



The SRI Navigator (methodology)

Objectively assessing environmental, social & governance (ESG) risks



Getty Images / Comstock

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SG SRI Navigator – sector risk exposure

HIGHER RISK	MEDIUM RISK	LOWER RISK
Automotive & Parts	Banks	Financial Services
Basic Resources	Food & Beverage	Health Care
Chemicals	Industrial Goods & Services	Insurance
Construction & Materials	Oil & gas	Media
	Personal & Household Goods	Real Estate
	Retail	Technology
	Travel & Leisure	Telecommunications
	Utilities	

Source: SG Equity Research

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Investment case

Economic crisis and (long-term) hidden risks The current crisis has moved the role and influence of hidden risks embedded in investment portfolios to the forefront. We believe that this needs to be accompanied by a move to objective views of long-term risk from environmental, social and governance (ESG) perspectives.

Introducing the SG SRI Navigator We are introducing a set of new, quantitative and objective indicators to reliably assess exposure to hidden risk factors. The Navigator crosses two dimensions: a quantitative and objective assessment of ESG risks (^{NEW}) coupled with quantified qualitative assessments of management of these risks (cf. Appendix 1 & 2)

Mix of financial and non-financial factors Our assessment system includes traditional financial metrics such as EBIT but also for the first time the geographic exposures of sales, assets and income, or floating factor – as key metrics for long-term risk analysis.

SRI effect on risk premiums Mastering ESG risks may result in more growth for value stocks and less risk for growth stocks.

1,500+ companies covered The Navigator covers all sectors across the world using the DJ Stoxx 1800 as the benchmark universe.

Sector by sector overviews and risk analysis in our SRI Navigator (stock picks) report of today's date.

SG SRI Navigator – sector risk exposure

HIGHER RISK	MEDIUM RISK	LOWER RISK
Automotive & Parts	Banks	Financial Services
Basic Resources	Food & Beverage	Health Care
Chemicals	Industrial Goods & Services	Insurance
Construction & Materials	Oil & gas	Media
	Personal & Household Goods	Real Estate
	Retail	Technology
	Travel & Leisure	Telecommunications
	Utilities	

Source: SG Equity Research

Risk, SRI & the current crisis, research is at an important crossroads

We believe that some important lessons can be drawn from the current economic crisis for ESG research:

- SRI has NOT played a role in revealing hidden risks
- SRI community needs to stop looking for excuses
- Fundamental illusions need to be put on the table
- Best in class approaches have seen their day

Risk: From the SG SRI Matrix to the SG SRI Navigator

We are carrying on with our previous proprietary SRI methodological work on the quality of management side. A series of SG reports (cf. *Back to Basics* and Appendix 1 and 2 of this report) have shown that it is necessary to conduct such analysis using a multi-best-in-class approach – bias-free with regards to sector, size, country and free float.

However, we are adding a second dimension to the SRI screening process, with scorings on risk exposure for our four SRI criteria:

- Environment
- Governance
- Human Capital
- Stakeholder Capital

Our SRI-financial risk exposure indicators

For our new risk exposure score, we strived to build and “integrate” as many indicators mixing ESG dimensions and financial data as possible – provided they were relevant to the business model and ESG stakes of the particular sector being analysed.

Risk exposure indicators: environment, governance, human capital, stakeholder capital

Theme	Sub-themes	Indicators	Ratio	Scope
ENVIRONMENT				
Climate change	Carbon intensity	Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2-3 (direct and indirect and beyond)
		Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2 only (production and supply chain)
	EBIT carbon exposure	EBIT (max) exposed	Max % of EBIT exposed to CO2 cost	Emissions scope 1-2
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2-3
Water	Water availability	Company geographic-weighted exposure to water withdrawal	Internal Renewable Water Resources (IRWR): per capita	Geographic assets
	Water withdrawal	Company geographic-weighted exposure to water availability	% of water withdrawal from Internal Water Resources	Geographic assets
GOVERNANCE				
Country risk	Average country float	Market-cap weighted float	Float (%)	DJ Stoxx 1800
	Average country float	Direct float	Float (%)	DJ Stoxx 1800
	Country governance practices	Perception of practices implemented (country of origin)	WB score for country of origin [0-100]	Country of origin
	Openness to foreign investors	Foreign share ownership (FSO)	% of shares held by foreign owners	Global
Debt	Debt dependence	Net debt/EBITDA	Net debt/EBITDA	Global
Capital attraction	Float	Float	% of floated capital	Share
	Liquidity	Liquidity	Average turnover on average market value (six months)	Share
HUMAN CAPITAL				
Pressure on employee	Profit generated per employee	EBIT/employee	€ generated per capita	Global
Human development	Human resources – level of requirements	Company geographic-weighted exposure to Human Development Index (HDI)	HDI score weighted by assets	Global
STAKEHOLDER CAPITAL				
Human development	Income & sales exposure to level of country development	Income geographic-weighted level of HDI	HDI score weighted by income	Global
		Sales geographic-weighted level of HDI	HDI score weighted by sales	Global
Local country governance	Income & sales exposure to level of country governance	Income geographic-weighted level of HDI	World Bank score weighted by income	Global
		Sales geographic-weighted level of HDI	World Bank score weighted by sales	Global

Source: SG Equity Research

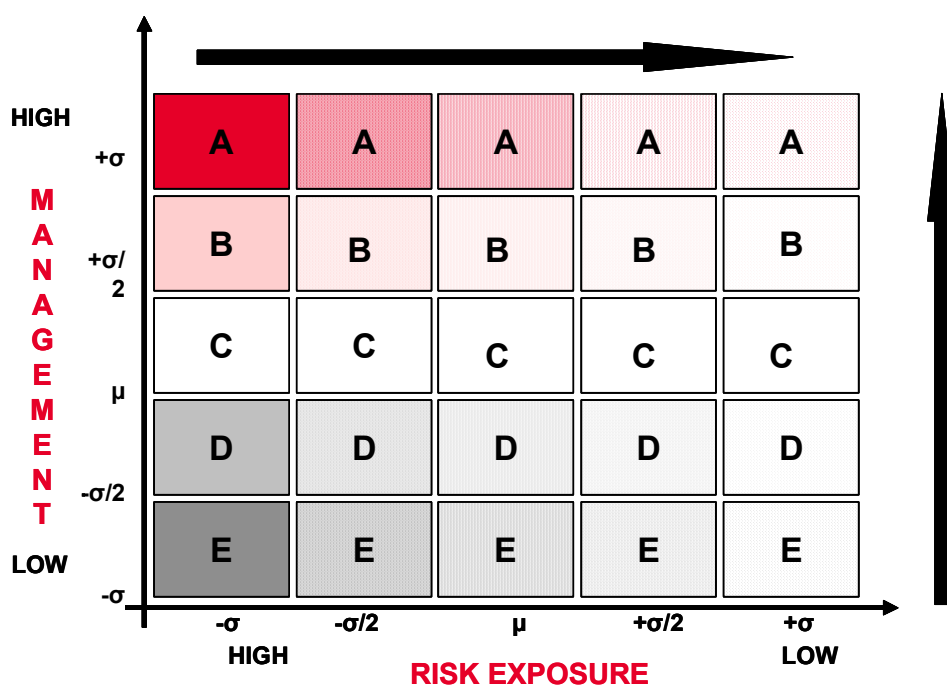
Two-dimensional analysis

From now on, for each of our four criteria – Environment, Governance, Human Capital & Stakeholder Capital – we will score companies on two dimensions:

- 1) Management score – **EXISTING SG SRI RATINGS** (See Appendix 1 and 2)
- 2) Risk Exposure score – **NEW**

Using our new SRI risk indicators coupled with existing unbiased SRI management scores, companies can now be positioned on a two-dimensional risk map that we call the SG SRI Navigator.

SG SRI Navigator: Management vs. Risk Exposure



Source: SG Equity Research

SRI-financial effect – growth for value stocks, value for growth stocks

The following table, focusing on average P/E for the last five years, sums up our observations on the SRI-financial effect:

■ **An apparently negative SRI effect:** On average A-B rated stocks have a **normalised P/E** at 0.98 vs. 1.02 for D-E rated companies, this being consistent across SRI Risk quintiles.

However, there is a positive or more complex SRI effect as soon as we take into account the two other variables:

■ **EBIT effect on P/E visible** with P/E increasing from 0.97 to 1.07 across the SRI Risk quintiles (reminder: our SRI Risk assessments includes EBIT as a key factor)

■ **A Style effect with an average higher P/E for well-SRI rated Value stocks** (0.93 above 0.91) and **lower P/E for well-SRI rated Growth stocks** (1.06 vs 1.12)

P/E (normalised) – SRI Effect / Style Effect / EBIT Effect

Aggregated SRI ratings (A= highest)	MSCI style	SRI Risk – Quintiles (1: high risk / 5: low risk)					Grand total
		1	2	4	3	5	
A-B (top)	Value	0.90	0.96	0.95	0.94	0.93	0.93
	Growth	1.02	1.07	1.10	1.06	1.07	1.06
A-B total		0.93	0.99	1.02	0.99	0.99	0.98
D-E (bottom)	Value	0.94	0.86	0.88	0.94	0.89	0.91
	Growth	1.08	1.12	1.05	1.10	1.22	1.12
D-E total		1.01	0.98	0.99	1.03	1.16	1.02
Grand total		0.97	0.99	1.01	1.01	1.07	1.00

Source: SG Equity Research, Datastream / IBES, MSCI

1500+ SG SRI Ratings as risk proxies

The current report explains the ratings and indicators displayed and available on the SG Research website: <http://www.sgresearch.socgen.com/sri.rha>.

Please refer to the attached Excel files for any SG SRI rating attributed to stocks included in our worldwide coverage.

SRI & the current crisis, lessons & illusions

SRI research and risk assessment at an important crossroads

We believe that some important lessons can be drawn from the current economic crisis for ESG research.

SRI has not played a role in revealing hidden risks

Among its main goals, SRI analysis is supposed reinforce investors' analysis of corporate governance and hidden risks vis-à-vis companies. But based on developments to date, we believe that in most cases, SRI analysis did not help to address specific risks faced by companies or more systemic risks facing industry sectors. Whether it was US real estate or fraud or tax evasion, SRI analysis did not reveal anything untoward or worrying – even in cases such as sub-prime mortgages, which was at its essence an SRI issue (i.e. seeking a win-win situation for lower middle class families and financial institutions).

SRI community needs to stop looking for excuses

Some will say that SRI's inability to reveal hidden risks is explained by a lack of resources – that if we had 10x more highly trained analysts, something could have been done to prevent disaster and warn investors. Others will say (after the fact) that it is not the role of SRI analysis to deal with the type of risks which are supposed to be already controlled by other well-equipped professionals. Others still will roll out the usual argument, saying that it is simply a matter of transparency and that companies should have simply disclosed more on their hidden risks. Finally, some will just admit that SRI failed like everyone else. While all of these rationales are partly relevant, they miss part of the underlying problem.

Fundamental illusions need to be put on the table

There are a series of fundamental illusions that we have faced for years on a day-to-day basis and that need now to be clearly identified – notably the illusions that it is possible:

- to investigate from the outside, what is really going on inside any company
- a company can identify and measure all of its risks, especially extra-financial risks
- to have clear, one-way indicators to detect fraud, tax evasion and anti-competitive behaviour
- companies are ready to voluntarily calculate and publicly disclose risks in strategic areas
- management can prevent all major risks by appropriate management systems
- risks can be averaged (whereas overall risk is at a minimum the risk associated with the most fragile part of the system – cf. hidden extreme risks celebrated by Taleb's *Black Swan* 2006)

Many risks that can and must be objectively measured

For 10-15 years now SRI ratings have been supposedly able to catch the “essence of good management”, even beyond “responsible management”. But beyond management there are plenty of exposure factors that, SRI or not, still wait to be identified and quantified, with geographic exposure of sales, assets and income at the forefront, as well as corruption or carbon footprint. Interaction of those factors with business model’s profitability is also key in the long term.

SRI screening systems based on “best-in-class” approaches and methodical scoring of ESG factors based on the quality of management systems has reached a zenith. We very much doubt there is a path for more to be gained from such systems, even if there is room for further refinement. If anything, we think it is time for simplification: focusing on fewer indicators – quantitative or qualitative – but better indicators. Certain indicators provide useful and effective means of measuring the results achieved by a company such as the reduction of CO2 emissions on a year-on-year basis and the lost-time injury frequency rate (LTIFR). Such indicators are clear, quantified objective indicators of results achieved by a company in ESG fields. Other indicators which focus on policies and processes – such as signing global charters, the percentage of ISO-certified sites or the proportion of “independent” directors – are focused on drivers rather than results.

From the SG SRI Matrix to the SG SRI Navigator

We believe that it is possible to assess part of the extra-financial risks embedded in a company in an objective, reliable and accurate way. We cannot pretend to cover all possible extra-financial risks. For some significant risks, we do not have the relevant indicators. However, it is our opinion that it is not because you cannot measure all risks that you should not even try to measure some of them. We thus propose that investors enter into an ongoing process of collecting reliable data to measure initial risks – the underlying goal of our new proposed model, the SG SRI Navigator, through which we will strive to measure an initial risk exposure on ESG issues (rather than the net risk position post management efforts).

A forward looking approach, risk exposure

In many cases, it is simply not possible either to measure precisely certain risks or even to hope to find a causal link. For that reason, we believe that we need to move towards using exposure indicators which cannot prove that something wrong is going on, but which can give an indication that something might go wrong and/or that a company might eventually face an issue which the market does not currently attach importance. This could encompass simple geographic indicators such as the percentage of sales in certain countries with specific risks, or activity indicators such as the percentage of production in sectors known for corruption risks or HR shortages.

New approach to risk exposure

We understand risk exposure as the (partial) exposure to some specific factors which might require a specific action from the company, or which might be unavoidable. In other words, we do not understand risk exposure as a clear-cut net exposure to a well-identified risk, but rather as the specific position of a company vis-à-vis its stakeholders including its shareholders. Some examples:

- The expectations from stakeholders or shareholders might change with regards to those factors. For instance, banking activity might be affected by a rise in tax fraud risk and money laundering practices. In such a case, initial exposure could be indirectly measured by the number of subsidiaries, branches and outlets opened in non-cooperative OECD / FATF (Financial Action Task Force) countries. Of course presence in those countries does not necessarily mean that there *is* a case of tax fraud or money laundering but rather that there is a greater likelihood of exposure to this risk being present in those countries.
- In the same vein, having activities in emerging countries necessitates that HR policies cannot be mirror images of those in place in developed industrialised countries – but rather that there will be different answers for the same issues – skills and qualifications, health & safety, staff, turnover, attrition, social security and severance packages.
- Exposure to issues like climate change is another example. This exposure will vary widely depending upon CO2 emissions from production and products / services sold by the company: even though a company might be one of the most CO2 efficient in its sector, the level of emissions might still be higher than the average of a wide set of companies, like a portfolio or an index. The exposure to CO2 risk could be high despite the fact the company manages the issue well relative to its sector.

Objective risk indicators

We are of the view that objectivity in SRI analysis can promote constructive dialogue and change between investors and companies, whereas quantification of qualitative views often only opens the door to never-ending controversies. For that reason, we are proposing the adoption of well-established data and indicators which rely only on:

- **Quantitative indicators** not based upon perceptions (with some clear exceptions).
- **Reliable, external sources** such as the United Nations and World Bank, well-recognised stakeholders such as Transparency International and the World Resources Institute, and reliable third party data.
- **Exhaustive data sources** as we screen a global universe of companies. This, unfortunately excludes certain data which was only available for a limited scope (e.g. social dialogue / unionisation: reliable data only available for 37 countries; tax fraud: the list of OECD non-cooperative countries was not finalised at the current time (but could be added for the next assessment)).

Introduction of a 2nd risk exposure dimension

We are carrying on with our previous proprietary SRI methodological work on the quality of management side. A series of SG reports (cf. *Back to Basics* and Appendix 1 and 2 of this report) have shown that it is necessary to conduct such analysis using a multi-best-in-class approach – bias-free with regards to sector, size, country and free float. **However, we are adding a second dimension to dimension to the SRI screening process, with scorings on risk exposure for our four SRI criteria:**

- Environment
- Governance
- Human Capital
- Stakeholder Capital

Our SRI-financial risk exposure indicators

For our new risk exposure score, we strived to build and “integrate” as many indicators mixing ESG dimensions and financial data as possible – provided they were relevant to the business model and ESG stakes of the particular sector being analysed.

Risk exposure indicators: environment, governance, human capital, stakeholder capital

Theme	Sub-themes	Indicators	Ratio	Scope
ENVIRONMENT				
Climate change	Carbon intensity	Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2-3 (direct and indirect and beyond)
		Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2 only (production and supply chain)
	EBIT carbon exposure	EBIT (max) exposed	Max % of EBIT exposed to CO2 cost	Emissions scope 1-2
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2-3
Water	Water availability	Company geographic-weighted exposure to water withdrawal	Internal Renewable Water Resources (IRWR): per capita	Geographic assets
	Water withdrawal	Company geographic-weighted exposure to water availability	% of water withdrawal from Internal Water Resources	Geographic assets
GOVERNANCE				
Country risk	Average country float	Market-cap weighted float	Float (%)	DJ Stoxx 1800
	Average country float	Direct float	Float (%)	DJ Stoxx 1800
	Country governance practices	Perception of practices implemented (country of origin)	WB score for country of origin [0-100]	Country of origin
	Openness to foreign investors	Foreign share ownership (FSO)	% of shares held by foreign owners	Global
Debt	Debt dependence	Net debt/EBITDA	Net debt/EBITDA	Global
Capital attraction	Float	Float	% of floated capital	Share
	Liquidity	Liquidity	Average turnover on average market value (six months)	Share
HUMAN CAPITAL				
Pressure on employee	Profit generated per employee	EBIT/employee	€ generated per capita	Global
Human development	Human resources - level of requirements	Company geographic-weighted exposure to Human Development Index (HDI)	HDI score weighted by assets	Global
STAKEHOLDER CAPITAL				
Human development	Income & sales exposure to level of country development	Income geographic-weighted level of HDI	HDI score weighted by income	Global
		Sales geographic-weighted level of HDI	HDI score weighted by sales	Global
Local governance	Income & sales exposure to level of country governance	Income geographic-weighted level of HDI	World Bank score weighted by income	Global
		Sales geographic-weighted level of HDI	World Bank score weighted by sales	Global

Source: SG Equity Research

EBIT as the key financial metric in risk assessment

In our *Back to Basics* (April 2008), *Auto & CO2: not that bad after all* (February 2008) and *CREAM-ing carbon risk* (June 2007) reports, **we observed the link between EBIT margin levels and the SRI effect on risk premium.**

As the *Back to Basics* report stated, the interaction between EBIT and SRI effect may very well be explained by the idea that the less profitable a company is, the greater its need to tackle ESG issues in the best possible way. Not doing so may induce additional risks – that coupled with low profitability in absolute terms or relative to a group of peers – and may be more material for such companies. The paradox is that a company with a business model under strong constraints and delivering low profitability is “condemned” to adopt a best-in-class approach, whereas profitable companies might be less materially affected.

This does not mean that good corporate social responsibility (CSR) leads to low profitability or conversely that low profitability leads to good CSR. If our statistical observations are confirmed, the best explanation we have, so far at least, is that a company with lower profitability has less room for “mistakes” which could hit the company proportionally harder than its peers. Of course, it might be already too late for some companies, assuming profitability is null or negative.

We now plan to systematically integrate economic views in our stakeholder approach, through selected indicators.

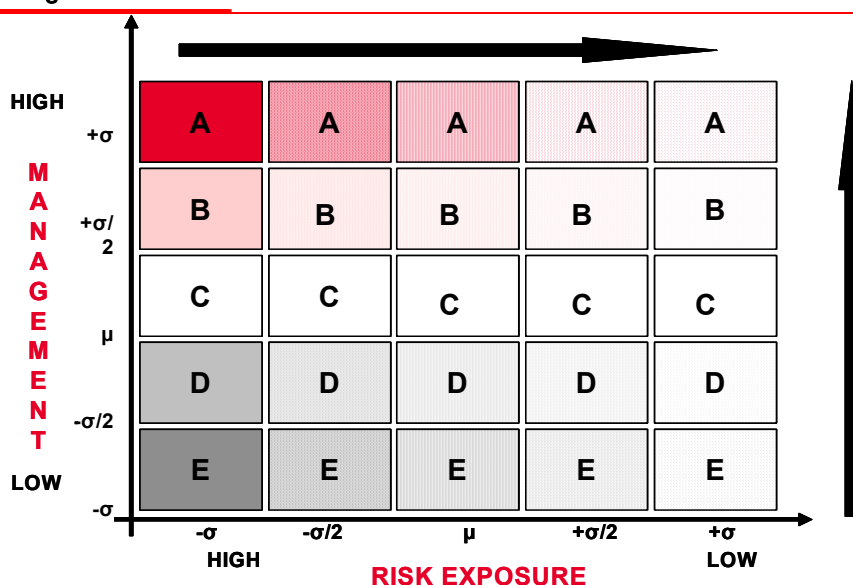
SRI Navigator – Two-dimensional analysis

From now on, for each of our four criteria – Environment, Governance, Human Capital and Stakeholder Capital – we will score companies on two dimensions:

- Management score – **EXISTING SG SRI RATINGS** (See Appendix 1 and 2)
- Risk Exposure score – **NEW**

Using our new SRI risk indicators coupled with existing unbiased SRI management scores, companies can now be positioned on a two-dimensional risk map, that we call the SG SRI Navigator.

SG SRI Navigator



Source: SG Equity Research

Scoring risk indicators: the method

Once the grid is applied, companies are ranked according to their risk level. This ranking will determine the different scorings attributed. Unless otherwise specified, we rank and score companies for all indicators with regards to three different scopes:

- Absolute ranking / scoring vs. the whole universe (c. 1,800 companies)
- Relative sector ranking / scoring vs. its own sub-sector
- Relative sector ranking / scoring vs. the cycle (position vs. cycle peak and bottoms)

Scoring formula:

$$score_i^j = (rank_i^{scope_j} / N_{scope_j}) \times 10$$

with

- scope_j = j-th scope, e.g. sector, whole coverage, or company over a long period of time
- N_{scope j} = number of companies within the scope
- Score_{ij} = score for company i relative to scope

Weighted criteria for each sector

This mapping can be drawn for each of our four criteria, and ultimately for the aggregated SRI scorings, using a different criteria weighting for each sector.

SG SRI weighting factors per criteria and sector

Industry sector	Environment (ENV)	Human Capital (HC)	Stakeholder Capital (SC)	Governance (GOV)	Total
AUTOMOBILES & PARTS	40%	20%	20%	20%	100%
CHEMICALS	35%	15%	30%	20%	100%
CONSTRUCTION & MATERIALS	30%	25%	25%	20%	100%
BASIC RESOURCES	35%	15%	30%	20%	100%
INDUSTRIAL GOODS & SERVICES	30%	30%	20%	20%	100%
FOOD & BEVERAGE	25%	25%	30%	20%	100%
PERSONAL & HOUSEHOLD GOODS	25%	25%	20%	30%	100%
TRAVEL & LEISURE	10%	30%	30%	30%	100%
OIL & GAS	30%	15%	30%	25%	100%
RETAIL	20%	30%	30%	20%	100%
CONSUMER GOODS	30%	30%	20%	20%	100%
UTILITIES	40%	10%	25%	25%	100%
FINANCIAL SERVICES	10%	40%	20%	30%	100%
MEDIA	10%	20%	30%	40%	100%
TECHNOLOGY	30%	40%	10%	20%	100%
INSURANCE	30%	20%	20%	30%	100%
BANKS	20%	20%	20%	40%	100%
HEALTH CARE	20%	30%	30%	20%	100%
TELECOMMUNICATIONS	20%	30%	30%	20%	100%
REAL ESTATE	30%	10%	20%	40%	100%
CONSUMER SERVICES	25%	25%	30%	20%	100%
AVERAGE	26%	24%	25%	25%	100%

Source: SG Equity Research

5 classes of SRI ratings

For practical reasons – i.e. to facilitate differentiation between companies and against sector averages – we have also introduced a fifth rating class to our model. From now on, we have a 5-tiered rating structure ranging from A (preferred) to E (least preferred) with a neutral class (C).

Introducing asymmetric SRI ratings

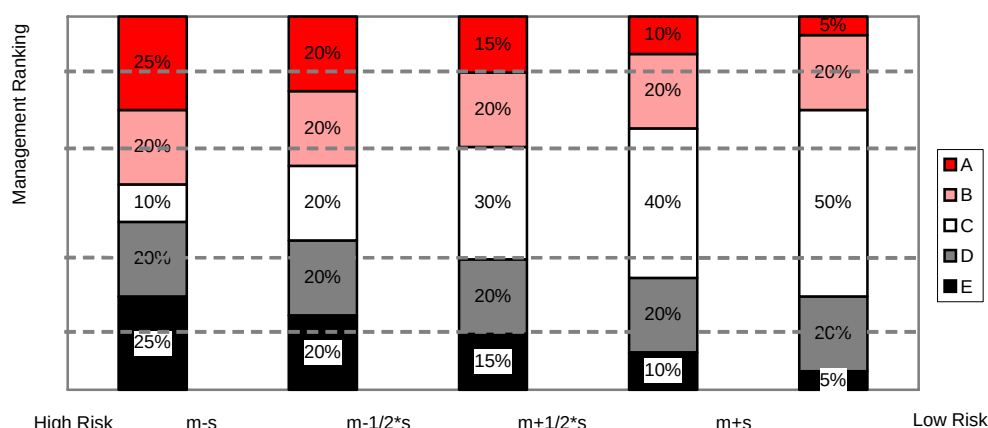
Generally speaking, SRI ratings are attributed according to a sector best-in-class approach – proportionally to the number of stocks within a sector. However, given that that level of profitability as measured by means of EBIT margin may give greater importance to managing ESG factors, we propose to adopt a non-linear rating approach, according to the following principles:

■ **For companies/sectors affected by a “low” level of profitability**, as measured by EBIT margins → **SRI scorings/ratings can play a more important role** in differentiating between companies at risk or not – **i.e. SRI / CSR positioning can give a real positive / negative edge.**

■ **For companies/sectors benefiting from a “high” level of profitability**, as measured by EBIT margin → **SRI scorings/ratings have less of a chance to influence business models and future levels of profitability** within the next few years. Unless companies are really at the top or at the bottom of their peer group, SRI will not fundamentally change the picture, and a neutral stance will be the most common case in that peer group from an SRI standpoint.

With these two rules in mind for our two-dimensional analysis (initial risk exposure + management), we propose the following asymmetric rating model:

SG SRI rating proportioned according to risk levels

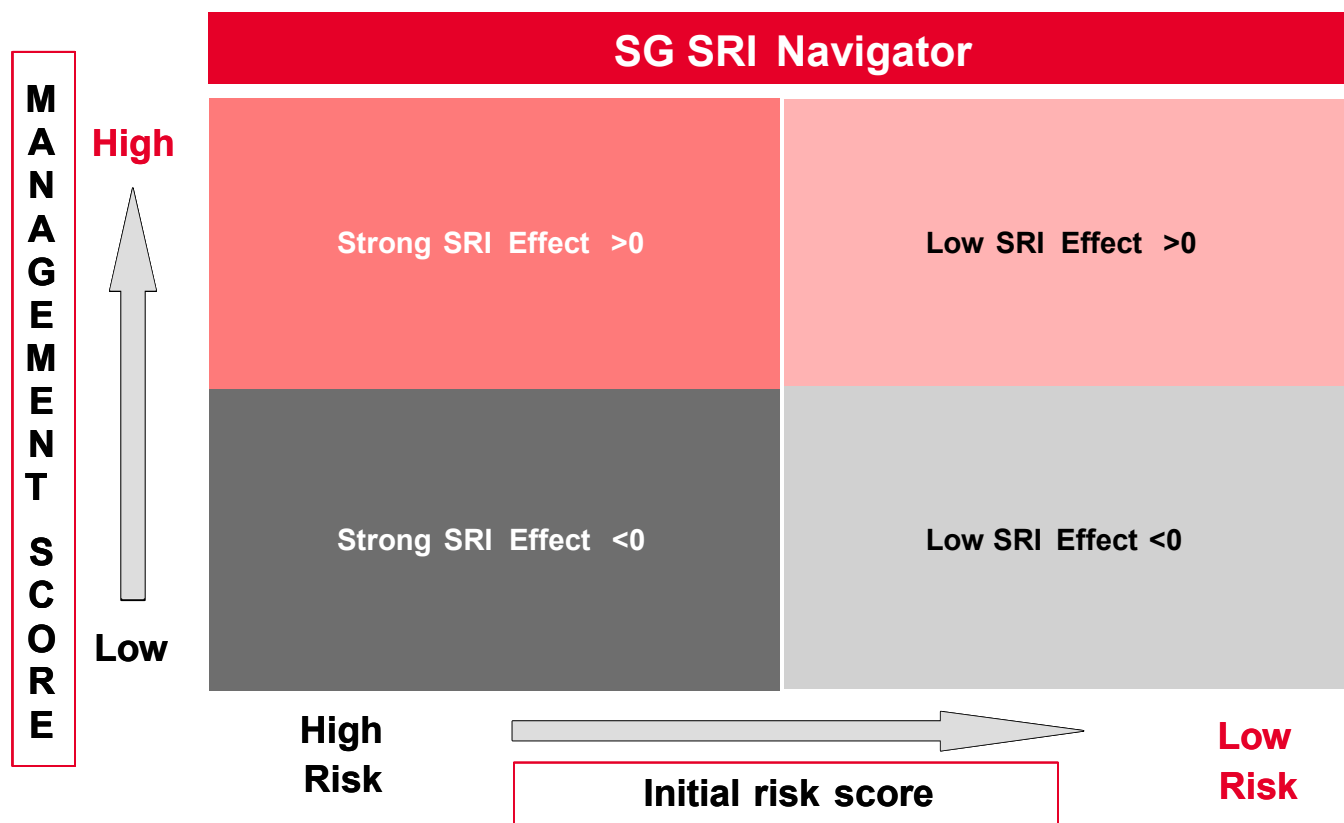


Source: SG Equity Research (m = average and s = standard deviation)

One can infer from the above chart that from now on our SG SRI Ratings will have on average:

- 15% **A**-rated companies
- 20% **B**-rated companies
- 30% **C**-rated companies
- 20% **D**-rated companies
- 15% **E**-rated companies

SG SRI Navigator and expected SRI effect



Source: SG Equity Research

Equity Research

Overview of new risk exposure indicators

Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update frequency	Scoring scope	Scoring method	Assessment objective
ENVIRONMENT									
Climate change	Carbon Intensity	Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2-3 (direct and indirect and beyond)	Centre Info	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	% share of responsibility throughout the chain
		Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2 only (production and supply chain)	Centre Info	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	% of direct responsibility
	EBIT Carbon exposure	EBIT (max) exposed	Max % of EBIT exposed to CO2 cost	Emissions scope 1-2 only	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin, yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Max exposure (0 free allocation and 0 pricing power)
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2 only	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin, yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking and real scoring	Realistic exposure (pricing power)
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2 only	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin, yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking and real scoring	Realistic exposure – (pricing power & variable free allocation)
Water	Water availability	Company geographic-weighted exposure to water withdrawal	Internal Renewable Water Resources (IRWR): per capita	Geographic assets	WRI for water data & Worldscope for geographic distribution of assets	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking average company (min:max) ranking	Exposure to water availability
	Water withdrawal	Company geographic-weighted exposure to water availability	% of water withdrawal from Internal Water Resources	Geographic assets	WRI for water data & Worldscope for geographic distribution of assets	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking average company (min:max) ranking	Exposure to water scarcity
GOVERNANCE									
Country risk	Average country float	Market-cap weighted float	Float (%)	DJ Stoxx 1800	DJ Stoxx	Quarterly	Relative vs. Universe	Direct percentage	Degree of country capital openness to investors and especially minority investors
	Average country float	Direct float	Float (%)	DJ Stoxx 1800	DJ Stoxx	Quarterly	Relative vs. Universe	Direct percentage	Degree of country capital openness to investors and especially minority investors
	Country governance practices	Perception of practices implemented by country of origin	World Bank score for country of origin [0-100]	Country of origin	World Bank	Yearly	Relative vs. Universe	Normalised score [0;10]	Conditions of investing in a country (through a stock)
	Openness to foreign investors	Foreign Share Ownership (FSO)	% of shares held by foreign owners	Global	Federation of European Stock Exchanges, World Federation of Stock Exchanges, US Treasury International Capital	Yearly (2007 for Europe and mid2007 for US)	Country Relative vs. Universe Country Relative vs Sub-sector	Relative ranking	Degree of capital openness and attraction to foreign investors
Debt	Debt dependence	Net debt/EBITDA	Net debt/EBITDA	Global	IBES consensus for EBITDA and debt estimates	Quarterly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Degree of debt exposure as decided by the management
Capital attraction	Float	Float	% of floated capital	Share	Datastream	Quarterly	Relative vs. Universe Relative vs. Sub-sector Relative vs. Country	Direct percentage and relative ranking	Degree of corporate capital openness to investors and especially minority investors
	Liquidity	Liquidity	Average turnover on average market value (six months)	Share	Datastream	Quarterly	Relative vs. Universe Relative vs. Sub-sector Relative vs. Country	relative ranking	Shareholder interest in the stock

Source: SG Equity Research

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Overview of new risk exposure indicators (cont'd)

Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update Frequency	Scoring scope	Scoring method	Assessment objective
HUMAN CAPITAL									
Pressure on employee	Profit generated per employee	EBIT/employee	€ generated per capita	Global	IBES consensus for EBIT estimates and Worldscope for number of employees	Quarterly (or daily) for EBIT margin and yearly for Worldscope data	Sub-sector vs. Universe Relative vs. Sub-sector Relative vs. Period	Relative ranking	Margin of manoeuvre for a company to pay for human capital (wages, training, retention)
Human development	Human resources level of requirement	Company geographic-weighted exposure to Human development	HDI score weighted by assets	Global	UN for Human Development Index (HDI), Worldscope (geog. distribution of assets)	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	HR risk to operate in countries with lower standards
STAKEHOLDER CAPITAL									
Human development	Income and sales exposure to level of country development	Income geographic-weighted level of HDI	HDI score weighted by income	Global	UN (HDI), Worldscope (geog. distribution of income)	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Profitability exposure to human development levels based on country operations
		Sales geographic-weighted level of HDI	HDI score weighted by sales	Global	UN (HDI), Worldscope (geog. distribution of sales)	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Sales exposure to human development levels based on country operations
Local governance	Income and sales exposure to level of country governance	Income geographic-weighted level of HDI	WB score weighted by income	Global	World Bank (country governance scores), Worldscope (geog. distribution of income)	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Profitability exposure to governance concerns based on country operations
		Sales geographic-weighted level of HDI	WB score weighted by sales	Global	World Bank (country governance scores), Worldscope (geog. distribution of sales)	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Sales exposure to governance concerns based on country operations

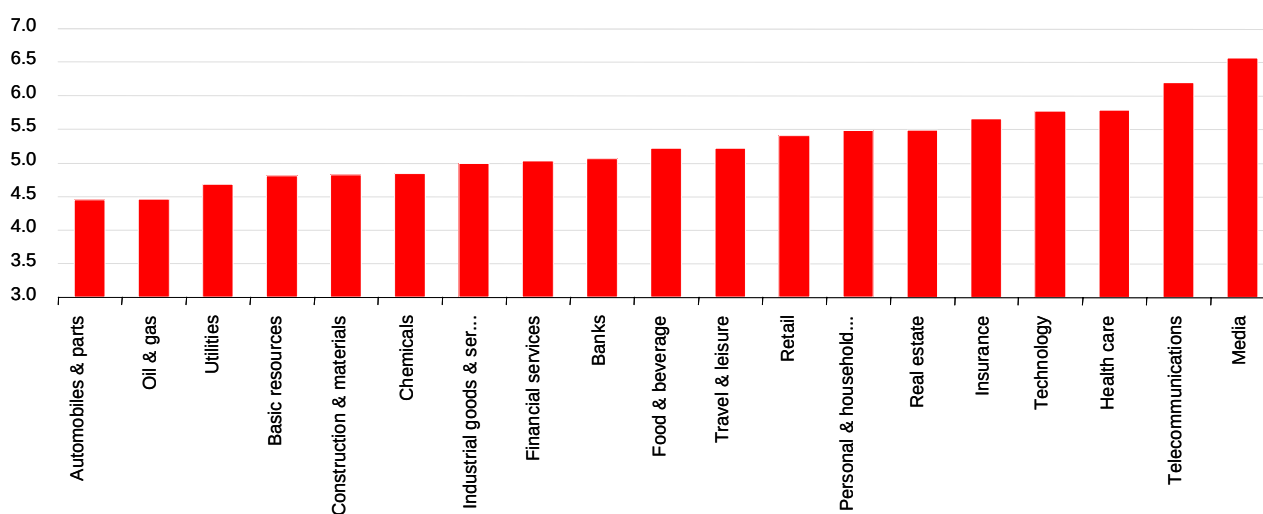
Source: SG Equity Research

Extra-financial risk exposure analysis

Environment, CO2 & water

Environmental risk can be defined as the potential exposure of any company to environmental concerns, like climate change, pollution, depletion of resources and safety issues. However, due to the lack of acceptable sources and indicators, we propose tackling environmental risks using two main angles, climate change (double weighted) and water scarcity exposure (single weighted).

Average Environment Risk Scoring – Sectors (0 = high risk, 10 = low risk)



Source: SG Equity Research

For climate change we explicitly adopt our CREAM (carbon risk exposure assessment model) based upon sales and EBIT exposure to CO2 costs as the most relevant indicator. As for water scarcity, we believe this could emerge as the next big universal environmental concern, and we adopt geographic exposure of assets to countries exposed to water shortages and water withdrawal as the relevant indicators.

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Environmental risk exposure indicators

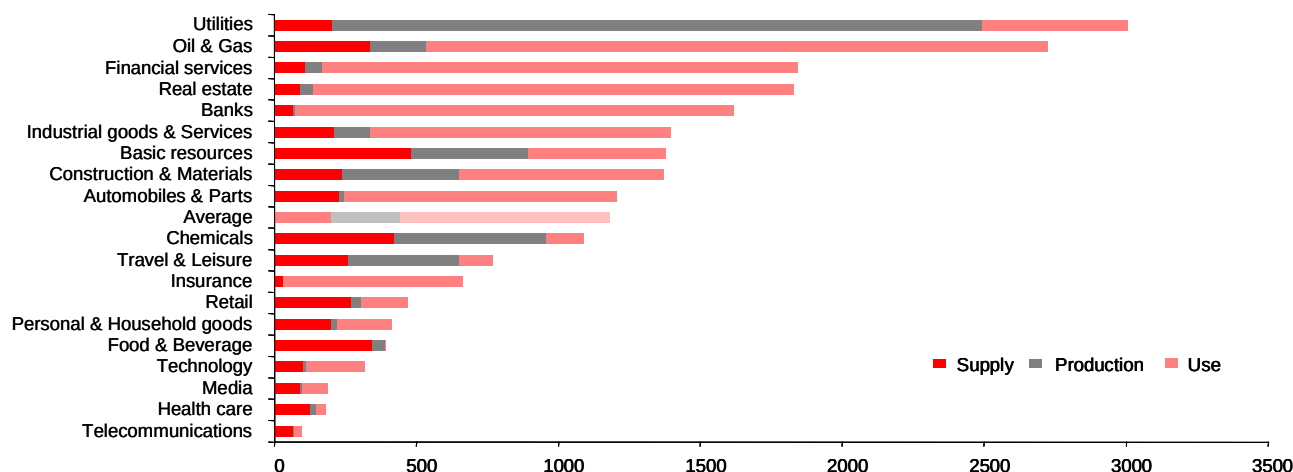
Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update frequency	Scoring scope	Scoring method	Objective
Climate change	Carbon Intensity	Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2-3 (direct and indirect and beyond)	Centre Info	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Assess % share of responsibility throughout the chain
		Carbon Intensity Unit	g CO2 / US\$ sales	Emissions scope 1-2 only (production and supply chain)	Centre Info	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Assess % of direct responsibility
	EBIT Carbon exposure	EBIT (max) exposed	Max % of EBIT exposed to CO2 cost	Emissions scope 1-2 only (production and supply chain)	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin and yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Assess max exposure - zero free allocation and zero pricing power
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2 only (production and supply chain)	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin and yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking and real scoring	Assess realistic exposure - introducing pricing power
		EBIT exposed	% of EBIT exposed to CO2 cost	Emissions scope 1-2 only (production and supply chain)	CIU (Centre Info) & IBES consensus for EBIT estimates	Quarterly (or daily) for EBIT margin and yearly for CIU data	Relative vs. Universe Relative vs. Sub-sector	Relative ranking and real scoring	Assess realistic exposure - introducing variable pricing power and variable free allocation
Water	Water availability	Company geographic-weighted exposure to water withdrawal	Internal Renewable Water Resources (IRWR): per capita	Geographic assets	World Resources Institute (last year 2007) for water data and Worldscope for geographic distribution of assets	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking avg company (min:max) ranking	Assess company exposure to water availability
	Water withdrawal	Company geographic-weighted exposure to water availability	% of water withdrawal from Internal Water Resources	Geographic assets	World Resources Institute (last year 2007) for water data and Worldscope for geographic distribution of assets	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking average (company (min:max) ranking)	Assess company exposure to water scarcity

Source: SG Equity Research

CO2 risk, all sectors will pay a price (sooner or later)

Climate change is, in our view, the most prominent environmental risk faced by humankind – as well as by all economic players across all sectors. Taking into account the circular characteristic of the economy as well as the ongoing process of pricing externalities, all sectors will sooner or later pay for CO2 emissions, whether direct or indirect (such as through higher electricity and transport prices).

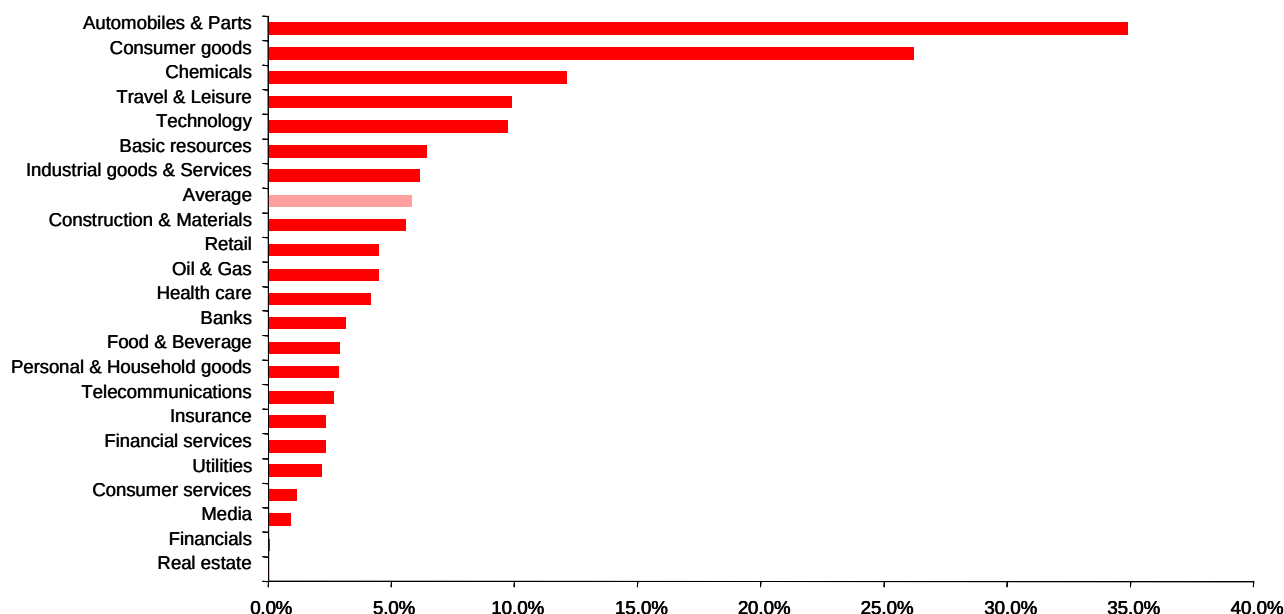
CO2 emissions over three stages – Supply Chain – Production – Use



Source: SG Equity Research, Centre Info (EnvImpact®) / Unit: g CO2 / US\$ sales

The chart above relies on data modelled by our partner Centre Info SA, and uses **CO2 emissions estimates for the three relevant lifecycle phases – supply chain, production, and use –** for all companies from all sectors. **It is supplemented by our assumptions on pricing power, e.g. capacity to pass on costs to customers / suppliers and CO2 prices** (CER price at the time of the assessment or EUA for European scope).

EBIT at CO2 Risk – post pricing power



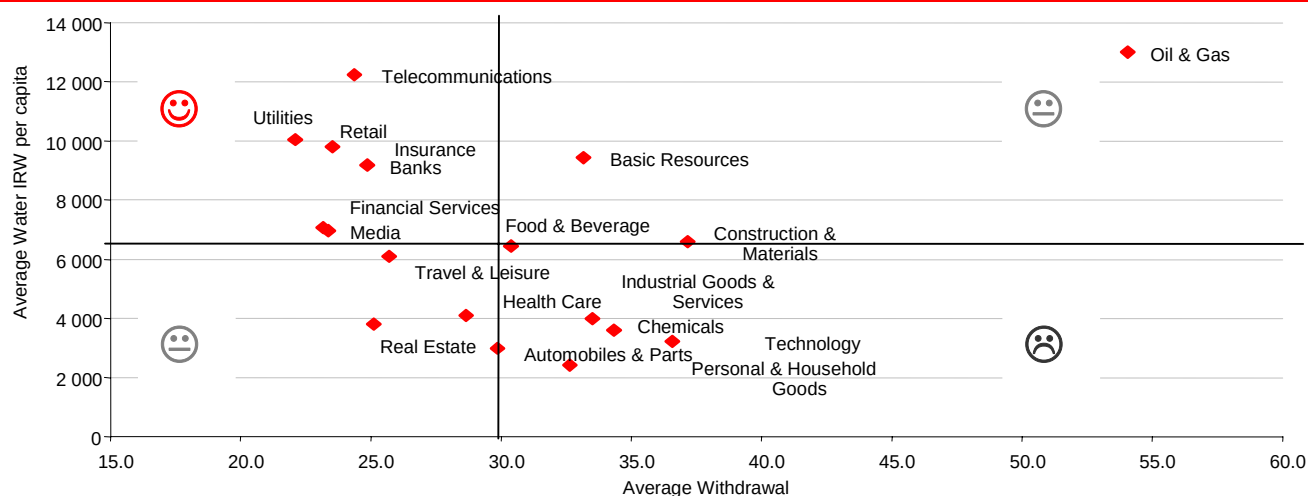
Source: SG Equity Research, Datastream / IBES / Unit: % of EBIT

Water scarcity should one day impact (some) industrial sectors

From the chart below – crossing the two water indicators used in our analysis – we can see that:

- **The Oil & Gas sector stands out**, to the extent the sector is very much exposed to countries with either very high resources in water per capita (Canada) or countries with low resources or a very high percentage of annual withdrawal (Middle East).
- **Ex-Oil & Gas sector, there is a partial correlation between the two indicators** (60%).
- **Geographic exposure of sectors like Telecommunication or Utilities prevent them from exposure to any major surprises** and, in the case of some Utilities, water scarcity should be an opportunity rather than a risk (water desalination / water treatment).
- **Services and non-industrial sectors (banks, insurance, media) have low exposure.**
- **The Food & Beverage industries probably face a real problem in terms of water quality, but their final exposure to water availability is in general average.** Chemicals seem more exposed. Automobiles & Parts could eventually present a risk.

Water withdrawal and water availability – a sector view



Source: SG Equity Research, Worldscope, WRI based on FAO (2000-2007)

Governance – country risk, debt & capital attraction

Governance is a critical factor, especially today – a period when systemic risk has arisen due to a lack of adequate controls and transparency. However, governance considered at a corporate level consists mainly of looking at formal aspects such as committees, independence, rules for remuneration, anti-takeover measures etc..

We believe that from a statistical point of view, some of this information on governance practices can be gleaned from very simple quantitative, objective indicators on the degree of openness of a country or corporation to foreign and minority shareholders as well as country risk factors. In this regard, we think that a corporation or a country able to attract foreign shareholders will probably adjust its governance standards towards international best practices (unless of course the company is heavily held by one foreign shareholder with a low governance standard).

Three simple criteria

With the underlying constraint of finding reliable data sources for 1,500+, we propose to start with three governance criteria that might affect relationships between management and investors, namely:

■ Country risk as measured by average float, World Bank scores and openness to foreign ownership

Average float in our eyes must be considered a risk factor to the extent that the lower the float factor, the less power minority shareholders have to defend their interests. Historically, family-owned companies tend to have lower float levels, and sometimes this lower level is even coupled with double voting rights! In this case, minority shareholders might only face “bad surprises”. In the case of country’s average float, the level encompasses a cultural dimension: how much the local situation is open to shareholders’ dialogue and international markets.

■ Debt levels

Gearing ratio from a pure financial standpoint can be interpreted in a number of ways depending on the position in the economic cycle, and we believe that from a combined management and shareholder standpoint, rising debt is always a potential threat, as: a) shareholders’ interests might be subordinated to bondholders’ interests, b) management

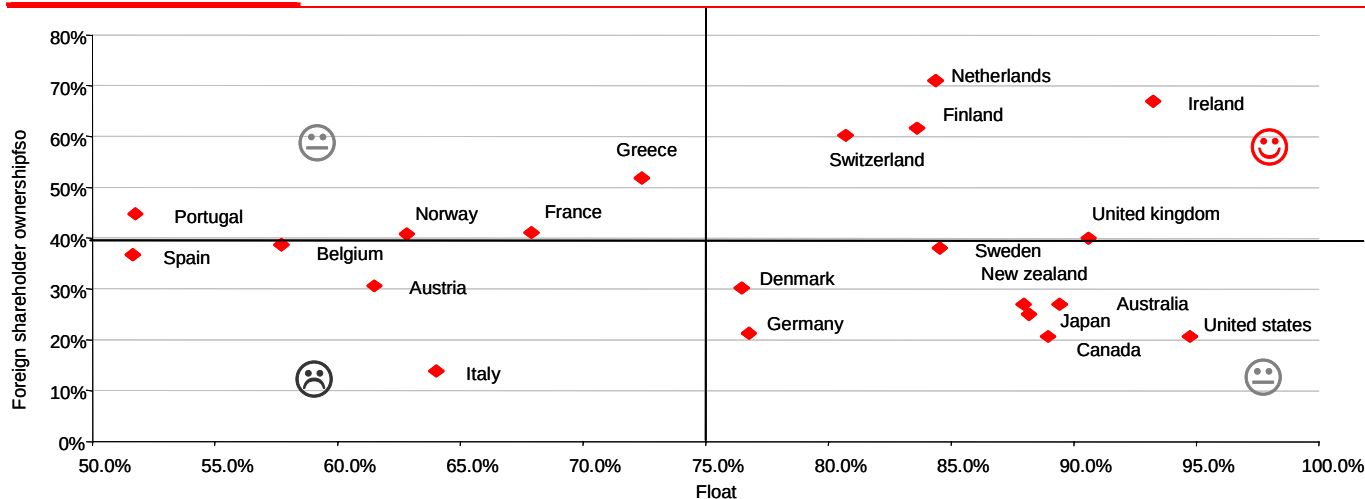
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might use debt as a financial leverage for aggressive, but dilutive, acquisitions, and c) the economic cycle is more fragile and less easy to forecast than usually believed.

■ **Capital attraction measured by float and liquidity**

After examining float on a national level, we consider specific corporate float and liquidity indicators in order to identify the risks specific to each stock.

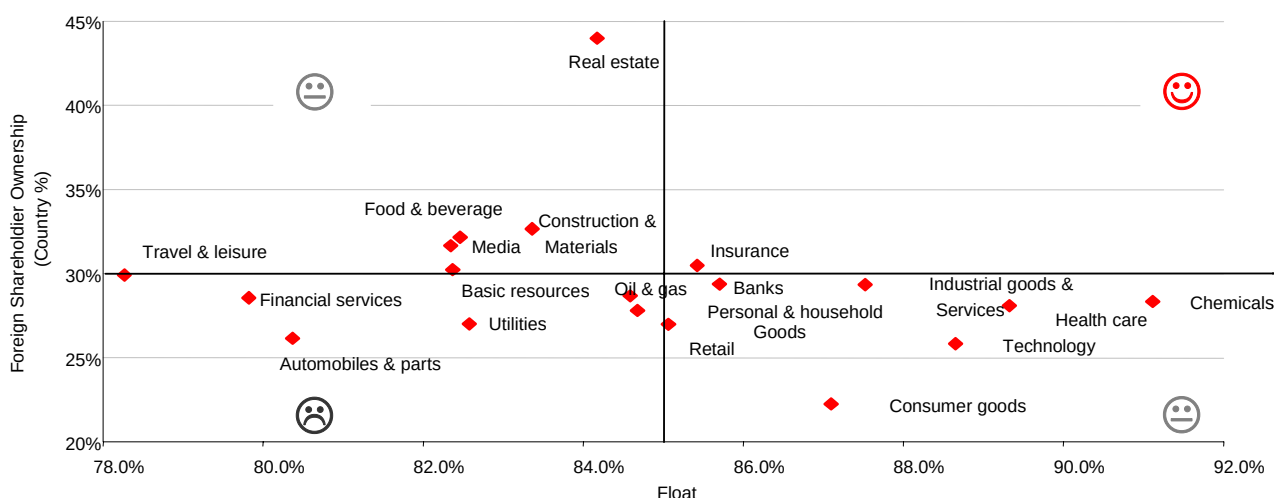
Country risk – openness to minority and/or foreign shareholders



Source: SG Equity Research, Stoxx, Datastream, FESE, WFE

Using the data from the various sources, we can compare the degree of “openness” of companies and sectors with two dimensions (% of foreign shareholding ownership and float). Excluding Real Estate, the correlation level is, in our view, quite acceptable, at -41% (anti-correlation), and understandable (the lower the float percentage, the smaller the room for foreign ownership).

Country risk – float & foreign shareholder ownership by sector



Source: SG Equity Research, , Stoxx, Datastream, FESE, WFE

The chart below gives sector rankings based on individual corporate rankings. The final scores are tight, but the ranking is clear.

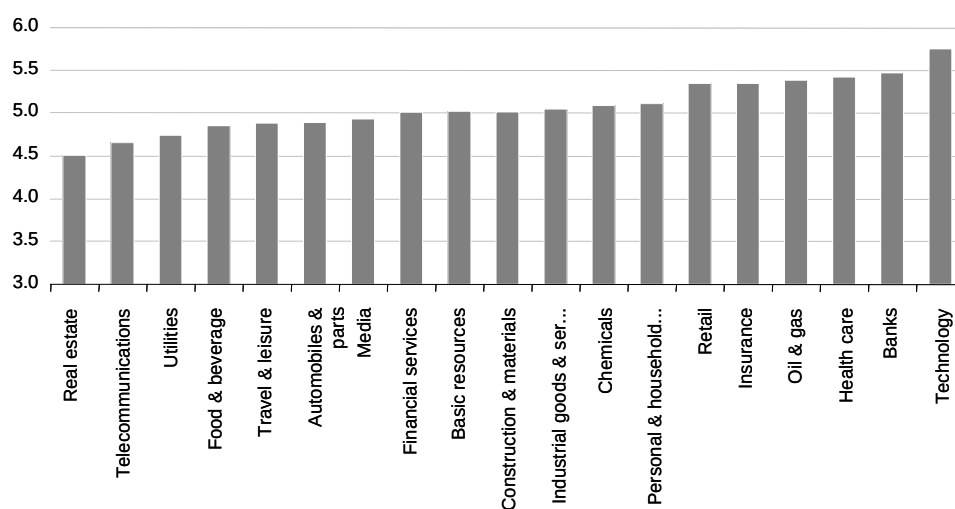
■ **Real Estate and Telecommunications at high risk.**

■ **Banks and Technologies at low risk.** Regarding Banks, we believe that a high level of float coupled with strong liquidity have likely benefited sector, while inversely, Real Estate suffers from the same factors.

■ **Utilities are at the bottom of the pyramid,** with a higher level of debt.

■ **Oil & Gas benefit thanks to a high level of float, liquidity and sound gearing.** Difficulties in terms of national governments and energy strategy do not prevent the sector from being attractive from a shareholders' point of view, thus putting less pressure than initially expected on the management of those companies.

Sectors: tight ranking with Banks & Real Estate at high risk (0= high risk, 10=low risk)



Source: SG Equity Research

Governance Risk Indicators - details

Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update frequency	Scoring scope	Scoring method	Objective
Country Risk	Average country float	Market-cap weighted float	Float (%)	Companies included in the DJ Stoxx 1800	DJ Stoxx	Quarterly	Relative vs. Universe	Direct percentage	Assess the degree of country capital openness to investors and especially minority investors
	Average country float	Direct float	Float (%)	Companies included in the DJ Stoxx 1800	DJ Stoxx	Quarterly	Relative vs. Universe	Direct percentage	Assess the degree of country capital openness to investors and especially minority investors
	Country governance practices	Perception of practices implemented by country of origin	WB score for country of origin [0-100]	Country of origin	World Bank	Yearly	Relative vs. Universe	Normalised score [0;10]	Assess the conditions of investing in a country (through a stock)
	Openness to foreign investors	Foreign share Ownership (FSO)	% of shares held by foreign owners	Global	Federation of European Stock Exchanges, World Federation of Stock Exchanges, US Treasury International Capital	Yearly (2007 for Europe and mid-2007 for US)	Country Relative vs. Universe Country Relative vs. Sub-sector	Relative ranking	Assess the degree of capital openness and attraction to foreign investors
Debt	Debt dependence	Net debt/EBITDA	Net Debt / EBITDA	Global	IBES consensus for EBITDA and debt estimates	Quarterly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Assess the degree of debt exposure as decided by the management
Capital Attraction	Float	Float	% of floated capital	Share	Datastream	Quarterly	Relative vs. Universe Relative vs. Sub-sector Relative vs. Country	Direct percentage and relative ranking	Assess the degree of corporate capital openness to investors and especially minority investors
	Liquidity	Liquidity	Average turnover on average market value (six months)	Share	Datastream	Quarterly	Relative vs. Universe Relative vs. Sub-sector Relative vs. Country	Relative ranking	Assess the shareholder interest for the stock

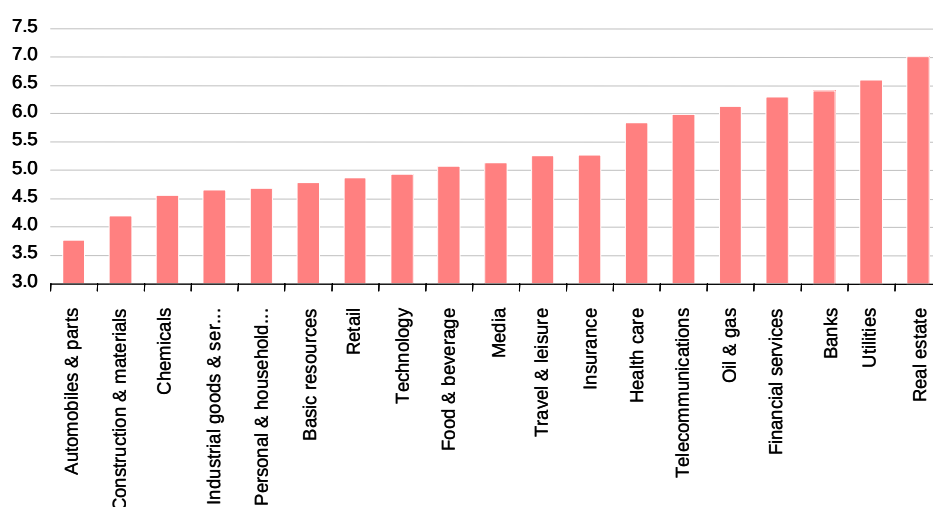
Source: SG Equity Research

Human capital, pressure on employees & level of HR development

We understand Human Capital as the relationship between a company and its employees (internal stakeholders). To arrive at this score we have relied on two indicators: 1) "Pressure on employees", which we calculate as the EBIT generated per employee within one company, and 2) the level of "Human Development", calculated on a weighted-geographic basis. The rules are simple:

- **The higher the EBIT generated by employee, the less the pressure**, as companies will have more financial capacity to pay decent remuneration and engage in measures on social welfare, training, hiring and retention, as well as health & safety.
- **The lower the level of human development, the more the company will have to care about knowledge capital among its employees.**

Average Human Capital Risk Scoring – Sectors (0 = high risk, 10 = low risk)



Source: SG Equity Research

The current scoring system again suggests that **some industrial sectors are most exposed to human capital risks, resulting from a low level of profitability per employee coupled with exposure to emerging and/or low-cost countries.** Margins of manoeuvre are narrow, especially for Auto, Chemicals and Construction & Materials.

Human Capital Risk Exposure Indicators

Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update frequency	Scoring scope	Scoring method	Objective
Pressure on employee	Profit generated per employee	EBIT/employee	€ generated per capita	Global	IBES consensus for EBIT estimates and daily) for Worldscope for number of employees	Quarterly (or margin and yearly for Worldscope data	Sub-sector vs. Universe Relative vs. Sub-sector Relative vs. Period	Relative ranking	Assess the room for manoeuvre of a company to pay for human capital (wages, training, retention)
Human development	Human Resources level of requirement	Company geographic-weighted exposure to human development	HDI score weighted by assets	Global	UN for Human Development index and Worldscope for geographic distribution of assets	Yearly	Relative vs. Universe Relative vs. Sub-sector	Relative ranking	Assess the human resources risk of operating in countries with lower standards

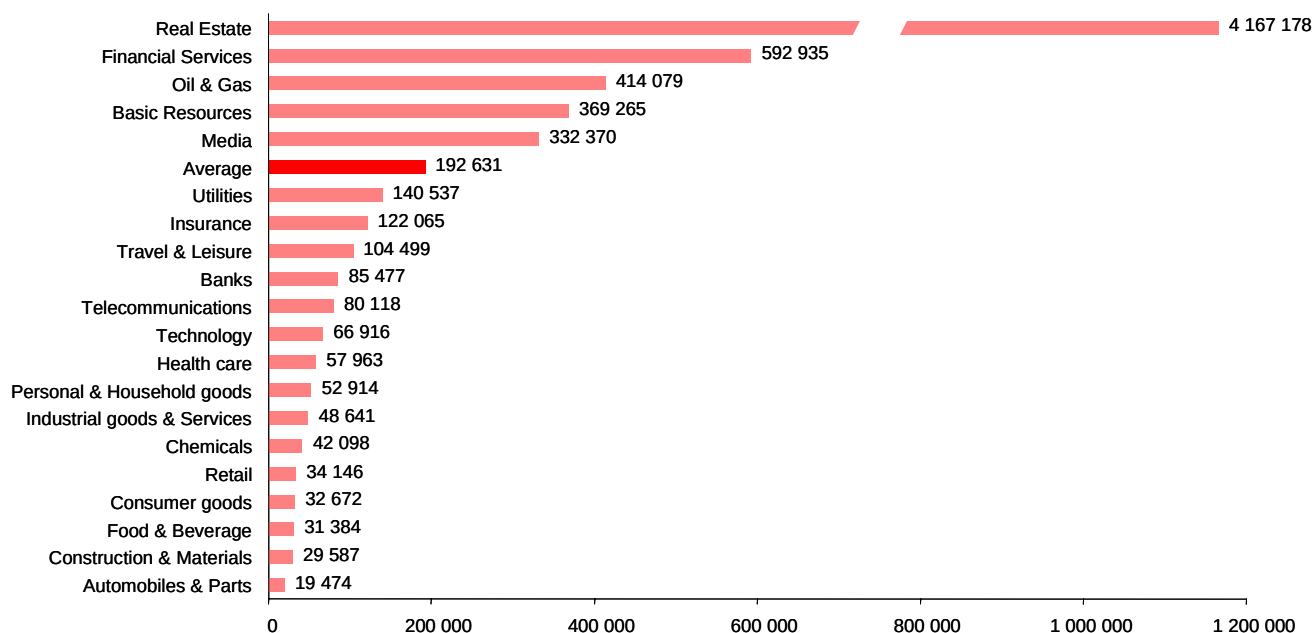
Source: SG Equity Research

EBIT per employee – not all employees are created equal

Despite the worldwide recession, the level of EBIT is still positive for all sectors, but clearly there is a huge discrepancy between sectors. It is not surprising to find auto at the bottom of the pyramid, and this may explain the many layoffs taking place in this “declining” sector – in terms of human resources employed over the last decades.

More surprisingly, industrial sectors like Oil & Gas and Utilities present a very “good” profile, with strong EBIT generated per employee, as the sectors are still very profitable. From that perspective, and despite some skill shortages, it is very likely that these companies are in a safe position to pay, hire, train and retain the needed employees.

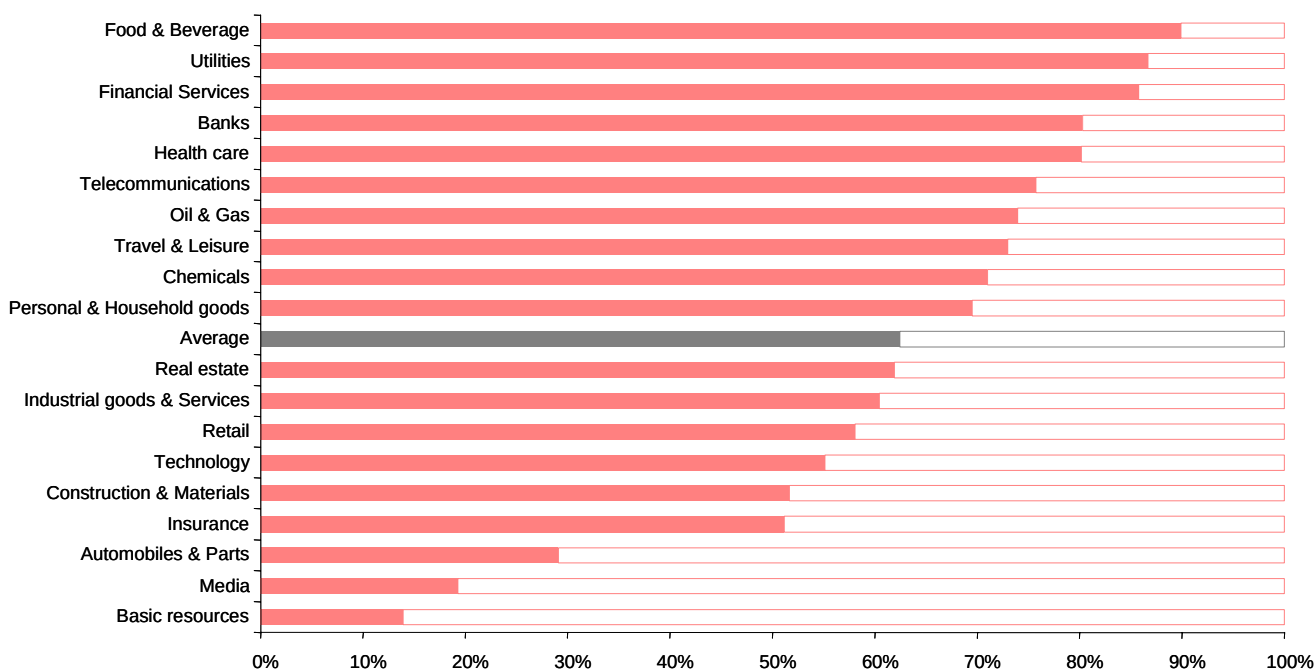
EBIT/employee: employees are not equal



Source: SG Equity Research, Worldscope, Datastream (IBES consensus estimates for EBIT2009) – data in euros

Looking at this from a historical perspective, the employment situation is not as bad as the last decade, with the exception of perhaps three sectors currently generating less than half of the maximum for the last decade: Automobile, Media and Basic Resources.

EBIT/employee: current position in the current decade (1999-2009)



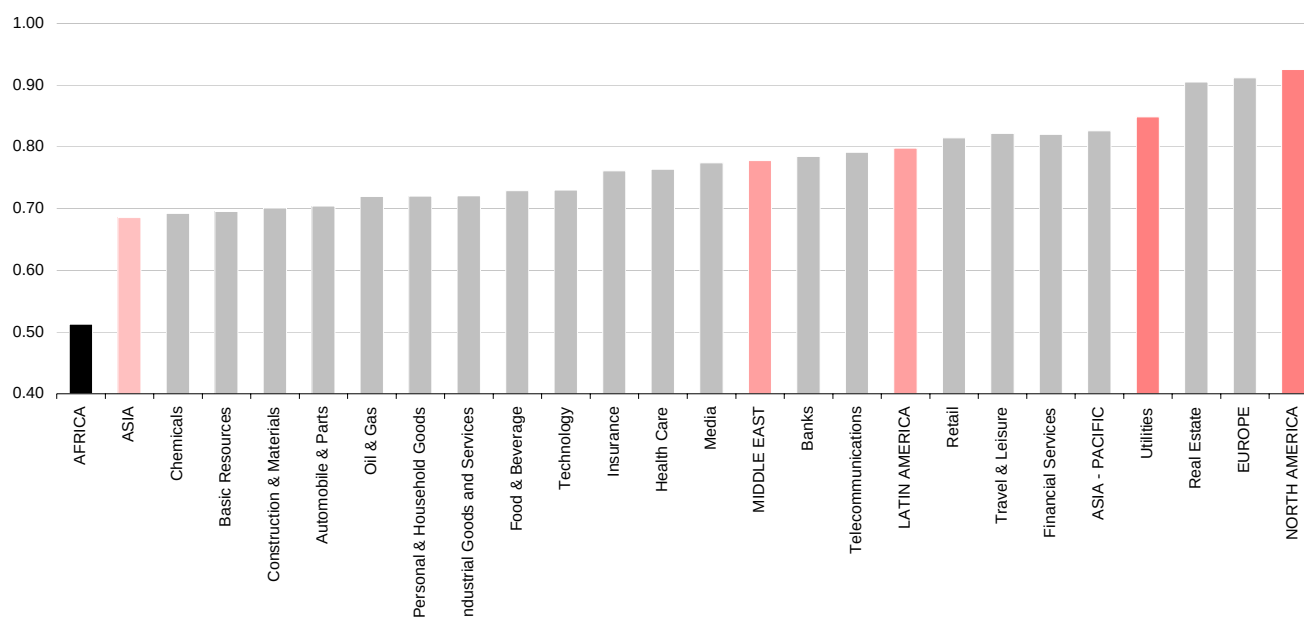
Source: SG Equity Research, Worldscope, Datastream - % of maximum observed in 1999-2009

Risks associated with level of human development

The chart below, which shows human development levels from a sector and geographic perspective, indicates that geographic diversification is widespread across sectors, with no individual sector scoring higher than the top-rated European or North American levels. Using the Middle East and Asia-Pacific as benchmark thresholds in our ranking, there are clearly three groups of sectors:

- **Sectors with very low social risk exposure, including Real Estate and Utilities**, mainly operating in highly industrialised countries.
- **Sectors with average social risk exposure, encompassing Banks, Consumer Goods, Telecommunications, Retail, Travel & Leisure and Financial Services.**
- **Sectors with high social risk exposure, e.g. mainly industrial sectors with high exposure to social issues specific to developing countries such as Oil & Gas and Basic Resources.**
- **The Chemicals sector profile is more exposed than initially thought.**
- **The Auto sector is also highly exposed**, mainly as a result of the geographic diversification of client basis and production sites (offshoring).

Sector & geographic levels of HDI (Human Development Index)



Source: SG Equity Research, UN (2008 – Data 2006), Worldscope

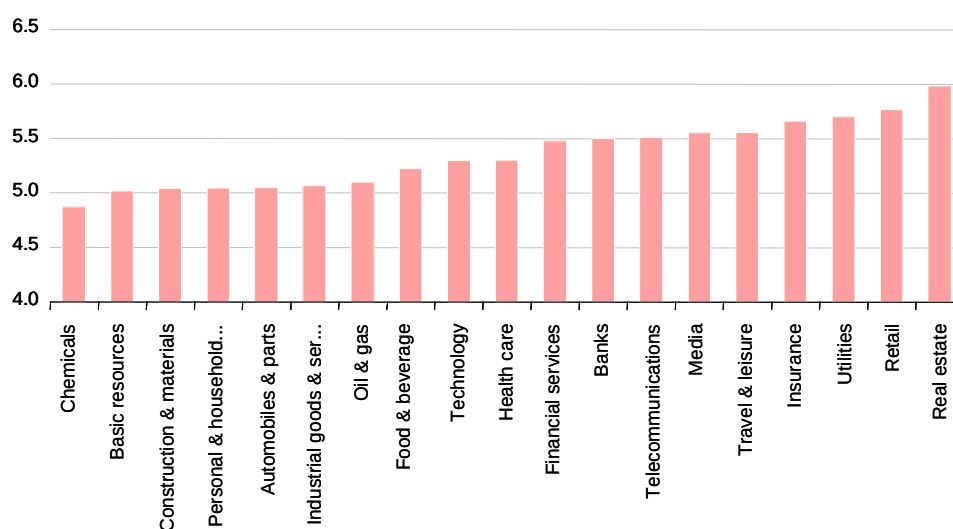
Stakeholder Capital - local governance, corruption & human development

We understand stakeholder capital to be the relationship between a company and all its external stakeholders (except for shareholders for the purposes of our analysis). This encompasses clients, suppliers and contractors, local communities, governments and authorities. To cope with the risks associated with these stakeholders, we believe it necessary to introduce objective indicators that identify possible damaging or asymmetric relations, where the company could benefit / suffer vis-à-vis its relationship with stakeholders.

Business standards, corruption & human development

This is why we are including an assessment of geographic exposure to countries with low standards of governance, corruption and human development. We do not believe *per se* that companies operating in countries with low standards are inherently riskier but that there is an increased risk of cultural misunderstanding, ease of doing business and reputational pressure. The main sources of relevant information and data are the World Bank's country assessments (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption), the UN's Human Development Index and Transparency International's tracking of corruption and bribery at national or sector level.

Stakeholder capital risk exposure by sector (0 = high risk, 10 = low risk)



Source: SG Equity Research

Scoring all companies on the three main dimensions across sectors, the aggregated scores show that:

- **Industrial sectors appear potentially most at risk**, with the exception of Utilities, due to their strong presence in industrialised countries.

Stakeholder Capital Risk Indicators – details

Theme	Sub-themes	Indicators	Ratio	Scope	Source	Update	Scoring scope	Scoring method	Objective
Corruption	Corruption and bribery	Corruption level perception	Sector perception	Global	Transparency International	Yearly	Sub-sector relative vs. Universe	Direct scoring	Indirectly assess the level of sector corruption as perceived by stakeholders (TI inquiry)
Human development	Income and sales exposure to level of country development	Income geographic-weighted level of HDI	HDI score weighted by income	Global	UN for HDI, Worldscoop for geog. distribution of income	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Assess the profitability exposure to human development level depending on the country in which a company operates
		Sales geographic-weighted level of HDI	HDI score weighted by sales	Global	UN for HDI, Worldscoop for geog. distribution of sales	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Assess the sales exposure to human development level depending on the country in which a company operates
Local governance	Income and sales exposure to level of country governance (voice & accountability, political stability & absence of violence, government effectiveness, regulatory quality, rule of law, control of corruption)	Income geographic-weighted level of HDI	WB score weighted by income	Global	UN for country governance, Worldscoop for geog. distribution of income	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Assess the sales exposure to governance concerns depending on the country in which a company operates
		Sales geographic-weighted level of HDI	WB score weighted by sales	Global	UN for country governance, Worldscoop for geog. distribution of sales	Yearly	Average relative vs. Universe Max relative vs. Universe Min relative vs. Universe	Relative ranking	Assess the sales exposure to governance concerns depending on the country in which a company operates

Source: SG Equity Research

Geographic exposure is key

We believe that risk analysis – from an SRI point of view as well as a traditional point of view – must encompass geographic exposure in terms of sales, assets and revenues. We have extracted and homogenised data from company sources so as to analyse this risk exposure and to use these data as inputs to be combined with other forms of exposure (national human development levels, water scarcity and availability levels, business standards and rules). In the three following tables we sum up for each sector sales, assets and income exposure according to geographic origin.

Sales: geographic exposure, 2007

	North America	America / Asia - Pacific Latin America	Asia (others)	Europe	EMEA	Middle East	Africa	Others	Total
Automobiles & Parts	28.1%	5.0%	20.5%	3.7%	41.9%	0.4%	0.0%	0.2%	100.0%
Banks	10.2%	4.6%	21.4%	0.8%	59.2%	2.3%	0.2%	0.7%	100.0%
Basic resources	18.0%	8.7%	28.7%	10.4%	26.7%	0.6%	0.1%	3.4%	100.0%
Chemicals	22.5%	5.4%	31.1%	6.8%	32.5%	1.0%	0.0%	0.4%	100.0%
Construction & Materials	16.9%	4.8%	19.0%	4.3%	51.3%	0.5%	0.6%	1.3%	100.0%
Financial services	45.9%	4.6%	24.7%	3.0%	21.4%	0.0%	0.0%	0.2%	100.0%
Food & Beverage	28.7%	15.9%	15.5%	6.2%	30.5%	1.8%	0.0%	0.7%	100.0%
Health care	58.4%	6.1%	13.4%	0.8%	19.7%	1.5%	0.0%	0.1%	100.0%
Industrial goods & Services	26.9%	5.0%	30.8%	7.5%	26.2%	3.0%	0.4%	0.1%	100.0%
Insurance	35.1%	2.5%	8.0%	2.8%	49.3%	0.0%	0.0%	1.2%	100.0%
Media	54.3%	0.9%	16.6%	0.6%	26.2%	0.1%	0.0%	0.7%	100.0%
Oil & Gas	42.9%	2.0%	10.2%	4.3%	35.2%	0.8%	0.9%	1.9%	100.0%
Personal & Household goods	24.2%	7.1%	29.7%	6.9%	28.1%	4.1%	0.0%	0.0%	100.0%
Real estate	4.6%	0.0%	0.0%	0.0%	95.4%	0.0%	0.0%	0.0%	100.0%
Retail	65.9%	1.0%	8.0%	2.0%	22.8%	0.0%	0.0%	0.1%	100.0%
Technology	30.7%	12.3%	26.1%	6.2%	21.6%	3.1%	0.0%	0.0%	100.0%
Telecommunications	37.8%	5.4%	8.0%	0.7%	47.2%	0.0%	1.0%	0.0%	100.0%
Travel & Leisure	19.1%	3.6%	30.1%	3.2%	42.2%	1.3%	0.3%	0.1%	100.0%
Utilities	35.7%	3.5%	4.6%	0.2%	55.9%	0.0%	0.1%	0.0%	100.0%
Average	34.6%	4.8%	18.3%	4.1%	35.4%	1.2%	0.3%	0.6%	100.0%

Source: SG Equity Research, companies (Worldscope), DJ Stoxx

Equity Research

Assets: geographic exposure, 2007

	North America	America / Latin America	Asia - Pacific	Asia (others)	Europe	EMEA	Middle East	Africa	Others	Total
Automobiles & Parts	28.2%	3.2%	29.5%	2.2%	36.6%	0.0%	0.0%	0.1%	0.1%	100.0%
Banks	11.2%	7.1%	18.9%	0.6%	59.7%	1.6%	0.1%	0.4%	0.4%	100.0%
Basic resources	23.6%	14.4%	22.1%	4.2%	25.3%	0.6%	0.0%	4.9%	4.9%	100.0%
Chemicals	19.5%	5.0%	31.8%	5.3%	36.6%	0.9%	0.0%	0.4%	0.4%	100.0%
Construction & Materials	15.3%	4.4%	16.6%	3.5%	58.5%	0.3%	0.2%	0.6%	0.6%	100.0%
Financial services	26.1%	6.2%	36.1%	3.1%	24.4%	0.0%	0.0%	2.0%	2.0%	100.0%
Food & Beverage	25.4%	18.0%	13.6%	4.7%	35.5%	1.8%	0.0%	0.5%	0.5%	100.0%
Health care	49.7%	6.3%	10.6%	0.3%	31.8%	1.2%	0.0%	0.0%	0.0%	100.0%
Industrial goods & Services	29.6%	3.3%	24.9%	5.4%	36.1%	0.7%	0.1%	0.0%	0.0%	100.0%
Insurance	28.0%	0.5%	3.9%	2.3%	61.9%	0.0%	0.0%	1.7%	1.7%	100.0%
Media	64.2%	0.6%	11.0%	0.2%	21.8%	0.0%	0.0%	1.1%	1.1%	100.0%
Oil & gas	47.8%	3.5%	8.9%	2.5%	26.3%	1.0%	0.9%	4.6%	4.6%	100.0%
Personal & Household goods	27.0%	4.5%	30.4%	4.9%	30.6%	2.7%	0.0%	0.0%	0.0%	100.0%
Real estate	4.2%	0.0%	0.0%	0.0%	95.4%	0.0%	0.4%	0.0%	0.0%	100.0%
Retail	54.1%	1.1%	10.6%	2.7%	31.2%	0.0%	0.0%	0.1%	0.1%	100.0%
Technology	33.5%	6.0%	29.3%	5.0%	25.5%	0.6%	0.0%	0.0%	0.0%	100.0%
Telecommunications	53.0%	2.6%	8.6%	0.9%	35.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Travel & Leisure	13.8%	0.9%	54.9%	2.4%	26.8%	1.1%	0.0%	0.0%	0.0%	100.0%
Utilities	47.5%	3.3%	6.8%	0.2%	42.1%	0.0%	0.1%	0.0%	0.0%	100.0%
Average	19.8%	5.7%	17.3%	1.4%	53.2%	1.1%	0.1%	0.7%	0.7%	100.0%

Source: SG Equity Research, companies (Worldscope), DJ Stoxx

Income: geographic exposure - 2007

	North America	America / Latin America	Asia - Pacific	Asia (others)	Europe	EMEA	Middle East	Africa	Others	Total
Automobiles & Parts	24.7%	3.1%	10.4%	10.4%	51.4%	0.0%	0.0%	0.0%	0.0%	100.0%
Banks	15.0%	11.9%	1.3%	1.3%	66.6%	2.2%	0.9%	0.3%	0.3%	100.0%
Basic resources	25.3%	23.8%	9.2%	9.2%	5.5%	0.0%	0.0%	13.5%	13.5%	100.0%
Chemicals	52.8%	10.5%	3.1%	3.1%	30.3%	0.0%	0.0%	0.2%	0.2%	100.0%
Construction & Materials	26.2%	13.7%	6.6%	6.6%	42.0%	2.5%	0.2%	1.1%	1.1%	100.0%
Financial services	69.4%	-2.5%	5.0%	5.0%	18.4%	0.0%	0.0%	2.3%	2.3%	100.0%
Food & beverage	27.9%	26.7%	4.2%	4.2%	26.7%	6.1%	0.0%	2.1%	2.1%	100.0%
Health care	55.0%	10.6%	0.5%	0.5%	33.2%	0.0%	0.0%	0.1%	0.1%	100.0%
Industrial goods & Services	51.4%	4.1%	11.6%	11.6%	18.7%	2.5%	0.1%	0.0%	0.0%	100.0%
Insurance	37.2%	6.6%	1.5%	1.5%	44.5%	0.0%	0.0%	4.3%	4.3%	100.0%
Media	81.5%	0.7%	0.1%	0.1%	17.6%	0.0%	0.0%	0.0%	0.0%	100.0%
Oil & gas	70.5%	1.3%	0.9%	0.9%	14.0%	3.1%	4.3%	2.6%	2.6%	100.0%
Personal & Household goods	45.2%	8.2%	7.1%	7.1%	25.9%	6.6%	0.0%	0.0%	0.0%	100.0%
Real estate	8.8%	0.0%	0.0%	0.0%	90.4%	0.0%	0.8%	0.0%	0.0%	100.0%
Retail	71.1%	1.2%	1.7%	1.7%	24.2%	0.0%	0.0%	0.0%	0.0%	100.0%
Technology	58.6%	14.0%	1.5%	1.5%	22.5%	1.9%	0.0%	0.0%	0.0%	100.0%
Telecommunications	68.9%	2.4%	0.1%	0.1%	25.9%	0.0%	2.5%	0.0%	0.0%	100.0%
Travel & Leisure	46.8%	4.2%	3.2%	3.2%	41.3%	0.9%	0.1%	0.1%	0.1%	100.0%
Utilities	50.5%	5.1%	0.3%	0.3%	43.8%	0.0%	0.2%	0.0%	0.0%	100.0%
Average	48.7%	7.9%	3.2%	3.2%	32.2%	1.7%	0.7%	1.2%	1.2%	100.0%

Source: SG Equity Research, companies (Worldscope), DJ Stoxx

Extra-financial risk effect – growth for value stocks, value for growth stocks?

SRI-P/E ratings, the higher the SRI risk, the worse the P/E

Using the SG SRI Navigator's new set of 1,500 ratings as well as data provided by our third-party research data partner Asset4, we have crossed P/E and SRI ratings. P/E ratios are calculated as averages over different periods: P/E 1Y (last 12 months (1Y)), P/E 3Y (last 36 months), P/E 5Y (last 60 months) and P/E 10Y (last 120 months).

So as to avoid different potential biases linked to P/E, we have normalised each set of P/E vs. sub-sector, country and size. At the end, we compare normalised P/E vs. 1, the perfect neutral P/E.

We then split the results into two categories: **Growth stocks** and **Value stocks** (as of February 2009), according to either the classification used by DJ Stoxx (DJ Stoxx TMI) or MSCI (MSCI World Index). Our results using these global data sets are:

- No apparent clear change in the risk premium in favour of well-SRI rated companies
- As expected, the higher the SRI risk, the worst the P/E

SG SRI Ratings – distribution

Super-sector name	A	B	C	D	E	Grand total
Automobiles & Parts	14%	21%	31%	14%	19%	100%
Banks	13%	20%	40%	20%	8%	100%
Basic resources	14%	22%	22%	25%	17%	100%
Chemicals	16%	25%	20%	13%	26%	100%
Construction & Materials	13%	20%	24%	22%	22%	100%
Financial services	14%	24%	27%	19%	17%	100%
Food & Beverage	13%	15%	38%	25%	10%	100%
Health care	12%	25%	32%	20%	12%	100%
Industrial goods & Services	17%	19%	20%	23%	20%	100%
Insurance	10%	22%	47%	13%	7%	100%
Media	17%	19%	27%	21%	17%	100%
Oil & Gas	19%	13%	30%	19%	19%	100%
Personal & Household goods	18%	26%	16%	16%	24%	100%
Retail	15%	17%	32%	23%	13%	100%
Technology	17%	19%	32%	21%	12%	100%
Telecommunications	8%	23%	46%	21%	3%	100%
Travel & Leisure	22%	16%	21%	26%	16%	100%
Utilities	18%	18%	29%	19%	16%	100%
Real estate	17%	25%	36%	13%	9%	100%
Grand total	15%	20%	29%	20%	15%	100%

Source: SG Equity Research

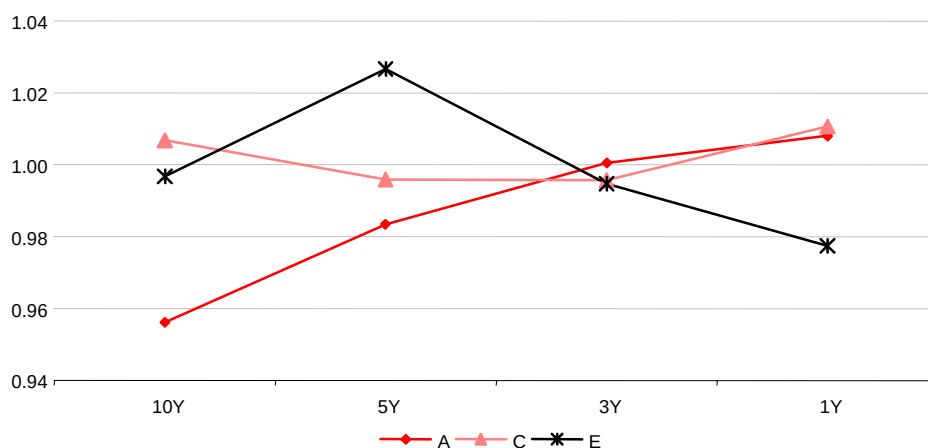
Risk premiums – average P/E 5Y (normalised sector / country)

Super-sector name	A	B	C	D	E	Grand total
Automobiles & Parts	0.90	1.04	0.99	1.09	0.94	0.99
Banks	0.95	0.94	0.93	0.98	0.94	0.94
Basic resources	1.19	0.98	1.03	1.01	1.00	1.03
Chemicals	1.12	1.05	0.92	1.02	0.87	0.99
Construction & Materials	0.83	1.10	0.90	0.97	1.07	0.99
Financial services	0.89	1.01	1.09	0.91	1.00	0.99
Food & Beverage	0.93	0.94	0.95	1.06	1.26	1.00
Health care	0.99	1.01	0.94	0.99	0.99	0.98
Industrial goods & Services	0.92	1.01	0.99	0.99	1.04	0.99
Insurance	1.21	0.86	0.97	1.10	1.16	1.00
Media	0.99	1.09	1.05	1.04	0.89	1.01
Oil & Gas	0.91	0.95	1.03	0.89	1.07	0.98
Personal & Household goods	0.91	0.92	0.99	1.07	0.98	0.97
Retail	0.99	0.88	1.07	0.93	1.05	0.99
Technology	1.01	0.93	1.00	1.27	0.79	1.01
Telecommunications	1.03	0.81	0.91	1.25	2.11	0.99
Travel & Leisure	1.09	0.80	1.02	0.87	1.20	0.98
Utilities	0.92	0.96	0.93	0.99	1.11	0.97
Real estate	0.95	1.04	1.08	1.01	0.91	1.02
Grand total	0.97	0.97	0.99	1.01	1.02	0.99

Source: SG Equity Research, Datastream / IBES

From the observed normalised P/Es above, the only clear trend which emerges is the opposite of what we initially expected – **the better the SRI rating is, the worse the P/E** (a “good” P/E is above 1, as it means that inversely Cost of Equity is lower). **The good news is that over the last 10 years the P/E tended to improve for A-rated companies**, while it has deteriorated for E-rated companies.

Risk premiums – A (best) rated vs E (worst) rated companies



Source: SG Equity Research, Datastream / IBES

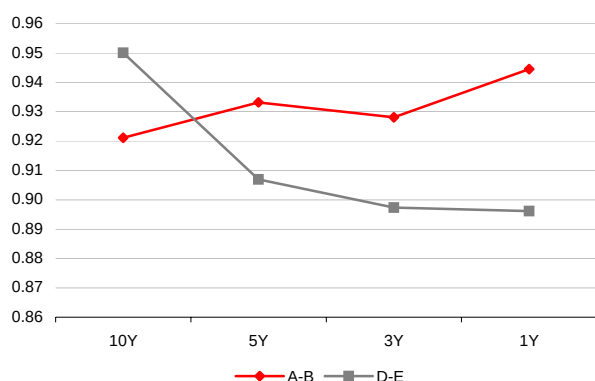
Value/Growth styles could interfere with SRI effect

We have crossed SRI ratings and Value/Growth styles, both for a global universe (MSCI World) and European universe (DJ Stoxx TMI). Our results are consistent: we see a parallel positive “SRI effect” on P/E.

- Value stocks with good SRI ratings tend to have higher P/E (more growth “inside”?) than low-rated stocks
- Growth stocks with good SRI ratings tend to have lower P/E (less risk “inside”?) than low-rated stocks

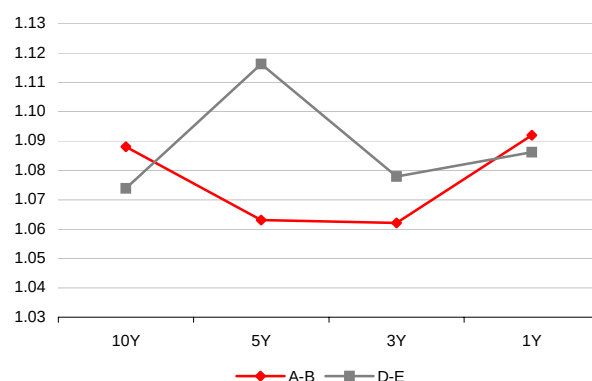
Over the last years the two trends mentioned above appear to have become more characteristic.

Value stocks (world) – SRI effect on P/E



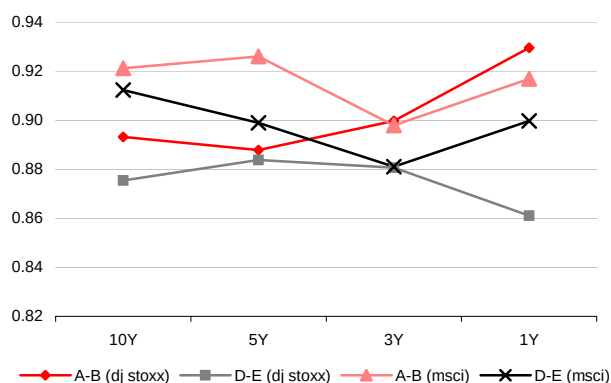
Source: SG Equity Research, MSCI World (Value / Growth)

Growth stocks (world) – SRI effect on P/E



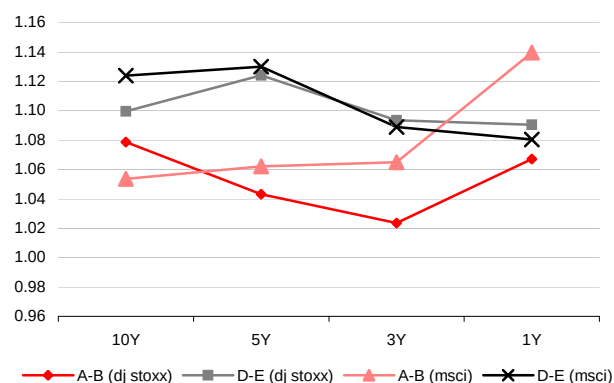
The two charts above illustrate the style difference for global coverage according to the MSCI classification. The following two charts give results for European stocks only, one according to MSCI's classification and the other according to DJ Stoxx's classification. In both cases we see a confirmation of the general trends already identified – a higher relative P/E over the last three years for well rated SRI companies, whether Value or Growth.

Value stocks (Europe) – SRI effect on P/E



Source: SG Equity Research

Growth stocks (Europe) – SRI effect on P/E



The following table focusing on average P/E for the last five years sums up all our previous observations:

An apparently negative SRI effect: On average, A-B rated stocks have a normalised P/E of 0.98 vs. 1.02 for D-E rated companies, this being consistent across SRI Risk quintiles.

However, there is a positive or more complex SRI effect as soon as we take into account the two other variables:

- **EBIT effect on P/E visible**, with P/E increasing from 0.97 to 1.07 across the SRI Risk quintiles (reminder: our SRI Risk assessments includes EBIT as a key factor)
- **A Style effect, with an average higher P/E for well-SRI rated Value stocks** (0.93 above 0.91) and **lower P/E for well-SRI rated Growth stocks** (1.06 vs 1.12)

P/E (normalised) – SRI Effect / Style Effect / EBIT Effect

Aggregated SRI ratings (A= highest)	MSCI style	SRI Risk – Quintiles (1: high risk / 5: low risk)					Grand total
		1	2	3	4	5	
A-B (top)	Value	0.90	0.96	0.95	0.94	0.93	0.93
	Growth	1.02	1.07	1.10	1.06	1.07	1.06
A-B total		0.93	0.99	1.02	0.99	0.99	0.98
D-E (bottom)	Value	0.94	0.86	0.88	0.94	0.89	0.91
	Growth	1.08	1.12	1.05	1.10	1.22	1.12
D-E total		1.01	0.98	0.99	1.03	1.16	1.02
Average		0.97	0.99	1.01	1.01	1.07	1.00

Source: SG Equity Research, Datastream / IBES, MSCI

Appendix 1: SG scoring system on the quality of management

The following appendix outlines the SG SRI scoring system in place on the quality of management on Environment, Governance, Human Capital and Stakeholder Capital criteria (cg. SG's reports *Back to Basics* et. al.).

Unbiased scorings on the quality of ESG management

The philosophy

- A quantitative approach based upon outsourced ESG data collection
- A qualitatively-adjusted rating
- A dialogue with SG sector teams
- Universe: focus on the DJ Stoxx 1800 benchmark

The four criteria

- Environment
- Governance
- Human Capital
- Stakeholder Capital

The innovation – objective biases can be objectively eliminated

We deem any score which is not affected by a factor not directly linked to SRI issues an unbiased score. We thus consistently reduce / eliminate four traditional SRI biases:

- Sector bias (DJ Super Sector)
- Size bias (measured by the market capitalisation)
- Country of Origin bias
- Free float bias

The rating model

Our calculations are based on data provided by our partner Asset 4 for a global universe of companies – on four extra-financial criteria. We then break down the initial SRI scores into two separate sub-scores:

- A predicted score, which takes account of country and size biases, **as a measure of stakeholder pressure.**
- A residual score, **as a measure of stakeholder management** (i.e. the specific efforts undertaken by the company's management to tackle stakeholder pressure).

$$\text{Initial Score} = \text{Predicted Score} + \text{Residual Score (1)}$$

$$(1) < = > (2)$$

$$\text{SRI Score} = \text{Stakeholder Pressure Score} + \text{Residual Management Effort Score (2)}$$

For instance, as we do not consider company size relevant to SRI, we see no reason for size to affect SRI scores. In our view, if size were relevant to SRI scores, on average, the management of large companies would be more SRI and stakeholder-oriented than management from small and medium companies, and for us, this is not the case.

Step-wise regression model

Principle: normalise the SRI score versus the factor average score, then repeat the process with the new SRI score until the factor F average tends significantly to zero.

$$X_1 = X_0 - X_0^{F=size}$$

$$X_2 = X_1 - X_1^{F=country}$$

$$X_3 = X_2 - X_2^{F=free-float}$$

$$X_4 = X_3 - X_3^{F=sector}$$

$$X_n = X_{n-1} - X_{n-1}^{F_k}$$

The formula can be summarised as:

$$X_n = X_0 - \sum_{i=1}^n \frac{F_{mod(i)-k}}{n-1}$$

Where:

- x_0 = initial management scoring (might be a sector-based z-score)
- x_n =residual management scoring after n reduction
- F_k = k-th specified factor that might lead to an SRI scoring bias, namely:
 - Size (market capitalisation)
 - Country of origin
 - Free float
 - Sector

The order has no specific importance in terms of final result. For practical reasons, k is calculated modulo (i), which means that at least n must be equal or above k.

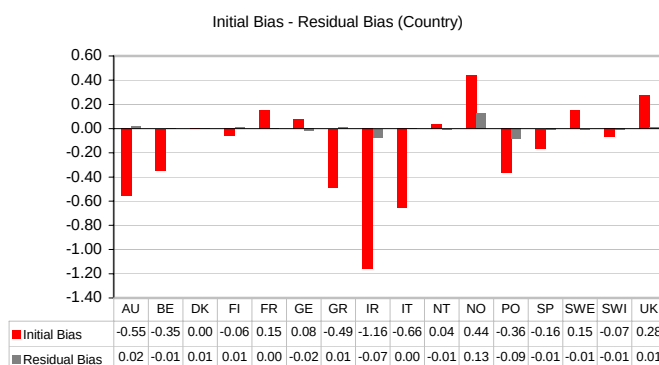
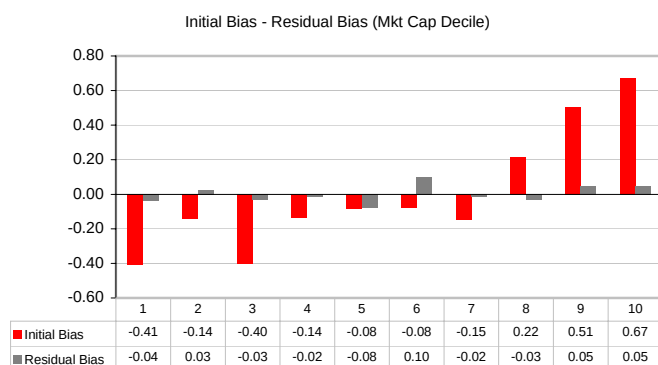
- $X_k^{F_k}$ = average scoring by factor F_k

The iterative stepwise regression process is carried on until $X_{n-1}^{F_k} \cong 0$.

Independent residual SRI scores

In the following charts, we present the results of our statistical bias reduction to obtain an independent, residual SRI score. This residual score can be considered to be an optimised triple best-in-class-approach score – i.e. free of biases relating to sector, country, free float and size.

Reducing objective bias



Source: SG Equity Research

Appendix 2: ASSET4 overview, provided by ASSET4

The following appendix outlines the methodology for Asset4 – SG’s third-party data provider partner for the SRI scoring system in place to assess the quality of management with regard to Environment, Governance, Human Capital and Stakeholder Capital.

Asset4

ASSET4 is the leading provider of objective, comparable and auditable extra-financial information. ASSET4 provides professional investors and corporate executives access to the world’s largest database of ESG information, and the analysis tools to integrate that information into their everyday decision making. The ASSET4 information and tools enable clients to improve investment performance, reduce risk, develop innovative products, drive down research costs and monitor the ESG aspects of their portfolios and companies.

The ASSET4 system enables professional investors to:

- Improve investment performance and reduce risk by integrating ESG factors to create a holistic view of corporate performance
- Drive down the cost of research by delivering systematic, verified and integrated information
- Increase revenue by enhancing investment research capabilities and empowering new, innovative financial products incorporating ESG aspects
- Monitor portfolios based on ESG-related risks and opportunities
- Add long-term value by establishing objective engagement overlays

Information framework

ASSET4 provides transparent, comparable and auditable ESG information based on a default framework consisting of 250 key performance indicators and 900 individual data points and their original data sources, which can be tailored to meet investors’ specific investment objectives and reporting requirements.

Customisation and the excel add-in

The ASSET4 information framework provides a default and holistic perspective covering the full range of issues affecting corporate performance. Within the AssetmasterProfessional™ system or by using the Excel Add-In functionality, users have the ability to completely customise this default view and “slice and dice” the information into their standard reports and analyses.

Universe

The current universe of over 2,600 corporations provides users a unique capability to compare and benchmark companies with their peers, sectors and industries on all levels. At present the universe includes the S&P 500, MSCI Europe, FTSE 350 and the MSCI World Index. The current universe of over 2,600 corporations provides users a unique capability to compare and benchmark companies with their peers, sectors and industries on all levels. At present the universe includes the MSCI World, S&P 500, MSCI Europe, FTSE 350 and major country indices.

Company

ASSET4 has 220 employees and is headquartered in Zug, Switzerland with locations in London, New York, Mauritius and India. ASSET4 is a proud signatory of the UN’s Principles

for Responsible Investment and a contributing member of organisations and initiatives such as UNEP-FI, Eurosif, UKSIF, USSIF, Nachhaltiges Investment and the Ceres Coalition in the US. For more information, please visit www.asset4.com.

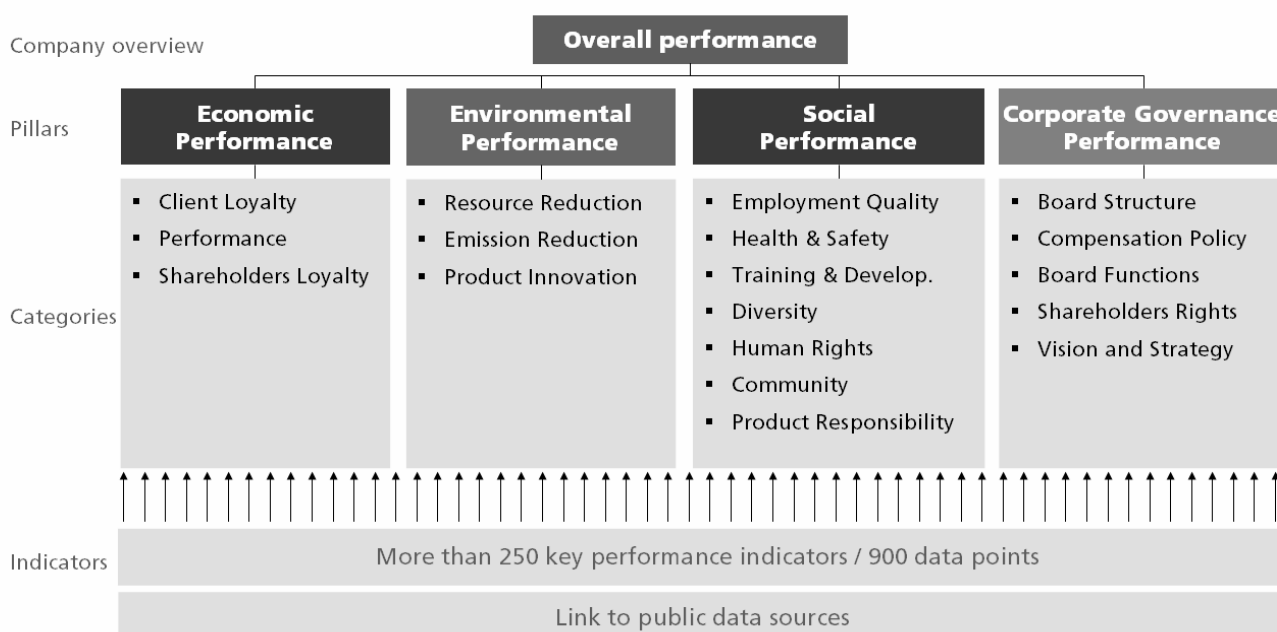
ASSET4 framework and organisation

The ASSET4 framework has been developed by ASSET4 and tested in cooperation with leading executives, global asset managers and experts associated with Gesellschaft für Organisation und Entscheidung m.b.H (GOE)/working at Swiss Institute of Technology (ETH), as well as experts from the International Institute for Management Development (IMD) and Copenhagen Business School (CBS). Financial data are supplied by Thomson Reuters, and approximately 10,000 global news sources are scanned daily with LexisNexis.

ASSET4's system is based on publicly available information collected by an outsourcing partner in India from company websites, reports, filings and global news sources. Company monitoring and data quality control is done by ASSET4's subsidiary in Mauritius.

For each company, the ASSET4 model consists of 900 master data points. A subset of these data points are calculated into approximately 278 key performance indicators that are organised in eighteen categories within four pillars: Economic, Environmental, Social and Corporate Governance.

ASST4 framework



Source: Asset4

Categories

Within the four pillars, there are a total of 18 categories consisting of more than 250 key performance indicators. Each of these structures is there by default, but users can combine categories across pillars to generate their own customised ratings and view of corporate performance. These views can reflect industry or sector-specific opportunities, risk exposure, general investment themes, etc.

Key performance indicators and data points

Each of the 18 sub-categories includes a multitude of indicators. This data is then organised into two types of indicators – driver or policy indicators and outcome indicators – in order to provide a balanced framework for assessing overall performance.

Driver indicators offer a view of what corporations claim to be doing, measure whether a company has "best practice" management tools in place and is committed to their implementation. Those driver indicators systematically look at:

- Policy: whether a company has a policy in place regarding a specific issue.
- Implementation: whether a company has best practices management tools in place to ensure the implementation of a policy.
- Monitoring: whether the company monitors the implementation of a policy, through internal or external audits.
- Improvements: whether the company has set targets on specific issues and reports on the progress made vis-à-vis these objectives.

Outcome indicators offer a view of what corporations currently do by examining a company's actual initiatives as well as quantitative measures of company performance (health and safety incidents or the turnover rate of employees, for example). In addition, outcome indicators include an overview of various controversies or criticisms of company actions that may exist in media sources or according to NGOs. For a complete list of indicators, please see the appendix.

Some examples of data points include Policy on Reducing CO₂, CO₂ Emissions in tonnes, and Board Member Salary, while their corresponding indicators include Policy on Reducing Emissions (Driver), CO₂ per million USD of Sales (Outcome), and Total Board Compensation (Outcome).

The AssetmasterProfessional™ news functionality enables users to dynamically monitor newsflow for any or all of the eighteen data categories within the system, such as controversies, human rights, emission reduction and health & safety. These criteria can be monitored for a single company, portfolio, sector or geographic region.

Data process & data quality

ASSET4 strives to ensure a high-quality product. One of the key strengths that separates ASSET4 from other service providers in the ESG field is the enormous effort undertaken to ensure that the extra-financial data it provides is both complete and accurate. ASSET4 is the only company that goes as far as to provide raw data sources and content (e.g. text, title, page number, URL and publisher) of all collected data, which is quality controlled by the Mauritius team.

ASSET4 currently employs 170+ research professionals in India and Mauritius. The core data research is performed by over 90 analysts from a partnership in India, who are organised on vertical industry lines. This team focuses exclusively on data collection. After the data collection, all information is validated by the ASSET4 team in Mauritius.

80 individuals conduct company-specific analysis in Mauritius. The ASSET4 analysts are organised by industry. Each analyst covers between 20 and 30 companies, which remain the same over the year so as to deliver in-depth knowledge of the company and its reporting. This

allows a systematic and easy update, with any mistakes corrected from the outset. The teams' main task, especially as far as the quality control unit in Mauritius goes, is to ensure data quality, completeness and homogeneity.

Controversial news is collected by a dedicated news team which is trained for this specific task. All analysts enjoy substantial support from partners such as Thomson Reuters for the economical data points, Lexis Nexis for ESG news, corporate register for CSR reports, etc.

Determining scores and ratings

Once Asset4 has found values for all relevant indicators, all numerical indicators are initially transformed into z-scores and then normalised. The z-score for an indicator shows how far and in what direction that indicator deviates from its distribution's mean, expressed in units of its distribution's standard deviation. By giving all numeric indicators of the ASSET4 data the same mean and standard deviation, the indicators can be compared directly, even if there are various units of difference in the absolute values.

In the second step of the process, the z-values are normalised to produce a distribution in which the highest value (best value) gets the value 1 and the lowest values gets the value 0. This is done to enable all values to be expressed in percentages. The normalisation is done by transforming the standard normal distribution into a cumulative normal distribution (CND). This method yields a company ranking system that is comparable across all indicators, categories, pillars and the ASSET4 Equal-Weighted Rating.

After having calculated the scores, the companies are distributed into the twelve ASSET4 rating classes called A, B, C, D, with subdivisions in + and -, giving twelve classes that represent different ratings for the performance of a company. The CND is used in order to construct a system where not all companies belong to the classes in the middle (the rating intervals of the average companies should be smaller than for those companies at the edges of the distribution). Having about the same number of companies for every class allows for better differentiating between the companies.

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