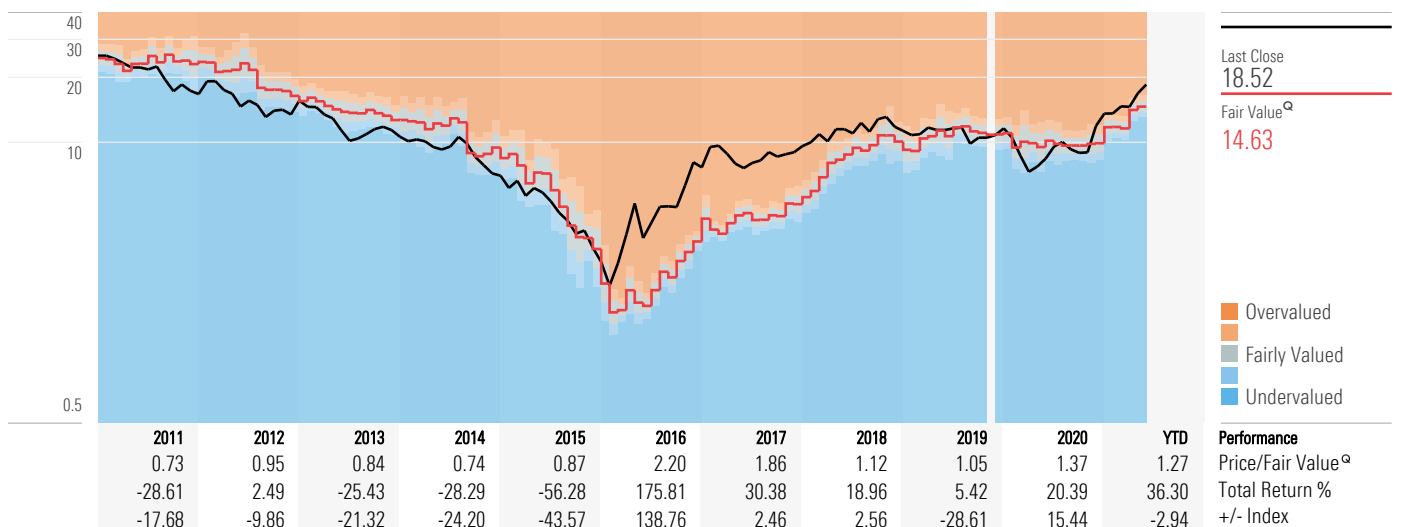


Vale SA XVALO ★ ^Q 10 May 2021, 22:36 UTC

Economic Moat ^Q	Uncertainty ^Q	Price/Fair Value ^Q	Trailing Dividend Yield %	Market Cap	Investment Style	Sector	Industry
None	Medium	1.3	5.43	95.0019 Bil	Large Value	Basic Materials	Other Industrial Metals & Mining



Last Close
18.52

Fair Value ^Q
14.63

Overvalued
Fairly Valued
Undervalued

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 10 May 2021



Last Close
18.52

Fair Value ^Q
14.63

Uncertainty ^Q
Medium

XVALO is Over Valued at a 27% premium.

Economic Moat ^Q

None

Financial Health ^Q

Moderate

1-Star Price ^Q

> 16.43

5-Star Price ^Q

< 13.02

Financials as of 10 May 2021 (Fiscal Year End 31 Dec 2021)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	YTD	Fiscal
Revenue (Bil)	60	47	47	35	23	27	34	37	38	40	13	Revenue (Bil)
Operating Income (Bil)	28.95	14.02	17.43	8.83	2.53	8.29	11.24	12.89	13.84	18.37	7.66	Operating Income (Bil)
Operating Margin (%)	48.19	30.11	37.27	25.13	10.83	30.17	33.09	35.23	36.84	45.9	60.55	Operating Margin (%)
Net Income (Bil)	22.80	5.45	0.58	0.66	-12.13	3.98	5.51	6.86	-1.68	4.88	5.55	Net Income (Bil)
Diluted Earnings/Share	4.34	1.06	0.11	0.13	-2.33	0.77	1.05	1.32	-0.33	0.95	1.08	Diluted Earnings/Share
Operating Cash Flow (Bil)	23.46	16.14	14.79	13.10	3.93	6.40	12.45	12.90	12.11	14.32	7.02	Operating Cash Flow (Bil)
Capital Spending (Bil)	-15.86	-15.32	-13.11	-11.78	-8.11	-4.95	-3.83	-3.78	-3.70	-4.43	-1.01	Capital Spending (Bil)
Free Cash Flow (Mil)	7,596	813	1,687	1,327	-4,182	1,450	8,619	9,117	8,406	9,892	6,013	Free Cash Flow (Mil)
Avg Shares Outstand(Mil)	5,247	5,106	5,153	5,153	5,197	5,197	5,197	5,178	5,128	5,130	5,130	Avg Shares Outstand(Mil)
Dividend Per Share	2.89	3.86	2.79	1.89	0.98	0.17	1.33	0.49	1.41	2.41	1.01	Dividend Per Share

Valuation as of 10 May 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Current	Calendar
Price/Fair Value ^Q	0.73	0.95	0.84	0.74	0.87	2.20	1.86	1.12	1.05	1.37	1.27	Price/Fair Value ^Q
Price/Sales	2.13	2.21	1.58	1.05	0.55	1.63	1.73	1.87	1.80	2.42	2.53	Price/Sales
Price/Earnings	5.38	20.83	17.01	—	—	—	8.75	15.21	18.30	33.42	11.37	Price/Earnings
Price/Cash Flow	5.12	6.53	4.54	3.30	3.62	7.74	5.19	5.06	5.37	7.96	5.88	Price/Cash Flow
Price/Book	1.90	2.06	1.47	1.12	0.82	1.05	1.32	1.62	1.59	2.48	3.17	Price/Book

Operating Performance as of 10 May 2021 (Fiscal Year End 31 Dec 2021)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Q3	Fiscal (%)
Return on Assets	17.75	4.24	0.46	0.55	-11.83	4.25	5.56	7.32	-1.87	5.31	6.2	Return on Assets
Return on Equity	38.3	9.3	1.19	1.81	-57.03	30.11	18.54	15.69	-4.0	12.88	15.37	Return on Equity
Rtn on Invested Capital	28.6	7.81	2.35	2.37	-23.57	11.42	12.29	12.19	0.53	11.61	11.54	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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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.

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- 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.
 $\text{Log (Quant FVE/Price)} < -1 * \text{Quantitative Uncertainty}$
*Micro-Caps: $\text{Log (Quant FVE/Price)} < -1.5 * \text{Quantitative Uncertainty}$*
 - ★★ – the stock is somewhat overvalued.
 $\text{Log (Quant FVE/Price)}$ between $(-1 * \text{Quantitative Uncertainty}, -0.5 * \text{Quantitative Uncertainty})$
*Micro-Caps: $\text{Log (Quant FVE/Price)}$ between $(-1.5 * \text{Quantitative Uncertainty}, -0.75 * \text{Quantitative Uncertainty})$*
 - ★★★ – the stock is approximately fairly valued.
 $\text{Log (Quant FVE/Price)}$ between $(-0.5 * \text{Quantitative Uncertainty}, 0.5 * \text{Quantitative Uncertainty})$
*Micro-Caps: $\text{Log (Quant FVE/Price)}$ between $(-0.75 * \text{Quantitative Uncertainty}, 0.75 * \text{Quantitative Uncertainty})$*
 - ★★★★ – the stock is somewhat undervalued.
 $\text{Log (Quant FVE/Price)}$ between $(0.5 * \text{Quantitative Uncertainty}, 1 * \text{Quantitative Uncertainty})$

Uncertainty

*Micro-Caps: $\text{Log (Quant FVE/Price)}$ between $(0.75 * \text{Quantitative Uncertainty}, 1.5 * \text{Quantitative Uncertainty})$*

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

$\text{Log (Quant FVE/Price)} > 1 * \text{Quantitative Uncertainty}$

*Micro-Caps: $\text{Log (Quant FVE/Price)} > 1.5 * \text{Quantitative Uncertainty}$*

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.

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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

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 - 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.

This Report **has not been made available** to the issuer of the security prior to publication.

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