Historic performance is not necessarily indicative of future performance, which could differ substantially. The performance figures are reported on a gross basis, but net of transaction and custody charges. Additional fees, such as the advisory fee, would reduce the return. For example, if an annualized gross return of 10% was achieved over a 5-year period and a management fee of 1% per year was charged and deducted annually, then the resulting return would be reduced from 61% to 54%. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in U. S. dollars.
What determines companies’ Carbon Beta™?

In addition to risk exposures driven by industry sector, individual corporates’ financial exposures are essentially a function of seven company-specific key factors:

- Energy intensity and fuel source mix and consumption patterns
- Geographic locations of production facilities relative to specific regulatory and tax liabilities and compliance schedules in different countries.
- Product mix – direct, indirect, and embedded carbon intensity
- Company-specific “marginal abatement” cost structures: some companies can reduce emissions at much lower cost than others
- Technology trajectory – level of progress which a company has already made in adapting/replacing its production technologies for a carbon-constrained environment
- Company-specific carbon risk management capability
- Ability to identify and capture upside and revenue opportunities, including new manufacturing cost efficiencies, new product/service opportunities, emissions trading, and clean technology investments.

All seven of these factors are analyzed in Innovest’s proprietary Carbon Beta™ analysis. The analysis is both “top down” and bottom up. At the company-specific level, risks and opportunities are analyzed and benchmarked, and individual company profiles are created.
Carbon Beta™ Varies Among – and Within – Sectors

Investors Need to Know Which Companies Are Which!

SAMPLE Carbon Beta™ PORTFOLIO ANALYSIS

Source: Innovest Strategic Value Advisors, company data
Based on the WACCRT model, for example, Honda’s overall emissions reduction obligations could be:

\[
\text{Europe (5.6\% x 8\%) + U.S. (1.8\% x 0\%) + Canada (5\% x 6\%) + Japan (14.6\% x 6\%) + RoW (57.5\% x 0\%) = 1.62\%}
\]
Bank "B" has reduced its holdings of AAA and AA rated companies, but has increased its investment in A rated companies by a proportional amount.

Bank "A" has substantially increased the proportion of CCC rated companies in its portfolio from 1.3% in 2002 to 7.5% in 2003. Manager "B" is noted for eliminating its holdings in CCC rated companies.
Some Product Applications: Carbon Risk-Adjusted Bond Funds...
Some Product Applications: “Green” Real Estate Securities Funds

Innovest vs DJ REIT / RESI Jan 2000 to May 2005

Innovest
DJ REIT
DJ RESI

Jan-00 Jul-00 Jan-01 Jul-01 Jan-02 Jul-02 Jan-03 Jul-03 Jan-04 Jul-04 Jan-05
Summary: Environmental Performance Does Matter

Comment:
This is an indicative graph we have put together as part of our current research for the global banking sector report due out in May. There will be further graphs in the report but we are currently organizing the data for proper comparability. This graph is interesting because although it shows a few below average firms performed well in 2004, the majority of the firms with above average ratings had positive stock price performance while below average rated firms tended to have negative stock price performance.

Please note:
(1) The stock price is in local currency.

(2) The firms were compared within their regional sub-category and include firms from both the Innovest banks and diversified financials sectors. The firms included in this graph were not all rated directly with each other according to Innovest's best of sector approach (this is due to the large number of banks and diversified financials firms in our universe, about 200).

(3) This is an indicative graph. While ratings do not change significantly year over year, we are currently collecting the data for ratings as of all previous year ends. This graph contains ratings given during 2005.

(4) This graph includes the largest firms by market cap (approx. 60). There are over 200 firms are included in the Innovest banks and diversified financials sectors, however numerous are small regional banks.
“It is becoming increasingly clear that sustainable development will be one of the major drivers of industrial change over the next 50 years, and that there is a growing demand from both companies and institutional investors to understand its financial impacts.”

Colin Monks
Head of European Equity Research,
HSBC
Appendix
The Momentum is Building. . .Some Recent Chronology

2003

- U.S. institutional investors launch Investor Network on Climate Risk (today: $3 trillion in assets)
- Global institutional investors launch Carbon Disclosure Project (today: $21 trillion in assets)
- U.K. and European investors launch Institutional Investors Group on Climate Change (today: $4 trillion)
- U.K., European legislation pension mandates greater ESG disclosure by both investors and corporates

2004

- Goldman Sachs, UBS, Citigroup and others create dedicated “extra-financial” research teams and publish research
- Morgan Stanley, HSBC, ABN AMRO and others launch “Who Cares Wins” report, documenting industry shift
- Enhanced Analytics Initiative launched by institutional investors specifically to stimulate more “extra-financial” research (current assets $500 billion)
- California Treasurer Angelides launches 4-pronged, billion-dollar “Green Wave” initiative
- Former Goldman Sachs Asset Management CEO launches Generation
- 8 U.S. State Attorneys General sue major electric utilities, demanding reductions in greenhouse gas emissions
The Momentum is Building . . . Some Recent Indicators

2005

- Kyoto Protocol on climate change comes into effect, EU carbon limits and trading system begin
- World Economic Forum publishes “Mainstreaming Responsible Investment”
- UN launches Principles for Responsible Investments initiative, with substantial support/participation from major institutional investors
- “Sustainability” research reports published by: Merrill Lynch, Goldman Sachs, UBS, Deutsche Bank, Citigroup, etc.
- JP Morgan, Citigroup, Bank of America and other banks make public commitments to monitor environmental risk in loan portfolios more aggressively
- General Electric launches $1 billion “Ecomagination” investment program
- Leading U.S. pension funds write SEC demanding better company disclosure of climate risks
- Climate Change Capital in London raises £10 million from hedge funds at a valuation of £30 million
- Fonds de Reserve pour les Retraités (FRR) in France launches €600 million RFP for “SRI” mandate
- CalPERS launches $500 million RFP for “environmentally-enhanced” strategies
- INCR “Call for Action” - $3 trillion in U.S. institutional investors demand greater climate risk analysis and accountability from their money managers
- Goldman Sachs publishes the first, Environmental Policy from a leading investment bank.
2006

- Carbon Disclosure Project increases its committed institutional asset backing substantially – to $30 trillion. Innovest wins 4th consecutive mandate as lead research and analysis team.

- UN Secretary General Kofi Annan launches Global Principles for Responsible Investment at the New York Stock Exchange. Supporting signatories include major pensions funds and mainstream investment houses.

- Mercer Investment Consultants conducts 2006 “Fearless Forecast” global survey of 157 investment management firms, with over $20 trillion in managed assets. Overall, more than 38% anticipate growing client demand for the systematic integration within 3 years. In Australia, the U.K., and Europe, the average is over 42%.
Analyst assembles and analyses industry specific data

Example of Strategic Profit Opportunities in the Auto sector

<table>
<thead>
<tr>
<th></th>
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<tbody>
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<td>BMW</td>
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<td>0</td>
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<td>10</td>
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<td>10</td>
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<td>0</td>
<td>10</td>
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<td>0</td>
<td>0</td>
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<td>7270</td>
<td>Fugi Heavy Industries</td>
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<td>3</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>259</td>
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</table>

Min 0 Research 1 Max 660 Concept 3 Avg 365.1

In this case, we have analyzed the research & development activities of the major auto manufacturers and evaluated them in terms of their potential positive environmental impact and how soon the technologies would come to market.
Preliminary Work on Rating Matrix

- Analyst reviews rating categories and weights, modifying necessary to reflect data availability and industry specific issues

<table>
<thead>
<tr>
<th>Category</th>
<th>Bayerische Motoren Werke</th>
<th>Bayerische Motoren Werke</th>
<th>Daimler Chrysler</th>
<th>Daimler Chrysler</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING RISK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Spills and Releases</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>B. Regulatory Compliance</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>C. Toxic Emissions</td>
<td>10.000%</td>
<td>9.0</td>
<td>54</td>
<td>Top Tier</td>
</tr>
<tr>
<td>D. Hazardous Waste</td>
<td>5.000%</td>
<td>9.0</td>
<td>27</td>
<td>Top Tier</td>
</tr>
<tr>
<td>E. Other Operating Risk</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>9.0</td>
<td>81</td>
<td>Top Tier</td>
<td>6.8</td>
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<table>
<thead>
<tr>
<th>LEADING/SUSTAINABILITY RISK INDICATORS</th>
<th>Bayerische Motoren Werke</th>
<th>Bayerische Motoren Werke</th>
<th>Daimler Chrysler</th>
<th>Daimler Chrysler</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Resource Use Efficiency/ Recycling</td>
<td>7.500%</td>
<td>9.0</td>
<td>41</td>
<td>Top Tier</td>
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<tr>
<td>B. Energy Efficiency</td>
<td>7.500%</td>
<td>9.0</td>
<td>41</td>
<td>Top Tier</td>
</tr>
<tr>
<td>C. Market Risk</td>
<td>10.000%</td>
<td>9.0</td>
<td>54</td>
<td>Top Tier</td>
</tr>
<tr>
<td>D. Regulatory/Legal Risk</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
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<tr>
<td>E. Vehicle Emissions Risk</td>
<td>10.000%</td>
<td>5.9</td>
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<td>F. ELV regulatory risk</td>
<td>10.000%</td>
<td>9.0</td>
<td>54</td>
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<tr>
<td>Total</td>
<td>8.3</td>
<td>224</td>
<td>Top Tier</td>
<td>5.3</td>
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<tr>
<th>INDUSTRY SPECIFIC RISK</th>
<th>Bayerische Motoren Werke</th>
<th>Bayerische Motoren Werke</th>
<th>Daimler Chrysler</th>
<th>Daimler Chrysler</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Global Warming</td>
<td>40.000%</td>
<td>3.0</td>
<td>72</td>
<td>Bottom Tier</td>
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<tr>
<td>B. Industry Specific Risk</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>C. Industry Specific Risk</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>D. Industry Specific Risk</td>
<td>0.000%</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>3.0</td>
<td>72</td>
<td>Bottom Tier</td>
<td>0.0</td>
</tr>
</tbody>
</table>
After interviews, analyst finalizes the company rating. When all company ratings are complete, the analyst compares the competitive set on all parameters to ensure that the relative 0 to 10 scores properly reflect the quantitative and qualitative data.

### Environmental Strategy

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Company Name</th>
<th>Overview</th>
<th>Policies</th>
<th>Integration with Core Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMW</td>
<td>Bayerische Motoren Werke</td>
<td>BMW has adopted solid environmental practices for its activities worldwide, strong EMS, ELV, compliance record, etc. However, BMW remains stuck in a low fuel efficiency bracket as a producer of large upper-end sedan cars. Despite numerous R&amp;D projects, BMW has taken a very conservative approach with respect to eco-efficient vehicles.</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>DCX</td>
<td>Daimler Chrysler</td>
<td>Daimler Chrysler is applying the best practices from either Chrysler or Daimler. Daimler-Benz environmental guidelines are applied group-wide. Fuel-efficiency as improved by 1.4/100 km since 1998 thanks to use of CDI diesel, class-A and Smart. Environmental criteria with suppliers has been reinforced.</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

BMW revised its environmental guidelines in 1998 to adapt to its international operations. Follows the ICC Charter for Sustainable Development. Objectives focus on efficient use of resources. Beyond compliance when technically and economically feasible. Alternative fuel vehicle concepts are mainly focused on combustion engine, using natural gas or hydrogen. BMW does not believe in the 3liter concept as a viable strategy.

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BMW has a high environmental culture and has adopted high eco-efficiency standards across entire value chain. BMW plants are all state of the art, probably one of the best in industry. Yet, BMW remains on the high end segment of luxury sport sedan. The corporate average fuel efficiency remains well above other European companies. BMW has done a lot of research into AFV. Yet it believes that the future lies in the combustion engine, be it with natural gas or hydrogen. This change of fuel would require the implementation of a new fuel infrastructure which is not likely to happen without a strong political commitment.
### Analyst defends final ratings in front of MD or a regional Director of Research

#### Rating Matrix

<table>
<thead>
<tr>
<th>Ticker</th>
<th>Company</th>
<th>Score</th>
<th>Rating</th>
<th>Rank</th>
</tr>
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<tbody>
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<td>7203</td>
<td>Toyota Motor</td>
<td>1556</td>
<td>AAA</td>
<td>1</td>
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<tr>
<td>7267</td>
<td>Honda Motor</td>
<td>1529</td>
<td>AAA</td>
<td>2</td>
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<tr>
<td>VOW</td>
<td>Volkswagen Group</td>
<td>1454</td>
<td>AA</td>
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<td>RNO</td>
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<td>4</td>
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<td>PSA Peugeot Citroen</td>
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<td>7201</td>
<td>Nissan Motor</td>
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<td>BBB</td>
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<td>FIA</td>
<td>Fiat SPA</td>
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<td>BBB</td>
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Final scores and ratings are discussed between the analyst and the Directors or MD of Research for the final reality check. Analysts defend their analysis as would an analyst presenting to credit committee or investment committee. Ratings are made public via press releases and other means.
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INTANGIBLE VALUE ASSESSMENT

ARACRUZ CELULOSE S.A.

Country: Brazil

Industry Sector: Forest Products

Combined Rating: IVA AA

Rank: 4 of 29

Area of Competitor Advantage

Internationally Ranked

Iatrogenic Risk: Despite the high investments and partnerships to maintain good community relations, exposure to international labor exploitation risks still exists in Brazil. Several groups maintain a strong campaign against Aracruz with frequent support from international organizations in our business development strategies. Policies, programs, and activities aim to build a strong foundation for business development that includes a focus on international labor and sustainability issues. Aracruz has a strong commitment to environmental protection and has implemented several initiatives to reduce its carbon footprint.

Strategic Profit Opportunities

Aracruz has significantly improved its R&D programs focusing on the following: value chain improvements, environmental control, and compliance. These programs have led to increased productivity, cost savings, and improved environmental performance. The implementation of R&D initiatives has resulted in Aracruz achieving its strategic goal of sustainability.

Intangible Value Drivers

Innovest's scoring methodology is driven by software services that analyze and identify intangible value drivers that inform decisions. Innovest evaluates the following: sustainability, reputation, innovation, and compliance. These factors are combined to determine the overall intangible value driver score.

Innovest's software tool analyzes the company's performance against industry benchmarks and identifies areas for improvement. The tool provides insights into the company's strengths and weaknesses, helping it to make informed decisions.

Environmental Strategy & Management

Aracruz has an ambitious environmental strategy that includes reducing its carbon footprint, improving water usage, and implementing sustainable practices. The company has set ambitious targets for environmental performance and continues to invest in green initiatives to achieve its goals.

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