For Professional Investors only

THE IMPACT OF ESG INVESTING IN EMERGING MARKET EQUITIES

CANDRIAM
A NEW YORK LIFE INVESTMENTS COMPANY

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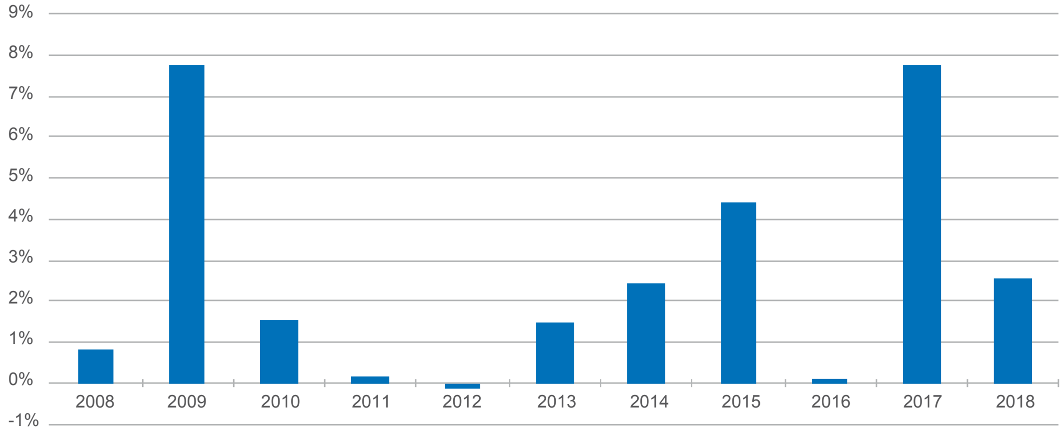
WHY ESG MATTERS IN EMERGING MARKETS

Investing according to Environmental, Social and Governance (ESG) criteria is increasingly embraced by investors in developed markets. Integrating ESG factors in Emerging Markets can present more of a challenge. Yet the attraction of innovative, higher-growth markets remains, and EM markets are showing evidence of positive change on ESG issues. For investors with an objective of positive social and environmental impact, these can matter as much as financial return. For most investors a central question is: Do ESG factors add to, detract from, or have no effect on financial returns in EM equities?

> *Persistent result: The Candriam ESG Eligible Universe outperformed the broad index in gross terms in ten out of eleven years.*

Excess return by year -- Candriam ESG Eligible universe versus MSCI© EM Index
Excess total gross return, cap-weighted, in USD



Source : Candriam ESG Team, MSCI (Weight) © 2019. All rights reserved; Factset Prices(Gross Total Return)

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Many investors are ready to become involved in emerging market companies. Practical strategies are needed to ensure both positive financial returns and protection of the social and natural capital of target investments.

Simply transferring processes suited to investing in developed markets to emerging markets is clearly inappropriate, we find. A far more holistic approach is necessary.

Since 2005, Candriam's dedicated Emerging Market and ESG teams have built a proprietary ESG Eligible investment universe and data set which can be used to test a specific ESG approach. Our rigorous analysis encompasses multiple fundamental elements based on proprietary analysis of company governance and risk of controversies.

We review the business activities of every company to assess their alignment with long-term sustainability challenges and opportunities.

Candriam's ESG team begins with the broad universe of all MSCI© Emerging Markets Index components, and analyses almost 90% of these by market capitalization -- the Candriam ESG Analysed universe of EM Companies.

Those which pass the proprietary analyses described on page 10 are included in the Candriam EM ESG Eligible universe. The investment managers for Candriam ESG strategies construct portfolios which consist solely of equities from the ESG Eligible universe. This universe is revised at least monthly.

Emerging Markets ESG Eligible universes by Candriam

MSCI© EM Equities Index	Candriam ESG Analysed Universe	Candriam ESG Eligible Universe	Investment Portfolios
Components of Broad Universe, about 1,158 equities as of Oct 2019	EM Companies analysed by Candriam ESG Analysts, about 900 equities	Approved by Candriam ESG Analysts, about 700 equities	Investments chosen by PMs from ESG Eligible Universe

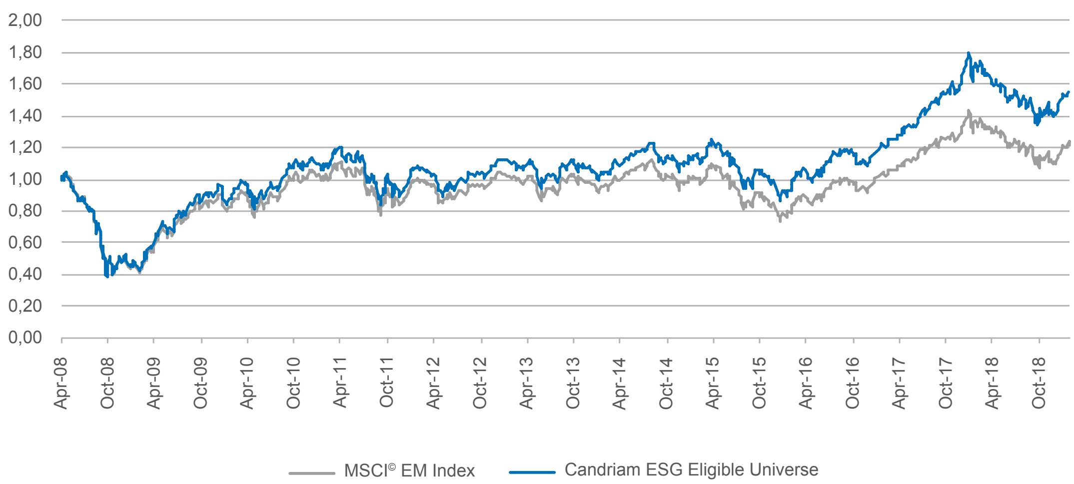
Data as of October, 2019 - Candriam ESG universe reviewed at least monthly.

For the balance of the document, we will typically refer to “ESG Analysed” and “Candriam ESG Eligible”.

INTEGRATING ESG IN EMERGING EQUITY INVESTMENTS CREATES VALUE

For many years poor data sets and a narrow traditional approach to emerging markets suggested that ESG strategies yielded no extra financial return, and may even have compromised investment performance. Our study demonstrates the reverse. We find integrating ESG factors in Emerging Equity investments, using an approach which is designed to create value, can enhance investment returns.

Candriam ESG Eligible universe versus MSCI© EM Index
Dividends reinvested, gross, cap-weighted, in USD



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Index 1.0 = April 2008; data from April 2008 to October 2018.

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On average the Candriam ESG Eligible universe has outperformed the MSCI© EM Index by 2.4% per annum over a 10-year period on a gross basis, with similar risk levels. While the amount of excess return varied by year, the direction remained stable. Of the 2.4% annualized outperformance, half was due to the selection of which company to analyse, and half to the result of our ESG analysis. It is noteworthy that historically, the result has been persistent; the excess return of the ESG eligible universe relative to the MSCI© EM Index was positive in ten of eleven years.

Return and Risk -- Candriam ESG Eligible universe versus MSCI© EM Index
Annual average total return, gross, cap-weighted, Apr 2008 to Oct 2018

	MSCI© EM Index	ESG Analysed	Candriam ESG Eligible
Annual Return	**3.60%**	4.80%	**6.00%**
Annual Volatility	**23.40%**	23.90%	**23.90%**
Sharpe Ratio	0.15	0.20	0.25

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It is part of the mission of the UN PRI that Responsible Investing "should, in fact, enhance risk and return characteristics".[1]

We examined the excess gross return of the ESG Eligible universe for consistency across Sector, Region, and Size. By industry, positive excess return was generated in ten of eleven sectors. Some was generated simply by the decision of which companies to analyse, but in eight of eleven sectors, the excess return of the ESG Eligible exceeded the excess return of the ESG Analysed. Over the ten-year period, more than 70% of the return of the MSCI© EM Index was generated by IT companies; this sector had one of the highest inclusion rates in the ESG Eligible universe (88% of IT companies analysed were ESG Eligible). By contrast, the Energy sector was the largest performance drag on the MSCI© EM Index over the period, while only half of the ESG Analysed companes were ESG Eligible, and half were Excluded.

For each of the four geographic regions, there was some positive excess return for the ESG Eligible universe, particularly for Asia. The excess returns for the three other regions were less pronounced, but over the period, two-thirds of the MSCI© EM Index components (by number) were in Asia. Excess return by size was also examined; ESG Eligible companies provided excess return versus the Index across all three size categories.

[1] UN PRI website, "What is responsible investment?" , https://www.unpri.org/pri/ an-introduction-to-responsible-investment/what-is-responsible-investment, accessed 6 November, 2019.

Size Definition

The **MSCI© Emerging Markets Index** covers approximately 85% of the free float-adjusted market capitalization in each emerging country. **Large-Cap**: Top 70% in the Index; **Mid-Cap**: Firms ranging in size less than the top 70%, but larger than the smallest 5%; **Small-Cap**: Bottom 5% in MSCI© EM Index. As a result, the Large-Cap threshold has historically been around US$5 billion. The Small-Cap threshold is around US$1 billion.

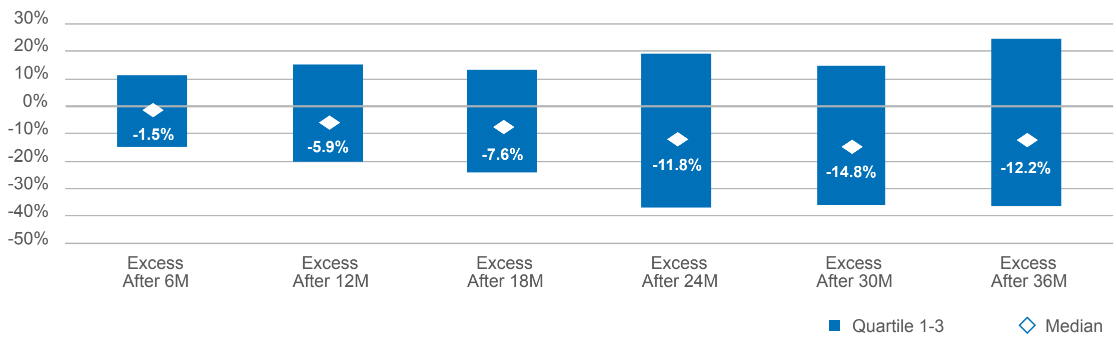
The investment process does not replicate the reference index which is mentioned for information purposes only.

THE IMPACT OF ESG DOWNGRADING

As well as evaluating the performance of equities included in the Candriam ESG Eligible Universe, we also monitored the implications of a stock being downgraded from ESG Eligible to ESG Excluded. That is, we determine whether there is value to the downgrade decision over the subsequent six months to three years. Using traditional event analysis methodology, we compute the relative performance of each company compared to the overall MSCI© EM Index.

We find that following a downgrade, there has historically been a negative excess return for periods beyond one year and up to three years. The lowest point is reached on the 30th month, with a median excess return of minus 14.8% on a gross basis. On average, the impact of a downgrade fades beyond this time horizon. We also note that the majority of excess returns for downgraded companies are negative. Some cases exhibit very large excess, but with very low frequency, which is why the mean may be much higher than the median.

Candriam ESG Eligible equity performance following internal downgrades
Gross excess return versus MSCI© EM Index



Source : Candriam ESG Team, MSCI (Weight) © 2019. All rights reserved; Factset Prices(Gross Total Return)

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VALE CASE STUDY

Vale S.A. provides a prime example of how ESG factors can be material and have direct financial impacts on companies.

Vale is a leading Brazilian multinational corporation in the metals and mining sector, and is one of the largest logistics operators in Brazil. The company has a history spanning several decades. Vale was founded in 1942 by the Brazilian Government and was partly privatized in 1997. Over the years, the company has acquired various entities making it today a global player with mining centers worldwide and a vast logistic network comprising ports and railroads.

The company enjoyed growth throughout the years, most notably the first decade of the 21st century, supported by economic growth and globalization. According to the company's reports, "between 2000 and 2010, Vale produced US$154.5 billion in value for its shareholders and distributed US$17.4 billion in dividends. Total shareholder returns were 38.2% per year between 2001 and 2010 – the highest rate among the largest mining companies" [1].

> *Vale's story is a prime example of how ESG factors can be material and have direct financial impacts on companies.*

It was shortly thereafter that the company began to appear in news headlines due to involvement in several incidents with impacts on local communities and their environmental surroundings.

- **2011** - Onça Puma Nickel Mine Operations & River Contamination: The company faced allegations of environmental contamination of the Iriir River in Brazil. Machinery and blasting activities contaminated the soil and eroded to the river impeding local communities from being able to fully use their land. As a result, the company was required to provide monthly compensation for nearly 800 families.

- **2015** - Dam Burst in Mariana, Brazil: The collapse of this dam, jointly owned with BHP Billiton, caused 18 fatalities[2] and was considered Brazil's worst environmental disaster at the time. The companies reached a settlement representing at least $1.8bn with the Brazilian Government.

- **January 2019** - Dam Collapse in Brumadinho, Brazil: Less than four years following the previous collapse, Vale's tailings dam in Brumadinho burst, sending a wave of mud and mining waste throughout the surrounding site and villages. This led to at least 60 fatalities with over 200 missing. Over 600 residents were displaced, and water supplies to thousands of residents in Minas Gerais state were disrupted due to the tailings spill.

Subsequent to the January 2019 incident, the share price plummeted by 24%, as illustrated below.

[1] http://www.vale.com/EN/aboutvale/book-our-history/Documents/livro/valehistorybook10.pdf , accessed 13 September, 2019.
[2] By July, the number of fatalities was 247, with 23 persons still missing.

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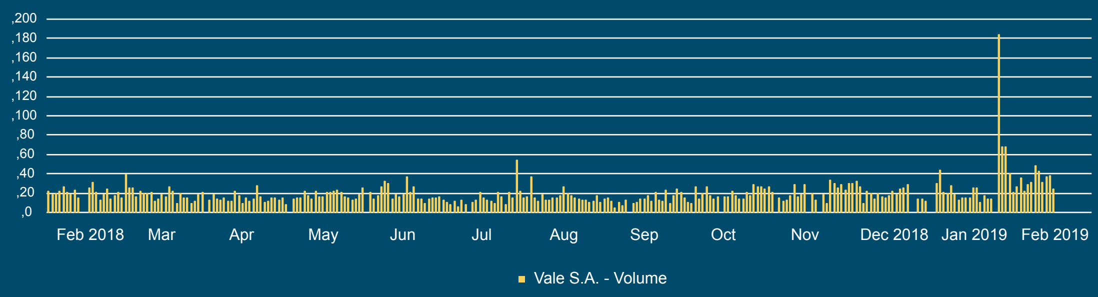
Share price of Vale equity leading up to Brumadinho dam failure



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There was indeed reason for concern by equity owners. Following the dam burst, the Brazilian Government froze approximately $3 billion of its assets to pay for potential human and environmental damages. This was coupled with fines from the Brazilian Institute of the Environment and Renewable Natural Resources and the local municipality. Lastly, the Brazilian Government opened an investigation into the company's responsibility in the affair.

The nature and frequency of these incidents have raised questions in the global financial press regarding the ESG practices of the company, most notably in terms of safety & health standards as well as governance. The company's second severe spill could have already indicated potential systemic issues in their infrastructure and/or tailings management system. Furthermore, the company's connections to the State could have possibly resulted in lenient regulatory oversight over the years. Prior to 2017, the company was in the control of the Brazilian state. Mining company operations naturally have a high level of risk for employees and surrounding communities. Therefore, deficiencies in operational processes, oversight and infrastructure can easily lead to severe consequences. Vale's story provides a case study of how ESG factors can be material and have direct financial impacts on companies.

Warning: This case study, dated as of March 2019, is not intended to be relied upon as a forecast, research or investment advice, and is not an investment recommendation, offer or solicitation to buy or sell any securities or to adopt any investment strategy. The figures and opinions set forth herein may change as subsequent conditions vary. This material may contain 'forward looking' information that is not purely historical in nature. There is no guarantee that any forecasts made will come to pass. Reliance upon information in this material is at the sole discretion of the reader. Past performance is not a reliable indicator of current or future results and should not be the sole factor of consideration when selecting a product or strategy.

FINANCIAL AND VALUATION CHARACTERISTICS

Stock selection for the Candriam ESG Eligible universe is based on ongoing assessments of a range of factors and risks; these can generate biases. Some are easier to identify and manage than others. In examining the characteristics of the ESG Eligible Universe over time, we first identify whether the financial characteristics of 'sustainable' companies included in the Candriam ESG Eligible universe differed materially from those of excluded, or 'non-sustainable' companies. We accomplish this by comparing the median of each universe from 2008 to 2018, on a monthly basis. We examine three groups -- the ESG Analysed universe, and each of its two subsets, the Candriam ESG Eligible Universe, and the Excluded companies. We compare each of these three to the full MSCI© EM Index. The conclusions are similar using the mean instead of the median, but the median displays more stability over the time period.

The Cash Flow to Sales and Cash Flow to Debt ratios are slightly higher in the Candriam ESG Analysed universe relative to the full MSCI© EM Index, and higher still in the Candriam ESG Eligible list of sustainable companies. This suggests that sustainable companies are generating better cash flow and presumably better shareholder value. The same applies to the Return on Equity ratio, a profitability measure.

Valuation ratios such as Price to Earnings, Price to Book, and Price to Sales in the ESG-Analysed universe are similar to those in the MSCI© EM Index, but those in the Candriam ESG-Eligible universe are slightly higher. This does vary by sector. The ESG Eligible universe is overweight in Consumer staples, Consumer discretionary, and IT, which typically carry higher valuations. The universe is underweight Energy, Industrials, and Materials. These are sectors which have traditionally averaged lower valuation metrics across the economic cycle.

Style Definitions

For each company in the MSCI© EM Index, the Candriam analytical team gathers the historical exposures to nine Bloomberg-defined styles, and compares the Candriam ESG universes to the Index based on equal-weighted universes. Bloomberg definitions are used because of the range of styles, the number of equities in their database, and the transparency of their methodology. Style exposures are defined by Bloomberg as Z-scores, ranging from -3 to +3. These are determined by reference to a global equity universe of approximately 100,000 equities across both Emerging and Developed markets. Bloomberg calculates Z-scores country by country.

STYLE TILTS

Over a decade of analyses by the Candriam team, the Candriam ESG Eligible universe has shown four significant style tilts, or biases, compared to the MSCI© EM Index. These are larger Size, lower "Value" style (higher average P/E), higher Growth, and higher Profitability. Each factor is defined according to the Bloomberg model (See BOX).

Within the MSCI© EM Index, the large Size components performed in line with the overall index. So a Size tilt should not have affected excess return. There was indeed a Size bias in the ESG Analysed companies, with a lesser Size bias in the Candriam ESG Eligible universe. The low "Value" and high Growth components of the Index were outperformers. The Candriam ESG Eligible universe had low "Value" and high Growth tilts; so the biases enhanced the performance relative to the Index.

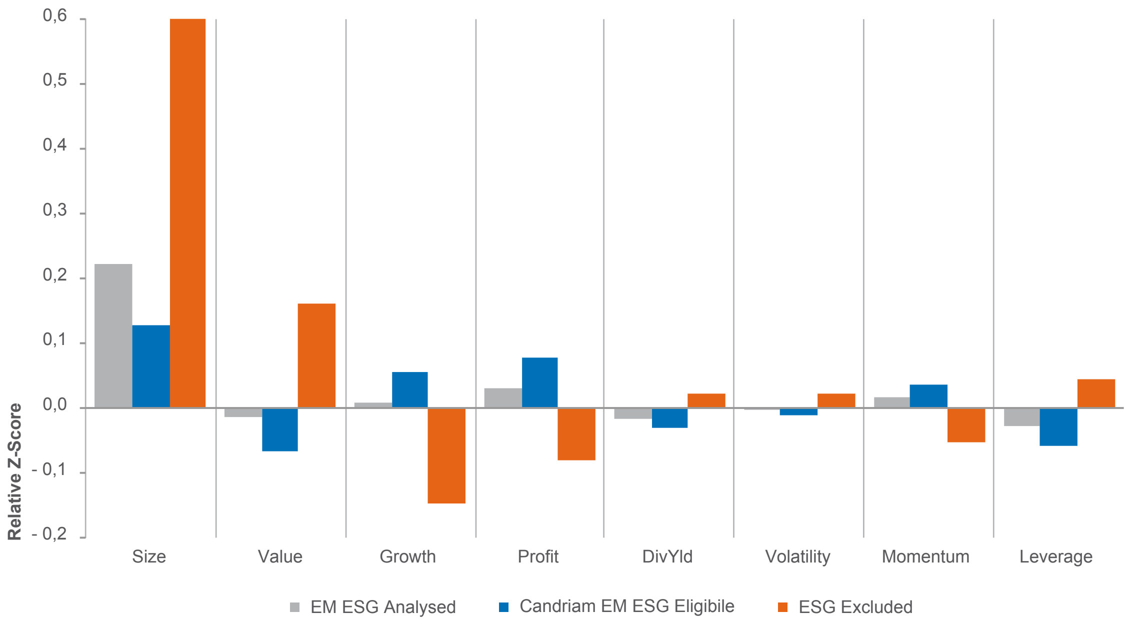
Why did these biases arise? The lower Size of ESG Eligible companies relative to all ESG Analysed companies may be due to the industry bias; Energy, Materials, and Industrial companies are more likely to be large, and more likely to fail ESG screens. The low "Value" bias could be that companies deemed more sustainable appear to be more expensive, and may carry somewhat higher P/E multiples.

In theory high Growth should generate excess equity returns, all else equal. Candriam ESG Eligible companies tilted more towards both a Growth and Profitability style than the ESG Excluded companies. It is part of our philosophy that incorporation of ESG factors should help identify issuers with better risk/return characteristics.

The results of analysis of other styles was inconclusive. In contrast to the style tilts for Size, Value, Growth, and Profit, there is no clear conclusion on the impact of Dividend, Volatility, or several other styles.

Style Exposure: Candriam ESG Analysed EM Companies, Candriam EM ESG Eligible, ESG Excluded

Average over ten years, Bloomberg Style definitions, versus MSCI© EM Index = 0



Source : Candriam ESG Team, MSCI (Weight) © 2019, All rights reserved; Bloomberg (Yearly Z-Score)

Candriam's ESG Analysis Methodology for Emerging Market Equities

Candriam has developed a rigorous and specific ESG analysis process to acknowledging the complexity of Emerging Market issuers. The Candriam ESG Eligible Emerging Markets equity universe begins with the constituents of the MSCI© Emerging Markets Index. It also includes some non-benchmark companies from so-called frontier markets which meet risk and liquidity requirements.

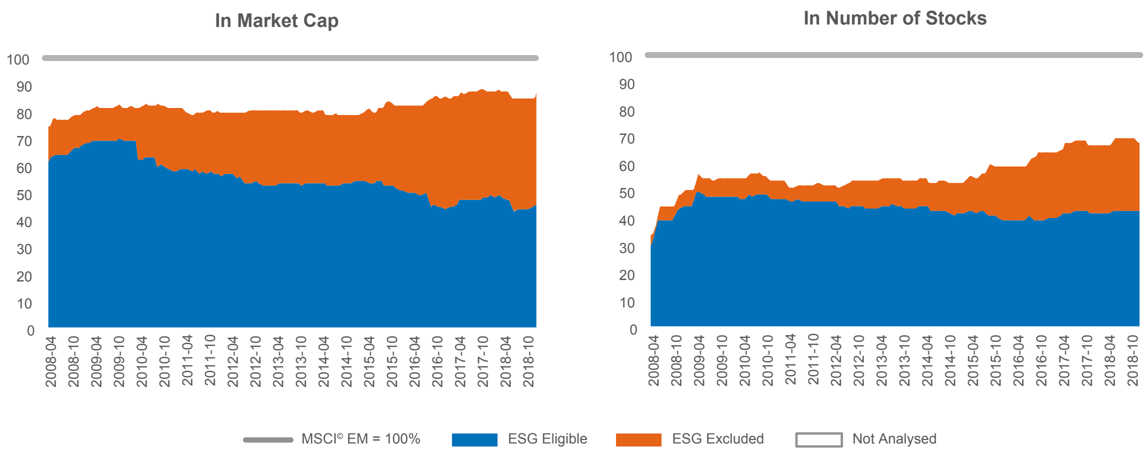
The Candriam Emerging Markets Equities ESG methodology combines:

- Norms-Based Analysis: Compliance with the 10 Principles of the UN Global Compact.
- Controversial Activities: Potential exclusion for involvement
- Governance Screening: Analysis of company's standards of corporate governance.
- Exposure to Global Sustainability Trends: Exposure to, and strategies for, five factors.

Candriam pays particular attention to the corporate governance policies, structures and practices of the companies in which we invest. These include the Management Accountability and Structure of the Board of Directors, Remuneration practices, Financial Transparency and Shareholder Rights. Around 13% of analysed companies are excluded from our ESG investible universe for insufficient Corporate Governance.

Candriam has defined five Global Sustainability Trends likely to shape companies' future market challenges and long-term growth. They are: Climate Change, Resource Depletion, Demographic Evolution, Inter-connectivity, and Health and Wellness. Between 2 and 5% of firms in the MSCI© Emerging Markets Equities Index are dropped from the ESG investible universe based on this basis. As a result of all the considerations above, the evolution from April 2008 to October 2018 of the number of companies included in the ESG analysis, in this study, and included or excluded from the Candriam ESG Eligible EM universe is as follows:

Proportion of MSCI© EM Index Analysed by ESG Team, 2008 to 2018



Source : Candriam ESG Team, MSCI© (Weight)

The Candriam Emerging Markets Equity strategy presents risks including capital risk, equity risk, currency risk, and risk related to emerging countries.

CONCLUSION

Investor appetite for both Emerging Market equities, and for a proven ESG investment process, is strong and growing. In a high-growth and high-risk sector, it is important to be able to demonstrate a consistent investment approach which is nonetheless sensitive to both global and local factors.

Candriam's investment engineers found that over the period for which they have developed sufficient testable historical data, an approach combining governance, controversy risk analysis and exposure to sustainability themes has enhanced investment performance in emerging markets equities in ten out of eleven years (April 2008 through October 2018). The study also determined that an ESG-based downgrade could be a predictor of negative excess returns over the long term; that is, for horizons of more than one year after a company was removed from the list of sustainable companies. These results have been feeding directly into Candriam's emerging market equities strategies and benefited value creation for investors in those strategies.

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