

17 June 2021

Bull/bear debate

HVAC with a focus on Carrier and Trane Technologies

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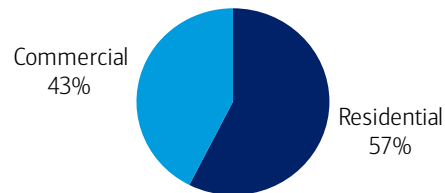




Overview of the North American HVAC equipment industry

Over 50% of the North American HVAC equipment market is residential

Breakdown of the \$31bn North American HVAC equipment market

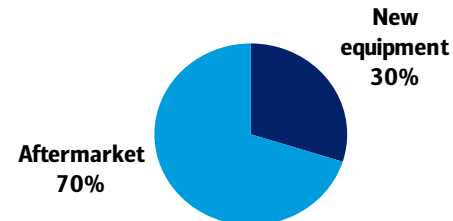


Source: BofA Global Research, HARDI, JRAIA

BofA GLOBAL RESEARCH

The HVAC market is primarily driven by aftermarket (repair and replacement)

Breakdown of the \$31bn North American HVAC equipment market

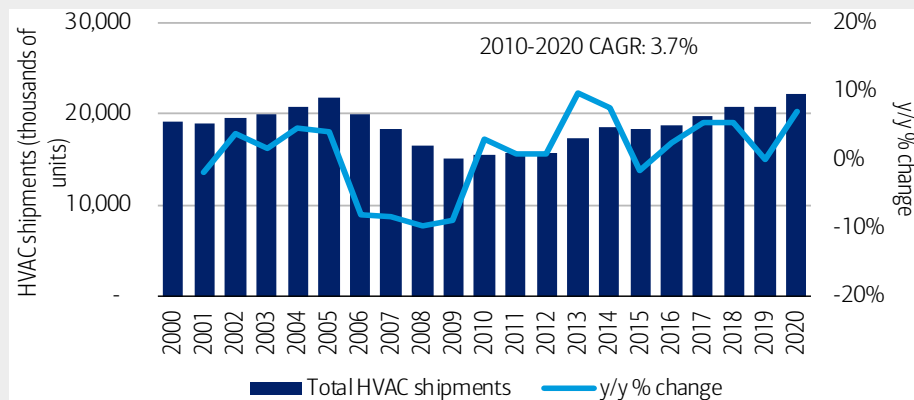


Source: BofA Global Research, HARDI, JRAIA

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Since 2010, the equipment industry has grown at a 3.7% annual pace

Annual US HVAC equipment shipments (includes AC, air-source heat pumps, water heaters, and furnaces)



Source: BofA Global Research, AHRI

BofA GLOBAL RESEARCH

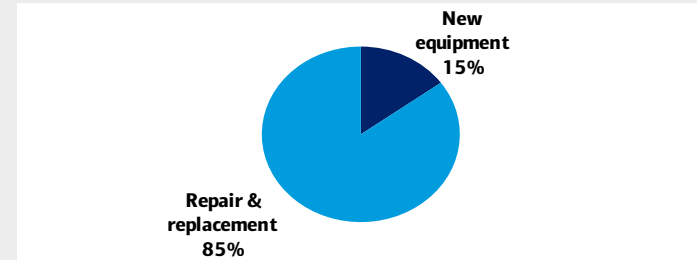


US residential HVAC equipment: an \$18bn market, growing 4%

- \$18bn market, primarily driven by repair & replacement vs new construction
- Growing at a 4% CAGR over the last decade
- Residential HVAC demand is 82% correlated with residential construction put-in-place
- 12-15 year replacement cycle implies 2020 peak, but new construction remains strong
- Federal efficiency standards (i.e. SEER upgrades) drive some demand

85% of the residential HVAC market is replacement

Breakdown of the \$18bn North American residential HVAC equipment market

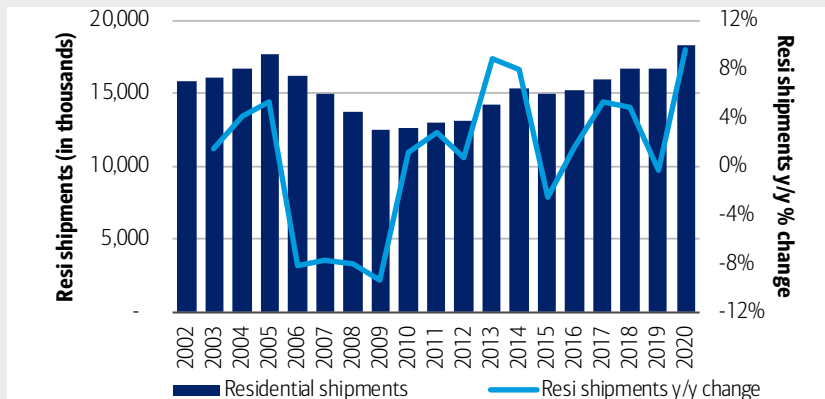


Source: BoFA Global Research, HARDI, JRAIA

BoFA GLOBAL RESEARCH

Since 2010, residential HVAC equipment has grown at a 4% annual pace

Annual US residential HVAC equipment shipments

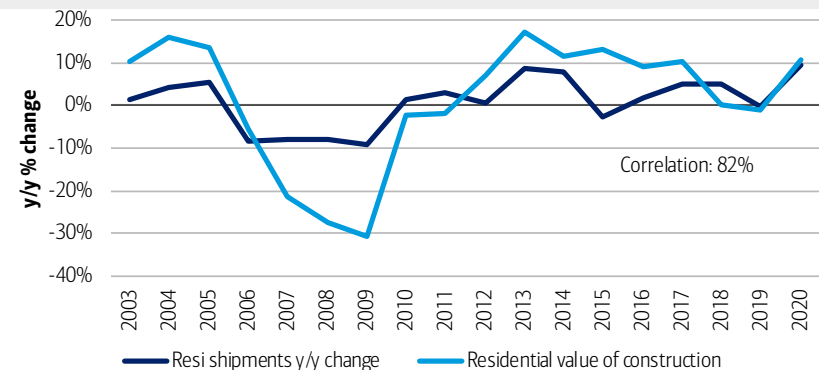


Source: BoFA Global Research, AHRI

BoFA GLOBAL RESEARCH

Residential HVAC demand is well correlated with resi construction

Resi HVAC shipments y/y growth vs resi value of construction put-in-place y/y growth



Source: BoFA Global Research, US Census Bureau AHRI

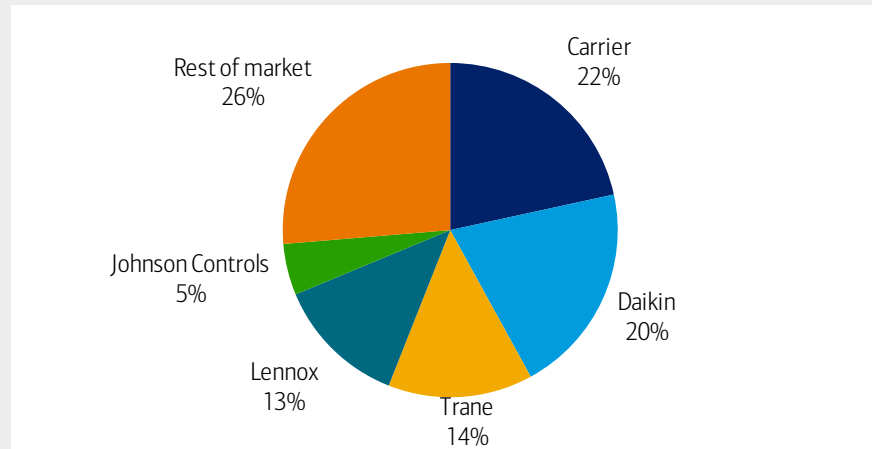
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Carrier and Daikin have the largest share of the resi HVAC market

- Five largest OEM manufacturers by market share:

1. Carrier: 22%
2. Daikin: 20%
3. Trane Technologies: 14%
4. Lennox: 13%
5. Johnson Controls: 5%

Carrier is the #1 player in the North American residential HVAC market
Market share breakdown of the North American residential HVAC equipment market



Source: BofA Global Research, company filings

BofA GLOBAL RESEARCH

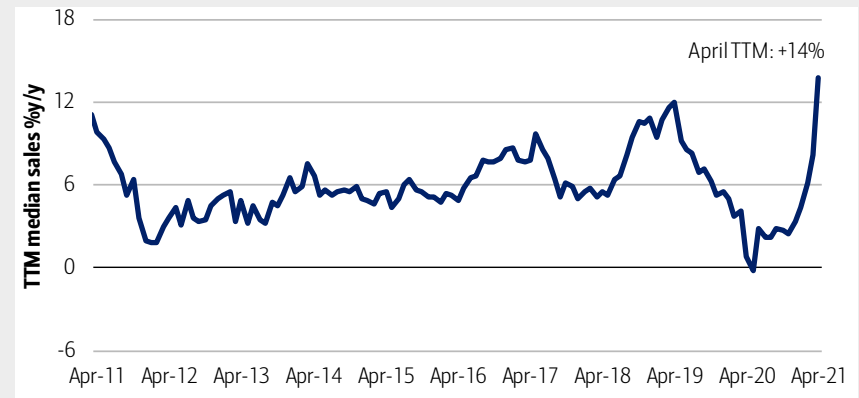


Current resi demand remains very strong, slightly elevated inventory

- After a strong 1Q, resi demand continues to be robust in April:
 - Median monthly sales + 50% y/y
 - Median TTM sales +14% y/y
- Inventory levels are higher than in 2019 and 2020; distributors preparing for peak season and getting ahead of supply chain issues
 - April sales-to-inventory ratio of 4.1 versus 4.5 in 2020

TTM distributor sales grew 14% y/y in April

HARDI members median sales growth (TTM, %y/y)

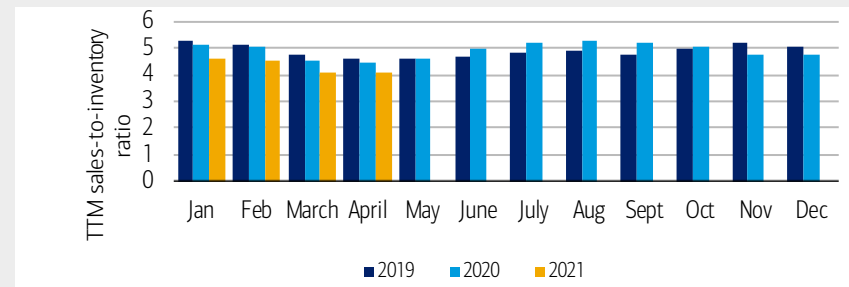


Source: BofA Global Research, HARDI

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April sales-to-inventory ratio is below historical levels

HARDI members median sales-to-inventory ratio (TTM)



Source: BofA Global Research, HARDI

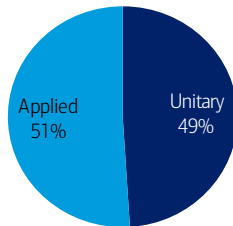
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US commercial HVAC equipment: \$13bn market growing 3.5%



The commercial HVAC equipment market is 50/50 applied/unitary...

Breakdown of the \$13bn North American HVAC commercial equipment market

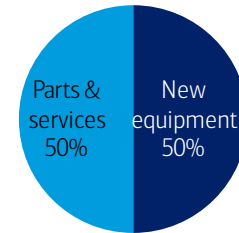


Source: BofA Global Research, HARDI, JRAIA

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...and 50/50 new equipment/aftermarket

Breakdown of the \$13bn North American HVAC commercial equipment market

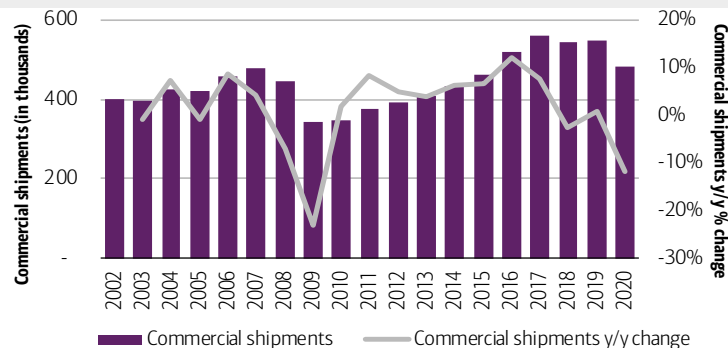


Source: BofA Global Research, HARDI, JRAIA

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Since 2010, commercial HVAC equipment has grown at a 3.5% annual pace

Annual US commercial HVAC equipment shipments

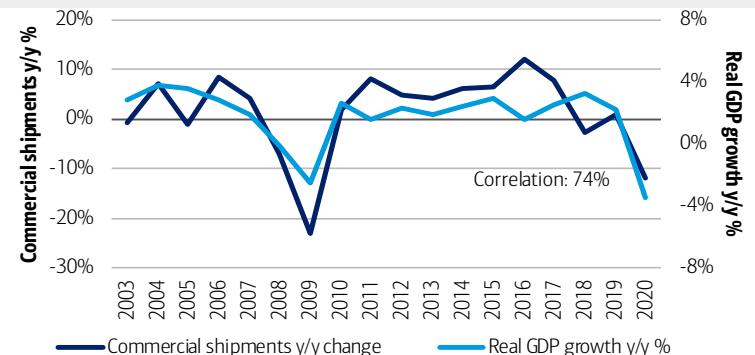


Source: BofA Global Research, AHRI

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Commercial HVAC shipments are 74% correlated with US GDP

Commercial HVAC shipments y/y growth vs US GDP y/y growth



Source: BofA Global Research, AHRI, US Census Bureau

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Trane is #1 player in applied, Carrier has largest share of unitary



- Unitary equipment market share:

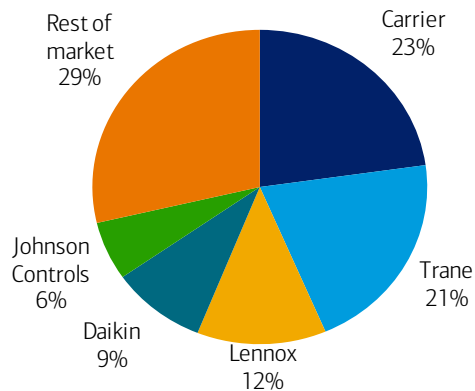
1. Carrier: 23%
2. Trane Technologies: 21%
3. Lennox: 12%
4. Daikin: 9%
5. Johnson Controls: 6%

- Applied equipment market share:

1. Trane Technologies: 29%
2. Johnson Controls: 24%
3. Daikin: 18%
4. Carrier: 14%

Carrier is the #1 player in the North American unitary equipment market

Market share breakdown of the North American unitary equipment market

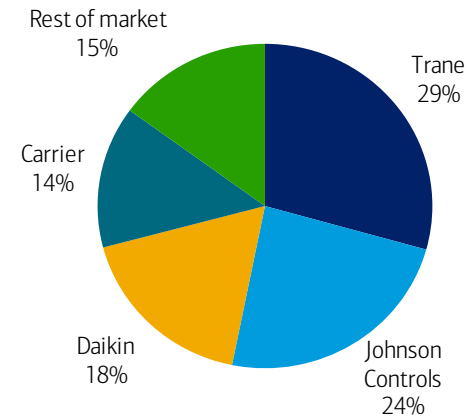


Source: BofA Global Research, company filings

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Trane is the #1 player in the North American applied equipment market

Market share breakdown of the North American applied equipment market



Source: BofA Global Research, company filings

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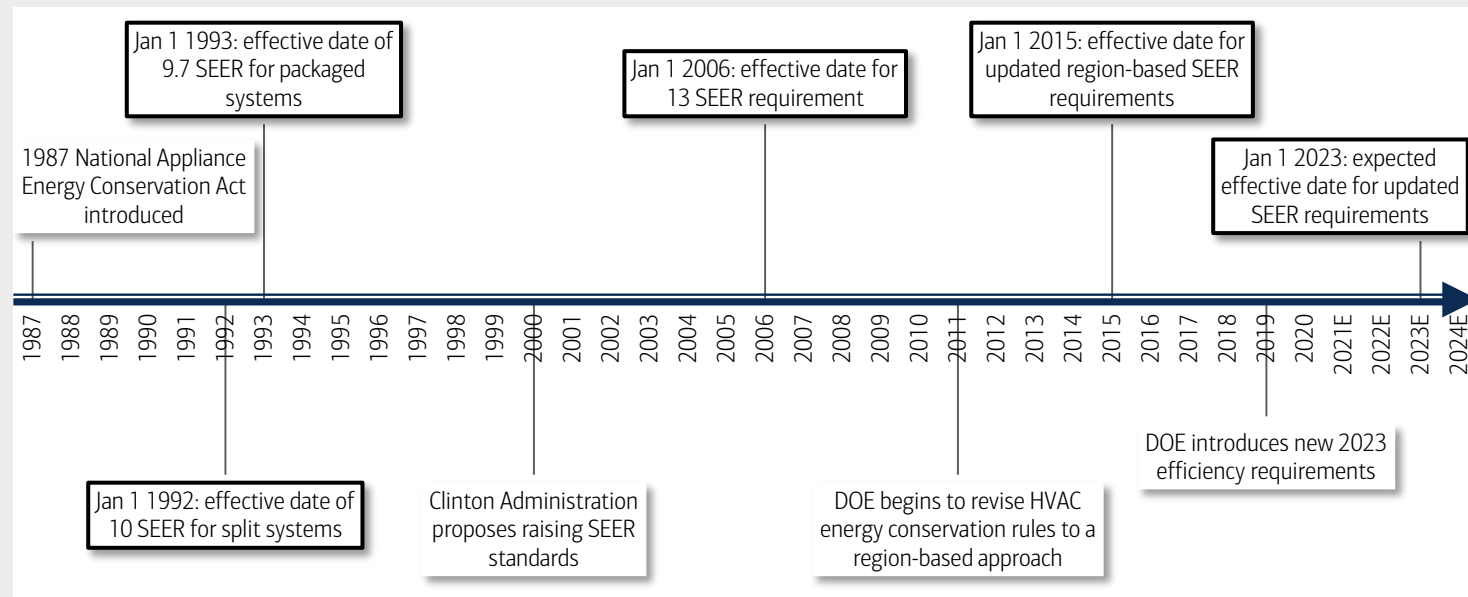


Regulatory upgrades could drive some channel pre-buy

- Since 1987, the US federal government has enforced minimum efficiency standards for HVAC systems known as “seasonal energy efficiency ratio” or “SEER”
- 2006 and 2015 SEER upgrades drove some pre-buy in the prior years
- There will be an upgrade to 14/15 SEER, effective 2023

US is heading towards SEER upgrades in 2023

Timeline of federally-enforced HVAC efficiency standards



Source: BofA Global Research, US Energy Information Administration

Stimulus could drive substantial HVAC spending in the near-term



- The recently passed COVID-19 relief bill includes \$123bn of funding towards K-12 education. Funds must be spent by Sept 30, 2023
 - At least 20% of the funds must be allocated to “address learning loss through the implementation of evidence-based interventions”
 - Air quality/HVAC is listed as an authorized use for the remaining funds
- In 2009, schools spent 70% of the ARRA grant on capital outlays

K-12 education funding from the American Rescue Plan Act of 2021 authorizes use of funds towards upgrading HVAC systems

From Section 2001. Elementary and Secondary School Emergency Relief Fund

“Inspection, testing, maintenance, repair, replacement, and upgrade projects to improve the indoor air quality in school facilities, including mechanical and non-mechanical heating, ventilation, and air conditioning systems, filtering, purification and other air cleaning, fans, control systems, and window and door repair and replacement.”

Source: US Library of Congress

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YTD municipal bond issuance is a positive indicator for non-residential construction

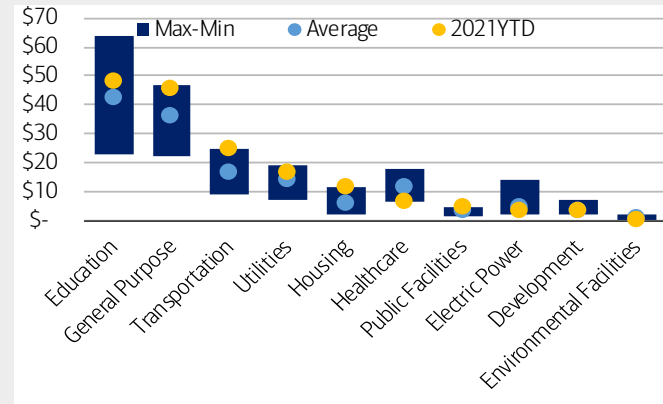
Year-to-date new money bond issuances are up 45% y/y
YTD and MTD municipal bond issuances, as of 5/19/21

	MTD			YTD		
(\$mm)	19-May-21	19-May-20	YoY % Δ	19-May-21	19-May-20	YoY % Δ
Total	19,609	19,011	3%	165,122	145,983	13%
New Money	11,822	10,126	17%	110,462	75,955	45%
Total Refunding	7,787	8,885	-12%	54,660	70,028	-22%
Education	6,675	6,349	5%	48,152	46,675	3%
General Purpose	5,345	5,022	6%	45,657	38,871	17%
Utilities	2,713	1,667	63%	16,626	14,319	16%
Transportation	1,417	2,267	-37%	25,039	16,088	56%
Housing	1,353	748	81%	11,533	8,343	38%
Electric Power	771	984	-22%	3,356	4,667	-28%
Healthcare	600	925	-35%	6,487	11,828	-45%
Public Facilities	437	201	118%	4,674	2,061	127%
Development	284	679	-58%	3,162	2,479	28%
Environmental Facilities	14	169	-92%	438	652	-33%
Muni-backed corporates	441	3,537	-88%	8,784	13,636	-36%

Source: BofA Municipals Research, Refinitiv

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YTD education issuances are above the 10-yr average
YTD issuance by sector vs max, min, avg of past 10 years (\$bn)



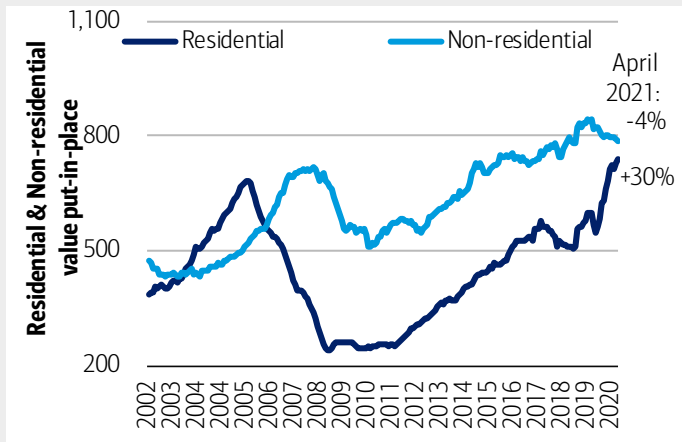
Source: BofA Municipals Research, Refinitiv

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Residential construction remains strong, non-resi leading indicators showing signs of recovery

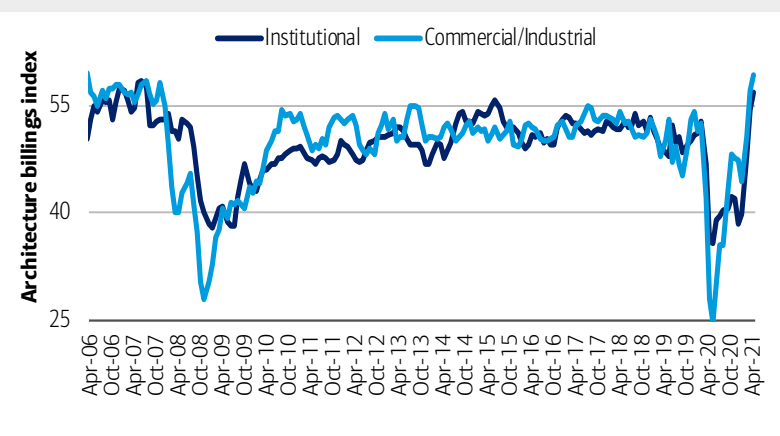
Resi construction strong, non-resi declines are decelerating
Residential and non-residential value of construction put-in-place (\$bn)



Source: BofA Global Research, US Census Bureau

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Institutional and commercial ABIs up 4% sequentially in April
Institutional and commercial/industrial architectural billings index (ABI), April 2006-April 2021



Source: American Institute of Architects

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Positive sentiment around indoor air quality (IAQ)

Indoor air quality is a long-term tailwind for the industry

Company commentary on IAQ

*"It's replacement. So, it's -- I would -- I think about it as replacement rather than new systems. But yeah, they have older systems. They are now comfortable that they're going to have financing and available capital to upgrade it, so they're doing that. They're talking a lot about indoor air quality, but that's isn't what moves the needle, **what moves the needle is replacing the entire system. And then that has better efficiency, better ventilation, which leads to better indoor air quality.**" - Todd Bluedorn, CEO, Lennox*

*"**We've sized it around 1% to 2% of revenues and we think for 2021, we're probably closer to 2% of revenue growth just from indoor air quality solutions,** that's been strong around education and as offices are reopening and folks are evaluating how to come back to work, ... We think it's going to be a tailwind for the foreseeable future, 400 billion square feet of commercial space that needs to be conditioned in some way or fashion." – Chris Kuehn, CFO, Trane Technologies*

*"So, a lot of the IAQ type offerings that really became much more prevalent when the pandemic hit, we really put that in the **healthy building \$500 million pipeline** that I talked about. So examples would include OptiClean, we have orders for more than 30,000 OptiClean units and we put that in the healthy building category. When we sell upgrades that are really driven by Filtration or UV lights we put that in there, and we're really, really excited about the new Abound offering." – Dave Gitlin, CEO, Carrier*

Source: Bloomberg, company transcripts

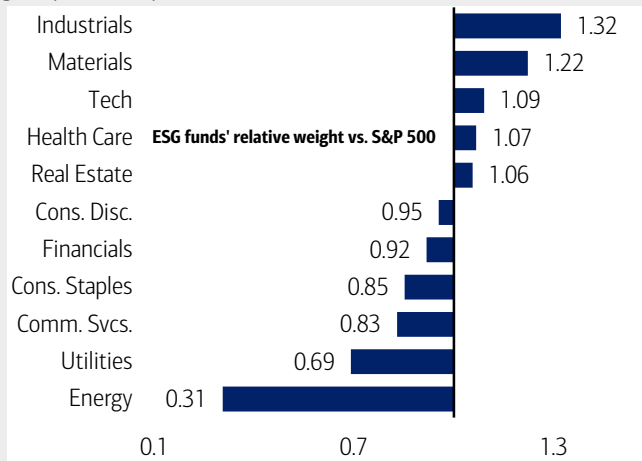
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HVAC is an “ESG-friendly” sector

ESG funds are most overweight industrials

ESG funds' sector positioning relative to the S&P 500 weight (5/2021)

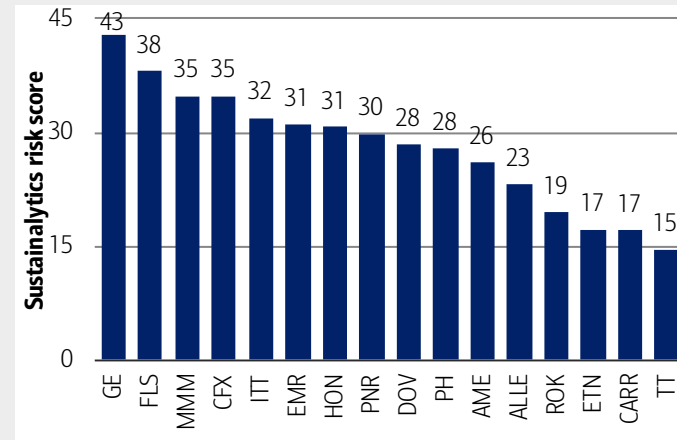


Source: BofA US Equity & Quant Strategy, FactSet Ownership

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TT and CARR have the strongest ESG metrics in our coverage

Sustainalytics risk score rankings for multi-industrials (lower number = lower ESG risk)



Source: Sustainalytics, Bloomberg

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Tough resi 2H comps, raw material inflation a headwind

Managements see flat resi growth in 2H on tough comps Company commentary on residential HVAC outlook

*"We still expect strong double-digit organic growth in the first half of 2021 and **closer to flat in the second half** given the Residential comparisons."*

- Patrick Goris, CFO, Carrier

*"For 2021, it really is still -- we believe it's going to be a tale of two halves. **The first half, very strong on easy comps, second half of the year will be very tough comps, given the recovery that began in the second half of 2020.** They are kind of calling 2021 up, say, mid-single-digit for resi markets in the US. We wouldn't disagree with that as this is kind of where we'll be putting it."*

- Chris Kuehn, CFO, Trane Technologies

Source: Bloomberg, company transcripts

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Signs of commercial HVAC recovery

Company commentary on commercial HVAC outlook

*"**So, I think the North American equipment is poised for a nice recovery, especially when you look at the ABI, the Architectural Billing Index...**So, we're very encouraged about what we're seeing in the applied space in North America and especially in the verticals like data centers and warehouses education, which I mentioned on the stimulus package and then health care."*

- Dave Gitlin, CEO, Carrier

*"If you look at Americas commercial HVAC, we've seen nice demand in data centers and warehouses...education vertical is also showing strength... hospitality is still weak. However, healthcare is showing some strength. **So it's kind of mixed right now, but you've got some leading indicators. ABI is strong, which is a good read for us in the future.**"*

- Dave Regnery, incoming CEO, Trane Technologies

Source: Bloomberg, company transcripts

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Raw material inflation will be a challenge, but companies have implemented two rounds of price increases

Company commentary on raw material inflation and pricing

*"Could there be a quarter or two where we saw in the last round of inflation, three or four years ago where the price cost spread was negative? Yes, that can happen from time to time, **but we take the longer-term view as that generally writes itself price cost we'd enter into any year trying to get a 20 to 30 basis points spread**" – Chris Kuehn, CFO, Trane Technologies*

*"So we announced the price increase -- a second price increase effective June 1. **So we've all (Trane, Daikin, Rheem, Goodman, Carrier) announced second price increases, and we feel we've priced to offset commodities** as recently as 2019. 2018, we got 2% on price and we're signing up for a little bit more this year, but inflationary pressures are greater this year. So, we feel pretty good about the price increases." – Todd Bluedorn, CEO, Lennox*

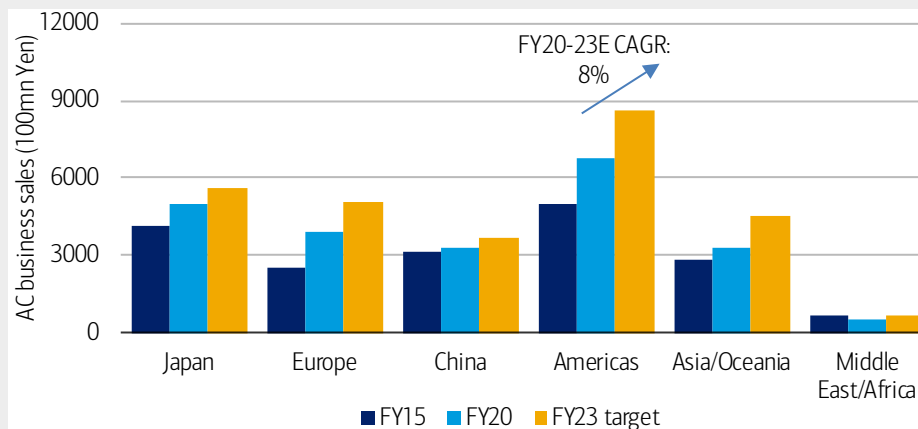
Source: Bloomberg, company transcripts

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Rising competition from Daikin could be a risk to North American players

- As part of Daikin's "FUSION 25" goals, the company aims to be the No. 1 player in the North American AC market by achieving 1 trillion yen sales in FY25
- Growing residential and light commercial market share could be a risk to Carrier's #1 position
- Focus on expanding applied HVAC market share could be a risk to Trane's #1 position

Daikin is targeting 8% CAGR in its Americas HVAC business for FY20-23E
Daikin AC business sales targets by region for FY23



Source: BofA Global Research, company presentations

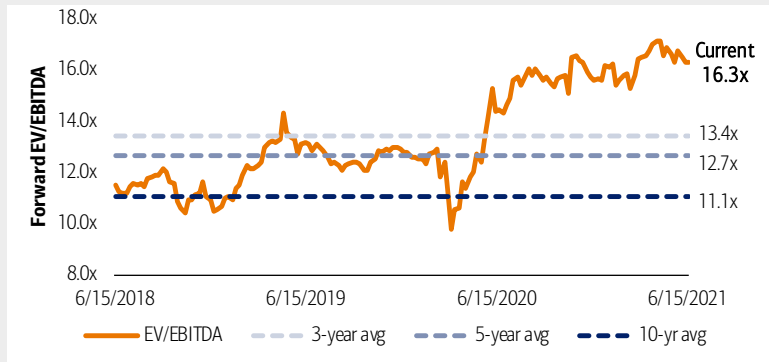
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HVAC valuations are lofty

HVAC sector is trading above historical levels...

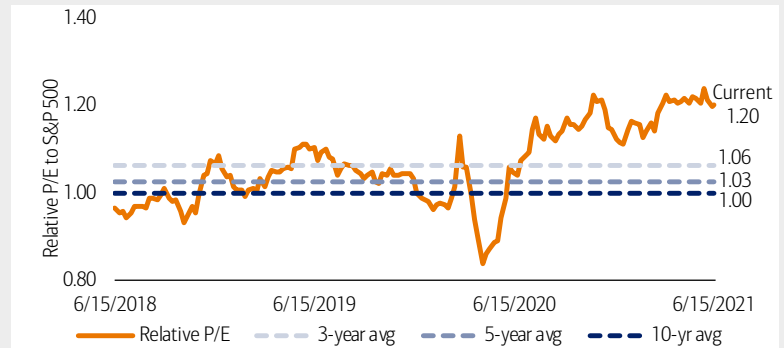
Current forward EV/EBITDA vs 3-yr, 5-yr, 10-yr averages



Represents average EV/EBITDA of: Carrier, Trane Technologies, Daikin, Johnson Controls, Lennox
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...and expensive relative to the S&P 500

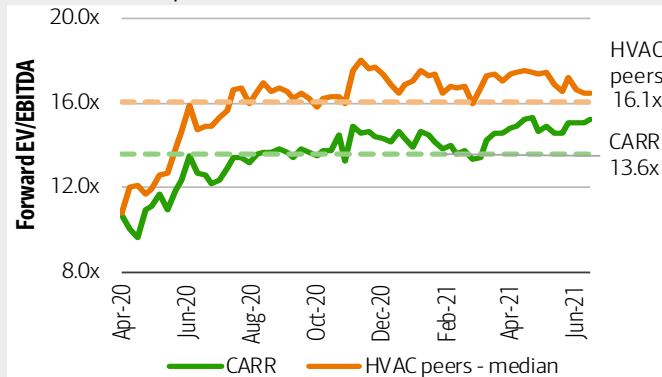
Current forward relative P/E vs 3-yr, 5-yr, 10-yr averages



Represents average relative P/E ratio to S&P 500 of: Carrier, Trane Technologies, Daikin, Johnson Controls, Lennox
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While the gap has narrowed, CARR trades at a discount to HVAC peers...

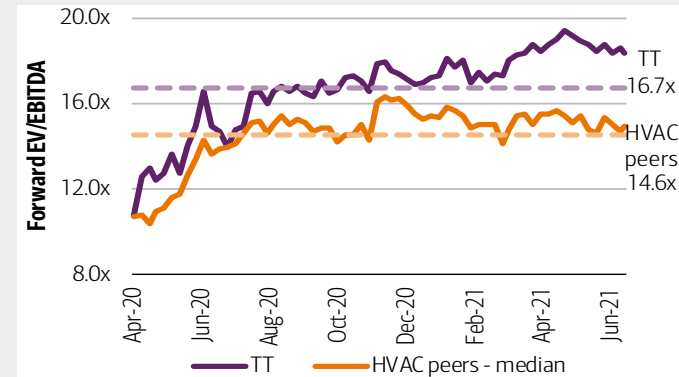
Carrier vs HVAC peers – forward EV/EBITDA



Peers include: Trane Technologies, Daikin, Johnson Controls, Lennox
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...whereas TT shares are expensive relative to HVAC peers

Trane Technologies vs HVAC peers – forward EV/EBITDA



Peers include: Carrier, Daikin, Johnson Controls, Lennox
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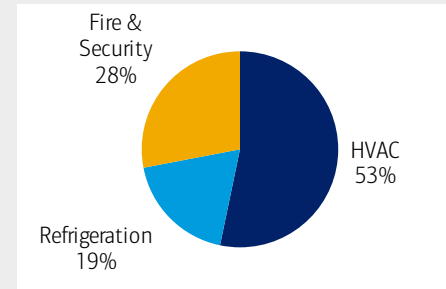


Carrier business overview

- \$17.5bn revenue (2020):
 - HVAC
 - 53% of revenue, 59% of operating profit
 - Fire & Security
 - 28% of revenue, 26% of operating profit
 - Refrigeration
 - 19% of revenue, 15% of operating profit

HVAC makes up over 50% of total revenue

Revenue by segment (2020)

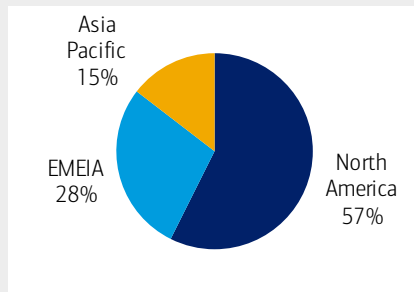


Source: BofA Global Research, company filings

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North America makes up 57% of revenue

Revenue by geography (2020)

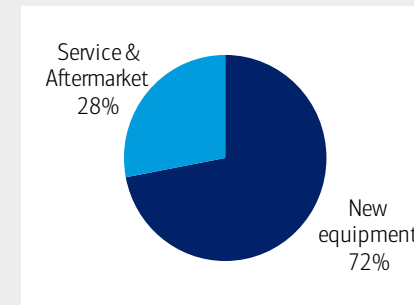


Source: BofA Global Research, company filings

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New equipment is 72% of revenue

Revenue by new equipment/aftermarket (2020)



Source: BofA Global Research, company filings

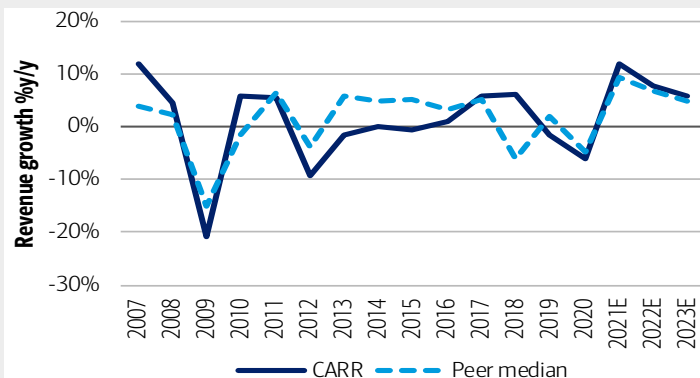
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Carrier's growth, margins, and returns are in line with peers



Carrier's revenue growth has been in line with peers

Revenue y/y growth, Carrier versus peers



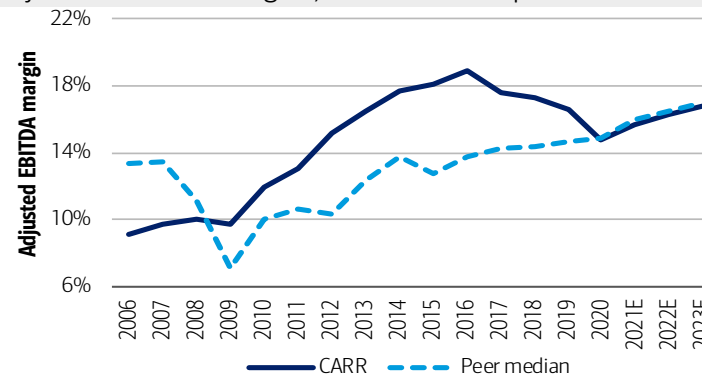
Source: BofA Global Research, company filings

Peers include: Trane Technologies, Daikin, Lennox, Johnson Controls

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Margins peaked in 2016 and are now in line with peers

Adjusted EBITDA margins, Carrier versus peers



Source: BofA Global Research, company filings

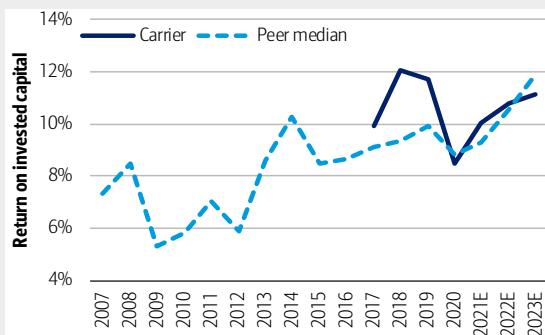
Peers include: Trane Technologies, Daikin, Lennox, Johnson Controls

Note: 2005-2015 Carrier margins include an estimated (140bps) adjustment to arrive at pro-forma standalone Carrier figures

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2020 ROIC was in line with peers

Carrier vs peers: ROIC

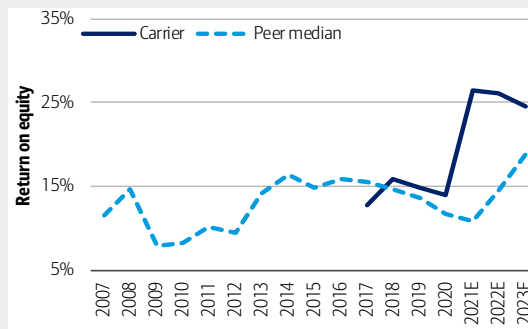


Source: BofA Global Research, company filings

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2020 ROE was above peers

Carrier vs peer: ROE



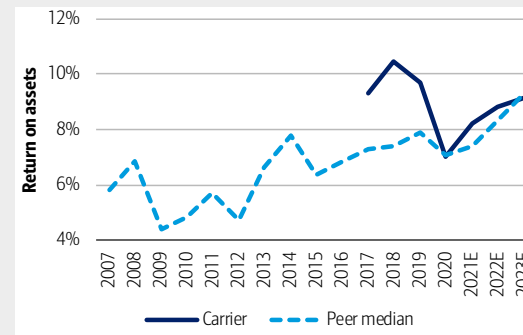
Source: BofA Global Research, company filings

The increase in 2021/2022E ROE reflects the \$10bn net transfer to United Technologies, which lowered book equity

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2020 ROA was in line with peers

Carrier vs peers: ROA



Source: BofA Global Research, company filings

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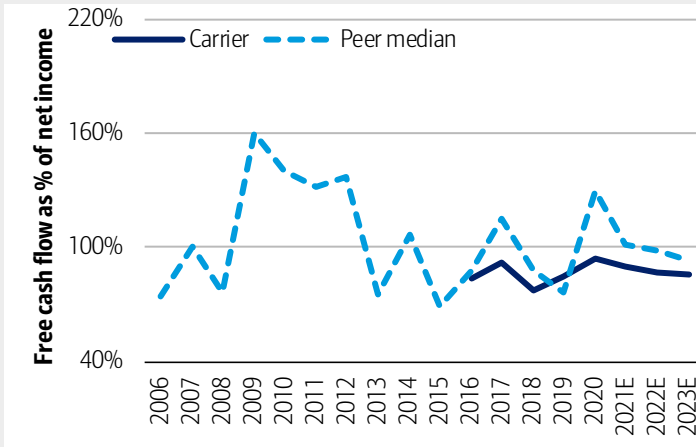


Leverage and FCF are below peers

- We attribute the valuation gap to higher leverage and lower FCF conversion
- FCF conversion averaged 87% vs peers of 102%, in 2017-2020
 - We estimate \$55mn of cash restructuring and \$272mn cash tax payment related to the Beijer equity stake sale was a 22pts headwind to conversion in 2020
- Net-debt-to-EBITDA was 2.8x vs peers 1.4x in 2020
 - \$11bn of debt issued to fund net transfers to UTC post-spin

FCF conversion has lagged peers

FCF as % of adjusted net income, Carrier vs peers

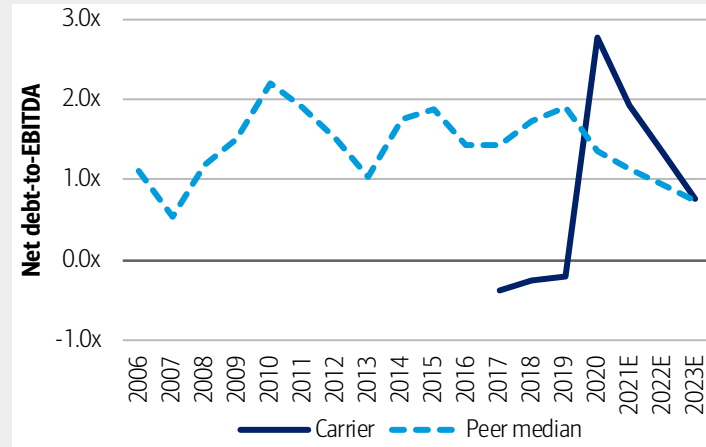


Source: BofA Global Research, company filings
Peers include: Trane Technologies, Daikin, Lennox, Johnson Controls

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Higher leverage than peers post-spin

Net debt-to-EBITDA, Carrier versus peers



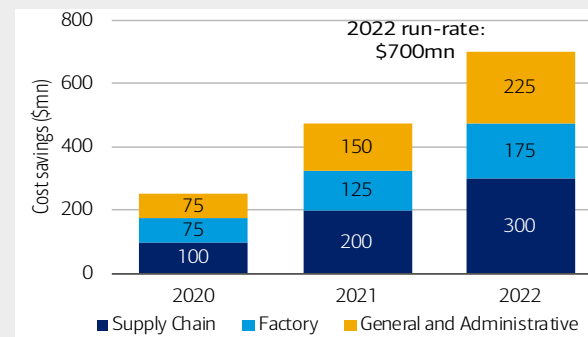
Source: BofA Global Research, company filings
Peers include: Trane Technologies, Daikin, Lennox, Johnson Controls

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Carrier 700 should refocus the franchise on execution

- 3-year cost takeout plan:
 - \$700mn run-rate savings by 2022
 - \$250mn savings in 2020
- Puts margins in line with HVAC peers
- We estimate cost savings are a 330bps benefit to EBITDA margins in 2022
- Permanent cost savings are in line with multi-industrials

\$700mn of cost savings primarily in supply chain and G&A
Breakdown of Carrier 700 cost savings

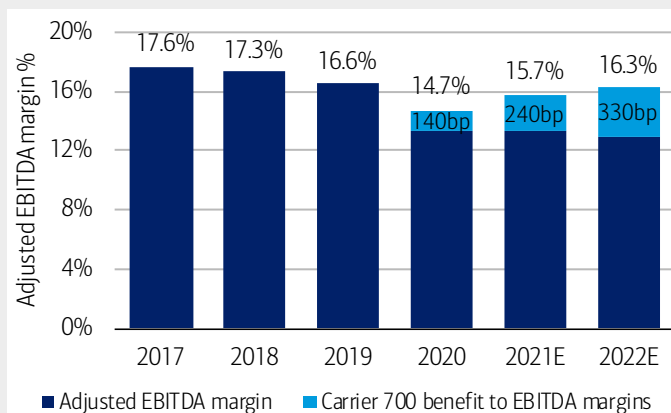


Source: BofA Global Research, company filings

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Carrier 700 expected to be 330bps benefit to EBITDA margins in 2022

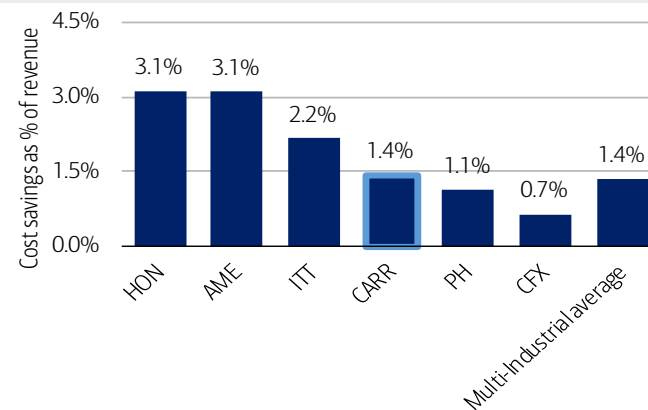
Carrier 700 benefit to adjusted EBITDA margins, 2017-2022E



Source: BofA Global Research, company filings

BofA GLOBAL RESEARCH

Carrier's 2020 permanent cost savings are in line with multis
2020 permanent cost savings as % of revenue, CARR vs multi-industrial peers



Source: BofA Global Research, company filings

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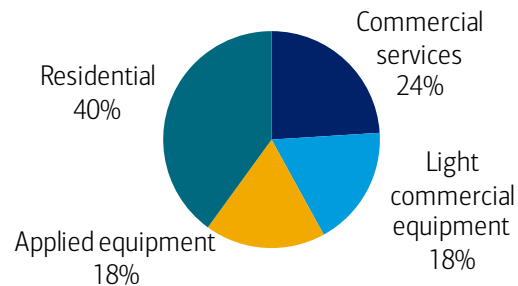


Carrier's HVAC segment

- \$9.5bn business (2020 revenue). Products include: air conditioners, heating systems, controls and aftermarket components, aftermarket repair/maintenance, building automation solutions
- #1 player in residential and unitary, #4 player in applied
- 100% of residential distribution is third-party (Watsco is ~50%)...applied HVAC 60%-70% Carrier-owned distribution
- Strategic priorities:
 - Grow the commercial services business by improving the attachment rate
 - Capture share in the applied equipment market, VRF, and ductless

Residential equipment is Carrier's largest HVAC product group

Carrier HVAC revenue breakdown by product type

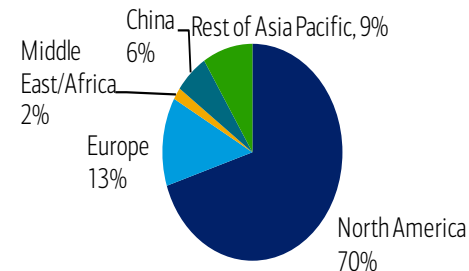


Source: BofA Global Research, company filings

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HVAC revenue is primarily concentrated in North America

Carrier HVAC revenue breakdown by geography



Source: BofA Global Research, company filings

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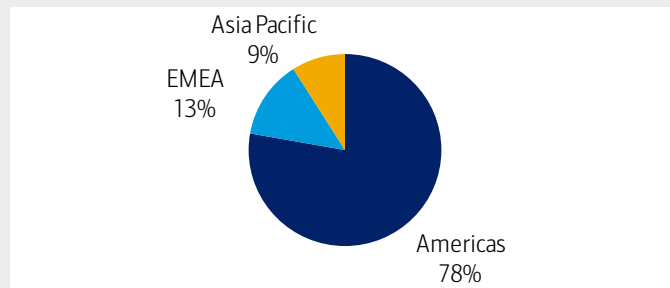


Trane Technologies business overview

- \$12.5bn revenue (2020):
 - Commercial HVAC equipment
 - 35% of revenue, 26% of operating profit
 - Commercial HVAC parts & services
 - 27% of revenue, 31% of operating profit
 - Residential HVAC
 - 23% of revenue, 28% of operating profit
 - Transport Refrigeration
 - 15% of revenue, 15% of operating profit

Predominantly an Americas-based business

Revenue by geography (2020)

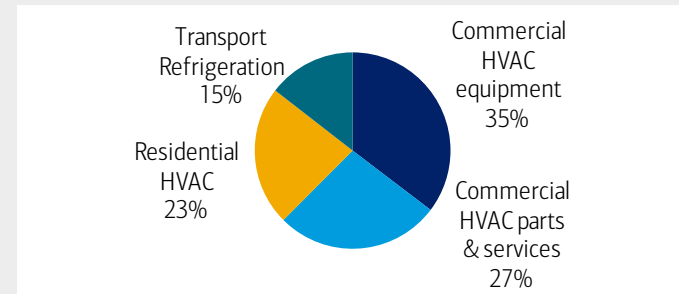


Source: BofA Global Research, company filings

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Commercial HVAC makes up over 60% of sales

Revenue by product group (2020)

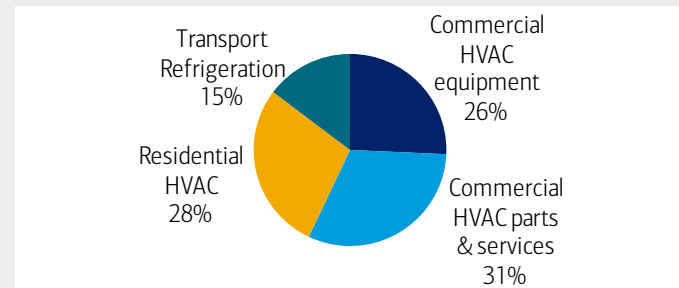


Source: BofA Global Research, company filings

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Residential HVAC and transport refrigeration are the highest margin products

Operating profit by product group (2020)



Source: BofA Global Research, company filings

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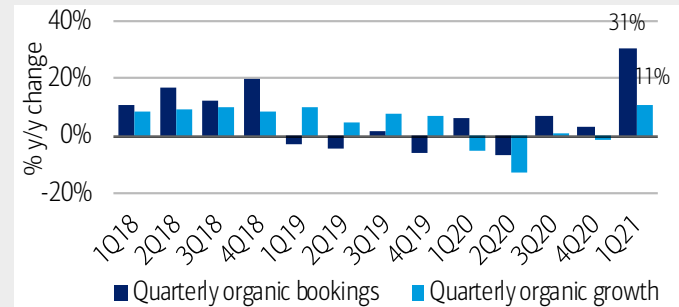


1Q bookings up 31% y/y, organic revenue up 11%

- Organic revenue up 11% (volume: +9.3%, pricing +1.8%)
- Organic bookings up 31%
 - Americas residential HVAC up 30%+
 - Commercial HVAC: Americas up LSD, EMEA up HSD, APAC up HSD
 - Transport: Americas up substantially, EMEA up 20%+, APAC up 40%+

Total 1Q organic bookings +31%

Trane quarterly organic revenue and bookings growth

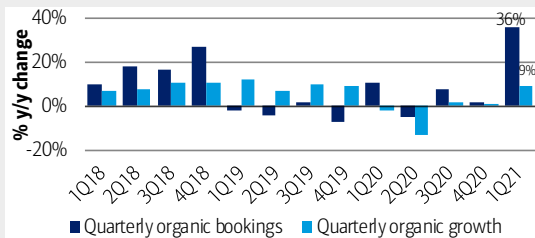


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Americas 1Q organic bookings +36%

Americas quarterly organic revenue and bookings growth

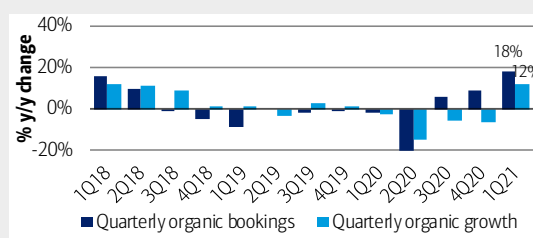


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EMEA 1Q organic bookings +18%

EMEA quarterly organic revenue and bookings growth

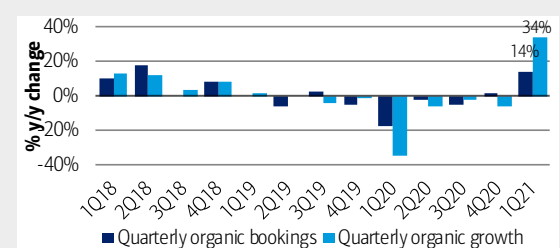


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APAC 1Q organic bookings +14%

APAC quarterly organic revenue and bookings growth



Source: BofA Global Research, company filings

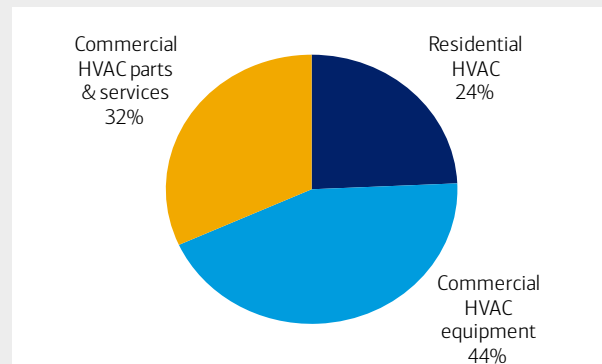
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Trane Technologies' HVAC business

- \$10.7bn business (2020 revenue)
- #1 player in applied, #3 player in residential
- 95% of Commercial HVAC distribution is Trane-owned with a goal of achieving 100%, residential HVAC distribution is a mixed model
- Focusing investments on sustainable products:
 - Heat pump technology, European trailer refrigeration, indoor air quality assessments

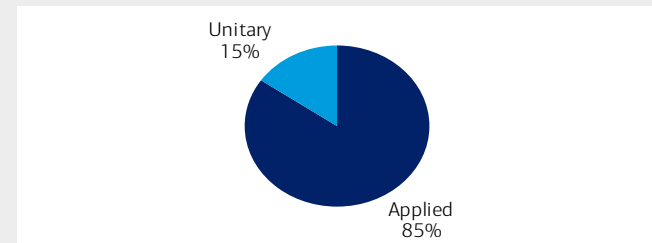
Trane primarily sells commercial HVAC products
Trane Technologies HVAC revenue breakdown by product type (2020)



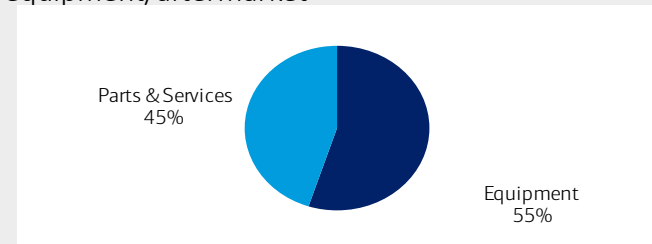
Source: BofA Global Research, company filings

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Commercial HVAC is primarily applied systems
Commercial HVAC revenue breakdown by system type



Commercial HVAC is ~50/50 equipment/aftermarket
Commercial HVAC revenue breakdown by equipment/aftermarket



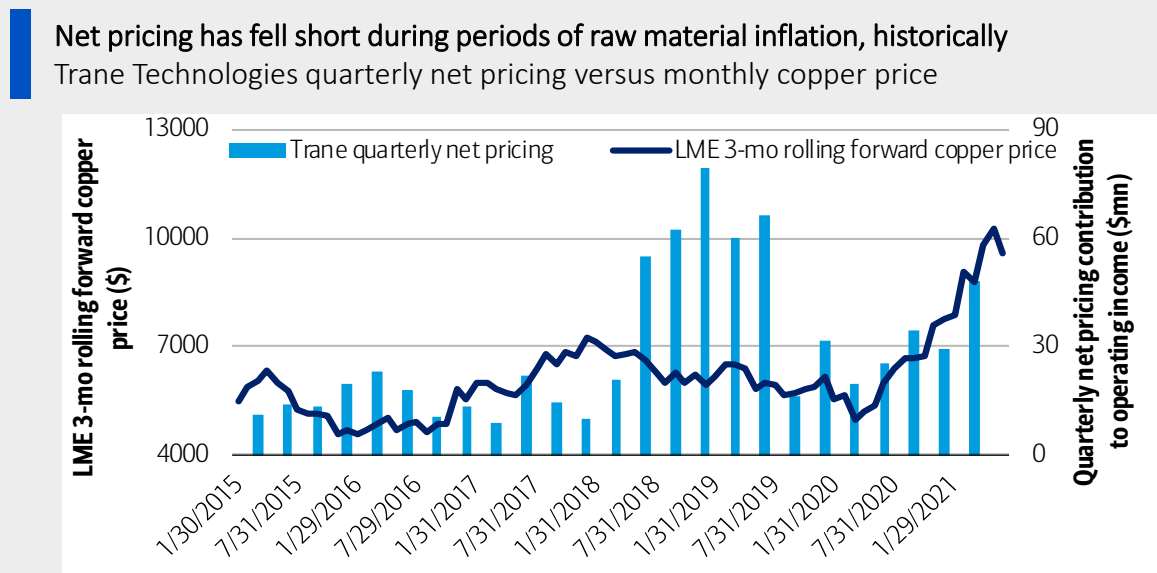
Source: BofA Global Research, company filings

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Raw material inflation has been a risk to net pricing in the past

- 2016-2017: inflationary copper prices
 - Trane averaged \$60mn of TTM net pricing
- 2018-2019: deflationary copper prices
 - Trane averaged \$180mn of TTM net pricing
- 1Q21 net pricing was \$48mn (+1.8%), above management expectations
 - First wave of price increases implemented in Nov-Jan, already announced second wave of spring price increases
 - Guiding to flat to slightly positive net price-cost for 2021



Source: BofA Global Research, company filings, Bloomberg

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Stocks mentioned



Stocks mentioned

Ticker, rating, price

Ticker	Rating	Price
CARR	B-1-7	\$ 46.91
TT	B-2-7	\$ 182.35

Source: BofA Global Research, Bloomberg

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Price Objective Basis and Risk



Carrier Global Corp. (CARR)

We base our \$60 price objective on 16.5x EV/EBITDA of our 2022 estimates. 16.5x is at a discount to peers trading at 18x on 2021 estimates. We believe the discount is warranted given above-peer leverage, below-peer FCF conversion, and PFAS liability risks.

Downside risks to our price objective are: 1) slower-than-expected macro recovery, 2) inability to execute on announced cost savings plan, 3) lost market share to competitors

Trane Technologies PLC (TT)

We base our \$195 price objective on 18x EV/EBITDA of our 2022 estimates. Our 18x target multiple is above the peer group average trading at 17x on 2021 estimates.

We think the premium valuation is warranted given tailwinds from indoor air quality demand, the recent K-12 education stimulus, and strong ESG factor.

Downside risks to our PO are: 1) a slower-than-expected economic recovery or an outright Industrial recession, translating into weaker nonresidential construction activity, and 2) lower-than-expected productivity improvement and cost synergies.

Analyst Certification

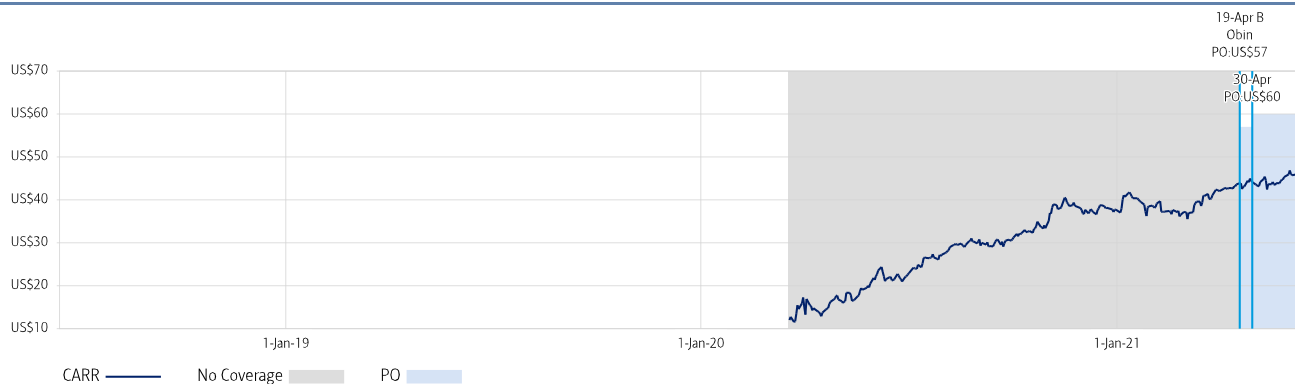


I, Andrew Obin, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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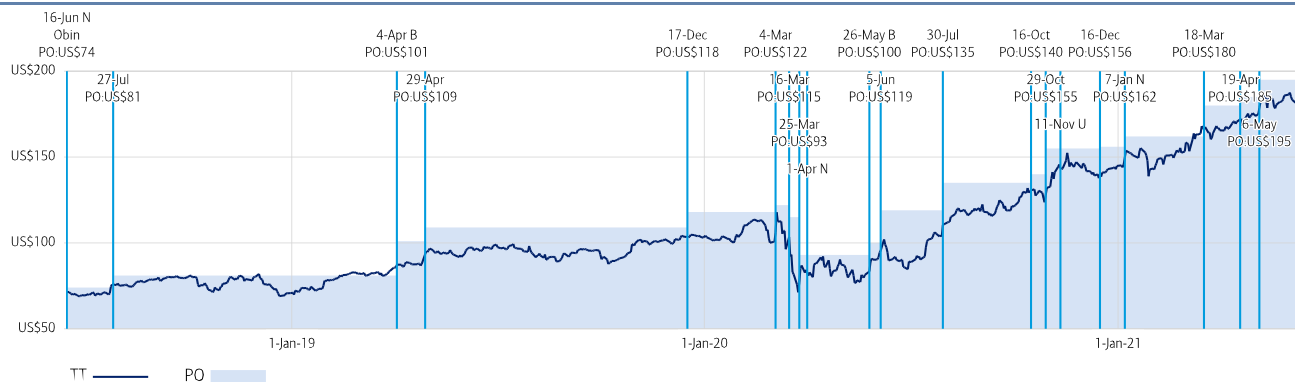


Carrier (CARR) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Trane Technologies (TT) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

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Equity Investment Rating Distribution: Industrials/Multi-Industry Group (as of 31 Mar 2021)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	48	64.00%	Buy	36	75.00%
Hold	13	17.33%	Hold	8	61.54%
Sell	14	18.67%	Sell	8	57.14%

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Equity Investment Rating Distribution: Global Group (as of 31 Mar 2021)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	1909	58.54%	Buy	1218	63.80%
Hold	653	20.02%	Hold	395	60.49%
Sell	699	21.44%	Sell	356	50.93%

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

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