BofA SECURITIES

Petrobras

Feedback from PBR Deep Dive; A new and re-energized company emerges

Maintain Rating: BUY | PO: 18.00 USD | Price: 17.07 USD

31 January 2024

Equity

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Deep dive boosts confidence over governance safeguards

Over the past two days, Petrobras (PBR) hosted a deep dive event in New York in which the CEO, CFO and other top executives discussed PBR's goals and outlook in detail as well as other relevant topics such as governance and financial strategy (cash returns, leverage policies, among others). CEO Jean Paul Prates highlighted that PBR's mission can be broken down into three key themes: 1) shaping PBR into a company that functions for the people, the country and the market; 2) pave the way for an energy transformation at PBR; and 3) overcome the trauma of past years particularly in regard to the corruption scandal ("Car Wash") and the resulting reaction to that. Overall, we come out of the event more confident over governance safeguards related to capex/M&A approvals, tax dispute settlements, pricing policy, among others. See more details on pages 3-6.

Upstream forecast more "realistic" yet we see upside

Management highlighted that its production forecast for the upstream embeds a reservoir-uncertainty factor and believe their estimates are "realistic and not conservative". According to the company, the pre-salt fields have more complex reservoirs which require more intricate subsea equipment and production systems compared to the Campos basin. In this context, the company does **not** assume that everything goes according to its plans and, therefore, penalizes its production curve to reflect potential/unexpected disappointments. We believe there is upside to production forecasts and our curve is ~100kbpd above PBR's for 2024-28.

Extraordinary dividends still on the table

Management emphasized that the decision on whether to pay extraordinary dividends or not is taken based on forward-looking risk analysis using a model which looks at different scenarios (based on oil prices, FX, production, capex, etc). In this context, if the forecasted cash position is above their reference (~US$8bn) within a reasonable degree of confidence then extraordinary dividends could be proposed. We estimate a ~3.8% total cash return yield for 4Q23 which could rise to ~12% accounting for extraordinary dividends.

Estimates(Dec) (US$)	**2021A**	**2022A**	**2023E**	**2024E**	**2025E**
Common ADR EPS	3.05	5.61	3.97	3.64	2.45
Common ADR GAAP EPS	3.05	5.61	3.97	3.64	2.45
EPS Change (YoY)	NM	76.3%	-32.3%	-8.4%	-32.6%
Consensus EPS (Bloomberg)			0.76	0.66	0.63
Common ADR DPS	2.07	5.78	3.00	1.68	1.06
Pref ADR EPS (BRL)	8.22	14.49	9.81	8.99	6.06
Pref ADR DPS (BRL)	5.57	14.92	7.40	4.16	2.62
Valuation (Dec)					
P/E	5.1x	2.9x	4.3x	4.7x	7.0x
Dividend Yield	13.2%	35.4%	17.6%	9.9%	6.2%
EV / EBITDA*	2.9x	2.2x	2.8x	2.9x	3.6x
Free Cash Flow Yield*	56.0%	67.8%	50.5%	33.7%	17.7%

* For full definitions of *iQmethod*SM measures, see page 8.

Stock Data

Price (Common ADR / Pref ADR)	17.07 USD / 16.40 USD
Price (Common / Pref)	42.16 BRL / 40.45 BRL
Price Objective (Common ADR / Pref ADR)	18.00 USD / 20.20 USD
Price Objective (Common / Pref)	45.00 BRL / 48.00 BRL
Date Established (Common ADR / Pref ADR)	23-Aug-2023 / 9-Jan-2024
Date Established (Common / Pref)	23-Aug-2023 / 9-Jan-2024
Investment Opinion	C-1-8 / C-1-8 / C-1-8 / C-1-8
52-Week Range	9.56 USD - 16.72 USD
Market Value (mn)	63,503 USD
Shares Outstanding (mn)	3721.2 / 6522.0 / 7442.5 / 13044.0
Average Daily Value (mn)	15.55 USD
BofA Ticker / Exchange	PBR / NYS
BofA Ticker / Exchange	PBRA / NYS
BofA Ticker / Exchange	PBRQF / SAO
BofA Ticker / Exchange	PTRBF / SAO
Bloomberg / Reuters	PBR US / PBR.N
ROE (2023E)	33.4%
Net Dbt to Eqty (Dec-2022A)	31.4%

Timestamp: 31 January 2024 09:58PM EST

iQprofile SM Petrobras

*iQ*method SM – **Bus Performance***

(US$ Millions)	2021A	2022A	2023E	2024E	2025E
Return on Capital Employed	17.0%	23.9%	16.8%	14.3%	10.2%
Return on Equity	30.6%	50.1%	33.4%	27.1%	16.2%
Operating Margin	46.6%	45.9%	41.2%	40.2%	34.3%
Free Cash Flow	32,546	41,182	32,057	21,424	11,249

*iQ*method SM – **Quality of Earnings***

(US$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash Realization Ratio	2.0x	1.4x	1.7x	1.6x	2.0x
Asset Replacement Ratio	0.5x	0.7x	0.9x	1.3x	1.5x
Tax Rate	29.2%	31.3%	31.9%	34.0%	34.0%
Net Debt-to-Equity Ratio	36.1%	31.4%	19.9%	13.1%	12.7%
Interest Cover	7.6x	16.3x	10.2x	9.1x	6.9x

Income Statement Data (Dec)

(US$ Millions)	2021A	2022A	2023E	2024E	2025E
Sales	83,911	124,163	104,123	101,342	87,986
% Change	66.4%	41.7%	-19.8%	-2.7%	-13.2%
Gross Profit	40,714	64,690	55,687	54,118	44,169
% Change	77.2%	52.1%	-17.6%	-2.8%	-18.4%
EBITDA	50,769	70,181	55,999	53,976	43,609
% Change	153.8%	32.3%	-23.7%	-3.6%	-19.2%
Net Interest & Other Income	(10,984)	(3,729)	(4,793)	(4,768)	(5,916)
Net Income (Adjusted)	**19,883**	**36,596**	**25,910**	**23,740**	**16,007**
% Change	**NM**	**76.2%**	**-32.3%**	**-8.4%**	**-32.6%**

Free Cash Flow Data (Dec)

(US$ Millions)	2021A	2022A	2023E	2024E	2025E
Net Income from Cont Operations (GAAP)	19,883	36,596	25,910	23,740	16,007
Depreciation & Amortization	11,687	13,206	13,150	13,237	13,439
Change in Working Capital	(3,293)	(1,232)	1,045	376	366
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	10,597	2,227	4,165	1,815	1,775
Capital Expenditure	(6,327)	(9,615)	(12,214)	(17,744)	(20,338)
Free Cash Flow	**32,546**	**41,182**	**32,057**	**21,424**	**11,249**
% Change	**40.5%**	**21.1%**	**-25.5%**	**-33.2%**	**-47.5%**
Share / Issue Repurchase	0	0	(197)	0	0
Cost of Dividends Paid	(13,480)	(37,681)	(19,544)	(10,970)	(6,926)
Change in Debt	(21,513)	(8,102)	(2,852)	0	0

Balance Sheet Data (Dec)

(US$ Millions)	2021A	2022A	2023E	2024E	2025E
Cash & Equivalents	10,487	7,902	13,705	17,557	16,765
Trade Receivables	8,284	7,362	6,858	6,474	6,023
Other Current Assets	13,339	18,029	12,504	12,050	11,516
Property, Plant & Equipment	108,483	109,653	120,809	130,937	143,366
Other Non-Current Assets	34,085	42,045	56,734	52,372	54,613
Total Assets	**174,677**	**184,992**	**210,610**	**219,390**	**232,283**
Short-Term Debt	3,647	3,534	4,439	4,439	4,439
Other Current Liabilities	15,131	21,986	20,632	20,170	19,552
Long-Term Debt	32,120	26,068	25,420	25,420	25,420
Other Non-Current Liabilities	53,836	64,389	78,882	75,355	79,784
Total Liabilities	**104,734**	**115,976**	**129,374**	**125,384**	**129,195**
Total Equity	**69,943**	**69,016**	**81,236**	**94,006**	**103,088**
Total Equity & Liabilities	**174,677**	**184,992**	**210,610**	**219,390**	**232,283**

* For full definitions of *iQmethod* SM measures, see page 8.

Company Sector

Oils

Company Description

Petrobras is a government-controlled enterprise that operates primarily in exploration and production and refining in Brazil. The company is expected to focus increasingly on its low-cost and high potential pre-salt developments in Brazil.

Investment Rationale

Our positive view is based on our expectation that PBR will pay extraordinary dividends considering that: 1) it does not have a statutory reserve, and 2) our view that the government is supportive of extraordinary dividends given its fiscal situation. In this context, we estimate a strong dividend yield prospect for 2H23 (19%) and 2024 (22%). Other factors that support our view are: 1) strong production growth, and 2) a fuel pricing policy more aligned with international prices.

Stock Data

Average Daily Volume	12,796,059
Shares / Common	2.00

Quarterly Earnings Estimates

	2022	2023
Q1	1.31A	1.21A
Q2	1.70A	0.91A
Q3	1.35A	0.84A
Q4	1.27A	1.06E

Feedback from PBR Deep Dive; A new and re-energized company emerges

Upstream

Most of the discussion was on the company's production curve, mostly regarding assumptions embedded in the 2024-28 Strategic Plan, and expectations regarding performance of the pre-salt fields. In our most recent interactions with investors, we believe that the market expects Petrobras to deliver a higher production vs. the company's guidance.

A realistic approach for the production curve

Management highlighted that its estimates embed a reservoir-uncertainty factor. According to the company, the pre-salt fields have more complex reservoirs with more intricate subsea equipment and production system compared to the Campos basin. In this context, the company does **not** assume that everything goes according to its plans and, therefore, they penalize their production curve to reflect potential/unexpected disappointments.

Management highlighted that its forecast has improved as it has been optimizing its production curve model over the last three to four years. It was also noted that, as the company factors historical datapoints to forecast future production, there could be upside from technological improvements deployed in more recent years.

The production curve model assumes oil prices of US$45/bbl in the long-term and new projects are only approved if they prove to be NPV positive under this conservative assumption. Overall, average breakeven is lower than the US$45/bbl.

Tupi field

Even though Tupi's production has already started to deplete, the pace is still unknown. In this regard, Petrobras assumes a depletion of 10%, which is the same rate of Marlim field, given that the company has seen similarities between both fields in this phase. Management highlighted that it has been working very hard to deliver a 7-8% depletion on the pre-salt field, but new investments will depend on the contract extension for the platforms. Additionally, a new development plan for Tupi has been submitted to ANP (Brazil's Oil & Gas Regulator).

Búzios field

According to management, Búzios production should peak in 2029 and the depletion phase is expected to start one-or-two years thereafter. Although the company has been studying and developing the field over the past ~10 years, management noted the company still has a lot to learn about it. The field has currently six platforms in operation and initial expectations have been beaten – but looking to the mid-to-long term, management does not know how its reservoirs will respond to future stimulations such as water and gas injections.

As soon as management has more information and new data on potential depletion of the field, it will feed these into its production curve model. Current forecast assumes past information for depletion rates. Management noted that depletion could be better than their expectations, but it prefers to take a realistic approach.

Revitalization projects

Revitalization projects are seen as low hanging fruits opportunities by management given their deeper knowledge of the legacy assets and the fact that they do not need to deploy new infrastructure at the sites. According to management, IRR for revitalization projects is higher vs. the average portfolio.

Downstream

Discussion in the downstream space contemplated: 1) operating rates; 2) potential partnerships; 3) capacity addition; 4) crack spreads; and 5) stabilization fund. Overall, for this segment, we believe that investors focus mostly on the company's pricing policy and analyzes it more from a corporate governance (as this is a delicate subject for the relationship between the company and the government) than from a cash generation perspective.

Operating rates supported by pricing policy & past investments

The previous administration of Petrobras followed the Import Price Parity (IPP) and, since the change in the policy implemented by the current management in May last year, the company has more flexibility which has favored the refining segment's operating rates and market share. In addition to that, the investments carried out over the past years on process-optimization and reliability-improvement have also supported operating rates to remain high. In this regard, management stated that 93% operating rates is an optimal number at which its refineries can run at safe levels.

Potential partnership with Mubadala (Acelen)

Management stated that Mubadala has invited Petrobras to participate in one of its new projects. Last year, both companies signed a Memorandum of Understanding (MOU) to develop a biorefinery project to produce renewable diesel and sustainable aviation fuel derived from Macauba, a native Brazilian crop. Petrobras is still assessing the project and if it proves to be NPV positive as well as achieve other financial hurdles, it is likely that Petrobras will join Mubadala in this project.

Capacity expansion

The company expects to expand crude capacity expansion by 225kbpd and ULSD (Ultra-Low-Sulphur-Diesel) capacity by 290kbpd. Most of the capacity expansion is expected to come from the construction of the second train of RNEST, expected to be concluded by 2028, and will add around 130kbpd of capacity. Of note, the story of the construction of RNEST is seen as somewhat delicate by the market given as it was initially budgeted at US$2.4 billion and ended up costing over US$18 billion (with only half of it being completed).

When asked about the risks regarding capex overruns again, management stated that the company mapped out the time and effort to conclude this project. According to the company, it has implemented clauses in the contracts with suppliers for the project that can be adapted to guarantee timely completion. In their view, they don't see the company facing the same problems of the past.

The company is currently looking for new ways to better monetize its crude oil. Therefore, if it sees an opportunity to integrate and increase market share in refining, they will do so. Management highlighted that the company is not responsible for the supply of fuel into the country. However, at the same time, if there is a dire situation like a war, Petrobras would try to be responsible for supplying fuel in the market. But ultimately the company does not have constitutional obligation or duty to supply the country.

Cracks spreads are expected to drop

According to Petrobras, diesel and gasoline crack spreads are still high and it expects a decrease over the next years. In the company's strategic plan, they estimate a drop of around US$5/bbl for diesel and US$3/bbl for gasoline over the next five years – the company estimates an impact of US$1.8 billion for diesel and US$1.0 billion for gasoline for each increase/decrease of US$10/bbl in crack spreads.

Energy Transition

The discussion regarding Energy Transition was mostly focused on capital allocation, where Petrobras shared some of its plans with investments in renewables energies such as: wind and solar. Petrobras also discussed the natural gas supply in Brazil.

Investments in renewables: focus on solar and wind

Petrobras plans to capture 10% of Brazil's centralized wind and solar generation market by 2028. The company's latest 2024-28 Strategic Plan foresees Petrobras having around 5GW of solar and wind onshore capacity in operation or construction over the next five years. In this regard, the state-owned company expects to invest US$5.2 billion in renewable energy over the same period. This amount is part of the increase in investments in low-carbon projects, which is expected to receive US$11.5 billion.

According to management, the company intends to acquire 2 GW of onshore wind and solar assets still this year. Management highlighted, however, that all these projects will be in partnership with other companies (it intends to have at most 50% in these projects). Of note, Brazil currently has 28.9GW of wind power in operation and another 11.7GW of centralized solar. There is an additional 26GW of distributed solar generation.

Wind offshore needs regulatory framework first

Regarding wind offshore, a key point of concern is the regulatory framework which is non-existent in Brazil. The company is currently studying 10 projects (with a potential capacity of 23GW) plus seven projects in partnership with Equinor (potential of 14.5GW) – while most of these projects are located in the northeastern region of Brazil, there are projects in the southeast and south as well. In the end of last year, the company announced that it intends to develop all the capacity mentioned above of offshore wind, but this is unlikely to happen within the latest strategic plan’s horizon in our view given the lack of regulatory framework.

Natural gas supply set to increase with Rota 3 start-up

There has been an ongoing reduction in the import of natural gas via LNG terminals and Bolivia. However, with the start-up of Rota 3 (expected by August this year), with an offtake capacity of 18MMm3/day, the country will reduce its dependence from imports. The reduction will mostly come on LNG imports given that its prices are usually more expensive compared to Bolivia’s. According to the company, net addition of the start-up will be lower than 18MMm3/day given that it will be partially offset by depletion at other assets.

In the long-term, Petrobras expects to add more natural gas offtake capacity with the development of the projects of: 1) BM-C-33 (owned by Equinor) – capacity addition of 16MMm3/day in 2028; and 2) Sergipe-Alagoas Deepwater – capacity addition of 18MMm3/day in 2028 onwards.

Governance and Compliance

In this section, management focused on safeguards related to project, M&A, capex approval and also related party transactions among other things.

A much more robust process to approve new projects

According to the company, there are many layers/departments (strategy, risk analysis and others) that ensure that the projects that will be analyzed by the company will pass the profitability criteria before obtaining their Final Investment Decisions (FIDs). Profitability criteria include: NPV, IRR, profitability ratio, payback, breakeven prices, risk analysis, among others.

There are many layers of approval that are required for an investment to reach the board. According to the company, no single director company can recommend a project by themselves. The board has the ultimate competency to approve or reject new projects. In the past, one director was able to approve a project – however, nowadays the processes are much more rigorous and go through many different layers of approval involving several different departments.

Additionally, management also highlighted that Petrobras is overseen by several regulators, such as: 1) CVM (investors and capital market); 2) CGU (Comptroller General Office); 3) TCU (Federal Court of Accounts); 4) SEST (control of governance practices), and 5) CADE (anti-trust body).

Financial Strategy

Management focused on the creation of the capital remuneration reserve, which has been a key point of concern among investors. Management also discussed and addressed a few points regarding 1) indebtedness, cash management and potential dividends; and 2) tax disputes.

Capital remuneration reserve

According to management, the capital remuneration reserve was created because there is a specific rule/law in Brazil that obliges the companies to pay dividends in a certain amount based on their net income regardless of their cash flow generation. Therefore, the creation of the reserve provides flexibility to Petrobras in a sense that future payments do not have to be automatic.

Indebtedness, cash management and potential dividends/buybacks

Management highlighted that it is committed with financial responsibility. Ideal indebtedness level is between US$50 and 65 billion. In this context, dividends decisions do not consider only past information, including most recent cash position, but **mainly** a forward-looking and risk-averse approach, taking into account forecasted inflows and outflows along with several risk factors. Overall, if the forecasted cash position in the short-to-mid term is above their reference cash position, then the management could feel comfortable in paying extraordinary amounts. Regarding buyback, the company continues to execute the buyback program - so far it has been successful and around 75% of the pilot program has been concluded.

Tax dispute settlements

Similar to capex, M&A and project approval, any discussion involving potential tax dispute settlements with the government are treated as a related party transaction. If the amount under discussion is above R$300mn then approving it would require a multi-layered process involving many different departments which would ultimately require a 2/3 majority in the board of directors for final approval. This would require at least one board member appointed by minority shareholders to approve the settlement.

Exhibit 1: Stocks mentioned
Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
PBR	PBR US	Petrobras ON	US$ 17.07	C-1-8
PTRBF	PETR4 BZ	Petrobras PN	BRL 40.45	C-1-8
PBRQF	PETR3 BZ	Petrobras ON	BRL 42.16	C-1-8
PBRA	PBR/A US	Petrobras PN	US$ 16.4	C-1-8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Price objective basis & risk

Petrobras (PBRQF / PBR)

Our price objective of US$18.0/ADR (R$45.00/share) is based on a discounted cash flow (DCF)-based valuation using the BofA base case oil price scenario, which assumes a Brent price of US$80/bbl for 2024, and US$70/bbl for 2025 and beyond. We use a 14.70% weighted-average cost of capital (WACC) and an long-term growth rate of 2.0%.

Upside and downside risks to achieving our price objective are more favorable or less favorable results from the following factors: (1) oil price trends, (2) political/economic developments in Brazil, (3) possible increase in global risk aversion/higher interest rate environment, and (4) operational delays in production/development projects.

Petrobras PN (PTRBF / PBRA)

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Analyst Certification

We, Caio Ribeiro and Leonardo Marcondes, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

Special Disclosures

The locally listed shares of Brazilian issuers may only be purchased by investors outside of Brazil who are eligible foreign investors within the meaning of applicable laws and regulations.

Latin America - Natural Resources Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	3R Petroleum	XPXXF	RRRP3 BZ	Leonardo Marcondes
	Alpek SAB de CV	ALPKF	ALPEKA MM	Leonardo Marcondes
	CSN	SIDHF	CSNA3 BZ	Caio Ribeiro
	CSN	SID	SID US	Caio Ribeiro
	Dexco SA	DURXF	DXCO3 BZ	Leonardo Neratika
	Empresas CMPC SA	XEMCF	CMPC CI	Leonardo Neratika
	Enauta Participacoes S.A.	QGEPF	ENAT3 BZ	Leonardo Marcondes
	Orbia	MXCHF	ORBIA* MM	Leonardo Marcondes
	Petro Rio	HRTPF	PRIO3 BZ	Caio Ribeiro
	Petrobras	PBRQF	PETR3 BZ	Caio Ribeiro
	Petrobras	PBR	PBR US	Caio Ribeiro
	Petrobras PN	PBRA	PBR/A US	Caio Ribeiro
	Petrobras PN	PTRBF	PETR4 BZ	Caio Ribeiro
	PetroReconcavo	XPXYF	RECV3 BZ	Leonardo Marcondes
	Suzano	XXRTF	SUZB3 BZ	Caio Ribeiro
	Suzano S.A.	SUZ	SUZ US	Caio Ribeiro
	Ternium	TX	TX US	Caio Ribeiro
	Usiminas SA	USNZY	USNZY US	Caio Ribeiro
	Usiminas SA	USSPF	USIM5 BZ	Caio Ribeiro

Latin America - Natural Resources Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Vale	VALE	VALE US	Caio Ribeiro
	Vale	VALEF	VALE3 BZ	Caio Ribeiro
	Vibra Energia SA	XUBRF	VBBR3 BZ	Leonardo Marcondes
NEUTRAL				
	Bradespar	BRDQF	BRAP4 BZ	Caio Ribeiro
	Companhia Brasileira de Alumínio	XZUDF	CBAV3 BZ	Leonardo Neratika
	CSN Mineracao	XZRAF	CMIN3 BZ	Caio Ribeiro
	Ecopetrol S.A.	XESSF	ECOPETL CB	Caio Ribeiro
	Ecopetrol S.A.	EC	EC US	Caio Ribeiro
	Gerdau S. A.	GGBUF	GGBR4 BZ	Caio Ribeiro
	Gerdau S.A.	GGB	GGB US	Caio Ribeiro
	Metalurgica Gerdau	MZGPF	GOAU4 BZ	Caio Ribeiro
	Ultrapar	XLRUF	UGPA3 BZ	Leonardo Marcondes
	Ultrapar Pa-ADR	UGP	UGP US	Leonardo Marcondes
UNDERPERFORM				
	Empresas Copec SA	PZDCF	COPEC CI	Leonardo Neratika
	Grupo Mexico	GMBXF	GMEXICOB MM	Caio Ribeiro
	Klabin S.A	XLWDF	KLBN11 BZ	Caio Ribeiro
	Klabin S.A	KLBAY	KLBAY US	Caio Ribeiro
	Southern Copper	SCCO	SCCO US	Caio Ribeiro
	YPF SA	YPF	YPF US	Leonardo Marcondes
	YPF SA	YPFSF	YPFD AR	Leonardo Marcondes
RSTR				
	Braskem SA-A	BAKAF	BRKM5 BZ	Leonardo Marcondes
	Braskem SA-ADR	BAK	BAK US	Leonardo Marcondes

*iQ*method℠ Measures Definitions

Business Performance	Numerator	Denominator
Return On Capital Employed	NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization	Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill Amortization
Return On Equity	Net Income	Shareholders' Equity
Operating Margin	Operating Profit	Sales
Earnings Growth	Expected 5 Year CAGR From Latest Actual	N/A
Free Cash Flow	Cash Flow From Operations – Total Capex	N/A
Quality of Earnings	**Numerator**	**Denominator**
Cash Realization Ratio	Cash Flow From Operations	Net Income
Asset Replacement Ratio	Capex	Depreciation
Tax Rate	Tax Charge	Pre-Tax Income
Net Debt-To-Equity Ratio	Net Debt = Total Debt – Cash & Equivalents	Total Equity
Interest Cover	EBIT	Interest Expense
Valuation Toolkit	**Numerator**	**Denominator**
Price / Earnings Ratio	Current Share Price	Diluted Earnings Per Share (Basis As Specified)
Price / Book Value	Current Share Price	Shareholders' Equity / Current Basic Shares
Dividend Yield	Annualised Declared Cash Dividend	Current Share Price
Free Cash Flow Yield	Cash Flow From Operations – Total Capex	Market Cap = Current Share Price × Current Basic Shares
Enterprise Value / Sales	EV = Current Share Price × Current Shares + Minority Equity + Net Debt + Other LT Liabilities	Sales
EV / EBITDA	Enterprise Value	Basic EBIT + Depreciation + Amortization

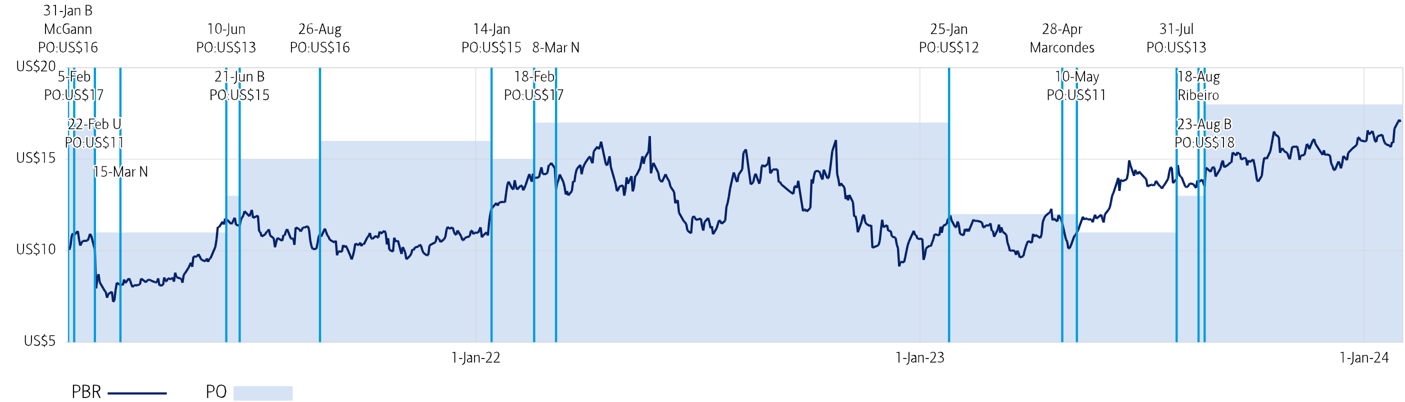
iQmethod℠ is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

iQdatabase® is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

Disclosures

Important Disclosures

Petrobras ON (PBR) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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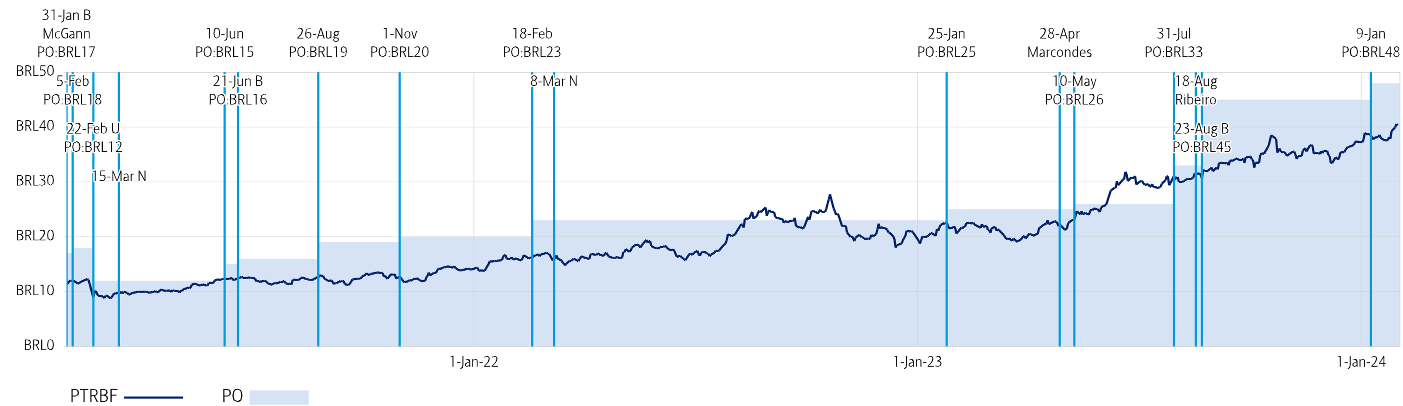
Petrobras PN (PTRBF) Price Chart



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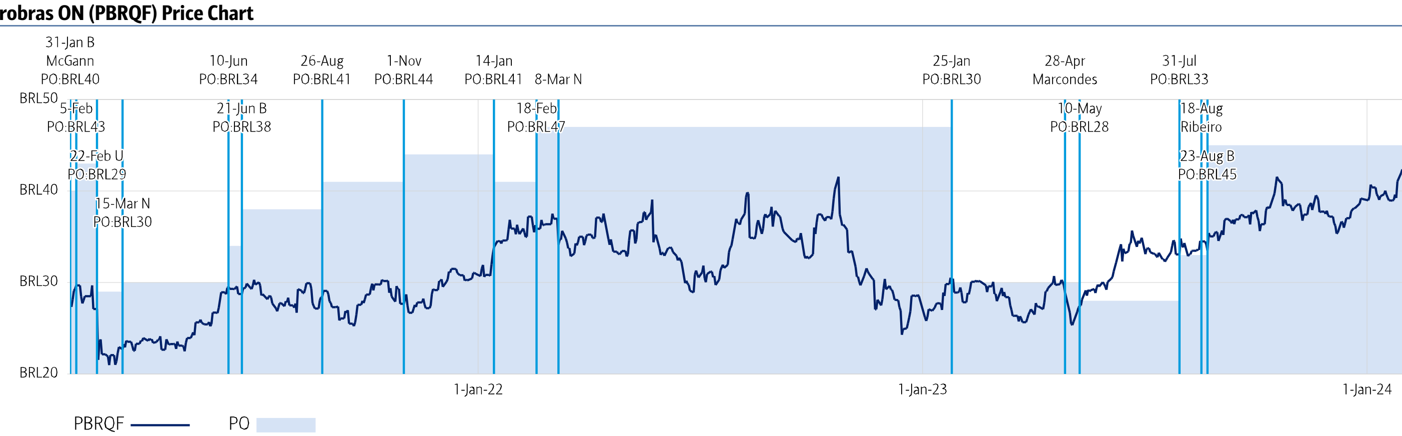
Petrobras ON (PBRQF) Price Chart



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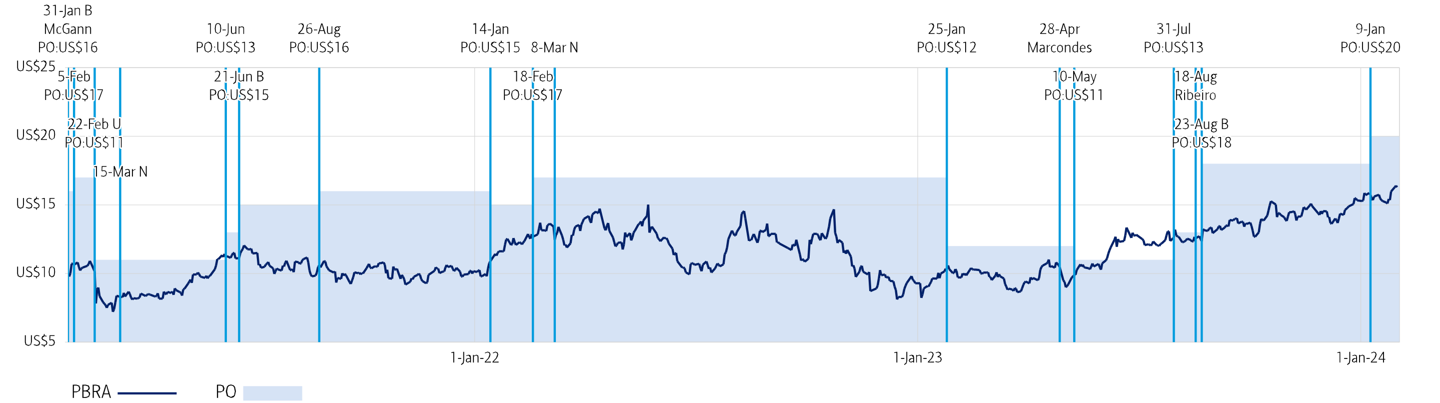
Petrobras PN (PBRA) Price Chart



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Equity Investment Rating Distribution: Energy Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	83	61.48%	Buy	64	77.11%
Hold	28	20.74%	Hold	21	75.00%
Sell	24	17.78%	Sell	18	75.00%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships [R1]	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

[R1] Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R2]
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Underperform	N/A	≥ 20%

[R2] Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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