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BofA TMT Themes, Flows and Debates

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March 16, 2021

Key Themes & Observations in TMT

- **The High Level**
 - Nasdaq +3% YTD – now lagging the S&P, which is up 6%, as rising yields, accelerated vaccine rollout, and economic optimism (coupled with inflation concerns) have driven a rotation out of Secular Growth and into more Cyclical, Value sectors (Banks, Energy, Materials)
 - Since Mid-February, we've seen a sharp pullback in Next Gen Growth Tech and ARK type names
 - Pain has come in several areas: 1) First, it was the underperformance of Mega-Cap “darlings” (AMZN, FB, BABA, NVDA, NFLX, ADBE) 2) Next it was the sharp mid-Feb sell off in Growth Software and e-Commerce (PLAN, Z, CHWY, PTON, SHOP, AI, DASH) with “WFH” names under particular pressure 3) Finally, the Value/Reopen/Short Squeeze has led to massive moves in TRIP, VIAC, DISCA, FOXA, CNK, DISH, EXPE, OMC and LAMR to name a few.
- **Q4 Revenues and Earnings Easily Beat:** Beats were common and across large-cap stocks, revs were revised ~5% higher and EPS ~7% higher or so 2021. Visibility improving, more issuing guidance
- **Sell The News, but Buy the Dips:** The most common stock reaction was “sell the news”....but dips were frequently bought within a day or so, and Semis, Software, Next Gen Growth Tech
 - **Better Than Feared Commentary & Traded Up:** NFLX, NOW, GOOGL, SNAP, PINS, PYPL, TWTR, LYFT, Z, EBAY, SYNA, NXPI, HUBS
 - **Beat/Raise, But Sell The News:** TXN, AMD, FB, AAPL, AMZN, PTON, FOXA
 - **Guide Disappointing & Traded Down:** AYX, INTC, QCOM, CSCO, MTCH



Key Themes & Observations in TMT (Cont'd)

- **Short Squeeze & Flight to (Lower) Quality:** Small caps with high short interest outperformed, while large cap core-holdings like AMZN, FB, BABA, V, MA, CMCSA, CRM, MSFT have lagged
- **Thematics Overwhelmed the Micro:** Call it the ARK effect, or whatever you'd like, but Thematic investing continued to outperform through mid February, until correcting significantly (15%-20%) as the rise in yields and "reopen" plays took center stage
- **Semi Supply Shortage – How Long Can the Good Times Last?:** Disrupted supply chain in early '20 followed by insatiable appetite for PCs/devices, 5G smartphone acceleration, 5G infrastructure builds, strong memory/compute demand, Auto SAAR hitting multi-year highs...all leading to supply shortages. Key players still 'sound' great – AMAT, TXN, NXPI a few lately.
- **E-Commerce's High Bar & Tough Comps:** Off to an early strong start, e-Commerce/WFH names have more recently sold off as the vaccination pace has accelerated, and travel green shoots have started (Airlines, DIS, UBER, LYFT)
- **The Return of Spending:** Advertising/Marketing, Hiring, Buybacks (NFLX, CMCSA), Capex guides (FB, TSM...)....we're hearing more about investment plans in '21 and even multi-year outlooks (SNAP, TWTR)
- **The Re-Ramp in M&A:** Over \$100B in SPACs yet to declare a target; Stocks at highs; Private Equity raising new funds; Q3 PE notional activity in Tech +90% Y/Y



Reopening Trade Has Overtaken “Next Gen Growth” Tech

So far in 2021, market-wide, Value has significantly outperformed Growth, and inside TMT, “reopening” baskets (Movie Theaters, Live Events, Travel) have begun to significantly outperform as vaccination rollout has accelerate....this has resulted in Software and 2020’s big winner, Next Gen Growth Tech, sources of funds/victims of rotation

| Ticker (Index) | Sub-Sector/Theme Name | YTD Return | 2020 Return | 2019 Return | 2018 Return | 2017 Return | Return Since End of '17 |
|---------------------|-------------------------------|------------|-------------|-------------|-------------|-------------|-------------------------|
| .MOVIES | "Movie Theaters/Live Events" | 34% | (20%) | 15% | 4% | (12%) | 27% |
| .ECOMM | "E-Commerce" (ex-AMZN) | 23% | 152% | 65% | 18% | 140% | 500% |
| MLRETAIL | ML RETAIL SIGNAL | 18% | NA | NA | NA | NA | NA |
| MLDINCOV | "Travel/Hotel/Airlines" | 15% | 1% | 31% | NA | NA | NA |
| MLDIHRDW | ML HARDWARE | 14% | 14% | 28% | (11%) | 18% | 50% |
| MLDIINTR | ML INTERNET | 12% | 86% | 19% | (12%) | 49% | 118% |
| S5MEDA | S&P 500 Media & Entertainment | 12% | 31% | 34% | (11%) | 7% | 74% |
| ML5GSEMI | ML 5G SEMIS | 11% | 50% | NA | (16%) | NA | 123% |
| MLNXTGEN | ML NEXT GEN TECH | 9% | 166% | 46% | 2% | 19% | 333% |
| MLDINWRK | ML NETWORKING | 9% | 19% | 17% | 3% | 12% | 56% |
| MLDISEMI | ML SEMICONDUCTORS | 8% | 60% | 67% | (6%) | 34% | 171% |
| MLDIFANG | ML FANG | 4% | 50% | 33% | 9% | 50% | 124% |
| QQQ | Invesco QQQ Trust Series 1 | 3% | 48% | 38% | (1%) | 31% | 107% |
| MLDIITSV | ML IT SERVICES | 2% | 14% | 32% | (8%) | 33% | 42% |
| MLDISOFT | ML SOFTWARE | (1%) | 43% | 31% | 19% | 37% | 120% |
| IGV | IGV - North Amer. Software | (2%) | 52% | 34% | 12% | 42% | 126% |
| MLDISAAS | ML SAAS | (4%) | 90% | 38% | 39% | 44% | 248% |
| .CVHOME | "Stay At Home Winners" | (5%) | 90% | 30% | 27% | 54% | 198% |
| S&P 500 | | 6% | 16% | 29% | (6%) | 19% | 48% |
| QQQ | | 3% | 48% | 38% | (1%) | 31% | 107% |
| Russell 2000 | | 20% | 18% | 24% | (12%) | 13% | 52% |
| Russell 1000 Value | | 11% | 0% | 23% | (11%) | 11% | 22% |
| Russell 1000 Growth | | 1% | 37% | 35% | (3%) | 28% | 82% |

Source: Bloomberg, BofA Delta One and Short Financing Analytics, and 2 created using CIX



Key Debates and Worries in TMT

Overall: Complacency, rising rates, positioning, valuation (too many \$10B to \$50B market cap moves in a year), that SMID-cap tech can't offset pot'l outflows in Mega Cap, Mega Caps trading on Crypto (TSLA, PYPL), and too many "themes" "if it looks too good to be true...."

- **Software**

- Not Cyclical Enough; Recurring/SaaS = less scope for big beats/raises
- Positioning – everyone 'there'; high-multiple, 5-year out valuation stories = rate risk

- **Internet**

- Tough comps in e-Commerce (AMZN, W, CHWY, PYPL, SHOP)
- High expectations near-term given strong numbers from GOOGL, FB, PINS, SNAP
- Isn't a travel/mobility recovery priced into UBER, LYFT, BKNG

- **Semis**

- Supply 'shortages' have long history of working themselves out and it can get sloppy (double-ordering) in mean time
- Lapping the 2020 consumer electronics bonanza (PC, smartphones, DRAM demand)
- Peak everything? Demand, margins, optimism

- **Media/Cable/Telco**

- The 'worries' in Media are more from bears, that Streaming works and VIAC/DISCA keep going higher (epic short squeezes...)
- Broadband solid, but slowdown from incredible '20;
- TMUS - why does it respond so poorly lately to catalysts?

- **Hardware & Networking**

- Looking past the PC strength – what "on prem" hardware and services will see a recovery
- Value unlock...or value trap (IBM, DELL, CSCO)



Topical Names

- **Software**
 - MSFT, WDAY, ZM, TWLO, HUBS, CRM, DT, DOCU, SPLK
- **Internet**
 - GOOGL, TWTR, SNAP, PINS, UBER, LYFT, ABNB, FB, Z
- **Payments**
 - PYPL, SQ, FIS, FISV, GPN, V, MA
- **Semis**
 - INTC, NVDA, AMD, MU, AMAT, LRCX, TSM, NXPI, ADI, ON, MRVL
- **Media/Cable/Telco**
 - VIAC, DISCA, TMUS, T, FOXA, T, DISH, CCI
- **Hardware**
 - AAPL, HPQ, DELL, WDC, GLW
- **Comm. Equip/Networking & Security**
 - CSCO, CRWD, ZS, PANW, NOK, ERIC



TMT Positioning: Overweights & Underweights

Based on data aggregated by BofA's Equity & Quant Strategy Team (Savita Subramanian). 1.0 weighting means those active managers hold it in proportion to its weighting in the S&P 500.

| TMT Overweights Among LO Active Managers | | | |
|--|---------|---------|-------------------|
| Ticker | LO Wght | HF Wght | LO % funds owning |
| NTAP | 2.48x | 0.32x | 7.5% |
| NFLX | 2.17x | 2.22x | 31.5% |
| AVGO | 2.15x | 0.11x | 19.6% |
| HPE | 2.05x | 0.51x | 4.3% |
| APH | 1.92x | 1.13x | 12.6% |
| INTU | 1.92x | 1.26x | 32.3% |
| FOX | 1.91x | 4.01x | 2.4% |
| CRM | 1.88x | 1.12x | 44.6% |
| FB | 1.87x | 2.25x | 64.2% |
| NOW | 1.86x | 3.40x | 28.5% |
| NWSA | 1.79x | 3.80x | 3.0% |
| ADSK | 1.75x | 3.40x | 21.0% |
| ADBE | 1.74x | 1.32x | 48.7% |
| CMCSA | 1.73x | 0.29x | 40.3% |
| KLAC | 1.71x | 0.85x | 16.1% |
| FOXA | 1.70x | 2.24x | 4.8% |
| TEL | 1.69x | 1.23x | 12.6% |
| V | 1.67x | 0.45x | 66.9% |
| PYPL | 1.67x | 2.30x | 47.3% |
| CHTR | 1.64x | 0.83x | 18.8% |
| FLT | 1.61x | 5.00x | 8.6% |
| DISH | 1.58x | 4.78x | 3.5% |
| MA | 1.51x | 1.52x | 52.7% |
| ATVI | 1.49x | 3.72x | 25.0% |
| AMAT | 1.49x | 1.46x | 30.1% |
| ADI | 1.49x | -1.73x | 19.1% |
| TXN | 1.40x | -0.39x | 40.1% |
| JNPR | 1.40x | 0.46x | 3.5% |
| FIS | 1.39x | 5.89x | 29.6% |
| QCOM | 1.38x | 0.49x | 39.8% |
| HPQ | 1.37x | 2.25x | 7.0% |
| CTSH | 1.37x | 0.97x | 13.2% |
| FISV | 1.35x | 6.90x | 19.6% |

| TMT Underweights Among LO Active Managers | | | |
|---|---------|---------|-------------------|
| Ticker | LO Wght | HF Wght | LO % funds owning |
| LUMN | 0.00x | -6.81x | 0.0% |
| FLIR | 0.00x | 1.66x | 0.8% |
| XRX | 0.01x | 22.06x | 1.3% |
| DXC | 0.04x | 7.20x | 2.4% |
| STX | 0.06x | 9.64x | 2.4% |
| T | 0.08x | -0.62x | 15.6% |
| IBM | 0.10x | -1.57x | 13.2% |
| FFIV | 0.13x | 6.32x | 3.0% |
| WDC | 0.15x | 0.32x | 3.0% |
| CTXS | 0.15x | 0.62x | 6.5% |
| SWKS | 0.22x | 1.72x | 5.9% |
| NWS | 0.23x | 0.73x | 0.8% |
| VIAC | 0.23x | -9.65x | 5.1% |
| TER | 0.24x | 4.58x | 5.9% |
| ZBRA | 0.32x | 2.02x | 7.5% |
| IPGP | 0.33x | -1.13x | 1.9% |
| XLNX | 0.35x | 2.00x | 6.7% |
| KEYS | 0.35x | -2.65x | 9.4% |
| JKHY | 0.36x | 0.15x | 4.6% |
| DISCK | 0.36x | 4.34x | 2.4% |
| AKAM | 0.38x | -2.83x | 5.6% |
| CSCO | 0.38x | 0.50x | 32.8% |
| VNT | 0.39x | NA | 5.1% |
| ANSS | 0.40x | 0.36x | 6.2% |
| VZ | 0.41x | 0.32x | 32.3% |
| IPG | 0.41x | 0.38x | 6.2% |
| ADP | 0.41x | 1.39x | 14.8% |
| FTNT | 0.43x | 5.26x | 7.8% |
| OMC | 0.45x | 1.28x | 5.6% |
| ORCL | 0.45x | -0.03x | 24.7% |
| MXIM | 0.46x | 7.84x | 4.3% |
| VRSN | 0.46x | 12.50x | 8.1% |
| TWTR | 0.47x | 3.41x | 6.7% |

Source: BofA Equity and Quant Strategy Research, Savita Subramanian

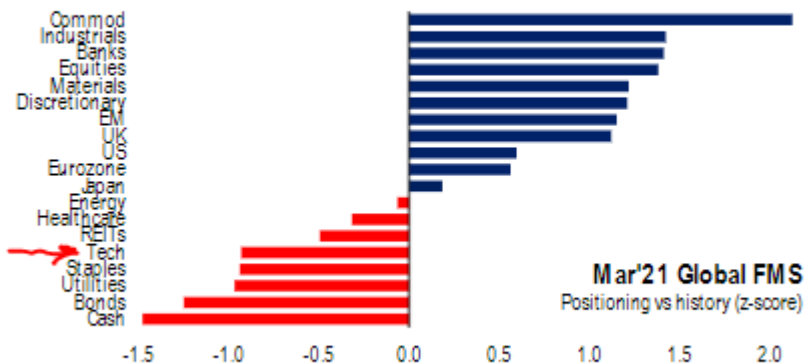


TMT Positioning: Investors are now *Underweight* Tech vs History, and Feb saw biggest *reduction* in Tech exposure in 15+ years

From Michael Hartnett's March 2021 Global Fund Manager Survey, Tech positioning is now Underweight vs history (was still overweight in his Feb edition, now it's lowest level of stated positioning since January 2009, see next slide), while Commodities, Industrials, Materials and Emerging Markets are far more OVERWEIGHT than they've been historically (lower left chart is latest)

Additionally, the latest survey revealed the biggest DECLINE in Tech exposure in 15 years (lower right chart)

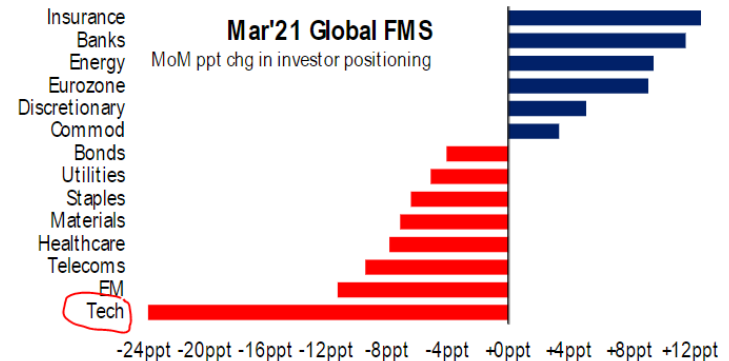
Exhibit 16: FMS shows cyclical consensus is "cyclical"
BoFA FMS positioning vs history z-scores



Source: BoFA Global Fund Manager Survey

BoFA GLOBAL RESEARCH

Exhibit 18: FMS investors add insurance, banks, energy in March
Month on Month change in FMS investor positioning



Source: BoFA Global Fund Manager Survey

Source: BoFA Equity Strategy, Michael Hartnett, [Global Fund Manager Survey](#), March 2021



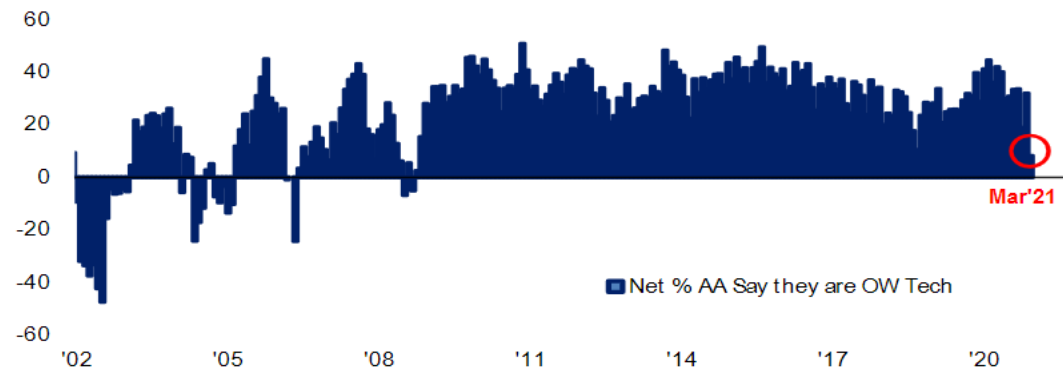
TMT Positioning: Not this Underweight Tech since January 2009

From Michael Hartnett's March 2021 Global Fund Manager Survey

Another look at Tech positioning (self reported by asset managers)

Exhibit 24: FMS tech overweight cut to lowest level since Jan'09

Net % AA Say they are OW Tech



Asset allocators cut their tech weighting to the lowest OW since Jan'09 to net 8%. Last time tech was underweight was Nov'08.

Source: BofA Global Fund Manager Survey

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Source: BofA Equity Strategy, Michael Hartnett, [Global Fund Manager Survey](#), March 2021



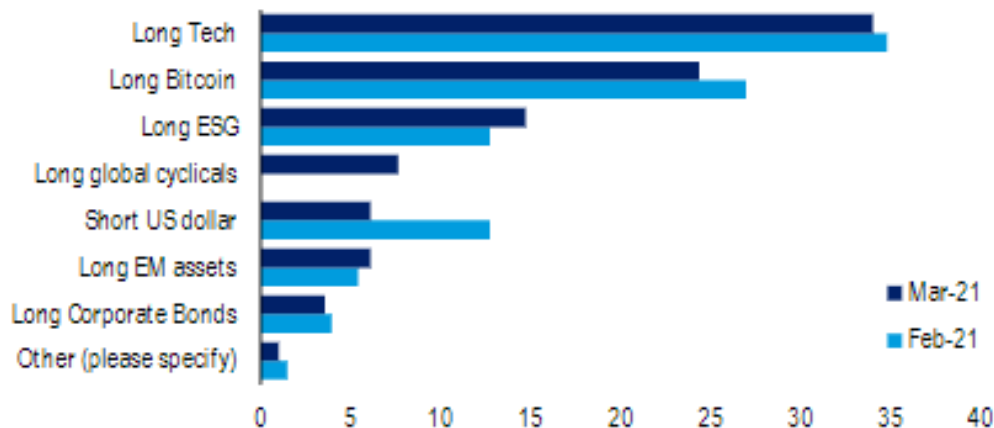
TMT Positioning:...but Investors seem to think Selling Tech is Non-Consensus...they are wrong

Despite self-declaring their positioning in Tech as more UNDERWEIGHT they've been (in aggregate) in years...investors still say "Long Tech" is the most crowded trade in the market (though 'less' than peak response in September 2020)

Exhibit 25: "Long Tech" still the most crowded trade but down in recent months

What do you think is currently the most crowded trade?

"Long tech" is still deemed the most crowded trade to 34%, but is down significantly from 80% of investors in Sept'20.



Source: BofA Global Fund Manager Survey

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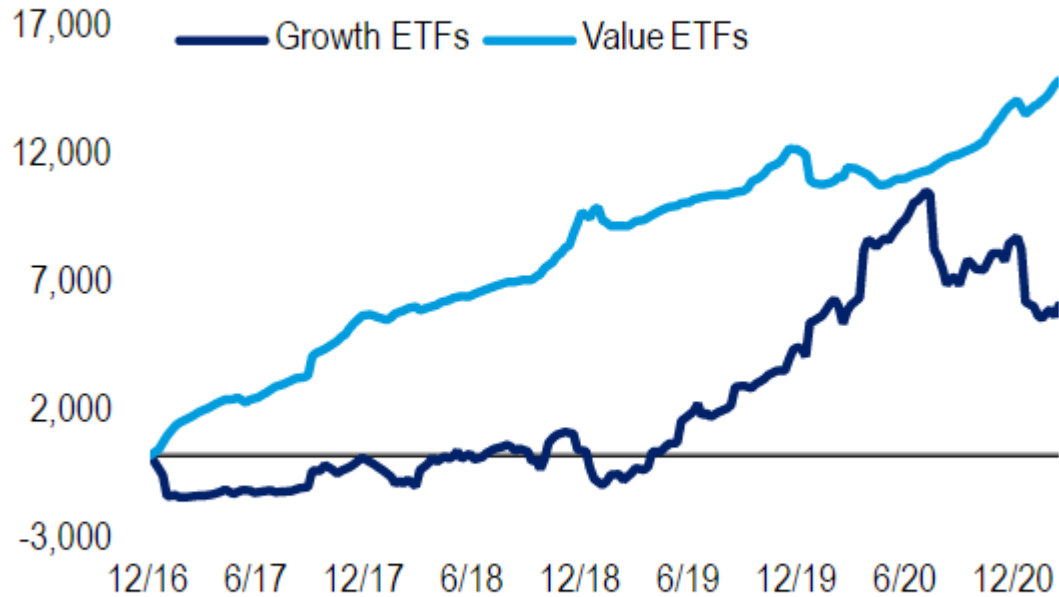
Source: BofA Equity Strategy, Michael Hartnett, [Global Fund Manager Survey](#), March 2021



TMT Positioning: Growth to Value Rotation has been Real

Chart 74: Signs of Growth to Value rotation

Growth ETF vs. Value ETF cumulative net buys, 2017-now (\$ mn)



Source: BofA Securities

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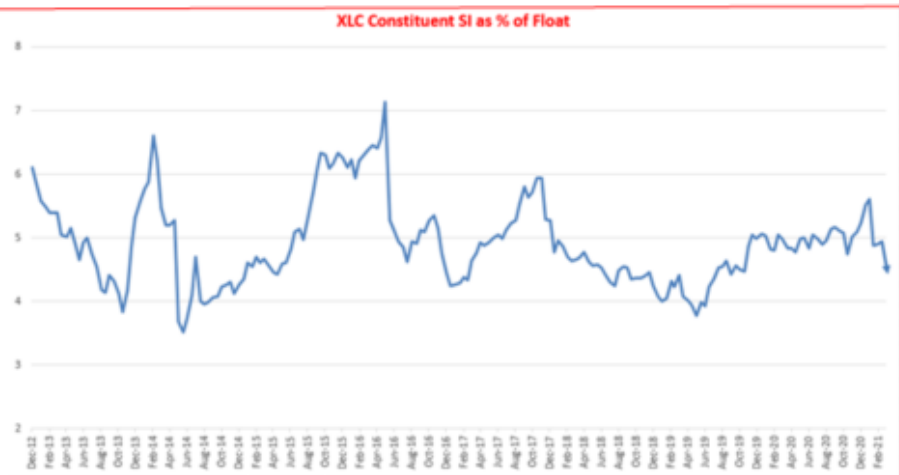
Source: BofA Equity & Quant Strategy - [NOTE](#)



TMT Positioning: Short Interest in Communications Services



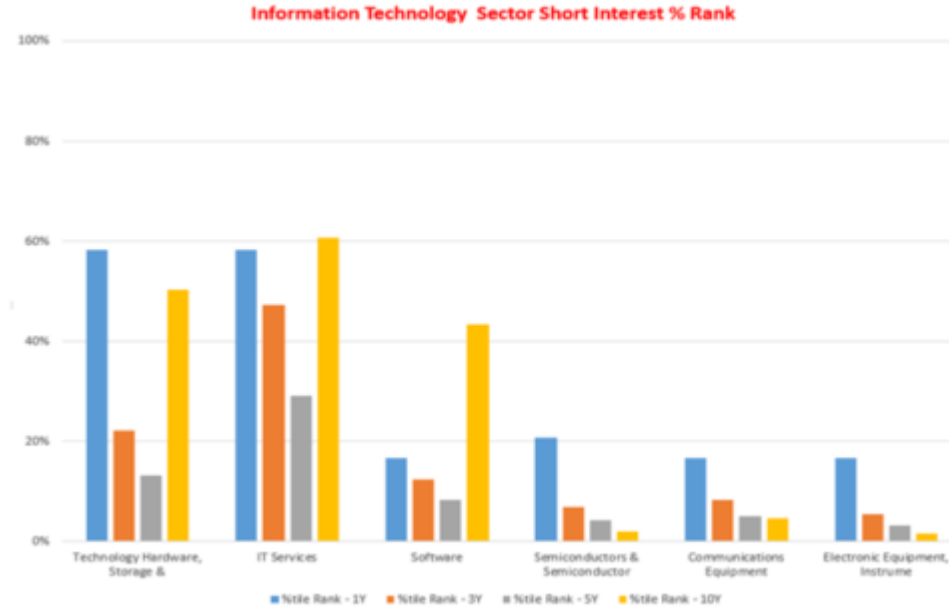
Media is the most heavily shorted group in Comm. Services – specifically VIAC, DISCA, FOXA, and AMCX, were elevated relative to history – but recent covering has been dramatic.



Source: BofA Global Short Financing Analytics



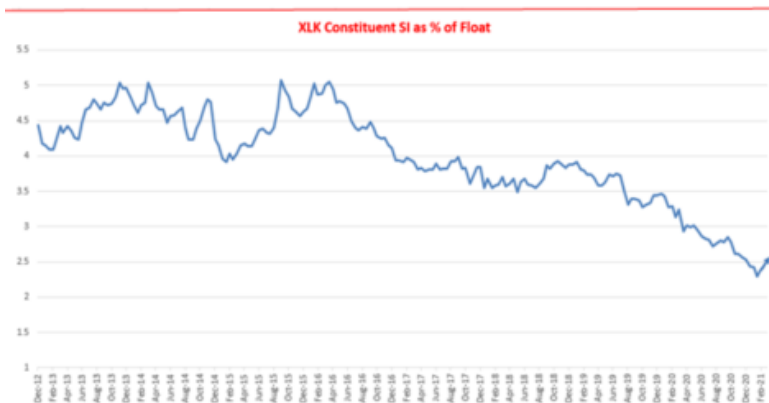
TMT Positioning: Short Interest in Information Technology



Hardware and IT services remain the most heavily shorted sub-sectors of Tech.

Recent increases in short interest have included AVT, CIEN, TER.

IBM short interest is at multi-year highs.



Source: BofA Global Short Financing Analytics

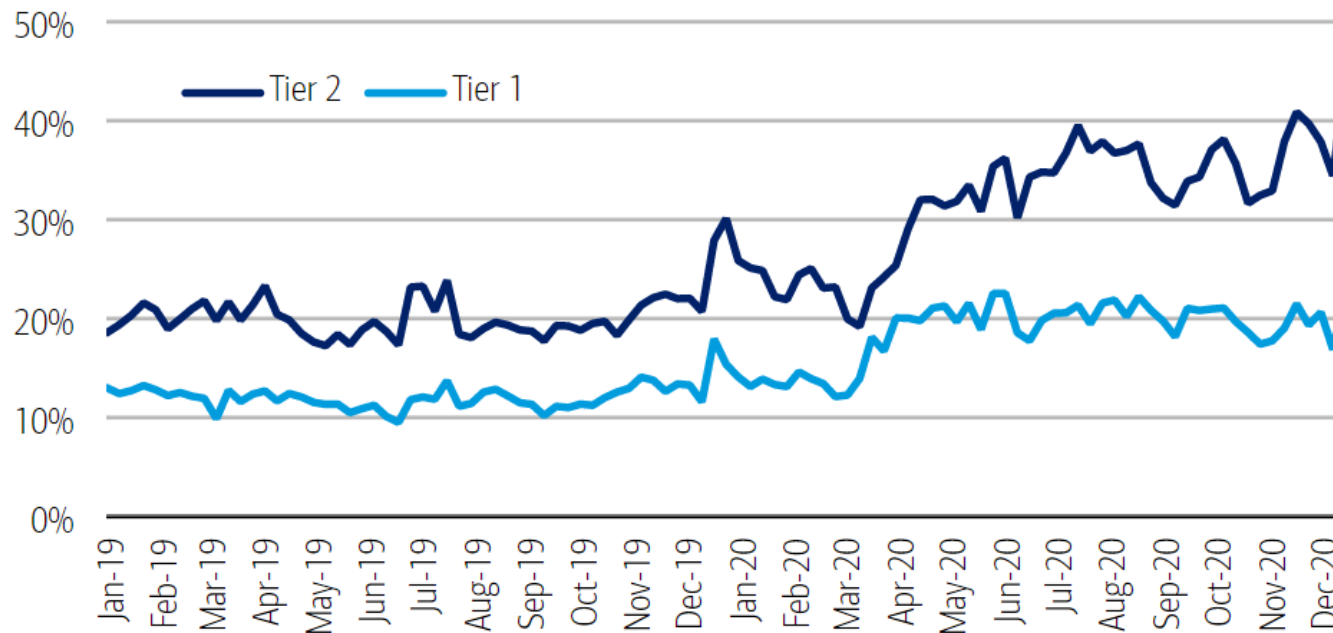


The Rise of Retail – A New Wrinkle in Market Structure

Retail Investor flow has gone from comprising 10% to now 20% of Tier 1 Securities flow, and has risen from 20% to 40% in Tier 2 Securities (small cap). Reach out for more detail/analysis on this topic.

Exhibit 4: Retail trading has accelerated since Mar 2020 with the small/mid cap companies gaining the largest interest

Retail flow as % of total US market volume, Tier 2 = Russell 2000, Tier 1 = Russell 1000



Tier 1: Retail flow in Russell 1000; Tier 2: Retail flow in Russell 2000

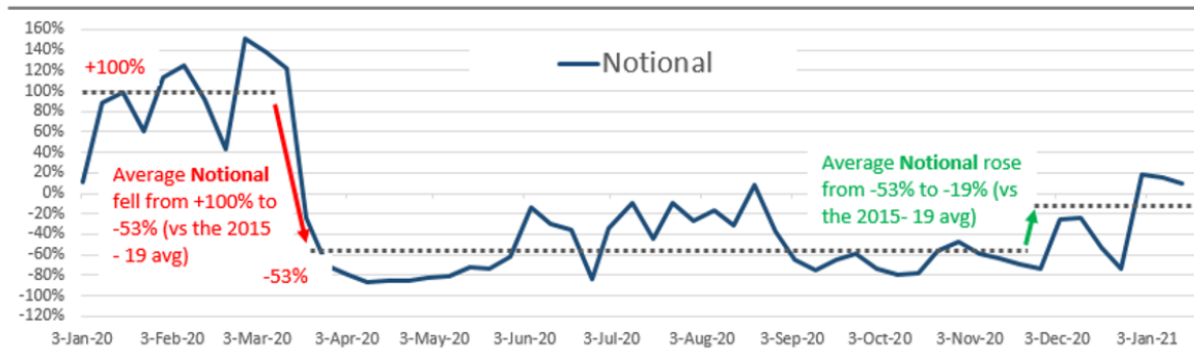
Source: FINRA. BofA trading desk



Buybacks are Resuming – BofA Data & Innovation Group

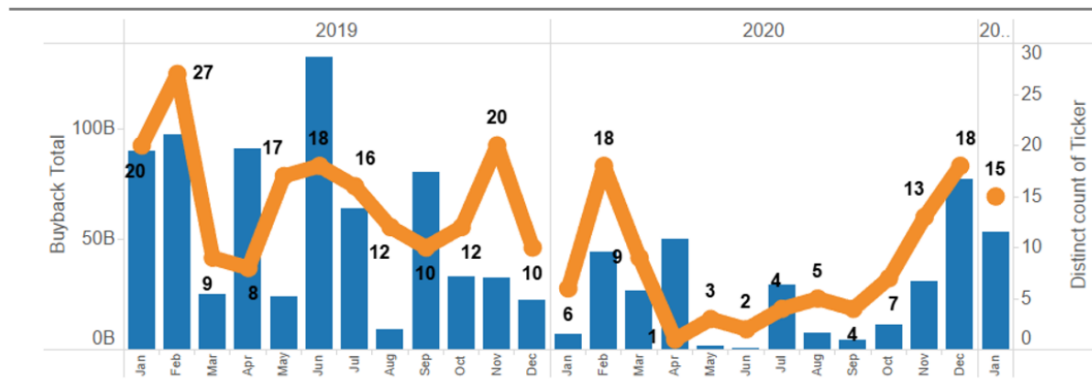
Buyback announcements, and activity, have steadily picked up since October

Figure 1: BofA Buyback Notional 2020/21



Source: BofA Trading Data

Figure 6: S&P 500 Announced Buybacks, Notional (LHS) & Count (RHS)



Source: BofA Trading Data, Bloomberg



Looking Ahead

- Vaccine Rollout Pace, and Success of Re-openings
- Policy: Stimulus Impact, FB Antitrust Case, Tax Policy, Infrastructure spending, Semi industry funding, China trade
- Continued Data Points in Travel / Outdoor Advertising / Mobility (UBER/LYFT) / Live Events
- Watching for Shifts in Card Spending Data - Brick & Mortar vs. E-Commerce, Services vs. Durable Goods, Changes in “Home” Related Spending
- M&A – Hard to handicap, but expect more
- INTC clarity on outsourcing/plans (earnings 4/23)
- Apple iOS/IDFA impact on FB, SNAP, U, others; Google’s changes as well, and impact on Ad Tech– TTD, PUBM, MGNI, RAMP, etc.
- Acceleration vs. Deceleration; Tough Comps vs. Easy Comps. An all-year theme.



Thank you.
Q&A



Disclosures

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