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# TRIVARIATE RESEARCH

## THE EIGHT RISKIEST TECHNOLOGY STOCKS

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## TIME TO BUY GROWTH STOCKS, BUT BE CAUTIOUS OF RISKS...

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We think that portfolio managers should be buying growth stocks again, focusing on positive free cash flow and margin expansion, not earnings-based valuation. Margin expansion and positive free cash flow were effective at picking winners from losers following prior growth-stock sell-offs and worked at this same phase in the 2009-2010 recovery, both of which are relevant today.

However, several investors have asked us to think about which technology stocks are riskiest today. We offer an analytically rigorous framework for identifying risky technology stocks and offer some stock ideas that screen as high risk on multiple parts of this framework. We left valuation out of the framework, as often fast-growing stocks that are expensive outperform fast-growing stocks that are cheap.

## TEN METRICS WE ARE USING TO ASSESS RISK, AND 8 “RISKY” STOCKS

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The TEN signals we evaluated for all technology stocks include:

1. High correlation to our REOPENING basket
2. Low / negative correlation to our INFLATION basket
3. No ownership from our proprietary universe of 60 hedge fund managers but reasonably high ownership from other funds, i.e. “bad crowding”
4. High insider selling in the open market in last three months
5. Low forecasted 2022 gross margin
6. Low forecasted 2022 margin vs. 2019 actual gross margin – so margin degradation
7. High asymmetric beta
8. High correlation convexity
9. Low company-specific risk
10. Negative forecasted free cash flow

In today’s research note, we show the riskiest ten stocks on each of these screens, and the eight stocks that appear in the bottom ten of all technology stocks on three or more of these screens we conclude have heightened risk

## THE EIGHT RISKIEST TECHNOLOGY STOCKS

Of the ten metrics we used to evaluate technology stocks, the stocks that appear in the bottom ten stocks of all technology stocks with greater than \$5 billion in market capitalization on three or more of the ten metrics are **Apple, NVIDIA, Square, Twilio, Microchip, DXC Technology, Arrow, and Jabil**. Our view is that these are among the riskiest stocks to own today, so investors who own these names should have disproportionate upside to their base cases to compensate them for these risks

Names with 3 or 4 Appearances on Risk Screens  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                           | Industry Group                                 | Market Cap. (US\$ Bil.) |
|--------|-----------------------------------|--|-------------------------|
| AAPL   | Apple Inc.                        | Technology Hardware, Storage & Peripherals     | 2125.17                 |
| NVDA   | NVIDIA Corporation                | Semiconductors & Semiconductor Equipment       | 444.21                  |
| SQ     | Square, Inc.                      | IT Services                                    | 99.88                   |
| TWLO   | Twilio Inc.                       | IT Services                                    | 56.98                   |
| MCHP   | Microchip Technology Incorporated | Semiconductors & Semiconductor Equipment       | 42.15                   |
| DXC    | DXC Technology Company            | IT Services                                    | 10.55                   |
| ARW    | Arrow Electronics, Inc.           | Electronic Equipment, Instruments & Components | 8.92                    |
| JBL    | Jabil Inc.                        | Electronic Equipment, Instruments & Components | 8.61                    |

## NEGATIVE ASYMMETRIC BETAS AND CONVEX CORRELATIONS

On the left chart, we show the technology stocks that have the largest differential between their 252-day correlations to their 100 most similar “peers” during “normal” times, and the average pairwise correlation to those same stocks during market drawdowns of 10% or more. In essence this is the group that is less of a hedge than you think during risk-off times. AAPL and MA were surprising to us as the implication is that will not be particularly defensive in a correction. The right chart shows asymmetric beta – i.e. the stocks with consistently higher betas during market pullbacks than during normal times – the payments companies all have shown this characteristic

**Top 10 Most Convex Correlation**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                     | Industry Group                             | Market Cap.<br>(US\$ Bil.) |
|--------|-----------------------------|--|----------------------------|
| AAPL   | Apple Inc.                  | Technology Hardware, Storage & Peripherals | 2125.17                    |
| MA     | Mastercard Incorporated     | IT Services                                | 362.23                     |
| CRM    | salesforce.com, inc.        | Software                                   | 222.53                     |
| SHOP   | Shopify Inc.                | IT Services                                | 155.17                     |
| SQ     | Square, Inc.                | IT Services                                | 99.88                      |
| FLT    | FLEETCOR Technologies, Inc. | IT Services                                | 22.66                      |
| GDDY   | GoDaddy Inc.                | IT Services                                | 13.89                      |
| DXC    | DXC Technology Company      | IT Services                                | 10.55                      |
| APPN   | Appian Corporation          | Software                                   | 8.01                       |
| PSTG   | Pure Storage, Inc.          | Technology Hardware, Storage & Peripherals | 5.40                       |

**Top 10 Most Asymmetric Beta**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                     | Industry Group                           | Market Cap.<br>(US\$ Bil.) |
|--------|-----------------------------|--|----------------------------|
| NVDA   | NVIDIA Corporation          | Semiconductors & Semiconductor Equipment | 444.21                     |
| PYPL   | PayPal Holdings, Inc.       | IT Services                              | 318.88                     |
| SHOP   | Shopify Inc.                | IT Services                              | 155.17                     |
| SQ     | Square, Inc.                | IT Services                              | 99.88                      |
| TWLO   | Twilio Inc.                 | IT Services                              | 56.98                      |
| OKTA   | Okta, Inc.                  | IT Services                              | 34.63                      |
| COUP   | Coupa Software Incorporated | Software                                 | 17.22                      |
| VRNS   | Varonis Systems, Inc.       | Software                                 | 5.62                       |
| AYX    | Alteryx, Inc.               | Software                                 | 5.52                       |
| CYBR   | CyberArk Software Ltd.      | Software                                 | 5.43                       |

## ANTI-CORRELATION TO INFLATION, CORRELATION TO “REOPENING”

The left chart shows the technology stocks with the most negative correlation to our inflation basket. These are stocks that likely underperform if bond yields back up, or if increasing fear of sharp inflation develops. This includes AAPL, MSFT, and NVDA, among others. On the right chart, we show stocks that have a high correlation to our reopening basket. If there is a pause in reopening, these stocks likely will be the most hurt – many of these are services businesses

**Top 10 Anti-Correlated to Inflation**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                     | Industry Group                             | Market Cap. (US\$ Bil.) |
|--------|-----------------------------|--|-------------------------|
| AAPL   | Apple Inc.                  | Technology Hardware, Storage & Peripherals | 2125.17                 |
| MSFT   | Microsoft Corporation       | Software                                   | 1942.32                 |
| NVDA   | NVIDIA Corporation          | Semiconductors & Semiconductor Equipment   | 444.21                  |
| PYPL   | PayPal Holdings, Inc.       | IT Services                                | 318.88                  |
| ADBE   | Adobe Inc.                  | Software                                   | 259.44                  |
| NOW    | ServiceNow, Inc.            | Software                                   | 98.33                   |
| SNPS   | Synopsys, Inc.              | Software                                   | 40.13                   |
| OKTA   | Okta, Inc.                  | IT Services                                | 34.63                   |
| EPAM   | EPAM Systems, Inc.          | IT Services                                | 28.68                   |
| COUP   | Coupa Software Incorporated | Software                                   | 17.22                   |

**Top 10 Most Correlated to Reopening**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                            | Industry Group                                 | Market Cap. (US\$ Bil.) |
|--------|------------------------------------|--|-------------------------|
| TEL    | TE Connectivity Ltd.               | Electronic Equipment, Instruments & Components | 44.88                   |
| FLT    | FLEETCOR Technologies, Inc.        | IT Services                                    | 22.66                   |
| HPE    | Hewlett Packard Enterprise Company | Technology Hardware, Storage & Peripherals     | 20.75                   |
| DXC    | DXC Technology Company             | IT Services                                    | 10.55                   |
| WEX    | WEX Inc.                           | IT Services                                    | 9.2                     |
| ARW    | Arrow Electronics, Inc.            | Electronic Equipment, Instruments & Components | 8.92                    |
| JBL    | Jabil Inc.                         | Electronic Equipment, Instruments & Components | 8.61                    |
| EEFT   | Euronet Worldwide, Inc.            | IT Services                                    | 8.24                    |
| NCR    | NCR Corporation                    | Technology Hardware, Storage & Peripherals     | 6.23                    |
| ADS    | Alliance Data Systems Corporation  | IT Services                                    | 5.56                    |

## OWNERSHIP AND INSIDER SALES

We analyzed the high conviction (3% or more of a fund's long AUM) ideas of 60 hedge fund we closely follow and compared them to stocks that have lots of high conviction ownership by funds other than 60 we closely follow. Our work shows these names that NONE of our 60 own but lots of other do are subject to "bad crowding", i.e. incremental volatility without commensurate alpha (left table). AAPL, NVDA, AMD, and INTC are among the highlight stocks. On the right side we show the companies with the most insider selling in the open market in the last 63 trading days, including CRM, AVGO, and TWLO, among others

**Top 10 Owned by non-Trivariate Managers  
With No Ownership by Trivariate Managers  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021**

| Ticker | Company                           | Industry Group                                 | Market Cap.<br>(US\$ Bil.) |
|--------|-----------------------------------|--|----------------------------|
| AAPL   | Apple Inc.                        | Technology Hardware, Storage & Peripherals     | 2125.17                    |
| NVDA   | NVIDIA Corporation                | Semiconductors & Semiconductor Equipment       | 444.21                     |
| INTC   | Intel Corporation                 | Semiconductors & Semiconductor Equipment       | 233.6                      |
| AMD    | Advanced Micro Devices, Inc.      | Semiconductors & Semiconductor Equipment       | 98.79                      |
| MCHP   | Microchip Technology Incorporated | Semiconductors & Semiconductor Equipment       | 42.15                      |
| MXIM   | Maxim Integrated Products, Inc.   | Semiconductors & Semiconductor Equipment       | 27.81                      |
| SSNC   | SS&C Technologies Holdings, Inc.  | Software                                       | 18.89                      |
| DT     | Dynatrace, Inc.                   | Software                                       | 15.73                      |
| SMAR   | Smartsheet Inc.                   | Software                                       | 8.12                       |
| COHR   | Coherent, Inc.                    | Electronic Equipment, Instruments & Components | 6.51                       |

**Top 10 Most Open Market Insider Sales in Last 63 Trading Days  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021**

| Ticker | Company                        | Industry Group                                 | Market Cap.<br>(US\$ Bil.) |
|--------|--------------------------------|--|----------------------------|
| CRM    | salesforce.com, inc.           | Software                                       | 222.53                     |
| AVGO   | Broadcom Inc.                  | Semiconductors & Semiconductor Equipment       | 193.11                     |
| AMAT   | Applied Materials, Inc.        | Semiconductors & Semiconductor Equipment       | 125.05                     |
| TWLO   | Twilio Inc.                    | IT Services                                    | 56.98                      |
| GLW    | Corning Incorporated           | Electronic Equipment, Instruments & Components | 36.74                      |
| DDOG   | Datadog, Inc.                  | Software                                       | 29.44                      |
| ZBRA   | Zebra Technologies Corporation | Electronic Equipment, Instruments & Components | 27.21                      |
| MPWR   | Monolithic Power Systems, Inc. | Semiconductors & Semiconductor Equipment       | 15.88                      |
| ARW    | Arrow Electronics, Inc.        | Electronic Equipment, Instruments & Components | 8.92                       |
| MDLA   | Medallia, Inc.                 | Software                                       | 5.25                       |

## LOW MARGINS AND MARGIN CONTRACTION

Our work shows that profitability and margin expansion will be important predictors of return for growth stocks following a correction in growth stocks. The stocks in the left chart are forecasted to have the lowest 2022 gross margins among technology stocks with at least three analyst estimates. The implication of this is that the low margin equipment and component businesses may not be best to own today. The right charts shows those with higher 2019 gross margins than the 2022 forecasts, indicating consensus does not believe these companies will have higher gross margins in 2022 than they achieved in 2019

**Bottom 10 Forecasted Gross Margins**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                 | Industry Group                                 | Market Cap. (US\$ Bil.) |
|--------|-------------------------|--|-------------------------|
| ACN    | Accenture plc           | IT Services                                    | 181.34                  |
| SQ     | Square, Inc.            | IT Services                                    | 99.88                   |
| APH    | Amphenol Corporation    | Electronic Equipment, Instruments & Components | 40.91                   |
| HPQ    | HP Inc.                 | Technology Hardware, Storage & Peripherals     | 36.13                   |
| CDW    | CDW Corporation         | Electronic Equipment, Instruments & Components | 23.65                   |
| DXC    | DXC Technology Company  | IT Services                                    | 10.55                   |
| FLEX   | Flex Ltd.               | Electronic Equipment, Instruments & Components | 9.07                    |
| ARW    | Arrow Electronics, Inc. | Electronic Equipment, Instruments & Components | 8.92                    |
| JBL    | Jabil Inc.              | Electronic Equipment, Instruments & Components | 8.61                    |
| SNX    | SYNNEX Corporation      | Electronic Equipment, Instruments & Components | 6.72                    |

**Bottom 10 2022 Forecast Gross Margin Minus 2019 Gross Margin**  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021

| Ticker | Company                           | Industry Group                                 | Market Cap. (US\$ Bil.) |
|--------|-----------------------------------|--|-------------------------|
| QCOM   | QUALCOMM Incorporated             | Semiconductors & Semiconductor Equipment       | 151.85                  |
| ZM     | Zoom Video Communications, Inc.   | Software                                       | 107.96                  |
| SQ     | Square, Inc.                      | IT Services                                    | 99.88                   |
| MCHP   | Microchip Technology Incorporated | Semiconductors & Semiconductor Equipment       | 42.15                   |
| SPLK   | Splunk Inc.                       | Software                                       | 19.82                   |
| WIX    | Wix.com Ltd.                      | IT Services                                    | 15.85                   |
| CDAY   | Ceridian HCM Holding Inc.         | Software                                       | 13.25                   |
| WEX    | WEX Inc.                          | IT Services                                    | 9.2                     |
| APPS   | Digital Turbine, Inc.             | Software                                       | 6.9                     |
| SNX    | SYNNEX Corporation                | Electronic Equipment, Instruments & Components | 6.72                    |



## “MACRO” STOCKS AND NEGATIVE FREE CASH FLOW YIELD

We have a proprietary seven factor model – equity market beta, two size factors (mega/large vs mid and mid vs. small/micro), style (growth vs. value), substance (quality vs. junk), liquidity, and momentum. We see how much of each stock’s returns we can explain from these macro factors, and what is left over we call “company-specific risk”. The left chart are the “macro” technology stocks – MSFT, ADBE, AVGO, ADSK, MCHP among them. The right chart shows stocks that are forecasted to burn the large amount of free cash flow over the next 12 months – many are software stocks and our work shows this is the wrong time to be buying software with negative FCF

**Bottom 10 Company-Specific Risk  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021**

| Ticker | Company                              | Industry Group                                    | Market Cap.<br>(US\$ Bil.) |
|--------|--------------------------------------|---|----------------------------|
| MSFT   | Microsoft Corporation                | Software  | 1942.32                    |
| ADBE   | Adobe Inc.                           | Software  | 259.44                     |
| AVGO   | Broadcom Inc.                        | Semiconductors &<br>Semiconductor Equipment       | 193.11                     |
| ADSK   | Autodesk, Inc.                       | Software  | 61.06                      |
| MCHP   | Microchip Technology<br>Incorporated | Semiconductors &<br>Semiconductor Equipment       | 42.15                      |
| SNPS   | Synopsys, Inc.                       | Software  | 40.13                      |
| ANSS   | ANSYS, Inc.                          | Software  | 29.32                      |
| ON     | ON Semiconductor Corporation         | Semiconductors &<br>Semiconductor Equipment       | 16.13                      |
| MPWR   | Monolithic Power Systems, Inc.       | Semiconductors &<br>Semiconductor Equipment       | 15.88                      |
| JBL    | Jabil Inc.                           | Electronic Equipment,<br>Instruments & Components | 8.61                       |

**10 Most Negative Forecasted Free Cash Flow  
Tech Names with Market Cap > \$5 bn. And Beta > 1  
June 11, 2021**

| Ticker | Company             | Industry Group                              | Market Cap.<br>(US\$ Bil.) |
|--------|---------------------|---|----------------------------|
| TWLO   | Twilio Inc.         | IT Services                                 | 56.98                      |
| NET    | Cloudflare, Inc.    | Software                                    | 29.20                      |
| U      | Unity Software Inc. | Software                                    | 27.79                      |
| MDB    | MongoDB, Inc.       | IT Services                                 | 20.76                      |
| CREE   | Cree, Inc.          | Semiconductors &<br>Semiconductor Equipment | 11.18                      |
| APPN   | Appian Corporation  | Software                                    | 8.01                       |
| ASAN   | Asana, Inc.         | Software                                    | 7.6                        |
| NTNX   | Nutanix, Inc.       | Software                                    | 7.39                       |
| FSLY   | Fastly, Inc.        | IT Services                                 | 6.29                       |
| MDLA   | Medallia, Inc.      | Software                                    | 5.25                       |

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