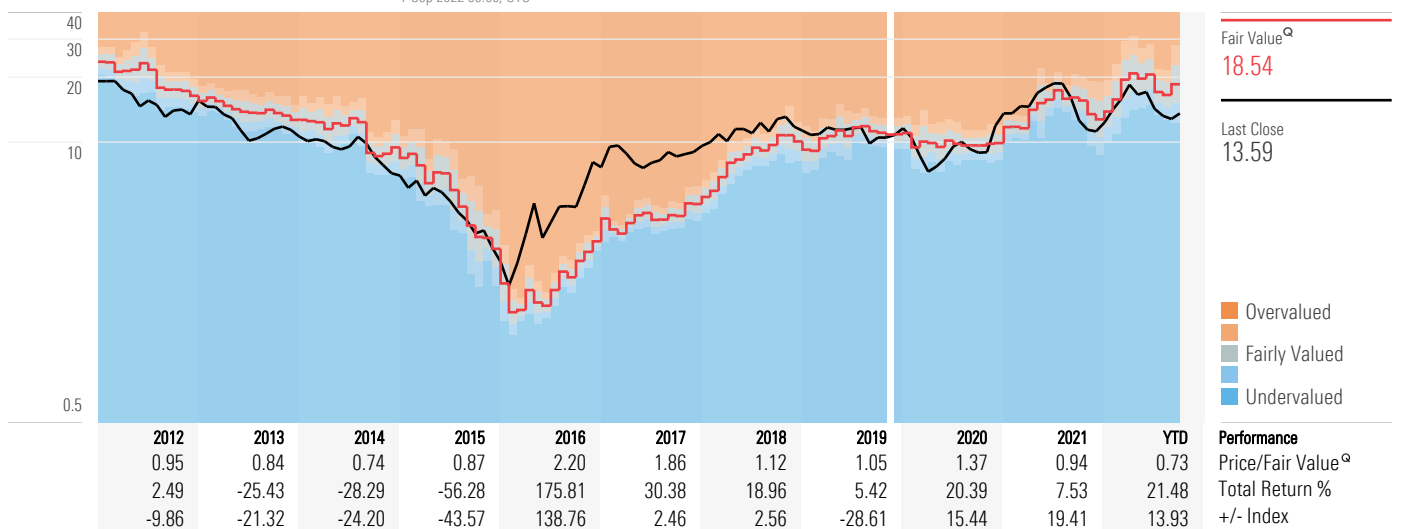


Vale SA XVALO ★★★★★ Q 23 Sep 2022, 22:49 UTC

Economic Moat ^Q	Uncertainty ^Q	Price/Fair Value ^Q	ESG Risk Rating Assessment	Trailing Dividend Yield %	Market Cap	Investment Style	Sector	Industry
None	Very High	0.7	7 Sep 2022 05:00, UTC	9.88	65.5065 Bil	Large Value	Basic Materials	Other Industrial Metals & Mining



Total Return % as of 23 Sep 2022. Last Close as of 23 Sep 2022. Fair Value as of 23 Sep 2022, 22:49 UTC. Index: Morningstar Brazil GR BRL.

The ESG Risk Rating Assessment is a representation of Sustainalytics' ESG Risk Rating. There is no one analyst in which a Quantitative Fair Value Estimate and Quantitative Star Rating are attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative fair value. As an employee of Morningstar, Inc., Mr. Davidson is guided by Morningstar, Inc.'s Code of Ethics and Personal Securities Trading Policy in carrying out his responsibilities. For information regarding Conflicts of Interests, visit <http://global.morningstar.com/equitydisclosures>.

Valuation ^Q as of 23 Sep 2022

Fair Value ^Q
18.54

Uncertainty ^Q
Very High

Last Close
13.59

XVALO is Under Valued at a 27% discount.

Economic Moat ^Q
None

Financial Health ^Q
Moderate

1-Star Price ^Q
> 28.04

5-Star Price ^Q
< 12.26

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Financials as of 23 Sep 2022 (Fiscal Year End 31 Dec 2021)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	Fiscal
Revenue (Bil)	47	47	35	23	27	34	37	37	40	55	22	Revenue (Bil)
Operating Income (Bil)	14.72	17.34	8.99	2.54	8.43	11.41	13.07	15.02	19.59	30.84	10.41	Operating Income (Bil)
Operating Margin (%)	31.62	37.08	25.61	10.88	30.66	33.59	35.74	41.08	49.54	56.59	47.36	Operating Margin (%)
Net Income (Bil)	5.45	0.58	0.66	-12.13	3.98	5.51	6.86	-1.68	4.88	22.45	10.61	Net Income (Bil)
Diluted Earnings/Share	1.06	0.11	0.13	-2.33	0.77	1.05	1.32	-0.33	0.95	4.47	2.24	Diluted Earnings/Share
Operating Cash Flow (Bil)	16.14	14.79	13.10	3.93	6.40	12.45	12.90	12.11	14.32	25.68	6.18	Operating Cash Flow (Bil)
Capital Spending (Bil)	-15.32	-13.11	-11.78	-8.11	-4.95	-3.83	-3.78	-3.46	-4.23	-5.03	-2.43	Capital Spending (Bil)
Free Cash Flow (Bil)	0.81	1.69	1.33	-4.18	1.45	8.62	9.12	8.65	10.10	20.65	3.75	Free Cash Flow (Bil)
Avg Shares Outstand(Mil)	5,106	5,153	5,153	5,197	5,197	5,197	5,178	5,128	5,130	5,012	4,742	Avg Shares Outstand(Mil)
Dividend Per Share	3.86	2.79	1.89	0.98	0.17	1.33	0.49	1.41	2.41	14.65	1.34	Dividend Per Share

Valuation as of 23 Sep 2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Current	Calendar
Price/Fair Value ^Q	0.95	0.84	0.74	0.87	2.20	1.86	1.12	1.05	1.37	0.94	0.73	Price/Fair Value ^Q
Price/Sales	2.21	1.58	1.05	0.55	1.63	1.73	1.87	1.80	2.42	1.25	1.36	Price/Sales
Price/Earnings	20.83	17.01	—	—	—	8.75	15.21	18.30	33.42	3.99	3.33	Price/Earnings
Price/Cash Flow	6.53	4.54	3.30	3.62	7.74	5.19	5.06	5.37	7.96	2.34	3.77	Price/Cash Flow
Price/Book	2.06	1.47	1.12	0.82	1.05	1.32	1.62	1.59	2.48	2.03	1.79	Price/Book

Operating Performance as of 23 Sep 2022 (Fiscal Year End 31 Dec 2021)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Q3	Fiscal (%)
Return on Assets	4.24	0.46	0.55	-11.83	4.25	5.56	7.32	-1.87	5.31	24.74	6.93	Return on Assets
Return on Equity	9.3	1.19	1.81	-57.03	30.11	18.54	15.69	-4.0	12.88	63.93	16.82	Return on Equity
Rtn on Invested Capital	7.81	2.35	2.37	-23.57	11.42	12.29	12.19	0.53	11.61	44.01	11.13	Rtn on Invested Capital

Business Description

Vale is the world's largest iron ore miner and one of the largest diversified miners, along with BHP and Rio Tinto. Earnings are dominated by the bulk materials division, primarily iron ore and iron ore pellets, with minor contributions from iron ore proxies, including manganese and coal. The base metals division is much smaller, primarily consist-

ing of nickel mines and smelters with a small contribution from copper.

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Morningstar's quantitative equity ratings consist of: (i) Quantitative Fair Value Estimate, (ii) Quantitative Star Rating, (iii) Quantitative Uncertainty, (iv) Quantitative Economic Moat, and (v) Quantitative Financial Health (collectively the "Quantitative Ratings").

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i. **Quantitative Fair Value Estimate:** Intended to represent Morningstar's estimate of the per share dollar amount that a company's equity is worth today. Morningstar calculates the Quantitative Fair Value Estimate using a statistical model derived from the Fair Value Estimate Morningstar's equity analysts assign to companies. Please go to <http://global.morningstar.com/equitydisclosures> for information about Fair Value Estimate Morningstar's equity analysts assign to companies.

ii. **Quantitative Economic Moat:** Intended to describe the strength of a firm's competitive position. It is calculated using an algorithm designed to predict the Economic Moat rating a Morningstar analyst would assign to the stock. The rating is expressed as Narrow, Wide, or None.

Narrow – assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 70% but less than 99%.

Wide – assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 99%.

None – assigned when the probability of an analyst receiving a "Wide Moat" rating by an analyst is less than 70%.

iii. **Quantitative Star Rating:** Intended to be the summary rating based on the combination of our Quantitative Fair Value Estimate, current market price, Quantitative Uncertainty Rating, and momentum. The rating is expressed as One-Star, Two-Star, Three-Star, Four-Star, and Five-Star.

★ – the stock is overvalued with a reasonable margin of safety.

*Log (Quant FVE/Price) < -1*Quantitative Uncertainty*

*Micro-Caps: Log (Quant FVE/Price) < -1.5*Quantitative Uncertainty*

★★ – the stock is somewhat overvalued.

*Log (Quant FVE/Price) between (-1*Quantitative Uncertainty, -0.5*Quantitative Uncertainty)*

*Micro-Caps: Log (Quant FVE/Price) between (-1.5*Quantitative Uncertainty, -0.75*Quantitative Uncertainty)*

★★★ – the stock is approximately fairly valued.

*Log (Quant FVE/Price) between (-0.5*Quantitative Uncertainty, 0.5*Quantitative Uncertainty)*

*Micro-Caps: Log (Quant FVE/Price) between (-0.75*Quantitative Uncertainty, 0.75*Quantitative Uncertainty)*

★★★★ – the stock is somewhat undervalued.

*Log (Quant FVE/Price) between (0.5*Quantitative Uncertainty, 1*Quantitative*

Uncertainty)

*Micro-Caps: Log (Quant FVE/Price) between (0.75*Quantitative Uncertainty, 1.5*Quantitative Uncertainty)*

★★★★★ – the stock is undervalued with a reasonable margin of safety.

*Log (Quant FVE/Price) > 1*Quantitative Uncertainty*

*Micro-Caps: Log (Quant FVE/Price) > 1.5*Quantitative Uncertainty*

After the initial calculation for the star rating, there is a final filtering step based on the momentum of the company. We rank the companies based on their 12-1 month momentum, then restrict those below the 30th percentile to a maximum of 3 stars.

iv. **Quantitative Uncertainty:** Intended to represent Morningstar's level of uncertainty about the accuracy of the Quantitative Fair Value Estimate. Generally, the lower the Quantitative Uncertainty, the narrower the potential range of outcomes for that particular company. The rating is expressed as Low, Medium, High, Very High, and Extreme.

Low – the interquartile range for possible fair values is less than 10%

Medium – the interquartile range for possible fair values is less than 15% but greater than 10%

High – the interquartile range for possible fair values is less than 35% but greater than 15%

Very High – the interquartile range for possible fair values is less than 80% but greater than 35%

Extreme – the interquartile range for possible fair values is greater than 80%

v. **Quantitative Financial Health:** Intended to reflect the probability that a firm will face financial distress in the near future. The calculation uses a predictive model designed to anticipate when a company may default on its financial obligations. The rating is expressed as Weak, Moderate, and Strong.

Weak – assigned when Quantitative Financial Health < 0.2

Moderate – assigned when Quantitative Financial Health is between 0.2 and 0.7

Strong – assigned when Quantitative Financial Health > 0.7

Other Definitions

i. **Last Close** – Price of the stock as of the close of the market of the last trading day before date of the report.

ii. **Quantitative Valuation** – Using the below terms, intended to denote the relationship between the security's **Last Price** and Morningstar's quantitative fair value estimate for that security.

Undervalued – Last Price is below Morningstar's quantitative fair value estimate.

Fairly Valued – Last Price is in line with Morningstar's quantitative fair value estimate.

Fairly Valued – Last Price is in line with Morningstar's quantitative fair value estimate.

Overvalued – Last Price is above Morningstar's quantitative fair value estimate.

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Sustainalytics analyzes over 1,300 data points to assess a company's exposure to and management of ESG risks. In other words, ESG Risk Ratings measures a company's unmanaged ESG Risks represented as a quantitative score. Unmanaged Risk is measured on an open-ended scale starting at zero (no risk) with lower scores representing less unmanaged risk and, for 95% of cases, the unmanaged ESG Risk score is below 50.

Based on their quantitative scores, companies are grouped into one of five Risk Categories (negligible, low, medium, high, severe). These risk categories are absolute, meaning that a 'high risk' assessment reflects a comparable degree of unmanaged ESG risk across all subindustries covered.

The ESG Risk Rating Assessment is a visual representation of Sustainalytics

ESG Risk Categories on a 1 to 5 scale. Companies with Negligible Risk = 5 Globes, Low Risk = 4, Medium Risk = 3 Globes, High Risk = 2 Globes, Severe Risk = 1 Globe. For more information, please visit sustainalytics.com/esg-ratings/

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