

Airfreight - Global

Air Cargo Watch #10 – demand/supply imbalances ease but more pressures ahead

Industry Overview

Monthly Air Cargo Watch to track the airfreight industry

Our monthly Air Cargo Watch includes high frequency airfreight data to check the pulse of the industry. Air cargo demand continues to decline at a slower pace, while most airlines hope for some peak uptick in demand into the 4Q23 this year. Air cargo supply remains above 2019 levels (now 103% of 2019 levels) and more supply pressure is coming as Chinese airlines ramp international capacity. Air cargo rates have stabilized around 28% above pre-COVID but we see more downside ahead. We see air cargo staying profitable in 3Q23 and before declining to loss-making levels in 4Q23.

Demand: Slowing decline in volumes, peak season looms

Air cargo demand fell -3.4% YoY in June 2023 marking a slower pace of decline from May (-5% YoY) while high frequency data shows air cargo demand slightly YoY lower through July/August. June demand improved across the board with Asia/Europe/North America strengthening to 90%/86%/107% of 2019 levels in June, all up 2% from May. Leading indicators showed mixed signals with a slight uptick in ISM new orders but the BofA Industrial Momentum Indicator shows ongoing declines given building inventories. Airlines are hopeful for some peak uptick in demand into 4Q23 although it is unclear how strong the peak will be this year with mixed reads still on inventory levels.

Supply: Chinese flight ramps will add supply pressure

Air cargo supply growth moderated slightly in June to reach 103.4% of 2019 levels, compared to 105% in May. The latest reads in July suggest that freighters/belly capacities are at 118%/85% of 2019 levels. We also expect continued ramp of belly capacity ahead as Chinese airlines restore international flights.

Rates: August seeing some stabilization for now

Air cargo rates have stabilized in August trending +1% MoM higher so far. Average rates are still 28% above 2019 levels but subject to potential downward revisions over added supply pressure ahead. We estimate cargo margins will contract to around 4% in 3Q23 and loss-making levels into 4Q23, down from 13% in 2Q23.

Airlines: Near-term catalysis possible post-September

Cargo yields for CAL/EVA fell to 15%/18% above normal in July. CAL/EVA delivered new records for passenger yields at 54%/32% above pre-Covid levels in June and 25%/36% above 2019 levels in July. Passenger yields are likely to be stronger for longer through the summer peak but we think this already looks price in with stocks trading at peak multiples versus both Asia Pacific peers and historical trading ranges.

15 August 2023

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EVA – EVA Airways

CAL – China Airlines

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Refer to important disclosures on page 28 to 30.

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Timestamp: 15 August 2023 02:51AM EDT

Airfreight rates

Exhibit 1: Weekly Global Baltic Airfreight Index

Baltic Airfreight index now at 1,919 down -45% YoY



Source: TAC

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

Shanghai-Europe +26% and Shanghai-US +34% vs 2019 in the latest week



Source: TAC

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

Global rates are down -11% QoQ in 3Q23 so far

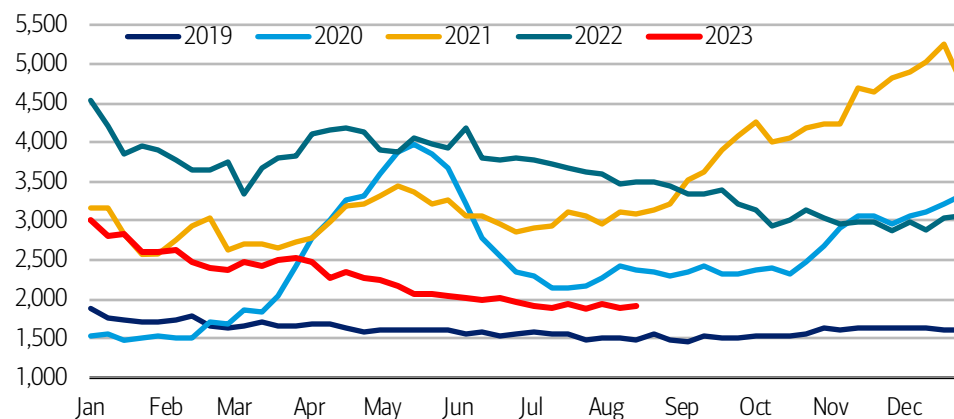
	Baltic Airfreight - Global	BAF- HK	BAF- Shanghai	BAF- Singapore	BAF- London	BAF- Chicago	Shanghai- Europe	Shanghai- US	HK- Europe	HK- US	HK-SE Asia	London- US	Singapore-SE Asia
1Q21	2,803	2,828	5,165	423	2,547	1,702	4.5	6.1	4.3	5.6	1.8	4.9	1.8
2Q21	3,136	3,545	5,867	425	2,755	1,672	4.5	7.7	4.6	8.0	1.8	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	1,911	3,028	3,475	363	1,167	1,293	2.9	4.2	3.6	4.5	1.6	1.4	1.6
QoQ	-11%	10%	-8%	-15%	-23%	-10%	-11%	-6%	-5%	-8%	-12%	-29%	-15%
YoY	-46%	-23%	-49%	-40%	-50%	-44%	-55%	-46%	-42%	-41%	-29%	-61%	-40%
YTD YoY	-41%	-33%	-46%	-20%	-42%	-31%	-47%	-47%	-34%	-44%	-22%	-49%	-20%
vs 2019	26%	84%	32%	76%	33%	-1%	26%	34%	39%	37%	46%	41%	76%

Source: TAC, BofA Global Research

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

Latest weekly rate index still on a weakening trend



Source: TAC, BofA Global Research

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Airfreight demand

Global cargo traffic

Exhibit 5: Monthly global air cargo demand growth YoY %

Demand was down -5.2% YoY in May and -3.4% YoY in June

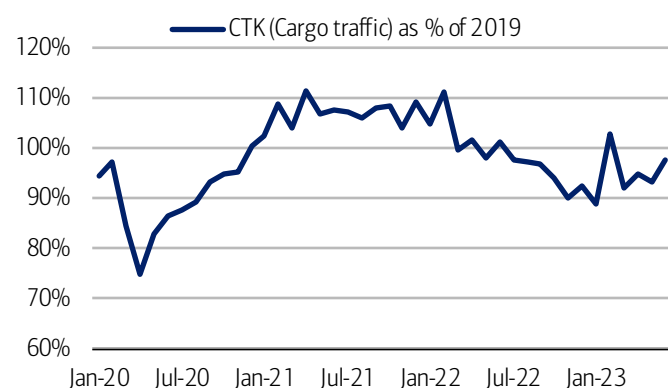


Source: BofA Global Research estimates, IATA

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

Demand was at 93% of 2019 levels in May and 98% in June

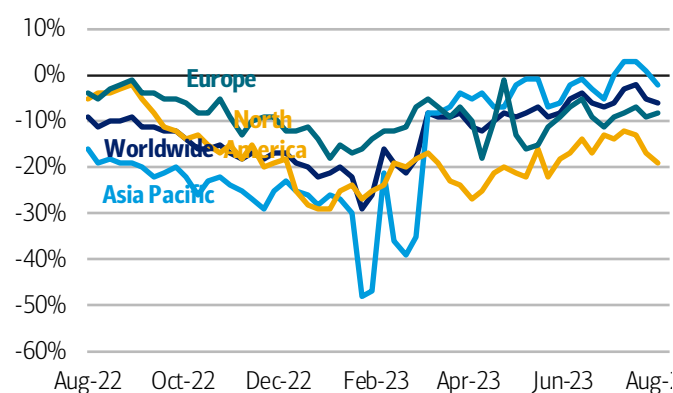


Source: BofA Global Research estimates

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

Global demand was down -6% YoY in the week of August 6th 2023

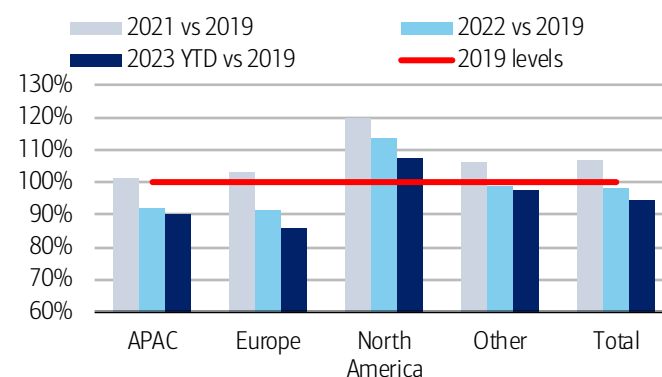


Source: WorldACD, BofA Global Research

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

2022 demand was 2% below 2019 levels, YTD2023 so far at -5% vs 2019

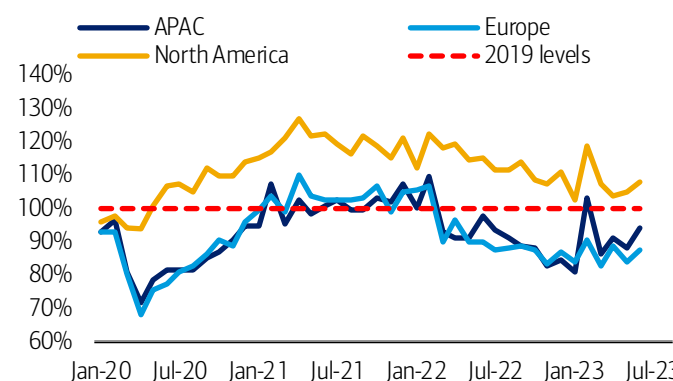


Source: IATA, BofA Global Research. YTD up to February 2023

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

Demand from North America strengthened to 108% of 2019 levels

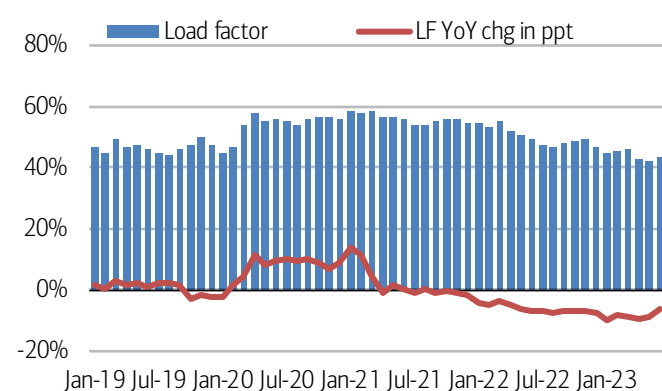


Source: IATA, BofA Global Research

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

Load factor down to 43.4% in June, up from 41.9% in May

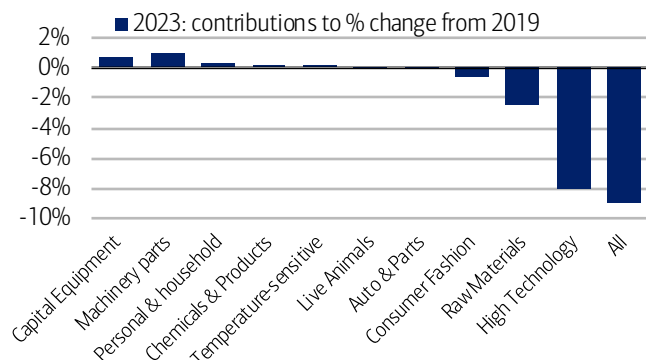


Source: IATA, BofA Global Research estimates

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Exhibit 11: China air cargo: Growth by industry v. 2019, 5M2023

Capital equipment & machinery made positive contributions in 2023

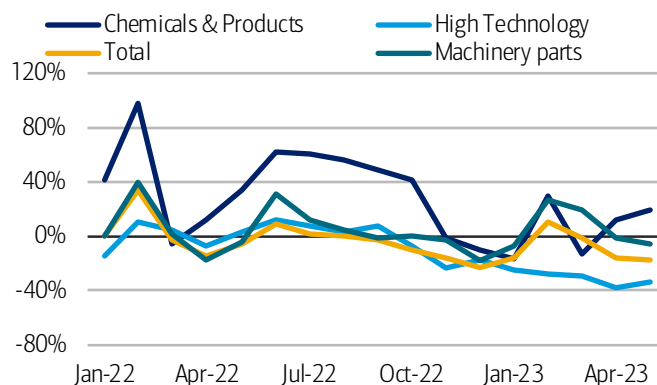


Source: Company report

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

Air shipping of high-tech products has been in the decline since Oct 22



Source: company report

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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 correlations



Source: BofA Global Research, Bloomberg

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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 correlations



Source: BofA Global Research, Bloomberg

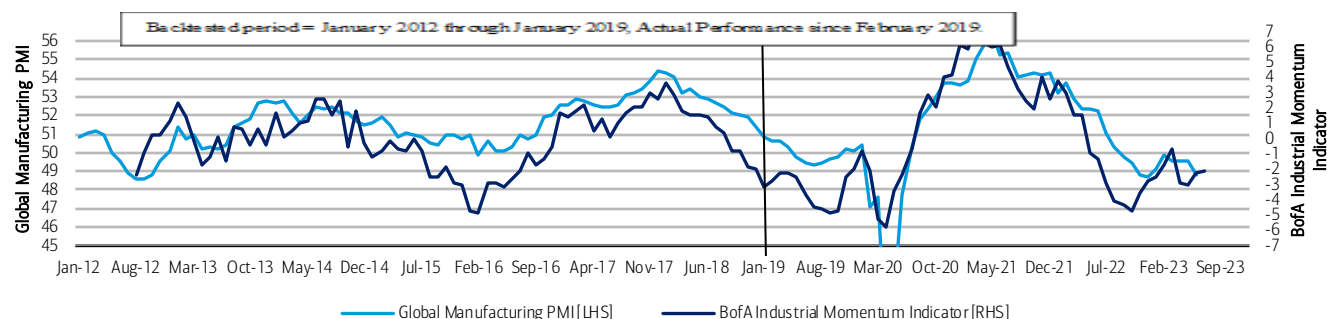
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Industry demand data

[Global Industrials: BofA Industrial Momentum Indicator ticks up MoM – navigating through uncertainty](#)

Exhibit 15: BofA Industrial Momentum Indicator vs Global Manufacturing PMI

Bottoms in the BofA Industrial Momentum Indicator lead bottoms in Global Manufacturing PMI



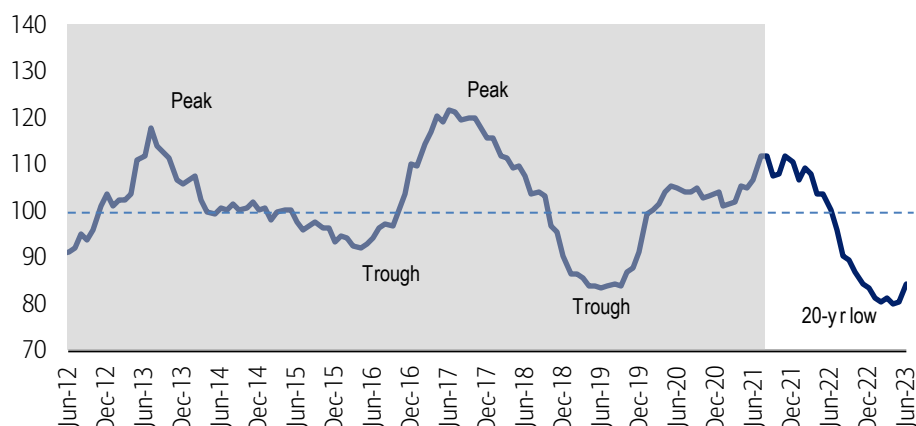
Source: BofA Global Research, Backtested period = January 2012 through January 2019, Actual Performance since February 2019. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of 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

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[Global Memory Tech: Weekly theme: lower expectations on spot, memory indicator, Samsung feedback](#)

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

June indicator better than Jan-May due to stable spot prices and recovery in memory billings (due to strong bit-shipment growth); Korea's semis exports also recovered in June



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

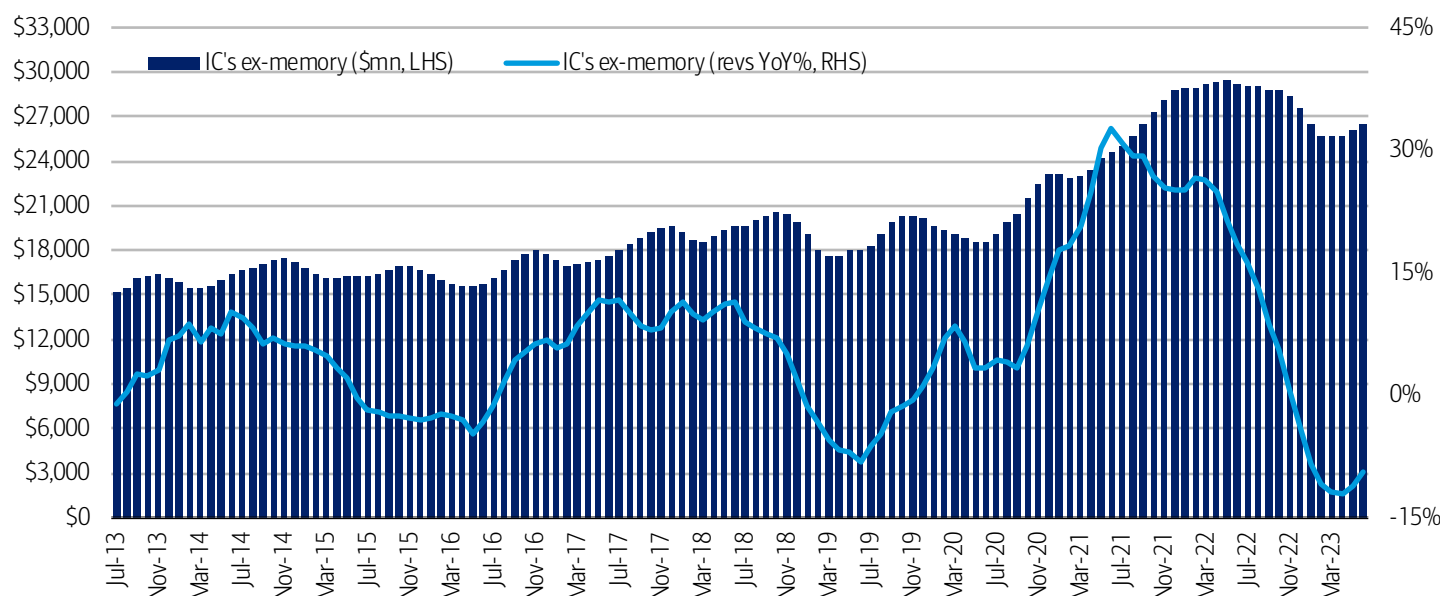
The shaded area represents backtested results from January 1991 to March 2021. The unshaded area represents actual performance since April 2021. This performance is backtested up to March 2021, and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (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.

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[Global Semiconductors: Jun'23 SIA: Pricing holds strong as semis grow MoM in June](#)

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

IC ex-memory sales were down -9.3% YoY (3mma)



Source: SIA, BofA Global Research

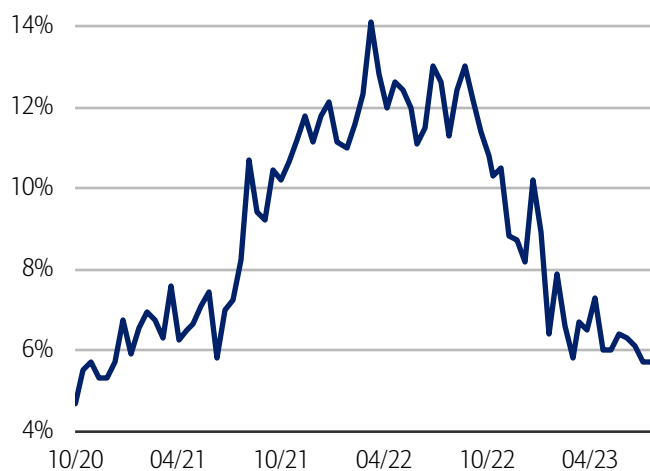
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Ocean vs air shipping

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

Congestion down to 5.7% of world supply now

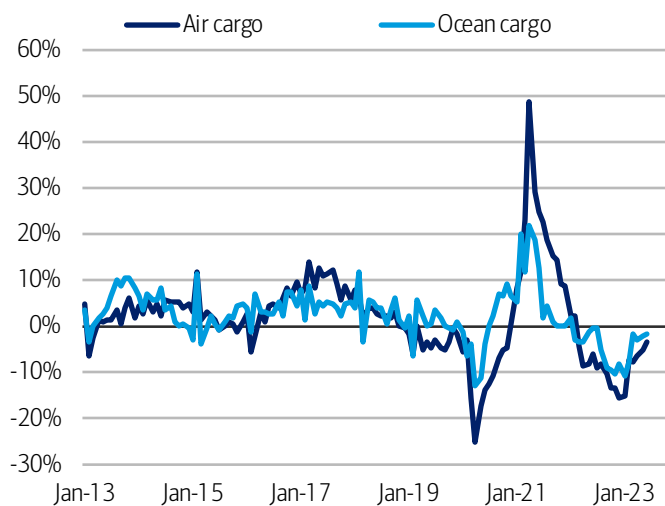


Source: Linerlytica

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

Air cargo demand seeing sharper deceleration than ocean

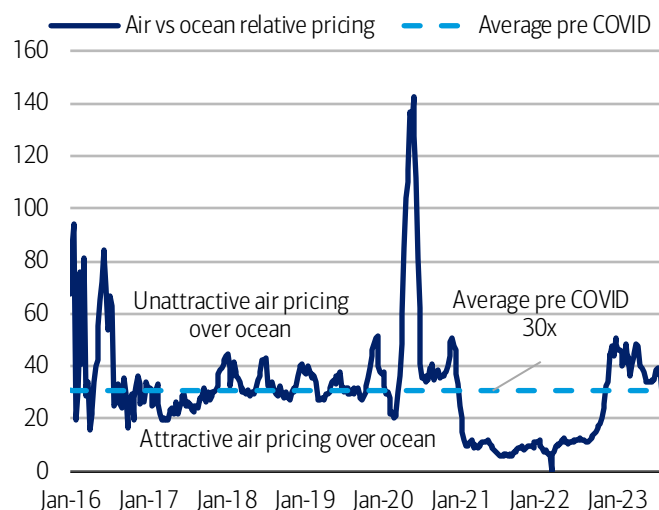


Source: Bloomberg, IATA, BofA Global Research estimates

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

Airfreight relative pricing is back above pre-COVID level of 30x

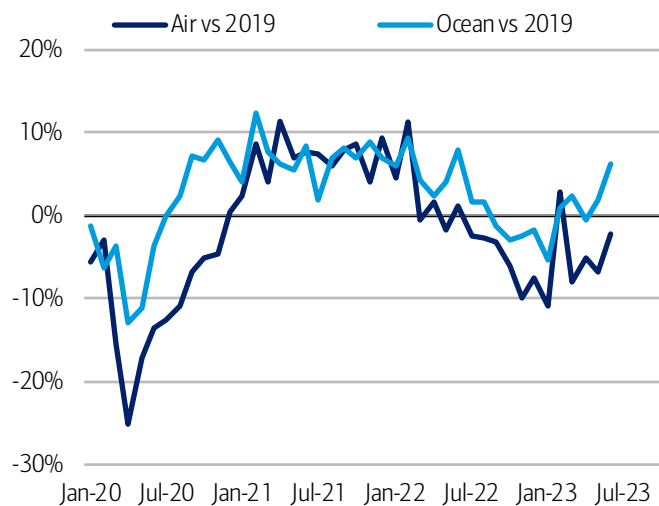


Source: BofA Global Research estimates, Bloomberg

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Exhibit 21: Air and ocean demand compared to 2019 levels

Air cargo demand is -2% below 2019 vs ocean at +6% in June



Source: Bloomberg, IATA, BofA Global Research estimates

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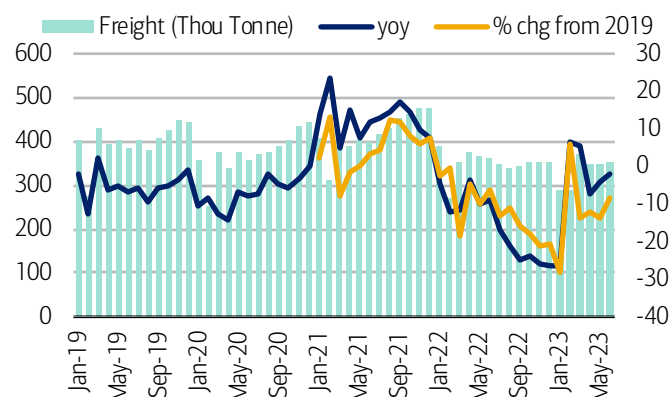
Airport cargo traffic

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

June cargo traffic at 8.3% below 2019 levels, -2% YoY

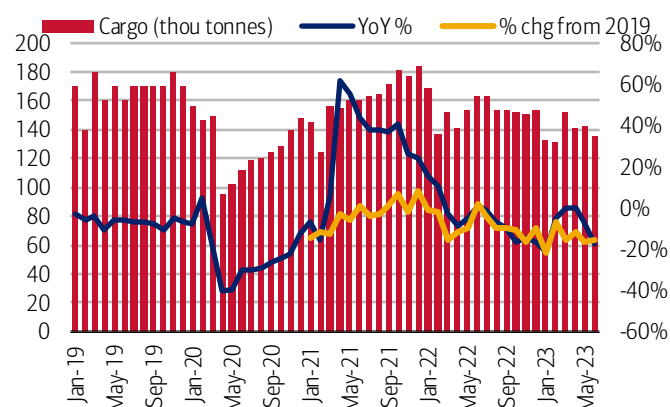


Source: BofA Global Research, company report

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

June cargo traffic at -15.6% below 2019 levels, -17% YoY

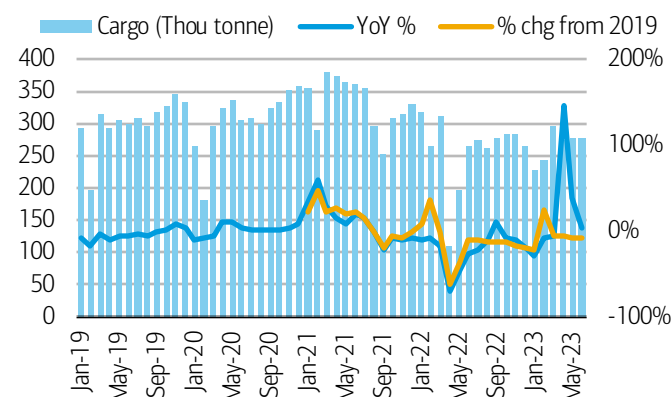


Source: BofA Global Research, company report

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

June cargo traffic at -7% below 2019 levels, +4% YoY

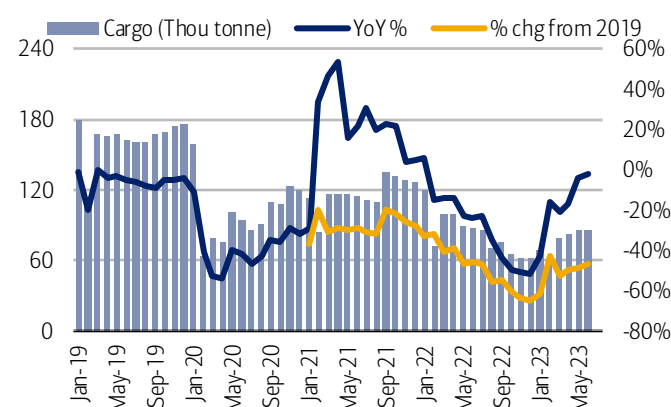


Source: BofA Global Research, company report

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

June cargo traffic at -47.3% below 2019 levels, -1.8% YoY

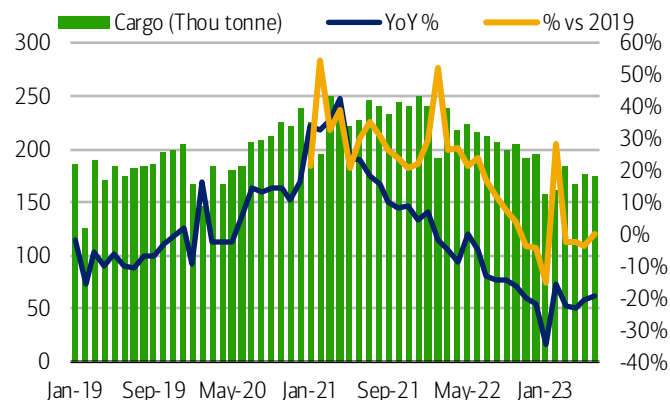


Source: BofA Global Research, company report

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

June cargo traffic flat compared to 2019 levels, -19% YoY

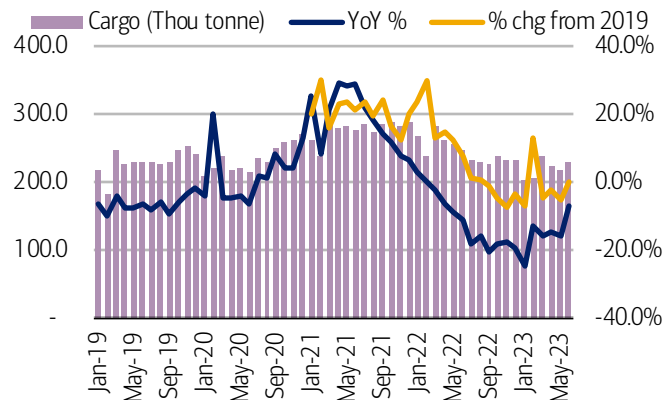


Source: BofA Global Research, company report

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

June cargo traffic flat compared to 2019 levels, -7% YoY



Source: BofA Global Research, company report

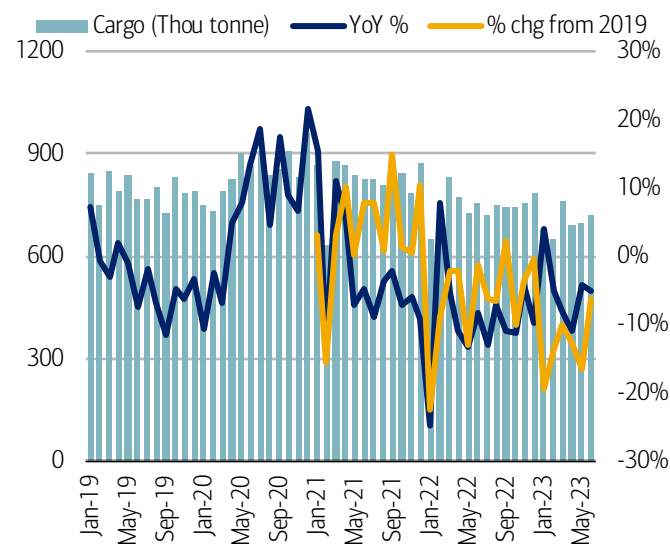
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US airports

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

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

June cargo traffic at -6% below 2019 levels, -5% YoY

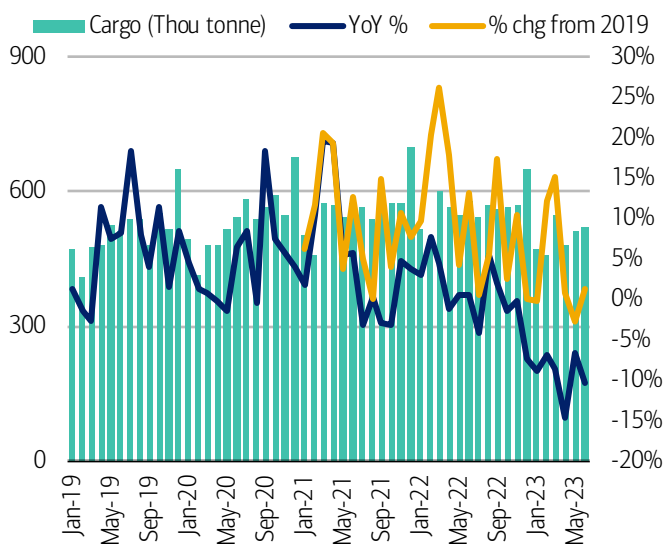


Source: BofA Global Research, company report

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

June cargo traffic at 1% above 2019 levels, -10% YoY



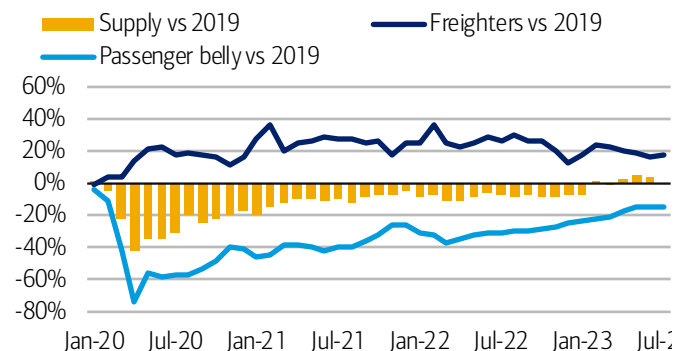
Source: BofA Global Research, company report

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Airfreight supply

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

Airfreight capacity is above 2019 levels in June 2023

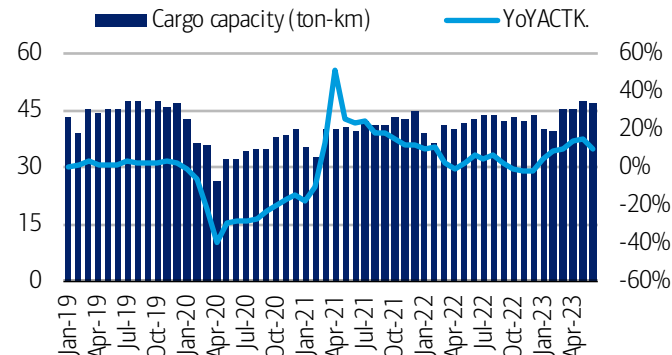


Source: BofA Global Research estimates, IATA

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

Global supply was up +10% YoY in June 2023



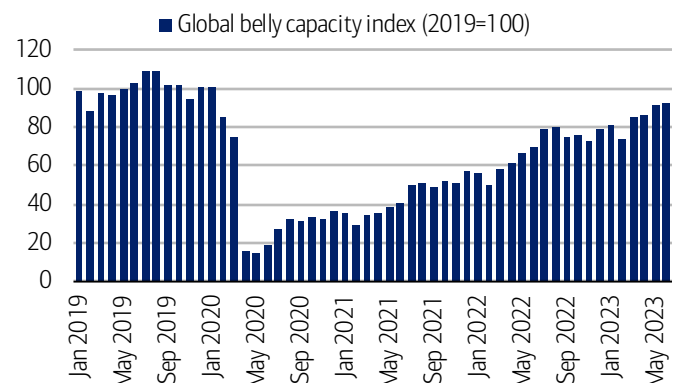
Source: IATA, BofA Global Research estimates

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Belly capacity

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

Belly cargo capacity rising to 92% of 2019 levels

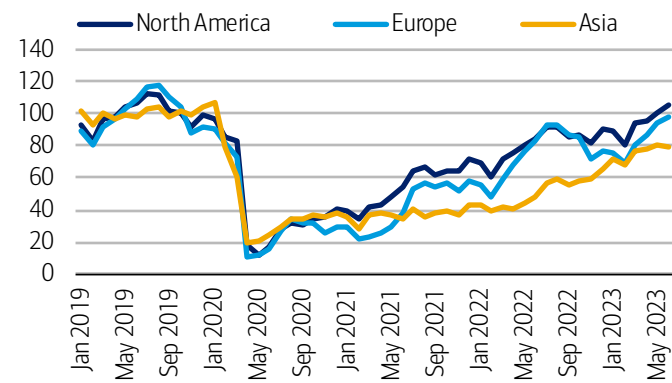


Source: BofA Global Research estimates, Diio, Boeing, Airbus

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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

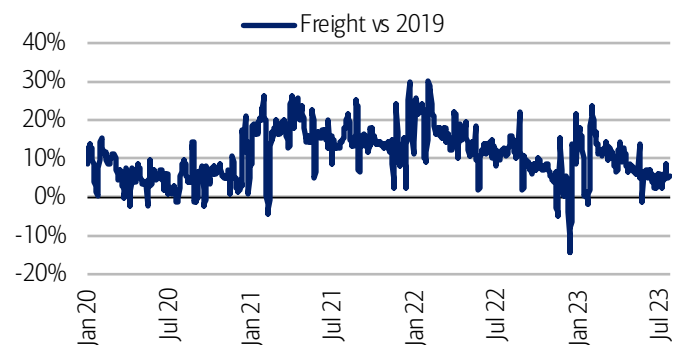
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Freighter

[BofA Commercial Aerospace: July review: Engine cycles show mixed performance](#)

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

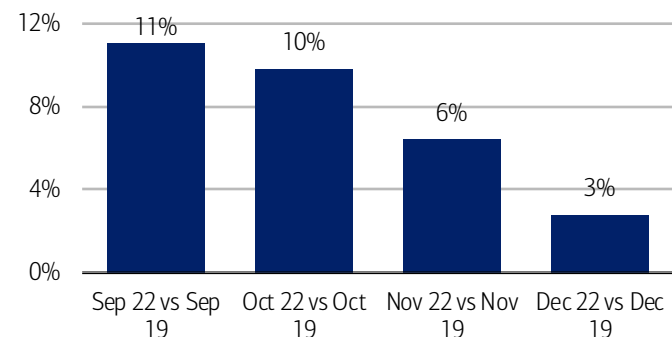


Source: BofA Global Research, Flightradar24

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Exhibit 35: Freight landings Sep – Dec 2022 vs 2019

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

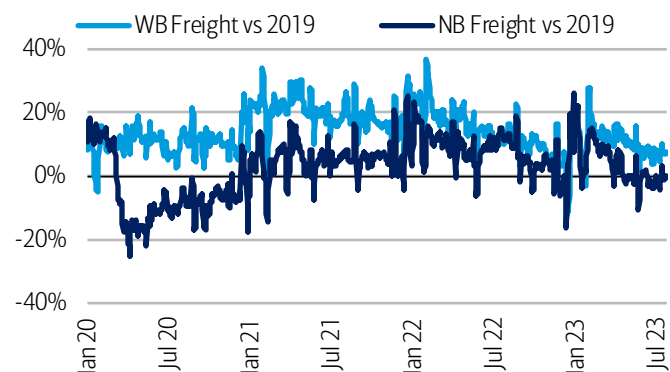


Source: BofA Global Research, Flightradar24

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

Narrowbody and Widebody freight have converged through 3Q22

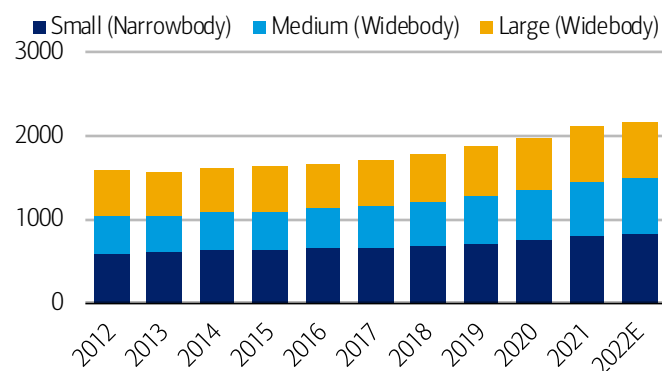


Source: BofA Global Research, Flightradar24

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Exhibit 38: Number of global freighter fleet from major OEMs

Fleet growth is at 3.2% CAGR since 2012

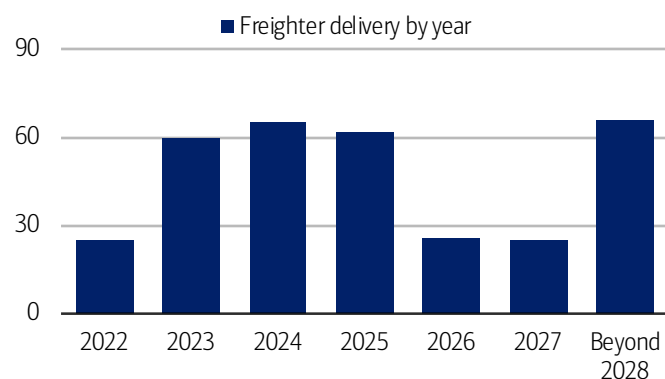


Source: Trade and Transport Group, BofA Global Research. Note excluding smaller feeder

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Exhibit 40: Number of freighter deliveries by year

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

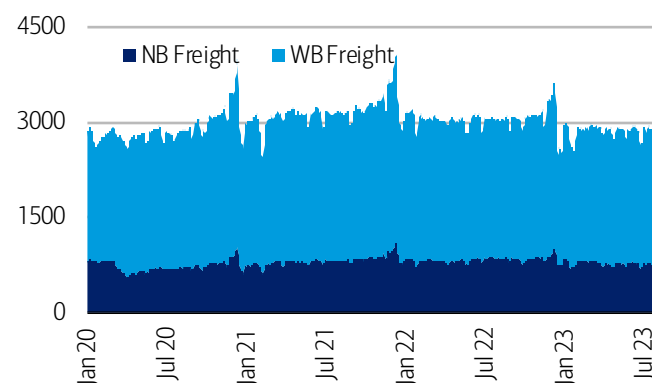


Source: Cirium, BofA Global Research estimates

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Exhibit 37: Narrowbody vs Widebody dedicated freighter flights daily

Freight cycles typically peak around the holiday period in December

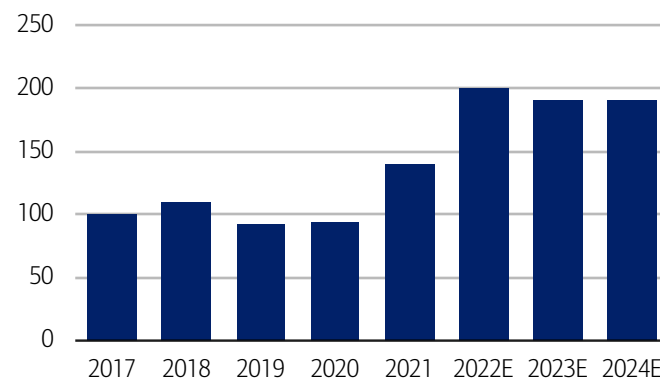


Source: BofA Global Research, Flightradar24

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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

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

About 3.5% retirement rate a year through the cycle

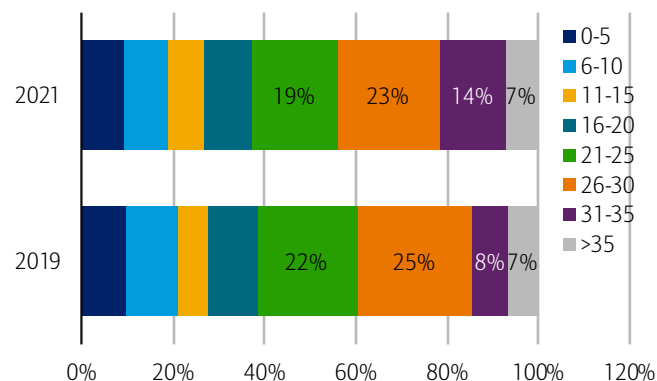


Source: Cirium, BofA Global Research estimates

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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

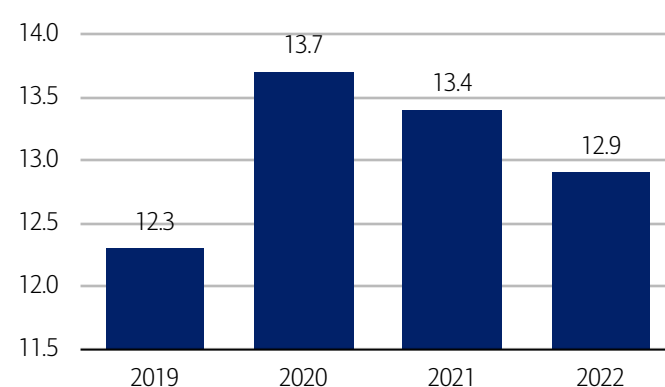


Source: Xeneta, BofA Global Research estimates

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Exhibit 43: Large freighter hours flown per day

Utilization hours not far from 2019 levels



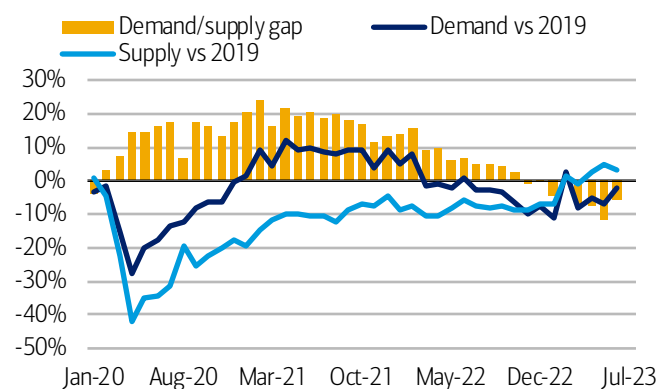
Source: Xeneta, BofA Global Research estimates

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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

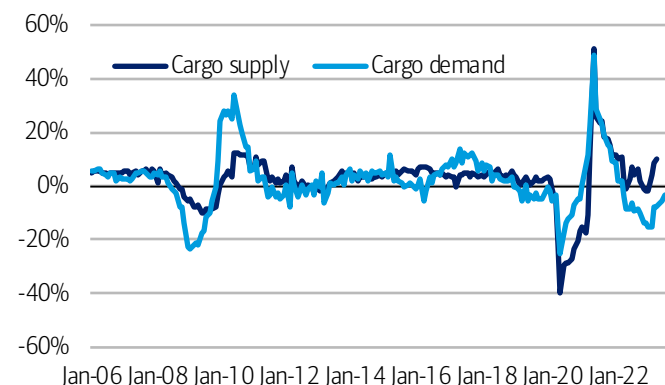


Source: IATA, BofA Global Research estimates

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Exhibit 45: Global airfreight demand and supply growth YoY%

YoY cargo demand and supply worsening further



Source: IATA, BofA Global Research estimates

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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

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Airfreight rates

Exhibit 47: Weekly Global Baltic Airfreight Index

Baltic Airfreight index now at 1,919 down -45% YoY

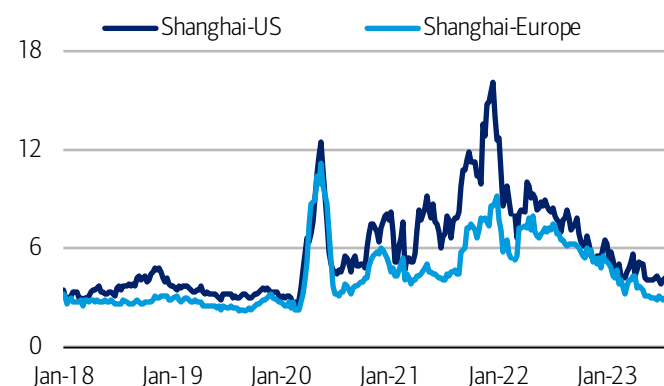


Source: TAC

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Exhibit 48: Baltic Airfreight Shanghai to US and Europe (US\$/kg)

Shanghai-Europe +26% and Shanghai-US +34% vs 2019 in the latest week



Source: TAC

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Exhibit 49: Key airfreight rates overview table, % change on 3Q23 data

Global rates are down -11% QoQ in 3Q23 so far

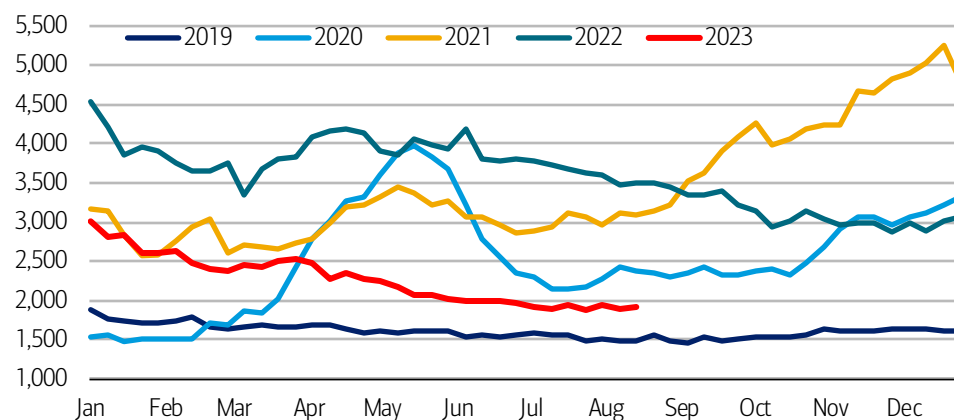
	Baltic Airfreight - Global	BAF- HK	BAF- Shanghai	BAF- Singapore	BAF- London	BAF- Chicago	Shanghai- Europe	Shanghai- US	HK- Europe	HK- US	HK-SE Asia	London- US	Singapore-SE Asia
1Q21	2,803	2,828	5,165	423	2,547	1,702	4.5	6.1	4.3	5.6	1.8	4.9	1.8
2Q21	3,136	3,545	5,867	425	2,755	1,672	4.5	7.7	4.6	8.0	1.8	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	1,911	3,028	3,475	363	1,167	1,293	2.9	4.2	3.6	4.5	1.6	1.4	1.6
QoQ	-11%	10%	-8%	-15%	-23%	-10%	-11%	-6%	-5%	-8%	-12%	-29%	-15%
YoY	-46%	-23%	-49%	-40%	-50%	-44%	-55%	-46%	-42%	-41%	-29%	-61%	-40%
YTD YoY	-41%	-33%	-46%	-20%	-42%	-31%	-47%	-47%	-34%	-44%	-22%	-49%	-20%
vs 2019	26%	84%	32%	76%	33%	-1%	26%	34%	39%	37%	46%	41%	76%

Source: TAC, BofA Global Research

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Exhibit 50: Weekly Global Baltic Airfreight Index by year, 2019-23

Latest weekly rate index still on a weakening trend



Source: TAC, BofA Global Research

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Airfreight demand

Global cargo traffic

Exhibit 51: Monthly global air cargo demand growth YoY %

Demand was down -5.2% YoY in May and -3.4% YoY in June

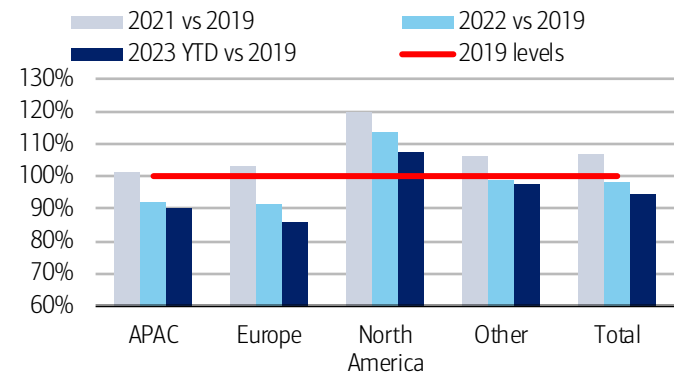


Source: BofA Global Research estimates, IATA

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Exhibit 52: Air cargo demand (CTK) vs 2019 levels by major regions

2022 demand was 2% below 2019 levels, YTD2023 so far at -5% vs 2019

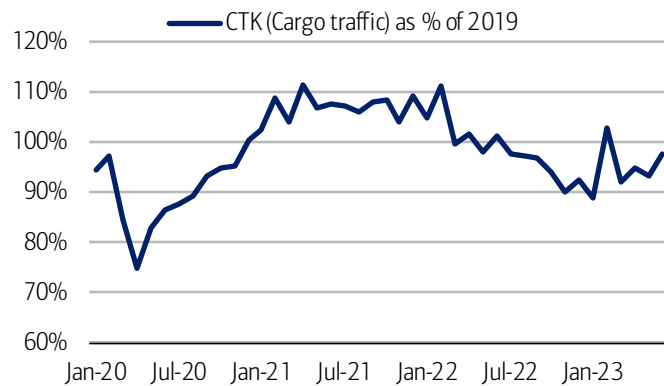


Source: IATA, BofA Global Research. YTD up to February 2023

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Exhibit 53: Air cargo demand (CTK) as % of 2019 levels

Demand was at 93% of 2019 levels in May and 98% in June

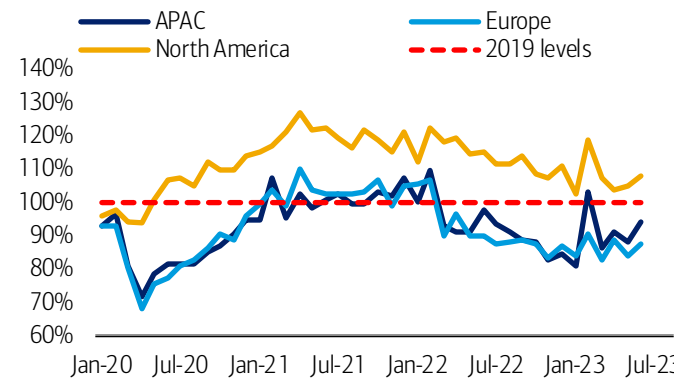


Source: BofA Global Research estimates

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Exhibit 54: Monthly air cargo demand by major regions vs 2019 levels

Demand from North America strengthened to 108% of 2019 levels

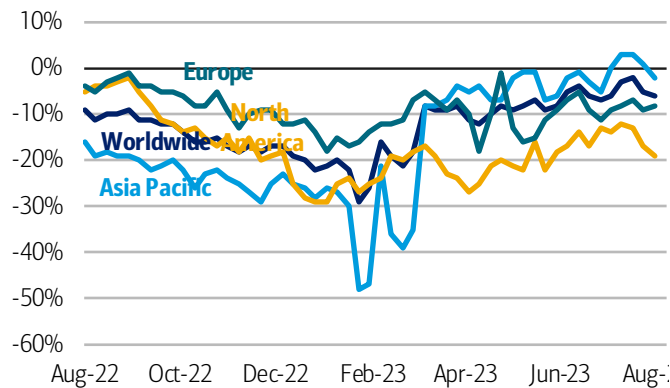


Source: IATA, BofA Global Research

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Exhibit 55: Weekly cargo chargeable weight, YoY % since Aug 2022

Global demand was down -6% YoY in the week of August 6th 2023

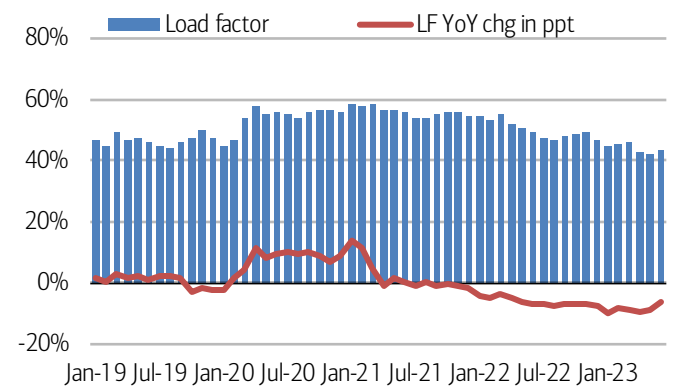


Source: WorldACD, BofA Global Research

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Exhibit 56: Global cargo load factor and YoY changes in ppts

Load factor down to 43.4% in June, up from 41.9% in May

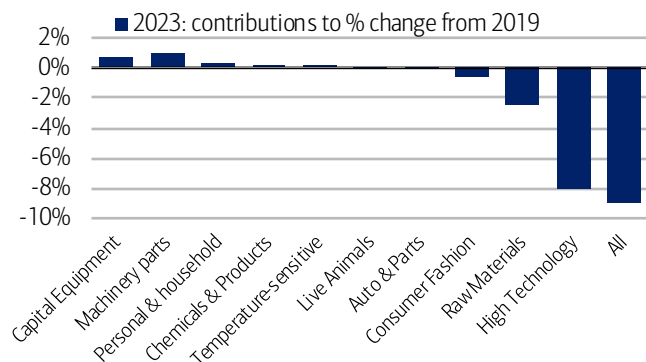


Source: IATA, BofA Global Research estimates

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Exhibit 57: China air cargo: Growth by industry v. 2019, 5M2023

Capital equipment & machinery made positive contributions in 2023

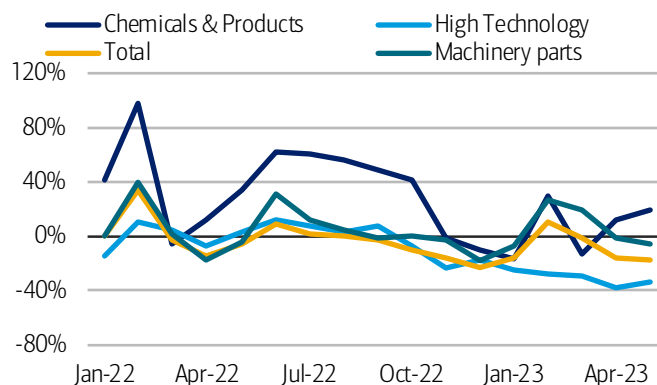


Source: Company report

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Exhibit 58: China monthly air cargo trade: % change from 2019 levels

Air shipping of high-tech products has been in the decline since Oct 22

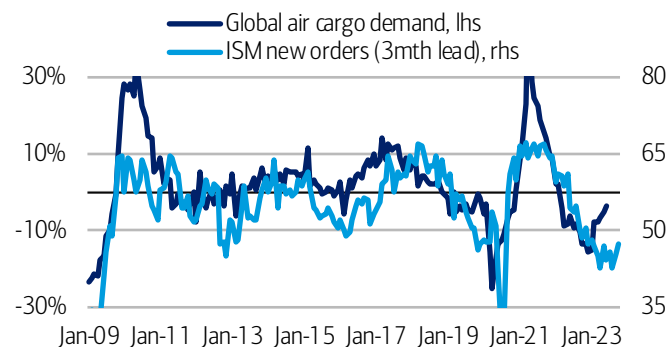


Source: company report

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Leading demand indicators**Exhibit 59: Global air cargo demand yoy growth v. ISM new orders**

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

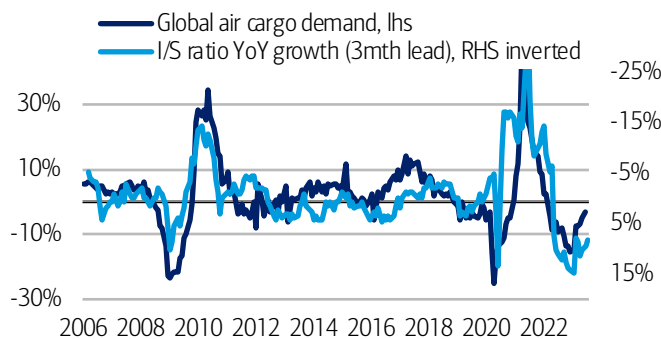


Source: BofA Global Research, Bloomberg

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Exhibit 60: Air cargo demand v. US inventory-to-sales ratio (inverted)

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



Source: BofA Global Research, Bloomberg

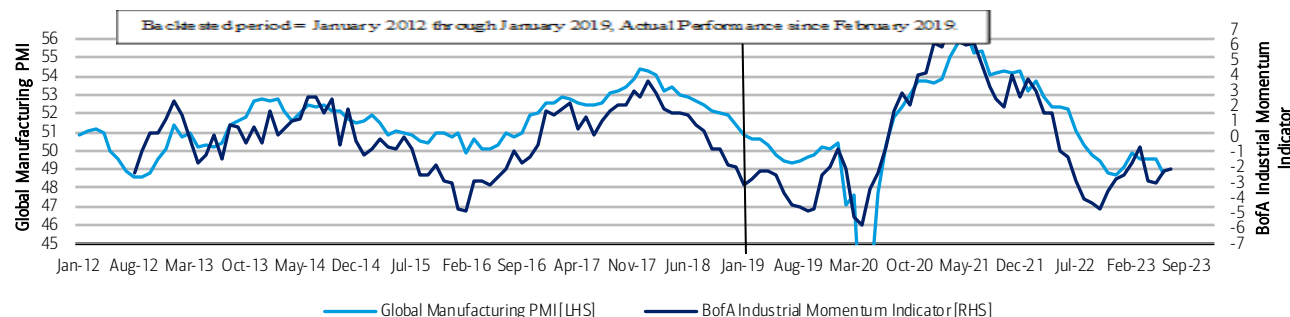
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Industry demand data

[Global Industrials: BofA Industrial Momentum Indicator ticks up MoM – navigating through uncertainty](#)

Exhibit 61: BofA Industrial Momentum Indicator vs Global Manufacturing PMI

Bottoms in the BofA Industrial Momentum Indicator lead bottoms in Global Manufacturing PMI



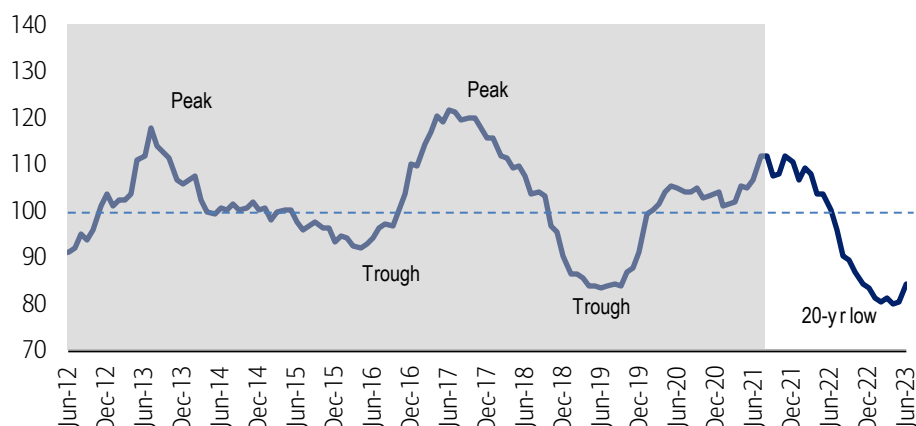
Source: BofA Global Research, Backtested period = January 2012 through January 2019, Actual Performance since February 2019. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of 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

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[Global Memory Tech: Weekly theme: lower expectations on spot, memory indicator, Samsung feedback](#)

Exhibit 62: BofA Memory Indicator is derived from YoY change in price/exports/billings

June indicator better than Jan-May due to stable spot prices and recovery in memory billings (due to strong bit-shipment growth); Korea's semis exports also recovered in June



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

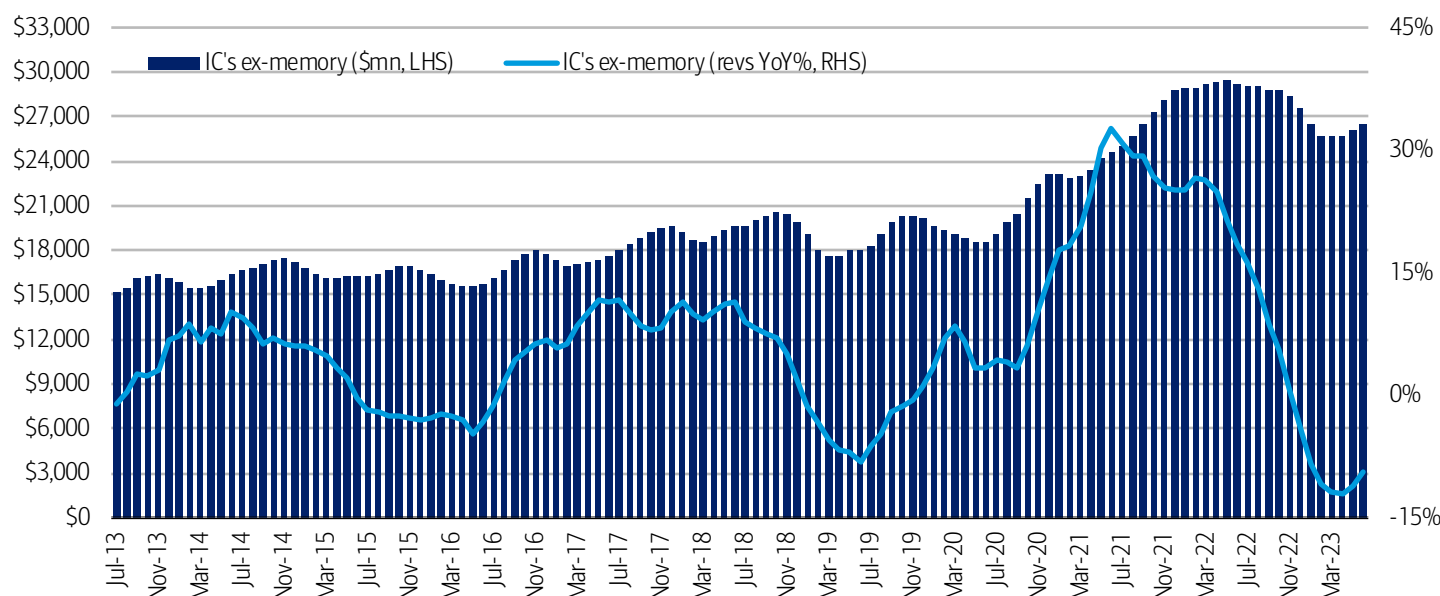
The shaded area represents backtested results from January 1991 to March 2021. The unshaded area represents actual performance since April 2021. This performance is backtested up to March 2021, and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (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.

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[Global Semiconductors: Jun'23 SIA: Pricing holds strong as semis grow MoM in June](#)

Exhibit 63: IC ex-memory unit trends over the last 10 years (3mma)

IC ex-memory sales were down -9.3% YoY (3mma)



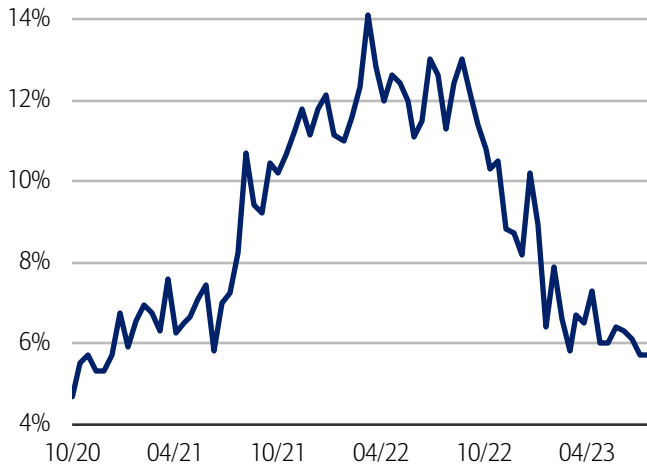
Source: SIA, BofA Global Research

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Ocean vs air shipping

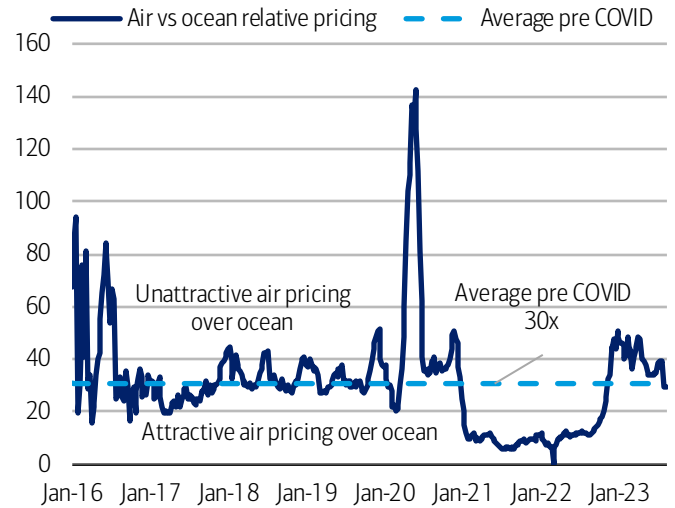
Exhibit 64: Vessel capacity stuck in congestion (% of fleet), 2020-23
Congestion down to 5.7% of world supply now



Source: Linerlytica

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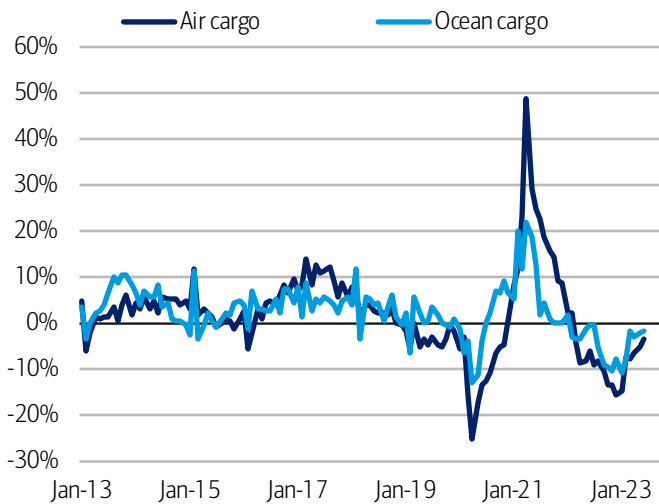
Exhibit 65: Airfreight relative pricings to ocean, China-Europe route
Airfreight relative pricing is back above pre-COVID level of 30x



Source: BofA Global Research estimates, Bloomberg

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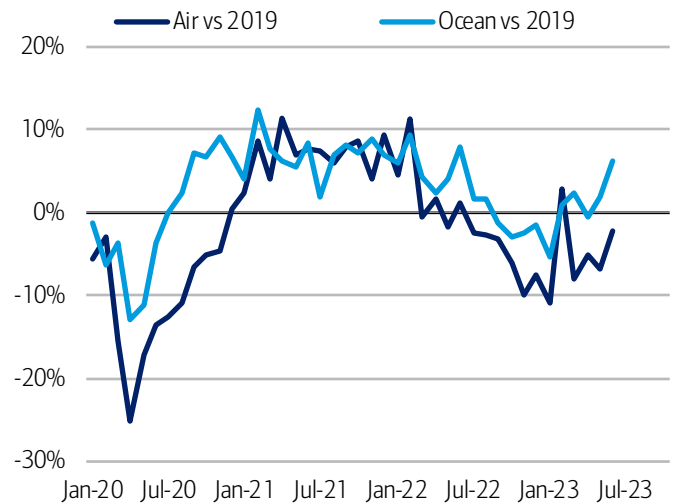
Exhibit 66: Air and ocean cargo demand growth YoY %, 2013-23
Air cargo demand seeing sharper deceleration than ocean



Source: Bloomberg, IATA, BofA Global Research estimates

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Exhibit 67: Air and ocean demand compared to 2019 levels
Air cargo demand is -2% below 2019 vs ocean at +6% in June



Source: Bloomberg, IATA, BofA Global Research estimates

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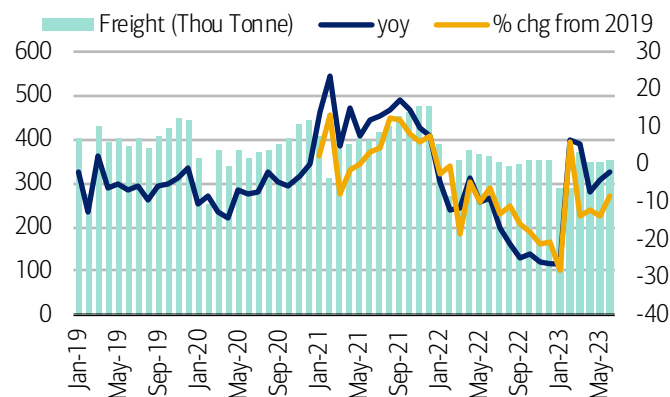
Airport cargo traffic

Asian airports

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

Exhibit 68: Hong Kong – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at 8.3% below 2019 levels, -2% YoY

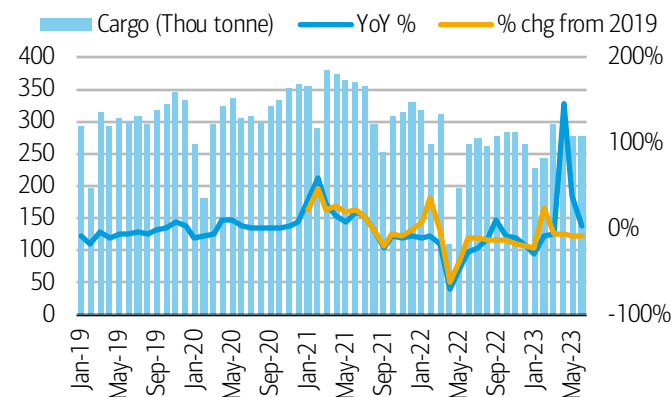


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 69: Shanghai PVG – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at -7% below 2019 levels, +4% YoY

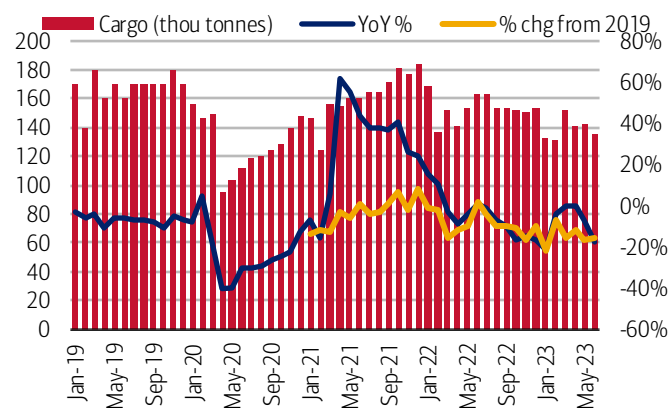


Source: BofA Global Research, company report

BofA GLOBAL RESEARCH

Exhibit 70: Singapore – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at -15.6% below 2019 levels, -17% YoY

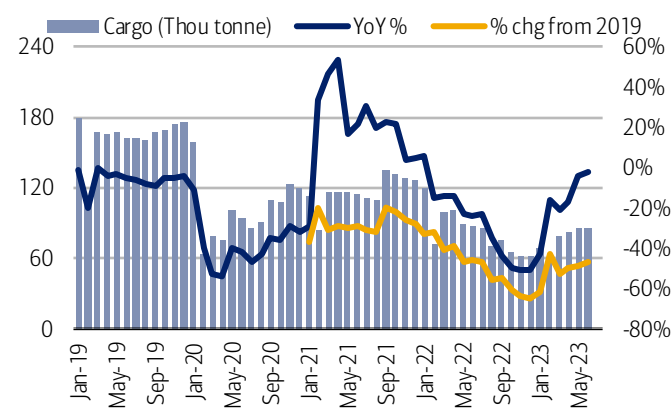


Source: BofA Global Research, company report

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Exhibit 71: Beijing PEK – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at -47.3% below 2019 levels, -1.8% YoY

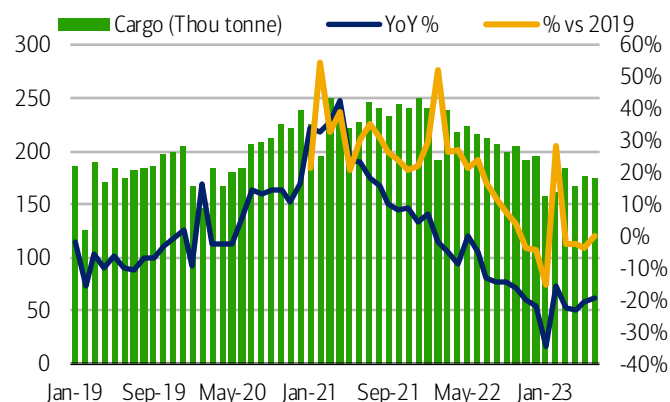


Source: BofA Global Research, company report

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Exhibit 72: Taipei – airport cargo traffic ('000 tonne) and % chg

June cargo traffic flat compared to 2019 levels, -19% YoY

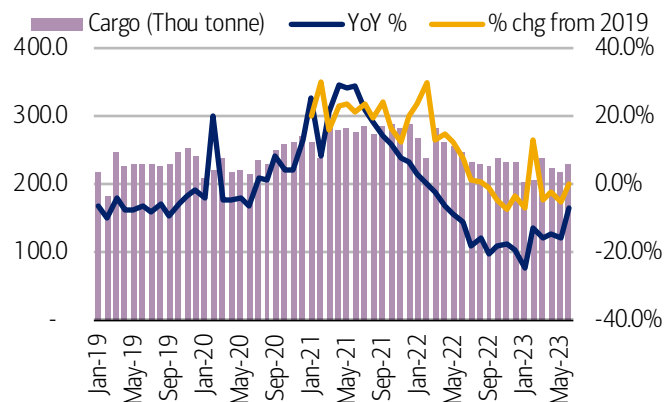


Source: BofA Global Research, company report

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Exhibit 73: Seoul – airport cargo traffic ('000 tonne) and % chg

June cargo traffic flat compared to 2019 levels, -7% YoY



Source: BofA Global Research, company report

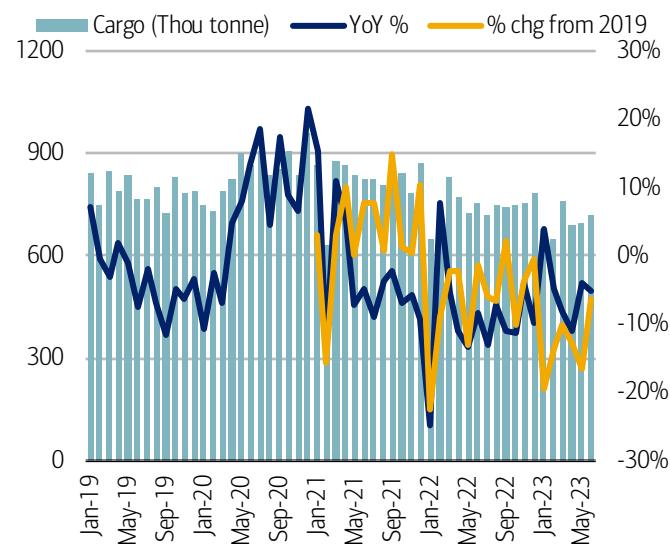
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US airports

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

Exhibit 74: Memphis – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at -6% below 2019 levels, -5% YoY

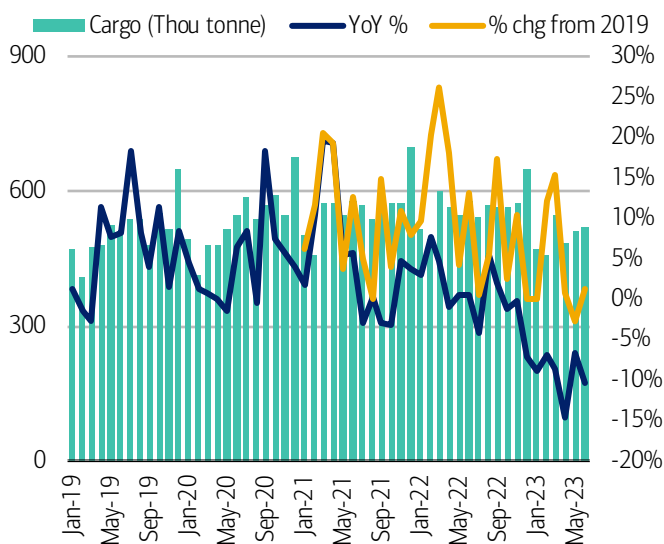


Source: BofA Global Research, company report

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Exhibit 75: Louisville – airport cargo traffic ('000 tonne) and % chg

June cargo traffic at 1% above 2019 levels, -10% YoY



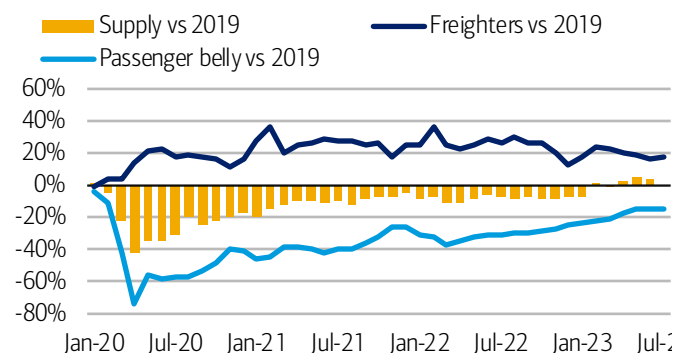
Source: BofA Global Research, company report

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Airfreight supply

Exhibit 76: Global airfreight capacity vs 2019, freighters & belly

Airfreight capacity is above 2019 levels in June 2023

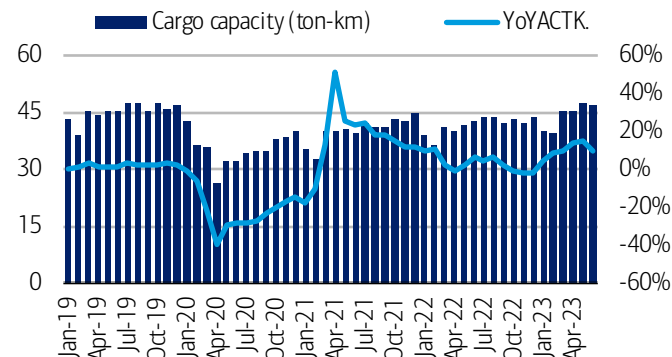


Source: BofA Global Research estimates, IATA

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Exhibit 77: Global airfreight capacity (mn ton-km)

Global supply was up +10% YoY in June 2023



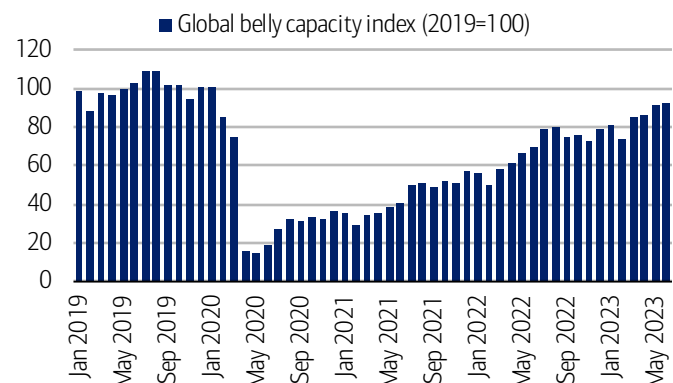
Source: IATA, BofA Global Research estimates

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Belly capacity

Exhibit 78: Payload adjusted global bellyhold capacity index, 2019=100

Belly cargo capacity rising to 92% of 2019 levels

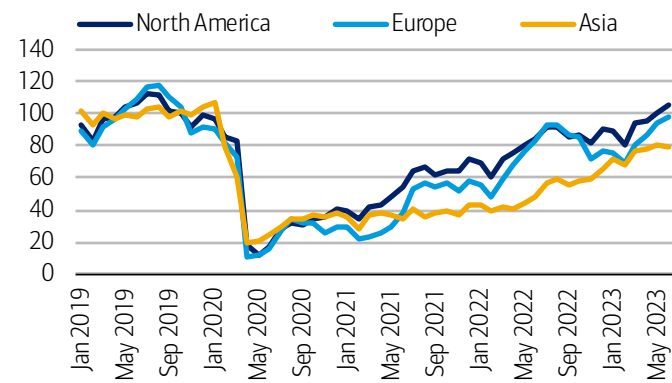


Source: BofA Global Research estimates, Dii, Boeing, Airbus

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Exhibit 79: Payload adjusted belly capacity by region, 2019=100

Belly capacity return led by North America



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

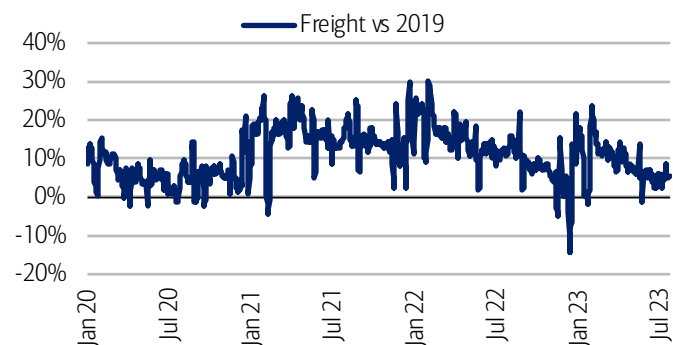
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Freighter

[BofA Commercial Aerospace: July review: Engine cycles show mixed performance](#)

Exhibit 80: Global dedicated freighter flights tracked 7 day avg. YoY %

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

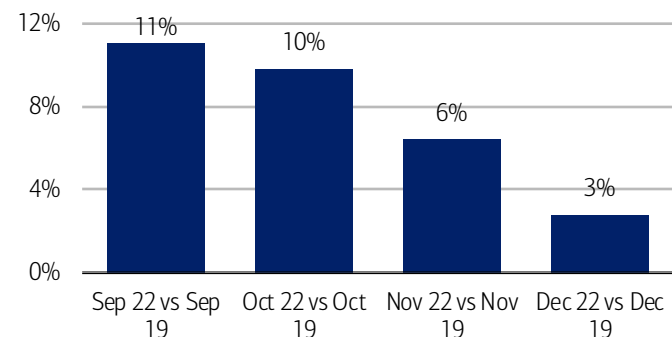


Source: BofA Global Research, Flightradar24

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Exhibit 81: Freight landings Sep – Dec 2022 vs 2019

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



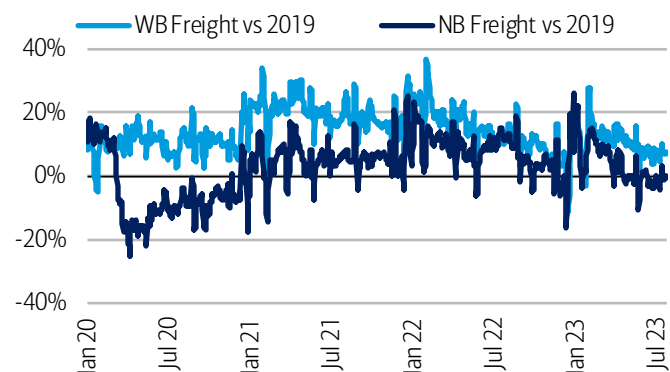
Source: BofA Global Research, Flightradar24

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Exhibit 82: Narrowbody vs Widebody dedicated freighter flights tracked 7 day avg. YoY %

Narrowbody and Widebody freight have converged through 3Q22

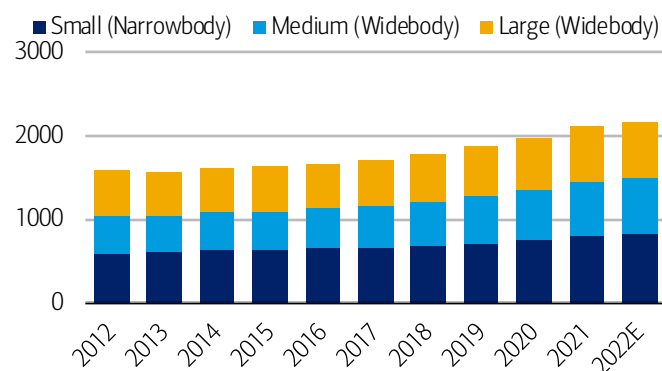


Source: BofA Global Research, Flightradar24

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Exhibit 84: Number of global freighter fleet from major OEMs

Fleet growth is at 3.2% CAGR since 2012

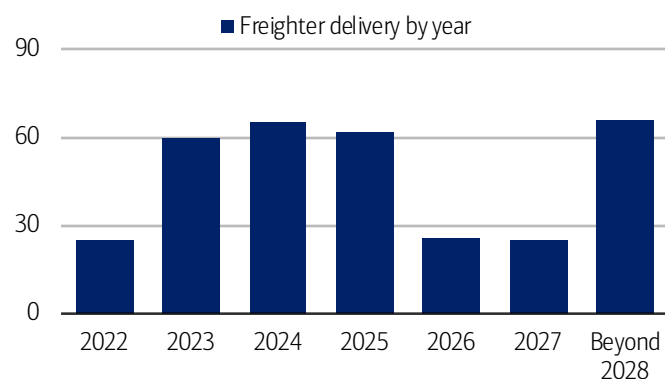


Source: Trade and Transport Group, BofA Global Research. Note excluding smaller feeder

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Exhibit 86: Number of freighter deliveries by year

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

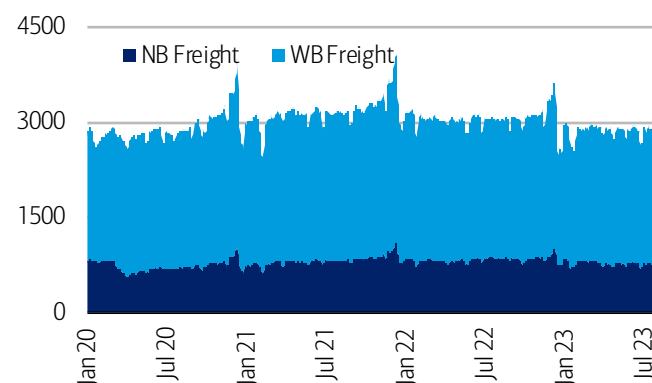


Source: Cirium, BofA Global Research estimates

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Exhibit 83: Narrowbody vs Widebody dedicated freighter flights daily

Freight cycles typically peak around the holiday period in December

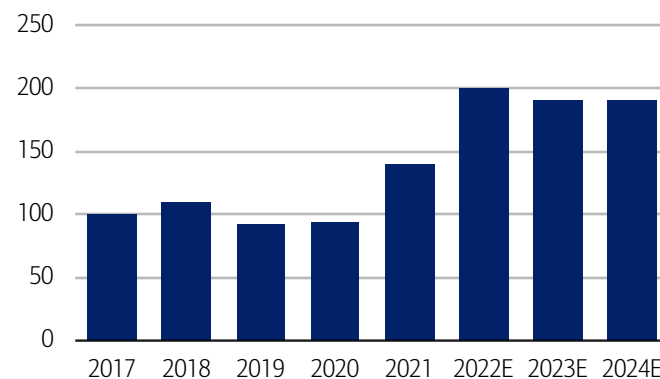


Source: BofA Global Research, Flightradar24

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Exhibit 85: Number of freighter jet conversions from passenger

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



Source: Cirium, BofA Global Research estimates

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Exhibit 87: Annual freighter retirement as % of in service fleet

About 3.5% retirement rate a year through the cycle

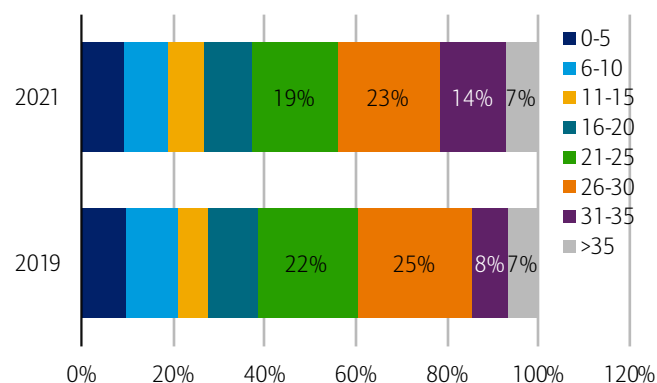


Source: Cirium, BofA Global Research estimates

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Exhibit 88: Age of freighters by year, 2019 and 2021

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

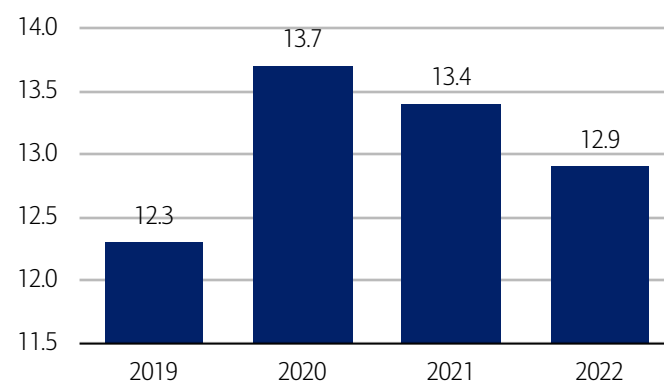


Source: Xeneta, BofA Global Research estimates

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Exhibit 89: Large freighter hours flown per day

Utilization hours not far from 2019 levels



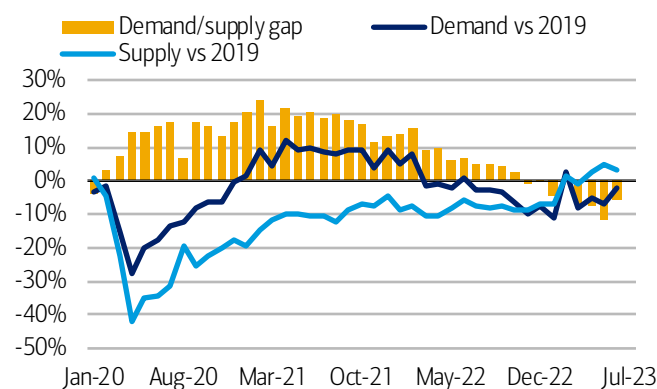
Source: Xeneta, BofA Global Research estimates

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Demand/supply balance

Exhibit 90: Global airfreight demand and supply vs 2019 levels and demand-supply gap

Balance has flipped to negative since November 2022

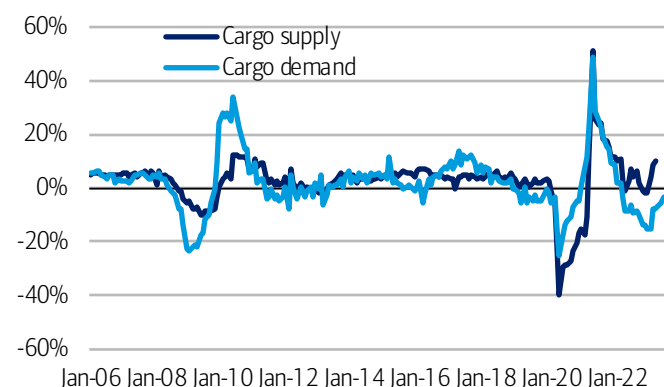


Source: IATA, BofA Global Research estimates

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Exhibit 91: Global airfreight demand and supply growth YoY%

YoY cargo demand and supply worsening further



Source: IATA, BofA Global Research estimates

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BofA demand/supply model

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

Exhibit 92: Global air cargo annual supply & demand balance

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

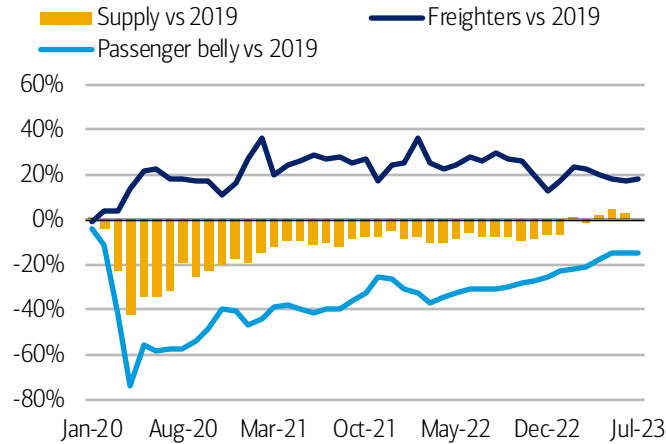
YoY %	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Demand (FTK)	20.8%	-0.7%	-1.0%	1.9%	4.5%	3.4%	3.8%	10.1%	3.7%	-3.3%	-8.9%	17.5%	-8.0%	-3.8%	3.2%
Capacity (AFTK)	8.9%	4.1%	1.1%	3.1%	3.7%	6.1%	5.3%	3.8%	5.2%	2.1%	-20.9%	12.8%	2.9%	7.3%	7.8%
Demand/supply balance	11.9%	-4.8%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

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Exhibit 93: Global airfreight capacity vs 2019, freighters & belly

Airfreight capacity is close to 2019 levels now

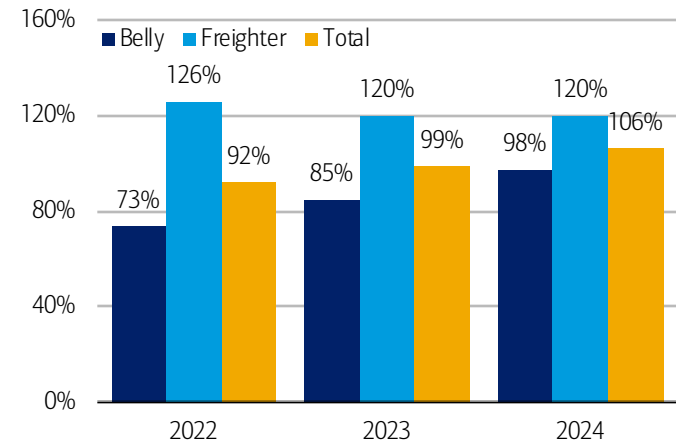


Source: BofA Global Research estimates, IATA

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Exhibit 94: 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

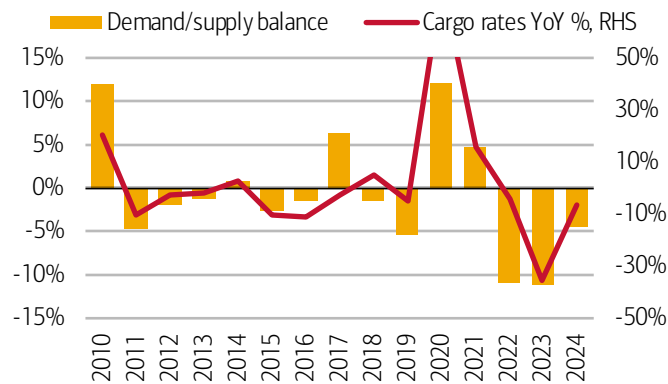


Source: BofA Global Research estimates

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Exhibit 95: Global air cargo balance and cargo yield YoY %

Cargo balance drives cargo yield with high correlation at 0.77

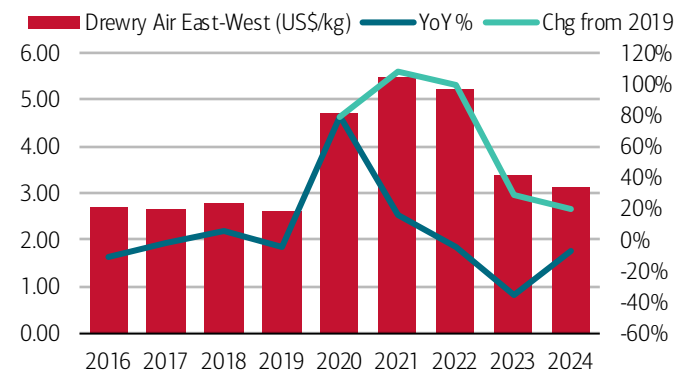


Source: IATA, BofA Global Research estimates

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Exhibit 96: Global air cargo yield and % change

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



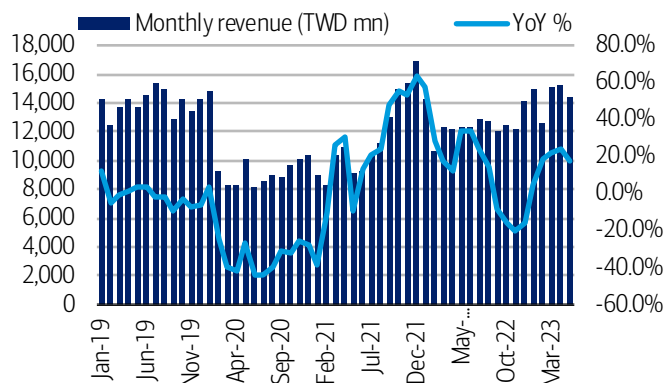
Source: Drewry, IATA, BofA Global Research estimates

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Airlines operating data

Exhibit 97: China Airlines – monthly revenue (TWD mn) and YoY %

June revenue +33.5% YoY and July +18% YoY

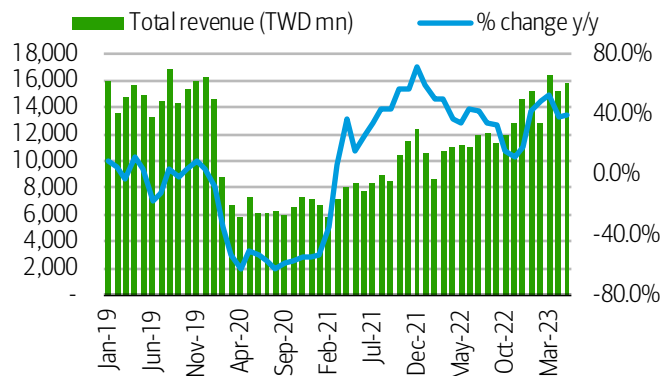


Source: BofA Global Research, company report

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Exhibit 98: EVA Air – monthly revenue (TWD mn) and YoY %

June revenue +59.4% YoY and +57.5% YoY

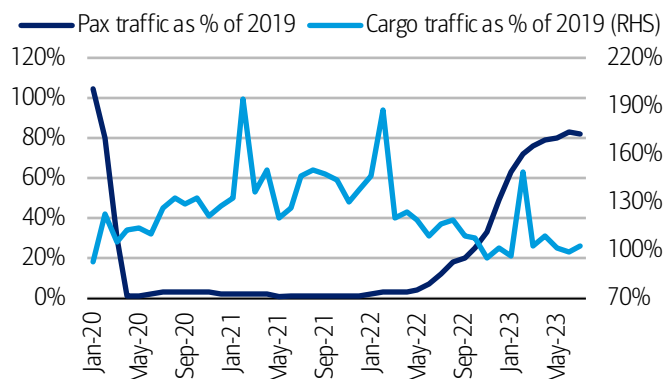


Source: BofA Global Research, company report

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Exhibit 99: CAL passenger (RPK) and cargo (FTK) traffic as % of 2019

Jun/Jul pax traffic at 83%/82% of 2019 levels & cargo traffic at 99%/103%

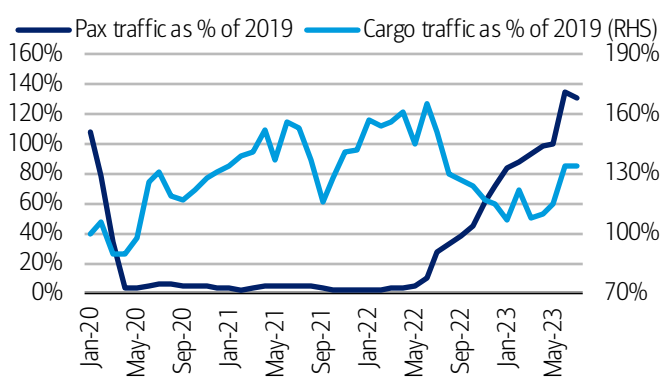


Source: BofA Global Research, company report

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Exhibit 100: EVA passenger (RPK) and cargo (FTK) traffic as % of 2019

Jun/Jul pax traffic at 134%/131% of 2019 levels & cargo at 134%/131%

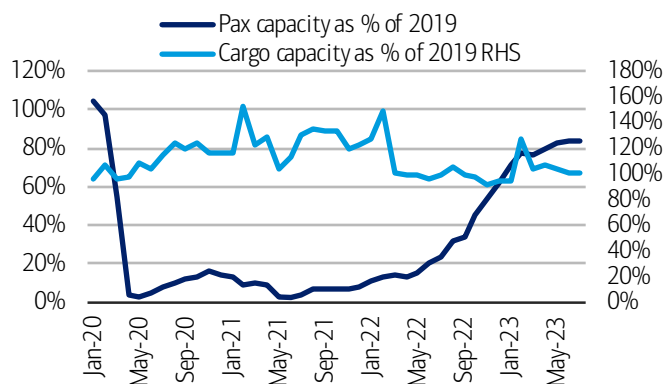


Source: BofA Global Research, company report

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Exhibit 101: CAL passenger and cargo capacity as % of 2019

Jun/Jul pax capacity at 83%/83% of 2019 levels & cargo at 101%/100%

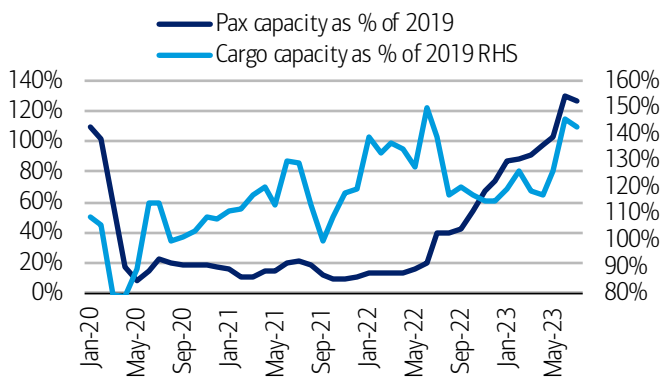


Source: BofA Global Research, company report

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Exhibit 102: EVA passenger and cargo capacity as % of 2019

Jun/Jul pax capacity at 130%/126% of 2019 levels; cargo at 145%/143%

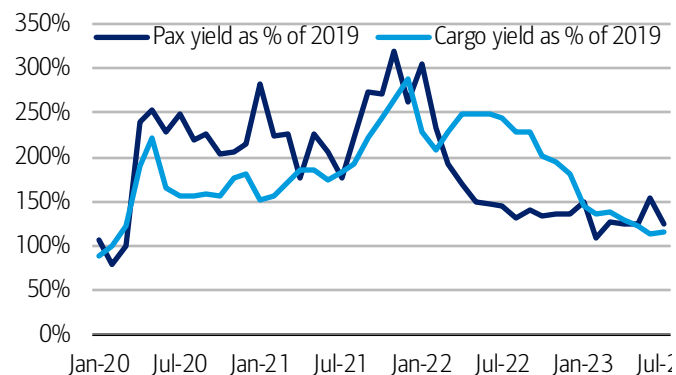


Source: BofA Global Research, company report

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Exhibit 103: CAL passenger and cargo yields as % of 2019 levels

Jun/Jul pax yield at 154%/125% of 2019 levels; cargo yield at 114%/115%

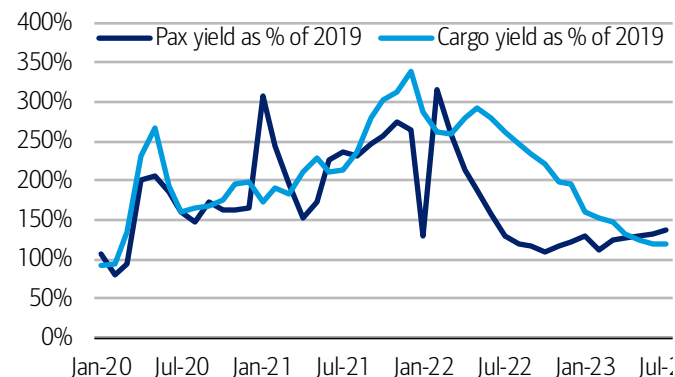


Source: BofA Global Research, company report

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Exhibit 104: EVA passenger and cargo yields as % of 2019 levels

Jun/Jul pax yield at 132%/136% of 2019 levels & cargo yield at 121%/118%

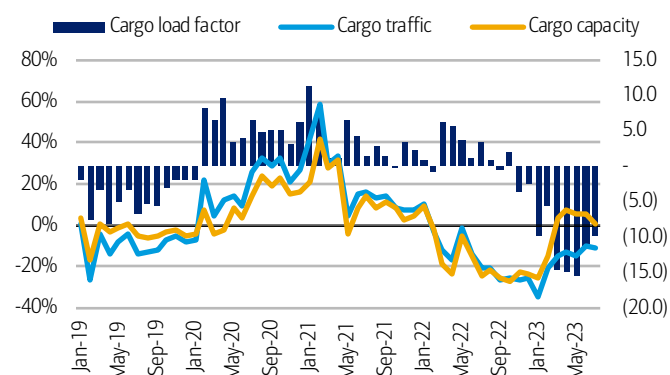


Source: BofA Global Research, company report

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Exhibit 105: CAL cargo traffic and capacity growth, loads YoY chg (RHS)

Jun/Jul cargo load factor at 67.2%/69.1%, -10 to -11 ppts YoY

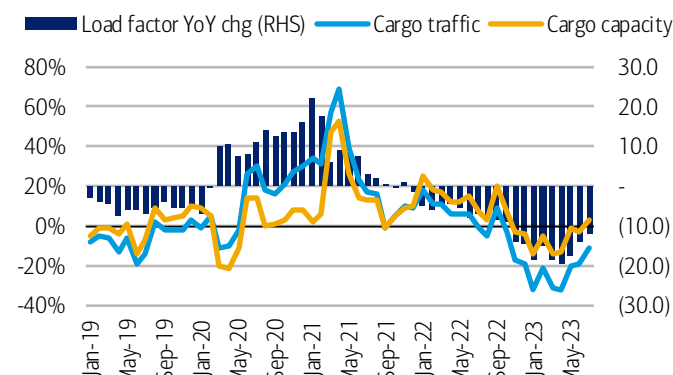


Source: BofA Global Research, company report

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Exhibit 106: EVA cargo traffic and capacity growth, loads YoY chg (RHS)

Jun/Jul cargo load factor at 73.3%/74.7%, -12 to -14 ppts YoY

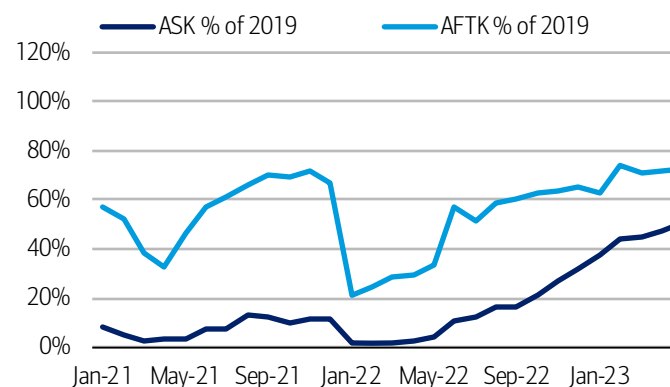


Source: BofA Global Research, company report

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Exhibit 107: Cathay Pacific passenger and cargo capacity as % of 2019

June passenger (ASK) capacity at 51% of 2019 levels and cargo (AFTK) capacity at 74%

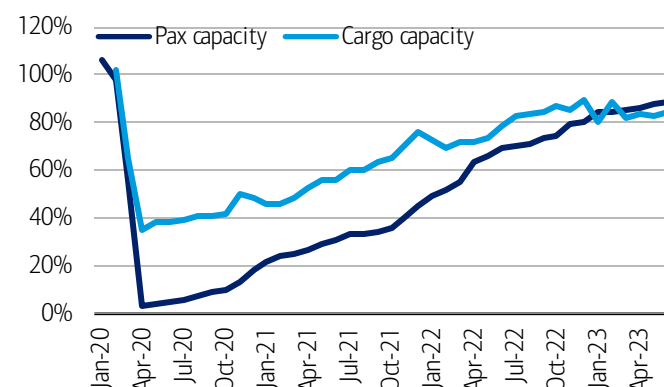


Source: BofA Global Research, company report

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Exhibit 108: Singapore Airlines passenger & cargo capacity as % of 2019

June passenger capacity at 88% of 2019 levels and cargo capacity at 84%

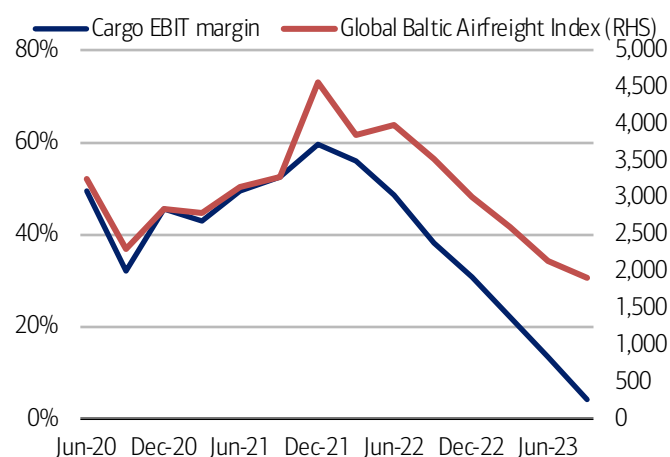


Source: BofA Global Research, company report

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Exhibit 109: Singapore Airlines quarterly cargo EBIT margin and Baltic Airfreight Index (RHS)

Jun-Q SIA cargo margin at 13% and likely going down to 4% in Sep-Q

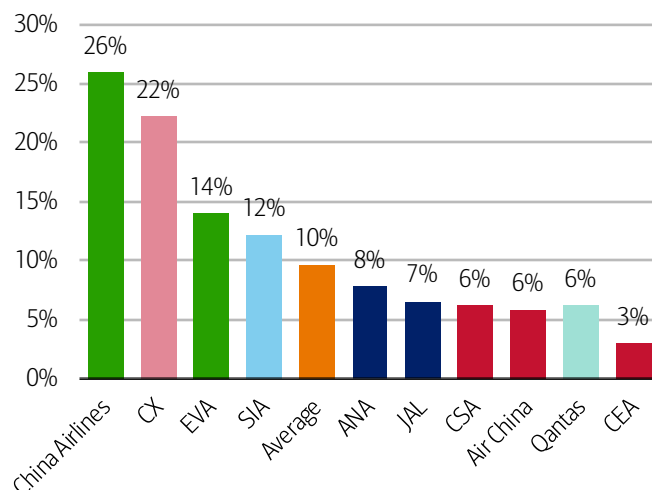


Source: BofA Global Research estimates, company report

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Exhibit 110: Asian airlines: Cargo as % of revenue in FY2019

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

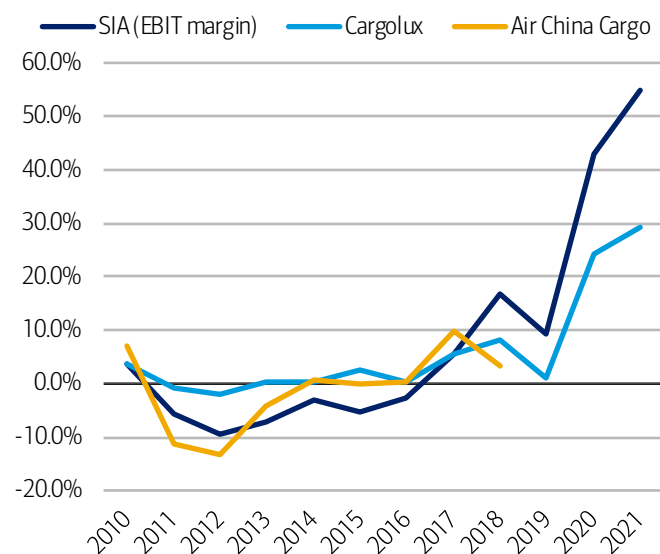


Source: BofA Global Research estimates, company report

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Exhibit 111: Cargo margins for selected airlines with disclosures

Cargo historically has been largely a breakeven business

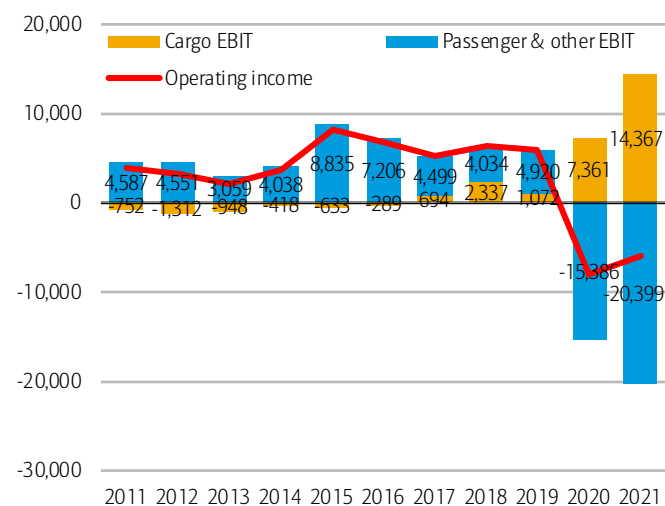


Source: BofA Global Research estimates, company report

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Exhibit 112: 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



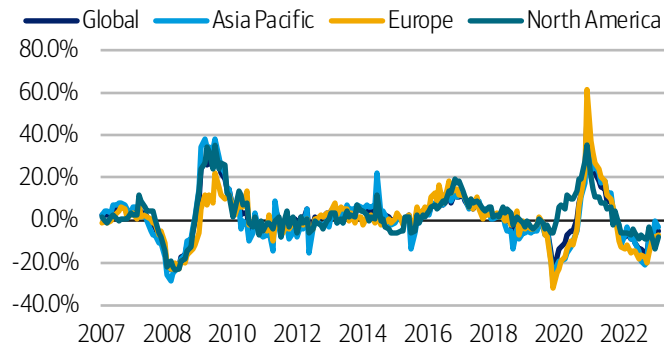
Source: BofA Global Research estimates, company report. Note airlines include Air China, CEA, CSA, JAL, ANA, EVA, China Airlines, CX and SIA

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Global airfreight market overview

Exhibit 113: Monthly air cargo demand growth YoY %

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

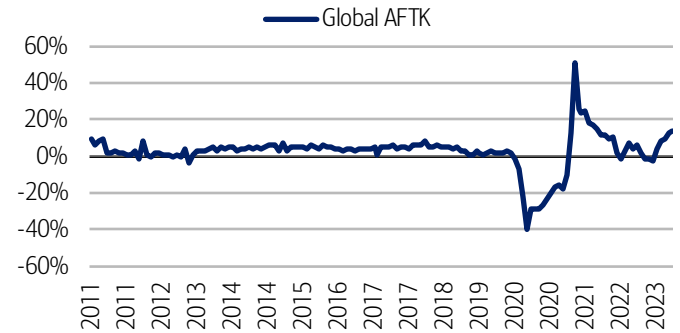


Source: IATA, BofA Global Research

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Exhibit 114: Monthly air cargo supply (AFTK) growth YoY %

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

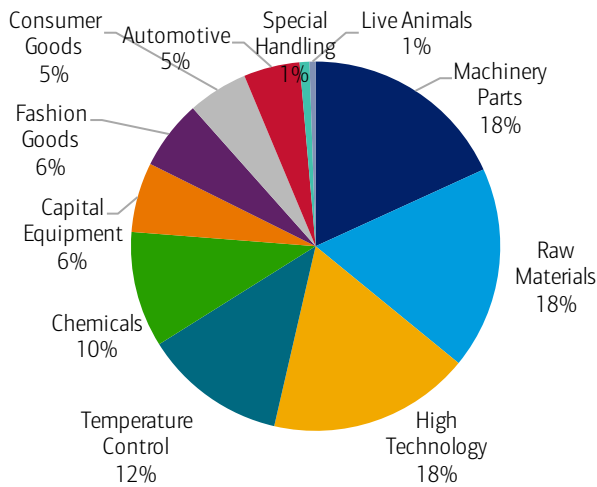


Source: IATA, BofA Global Research

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Exhibit 115: Global air cargo demand (metric tonne) by industry, 2022

Major industries are machinery parts, raw materials and high tech

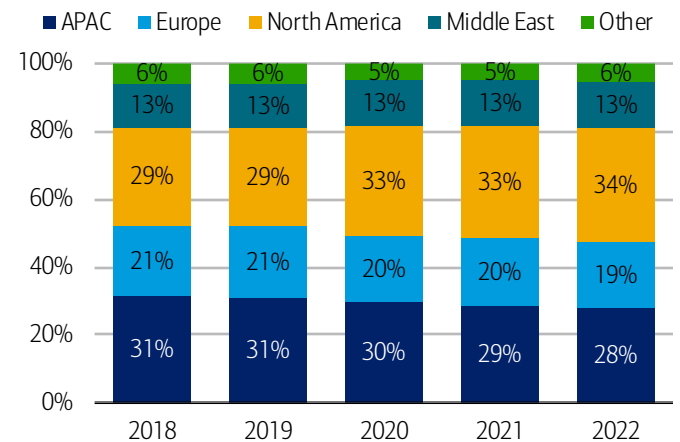


Source: BofA Global Research estimates

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Exhibit 116: Global air cargo demand by region

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

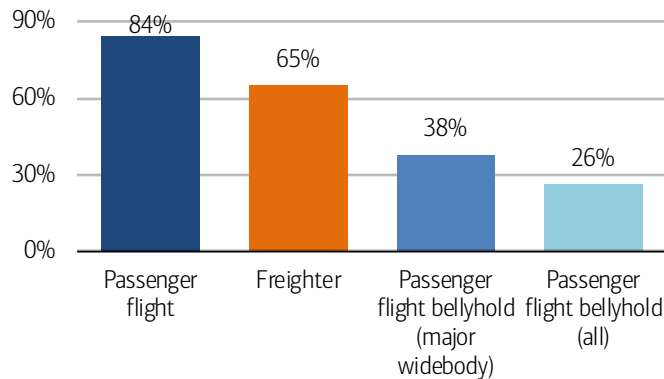


Source: IATA, BofA Global Research

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Exhibit 117: Seat/cargo load factors for different type of services, 2019

Freighter has higher cargo loads than bellyhold capacity

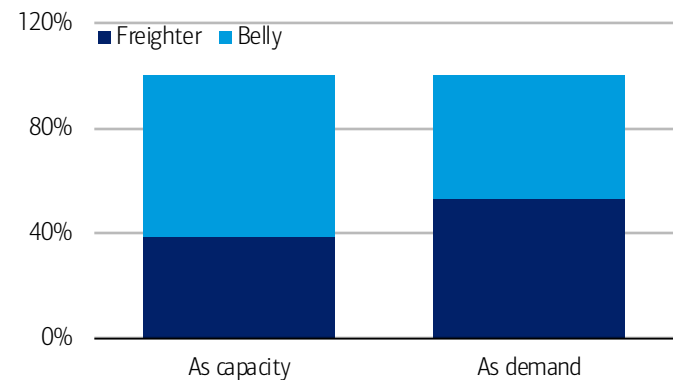


Source: IATA, Boeing

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Exhibit 118: Capacity and demand breakdown by cargo fleet type, 2019

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

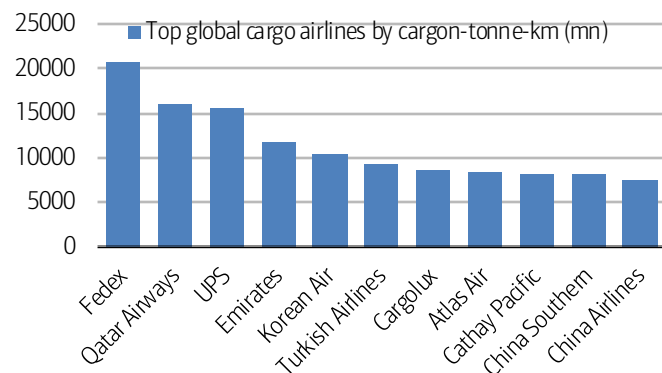


Source: IATA

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Exhibit 119: Top global cargo airlines by cargo-tonne-km (mn), 2021

Fedex, Qatar and UPS the global top 3

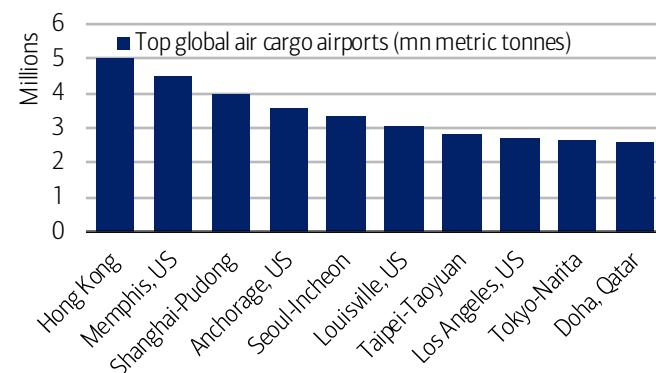


Source: IATA

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Exhibit 120: Top global air cargo airports (mn metric tonnes), 2021

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

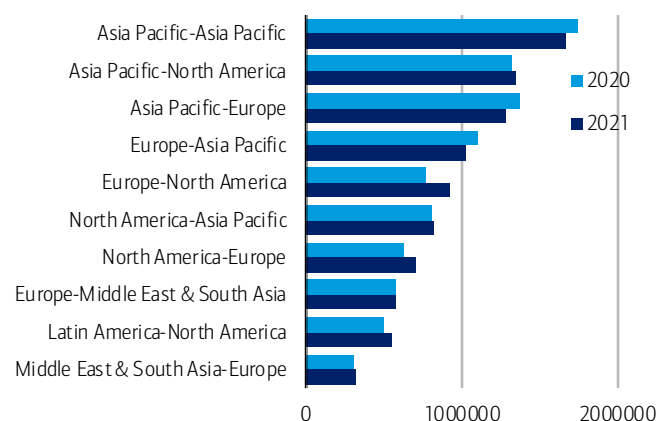


Source: ACI

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Exhibit 121: Global air cargo trade (metric ton) by trade lane

Trades among Asia, North America and Europe the top lanes

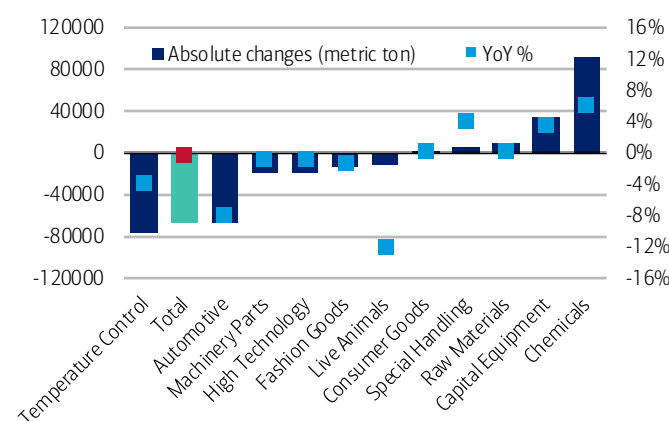


Source: IATA

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Exhibit 122: Air cargo demand (metric tonne) YoY changes by industry

Global demand growth is flattish YoY % year to date



Source: BofA Global Research estimates, IATA

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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.

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