

Airfreight - Global

Air Cargo Watch #13: Demand looks to have bottomed, but watch belly supply

Industry Overview

Monthly Air Cargo Watch to track the airfreight industry

Our monthly Air Cargo Watch includes high frequency airfreight data to track trends in the industry. Air cargo freight rates have averaged +10% QoQ higher so far in 4Q23 with the seasonal peak period arriving. Air cargo demand is showing signs of a cyclical and seasonal upturn right now, but belly supply continues to be added (+31.5% YoY) with more additions coming in 2024 while belly capacity is only back to 93% of 2019 levels.

Demand: Air cargo appears to have bottomed

There are growing signs that air cargo demand has bottomed with IATA data showing YoY demand improvements through August-September and high frequency data suggesting October-November air cargo volumes are also trending YoY higher. Demand growth appears to be the strongest in Asia where it has recovered to 96% of 2019 levels by September led by strength in auto parts, capital equipment and machinery. The data also suggests the seasonal upturn has begun, helped by new tech launches and holidays.

Supply: Belly adds continue, freighter discipline lacking

Air cargo capacity continues to be restored with belly capacity +31.5% YoY driving global air cargo capacity +12% YoY higher in September 2023. Freighters aren't showing much discipline yet – with capacity holding at -0.3% YoY despite YoY falling freight rates. Chinese airlines added another 9-11% MoM of belly capacity in October 2023, and we see more capacity additions into 2024 with belly capacity at 93% of 2019 levels right now.

Rates: Seasonal rate upswing gains momentum

4Q23 air cargo freight rates are averaging 10% QoQ higher so far as the seasonal peak upswing has arrived. Freight rates are averaging 30% above 2019 levels with belly constrained markets (e.g. Shanghai to US/Europe, HK to US/ASEAN) seeing rates closer to 50% above 2019. We expect rates to remain strong over the peak but foresee downward pricing pressure into 2024 as supply continues to be added.

Airlines: Yield upturn while cargo loads hold

Asian airline cargo load factors trended at ~70% in October 2023 below COVID peaks. October cargo yields strengthened for China Airlines & EVA to 32%/40% above 2019 levels respectively (up from 29%/33% in September).

16 November 2023

Equity
Global
Airfreight**Nathan Gee, CFA** >>Research Analyst
Merrill Lynch (Singapore)
+65 6678 0418
nathan.gee@bofa.com**Ken Hoexter**Research Analyst
BofAS
+1 646 855 1498
ken.hoexter@bofa.com**Muneeba Kayani** >>Research Analyst
MLI (UK)
+44 20 7996 5208
muneeba.kayani@bofa.com**Isabella Zeng** >>Research Analyst
Merrill Lynch (Singapore)
+65 6678 5390
isabella.zeng@bofa.com**Hiro Nakakura, CFA** >>Research Analyst
Merrill Lynch (Singapore)
+65 6678 0972
hiro.nakakura@bofa.comIATA: International Air Transport
Association

>> 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 18 to 20.

12628848

Timestamp: 16 November 2023 02:59AM EST

Airfreight rates

Exhibit 1: Weekly Global Baltic Airfreight Index

Baltic Airfreight index now at 2,205 down -40% YTD YoY

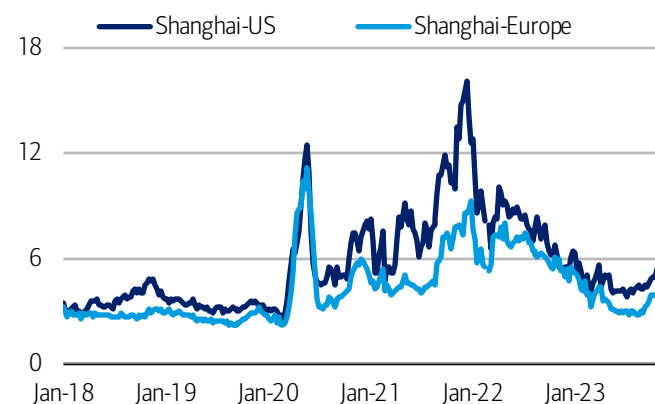


Source: TAC

BofA GLOBAL RESEARCH

Exhibit 2: Baltic Airfreight Shanghai to US and Europe (US\$/kg)

Shanghai-Europe +48% and Shanghai-US +74% vs 2019 in the latest week



Source: TAC

BofA GLOBAL RESEARCH

Exhibit 3: Key airfreight rates overview table, % change on 4Q23 data

Global rates are up 10% QoQ in 4Q23 so far

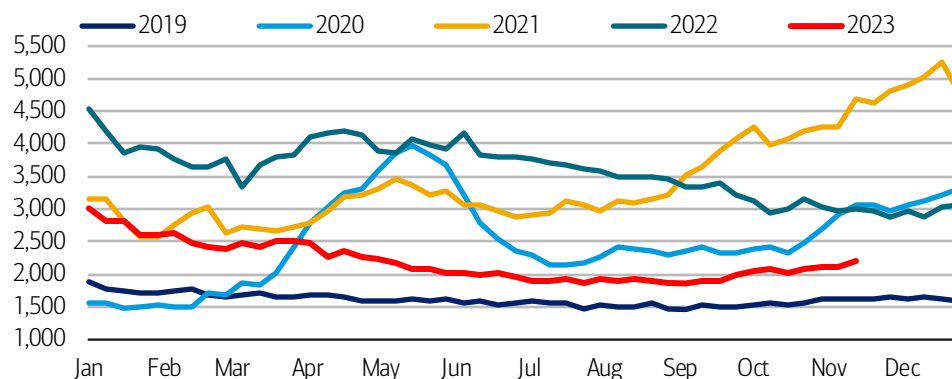
	Baltic Airfreight - Global	BAF-HK	BAF-Shanghai	BAF-Singapore	BAF-London	BAF-Chicago	Shanghai-Europe	Shanghai-US	HK-Europe	HK-US	HK-SE Asia	London-US	Singapore-SE Asia
1Q21	2,803	2,828	5,165	423	2,547	1,702	4.5	6.1	4.3	5.6	1.8	4.9	1.8
2Q21	3,136	3,545	5,867	425	2,755	1,672	4.5	7.7	4.6	8.0	1.8	5.5	1.9
3Q21	3,284	3,724	6,521	412	2,664	1,702	5.0	8.5	4.8	8.5	2.0	5.0	1.8
4Q21	4,562	5,230	9,898	417	2,928	2,322	7.8	12.8	7.5	11.6	2.5	4.9	1.8
1Q22	3,844	4,300	7,373	484	2,771	2,151	6.4	9.0	6.0	9.3	2.3	4.5	2.1
2Q22	3,995	4,226	7,717	564	2,890	2,424	7.2	8.9	6.1	8.9	2.3	4.2	2.5
3Q22	3,529	3,909	6,845	600	2,340	2,312	6.6	7.7	6.3	7.7	2.3	3.5	2.6
4Q22	3,002	3,288	5,477	528	2,210	1,973	5.5	5.9	5.7	6.1	2.1	3.3	2.3
1Q23	2,591	2,736	4,542	495	1,877	1,958	4.3	5.0	4.5	5.2	1.9	2.7	2.2
2Q23	2,148	2,742	3,777	425	1,512	1,436	3.3	4.4	3.8	4.9	1.8	1.9	1.9
3Q23	1,905	3,067	3,577	351	1,090	1,230	3.0	4.3	3.7	4.6	1.6	1.2	1.5
4Q23	2,101	3,539	4,435	288	955	1,198	4.0	5.2	4.2	5.4	1.7	1.0	1.3
QoQ	10%	15%	24%	-18%	-12%	-3%	30%	22%	14%	18%	4%	-16%	-18%
YoY	-30%	8%	-19%	-45%	-57%	-39%	-28%	-11%	-26%	-12%	-22%	-68%	-45%
YTD YoY	-26%	10%	-5%	-45%	-54%	-44%	-19%	11%	-22%	-14%	-19%	-69%	-45%
vs 2019	31%	93%	50%	34%	5%	-2%	41%	57%	36%	50%	53%	-1%	34%

Source: TAC, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 4: Weekly Global Baltic Airfreight Index by year, 2019-23

Latest weekly rate index trending slightly higher



Source: TAC, BofA Global Research

BofA GLOBAL RESEARCH

Airfreight demand

Global cargo traffic

Exhibit 5: Monthly global air cargo demand growth YoY %

Demand was up 1.9% YoY in September compared to +1.5% YoY in August

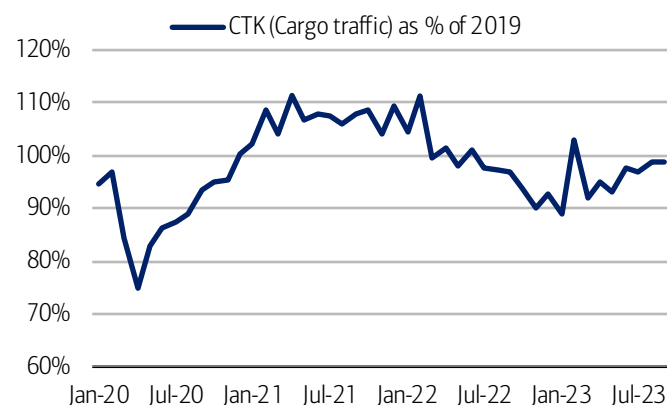


Source: BofA Global Research estimates, IATA

BofA GLOBAL RESEARCH

Exhibit 7: Air cargo demand (CTK) as % of 2019 levels

Demand stabilized at 99% of 2019 levels in September, same as August

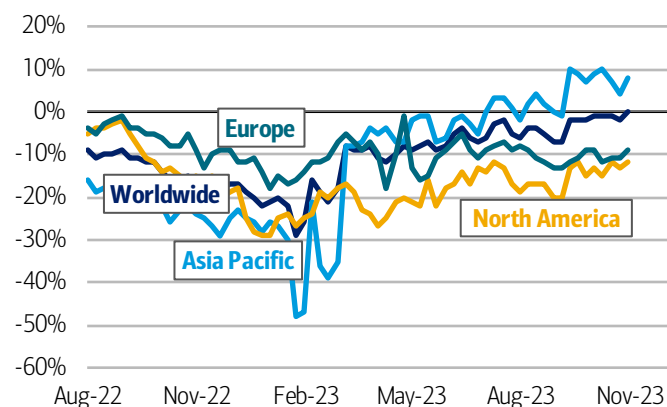


Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 9: Weekly cargo chargeable weight, YoY % since Aug 2022

Global demand was slightly down by -1% in October-mid November

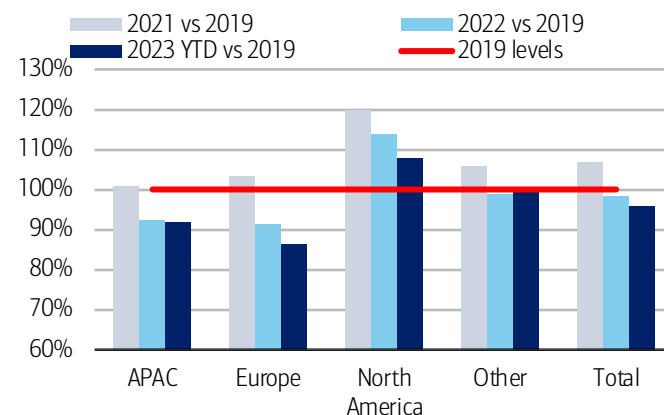


Source: WorldACD, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 6: Air cargo demand (CTK) vs 2019 levels by major regions

2022 demand was 2% below 2019 levels, YTD2023 so far at -4% vs 2019

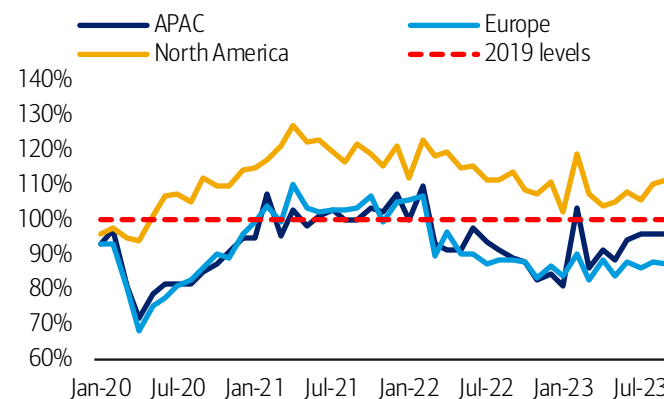


Source: IATA, BofA Global Research. YTD up to February 2023

BofA GLOBAL RESEARCH

Exhibit 8: Monthly air cargo demand by major regions vs 2019 levels

Demand from North America is still the strongest at 111% of 2019 levels

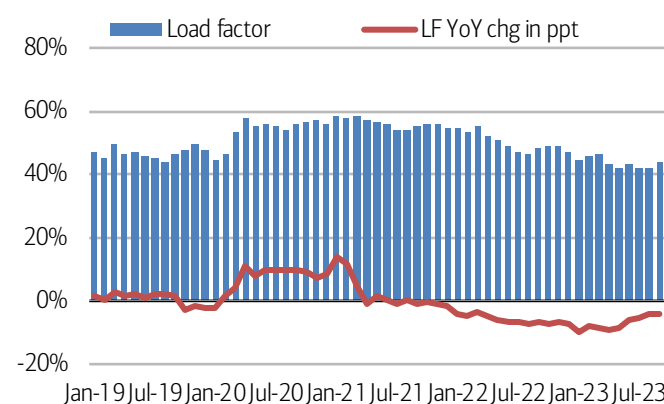


Source: IATA, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 10: Global cargo load factor and YoY changes in ppts

Load factor improved to 44% in September, up from 42.2% in August

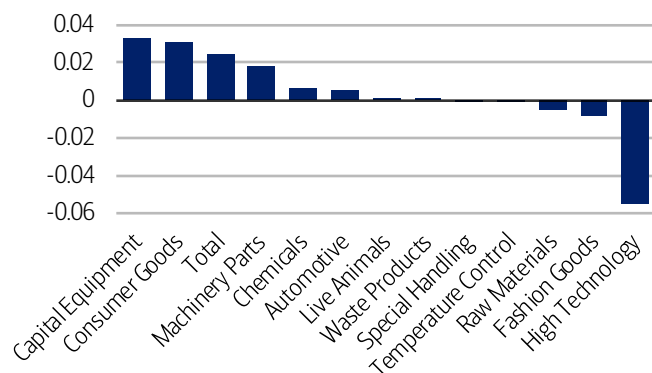


Source: IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 11: China air cargo: Growth by industry v. 2019, 8M2023

Capital equipment & consumer goods made positive contributions YTD2023

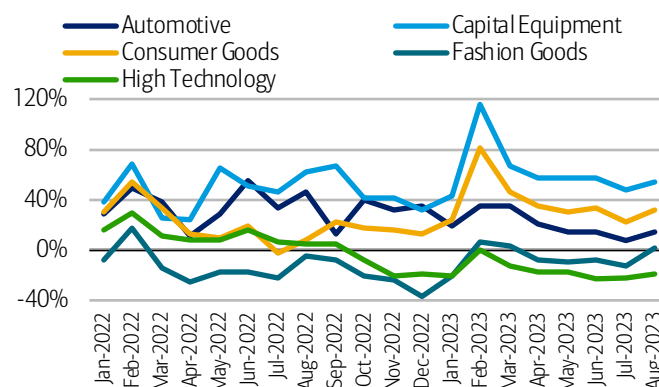


Source: Company report

BofA GLOBAL RESEARCH

Exhibit 12: China monthly air cargo trade: % change from 2019 levels

Capital equipment & consumer goods made positive contributions YTD2023



Source: Company report

BofA GLOBAL RESEARCH

Leading demand indicators**Exhibit 13: Global air cargo demand yoy growth v. ISM new orders**

ISM new orders lead air cargo demand by 3 months with 0.65 correlation

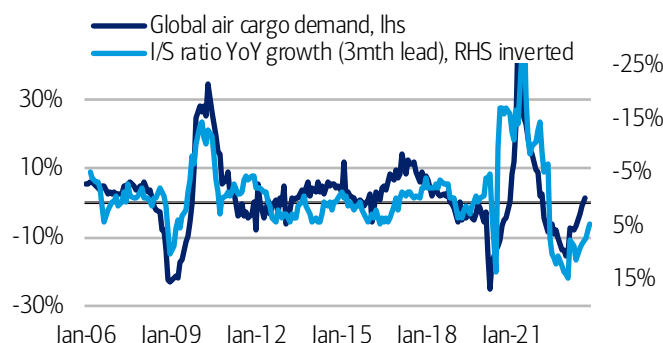


Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 14: Air cargo demand v. US inventory-to-sales ratio (inverted)

I/S ratios lead air cargo demand by 3 months with -0.56 correlation

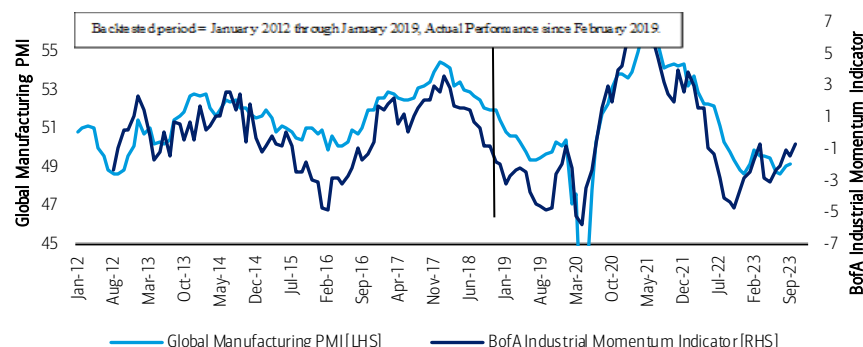


Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Industry demand data[Global Industrials: BofA Industrial Momentum Indicator holds steady](#)**Exhibit 15: BofA Industrial Momentum Indicator vs Global Manufacturing PMI**

BofA Industrial Momentum Indicator typically leads Global Manufacturing PMI



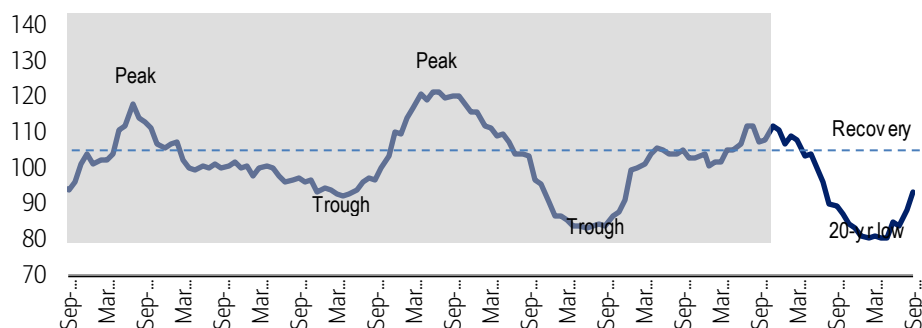
Source: BofA Global Research, Backtested period = January 2012 through January 2019, Actual Performance since February 2019. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. Disclaimer: The indicator identified as BofA Industrial Momentum Indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purposes, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark.

BofA GLOBAL RESEARCH

[Global Memory Tech: Memory forecast further up, Huawei back, overshooting NAND spot](#)

Exhibit 16: BofA Memory Indicator is derived from YoY change in price/exports/billings

In Sep, the indicator (94) reached a year-high level, mostly due to significant recovery in DRAM billings (volume+price driven), as well as resilient NAND billings, Korea semis exports, and spot prices



Source: DRAMExchange, WSTS, MoTIE Korea, BofA Global Research

The shaded area represents backtested results from January 1991 to March 2021. The unshaded area represents actual performance since April 2021. This performance is backtested up to March 2021, and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein.

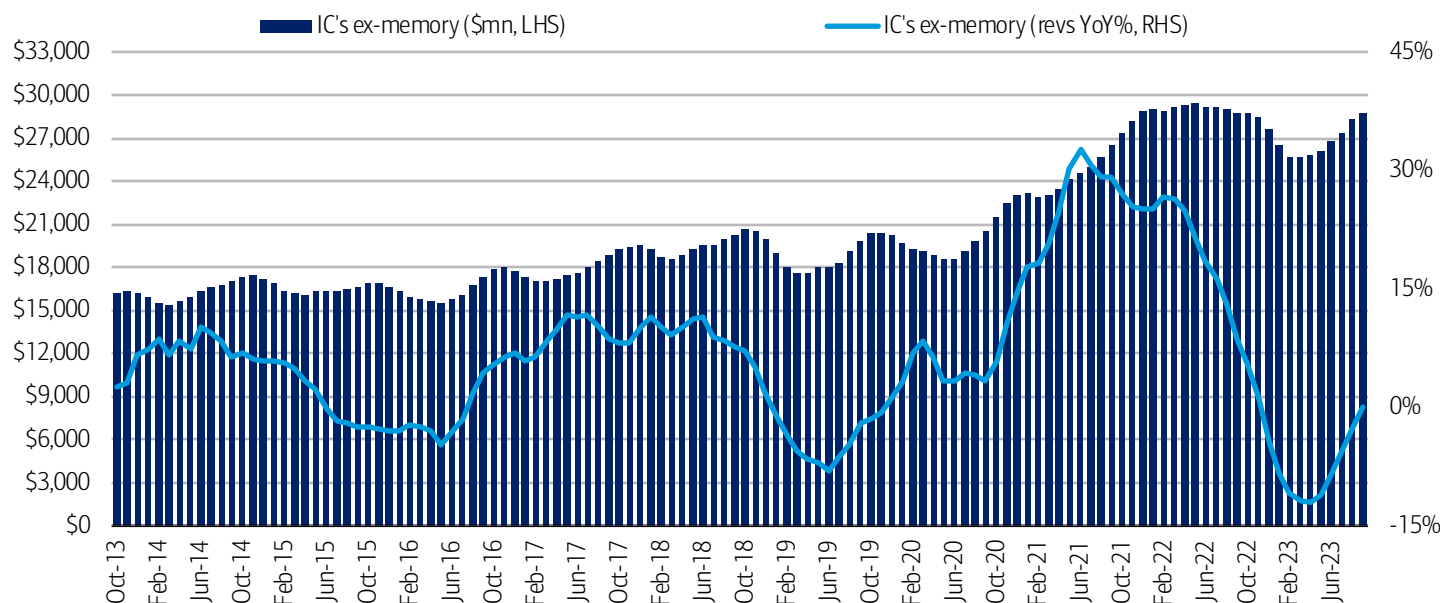
Disclaimer: The BofA Memory Indicator is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark.

BofA GLOBAL RESEARCH

[Global Semiconductors: Total semis return to growth, resilient pricing offsetting unit weakness](#)

Exhibit 17: IC ex-memory unit trends over the last 10 years (3mma)

IC ex-memory sales were flat YoY (3mma)



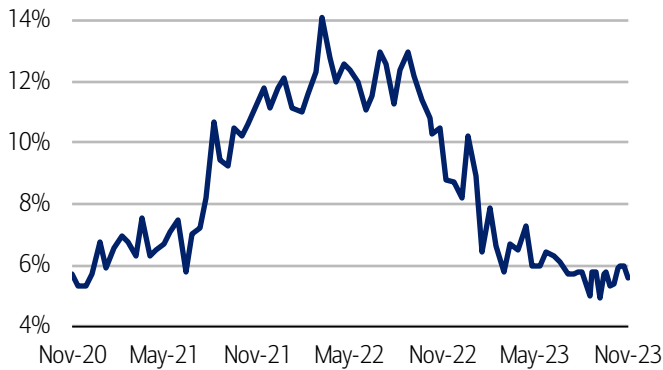
Source: SIA, BofA Global Research

BofA GLOBAL RESEARCH

Ocean vs air shipping

Exhibit 18: Vessel capacity stuck in congestion (% of fleet), 2020-23

World congestion eased to 5.6% of world supply now

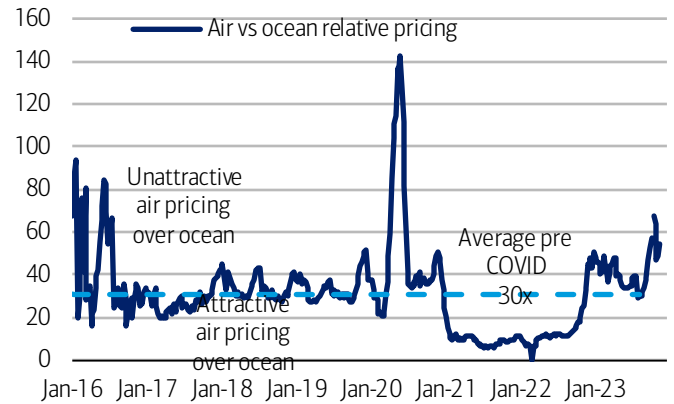


Source: Linerlytica

BofA GLOBAL RESEARCH

Exhibit 19: Airfreight relative pricings to ocean, China-Europe route

Airfreight relative pricing still at over 50x in November

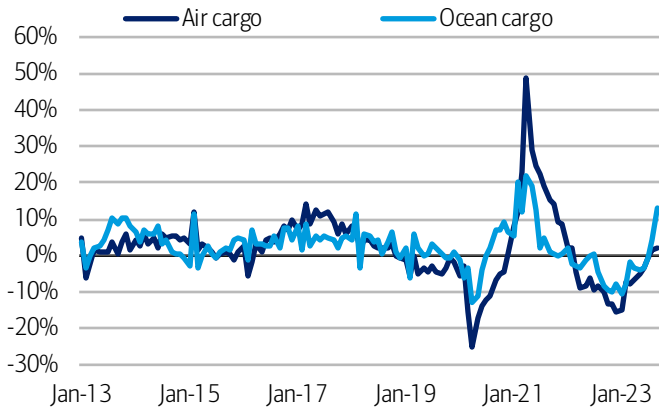


Source: BofA Global Research estimates, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 20: Air and ocean cargo demand growth YoY %, 2013-23

Air cargo and ocean demand both grew yoy in September

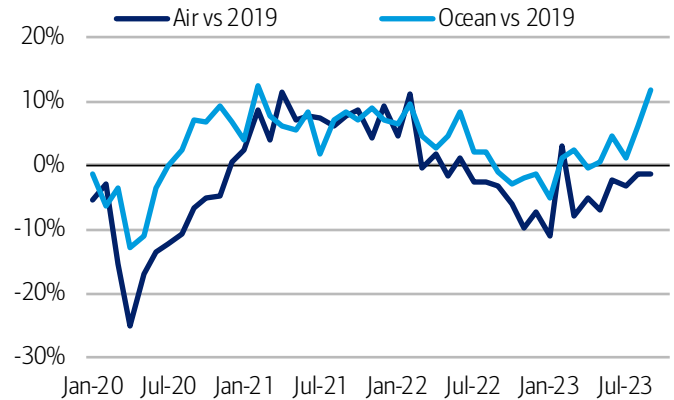


Source: Bloomberg, IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 21: Air and ocean demand compared to 2019 levels

Air cargo demand is -1% below 2019 vs ocean at +12% in September



Source: Bloomberg, IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

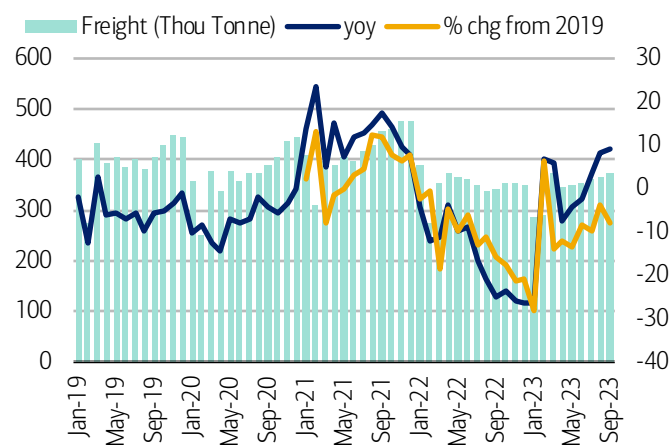
Airport cargo traffic

Asian airports

Key cargo hubs in the region (Hong Kong, Shanghai, Singapore, Beijing, Taipei, Seoul):

Exhibit 22: Hong Kong – airport cargo traffic ('000 tonne) and % chg

September cargo traffic was -8% down from 2019 levels, +9% YoY

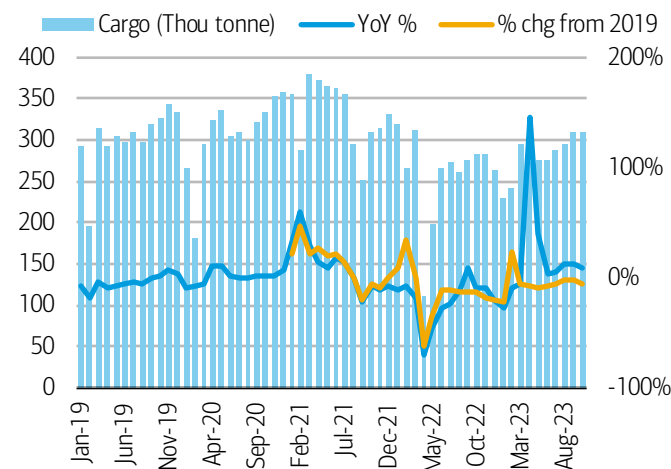


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 23: Shanghai PVG – airport cargo traffic ('000 tonne) and % chg

October cargo traffic was -6% down from 2019 levels, +9% YoY

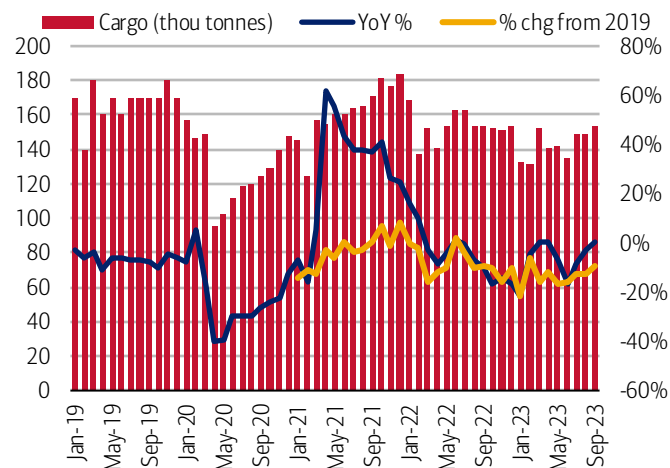


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 24: Singapore – airport cargo traffic ('000 tonne) and % chg

September cargo traffic were -9% of 2019 levels, flat YoY

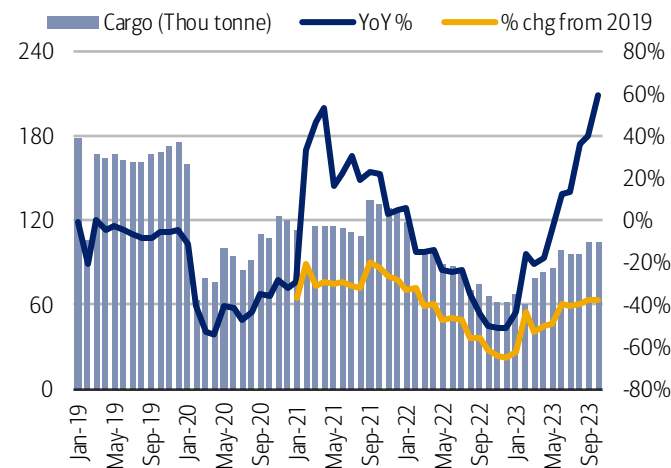


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 25: Beijing PEK – airport cargo traffic ('000 tonne) and % chg

October cargo traffic was -38% down from 2019 levels, +59% YoY

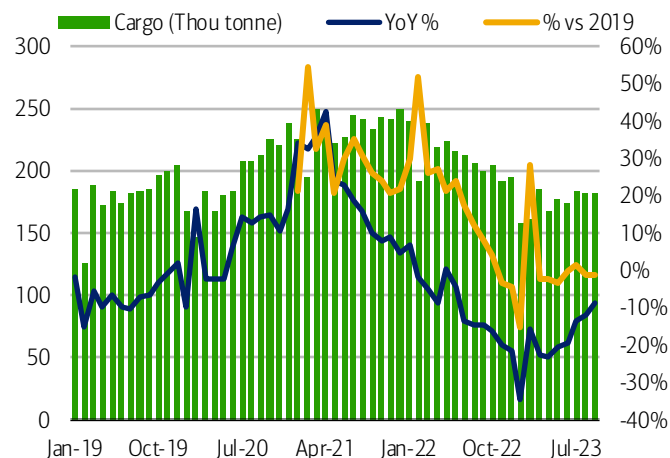


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 26: Taipei – airport cargo traffic ('000 tonne) and % chg

September cargo traffic was -1.4% down from 2019 levels, -9% YoY

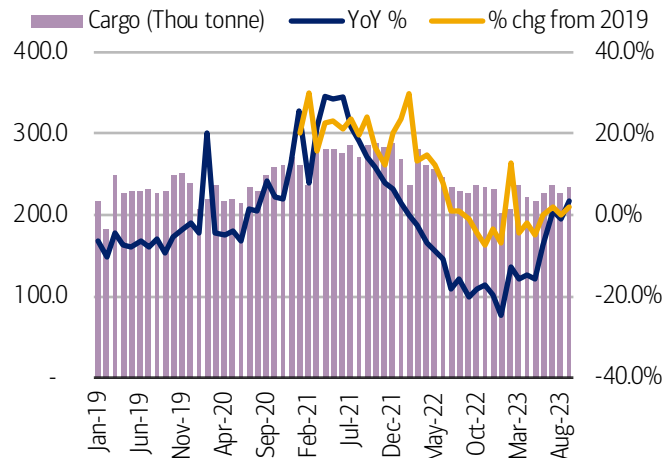


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 27: Seoul – airport cargo traffic ('000 tonne) and % chg

October cargo traffic was -4% down from 2019 levels, +0.7% YoY



Source: BofA Global Research, company report

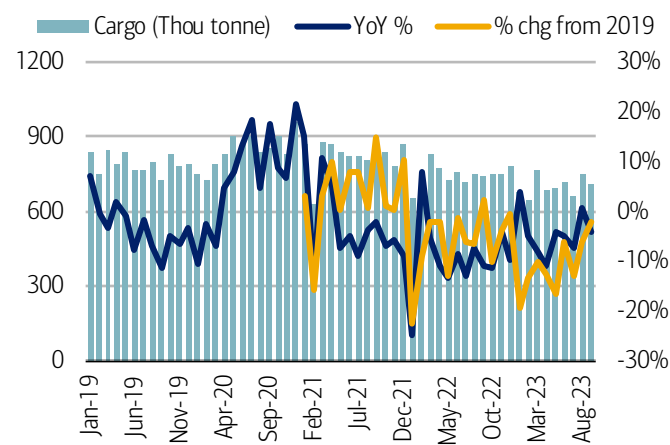
BofA GLOBAL RESEARCH

US airports

Key cargo hubs for FedEx (Memphis) and UPS (Louisville):

Exhibit 28: Memphis – airport cargo traffic ('000 tonne) and % chg

September cargo traffic was -2% down from 2019 levels, -4% YoY

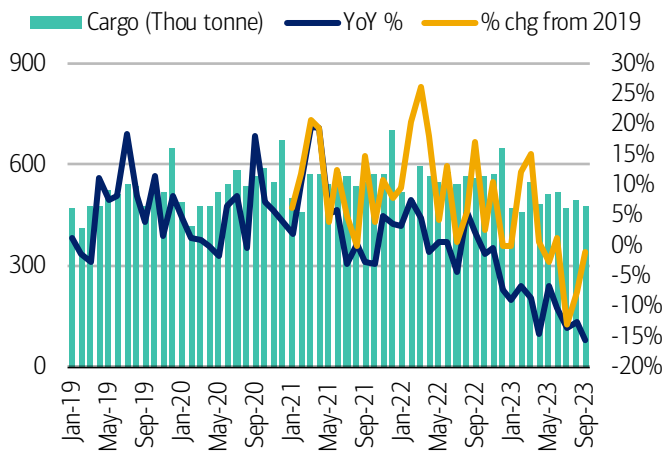


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 29: Louisville – airport cargo traffic ('000 tonne) and % chg

September cargo traffic was -1% down from 2019 levels, -16% YoY



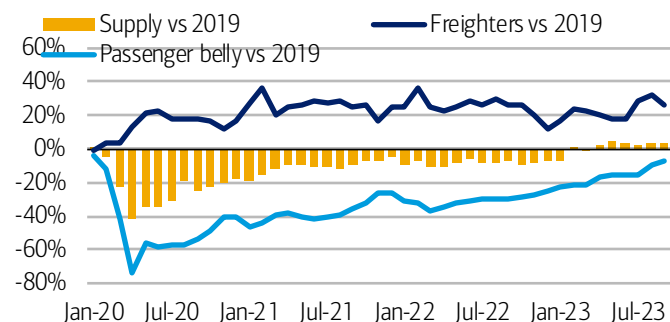
Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Airfreight supply

Exhibit 30: Global airfreight capacity vs 2019, freighters & belly

Airfreight capacity is above 2019 levels in September 2023

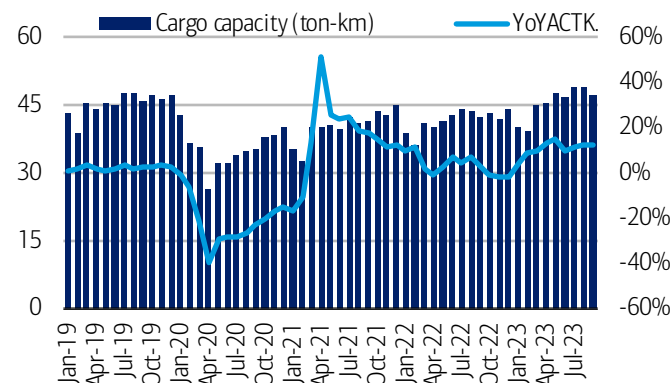


Source: BofA Global Research estimates, IATA

BofA GLOBAL RESEARCH

Exhibit 31: Global airfreight capacity (mn ton-km)

Global supply was up +12.1% YoY in September 2023



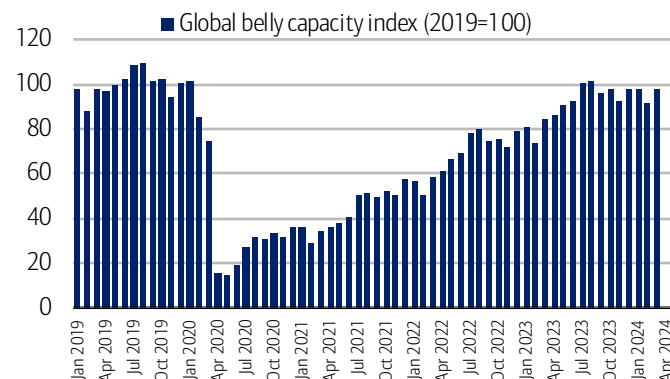
Source: IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Belly capacity

Exhibit 32: Payload adjusted global bellyhold capacity index, 2019=100

Belly cargo capacity rising to 98% of 2019 levels in 2024

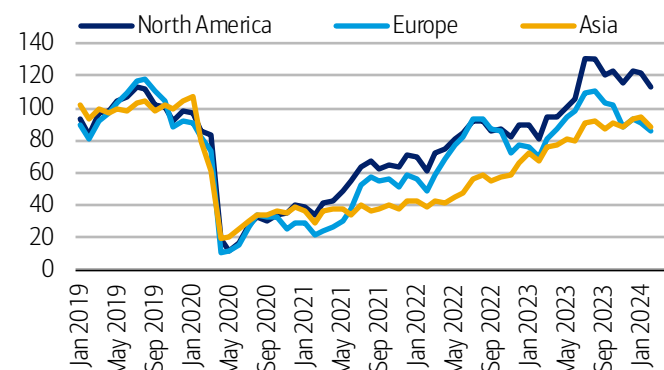


Source: BofA Global Research estimates, Diio, Boeing, Airbus

BofA GLOBAL RESEARCH

Exhibit 33: Payload adjusted belly capacity by region, 2019=100

Belly capacity return led by North America



Source: BofA Global Research estimates, Diio, Boeing, Airbus

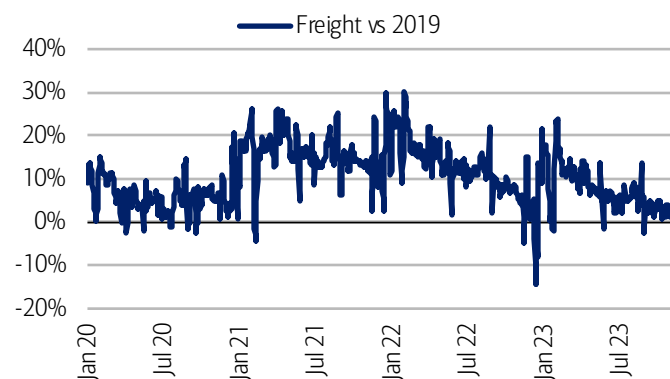
BofA GLOBAL RESEARCH

Freighter

[BofA Commercial Aerospace: Global Commercial Flight cycles vs 2019 fell WoW](#)

Exhibit 34: Global dedicated freighter flights tracked 7 day avg. YoY %

This excludes commercial aircraft used as freighter. It has become progressively weaker through 2022-23

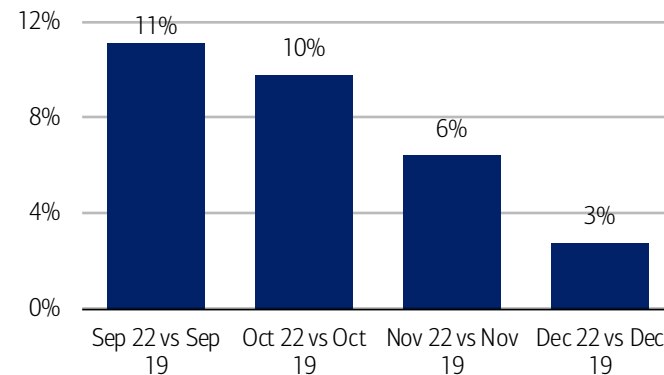


Source: BofA Global Research, Flightradar24

BofA GLOBAL RESEARCH

Exhibit 35: Freight landings Sep – Dec 2022 vs 2019

Monthly average number of landings vs 2019 levels have cooled off since September 2022

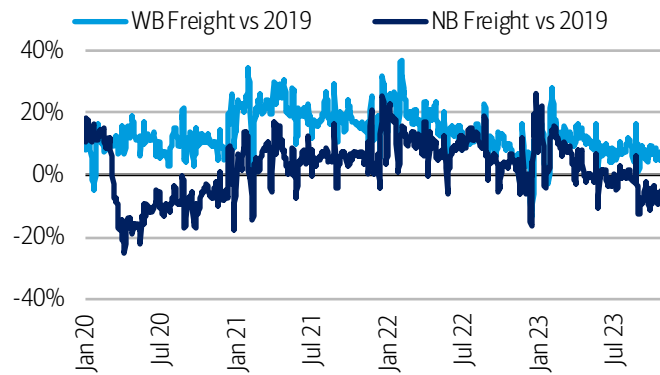


Source: BofA Global Research, Flightradar24

BofA GLOBAL RESEARCH

Exhibit 36: Narrowbody vs Widebody dedicated freighter flights tracked 7 day avg. YoY %

Narrowbody and Widebody freight have converged through 3Q22

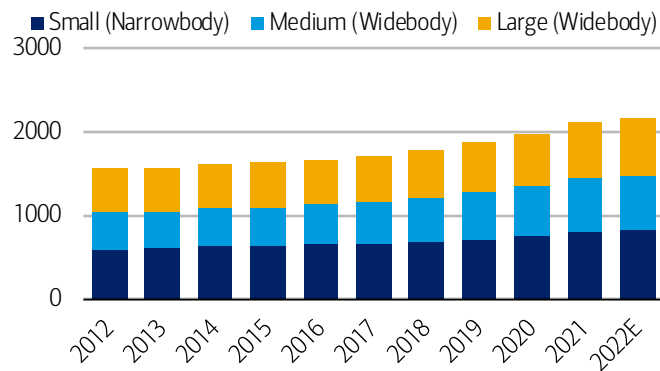


Source: BofA Global Research, Flightradar24

BofA GLOBAL RESEARCH

Exhibit 38: Number of global freighter fleet from major OEMs

Fleet growth is at 3.2% CAGR since 2012

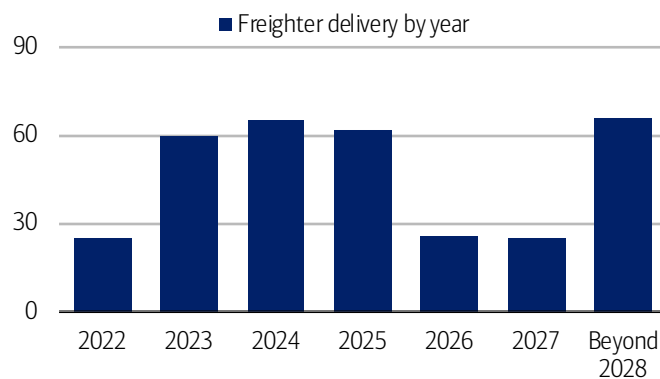


Source: Trade and Transport Group, BofA Global Research. Note excluding smaller feeder

BofA GLOBAL RESEARCH

Exhibit 40: Number of freighter deliveries by year

Deliveries will reach 60-65 freighter per year in 2023-25

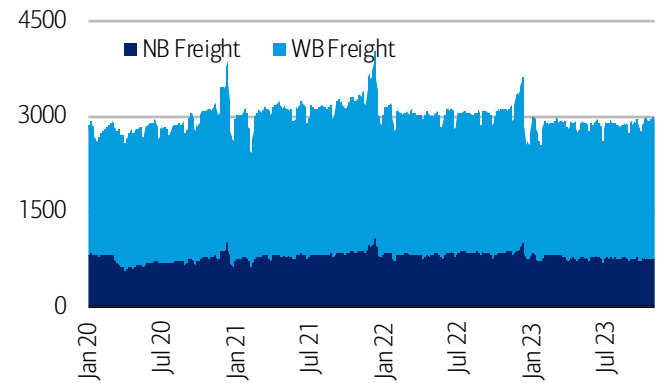


Source: Cirium, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 37: Narrowbody vs Widebody dedicated freighter flights daily

Freight cycles typically peak around the holiday period in December

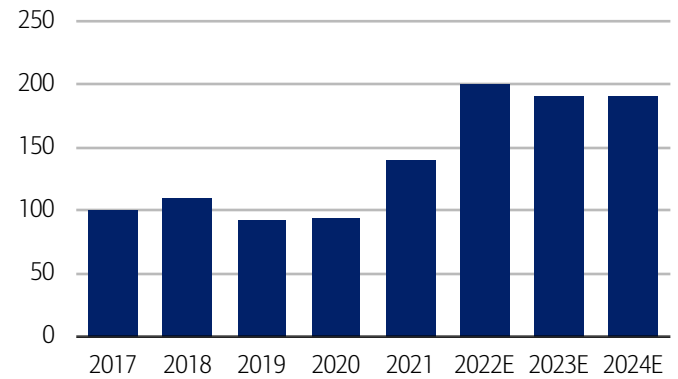


Source: BofA Global Research, Flightradar24

BofA GLOBAL RESEARCH

Exhibit 39: Number of freighter jet conversions from passenger

Annual conversions planned has doubled in 2022-24E vs pre-COVID

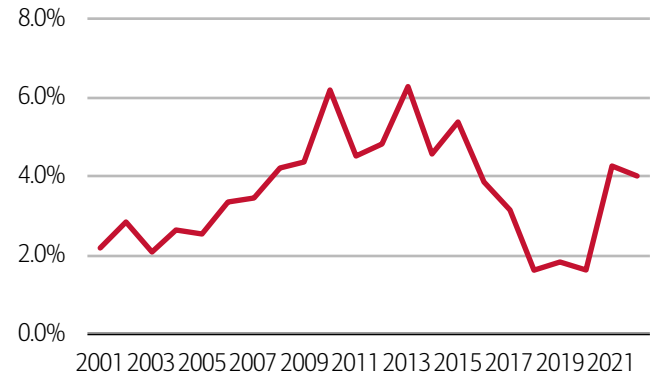


Source: Cirium, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 41: Annual freighter retirement as % of in service fleet

About 3.5% retirement rate a year through the cycle

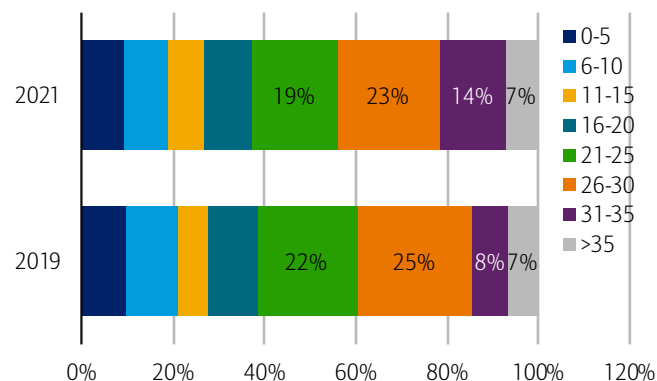


Source: Cirium, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 42: Age of freighters by year, 2019 and 2021

The share of fleet with age over 30 years is higher at 21% in 2021

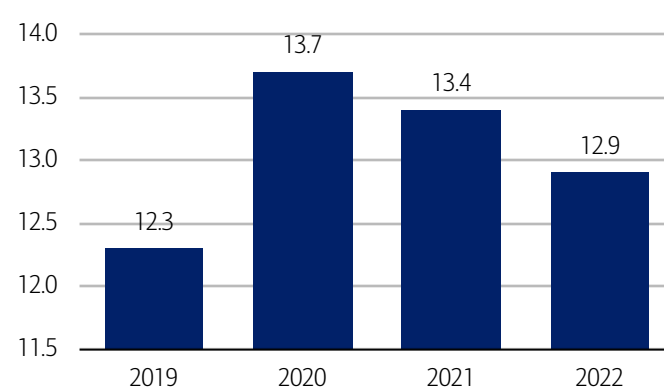


Source: Xeneta, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 43: Large freighter hours flown per day

Utilization hours not far from 2019 levels



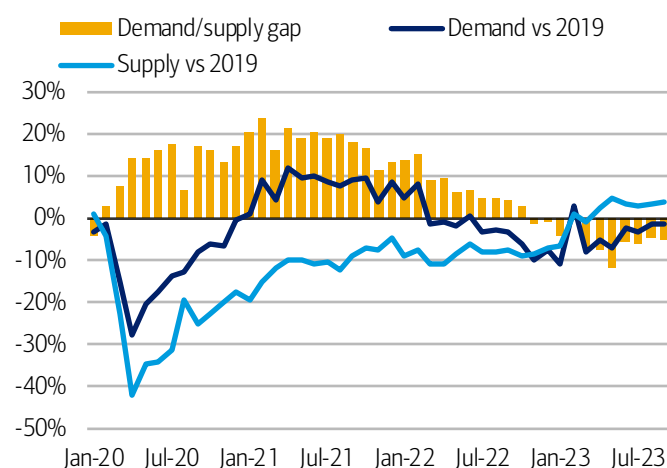
Source: Xeneta, BofA Global Research estimates

BofA GLOBAL RESEARCH

Demand/supply balance

Exhibit 44: Global airfreight demand and supply vs 2019 levels and demand-supply gap

Balance has flipped to negative since November 2022

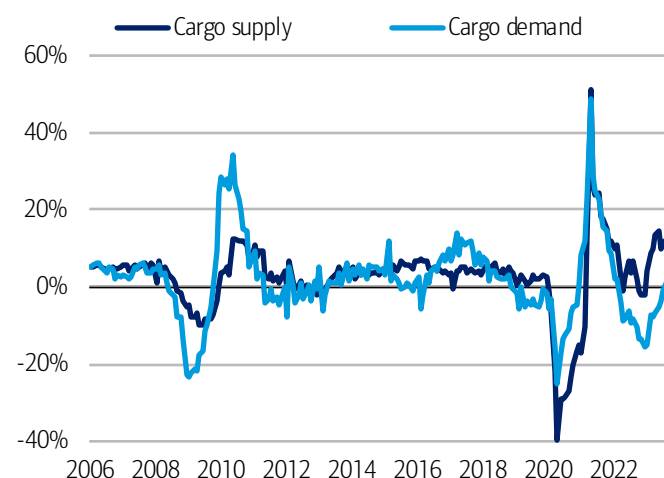


Source: IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 45: Global airfreight demand and supply growth YoY

YoY cargo demand and supply imbalance improved slightly



Source: IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

BofA demand/supply model

We expect air cargo to remain in oversupply in 2023-24:

Exhibit 46: Global air cargo annual supply & demand balance

We see demand-supply turning negative in 2022-24E

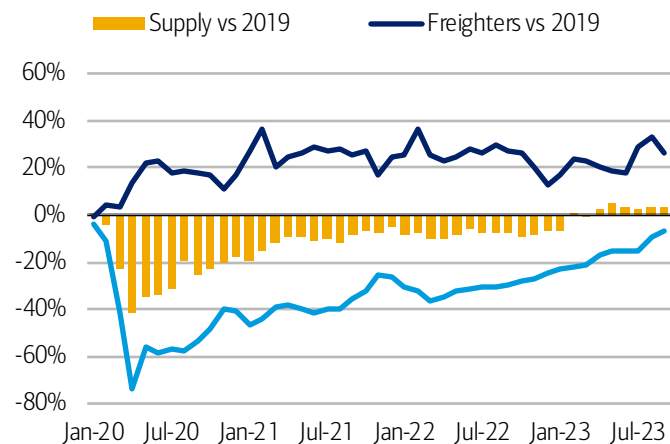
YoY %	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Demand (FTK)	20.8%	-0.7%	-1.0%	1.9%	4.5%	3.4%	3.8%	10.1%	3.7%	-3.3%	-8.9%	17.5%	-8.0%	-3.8%	3.2%
Capacity (AFTK)	8.9%	4.1%	1.1%	3.1%	3.7%	6.1%	5.3%	3.8%	5.2%	2.1%	-20.9%	12.8%	2.9%	7.3%	7.8%
Demand/supply balance	11.9%	-4.8%	-2.0%	-1.2%	0.8%	-2.7%	-1.5%	6.3%	-1.5%	-5.4%	12.0%	4.7%	-10.9%	-11.1%	-4.6%

Source: BofA Global Research estimates, IATA

BofA GLOBAL RESEARCH

Exhibit 47: Global airfreight capacity vs 2019, freighters & belly

Airfreight capacity is close to 2019 levels now

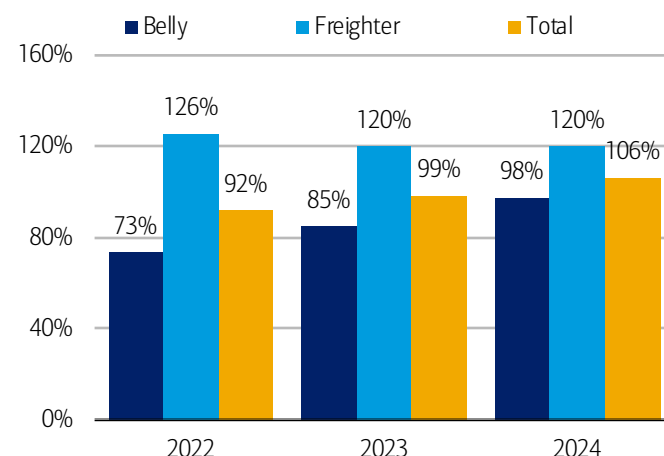


Source: BofA Global Research estimates, IATA

BofA GLOBAL RESEARCH

Exhibit 48: Air cargo capacity by segment, as % of 2019 levels

We see global capacity to reach 93%/99%/106% of 2019 levels in 2022/23/24

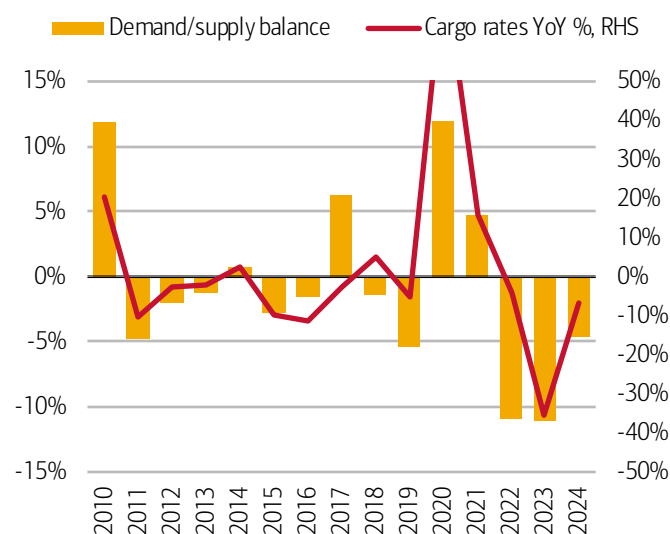


Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 49: Global air cargo balance and cargo yield YoY %

Cargo balance drives cargo yield with high correlation at 0.77

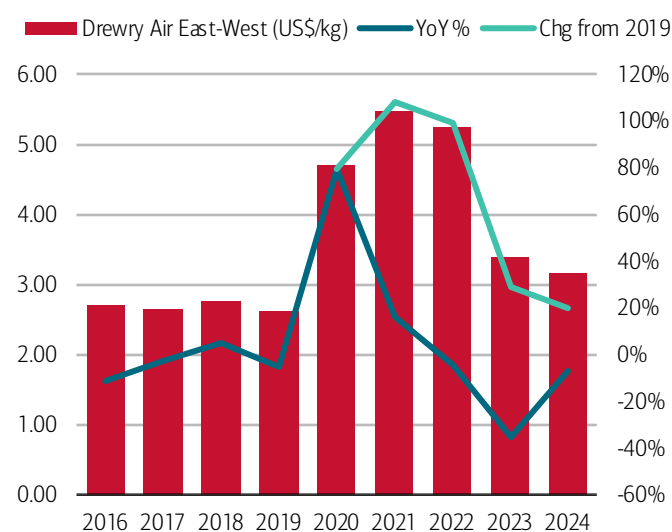


Source: IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 50: Global air cargo yield and % change

We expect cargo yield will continue to normalize in 2023-24

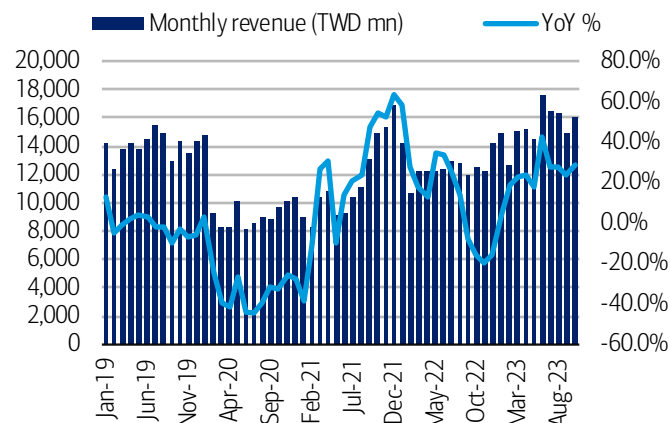


Source: Drewry, IATA, BofA Global Research estimates

BofA GLOBAL RESEARCH

Airlines operating data

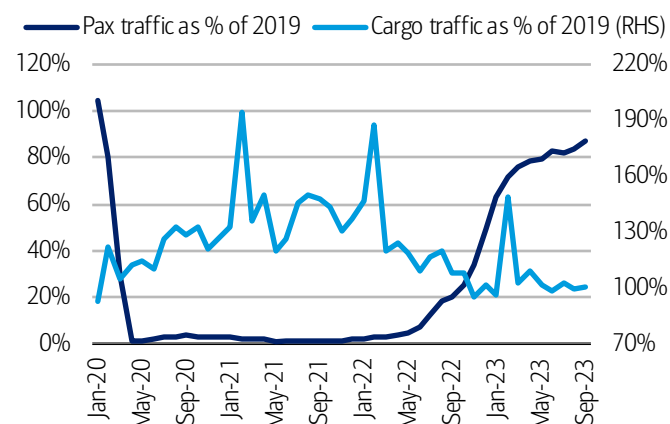
Exhibit 51: China Airlines – monthly revenue (TWD mn) and YoY %
October revenue +28.6% YoY



Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

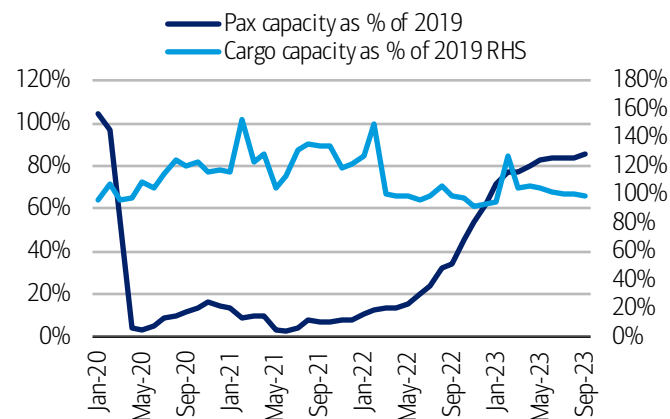
Exhibit 53: CAL passenger (RPK) and cargo (FTK) traffic as % of 2019
October pax traffic at 85% of 2019 levels & cargo traffic at 92%



Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

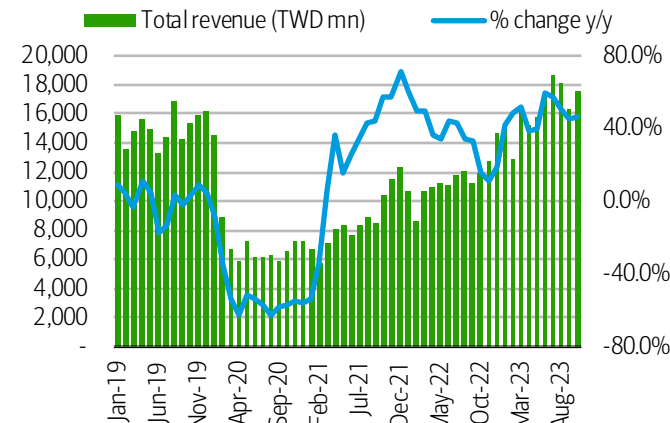
Exhibit 55: CAL passenger and cargo capacity as % of 2019
October pax capacity at 86% of 2019 levels & cargo at 93%



Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

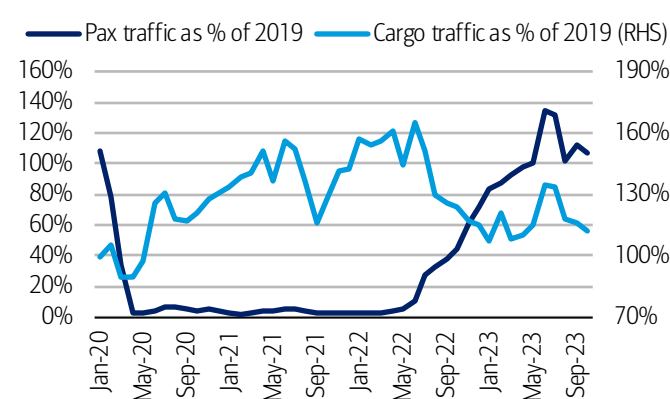
Exhibit 52: EVA Air – monthly revenue (TWD mn) and YoY %
October revenue +44.8% YoY



Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

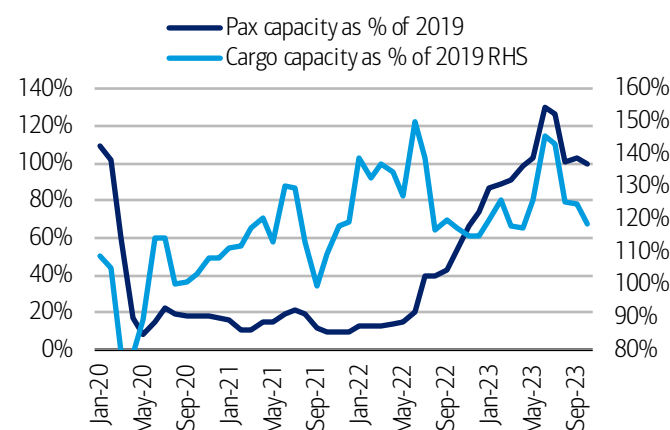
Exhibit 54: EVA passenger (RPK) and cargo (FTK) traffic as % of 2019
October pax traffic at 107% of 2019 levels & cargo at 112%



Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 56: EVA passenger and cargo capacity as % of 2019
October pax capacity at 100% of 2019 levels & cargo at 119%

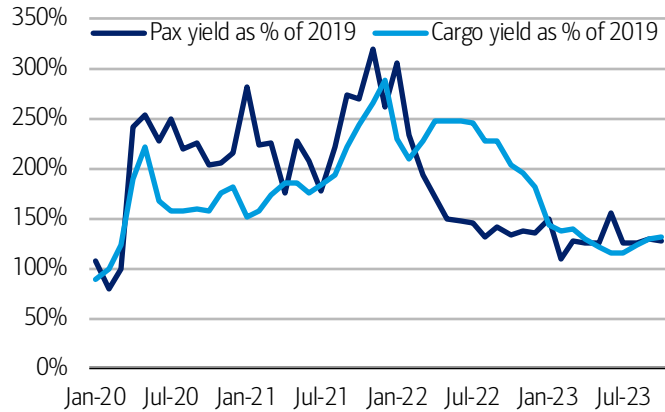


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 57: CAL passenger and cargo yields as % of 2019 levels

October pax yield at 127% of 2019 levels & cargo yield at 132%

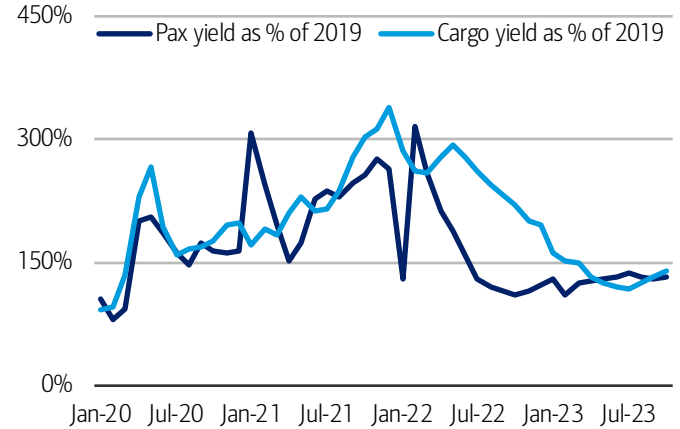


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 58: EVA passenger and cargo yields as % of 2019 levels

October pax yield at 131% of 2019 levels & cargo yield at 140%

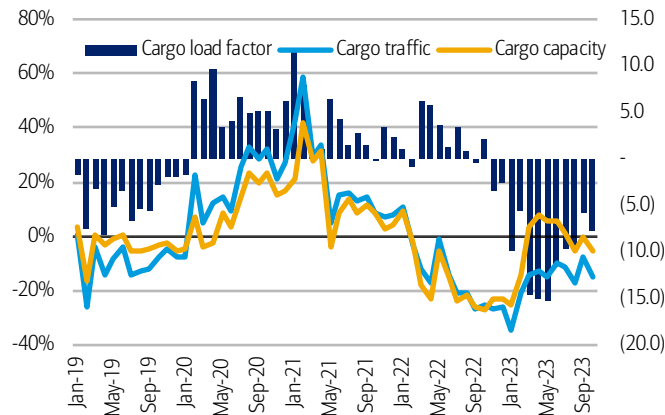


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 59: CAL cargo traffic, capacity growth, loads YoY chg (RHS)

October cargo load factor at 68.4%, -8ppts for the month YoY

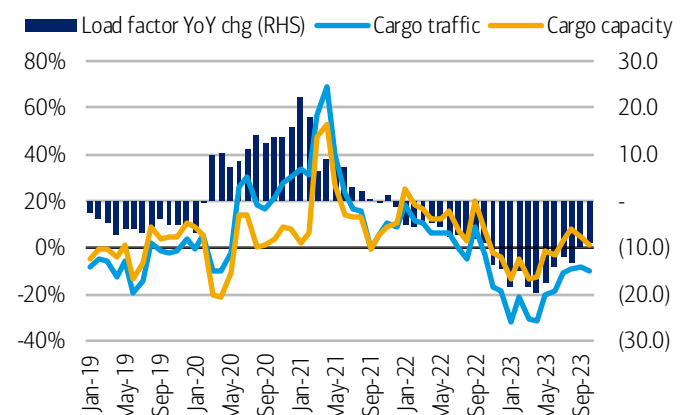


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 60: EVA cargo traffic and capacity growth, loads YoY chg (RHS)

October cargo load factor at 73.4%, down -9ppts for the month YoY

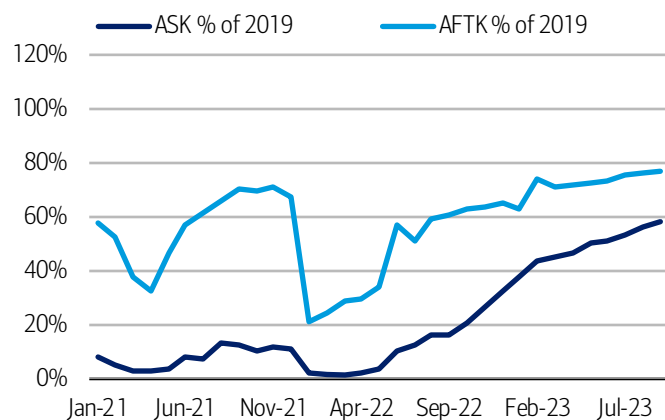


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 61: Cathay Pacific passenger and cargo capacity as % of 2019

Sep pax capacity (ASK) at 58% of 2019 levels & cargo capacity (AFTK) at 77%

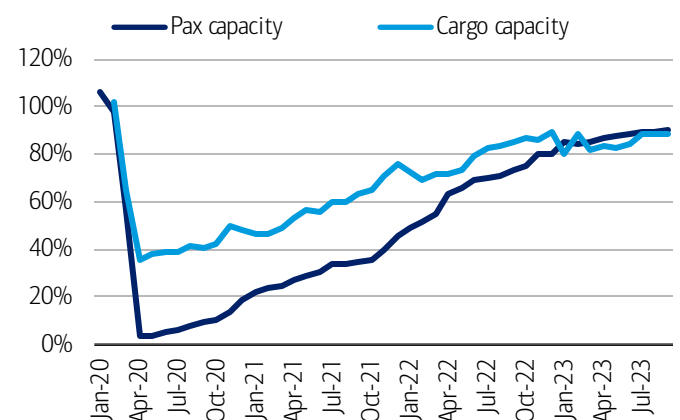


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 62: Singapore Airlines pax & cargo capacity as % of 2019

October pax capacity at 92% of 2019 levels & cargo capacity at 87%

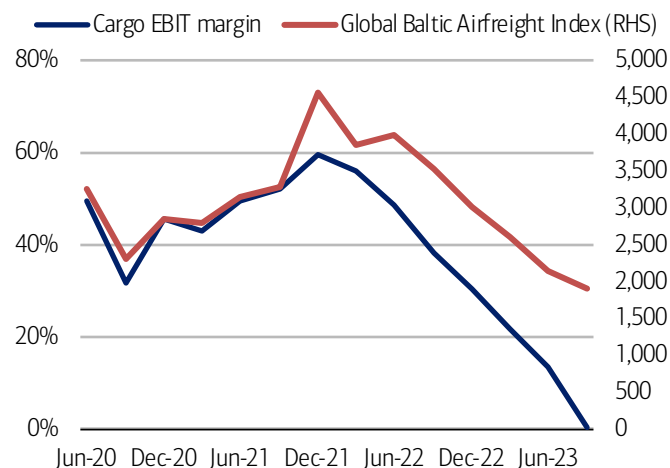


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 63: Singapore Airlines quarterly cargo EBIT margin and Baltic Airfreight Index (RHS)

Sep-Q SIA cargo margin at 0%, down from 13% in Jun-Q

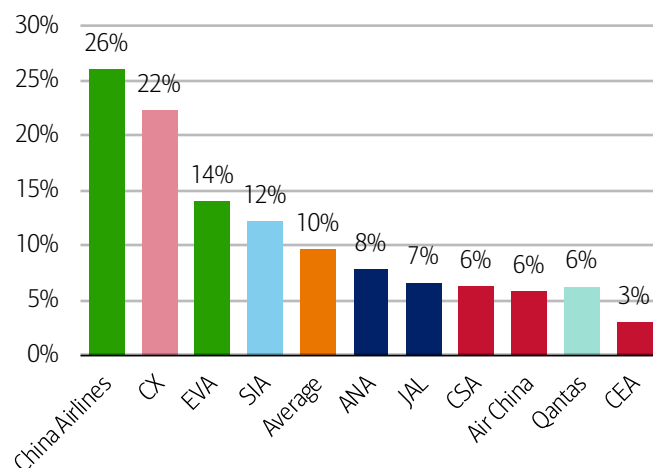


Source: BofA Global Research estimates, company report

BofA GLOBAL RESEARCH

Exhibit 64: Asian airlines: Cargo as % of revenue in FY2019

China Airlines, Cathay Pacific and EVA are most exposed to cargo earnings

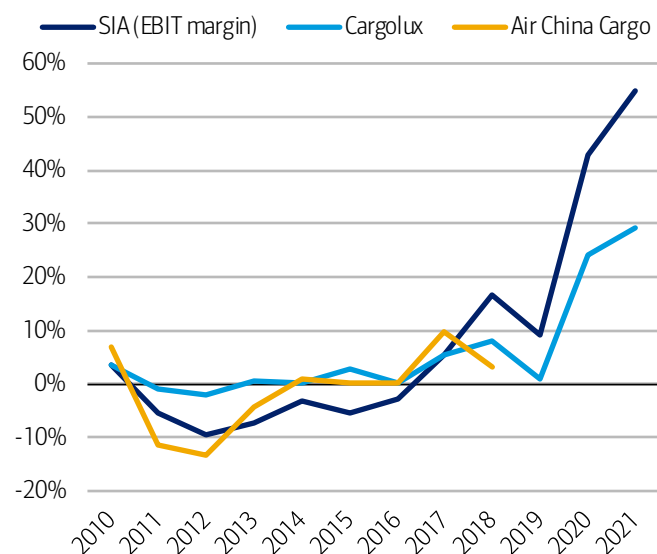


Source: BofA Global Research estimates, company report

BofA GLOBAL RESEARCH

Exhibit 65: Cargo margins for selected airlines with disclosures

Cargo historically has been largely a breakeven business

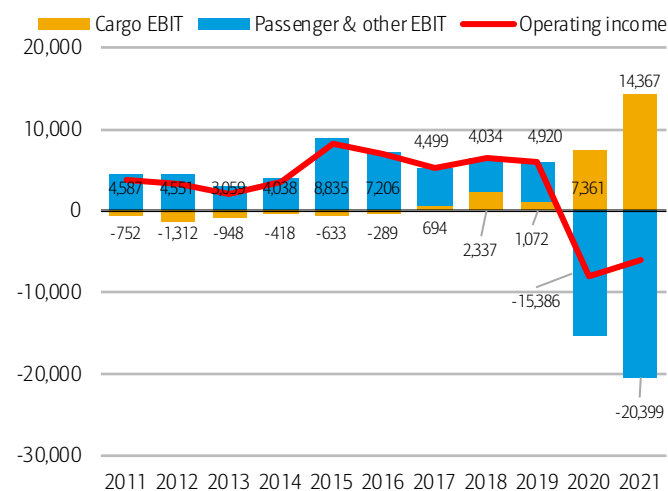


Source: BofA Global Research estimates, company report

BofA GLOBAL RESEARCH

Exhibit 66: Asian airlines estimated EBIT breakdown by cargo and other segments, USD mn

We estimate cargo has contributed US\$14bn in operating profit in 2021, offsetting >70% of the losses in passenger and other businesses



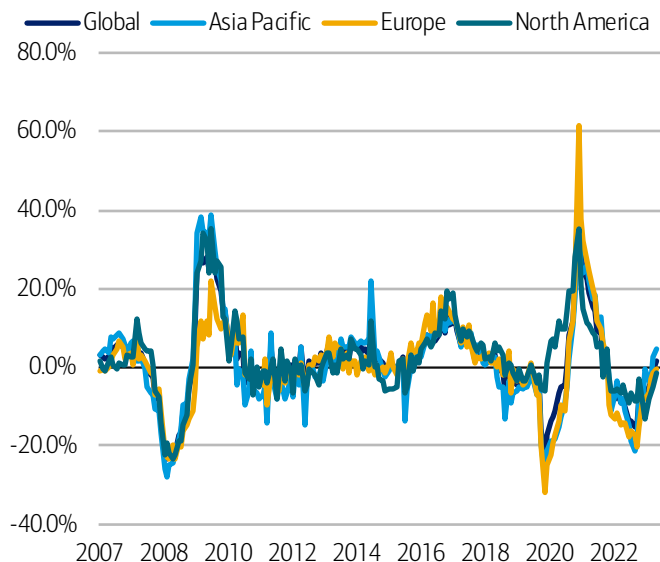
Source: BofA Global Research estimates, company report. Note airlines include Air China, CEA, CSA, JAL, ANA, EVA, China Airlines, CX and SIA

BofA GLOBAL RESEARCH

Global airfreight market overview

Exhibit 67: Monthly air cargo demand growth YoY %

Cargo demand drives the cyclical nature of the industry, CAGR at ~3% pre-COVID

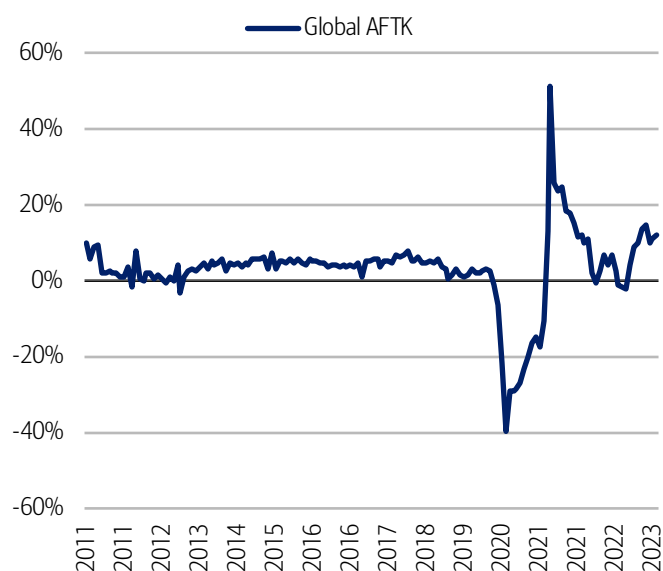


Source: IATA, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 68: Monthly air cargo supply (AFTK) growth YoY %

Cargo supply has been relatively steady at 3-4% p.a. pre-COVID

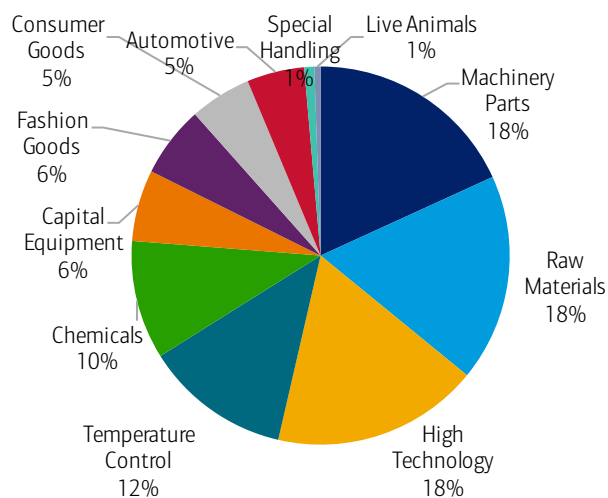


Source: IATA, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 69: Global air cargo demand (metric tonne) by industry, 2022

Major industries are machinery parts, raw materials and high tech

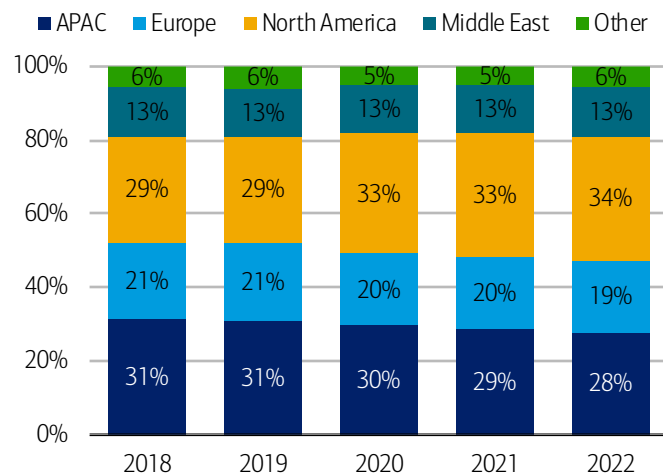


Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 70: Global air cargo demand by region

The share of North America has risen from 29% to 34% now

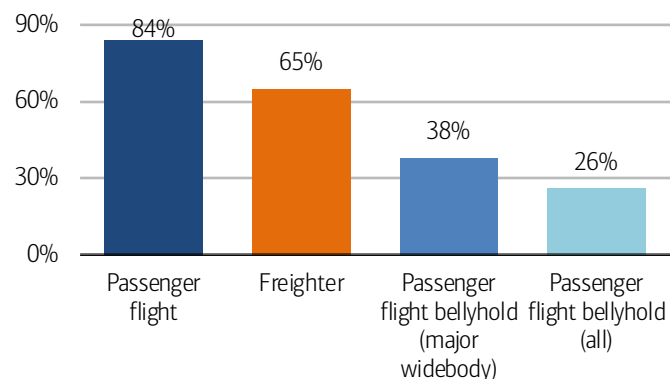


Source: IATA, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 71: Seat/cargo load factors for different type of services, 2019

Freighter has higher cargo loads than bellyhold capacity

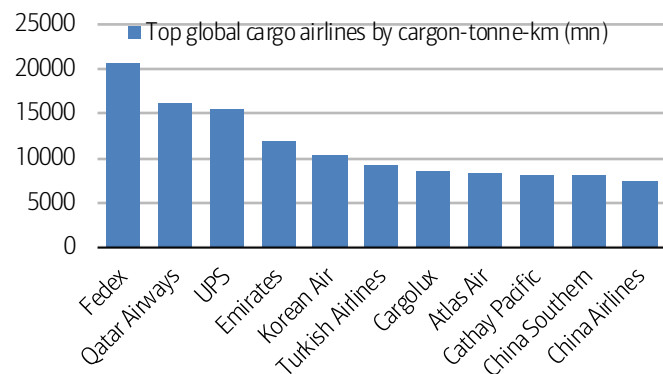


Source: IATA, Boeing

BofA GLOBAL RESEARCH

Exhibit 73: Top global cargo airlines by cargo-tonne-km (mn), 2021

Fedex, Qatar and UPS the global top 3

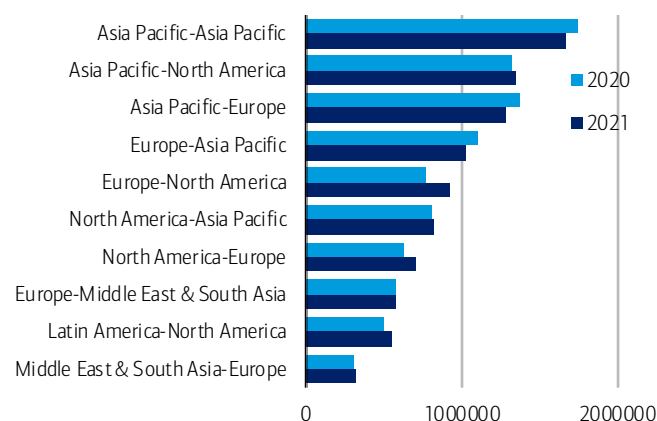


Source: IATA

BofA GLOBAL RESEARCH

Exhibit 75: Global air cargo trade (metric ton) by trade lane

Trades among Asia, North America and Europe the top lanes

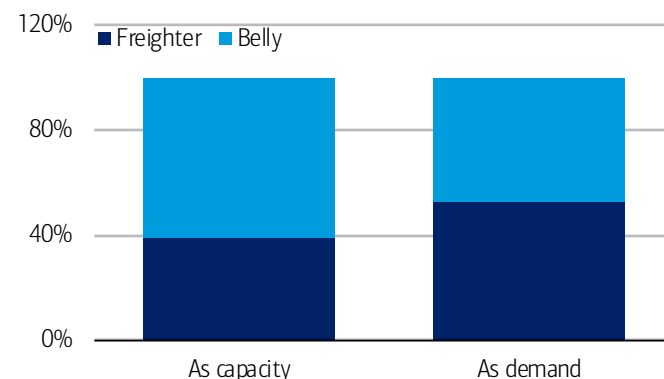


Source: IATA

BofA GLOBAL RESEARCH

Exhibit 72: Capacity and demand breakdown by cargo fleet type, 2019

Freighter represented 39% of capacity but 53% of demand with higher loads

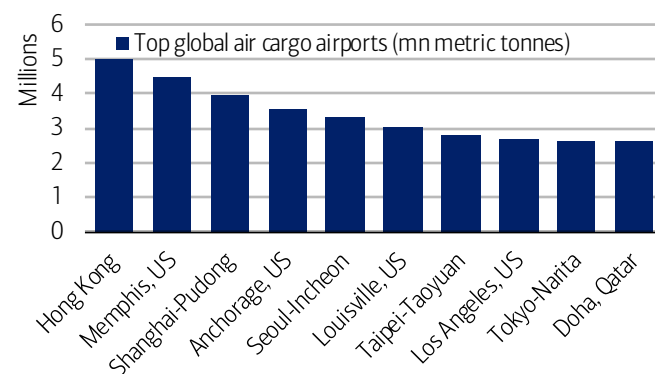


Source: IATA

BofA GLOBAL RESEARCH

Exhibit 74: Top global air cargo airports (mn metric tonnes), 2021

Hong Kong, Memphis and Shanghai-Pudong the global top 3

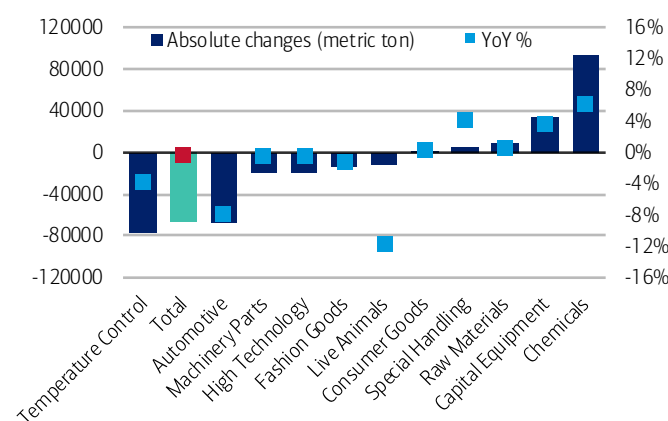


Source: ACI

BofA GLOBAL RESEARCH

Exhibit 76: Air cargo demand (metric tonne) YoY changes by industry

Global demand growth is flattish YoY % year to date



Source: BofA Global Research estimates, IATA

BofA GLOBAL RESEARCH

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 BofA 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 (DFS); 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 CBI. BofA Securities entities, including BofA Europe and BofA SE (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 BofA 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. BofA and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofA 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 BofA 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.

BofA or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofA 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 BofA for the provision of research services for a separate fee, and in connection therewith BofA may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofA has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofA). If such recipient uses the services of BofA in connection with the sale or purchase of a security referred to herein, BofA may act as principal for its own account or as agent for another person. BofA 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 2023 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 BofA or 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.