



Baird Technology Sector Strategy Earnings preview of Q121 Set up for 1H21

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(Updated 4/30/21)**

The Earnings data and commentary in this presentation is derived from public quarterly conference calls. The Baird Technology Research Team when annotated is available to go into further detail on this data. This is a product of Baird Technology Sale.

Technology Market Metrics (4/14/21):

The macro:

For now, its all about the “V” recovery (Vaccine) and stimulus

4/30/21 (Bloomberg data)

CCMP (NASDAQ Composite Index): up 9.27% YTD

- **REMINDER: For 2020, the CCMP (NASDAQ Composite Index) was up 43.4%**
- Digital Transformation/Cloud/Data Center and 5G macros well understood

SPX (S&P 500 Index): up 12.1% YTD

- **REMINDER: For 2020, the SPX (S&P 500 Index) was up 15.5%.**
- 5 names make up 23% of the index: **MSFT** (up 37% in 2020), **AAPL** (up 62% in 2020), **AMZN** (up 69% in 2020), **FB** (up 35% in 2020), **GOOG** (up 33% 2020)

RTY (Russell Index): up 16.2% YTD

- **REMINDER: For 2020, the RTY (Russell Index) was up 18.7%**

SOX (Semi Index): up 14.6% YTD (start focusing on the 5-year chart)

- **REMINDER: For 2020, the SOX (Semi Index) was up 50.5% YTD**
 - Buffer inventory builds driving sector accumulation
 - Higher content in Auto, Industrial, 5G and Data center silicon
 - The new 7nm, 5nm and 3nm manufacturing nodes represents a multi-year investment cycle (scale matters)

INDU (Dow Jones Industrial Index): up 11.3% YTD

- **REMINDER: For 2020, the INDU (Dow Jones Industrial Index) was up 6.6% YTD**

IGV (Cloud Index): is up 3% YTD

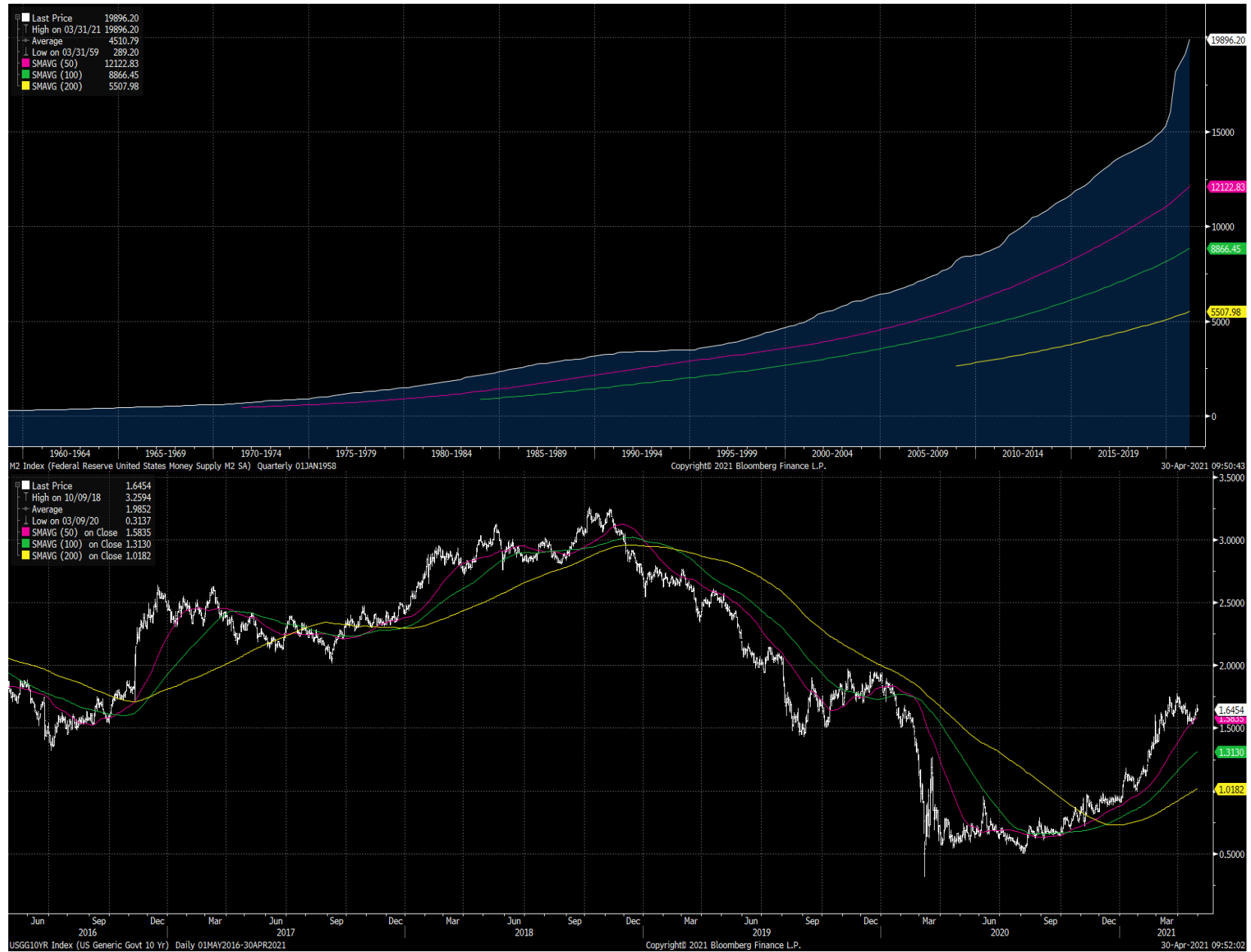
- **REMINDER: for 2020, the IGV (Cloud Index) was up 51.6%**
 - The drumbeat from management Teams: “ seeing a pull in of Digital Transformation, Cloud, AI and web enabled SaaS applications” (V shape recovery, momentum investors and short covering). The perfect FOMO melt up since 4/1/20
 - The Vaccine trade MUST be monitored (sector rotation top of mind). Monitor the remote bundle.

Key Economic Macro inputs: "GLOBAL STIMULUS HAS ELIMINATED TRADITIONAL ECONOMIC SIGNALS and VALUATIONS"

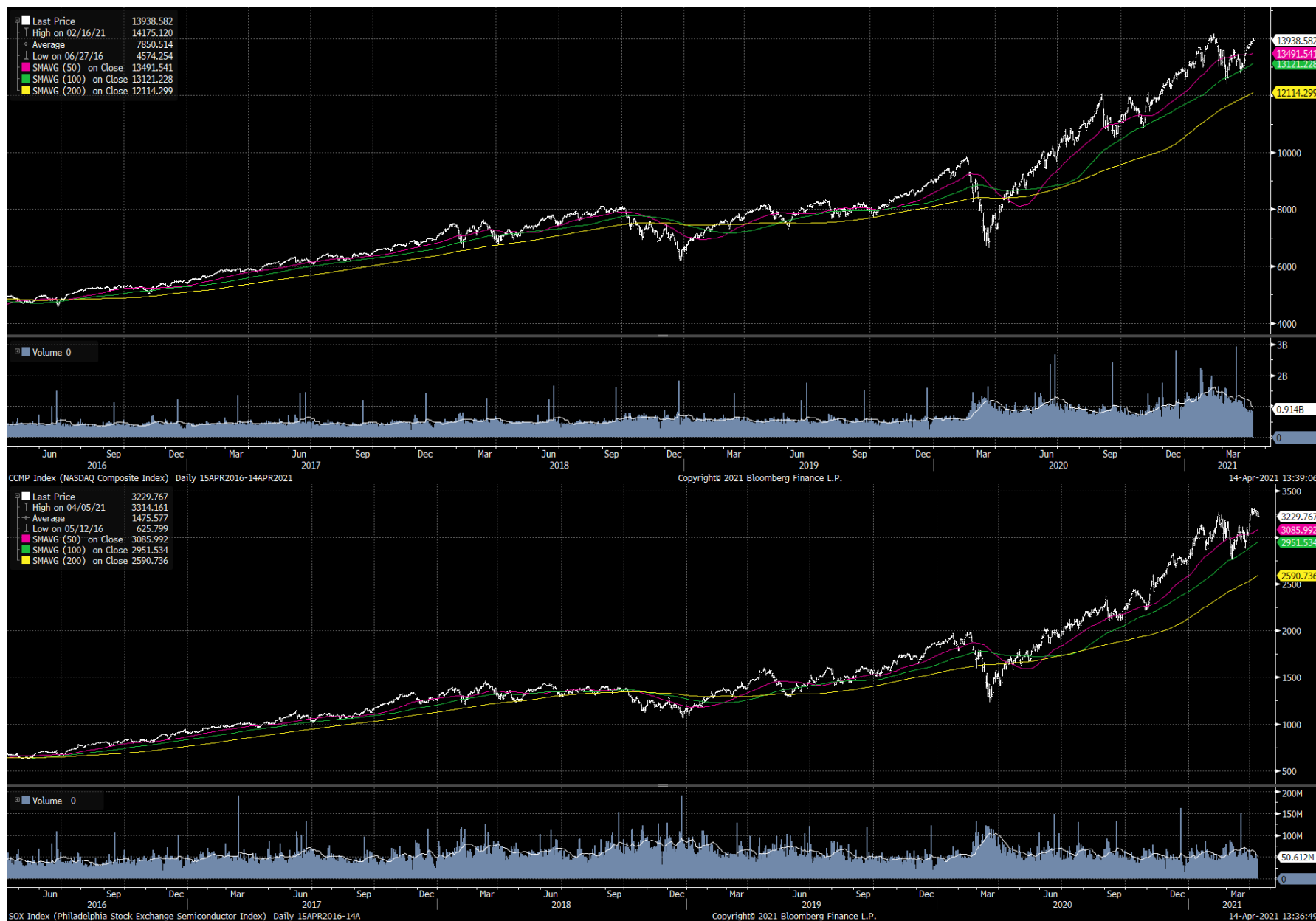


- Where have we been: There continues to be a daily battle between "believe in the dream" vs fundamentals vs stimulus investing". Liquidity combined with Stimulus fundamentals equates to a melt up that will last thru 2022
 - **Q120:** Covid froze demand and the supply chain in March 2020. **GDP fell 5% y/y**
 - **Q220:** The majority of the Covid impacts was felt in Q220 with **GDP declining 31.4%.**
 - The Covid dislocation brought forward secular trends around Digital Transformation were brought forward by **YEARS (WFH, PFH, LFH)**
 - **Q320:** "The bounce", violent 2nd derivative. Normalized production < pre-Covid levels. **Q3 US GDP up 33.4%**
 - **Q420:** GDP expanded 4%
 - **2020 GDP:** up 3.5% vs 2019 which expanded 2.2%
 - **2021 GDP projected to up ~7%+** (the debate of the 2023 down cycle)
 - The financial cushion of stimulus (**3 rounds**) spent so far equates to **~\$5.335T.**
 - M2 money supply at \$20T, growth the highest since the 1940's
 - **Deficits:** Trailing 12 months the US budget deficit is projected at **~ \$3.3T with a national debt of ~\$28.1T or 130% of GDP (the highest since WWII)**
 - **US margin debt now stand at ~\$823B up 72% y/y**
 - **T&E leverage** was the BIG driver in 2020.
 - For 2021, T&E is now reversing on increased hiring, higher marketing and reopening overhead (higher T&E)
 - On GM, input prices headed in the wrong direction
- Wall Street's Forward Focus: Talking heads have worn out "transitory thought process"
 - Both ISM Manufacturing and Services indexed hit multiple monthly and yearly highs
 - **ISM Manufacturing Index hit 64.7 vs 60.8 m/m** (the highest level since 12/83)
 - **ISM Services Index hit 63.7 vs 55.3 m/m**
 - **4/30/21:** Chicago Purchasing Index 72.1 vs a forecast of 65.3 and 66.3 q/q (**the highest since 1983**)
 - **4/30/21:** Personal income up 21.1% due to stimulus (**highest level since 1943**)
 - Supply chain shortages acute (boats, autos, ATV, jet skis)
 - Semi lead times continue to extend (most likely will not normalize to well into 2022)
 - Comparison across the re-open/infrastructure vs the previous Covid trade are dynamic
 - The focus is on Macro monopolies vs compares across e-commerce, SaaS, Remote infrastructure, Cloud and Security
 - **The "roaring 20's,** are upon us due to unbridled stimulus ("the peak of the economic cycle"?)
 - SMB/Commercial (<100M in revs) and on-premise enterprise spend are now at pre-Covid levels
 - Inflation is inflecting across multiple industries (10- year rates trend is up)
 - **The Q1 GDP report pointing to a 2021 annualizing growth rate of 6.4%+**

Key Economic Macro inputs: "STIMULUS HAS ELIMINATED TRADITIONAL ECONOMIC SIGNALS" We are a wash in liquidly. Bubble?



The **top 15 Technology** macros have not changed. In this cycle, numerous macros are interrelated. **EXPECTATIONS are high**
 The 5-year charts for the NASDAQ and SOX



The Top 10 2020 Technology Macros: (Accelerating Secular, Core Secular, Secular but seeing peak growth)

- ***Digital Transformation:** the digital future is arriving much sooner. Digital RE-PLATFORMING a multi-year macro
 - ACN, CRM, CTSH, INFY, AMZN, GOOG, MSFT, NOW
- ***Artificial Intelligence (AI)/Machine Learning** (ML)=>all industries impacted
 - AMD, AMZN, AYX, BABA, FB, INTC, GOOG (Bert), MSFT, NVDA, SPLK, XLNX (AMD)
- ***Cloud:** Public, Hybrid, Private deployments (\$21B+ in quarterly spend across cloud Titans)
 - AMZN, ANET, BABA, CRM, IBM (RHT), GOOG, MRVL, MSFT, NOW, NVDA (A100) ORCL, SAP, SPLK, VMW
 - ***Edge Data Center** macro accelerating
 - ***Observability:** DDOG, DTC, ESTC, SPLK
- ***E-commerce** : AI/ML driving same day delivery/Covid supply chain
 - AMZN redefining logistics. The company spent \$800M in Q219 to go to 1-day delivery. AMZN 2020 cost associated with Covid totaled \$11.5B (\$2.1B in Q121).
 - The bundle: AMZN, BABA, FB, GOOG, PYPL, SHOP, SQ
- ***5G=>Handset Mobility** (silicon content up ~4x)/WiFi 6: infrastructure, handsets (5G 15% of the TAM or ~200M units (140M into China), enablement of IOT/AI at the edge
 - AAPL, ADI, AVGO, BAND, ERIC, FTNT (new), INTC, KEYS, MRVL, NATI, NVDA (new), QCOM, QRVO, SWKS, TER, XLNX
- ***Software as a Service (SaaS)/Zero Trust Security**
 - SaaS: ADBE, ANSS, BSY, CRM, NOW, SPLK, TEAM, TWLO, VEEV, WDAY
 - Security: the pivot to cloud based “zero trust” architectures: NET, PANW, VMW, ZS
 - NVDA (new) has drawn a new line in the sand on security residing on silicon (NVDA’s DPU=>Bluefield)
- ***Semiconductors:** increased content across 5G, DC, Auto, Industrial and IOT end markets. Supply constraints acute (Covid reopen and move to Digital architectures). ARM emerging to challenge x86
 - ADI (MXIM), INTC (\$10B ASP), NVDA (ARM), NXPI, ON, TXN, XLNX
 - *Focus on Fabless: AMD, MRVL (IPHI), NVDA, QCOM, XLNX) (AMD)=> TSM enabled at 7 and 5nm (AAPL)
 - Huawei inventory close to being depleted post 9/20 DOC restrictions
 - Higher content across 5G (250M handsets in 2020 going to 550M in 2021 (3x the content), Industrial and Auto end markets (EV crowded)
- ***Semi IC design/Equipment:** Moore’s Law compromised. The move to 7nm-3nm nodes game changing (EUV). AMAT, ASML, KLAC, LRCX, TSM, Software=>CDNS, SNPS
 - NEW (\$236B of proposed capex spend): INTC spending \$20B for Foundry business and expansion, TSM will spend \$100B over 3 years, Samsung increasing spend materially. Supply now a natural security issue. NEW: 5nm and below production now a National Security issue
 - Supply tight, capex being increased (EUV, Test and Assembly)
- ***Internet of Things (IOT)/AI** and the proliferation of “edge computing”
 - AKAM, AMZN, CSCO, FSLY, GOOG, INTC, QCOM, SMTC (LoRa)

2020 Key “Secondary” Technology Macros (7)

- ***Remote Infrastructure (COVID 19)**: 95% of employees now remote. (a reopen focus. We have pulled in A LOT of PC growth)
 - AAPL (Mac/iPad), AKAM, AMD (NB), AMZN, BAND, CHGG, CHKP, CSCO, **CTXS**, CRWD, DOCU, FFIV, FIVN, FSLY, FTNT, GDDY, INTC (NB), LLNW, LPSN, MSFT, NET, **NFLX**, PANW, OKTA, PTON, RNG, SHOP, SPLK, TWLO, TWOU, VG, VMW, W, WIX, ZM, ZS
- ***Telehealth**: Covid 19 has changed healthcare in 2 months
 - AAPL, GOOG, TDOC, VEEV
- **Hyperscale Infrastructure Software**: scale out data bases/containers
 - NTNX, VMW, NVDA (new=>AI stack monetization new=>billions of revenue potential)
- ***Next Generation Security**: on premise migration to “zero trust” (**ZS, NET, PANW**) Cloud based security (monitor consolidation). PLATFORMS win this cycle
 - CYBR, OKTA, FEYE, FTNT, NET, PANW, VMW, ZS
- ***Over the Top**: OTT=>migration away from linear TV dramatic. Long term, explosion of new content
 - AKAM, AMZN, BABA, CMCSA (Peacock/Hulu), DIS, **FSLY**, GOOG, NFLX
- ***Social Media/Digital Advertising**: traditional channels and access to the cord cutters
 - AMZN, FB, GOOG, PINS, SNAP, TTD, TWTR
- **Autonomous Driving**: AI, real time mapping, ADAS, enabling silicon
 - GOOG, INTC, NVDA
 - LIDAR the new emerging TAM: AVEA, IIVI, LAZR, LITE, VLDR
- **Gaming**: E-Sports inflecting, scale out cloud streaming platforms vs consoles
 - EA, GOOG, MSFT, NVDA, SNE
- ***Telecom** (5G, 100G migration to 400G optical cycles=>800G on the horizon)
 - VZ increased spend by \$10B over 3 years for C-Band investment above core capex of ~18B
 - ANET, AVGO, CALX, CIEN, CSCO, IIVI, IPHI, JNPR, KEYS (400G in DC), LITE, NPTN
- **Payments/*Blockchain/Bitcoin**

Key Q121 Reports

Input Cost Tracker (what is the outside chance of hyperinflation?)

HPE: “Inflationary environment” around memory a topic on the call (DRAM=>MU)

MU: DRAM pricing inflecting

TSM: Pricing being raised on selected nodes due to cost structures at 5nm and 3nm as well as investments in more mature nodes.

WDC: pricing increasing in HDD and NAND

Other companies highlighting **higher input costs**: KO, PPG, PG, HAL, TEL, WHR

Other companies highlighting **labor inflation**: CMG (most restaurants and service industries),



Services (Digital Transformation leverage)

ACN

- (+) Seeing an accelerated “re-platforming” to Digital Transformation solutions.
 - Demand came in hotter than anticipated.
 - Pricing: seeing some stability
- Rev \$12.1B (guide \$11.55B-\$11.95B), up 8% y/y in USD and up 5% y/y CC (street \$11.83B)
 - Monitor=>**INDIA**, Growth Markets (APAC) \$2.43B (20% revs) up 8% USD and up 6% y/y in CC

Software (positive prints but it all about the 10 year and potential multiple adjustments. FCF MATTERS)

ADSK: CAD secular shift to cloud

- Revenue \$1.039B up 15.6% y/y (97% recurring), Street \$1.01B
 - AEC (43% revs) up 18% y/y
- Revenue \$955M-\$970B, Street \$995M
 - Seasonal quarter, low point of the year

COUP (multiple contraction)

- Revenue \$163.54M (\$145M-\$146M) was up 46.7% y/y Street \$146M.
- EPS \$.17 vs the Street at \$.11
- **FY22 Guide:**
 - Revs of \$675M-\$678M vs the street of \$665M
 - Llamasoft looks to be dilutive for Q421-Q222
- EPS adjusted from (\$.27)-(\$.23) vs the street of \$.36

CDNS

- (-) NEW: now seeing some headwinds in the IP business due to worse Covid trends in India over as well as chip supply restrictions for the next 3 quarters.
- (-) **NEW: Strong 2H20 momentum in China (Big part of Q&A) is now starting to normalize to historical revs of ~12%**
- Revenue \$736M up 19% y/y, Street \$718M

CRWD

- Rev \$264.9M was up 74% y/y, Street \$250.6M
- Q122 Guide (Includes Humio Acquisition):
 - Expecting seasonality in net new ARR to be less pronounced relative to prior years
 - Revenue \$287.8-\$292.1M, y/y growth of 62%-64%, Street \$267.8M

Key Q121 Reports

Software continued (positive prints but it all about the **10 year and potential multiple adjustments. FCF MATTERS**)

BAIRD

FTNT

- (+) Continue to see strong adoption of the FTNT security fabric (growing 17%) and platform or (growing at 40% and will approach \$1B in 2021). **5G security** and SDWAN long term macros
- Rev. \$710.3M up 23% y/y, Street \$681M
- Product revs \$240.7M up 25.2% y/y (highest in last 5 years)
- Subscription Services \$470M up 21.8% y/y

MANH

- Rev \$156.9M up 2% y/y, Street \$143.8M
- **RPO totaled \$421M up 108% y/y and 36% q/q**
- FY21 Guide:
 - Rev up to \$625M-\$640M (Previously \$595M-\$625M), Street \$613M. Includes \$22.5M impact from license and maintenance attrition.
 - **RPO \$450M-\$550M (key metric due subscription migration). Confident in ability to achieve high-end**

MDB

- Sign a partnership with IBM
- **Revenue \$171M up 38% y/y**, Street \$157M
- ARR growth greater than 120%

MSFT

- Rev \$41.7B up 19% y/y as reported and 16% y/y in CC. Street \$40.83B
 - **Productivity and Business Processes** \$13.6B up 15% y/y as reported and up **12% in CC** (Office 365 and LinkedIn drove results)
 - **Dynamics products/cloud services** grew **22% y/y in CC**
 - **Dynamic 365 revs** were up 40% y/y in CC (**CRM?**)
 - Commercial booking growth 39% y/y as reported and **38% y/y in CC**
 - **Intelligent Cloud** \$15.1B up 23% as reported and **20% y/y in CC**
 - **Personal Computing** \$13B up 19% as reported and up **16% y/y in CC (peak?)**
 - Gaming (Xbox) revenue increased 32% y/y in CC

NOW

- Total Revs \$1.36B up 30% y/y and 26% y/y in CC, street \$1.34B
- **EPS \$1.52 vs street at \$1.35**
- FY21 (if you don't exceed=>you're down 8%)
 - **Subscription Revenue** guided from \$5.48-\$5.5B up 28% y/y to \$5.455-\$5.47B up 27% to 28% y/y
 - **Subscription billings** guided from \$6.205B-\$6.225B to \$6.19B-\$6.205B up 24% to 25% y/y

Key Q121 Reports

Software continued (positive prints but it all about the 10 year and potential multiple adjustments. FCF MATTERS)

OKTA:

- Announced agreement to acquire Auth0 – a leading identify platform for application teams. Cloud native company for \$6.5B
 - Rev. \$234.7M up 40% y/y, Street \$221.8M
- FY22
 - Rev raised to \$1.08B-\$1.09B, growth of 29%-30% y/y, Street \$1.07B
 - Believe Current RPO is going to outpace rev growth.
 - Op loss of (\$61M) to (\$55M)
 - Increased head count in S&M (Specifically International) and R&D
 - EPS to (\$.49)-(\$.44), Street (\$.02)

ORCL

- (+) Oracle Cloud Infrastructure (OCI) grew 123%. Cloud consumption up 200% (off a small base)
- (+) Autonomous Cloud Data base (now on Version 2). Starting to inflect with 55% growth

PTC

- **Revenue \$461.8M up 22% y/y in CC. Street \$416M**
- ARR was \$1.39B up 15% y/y in CC, Street \$1.38B
- FY21 guide:
 - Macro stable, expecting 2H21 to improve
 - **ARR up to \$1.445B - \$1.77B** (Previously \$1.47B - \$1.5B)
- Rev guided up to \$1.71B-\$1.74B, growth of 17%-19% (Previously \$1.69B-\$1.73B, 16%-19%), Street of \$1.71B
- **EPS guided up \$3.18-\$3.39 (Previously \$3.05-\$3.25), Street at \$3.17**

SPLK: Secular shift to cloud/data analytics

- **Revenue \$775M down 6% y/y street \$677M. Reminder:**
- SPLK has moved to a recurring rev model vs license.
- **ARR was \$2.365B vs \$2.067B q/q and \$1.68B y/y or up 41% y/y**
- Cloud as a percentage of software bookings was 51% up from 46% q/q and up from 42% y/y

VEEV: Secular shift to cloud/data analytics

- **Revenue \$396.8M up 27% y/y, Street \$380.2M**
- (+) Pleased with traction in Vault family (\$6B TAM). Faster up-take in add-ons
 - More than 850 Vault customers overall

High valuation software has been hit due to the 10-year interest rate inflection

BAIRD

Updated	4/29/21				
High Valuation SaaS	Interim Peak EV/Revs (2/22/21)	EV/Revs (4/29/21)	Companies that have increased opex	Change from 2/22/21 to 4/6/21	Short Interest
SNOW	54.5	47		-13.8%	3.5%
BILL	52.1	45.2		-13.2%	9.6%
SHOP	44.9	31.9	X	-29.0%	1.6%
CRWD	41.7	32.1	X	-23.0%	4.9%
ZS	39.8	31.6	X	-20.6%	6.0%
COUP	39.7	27.3		-31.2%	10.0%
NET	36.6	32.9	X	-10.1%	5.7%
ZM	33.9	23.1		-31.9%	3.8%
OKTA	32.8	29.4	X	-10.4%	4.6%
DDOG	32.8	28.8	X	-12.2%	7.1x%
NCNO	30	22.6	X	-24.7%	5.6%
TEAM	28.2	25.3		-10.3%	4.7%
TWLO	28	23.1	X	-17.5%	3.7%
RNG	26.4	18.2		-31.1%	6.7%
VEEV	25.8	22.1		-14.3%	1.3%
DOCU	25.8	20.3		-21.3%	2.6%
FIVN	24.2	20.6	X	-14.9%	4.3%
SPT	23.3	19.3		-17.2%	2.1%
FSLY	23.2	17.7	X	-23.7%	21.1%
PAYC	21.3	21.3		0.0%	2.1%
PLAN	20.6	14.2		-31.1%	11.0%
WORK	20.6				
AVLR	20	17.2		-14.0%	2.4%
ESTC	19.7	14.4		-26.9%	14.3%
ASAN	18	16.3	X	-9.4%	2.8%
SMAR	19.1	12.6	X	-34.0%	2.8%
HUBS	18.9	19.8		4.8%	3.6%
NOW	17.6	16.1		-8.5%	1.4%
BL	16.5	15.2	X	-7.9%	9.2%

High Valuation SaaS	Interim Peak EV/Revs (2/22/21)	EV/Revs (4/14/21)	Companies that have increased opex	Change from 2/22/21 to 4/6/21	Short Interest
EVBG	16.1	13.8	X	-14.3%	10.9%
APPF	15.8	14.4		-8.9%	7.0%
PCTY	15.5	15.1		-2.6%	1.8%
PD	14.9	11.4	X	-23.5%	12.7%
Q TWO	14.8	11.6		-21.6%	9.2%
WIX	14.7	12.7		-13.6%	3.3%
ADBE	14.4	14.4		0.0%	1.1%
WK	13.6	10.8	X	-20.6%	9.1%
ZEN	12.7	12.6		-0.8%	6.0%
WDAY	12.7	11.8		-7.1%	4.2%
SPLK	10.6	8.9		-16.0%	3.9%
PYPL	11.6	11		-5.2%	1.3%
MDLA	11.6	7.3	X	-37.1%	13.3%
SQ	8.9	7.5		-15.7%	8.6%
DOMO	8.6	8.1		-5.8%	7.7%
QLYS	8.6	8.8	X	2.3%	16.3%
CRM	8.5	7.5		-11.8%	2.2%
TENB	8	6.7		-16.3%	3.7%
RP	7.3				
PS	6.7				
PFPT	6.3	7.6		20.6%	4.2%
NEWR	5.1	5.6		-2.7%	12.6%
High short Interest		18.6	Average	-15.2%	
Low short interest					

Key Q121 Reports

AI/ML (new models emerging, the genie out of the bottle)

SNOW:

- Rev. \$190M up 117% y/y, Street \$147.6M
 - Product revs of \$178M was up 116% y/y (95% revs)
 - Not a SaaS model. 93% of revs consumption based with contract durations expanding
- Total customers grew to 4,139 up 73% y/y
- 77 customers (up from 65 q/q) with revs >\$1M revs, up 88% y/y
- Now have 5 customers with a \$5M TTM revs

UCaaS/Collaboration Software (long runway)

FIVN

- (+) Seeing strong traction with **MSFT** and **ZM** relationships
- (+) Partnership with **AT&T** on track and ramping. Should continue to expand.
- Inference Solutions acquisition gaining traction (Second quarter). Increased adoption rate
- Pipeline at an all-time high
- Revenue \$137.9M up 45% y/y, Street \$122.6M

ZM

- Rev. \$882M up 369% y/y above guided range of \$806M-\$811M. Street \$810M.
- **ZM phone** customers with >10 employees grew from 2,900 in FY20 to 10,700 in FY21
- **FCF: \$378M vs \$26.6M y/y**

Key Q121 Reports

E-Commerce (Covid has driven secular changes in retail. The perfect tailwind of *stimulus and COVID compares*)

AMZN

- Net sales \$108.5B (guide \$100B - \$106B) up 44% y/y as reported and 41% y/y in CC. Street \$104.6B.

North American Metric

- NA segment sales \$64..4B (59% revs) up 39% y/y in CC
- Op margin 5.4% vs 2.8% y/y

International Metrics

- International \$30.65B (28% revs) up 60% y/y as reported and 50% in CC
- Op margin 4.1% vs (2.1%) y/y

Amazon Web Service (AWS) metrics (SCALE)

- Amazon Web Services \$13.5B (13% revs) up 32% y/y as reported and 32% CC
- TTM run rate \$48.64B. Annualized run rate \$54B.
- Backlog \$52.9B up 55% (cost superior, better security)

EBAY

- US grew 36% y/y (*Stimulus*) vs International growth of 17% y/y

MELI

- Net sales \$1.327B up 97% as reported and 149% y/y in CC. Street \$1.23B.

SHOP

- Rev. \$988.6M up 110% y/y, Street \$859.4M
 - Subscription Solutions rev. \$320.7M up 71% y/y
 - Driven primarily by growth in MRR, driven by increase in number of merchants.
 - MRR of Shopify Plus 26% of subscriptions
 - Merchant Solutions rev. \$668M up 137% y/y
- EPS \$2.01, Street \$0.74

Key Q121 Reports

Internet (Digital advertising up)

FB

- Rev \$26.17B, Street \$23.73B, up 48% y/y => Benefited from currency tailwind
 - Advertising \$25.44B up 46% y/y, Street \$23.3B

NFLX

- Paid memberships were up 13.6% y/y to 207.6M (forecasted 210M)
- Global sub adds totaled 3.98M vs 8.51M q/q, guidance of 6M (miss) and 15.77M y/y

GOOG

- Consolidated Revenue \$55.3B up 34% y/y as reported and up 32% in CC vs the street of \$51.4B
 - GOOG Search \$31.9B was up 34% y/y
 - Online advertising very strong (brand and direct response vs linear TV which is in decline)
 - YouTube \$6B up 49% y/y
 - Usage up materially
 - Brand advertising improved q/q
 - GOOG Network \$6.8B was up 30% y/y
 - GOOG Cloud of \$4B grew 46% y/y

Key Q121 Reports**Semiconductors** (*Peak of the cycle, game of chicken on who moves off the trade first*)**AMD**

- Revenue \$3.45B up 6% q/q and up 93% y/y Street \$3.2B
 - Compute and Graphics (60.8% revs) \$2.1B up 7% q/q and up 46% y/y**
 - Enterprise, Embedded, Semi-Custom (39.2% of revs) \$1.35B was up 5% q/q and up 286% y/y.**
 - Record server sales (strength across HPC, Hyperscale and Enterprise servers)
 - EPYC (Rome) share gains evident.
 - Very positive on follow on Milan server offering (100 new platforms=>share gains evident across hyperscale and HPC)**

AVGO

- Semiconductor Solutions (SS): \$4.91B (74% revs) was up 17% y/y.
 - Networking (29% of SS revs) was up 15% y/y**
 - Wireless (31% of SS revs) was up 52% y/y on seasonal trends at AAPL (one quarter late)
 - Broadband (15% of SS revs) was up 8% y/y on WFH trends.
 - Server/Storage (12% of SS revs) was down 22% y/y**
- BOOKINGS UP 62% q/q and 80% y/y (Very strong, mission critical silicon for end customers=>non-cancellable orders. "New products needed for 400G and 800G.")**

INTC (losing share to AMD)

- Client Computing Group (54.7% revs) \$10.6B was up 8% y/y,**
 - Record rev on increased platform volume, **PC volumes up 38% y/y=>PEAK**
 - Notebook revs up 19% y/y**, with ASP were down 23% y/y (more consumer/entry mix) **PEAK**
 - Desktop revs down 7% y/y, ASP down 5% y/y
- Datacenter Group (30.5%) rev. \$5.6B declined 20% y/y,**
 - "Will be very aggressive on market share . Will fight for every socket." (price)**
 - 4th quarter of data center digestion (share loss). Claiming Q121 the bottom. , NVDA not seeing digestion.
 - Unit volumes down 13% y/y**
 - ASP's down 14% y/y**
- Cloud Service Providers down 29% y/y**
- Comm/Service Providers up 5% y/y
- Enterprise/Govt declined 20% y/y**
- Op Margin 23% vs 50% y/y**

Key Q121 Reports

Semiconductors continued (Peak of the cycle, game of chicken on who moves off the trade first)

MU

- **DRAM \$4.43B (71% of revenue)** up 10% q/q and up 44% y/y
- (+) Strong demand across all end-market segments
- **Expect CY21 bit growth of 20%. Prior guidance of high teens**
- **Industry DRAM supply to be below demand. Severe undersupply causing DRAM prices to increase rapidly**

NVDA (GTC)

- **NVDA now enabling AI across every industry.** Gaming still robust
- **Data Center (38% revs)**
 - For FY21, Revenue grew 124% y/y in FY21 to \$6.7B
- **Gaming (50% of revs) I**
 - n FY21 Gaming was \$7.8B up 41% y/y.
- NVDA's single architecture a major competitive advantage. Software that is now about to be monetized.
- **Application frameworks**
 - **DRIVE**=>Auto (will inflect in 2026 and beyond)
 - **Jarvis**=>Natural Language
 - **CLARA**=>Drug Discovery
 - **Aerial**=>5G
 - **Morpheus**=>Security/Zero trust
 - **GeForce NOW**=>cloud gaming
 - **cuQUANTUM**=>quantum computing
 - **MAXINE**=>video conferencing
 - **METROPOLIS**=>smart city
 - **ISSAC**=>robotics
 - **MERLIN**=>deep leaning

NXPI

- Reminder: NXPI targeting the Auto (ADAS/EV), industrial IOT, Mobile (features) and Comm. Infrastructure end markets
- **(+) Auto commentary: targeting ADAS/electrification (~44% revs), 3-year CAGR previously guided to 7-10%**
 - **Revs of \$1.23B was up 3% q/q and up 24% y/y, \$13M great than mid-point.**
 - NXPI can't meet supply due to robust order and drained inventory levels at Auto OEM
- **(+) Industrial /IOT commentary (21% revs), 3-year CAGR previously guided to 8-11%**
 - **Revs of \$571M was up 12% q/q but up 52% y/y. \$13M great than mid-point.**
- **(+) Mobile (14% revs), 3-year CAGR previously guided to 4-6%**
 - **Revs of \$346M was down 15% q/q but up 40% y/y, in line with guide**
- **(-) Communications commentary (20% revs), 3-year CAGR previously guided to 0-2%**
 - **Revs of \$421M was up 7% q/q and down 4% y/y**



Key Q121 Reports

Semiconductors continued (Peak of the cycle, game of chicken on who moves off the trade first)

QCOM

- QCT: Revenue \$6.281B up 53% y/y vs guide of \$6B-\$6.5B
 - **Handset \$4.06B up 53% y/y (China strong)**
 - **RF Front End \$903M up 39% y/y**
 - **Auto \$240M up 40% y/y due to OEM recovery**
 - **IoT \$1.073B up 71% y/y**
- **QTL: Revenue \$1.614B up 51% y/y vs guided \$1.25B-\$1.45B**
 - China strong, more units
 - **Benefits from the \$80M royalty true up in the quarter**
 - **EBT Margin 74% vs 63% y/y (guided 66%-70%)**

TXN

- **Rev \$4.29B up 5% q/q and up 29% y/y, Street \$3.98B**
 - Strong demand in auto, personal electronic, and industrial
 - 90% of rev coming from shipments outside of U.S.
 - ~20% of rev are based by customers in China
- Auto and Industrial made up ~57% revs
 - **Industrial: 37% revs**
 - **In Q121 Industrial was up 20% q/q and up 30% y/y**
 - **Auto 20% revs**
 - **Continues to rebound (bottom in cycle was in Q220)**
 - **In Q121 Auto was flat q/q and up 25% y/y**
 - **Personal Electronics 27% revs**

Key Q121 Reports

Semi Cap/Foundry (A secular move to 5nm and below)

ASML

- (+) Macro Drivers AI/ML, HPC, Big Data and 5G. Customers short of semi-inventory
- **(+) Saw a significant increase in demand q/q. Revenues now expected to be up 30% y/y in 2021.**
- **Now looking for logic growth to increase from 10% to 30% (think INTC, AMD)**
- **Now looking for memory growth to increase from 20% to 50% (think DRAM and MU)**
- **2021 (sold out)**
- **Looking for revs to growth of ~30% y/y (2H21 will be strong)**
- **GM raised from 48%-50% to 51%-52% (higher DPUV mix)**

LRCX

- (+) For 2021, WFE is expected to be greater than \$75B with the 2H21>1H21 (logic and memory). The previous estimate for 2021 was in the \$68B-\$70B range due to chamber expansions and services and spars. Seeing very strong pricing. 2nd year of very strong growth (street focused on the 2 year cycle peak. To early to predict 2022.
 - China will be greater than 17% of WFE in 2021.
- **Non-Volatile Memory (NAND) 48% vs 51% revs q/q=>strong**
- **DRAM 14% vs 17% revs q/q**
- **Foundry 31% revs 26% revs q/q**
- The highest results in LRCX history due to 7nm, 5nm and future 3nm node transitions
- **China spend (32% revs)=>major area of investor focus (~10B of WFE)**

TSM

- **(+) For 2021, TSM is now looking for the Semi industry ex of memory to 12%, up from ~8% previously.**
- **(+) For 2021, Foundry growth increased from 10% to 16% y/y. TSM is expected to grow 20% up from 15% y/y previously due to 5G build outs and HPC.**
- **Shortages will persist throughout 2021 and possible into 2022 (in Q&A TSM stated it will ~ 18 months (implied August of 2022) for supply to start to normalize)**
 - **Excess capacity will not be available until 2023 due to equipment lead times.**
- **Revs \$12.92B USD (guide was \$12.4B-\$12.7B) up 1.9% q/q and up 25.4% y/y.**
- **(+/-) Smartphone (45% revs) was down 11% q/q (milder seasonality)**
- **(+) HPC (35% revs) and was up 14% q/q**

Key Q121 Reports**Tech Bellwethers (WFH, LFH, PFH, Covid pulls in)****AAPL**

- Revenue \$89.6B (record) up 54% y/y vs. street \$76.8B
 - iPhones (53% of revs):
 - Revenue \$47.9B up 66% y/y
 - Macs (10% rev.): **LFH, WFH, PFH**
 - Revenue \$9.1B was up 70% y/y.
 - iPad (8.7% rev.): **LFH, WFH, PFH**
 - Revenue \$7.8B up 79% y/y (like Mac, covid pull in)
 - Services: 18.9% on revs
 - Revenue \$16.9B up 27% y/y
 - Subs now at 660M up 145M y/y
 - Wearable, Home, Accessories (8.7% of rev):
 - Rev. \$7.8B up 25% y/y
- EPS \$1.40 vs street of \$.98

Telecom (monitor a positive 2H21)**CIEN**

- Macros=>Cloud, Data Center, IOT, Deep Fiber (Cable/MSO) and 5G driving demand
- (-) For the 3rd straight quarter, Covid now having an impact on CIEN, specifically in new business and extending the time frame for integration (taking longer to execute on projects).
- CIEN estimates the slowdown will continue into the 1HF21 and then improve in the 2HFY21.
 - Implied Tier 1 carriers: capacity adds (VZ, T, DT) moderating=>2H21 better
 - Implied Cable MSO 1H20 spend across Comcast and Charter moderating (think cord cutting)
- Rev \$757.1M (guide \$735M-\$765M) down 9.1% y/y vs. street \$750M

Focus names for the 1H21

4/14/21	Companies that exceeded Q420 or guided up Q121										
<u>Networking/Storage</u>	<u>Semiconductors</u>	<u>Software</u>	<u>Internet</u>	<u>Hardware, Diversified, Services</u>	<u>NEW</u>	<u>Impacted by COVID</u>	<u>Affected Industry Exposures</u>				
ACIA	AMAT	AKAM	AMZN	AAPL	ACN	20%					
ANET	AMBA	APPN	CHGG	ACN	AKAM	20%					
BAND	AMD	AZPN	GDDY	AVT	AYX	31%					
CSCO	APH	CRWD	GOOG	CDW	BL	25%					
CALX	CDNS	CSOD	NFLX	CRSR	CYBR	15%					
CIEN	CRUS	DDOG	PINS	FISV	EGHT	15%					
COHR	DIOD	EVER	PS	GLW	EVBG	18%					
DBX	HIMX	FIVN	ROKU	GPN	FIVN	15%					
EXTR	INTC	FTNT	SHOP	GRMN	FSLY	4%					
FFIV	KN	HUBS	SPT	HPE	IBM	30%					
FN	LFUS	INTU	TTD	INFY	ORCL	20%					
LITE	LRCX	MANH	TWTR	KEYS	MANH	17%					
VIAV	LSCC	MODN	WIX	LOGI	MDLA	30%					
	MCHP	MSFT	ZG	PI	NET	10%					
	MPWR	NET		PLXS	NEWR	20%					
	MU	NEWR		SONO	PD	7%					
	NVDA	NOW		TATA	PFPT	20%					
	NXPI	NTNX		VOXX	PRO	45%					
	ON	ORCL		WIT	RPD	15%					
	QCOM	PANW			SWI	15%					
	QRVO	PAYC			TWLO	10%					
	SWKS	PLTR			VG	20%					
	XLNX	PTC			WDAY	15%					
	STM	RNG			WORK	15%					
	SNPS	SAIL			>20% C19 industries						
	TER	SAP									
	TXN	SMAR									
	WDC	SPLK									
		TWLO									
		TWOU									
		VEEV									
		VRNS									
		WK									
		ZEN									
		ZM									
		ZS									

BAIRD

Geo exposure: The focus is on non-US Covid lockdowns

	Total Intl. Revs	EMEA % Revs	APac % Revs	China Revs	Huawei breaked out of China Revs
AAPL	55%	24%	15%	16%	
ACN	52%	32%	20%		
ADI				22%	3%
ADSK	57%	39%	18%		
AMAT	63%	5%	58%	29%	
AMZN	26%	26%			
ANET	20%	20%			
ANSS	53%	25%	28%	4%	
ASML	78%		59%	19%	
AYX	26%	26%			
CDNS	56%	18%	26%	12%	
CDW	13%	13%			
CHKP	54%	42%	12%		
CIEN	27%	16%	11%		
CRM	30%	21%	9%		
CRWD	27%	14%	13%		
CSCO	41%	26%	15%		
CTSH	24%	18%	6%		
CYBR	39%	28%	11%		
FB	52%	24%	28%		
FFIV	43%	24%	19%		
FTNT	58%	37%	21%		
GOOG	47%	30%	18%		
HPE	60%	37%	10%	13%	
HPQ	66%	37%	29%		
HUBS	42%	42%			
IBM	47%	31%	16%	6%	

IIVI				27%	7%
INTC				22%	
INFY	38%	24%	14%		
IPHI				40%	0%
JNPR	44%	28%	16%		
KEYS	58%	16%	22%	20%	3%
KN				22%	
LITE				25%	0%
LRCX	85%		51%	34%	
LSCC					3%
MPWR					5%
MU				30%	
NPTN				49%	
NOW	34%	25%	9%		
NTNX	44%	24%	20%		
NVDA				~22%	
ON	86%	18%	58%	10%	
ORCL	45%	28%	17%		
PANW	31%	19%	12%		
PTC	57%	37%	20%		
QCOM				48%	7%
QRVO				30%	
RNG	38%	24%	14%		
SAP	58%	43%	15%		
SNPS	52%	10%	42%	20%	
SMTC				19%	3%
SPLK	34%	34%			
SWKS				20%	2%
TEAM	50%	39%	11%		
TER	69%	43%	13%	13%	
TSM	42%	6%	15%	21%	
TXN				55%	
VMW	50%				
XLNX	74%	13%	51%	10%	0%

BAIRD

Industrial, Auto and 5G Handsets inflecting off a Q220 bottom (off 20% y/y)

Auto supply chain in disarray

BAIRD

<u>Semi</u>	<u>Auto %</u> <u>Revs</u>	<u>Semi</u>	<u>Industrial %</u> <u>Revs</u>	<u>Semi</u>	<u>Comm</u> <u>% Revs</u>	<u>Semi</u>	<u>Consumer</u> <u>% Revs</u>	<u>Handset %</u> <u>Revs</u>	<u>AAPL</u> <u>exposures</u>
ADI	11%	ADI	53%	ADI	25%	AAPL		50%	
				ANET	40%				
						AVGO			15%
		LSCC	39%	LSCC	38%				
MCHP	15%	MCHP	28%	MCHP	14%	MCHP	13%		
MPWR	15%	MPWR	17%	MPWR	11%	MPWR	26%		
		MTSI	42%						
MU	15%					MU		29%	
		MTSI	42%	MTSI	35%				
MXIM	26%	MXIM	30%	MXIM	24%	MXIM	20%		
NXPI	47%	NXPI	18%	NXPI	21%	NXPI		13%	
NVDA	5%								
ON	27%	ON	29%	ON	21%	ON		10%	
						QRVO			36%
						QCOM			7%
						SWKS		70%	39%
TER		TER	13%	TER	69%				
						TSM		47%	> 10%
TXN	21%	TXN	36%	TXN	11%	TXN	13%	10%	6%
XLNX	12%	XLNX	30%	XLNX	32%				

Reopen vs Covid plays



<u>Reopen and Infrastructure trades</u>		<u>Covid trades</u>	
	ACN		AAPL
	ABNB		AMD
	ADSK		AMZN
	AMAT		BABA
	ANET		CHGG
	ANSS		CTXS
	BSY		CRWD
	CIEN		DASH
	CSCO		DOCU
	FIS		FFIV
	FISV		FIVN
	GPN		GDDY
	PFPT		INTC
	PTC		MSFT
	RNG		NET
	SMTC		NFLX
	TSM		PANW
			OKTA
			PTON
			SHOP
			TWLO
			W
			WIX
			ZM
			ZS

Cloud Titans now spending post the 2H20 digestion phase

Q121 Capex

AMZN: \$6.8B

FB: \$4.4B

MSFT: \$5.1B

GOOG: \$5.9B

Total: \$22B (strong)



Cloud	% revs	Growth	Q320 Capex
			Capex (B)
ANET	40%		
AMZN	13%	29%	\$6.0
BABA	11%		
CIEN	24%		
FB			\$3.9
GOOG	10%	43%	\$5.4
IBM	14%		
INTC	33%		
JNPR	23%		
MCHP	18%		
MPWR	31%		
MSFT	35%	47%	\$4.9
MTSI	20%		
NVDA	40%	162%	
ON	13%		
SAP	30%		
TSM	33%		
XLNX	12%		
		Total	\$20.2
		FY20	FY21
FB		\$16B	\$22B



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