
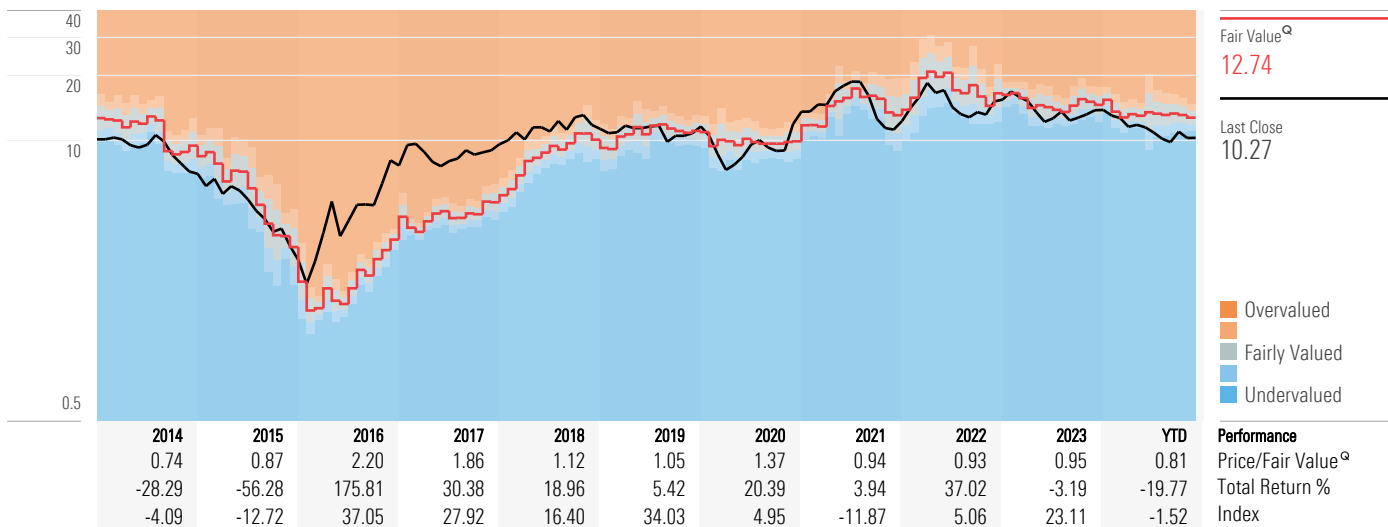


Vale SA XVALO ★★★★★ Q 6 Nov 2024 23:37, UTC

Economic Moat ^Q	Uncertainty ^Q	Price/Fair Value ^Q	ESG Risk Rating Assessment ¹	Trailing Dividend Yield %	Market Cap	Investment Style	Sector	Industry
None	Medium	0.81	 2 Oct 2024 05:00, UTC	12.37	—	Large Value	Basic Materials	Other Industrial Metals & Mining



As of 06 Nov 2024 | Index: Morningstar Brazil GR BRL. Fair Value data as of 6 Nov 2024 00:00, UTC.

¹The ESG Risk Rating Assessment is a representation of Sustainalytics' ESG Risk Rating. Lee Davidson, Chief Analytics Officer for Morningstar, Inc, oversees the methodology that supports Quantitative Fair Value Estimates and Quantitative Star Ratings. Mr. Davidson is guided by the Morningstar, Inc. Code of Ethics in carrying out his responsibilities. For information regarding Conflicts of Interests, visit <http://global.morningstar.com/equitydisclosures>.

Key Metrics as of 5 Nov 2024

Metrics		Percentile in Sector
Earnings Yield (%)	20.0	97.0
Sales Yield (%)	88.4	71.0
Book Value Yield (%)	83.0	56.0
Return on Assets (%)*	10.4	93.0
Revenue(Bil)*	41.0	99.0
Market Value (Bil)	46.2	99.0
Enterprise Value (Bil)	58.1	99.0
EV/MV Ratio	1.3	76.0
Volatility TTM (%)	22.4	14.0
Drawdown TTM (%)	27.8	30.0
Volume (Mil)	26.2	98.0

*30 Sep 2024

Business Description

Vale is a large global miner and the world's largest producer of iron ore and pellets. In recent years the company has sold noncore assets such as its fertilizer, coal, and steel operations to concentrate on iron ore, nickel, and copper. Earnings are dominated by the bulk materials division, primarily iron ore and iron ore pellets. The base metals division is much smaller, consisting of nickel mines and smelters along with copper mines producing copper in concentrate. In 2024, Vale sold a minority 10% stake in energy transition metals, its base metals business, likely the first step in separating base metals and iron ore.

Valuation ^Q as of 7 Nov 2024

Vale achieves a 5-star quantitative star rating based on Morningstar's equity model. This reflects the company's valuation and uncertainty scores under this assessment system.

The Quantitative Fair Value estimate is 12.74, above the previous closing price of 10.27. The stock has been trading between a 29.91% and 2.42% discount to its quantitative fair value over the past year. The stock's current valuation rating sits at the 62nd percentile in the coverage universe and 78th percentile in the basic materials sector.

The quantitative uncertainty rating for Vale is Medium.

Our quantitative star rating last differed from the current rating on 10/08/2024; the uncertainty rating last differed on 11/05/2024. The previous ratings were 4 and High, respectively.

The main drivers of the company's valuation and uncertainty are its earnings yield and volatility. The earnings yield of 20.00% falls at the 95th percentile in the equity universe and the 95th percentile in its sector. The annualized trailing 12-month volatility of 22.43% corresponds to the 25th percentile over-

all and the 14th percentile in the industry.

Economic Moat ^Q as of 6 Nov 2024

Morningstar maintains a quantitative moat rating of None on the company. The firm's quantitative moat score of 0.13 sits at the 13th percentile in the basic materials sector. This is a decrease from 0.73, the maximum of its moat scores over the past year. The quantitative financial health rating for Vale is Moderate. Its financial health score, termed Distance to Default, sits at the 57th percentile in the universe and 73rd percentile in the sector.

The significant drivers of these ratings are the company's book value yield and enterprise value-to-market value ratio. The book value yield for Vale is 83.06%, and its enterprise value-to-market value ratio is 1.26. They sit at the 63rd and 68th percentile in the global equity universe, respectively.

Fundamentals as of 7 Nov 2024

The earnings per share for Vale is 2.16. The company earns a return on invested capital of 18.89%, falling at the 95th percentile in the basic materials sector. The firm maintains a dividend yield of 12.38%. We calculate the above figures over a trailing 12-month period.


Examining valuation further, we find Vale holds a price-to-earnings ratio of 5.17, a figure greater than 8% of its sector peers. The company's price-to-free cash flow ratio is 9.57, greater than 30% of its sector peers. These values are calculated using the stock's price at last market close.

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Vale SA XVALO ★★★★★

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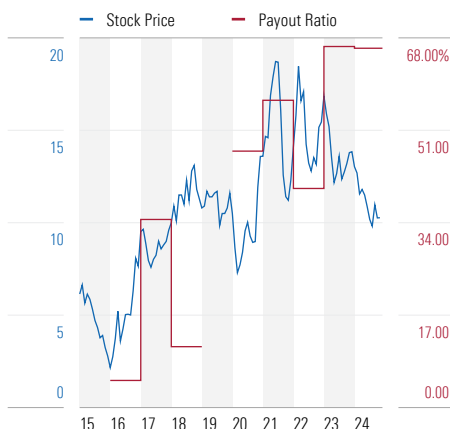
Earnings as of 5 Nov 2024

Earnings	%	Percentile in Sector
Dividend Yield*	12.4	99.0
Payout Ratio*	64.5	73.0
Price to Earnings	5.1	8.0
Price to Cash Flow	9.4	31.0
ROIC**	18.9	96.0

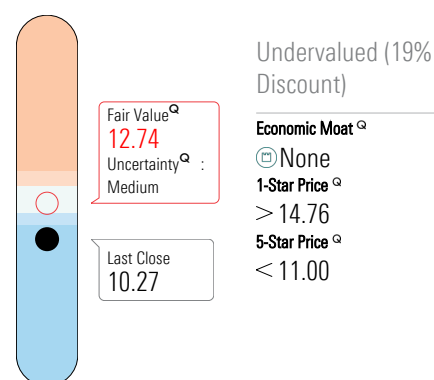
*31 Oct 2024

**30 Sep 2024

Dividends as of 6 Nov 2024



Valuation ^Q as of 6 Nov 2024



Financials (Fiscal Year End 31 Dec 2024)

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	09/2024	Fiscal
37.54	25.61	27.49	33.97	36.58	37.57	40.02	54.50	43.84	41.78	40.99	Revenue (Bil)
8.78	2.61	8.19	11.41	13.04	14.13	18.55	30.84	17.79	15.86	14.13	Operating Income (Bil)
23.39	10.20	29.79	33.59	35.65	37.62	46.35	56.59	40.57	37.95	37.95	Operating Margin (%)
0.66	-12.13	3.98	5.51	6.86	-1.68	4.88	22.45	18.79	7.98	9.28	Net Income (Bil)
0.13	-2.35	0.77	1.05	1.32	-0.33	0.95	4.47	4.05	1.83	2.16	Diluted Earnings/Share
12.81	4.49	6.58	12.45	12.90	12.11	14.32	25.68	11.49	13.17	11.24	Operating Cash Flow (Bil)
11.81	8.37	4.95	3.83	3.78	3.70	4.43	5.03	5.45	5.92	6.24	Capital Spending (Bil)
-2.78	-5.13	2.52	7.99	10.68	8.48	13.12	20.63	7.31	8.15	6.28	Free Cash Flow (Bil)
5.15	5.15	5.15	5.20	5.13	5.13	5.13	4.89	4.48	4.34	4.34	Avg Shares Outstand(Bil)

Valuation as of 6 Nov 2024

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Current	Calendar
0.74	0.87	2.20	1.86	1.12	1.05	1.37	0.94	0.93	0.95	0.81	Price/Fair Value ^Q
1.18	0.57	1.71	1.67	1.94	1.81	2.20	1.32	1.78	1.61	1.17	Price/Sales
—	—	—	8.02	16.00	18.43	30.41	4.20	3.84	7.03	5.16	Price/Earnings
4.05	3.77	10.48	4.58	5.01	8.51	4.36	2.57	5.85	5.39	3.82	Price/Cash Flow
1.17	0.84	1.11	1.30	1.66	1.54	2.37	2.10	2.08	1.66	1.28	Price/Book

Operating Performance (Fiscal Year End 31 Dec 2024)

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	09/2024	Fiscal (%)
0.55	-11.83	4.25	5.56	7.32	-1.87	5.31	24.74	21.31	8.82	10.43	Return on Assets
1.81	-57.03	30.11	18.54	15.69	-4.00	12.88	63.93	53.42	21.20	24.32	Return on Equity
2.37	-23.57	11.42	12.29	12.19	0.53	11.61	44.01	36.88	16.49	18.89	Rtn on Invested Capital

Dividends as of 6 Nov 2024

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Current	Calendar (%)
0.81	0.30	0.05	0.42	0.15	0.26	0.45	2.79	1.45	1.22	1.27	Dividend Per Share
8.81	9.71	0.62	3.81	1.99	1.92	2.68	18.84	4.78	8.06	12.37	Trailing Dividend Yield
0.00	—	—	—	—	0.75	0.00	0.00	7.25	5.51	1.00	Buyback Yield

Appendix

Economic Moat [®]History as of 6 Nov 2024 (No Moat: 0.00-0.70, Narrow Moat: 0.70-0.99, Wide Moat: 0.99-1.00)

Year	January	February	March	April	May	June	July	August	September	October	November	December
2024	0.06	0.01	0.02	0.03	0.04	0.29	0.06	0.06	0.09	0.04	0.13	—
2023	0.07	0.14	0.16	0.22	0.08	0.15	0.12	0.04	0.11	0.12	0.09	0.16
2022	0.06	0.04	0.06	0.07	0.06	0.08	0.05	0.04	0.03	0.01	0.08	0.11
2021	0.11	0.06	0.04	0.06	0.85	0.26	0.12	0.10	0.04	0.07	0.04	0.08
2020	0.03	0.04	0.06	0.09	0.11	0.14	0.15	0.07	0.08	0.17	0.06	0.07
2019	0.04	0.03	0.02	0.05	0.04	0.15	0.12	0.05	0.04	0.04	0.03	0.03

Quantitative Equity Report Overview

The quantitative report on equities consists of data, statistics and quantitative equity ratings on equity securities. Morningstar, Inc.'s quantitative equity ratings are forward looking and are generated by a statistical model that is based on Morningstar Inc.'s analyst-driven equity ratings and quantitative statistics. Given the nature of the quantitative report and the quantitative ratings, there is no one analyst in which a given report is attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative equity ratings used in this report. 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.

Quantitative Equity Ratings

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").

The Quantitative Ratings are calculated daily and derived from the analyst-driven ratings of a company's peers as determined by statistical algorithms. Morningstar, Inc. ("Morningstar", "we", "our") calculates Quantitative Ratings for companies whether or not it already provides analyst ratings and qualitative coverage. In some cases, the Quantitative Ratings may differ from the analyst ratings because a company's analyst-driven ratings can significantly differ from other companies in its peer group.

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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