Vontobel

ESG Reporting

Valuation Methodology for Fund ESG Metrics

Vontobel Asset Management – ESG Center

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ESG Valuation Methodology

1. Scope of fund ESG Reporting

This document details the methodology applied for calculation of ESG metrics in Vontobel fund reporting. Detailed ESG metrics definitions are presented in chapter 2, while chapter 3 provides illustrative examples. The model presented is based on MSCI ESG native valuation methodology^[1], and incorporates the April 2023 upgrade^[2].

Initially it covers the following metrics:

- ESG score (0 10)
- ESG rating (AAA CCC)
- ESG ratings breakdown
- ESG ratings coverage (0 100%)
- Environmental score (0 10)
- Social score (0 10)
- Governance score (0 10)
- Weighted-Average Carbon Intensity (WACI)
- Carbon Footprint

Data used in calculations of ESG metrics includes:

- Portfolio composition
- Month-end MSCI ESG data, at security level, covering: listed and unlisted companies, supranational organization and sovereigns, local authorities, and funds
- List of elegible securities, per type (see appendix)

2. Definitions of fund ESG metrics

The follows MSCI ESG methodology as it is the most widely used.

Short positions are excluded for all valuations in scope.

2.1. ESG score

The fund's overall ESG score ranges between (0 - 10) and describes the average ESG performance of the companies in the fund. A higher score is associated with funds invested in companies with higher ESG performance in the respective industry sector.

It is calculated as a weighted average of: Portfolio weight and the ESG Adjusted Score (ie. Industry or Government Adjusted Score; or Fund Weighted Average Score); the latter figures are obtained at security level from MSCI ESG datasets.

$$\frac{\sum_{i=1}^{in PF, with \ score} \ ESG_adj_score \ _i \ast \ PF_weight \ _i}{all \ long \ positions} \sum_{i=1}^{in \ PF, \ with \ score} \ PF_weight \ _i}$$

2.2. ESG rating

Fund ESG rating is obtained by mapping the ESG score to letter-rating categories using the table below.

RANGE ESG SCORE	FUND ESG RATING
(60/7 - 70/7)	AAA
(50/7 - 60/7)	AA
(40/7 - 50/7)	A
(30/7 - 40/7)	BBB
(20/7 - 30/7)	BB
(10/7 - 20/7)	В
(0 - 10/7)	CCC

2.3. ESG ratings breakdown

The portfolio ESG ratings distribution is provided by each fraction of the portfolio with ESGrating = {AAA, AA, A, BBB, BB, B, CCC, NR}

 $\mathsf{PF}_{\mathsf{ESGrating}} = \frac{\sum_{k=all\ PF\ positions\ long} PF_wt_k\ \theta(ESGrating)_k}{\sum_{k=all\ PF\ positions\ long} PF_wt_k}$

where θ (ESGrating) = 1 if rating of position k is *ESGrating*, else it is zero. By convention, Cash-like positions are counted under NR.

2.4. ESG ratings coverage

This figure shows which portion of the portfolio leads to the obtained ESG results. Higher coverages mean calculated ESG values are more representative of the whole portfolio

$$\frac{\sum_{i=all \ long \ positions \ in \ PF, PF_weight_{i}}{with \ ESG \ rating}}{\sum_{i=all \ long \ positions \ in \ PF} \ PF_weight_{i}}$$

2.5. Environmental score

The fund's Environmental score ranges between (0 - 10) and describes the average environmental performance of the entities in the fund. Funds with higher score hold positions with higher environmental performance, in the respective domains.

It is calculated as a double-weighted average of: the Enviro score, the Enviro weight, and the Portfolio weight; the first two figures are likewise obtained from MSCI ESG datasets.

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\frac{\underset{i=1}{\overset{all \ long \ positions}{\sum_{i=1}^{in \ PF, \ with \ score} \ Enviro\_score \ _i \ * Enviro\_weight \ _i \ * \ PF\_weight \ _i}{\underset{i=1}{\overset{all \ long \ positions}{\sum_{i=1}^{in \ PF, \ with \ score} \ Enviro\_weight \ _i \ * \ PF\_weight \ _i}}}
```

[2] MSCI ESG communication, 23rd September 2022. Roll out in April 2023

^[1] calculation template 'MSCI ESG Fund Ratings and ESG Reporting Aggregation Guide.xlsx';

2.6. Social score

The fund's Social score ranges between (0 - 10). It describes the average social performance of the fund's holdings. A higher score is associated with funds invested in entities with higher social performance in the respective domains.

It is calculated as a double-weighted average of: the Social score, the Social weight, and the Portfolio weight; the first two figures are obtained from MSCI ESG datasets.

all long positions

 $\frac{\sum_{i=1}^{in PF, with \ score \ Social_score \ _{i} \ * \ Social_weight \ _{i} \ * \ PF_weight \ _{i}}{all \ long \ positions} \sum_{i=1}^{in PF, \ with \ score \ Social_weight \ _{i} \ * \ PF_weight \ _{i}}$

2.7. Governance score

The fund's Governance score ranges between (0 - 10). It describes the average governance performance of the fund's holdings. A higher score is associated with funds invested in entities with higher governance performance in the respective domain.

It is calculated as a double-weighted average of: the Governance score, the Governance weight, and the Portfolio weight; the first two figures are obtained from MSCI ESG datasets.

 $\begin{array}{c} \begin{array}{c} \text{all long positions} \\ \underline{\sum_{i=1}^{in \, PF, \ \text{with score}} \, Gov_score \ _i \ast Gov_weight \ _i \ast \ PF_weight \ _i} \\ \\ \hline \\ \begin{array}{c} \text{all long positions} \\ \underline{\sum_{i=1}^{in \, PF, \ \text{with score}} \, Gov_weight \ _i \ast \ PF_weight \ _i} \end{array} \end{array}$

2.8. Weighted-Average Carbon Intensity (WACI)

The Weighted-Average Carbon Intensity (WACI) has units of (tCO₂e/\$M sales) and reflects the annual CO₂-equivalent emissions required to generate one million USD of annual revenue, in average, for the aggregate of all the companies in the fund. Emissions counted include scope 1 and 2^[3]. Companies with no data reported and securities issued by governmental institutions are not considered in the valuation. Fund positions are also excluded.

It is calculated as the product of the Carbon Intensity specific of each security in a portfolio, with the respective portfolioweight:

 $\frac{\sum_{i=1}^{with \ Carbon_intensity} \ Carbon_intensity \ _i * PF_weight_i}{\sum_{i=1}^{with \ Carbon_intensity} \ PF_weight_i}$

where Carbon_intensity is in (tCO_2e) sales) units, and is obtained from MSCI ESG datasets.

2.9. Carbon Footprint

The Carbon Footprint, or specific financed carbon emissions, has units of (tCO_2e) M EVIC) and reflects the specific Greenhouse Gas- equivalent emissions of portfolio holdings per

USD million invested. Emissions counted are of CO2 and include scope 1 and 2^[4]; while EVIC stands for Economic Value Including Cash, and is counted in USD million (unless stated otherwise). Not considered in the valuation are: Funds, Companies with no data reported, and Securities issued by governmental institutions.

It is calculated as the product of the Carbon Footprint of valid portfolio securities, with the respective portfolio-weight:

 $\frac{\underset{i=1}{\overset{with Carbon_footprint}{footprint}} Carbon_footprint_i * PF_weight_i}{\underset{i=1}{\overset{all long positions in PF,}{\sum_{i=1}^{with Carbon_footprint}}} PF_weight_i}$

where Carbon_footprint is in (tCO₂e/\$M EVIC) units, and is obtained from MSCI ESG datasets for corporate single securities.

In general the Carbon emission data of Corporates is obtained from their most-recent public financial / sustainabiliy annual reports. Inherently, used data may stem from the last 0-24 months.

^[3] See www.epa.gov/climateleadership/scope-1-and-scope-2-in-ventory-guidance

3. Practical example

For illustrative purposes we present a practical application of the above methodology to a model portfolio, which includes representative security types. Additionally, calculations are available in the accompanying Excel template.

3.1. Overall calculations

- Fund ESG score (see section 2.1)
- ESG rating (2.2)
- ESG ratings breakdown (2.3)
- ESG ratings coverage (2.4)

SEC	SEC_TYP	HLD_C	HLD_DATE	UNDER1Y_	WT	ELEGIB	IVA_CO	GOV_E	FUND_ES	ESG	IND_A	GOV_A	FUND_ESG	ESG_A	FUND_ES	ESG_SC	FND_ESG	FND_ESG	FND_ES	FND_ESG	FND_ESG	FND_ES	FND_ESG	FND_ESG_R	ADJ_WT
		OUNT		OVER10P			MP_RT	SG_RT	G_RATING	_RT	DJ_SC	DJ_SC	_AVG_SCR	DJ_SC	G_CVGE	R_CVGE	_RT_AAA	_RT_AA	G_RT_A	_RT_BBB	_RT_BB	G_RT_B	_RT_CCC	T_NoValue	
Α	Common Stock			1	0.2	1	AAA			AAA	9			9		100									0.1667
В	Corporate Bond			1	0.1	1	AA			AA	8			8		100									0.0833
С	Government Bond			1	0.1	1		Α		A		7		7		100									0.0833
D	Mutual Fund, Open-End	85	02.10.2023	1	0.1	0			BBB	BBB			5.5	5.5	50	50				50				50	0.0833
Е	Floating Rate Note			1	-0.1	1	BB			BB		4		4		100									0.0000
F	Preferred Stock			1	0.1	1	В			В	2.5			2.5		100									0.0833
G	Foreign Government Bond			1	0.2	1		CCC		000	1			1		100									0.1667
Н	Index Future			1	0.1	0								0		100									0.0000
1	Collateral Cash Account			1	-0.1	0								0		100									0.0000
J	Swap Fixed Leg			1	0.1	0								0		100									0.0000
K	Fund	30	19.11.2021	0	0.2	1			BB	BB			4.2	4.2	40	40			10	20	10			60	0.0000

ESG_METRIC_NAME		ESGmetric_VALUE
Fund ESG SCORE, wt-avg		5.357
Fund ESG RATING		BBB
Fund ESG RATING, distribution	Α	8.33%
Fund ESG RATING, distribution	BBB	4.17%
Fund ESG RATING, distribution	BB	0.00%
Fund ESG RATING, distribution	В	8.33%
Fund ESG RATING, distribution	CCC	16.67%
Fund ESG RATING, distribution	NR	37.50%
Fund ESG RATING COVERAGE		62.50%
		62.50% =1-NR

ADJ_WT single cells are calculated as =(Under1y_Over10p * WT * (WT>0) * (ESG_RT<>"")) / SUMPRODUCT([WT]*([WT]>0))

0.00	CCC
1.43	В
2.86	BB
4.29	BBB
5.71	А
7.14	AA
8.57	AAA

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Color Convention: shaded cells 🔲 feature operations, while other cells include monthly input data

Description: variables in brackets - like [ADJ_WT] denote full column range (in excel sumproduct calculations). Scaling factors x100 and x0.01 are used in some equations to tackle non-normalized input units

3.2. Calculation of Fund's individual E-S-G Scores

- Environmental score (2.5)
- Social score (2.6)
- Governance score (2.7)

SEC	SEC_TYP	HLD_C	HLD_DATE	UNDER1Y_	WT	ELEGI	FUND_ES	ENV_	ENV	GENV	GEN	Fund_ENV	SOC_	SOC	GSOC	GSOC	Fund_SO	GOV	GOV	GGOV	GGOV	Fund_GO
		OUNT		OVER10P		В	G_CVGE	SCR	_WT	_SCR	V_W	IRO_SCR	SCR	_WT	_SCR	_WT	C_SCR	_SC	_WT	_SCR	_WT	V_SCR
А	Common Stock			1	0.2	1	0	1	50				9	30				6	20			
В	Corporate Bond			1	0.1	1	0	2	50				8	30				6	20			
С	Government Bond			1	0.1	1	0			3	50				3	30				6	20	
D	Mutual Fund, Open-End	85	02.10.2023	1	0.1	0	50					4	6	30				6	20			
Е	Floating Rate Note			1	-0.1	1	0			5	50				5	30				6	20	
F	Preferred Stock			1	0.1	1	0	6	50				4	30				6	20			
G	Foreign Government Bond			1	0.2	1	0			7	50				3	30				6	20	
н	Index Future			1	0.1	0	0	8	50				2	30				6	20			
I	Collateral Cash Account			1	-0.1	0	0	9	50				1	30				6	20			
J	Swap Fixed Leg			1	0.1	0	0	0	50				10	30				6	20			
К	Fund	30	19.11.2021	0	0.2	1	40															

ESG_METRIC_NAME	ESGmetr	ic_VALUE
Fund ENVIRONMENTAL SCORE	3.857	
Fund SOCIAL SCORE	5.571	
Fund GOVERNANCE SCORE	6.000]

Color Convention: shaded cells feature operations, while other cells include monthly input data

Description: variables in brackets - like [WT] denote full column range (in excel sumproduct calculations). Scaling factors x100 and x0.01 are used in some equations to tackle non-normalized input units

Example for the Environmental Score: its value is given in the lower table, as 3.857. It is calculated with the formula on its right. Where there is sum-product operations of the ranges [EL-EGIB] * [WT] * For instance, range [ELEGIB] comprises all the cells under the column with header "ELEGIB".

A similar approach is valid for the rest of the ESG indicators.

3.3. Calculation of Carbon Metrics

- Weighted-Average Carbon Intensity, WACI (2.8)
- respective coverage of WACI
- Carbon Footprint, per EVIC (2.9)
- respective coverage of Carbon Footprint, per EVIC

SEC	SEC_TYP	HLD_CO	HLD_DATE	UNDER1Y_	WT	ELEGIB	C_INT	Fund_	SINGLE	Fund_WA	WACI_CVG	C_EMM	C_EMM	EVIC_EUR
		UNT		OVER10P	1			WACI	_WACI	CI_CVGE	E_FACTOR	_SC1	_SC2	
A	Common Stock			1	0.2	1	20		20		1	56789	123456	8765.43
В	Corporate Bond			1	0.1	1	40		40	l i	1			
С	Government Bond			1	0.1	1	60		60		1			
D	Mutual Fund, Open-End	85	02.10.2023	1	0.1	0		80	80	40	0.4			
E	Floating Rate Note			1	-0.1	1	100		100		1			
F	Preferred Stock			1	0.1	1	120		120		1			
G	Foreign Government Bond			1	0.2	1	140		140		1			
Н	Index Future			1	0.1	0	160		160		1			
1	Collateral Cash Account			1	-0.1	0	180		180		1			
J	Swap Fixed Leg			1	0.1	0	200		200		1			
K	Fund	30	19.11.2021	0	0.2	1	111	100	111	50	0.5			

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ESG_METRIC_NAME	ESGmetric_VALUE
WACI (WT.AVG CARBON INTENSITY)	77.1
WACI COVERAGE	58.3%
CARBON FOOTPRINT EVIC USD	20.56
CARBON FOOTPRINT EVIC COVERAGE	16.7%

Color Convention: shaded cells feature operations, while other cells include monthly input data

Description: variables in brackets - like [WT] denote full column range (in excel sumproduct calculations). Scaling factors x100 and x0.01 are used in some equations to tackle non-normalized input units

APPENDIX

Calculation details

DERIVATIVES

Symmetric derivatives with long/short positions are counted together so that only its synthetic combination is considered in the calculations.

PORTFOLIOS HOLDING OTHER FUNDS

When a fund is exposed to another fund, accuracy is preserved in the formulation above (2.1 - 2.9) by only accounting for a fund's covered fraction. For instance, if portfolio of fund A has a 10% exposure to fund X, and the latter has 60% coverage in WACI reporting, then only a weight of 6% (ie. 10% * 60%) is counted when calculating WACI of fund A.

LOW COVERAGES

Portfolios with low coverages of a given figure provide for unreliable (often unrealistic) portfolio-level values. This often happens in reportings like of Carbon Footprints.

Elegible Securities in ESG valuations

Only Asset Types in the list below will be included in ESG valuations $^{\rm 5}$.

ASSET TYPE	
Agency Security	Loan
Bank Loan	Municipal bond
Bond Future	Option on Future
Certificate	Preference Shares
Commercial Paper	Preferred Security
Common Shares	Provincial Bond
Convertible Bond	Real Estate Invst. Trust
Convertible Note	Rights
Corporate Debt	Supranational
Depository Receipt	Tracking Instrument
Equity Future	Treasury Bill
Equity Option	Units
Equity Warrant	American Depository Receipt
Government Debt	Global Depository Receipt
Limited Partnership	International Depository Receipt

Asset Types values are obtained at security label based on attribute 'ASSET_TYPE' in file *9063_..._MasterSecu-rity_V2_YYYMMDD.txt*. This follows the standard Asset Type classification from Lipper.

⁵ See document 'MSCI ESG Fund Ratings Summary', Jan. 2021

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