Insights
Fundamental Growth and Core Equity

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Chip Shortages: Created by Demand, Geopolitics, Pandemic and Mother Nature

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Any shortage of something implies either too much demand relative to supply or too little supply relative to demand. The current semiconductor chip shortage is a function of very strong and accelerating demand outpacing supply, with the gap exacerbated by successive and unexpected supply shocks. Recognizing this issue will have major implications for the global economy for years to come, we have positioned select investments in our portfolios to leverage both the problem and solution.

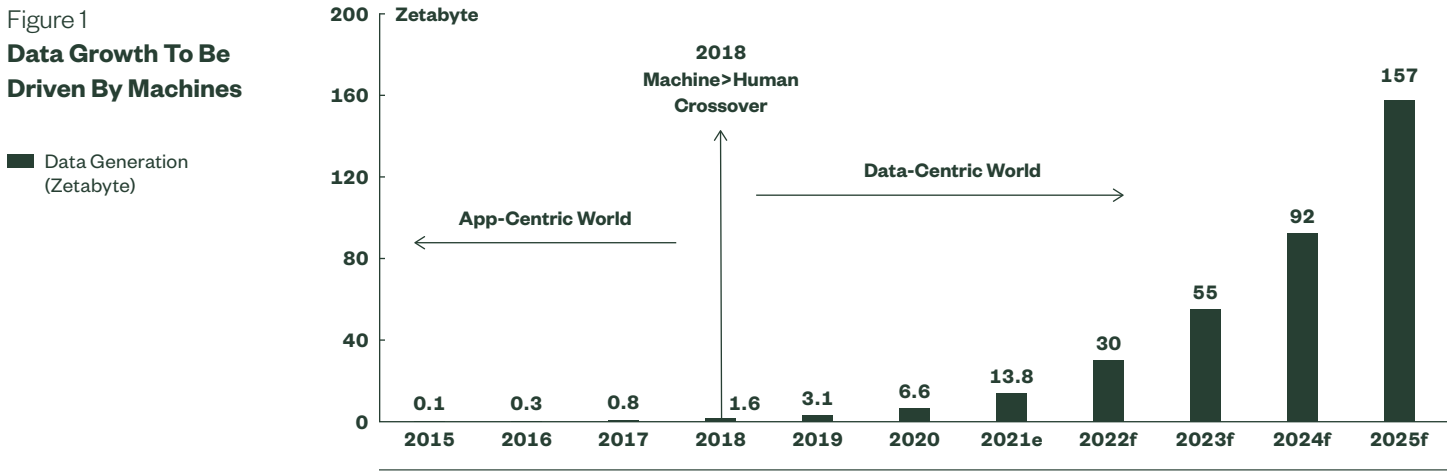
Drivers of Demand

From a demand perspective, there are both longer-term secular and shorter-term cyclical drivers at play in the current environment.

In June 2018, the Fundamental Growth and Core team wrote a paper entitled, "Secular Growth & the New Data Economy", which highlighted key secular growth drivers of the Data Economy, including AI, IoT, 5G, and the Cloud.[1] Since publication, those underlying trends have strengthened and related secular growth has accelerated. At the time, we noted that by 2021, approximately 10% of the useful data created in the world would likely be stored — this is equivalent to about 7.2 Zetabytes (ZB) of data. As can be seen in Figure 1, we now believe 13.8 ZBs of useful data will be stored by the end of 2021, and Applied Materials — one of the leading semiconductor capital equipment companies — sees the bulk of that created by machines in the Industrial Internet of Things (IoT).[2]

Figure 1

Data Growth To Be Driven By Machines

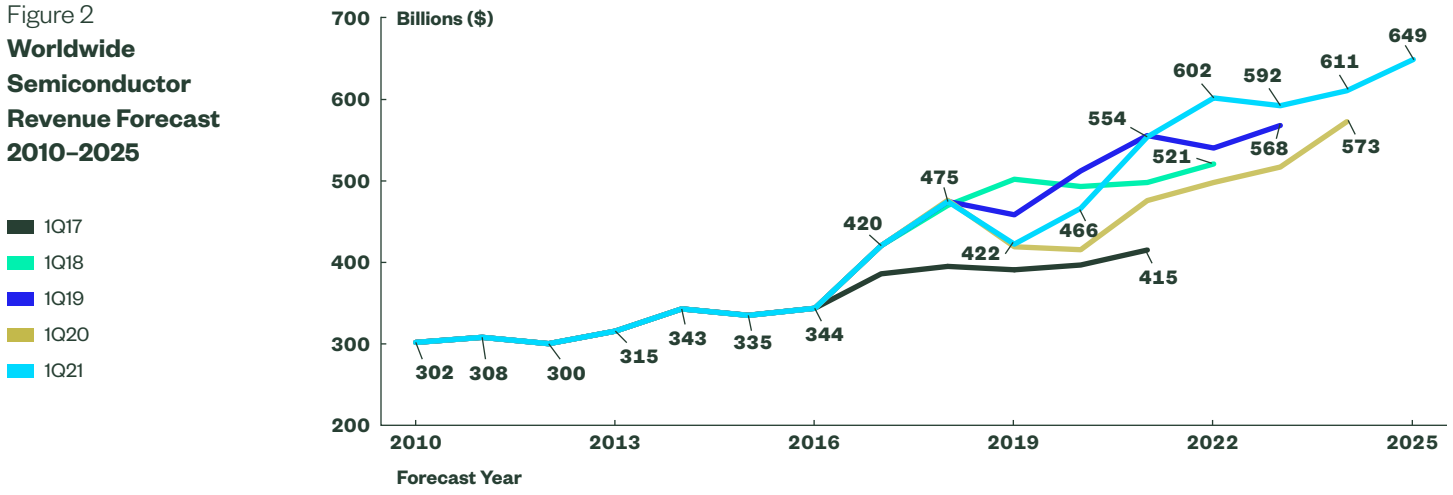


Source: Applied Materials, April 2021.

The primary beneficiary of this massive growth in data is the semiconductor industry. Figure 2 illustrates the dramatic increase in forecasted semiconductor revenues by independent technology consulting firm Gartner, beginning in 2017 through the most recent quarter of 2021. As we highlighted in our 2018 paper, 2017 saw a major inflection point as the semiconductor industry experienced organic growth from entirely new semiconductor use cases, and secular growth from increased semiconductor content. However, the severe semiconductor memory market downturn in 2019 and the overall semiconductor inventory correction resulted in a down year, which was then followed by the 2020 global pandemic shutdown. But with the rapid global economic recovery this year, forecasts for overall worldwide semiconductor revenues have once again risen dramatically, now anticipated to hit $649 billion by 2025, and according to forecasts developed by SEMI, VLSI and Applied Materials, are now expected to grow at a compound annual growth rate of about 7% to as much as $1 trillion by 2030.

Figure 2

Worldwide Semiconductor Revenue Forecast 2010–2025



Source: State Street Global Advisors, Gartner.

Cyclical Drivers

In addition to underlying secular demand, emerging through the V-shaped recovery from the global pandemic-led recession the semiconductor industry is in the early stages of a major cyclical upturn amid strong current and near-term demand. According to IC Insights, a semiconductor market researcher, total semiconductor units are expected to increase 13% in 2021 (compared to growth of just 3% in 2020) to a record 1.13 trillion units.[3]

Overall semiconductor sales, which benefit from both higher semi units and higher semi content, are expected to grow 20% in 2021 and another 8–10% in 2022; core semiconductor (excluding memory) sales are expected to grow 20–25% this year — if supply constraints were not an issue, growth in 2021 would likely to have been about 25%–30%.[4] These chip sales are being supported by strong broad-based end demand.

Cloud and Hyperscale capex continues to be very strong, with growth of up to 27% expected in 2021, with spillover into 2022. Demand from the auto industry will likely see auto unit production accelerate to 12% growth in 2021, followed by another 10% in 2022. Smartphone shipments could accelerate to 8–10% growth in 2021, including a doubling of 5G smartphones to 500 million+ units. PC shipment growth will likely exceed 15–20% in 2021, building on growth of 11–13% in 2020. Moreover, the global economy has yet to experience the acceleration of full "re-opening" end demand, something most likely to be felt in the industrial and auto sectors by the second half of 2021 and into 2022.

The Supply Question

The strength of the cyclical upturn has surprised many, including us. While we may have underestimated the pace of accelerating demand for semiconductors back in 2018, we were confident the growth would be significant and sustainable, based on the tremendous underlying secular trends.

However, in terms of semiconductor supply, we did not anticipate the supply shocks that came in the form of export restrictions arising from heightened US/China trade tensions, nor the severe economic and manufacturing shut-downs resulting from the COVID-19 global pandemic.

Weather-related disruption has also taken a toll on the semi industry with extreme cold weather and record droughts hampering production, while factory fires also contributed to a situation that saw a supply shortage transform into a full-blown global supply crisis. This 'perfect storm' forced major industries, such as the automotive, smartphone and PC industries, to scale back production even in the face of some of the strongest demand in decades.

Supply Shock 1: US/China Trade Tensions

US/China trade tensions have risen significantly in recent times, although they had been brewing for many years — back in 2012, the US designated Chinese national champions Huawei Communications and ZTE Corp. as security threats to major US telecom networks.[5] That same year, China's government agencies ceased using Cisco's products and barred it from future government bids, citing security risks.[6]

Since early 2017, the US and Chinese administrations under former President Donald Trump and President Xi Jinping, respectively, presided over a new era of trade tariffs/export restrictions that contributed to significant semiconductor supply chain disruptions. These disruptions became more acute after official US technology export bans in 2019 to Huawei, the world's largest communications equipment and second-largest smartphone manufacturer. A similar action against Semiconductor Manufacturing International Corporation (SMIC) — China's largest semiconductor foundry and the fifth largest in the world — followed in 2020, while over 40 major Chinese technology companies were designated as military-related entities by the US Department of Defense in 2020 and 2021.

Supply Shock 2: COVID-19

The second major supply shock came after the emergence in China of the COVID-19 virus in January 2021. Efforts to flatten the curve of the rapidly spreading virus saw the successive and near-complete shutdowns of the Chinese and rest of world economies. While China's flattening efforts in January/February had the desired effect, the rest of the world largely failed to contain the virus. As China manufactures 30% of the world's goods and consumes 60% of the world's semiconductor supply, its brief two-month shutdown caused shocks that reverberated around the globe, particularly in global manufacturing and semiconductor supply chains. Additionally, the impact of the shutdowns caused global GDP and end demand to plunge briefly to levels never seen before throughout history.

Out of necessity, the world's largest economies quickly shifted to a Work from Home (WFH), Study from Home (SFH) and Play from Home (PFH) reality. This accelerated a growing digital transformation trend over a few months that otherwise might have taken a decade or longer. At the same time, the world's major pharmaceutical companies (strongly supported by governments) developed promising vaccines, something that normally takes years, in the space of a few months. By the summer of 2020, the global economy had begun a V-shaped recovery, super-charged by unprecedented and universal monetary and fiscal support from reserve banks and governments.

The combination of rising US/China trade tensions and global pandemic shutdowns led to significant supply chain disruptions and inefficiencies that caught the semiconductor industry flat-footed with too lean inventories and too little new semiconductor capacity to meet the combined demand from accelerated digital transformation caused by WFH/SFH/PFH due to the pandemic, a much faster than expected global V-shaped economic recovery, and the accelerating secular trends underlying growth of the Data Economy.

Supply Shock 3: Mother Nature

When it appeared the overall semiconductor industry might manage a second half 2020 recovery in supply, Mother Nature intervened with a series of natural disasters that knocked industry efforts to get back in balance with unprecedented demand. In February 2021, the state of Texas experienced a record blizzard and extreme cold spell that triggered a first-ever triple power outage (electric grid, gas and diesel), shutting down the local plants of several major semiconductor manufacturers, including Samsung (world's largest memory maker), Infineon and NXP Semiconductors (the two largest auto semi suppliers). All three indicated it would likely take until June 2021 to get back to full production. In mid-March, a fire at the main manufacturing facility of Renesas Electronics' Naka plant in Japan shut down production until May/June. These additional supply shutdowns devastated the auto sector, as NXP, Infineon and Renesas represent nearly one-third of the entire supply of automotive semiconductors.

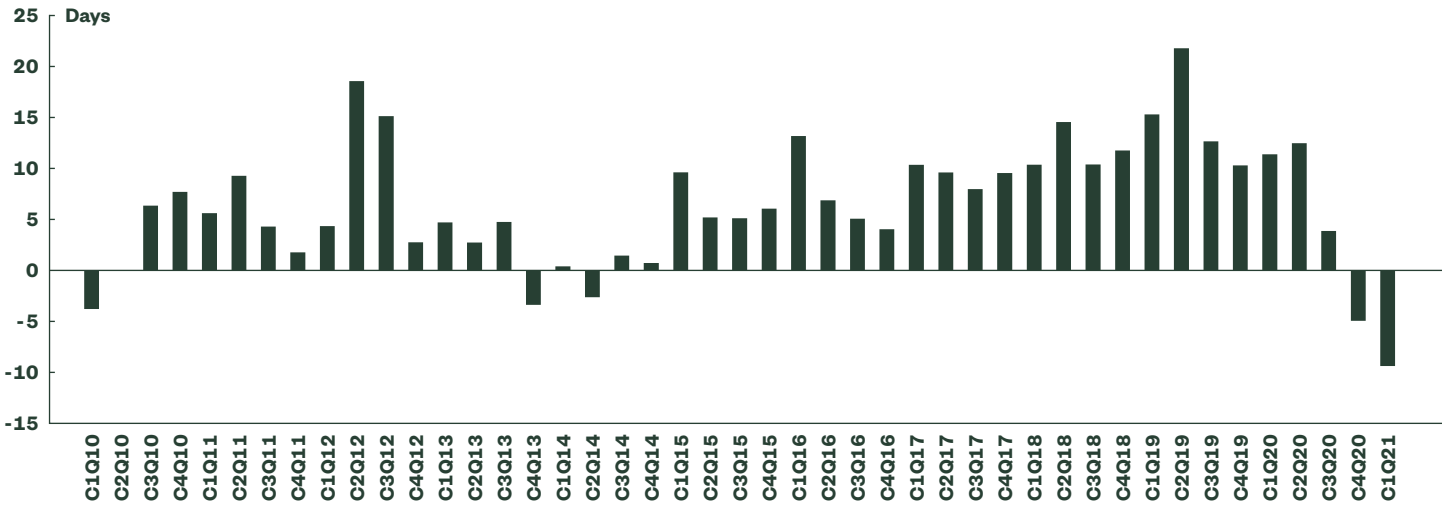
Additionally, TSMC's semi production (representing 70% of the world's foundry capacity) has been threatened by Taiwan's worst drought in 56 years, leaving reservoirs with less than 20% of normal water capacity, and TSMC's primary reservoir only 7% full.[7] Manufacturing semiconductors is a very water-intensive process and TSMC currently uses 156,000 tons of water a day. Fortunately, TSMC has long prepared against such risks and has collaborated with the government and private sector, contracting for additional water supplied by trucks in the near term and building a plant capable of treating industrial water for reuse in the longer term.[8]

Not A Typical Semiconductor Cycle

As 2021 has unfolded and the gap between supply and demand widens, the sustained strength of semiconductor demand had made it very apparent this is not going to be a typical semi cycle. By June 2021, we were in month 11 of the semi upcycle, with the average historical upturn in terms of unit growth being about 19 months; the longest upturn over the prior nine cycles was the 30 month period ending in 2016.[9] We expect the current semi upcycle to be closer to the longest rather than the average. But cycles only end when supply catches demand, which is typically achieved using three levers: 1) depleting and then restoring inventory levels, 2) maximizing utilization of existing capacity, and 3) building new capacity to meet higher expected future demand.

Overall, the semiconductor industry has mainly kept up with strong end-demand by depleting inventory during the latter half of 2020 and the first half of 2021 while hoping that rising utilization and capacity increases can replenish stockpiles in the second half of 2021 and into 2022. An analysis of semi industry inventories in the final quarter of 2020 indicated surging demand drove a 9% sequential decline in inventory days (vs a 1% typical seasonal decline) and, as seen in Figure 3, first quarter 2021 inventory days were nine days below the five-year median, the largest differential since 2013/14.[10]

Figure 3
Semiconductor Inventory Days Relative to 5-Year Median



Source: BofA Global Research, FactSet, as of 31 March 2021.

Closing the Demand/ Supply Gap

The combination of very strong demand meeting multiple supply shocks has resulted in a broad-based chip shortage, impacting auto, home appliance, heavy equipment and server manufacturers around the globe. Understandably, this has prompted renewed focus on the shortfall of existing semi manufacturing capacity. However, the lead time to build significant new semiconductor wafer capacity typically takes 12–18 months and the cost to build a new state-of-the art semiconductor manufacturing plant, or fab, has risen substantially over the past decade.

Given long lead times, the largest manufacturers have responded quickly in order to provide new supply as soon as possible:

- TSMC raised its capex plans by 76% from $17 billion in 2020 to $30 billion in 2021 and $100 billion over the next three years, implying an average of an additional 10% more each year to over $33 billion in both 2022 and 2023.
- Samsung, the world's second-largest foundry announced its intention to increase its foundry R&D and capex spending by 30% to $151 billion and will also make a yet-to-be determined increase in memory R&D and capex spending by 2030.
- SK Hynix, the second-largest memory manufacturer, said it plans to spend $203 billion for existing fab expansions plus four new fabs by 2030.
- Intel, the largest integrated manufacturer of logic chips, increased its capex plans roughly 35% from $14.5 billion in 2020 to $19-$20 billion in 2021, and committed to spending an incremental $20 billion for two new leading edge fabs in Arizona, an additional $3.5 billion to expand in New Mexico and another $10 billion for a new fab in Israel over the next several years.

Governments Seek to Ensure Supply

These severe chip shortages have made the critical and highly strategic nature of local semiconductor manufacturing starkly apparent. Governments of the world's largest economies are working with the leading manufacturers highlighted above on plans to build incremental and more geographically-diverse capacity and incremental buffer inventory to protect against supply chain risks, whether geopolitical or pandemic-related.

Although China accounts for nearly one-third of global semiconductor demand it produces only 10% of semiconductor foundry supply. The government has increased support for the semiconductor industry over the last two years via traditional methods, such as subsidies, and through novel mechanisms designed to introduce market forces into the industry and attract domestic and foreign investment into this critical sector. In August 2020, Beijing unveiled new measures to promote the domestic industry, including significant tax relief for companies engaged in semiconductor manufacturing, design, or design-related software.[11]

Semiconductors are an important component for 12% of US GDP, and a recent Goldman Sachs report estimates 169 US industries are directly affected, as diverse as boat building, breweries and fabric mills. Acknowledging this, President Biden, who recently met with more than a dozen chief executives from semiconductor and affected companies, pledged $50 billion for semiconductor manufacturing and research as a key component in his proposed $2.25 trillion infrastructure plan; and highlighting the bi-partisan support for the semiconductor industry, the US Senate overwhelmingly passed an expansive bill to invest almost $250 billion in bolstering US manufacturing and technology, including $52 billion in emergency outlays to help domestic manufacturers of semiconductors expand production.

Similarly, the European Union (EU) has announced plans to invest €30 billion to double its market share in semi manufacturing to 20% by 2030. And finally, South Korea announced plans to support investment of up to $450 billion over the next decade by nearly 150 South Korean semi and semi-related companies led by Samsung and SK Hynix. Referring to semiconductors as "strategic weapons", the government said support will include tax breaks, lower interest rates, eased regulations and reinforced power supplies.[12]

Managing the Near-Term Shortage

The chip shortage is not going away any time soon given the significant drawdown of inventory and lack of excess semi manufacturing capacity. The industry will remain capacity constrained and in short supply, with some severe shortage situations causing production shutdowns (e.g. auto industry) and product delays (e.g. certain smartphones and low-end PCs) over the near term.

Living off existing inventory has helped meet strong end demand, but levels are quickly falling and distribution channels are very lean, in some instances 25%–35% depleted. The semiconductor and semiconductor capital equipment industries are doing what they can to boost the utilization of existing semiconductor manufacturing capacity by upgrading existing semi manufacturing tools where they can, and by pulling forward software upgrades to squeeze out any remaining possible capacity otherwise.

The convergence of unprecedented demand, geopolitical tensions, a global pandemic and mother nature's wrath has placed the semiconductor industry between the proverbial rock and a hard place. For some of the most affected industries, such as PCs and servers, Cisco CEO Chuck Robbins sees the chip shortage lasting at least another six months. For the automotive industry, manufacturers are talking about building 12 months of buffer inventory versus the normal three-month supply, but currently capacity is so short that no amount of inventory can be built. Under pressure from the auto industry and governments of major auto manufacturing countries, TSMC announced it expects to "catch up" to the minimum requirement of its auto semi customers by the end of June. However, the extended auto supply chain typically requires an additional 7–8 months to manufacture and deliver new cars into the channel.

Despite all efforts to close the demand/supply gap, it appears as if the entire semi industry supply shortage will last at least until the second half of 2021, will take until mid-2022 or later to achieve new targeted higher buffer inventories, and several years or more to build sufficient additional semiconductor manufacturing capacity to satisfy not only increased demand, but also redundant capacity to secure supply chains and for national security purposes.

Leveraging the Chip Shortage in our Portfolios

While it is important to identify beneficiaries of major secular and cyclical growth trends like those in the semiconductor and semiconductor capital equipment industry and to leverage unique circumstances such as the current chip shortage, for stocks to make it into our concentrated portfolios, we employ a fairly rigorous screening process to identify high quality companies with sustainable growth at a reasonable price. We focus on sustained growth as it results in compounded value over time.

One of the ways we identify companies with sustainable growth is through our unique proprietary Confidence Quotient (CQ) process, which includes (among others) Market Position and Fundamental Momentum sub-scores. Our experience has shown many companies with both high Market Position and Fundamental Momentum sub-scores tend to exhibit sustainable growth profiles, which we are currently seeing in some of our select semiconductor and semiconductor capital equipment stock investments. In particular, we view the semiconductor capital equipment sector as particularly attractive right now given the unquestioned winners in any major global supply shortage are always the equipment providers that enable additional capacity.

Endnotes

1 "Secular Growth & the New Data Economy — Investment Implications". Investing in Sustainable Growth, Fundamental Growth and Core Equity, June 2018.

2 Applied Materials 2021 Investor Meeting presentation, slide 9, April 6, 2021.

3 "Semiconductor Units Forecast To Exceed 1 Trillion Devices Again in 2021", IC Insights, April 7, 2021.

4 "Chip crunch reality: solid '21E, stronger '22E, compelling Semicaps", BofA Securities, May 4, 2021, p.2.

5 Investigative Report on the U.S. National Security Issues Posed by Chinese Telecommunications Companies Huawei and ZTE, U.S. House of Representatives 112th Congress, October 8, 2012.

6 "Investors Shouldn't Worry About Cisco's Blacklist Risks in China", The Motley Fool September 23, 2020.

7 "Why the world should pay attention to Taiwan's drought" April 20, 2021. https://bbc.com/news/world-asia-56798308.

8 "TSMC tackles Taiwan drought with plant to reuse water for chips", Nikkei Asia, April 22, 2021.

9 Data Deposition, C1Q Semiconductor Earnings — "June Y/Y Peak Likely to Impact Stocks but Is a Red Herring", Credit Suisse, April 18, 2021, p. 3.

10 "Inventory update: tight supplies, broad demand could extend cycle into 2022" and "Q1 Inventory update: Tight supplies, strong demand visibility", BofA Securities, Vivek Arya, March 10, 2021 and May 24, 2021.

11 State Council (China), "Several Policies Concerning the Promotion of the High Quality Development of the Integrated Circuit Industry and Software Industry in the New Era," August 4, 2020.

12 "European Semiconductors: Korean silicon sovereignty = $450bn capex plan", BofA, May 13, 2021.

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