

LatAm Natural Resources

The inflationary potential of Red Sea and Panama Canal trade disruptions

Industry Overview

Two key trade routes under strain = inflationary pressure

The global seaborne freight market has been pressured by escalating tensions in the Red Sea resulting from attacks made by Houthi rebels on commercial vessels, which adds to a severe drought affecting the Panama Canal operations. Seaborne trade corresponds to ~80% of global trade while the Red Sea and the Panama Canal represent ~15% and ~5% of seaborne trade, respectively.

Implications are global, oil & gas markets most exposed

Direct effects for Europe are more likely given the importance of the Red Sea for Asia-Europe trade. Recent trade disruptions could have a similar effect (although much smaller in magnitude) as the supply chain crisis that unfolded in 2021-22 – boosting freight rates, lead times and energy prices, ultimately leading to a surge in global inflation. Sector-wise, oil & gas markets are the most directly exposed, but other commodity and export markets could also be affected.

Oil & Gas: muted impact so far but prices could rise fast

The Red Sea is a key energy trading route. We note, however, that oil prices haven't increased yet as demand concerns have prevailed coupled with strong output in recent months. At the same time, it is important to highlight that escalating tensions in the region pose a serious risk to oil flows, and prices could change very quickly if the conflict leads to a major supply disruption in the Middle East.

Steel could see some pricing support but imports a threat

Although the Red Sea is not really an important route for South American trade flows, we see some potential indirect effects. Asia accounts for ~52% of steel imported into the EU, while China last year exported a net of 83.6Mt of steel. Extended lead times/higher freight costs could ultimately support global steel prices, particularly as regional prices are mostly set based on either import or export parity. On the other hand, we note the risk of some Asian exports being redirected to Latin America as Europe becomes a less accessible and more costly destination (given higher freight). This offers some cushion to Chinese exports and thus iron ore demand.

Limited impacts on pulp & paper, some support for SW

The trade disruptions should have a relatively minor impact on global pulp markets, as they coincide with weaker Chinese demand. Softwood (SW) could find US\$20-40/t of support when searching for its next bottom in the wake of LNY and SPW, but this in turn will also likely work to prevent additional supply closures. Fluff pulp prices are more likely to experience inflation due to higher container rates, as price increases have decelerated in recent months but have yet to turn over. Separately, paper exports being redirected to LatAm could pressure local prices, but cushion some of the impact on Chinese paper exports and support paper production, and in turn pulp demand.

31 January 2024

Equity
Latin America
Natural Resources

Caio Ribeiro
Research Analyst
BofAS
+1 646 855 4051
caio.ribeiro@bofa.com

Leonardo Neratika >>
Research Analyst
Merrill Lynch (Brazil)
+55 11 2188 4200
leonardo.neratika@bofa.com

Leonardo Marcondes >>
Research Analyst
Merrill Lynch (Brazil)
+55 11 3140 4801
leonardo.marcondes@bofa.com

Guilherme Rosito >>
Research Analyst
Merrill Lynch (Brazil)
+55 11 2188 4363
guilherme.rosito@bofa.com

George L. Staphos
Research Analyst
BofAS
+1 646 855 4495
george.l.staphos@bofa.com

Lawson Winder, CFA >>
Research Analyst
Merrill Lynch (Canada)
+1 416 369 7592
lawson.winder@bofa.com

Carlos Assumpcao, CFA
Research Analyst
Merrill Lynch (Brazil)
+55 11 2188 4025
carlos.assumpcao@bofa.com

LNY = Lunar New Year

SPW = Shanghai Pulp Week

>> Employed by a non-US affiliate of BofAS and is not registered/qualified as a research analyst under the FINRA rules.

Refer to "Other Important Disclosures" for information on certain BofA Securities entities that take responsibility for the information herein in particular jurisdictions.

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Refer to important disclosures on page 16 to 18.

12653050

Timestamp: 31 January 2024 12:00AM EST

Two key trade routes under strain

Throughout the last few months, escalating tensions in the Red Sea resulting from attacks made by Houthi rebels on commercial vessels triggered a response from countries such as the US and the UK. The conflict is putting pressure on the global seaborne freight market due to the region's relevance as a trade route. In addition, a severe drought in Panama is leading to a backlog of vessels that need to wait longer to cross the Panama Canal. Seaborne trade corresponds to close to 80% of global trade while the Red Sea and the Panama Canal together represent ~20% of seaborne trade.

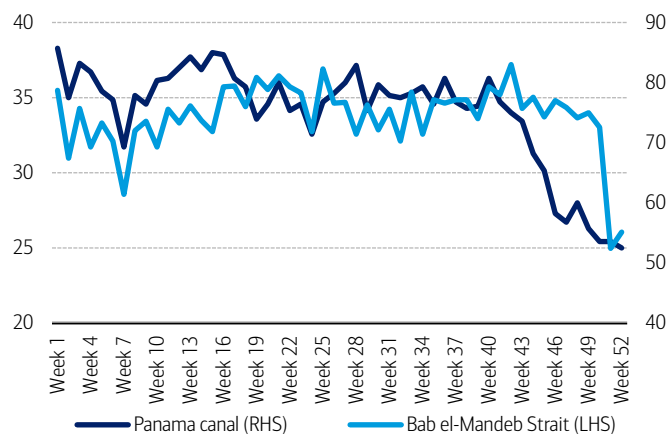
It all starts with oil generating ripple inflationary effects

Close to 5% of seaborne trade passes through the Panama Canal while the Red Sea is an important trading route for oil and gas, dry bulk and container shipping, representing 15% of seaborne trade. More than 1/3 of the vessels that cross the Red Sea passing through the Bab-el Mandeb Strait and the Suez Canal are tankers. In fact, around 12% and 8% of seaborne oil and LNG passes through this trade route.

Statistics on transiting ships through the Panama Canal and the Bab el-Mandeb Strait in the Red Sea have dropped significantly, by 30% and 10% YTD. Meanwhile the Baltic Dry Index (BDI) and the World Container Index (WCI) have risen by 139% and 195% from the lows immediately preceding the Panama Canal disruptions to the recent peaks.

Exhibit 1: Daily average per week of ships crossing the Panama Canal and Bab el-Mandeb Strait

The number of vessels dropped significantly by the end of 2023

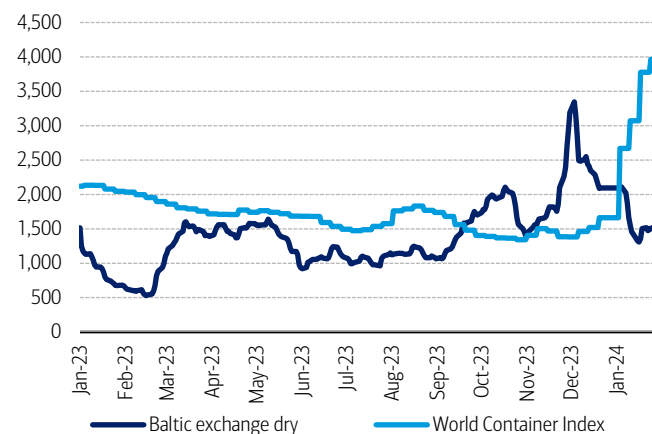


Source: BofA Global Research, IMF Portwatch

BofA GLOBAL RESEARCH

Exhibit 2: Baltic exchange dry (BDI) and World Container index evolution

Freight rates spike on the onset of the Red Sea crisis



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

In addition, the nearby Strait of Hormuz is also a particularly sensitive zone for energy trade given that around ~20% of oil and LNG flows through it. So ultimately an escalation of the conflict in the Red Sea can have a very significant inflationary implication for oil & gas markets.

As a result of the conflict in the Red Sea, oil and shipping companies are diverting vessels away from the region. The alternate route via the Cape of Good Hope around Southern Africa adds around 7–14 days to the voyage between Europe and Asia.

It is worth mentioning that the Panama Canal Authority has recently alleviated the restrictions on the number of ships that are allowed to cross the canal as of this month. The limit on transiting ships was increased from 20 to 24 given the expectation of more rainfall in the next few months as well as water conservation measures adopted by the Canal.

However, the conflict in the Red Sea is still fluid and could continue to drive up container and freight rates. In addition, the conflict also has the potential to push up energy prices. In fact, the current situation is reminiscent (but to a much smaller extent) to the supply

chain crisis that unfolded in 2021-22 which led freight rates to increase sharply and generated significant backlogs of stranded ships that were unable to dock at busy ports. This in turn led to a surge in global inflation.

Recent trade disruptions and the resulting impact on freight rates, higher lead times and energy prices have the potential to generate ripple effects and once again drive the price of goods up. This is most likely to generate direct effects for Europe given the importance of the Red Sea for Asia-Europe trade. But it could also have global inflationary impacts especially if energy prices catch a bid. However, the impact this time around should be much smaller in comparison to the supply chain crisis in 2021-22. Back then the inflationary impact was exacerbated by Covid-relief checks and a higher proportion of consumer spending allocated towards goods (vs. services) and lockdowns which generated significant supply and demand deficits.

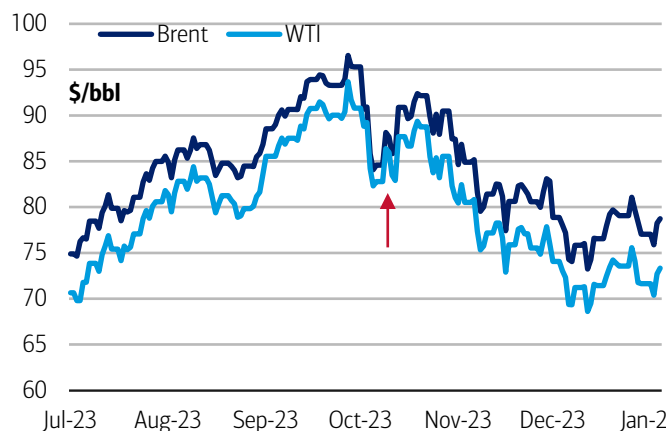
It is also worth mentioning that higher lead times also have the potential to result in customers increasing consumption patterns to prevent inventory shortfalls.

We recently cut 24' oil price forecast yet geopolitical tensions could push it up

Having peaked at \$95/bbl in September and rebounded again to almost \$91/bbl in the second half of October, WTI crude oil prices have pulled back considerably since the Hamas-linked spike (Exhibit 3) on a weakening fundamental backdrop. Despite continued efforts by Saudi Arabia to keep removing crude volumes from an oversupplied market (Exhibit 4), growing US output and a slowing global demand picture in 2024 have nudged oil prices lower. Yet, after a brief drop below \$70/bbl in early December and again in early January (see the report [Energy held by a thread of diesel](#)), crude oil prices have bounced from the lows on rising geopolitical concerns.

Exhibit 3: Daily Brent and WTI prices

WTI crude oil prices have pulled back considerably since the October 7 Hamas-linked spike...

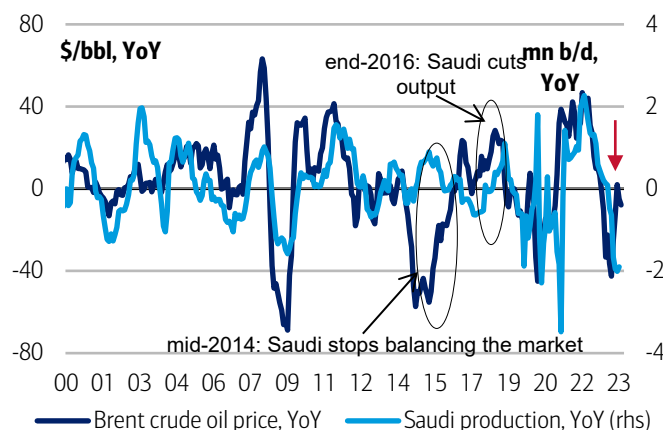


Source: Bloomberg

BofA GLOBAL RESEARCH

Exhibit 4: Brent crude oil price and Saudi production changes

...despite continued efforts by Saudi Arabia to keep curbing crude volumes



Source: Bloomberg

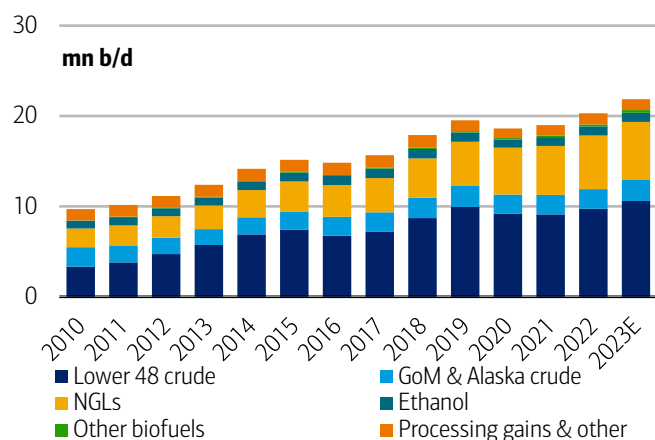
BofA GLOBAL RESEARCH

...due to expanding US shale oil supplies and...

While prices are lower than where they were three months ago, the geopolitical backdrop has not improved (see the report [Geopolitics create oil asymmetries](#)). It is precisely this volatile political and geopolitical backdrop that could keep the oil market on edge over the course of 2024, as fundamentals paint a softer picture. As we explained in our 2024 Year Ahead (see the report [Year Ahead 2024: Energy outlook](#)), the oil market needs firm OPEC+ cuts to support Brent prices above \$80/bbl this year. In that regard, the fact that total US liquids production reached a record 21mn b/d at the end of last year (Exhibit 5) driven by a very large expansion in shale supply across various basins (Exhibit 6) is a major headwind for the producer group.

Exhibit 5: Total US liquids production

Total US liquids production reached a record 21mn b/d at the end of last year...

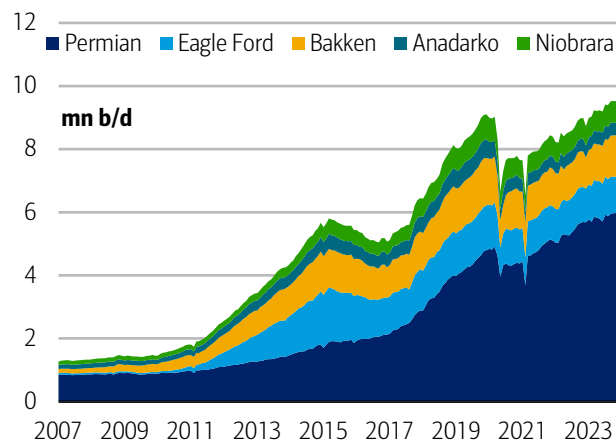


Source: EIA

BofA GLOBAL RESEARCH

Exhibit 6: US oil production by major shale basins

...driven by a very large expansion in shale supply across various basins



Source: Bloomberg

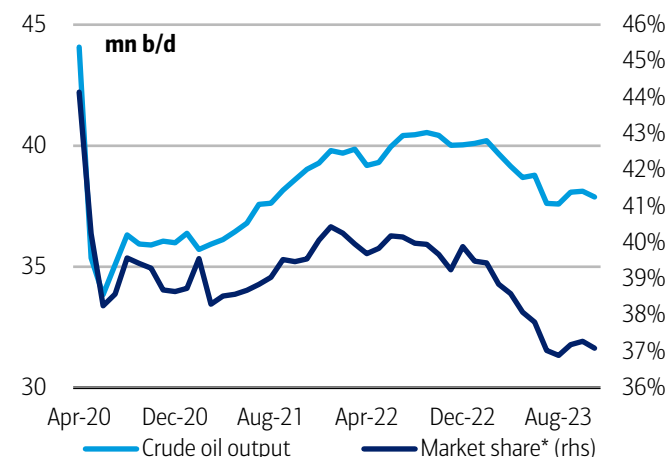
BofA GLOBAL RESEARCH

...a weak OPEC+ commitment to limit volumes

Precisely because of rapidly rising US shale supplies, as well as ongoing production growth in Guyana, Brazil, Canada, and other corners of the market, OPEC+ production and market share has come down significantly in the past year (Exhibit 7). Yet Saudi Arabia has carried most of the weight of the output cuts in the last 18 months with its voluntary production reductions. Although Saudi hoped to build goodwill to encourage others to join in the cuts, the unilateral action has led to a breakdown in OPEC cohesion and internal tensions (Exhibit 8). As the group gathered in their last meeting of 2023, some countries (such as Angola) refused to play by the new rules, ultimately leaving the organization and triggering a confidence crisis in the producer group.

Exhibit 7: OPEC+ crude oil production and market share (vs global liquids supply)

While OPEC+ production and market share has come down significantly in the past year...

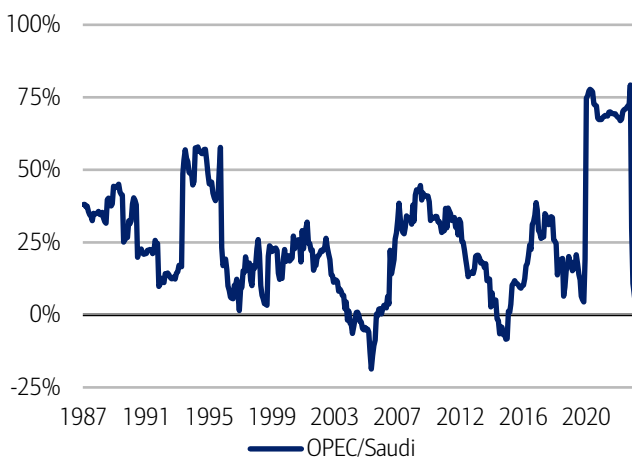


Source: IEA, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 8: OPEC cohesion (correlation between Saudi supply changes and other OPEC supply changes)

...Saudi Arabia has carried most of the weight, leading to a breakdown in OPEC cohesion



Source: IEA, BofA Global Research estimates

BofA GLOBAL RESEARCH

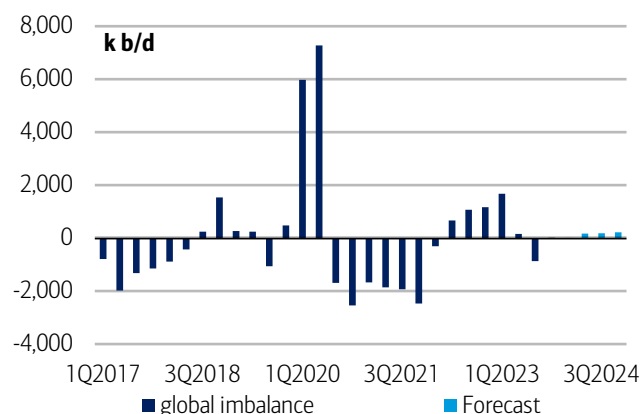
Balances look soft unless OPEC+ curbs output

Will OPEC+ cohesion increase in 2024 with others joining Saudi to manage production and ultimately market prices? This is one of the key questions for the oil market over the next few quarters. In our year ahead outlook in November, we projected a balanced oil market in 2024 and a \$90/bbl Brent average for 2024, but fundamentals have softened

since then (Exhibit 9). Now, Saudi oil production volumes likely must remain flat at 9mn b/d for the remainder of the year and (Exhibit 10) contributions from other members will be needed to prevent global oil balances from deteriorating further. While we assume additional cuts from other OPEC+ members, we think the group will fall short of its headline 2.2mn b/d 'cut'. Internal disagreements dominated the November meeting, so the group has spent much of the last four weeks trying to convince the market that the level of internal cohesion is still high despite the Angolan exit.

Exhibit 9: Global oil surplus (current)

In our year ahead outlook in November, we projected a balanced oil market in 2024, but balances have softened since then...

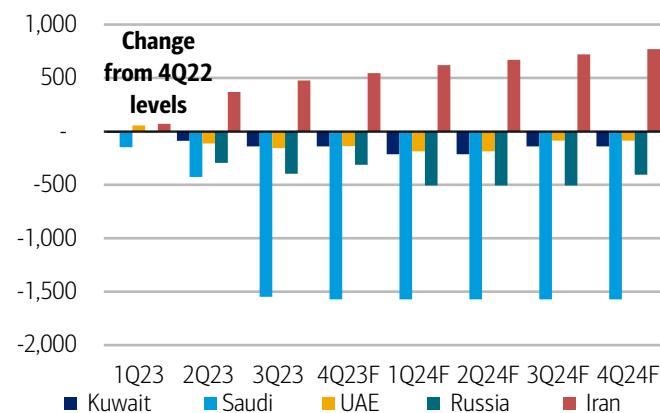


Source: IEA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 10: Change in supply from select countries

...and we assume Saudi oil production volumes of 9mn b/d during 2024 and cuts from other members to prevent balances from weakening further



Source: IEA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Still, growing spare capacity in Saudi and the UAE...

Moreover, while OPEC+ released a communique in their last meeting with large production cut commitments (Exhibit 11), there were a range of issues with it, starting with the lack of clarity with regard to exact quotas and production commitments levels. Further marring the view, the communique referred to both production and exports, making it difficult to gauge how balances will play out in the first half of this year. Meanwhile, spare crude oil production capacity has already increased to ~4mn b/d from a low of 1.8mn b/d in late 2022 and could continue to grow throughout 2024 (Exhibit 12) as OPEC+ continues to cut production volumes and the UAE maintains its energy investment programs.

Exhibit 11: Select press release text from recent OPEC meetings

While OPEC+ released a communique in their last meeting with production cut commitments...

Meeting	Action
10/5/2022	"Adjust downward the overall production by 2 mb/d from the August 2022 required production levels, starting November 2022 for OPEC and non-OPEC Participating Countries as per the attached table."
4/3/2023	"The Meeting noted the following voluntarily production adjustment announced on 2 April 2023 by" Saudi Arabia (500kb/d); Iraq (211kb/d); UAE (144 kb/d); Kuwait (128kb/d); Kazakhstan (78kb/d); Algeria (48kb/d); Oman (40kb/d); and Gabon (8kb/d) "starting May until the end of 2023"
6/4/2023	"Adjust the level of overall crude oil production for OPEC and non-OPEC Participating Countries in the DoC to 40.46 mb/d, starting 1 January 2024 until 31 December 2024, which is to be distributed as per the attached table."
11/30/2023	"The OPEC Secretariat noted the announcement of several OPEC+ countries of additional voluntary cuts to the total of 2.2 million barrels per day, aimed at supporting the stability and balance of oil markets. These voluntary cuts are calculated from the 2024 required production level as per the 35th OPEC Ministerial Meeting held on June 4 2023, and are in addition to the voluntary cuts previously announced in April 2023 and later extended until the end of 2024."

Source: OPEC, BofA Global Research

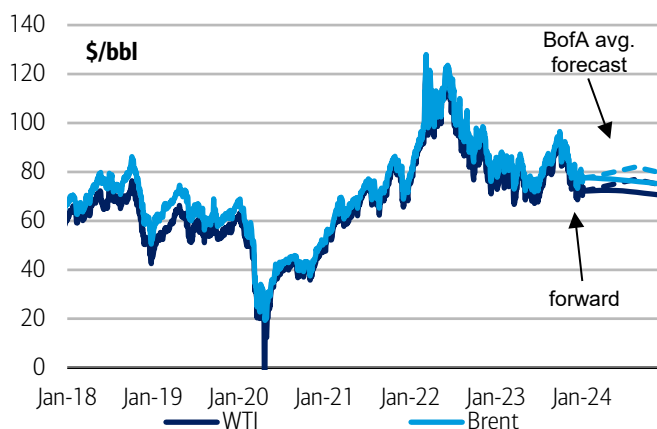
BofA GLOBAL RESEARCH

...and softer balances contribute to lower the prices in 2024

With spare capacity on the rise, OPEC+ credibility under the spotlight, and a weakening global supply/balance, oil prices have been on a downward slide for three months, even if the last month has provided some relief. From our perspective, however, we maintained our \$86 and \$90/bbl WTI and Brent crude oil forecasts for 2024 (Exhibit 14) despite these headwinds, but we acknowledge that fundamentals have softened and the economy continues to slow down (Exhibit 14). In the light of this, we reset our projected annual averages for Brent and WTI crude oil prices in 2024 to \$80 and \$75, down from \$90 and \$86 prior.

Exhibit 13: Brent & WTI crude price history, forecast, forward curve

We now project average prices of \$75 and \$80/bbl for WTI and Brent crude oil in 2024...

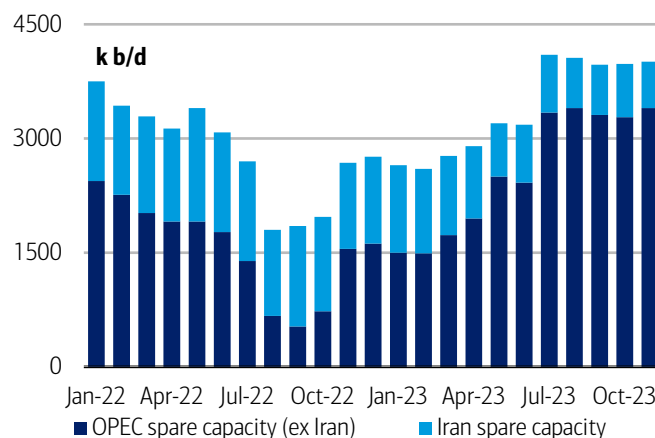


Source: Bloomberg, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 12: OPEC spare capacity

...spare capacity has already increased and could continue to grow throughout 2024

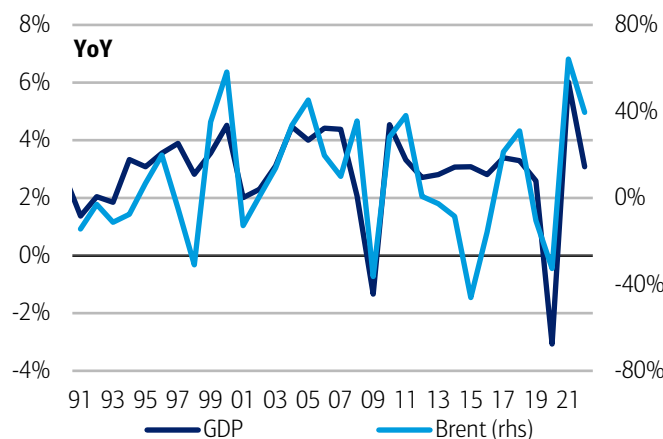


Source: IEA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 14: World GDP and Brent price growth

...and we acknowledge that fundamentals have softened and the economy continues to slow down



Source: IMF, Bloomberg

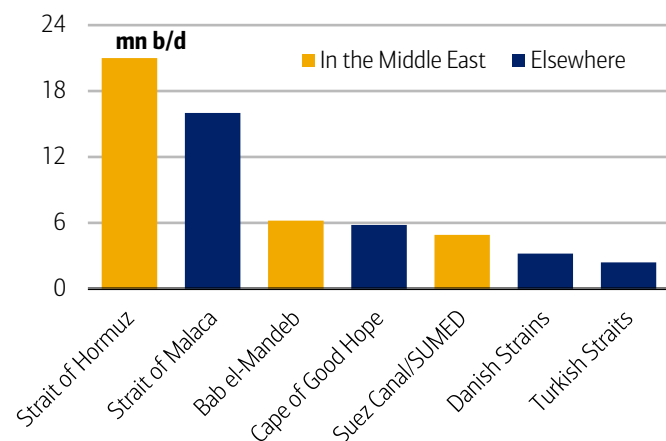
BofA GLOBAL RESEARCH

Yet geopolitical tensions in the Gulf continue to rise...

Even then, we remain concerned about (geo)politics. Not only are military tensions high across the world, but we are also facing a historical election year where over 60 countries representing about half of the world's population, from India to the US to the European Parliament, will go to the polls. Energy prices matter to voters the world over and the Biden Administration has been dealing with foes for much of the past 18 months to ensure ample supplies, allowing Russia, Iran, or Venezuela to increase their export volumes relative to market expectations. Against slowing demand and a growing supply backdrop, we note growing risks at key energy trading choke points (Exhibit 15) from the Persian Gulf to the Red Sea to the Panama Canal, as well as the sharp increase in armed conflict deaths witnessed in 2022 and 2023 due to both the Ukraine and Gaza wars (Exhibit 16). NATO can hardly afford to stretch itself thinner into more global conflicts ahead of major elections, and autocrats are taking notice.

Exhibit 15: EIA chokepoints

Against this slowing demand and growing supply backdrop, we note growing risks at choke points...

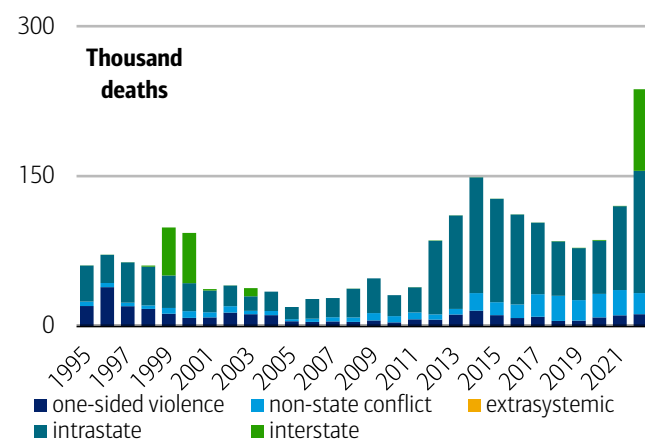


Source: EIA (estimates as of 2019), BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 16: Deaths in armed conflicts

...and the sharp increase in conflict deaths witnessed in 2022 and 2023 due to both the Ukraine and Gaza wars



Source: United Nations Office for the Coordination

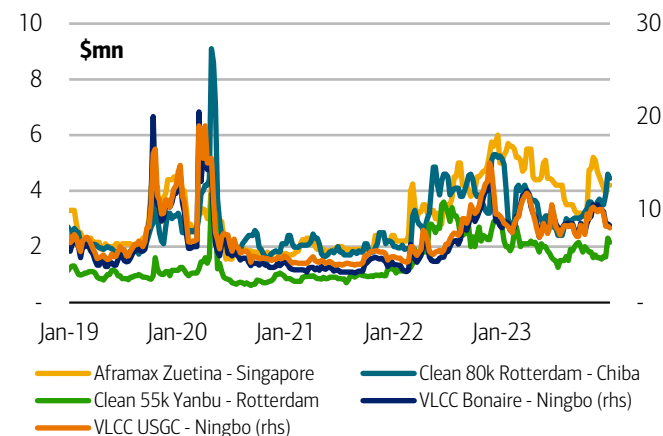
BofA GLOBAL RESEARCH

...and crude inventories are declining again...

For the time being, ample shipping capacity has kept freight rates in check despite geopolitics and weather disruptions (Exhibit 17), a factor that has surely alleviated some of the pressures on global energy markets. Yet (geo)politics remain front and center of an energy market looking for a clear direction. Importantly, the ability to manage unexpected events over the coming quarters is much thinner than in previous periods due to the lower government strategic energy stocks available at present. Saving the fact that Saudi Arabia has ample spare production capacity, there are limited tools across OECD economies to cap an unexpected surge in oil prices. Even if onshore, aboveground crude oil inventories increased in recent months from post covid lows of ~2.9bn barrels to ~3.1bn during 2023, they have started declining once again (Exhibit 18) and are now at ~3bn barrels.

Exhibit 17: Tanker spot rates

Ample shipping capacity has kept freight rates in check despite geopolitics and weather disruptions

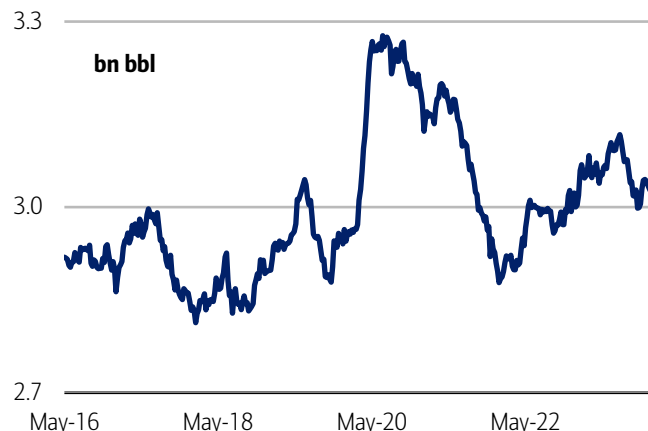


Source: Clarksons

BofA GLOBAL RESEARCH

Exhibit 18: Kayrros global onshore aboveground crude oil inventories

While onshore crude oil inventories increased in recent months, they have started declining once again



Source: Kayrros

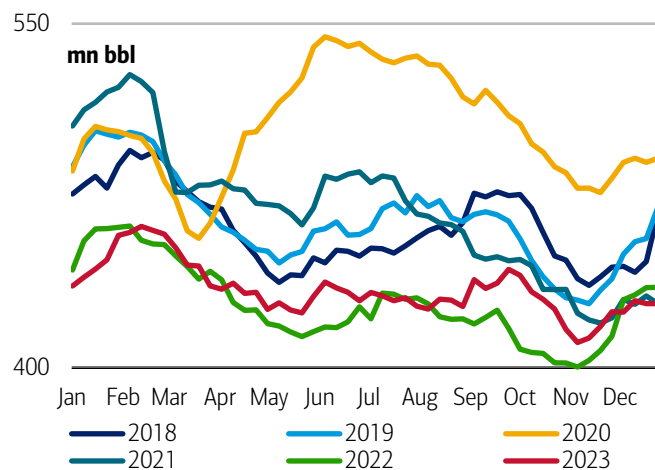
BofA GLOBAL RESEARCH

...while product stocks remain remarkably low...

While commercial crude stocks are low-ish, a much starker picture emerges for fuels like diesel, jet or even gasoline. Looking at aggregate petroleum product inventories across the main hubs, we note that stocks of transportation fuels are at very low levels and nearly 30mn barrels below five-year averages (Exhibit 19). As a result of the relatively tight petroleum product market situation, refining margins have yet to normalize after the big disruptions caused by the Ukraine war (Exhibit 20) and the banning of Russian petroleum product imports in Europe and the US. We believe new refineries will eventually expand capacity to bring crack spreads lower, but it may take some time (see the report [Waiting for Dangot\(e\)](#)).

Exhibit 19: Gasoline, diesel, and jet fuel inventories in the US, ARA, and Singapore

Aggregate petroleum product inventories across the main hubs are at very low levels...

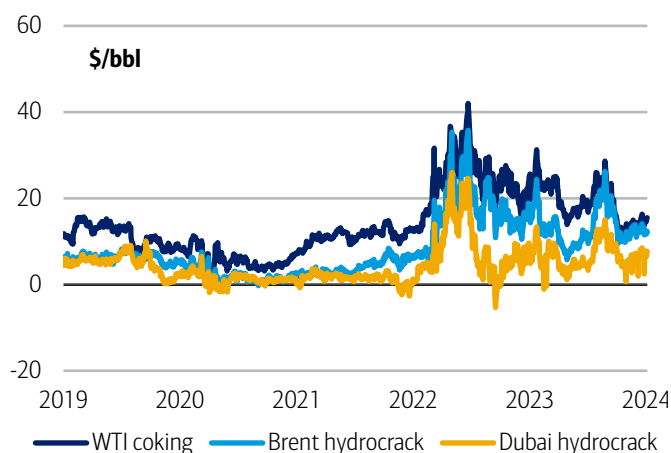


Source: Bloomberg

BofA GLOBAL RESEARCH

Exhibit 20: Regional refining margins

...and refining margins have yet to normalize after the big disruptions caused by the Ukraine war



Source: Bloomberg

BofA GLOBAL RESEARCH

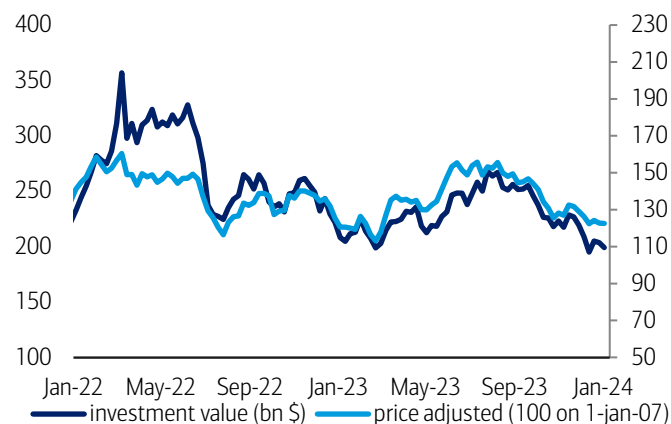
...just as speculative positioning has turned short

When it comes to investor positioning in commodity markets, we note that long exposure is down considerably in commodity indices (Exhibit 21) from a high point of ~\$350bn in March 2022 to today's levels of ~\$200bn. If we adjust this figure for price effects, we note that the value (indexed to Jan 1, 2007) of 122 is closer to 2020's low of

112 and even 2009 low of 91. Put differently, investor portfolios do not have much exposure to the asset class. Similarly, speculative positions across both Brent and WTI crude oil futures and options markets are down significantly (Exhibit 22) from a high last year of 545k contracts in September to 307k contracts recently after falling as low as 135k in December. So, sentiment and positioning can change on a dime, leading to large price swings, as we saw on January 3 on the back of the terrorist attack in Iran.

Exhibit 21: Index money invested in commodities (long) (nominal and price-adjusted)

Looking at investor positioning in commodity markets, we note that exposure is down considerably

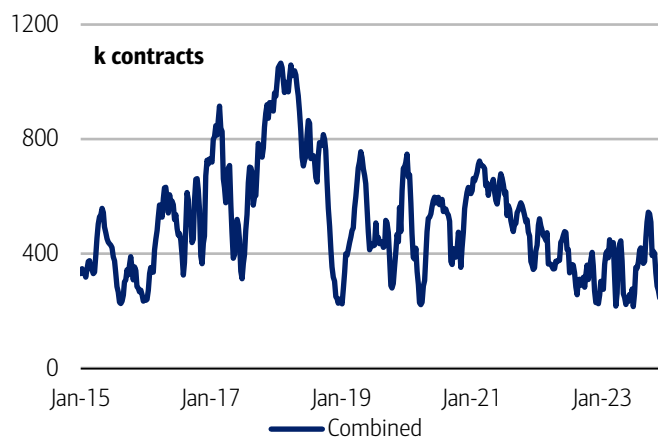


Source: Bloomberg, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 22: WTI and Brent managed money net length (futures only)

Similarly, speculative positions across both Brent and WTI crude oil markets are down significantly



Source: Bloomberg

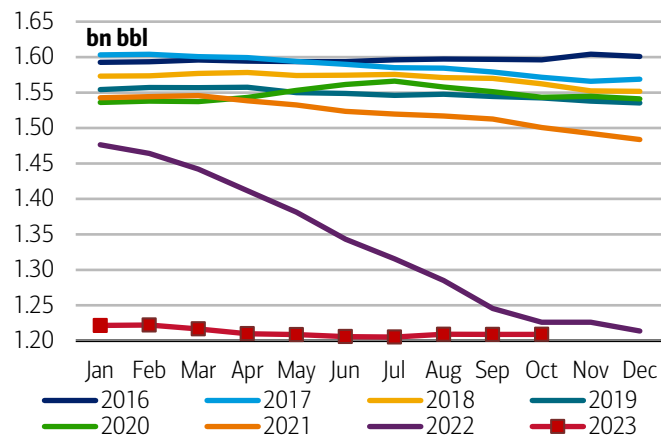
BofA GLOBAL RESEARCH

Also, OECD strategic stocks have yet to rebuild...

Beyond the fact that crude oil spec positioning length is light and commercial oil stocks are generally on the low side, strategic oil inventories across OECD economies are at the lowest point in decades (Exhibit 23). Although the US has started to push some barrels into strategic stockpiles in recent months (Exhibit 24), it is important to note that the ability of Western governments to limit an oil price rally, should there be one, has been reduced. Conversely, should oil WTI prices drop below \$70/bbl for a sustained period of time, we would expect a pickup in the refill of government oil stocks globally, contributing to create a soft put for oil prices.

Exhibit 23: OECD government petroleum stocks

Strategic oil inventories across OECD economies are at the lowest point in decades...

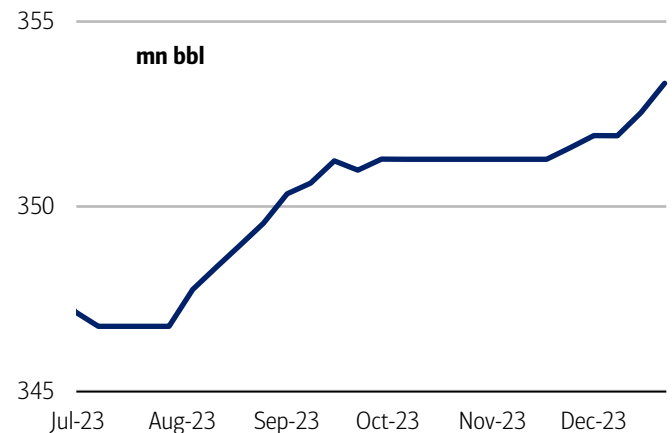


Source: IEA

BofA GLOBAL RESEARCH

Exhibit 24: US Strategic Petroleum Reserve

...although the US has started to push some barrels into strategic stockpiles in recent months



Source: Bloomberg

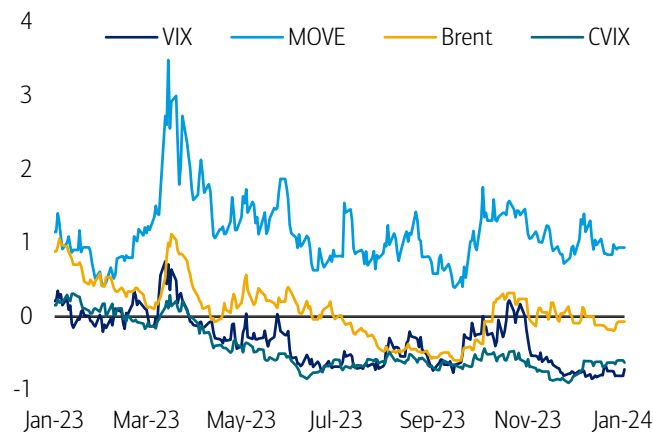
BofA GLOBAL RESEARCH

...leaving oil vulnerable to upside price swings...

With oil prices trapped in a \$25/bbl range for most of last year compared to a \$50/bbl range in 2022, volatility implied in crude oil options prices has been declining steadily but it has not collapsed. On a relative basis, volatility in the Brent crude oil market is not as high as it has been in the interest rates market (Exhibit 25) but has stayed persistently above the depressed vol levels witnessed in the equity and foreign exchange markets. Importantly, oil options continue to price a marked put skew due to continued dominance of producer hedging flows (Exhibit 26) and the relative absence of consumer hedging activity, a potential opportunity for investors concerned about geopolitical risks.

Exhibit 25: Z-score of cross-asset implied volatility since 2006

On a relative basis, volatility in the Brent crude oil market is not as high as in the rates market

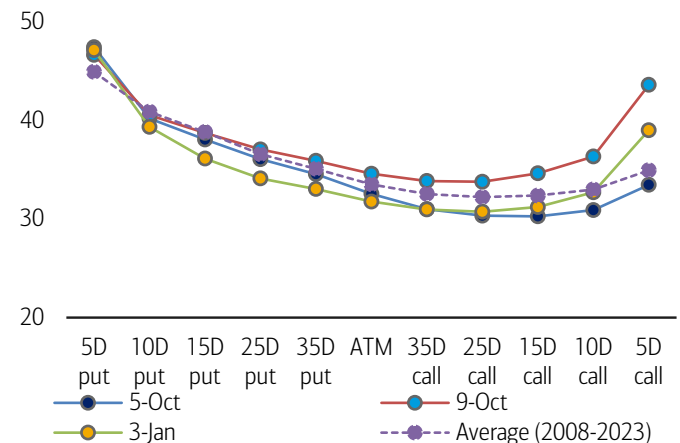


Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 26: Brent crude 3-month option skew

Oil options continue to price a marked put skew due to continued dominance of producer hedging flows



Source: Bloomberg

BofA GLOBAL RESEARCH

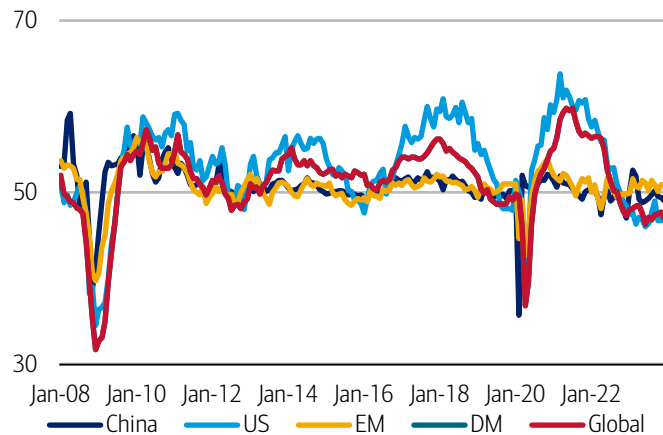
...especially if the economy improves on rate cuts

Another factor that has caused oil prices to drop is the worsening macro conditions across the global economy, particularly in the industrial and trade sectors. For starters, PMIs have been sinking for quite some time and are in contraction mode around the globe (Exhibit 27). However, industrial activity cannot contract forever if the economic outlook brightens. So, an eventual upturn in global manufacturing could quickly lead to rising metals prices and eventually energy prices too (Exhibit 28). Put differently, unless a recession unfolds over the coming months, industrials will have to restock on their

finished and intermediate goods, as well as their raw materials this year, which would trigger a round of fresh commodity demand (see [Rates, recession, and restocking are the keys to energy](#)).

Exhibit 27: Global manufacturing purchasing manager indices

PMIs have been sinking for quite some time and are in contraction mode around the globe...

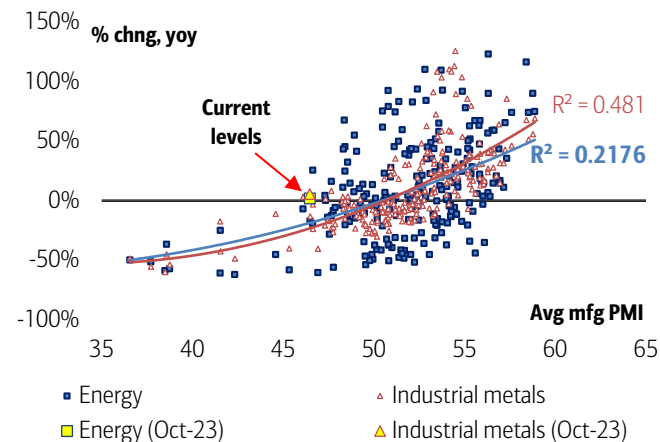


Source: Bloomberg

BofA GLOBAL RESEARCH

Exhibit 28: Average manufacturing vs (US, China, Eurozone) and annual commodity sector index returns

...but an eventual upturn in global industrial activity could quickly lead to rising metals and energy prices



Source: ISM, Markit, Bloomberg

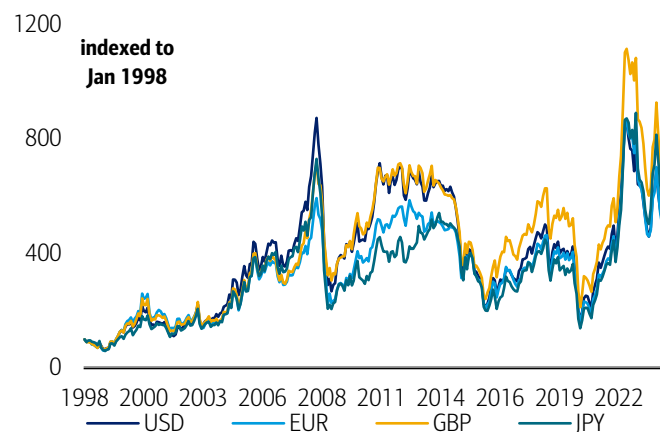
BofA GLOBAL RESEARCH

With fuel prices dropping relative to income...

Beyond the tailwinds that a cyclical inflection point could create for the energy sector over the course of the next few weeks, there are also important demand and price-level considerations related to the inflation-adjusted and relative prices of energy. While fuel prices measured in local currency have risen in absolute levels compared to history and fuels are somewhat expensive in a range of economies including the United Kingdom and Japan (Exhibit 29), fuel prices adjusted for income and inflation have come down considerably (Exhibit 30) in other places like the United States. After all, \$1 in 2024 has the purchasing power of \$0.84 in 2019 before the pandemic.

Exhibit 29: Front-month gasoil futures price in local currency indexed to January 1998

While fuel prices measured in local currency have risen in absolute levels compared to history...



Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 30: US gasoline price as a share of hourly wages

...fuel prices adjusted for income or inflation in the US have come down considerably



Source: Bloomberg, BofA Global Research

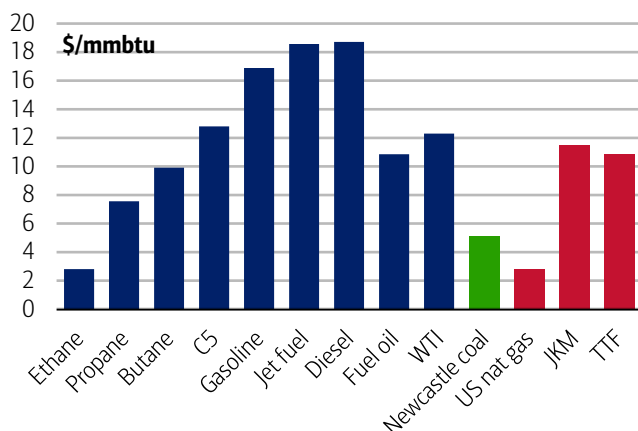
BofA GLOBAL RESEARCH

...and nat gas and thermal coal staying high...

Beyond the inflation considerations that define the real price of energy, it is also crucial to understand relative fuel prices to capture how high or how low Brent and WTI prices can trade over the course of this year. On this point, when looked at from a relative calorific value cross-fuel perspective, crude oil is not particularly expensive right now given its position as the king of thermal fuels (Exhibit 31) even after the slight drop in European TTF natural gas prices below EUR35/MWh in the first week of the year. In part, this is because Australian thermal coal and JKM liquid natural gas prices have held up (Exhibit 32) better than the European counterparts, although admittedly warm winter weather has been a headwind for prices.

Exhibit 31: Fuel prices in Mmbtu

When looked at from a relative calorific value cross-fuel perspective, oil is not particularly expensive right now

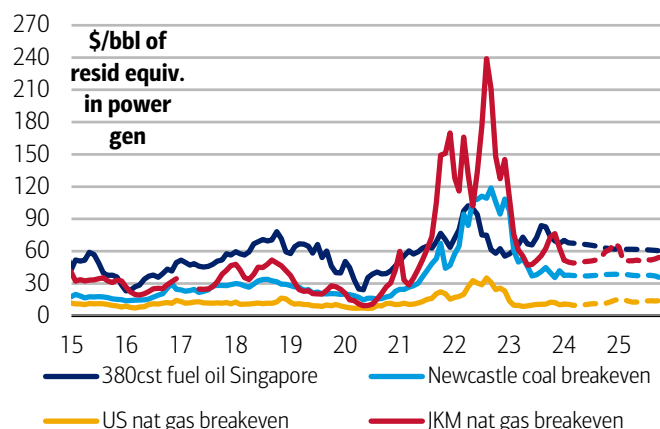


Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 32: Asia resid fuel oil prices and breakevens with coal and gas in power generation

In part, this is because Australian thermal coal and JKM liquid natural gas prices have held up



Source: Bloomberg, BofA Global Research

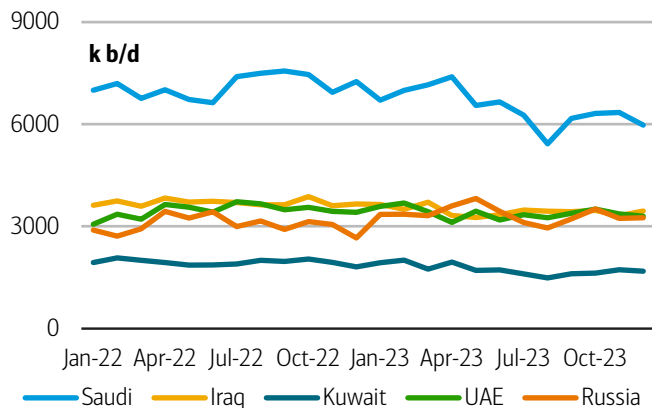
BofA GLOBAL RESEARCH

...prompt oil has limited downside near-term...

So, what happens next over the coming weeks? Given the geopolitical risks involved and the relatively low starting point for stocks, we see limited downside for Brent and WTI prices in the near-term. Even then, looking at loadings for Russian and Middle East oil across a range of shipping terminals, we note that exports have yet to start dropping (Exhibit 33) to reflect the agreement that OPEC+ came to last month. If these loadings start to decline in earnest as we expect, the Brent oil market will likely gain support and rally above \$80/bbl, further boosted by geopolitics. But if loadings increase further and reflect a fractured OPEC+, crude prices could take again a downward path below \$70/bbl. If it comes to that, we would emphasize that China's energy imports have tended to increase sharply when Brent prices drop below \$65/bbl (Exhibit 34).

Exhibit 33: Monthly crude loadings by country

Looking at loadings for Russian and Middle East oil, we note that exports have yet to start dropping

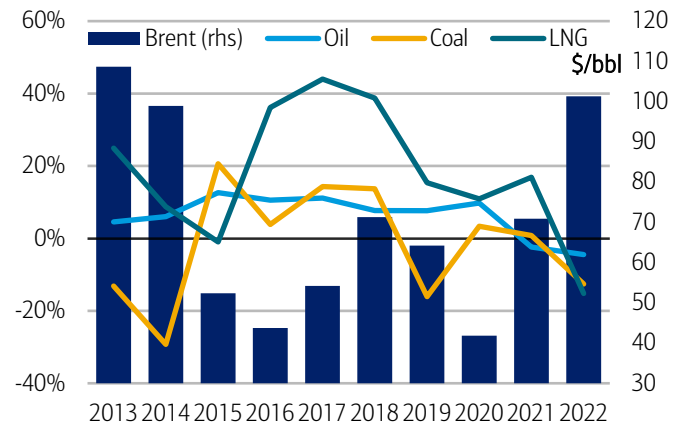


Source: Bloomberg

BofA GLOBAL RESEARCH

Exhibit 34: YoY change in imports to China by fuel versus Brent prices

China's energy imports have tended to increase sharply when Brent (oil or gas) prices dropped below \$65



Source: Energy Institute

BofA GLOBAL RESEARCH

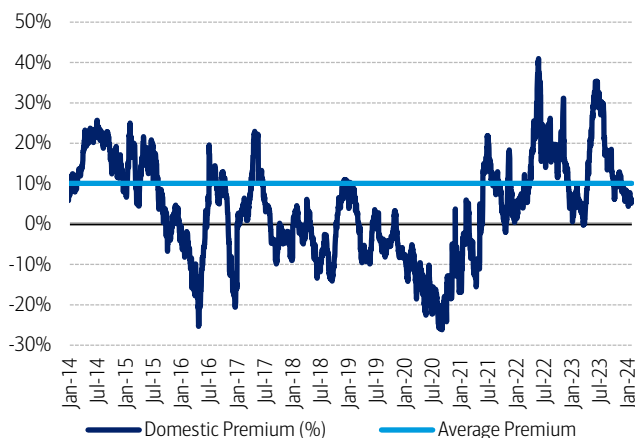
Steel could gain price support but imports a threat

Although the Red Sea is not really an important route for South American trade flows, we see some potential indirect effects that could unfold. Ultimately around 52% of steel imported into the EU comes from Asia with China alone representing 9%. Last year China exported around 83.6Mt of steel on a net basis (exports - imports). In our opinion, escalating tensions in the Red Sea could lead Chinese steelmakers to try and pass on higher freight rates onto customers. We don't expect them to significantly deter export volumes as there are alternate routes available but rather increase the costs of shipping those volumes and increase the lead times.

Given that most regional steel prices are mostly set based on either export parity or import parity, higher Chinese export prices and consequently higher European prices could generate some positive implications for regional prices in LatAm. In Brazil for example, we currently calculate that import premia remain at -6.5% for long steel (Exhibit 36) and 5.9% for flat steel (Exhibit 35) vs. a normalized premium of 5-10%. In fact, Brazil steelmakers have been signaling 5-10% hikes for February and if international steel price references rise on the back of the Red Sea conflict, then pass-through conditions could improve.

Exhibit 35: Brazilian HRC import parity premium/discount

The premium is currently at 5.9%

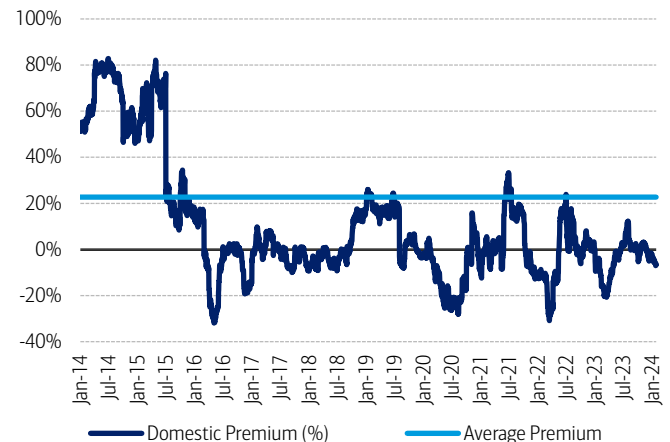


Source: BofA Global Research estimates, Bloomberg, Platts

BofA GLOBAL RESEARCH

Exhibit 36: Brazilian rebar import parity premium/discount

The discount is currently at 6.5%



Source: BofA Global Research estimates, Bloomberg, Platts

BofA GLOBAL RESEARCH

Risk of higher Asian exports to LatAm the key negative implication

Conversely, we also note the risk of some Asian exports, particularly Chinese, being redirected to Latin America as Europe becomes a less accessible destination. For steels specifically, we already saw a 64% surge in Brazilian imports from Asia in 2023 (led by China adding over 1.1Mt) – also benefitting from the 80% drop of imports from Türkiye (particularly important for long steel) in 2023 given reconstruction efforts after the earthquake in early 2023. This trend drove import penetration up in 2023, with imported steel accounting for 18.6% of apparent consumption (+5pp y/y), and could continue to pressure domestic markets.

Paper could also see a similar effect, and in fact we saw some anecdotal commentary from our industry sources suggesting Chinese paper & board producers, particularly for graphic paper, are looking into alternatives to European markets and plan to shift some of these volumes to Latin America. This could ultimately pressure domestic paper prices given higher import penetration. On the other hand, this could cushion some of the impact on Chinese paper exports and support paper production, and in turn pulp demand. Additionally, higher paper prices in Europe could offer some support to local prices for some grades such as kraftliner, and also benefit LatAm paper exports to Europe (e.g. Klabin's liquid paperboard exports).

Softwood, paper and fluff markets could also be impacted

We ran some channel checks with our industry contacts in the pulp & paper market and received the feedback below:

Shipments of paper and board out of China Europe are being restricted by the Red Sea conflict. That is providing some relief for EU paper & board suppliers and to a lesser extent US producers.

This in turn is leading China paper and board producers to focus more on the domestic market and less on exports meaning paper quality is less of an issue and using pulp that is certified to an international Forest Management Standard is not required. As such, they are using more domestic pulp and less imported pulp, especially when it comes to BCTMP.

In some non-China Asian pulp markets like India, a smaller share of pulp imports arrive via direct routes compared to China and are more subject to delays. Some buyers there are starting to increase pulp orders with a just-in-case sentiment, fearing a repeat of the extended lead times that unfolded as a result of the global supply chain crisis in 2021-22.

According to our industry contacts, softwood pulp is most at risk for disruption, particularly Nordic NBSK (Northern bleached softwood kraft pulp) and fluff pulp, which primarily use the Suez route for shipping to Asia. The conflict is driving an additional 2-week delivery time and approximately \$40-50/tonne in additional transportation costs have been cited for Nordic NBSK shipped to China.

As of last week, the shock appeared likely to be absorbed/managed by existing excess shipping capacity and the fact that 4 of 10 major container carriers remain active in the Red Sea, including notably COSCO and Evergreen. The attacks on American flagged vessels in recent days adds a new dynamic for shipping rates this week. Prices are likely to continue rising in the short term, especially with the disruption of Lunar New Year likely only adding to the inflation in container backhaul rates. Investments in vessels, port infrastructure and containers have already demonstrated a dampened effect on global shipping rates in 2023, which pushed major lines to restrict capacity. This idle capacity will now likely play a role in helping to limit the inflation beyond the initial shock.

Nordic producers have proposed a \$20/tonne hike on NBSK in China, although buyers have reportedly shrugged this off given the seasonally low demand leading into LNY and

declining paper and board prices. Fluff could prove more sensitive to container rate inflation, as was witnessed in 21/22.

Our conclusion given the current state is that the Red Sea crisis will likely have a relatively minor impact on global pulp markets, as the disruption is coinciding with weak demand in China. NBSK is likely to find \$20-40/tonne of support when searching for its next bottom in the wake of Lunar New Year and Shanghai Pulp Week, but this in turn will also likely work to prevent additional supply closures. Fluff pulp prices are more likely to experience inflation due to container rate inflation, as price increases have decelerated in recent months, but have yet to turn over. The 2-week extension of the softwood supply chain to China will one day contract when the security of the Suez route is guaranteed. This represents a future downside risk to softwood prices, similar to when shipping rates quickly declined in 2H22.

Disclosures

Important Disclosures

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R1}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R1} 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.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. *Coverage Cluster* is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of



its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBL. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.



All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein. Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies. Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.