

## **Weekly Commentary 19 – May 2023**

### *The Chip Wars, Part 2*

The news of continuing breakthroughs in the Chinese semi-conductor sector have been coming in non-stop all of last week. There have been a flood of reports emanating from Chinese sources (you cannot find even one instance of these developments in western media) that shone light on how China is beginning to overcome the sanctions that have been imposed on it by the Americans.

Such reports carry a sense of Chinese relief that their country has been able to prevail against the high barriers set up by the Biden White House to box the Chinese semi-conductor technology sector in. They were also visibly proud of the achievements that seem to have been made. These are two very powerful emotions, and both on nationalistic fervour. But hey, can you blame them for being vocal when they actually want to shout, “Beat it...we can also do it ourselves!” There’s a lot of that which can be detected, brazenly and defiantly expressed, in the various reports that flooded the internet over the last few days.

And given that mainstream western media cannot have missed the flood of reports on the chip breakthroughs by domestic Chinese companies, the conspicuous silence across the board is equally indicative of some soul-searching on the west’s inability to deal with a rising China. Where’s the sportsmanship? Somebody could have said, well done!

Frankly, not being a technologist myself, I cannot fully express how real or how important are these Chinese breakthroughs. But the reports come from groups I have followed for some time, and they have invariably made correct assessments in the past. So I take their word for it that the most recent breakthroughs have been significant.

I am more concerned about the economics and financial market implications of these technological developments. My conclusion is that even if we allow for some hype and bombast from Chinese media, there is definitely forward progress being made to effectively counter the American sanctions. And that says a lot for the China-US economic competition for pole position in the global economy.

My sense of what has happened is as follows:

- 1) China has long overtaken the collective west in manufacturing, but all modern electronic devices have chips embedded in them. On the strategy that the US is still ahead of China in chip technology, the Biden White House thought it can block China's economic progress if America controls the supply of chips to all of global manufacturing, including that in China.
- 2) The manifestation of China's dependence on chips was the huge amount of imports totalling hundreds of billions per year spent by the country on bringing chips into Chinese industry. China imported US\$350 billion of chips just in 2020, which was a 14.6% increase from the previous year. As such, it seems to be a reasonable strategy to impose strict controls on the companies that have been exporting chips to China. It is obviously thought that when the supply is cut off, Chinese industry will collapse, or at least severely hindered. This strategy by the Biden Administration is almost an act of war, and is intended kill off China's challenge to American economic and simultaneously technological hegemony. It was definitely maligned.
- 3) Some would say the strategy is obvious. And that is why we have the Biden Administration go forward so forcefully with the strategy last August when they went ahead with the Chips Act. I mean, it was so stringent that Americans found helping Chinese employers with chip manufacturing would be stripped of their citizenship. I don't suppose there was any American lawmaker or White House planner who did not applaud the action, thinking that it will lead to an outcome in which China will no longer pose a threat to the US, both economically or militarily.
- 4) What they did not expect was the Chinese reaction. Or the speed of it. By October, the CCP, at its 20<sup>th</sup> Conference, came up with the response that China will devote resources to developing its own domestic value chains in the semi-conductor industry. And by May, just a mere six months after the American launch of the Chips Act, the Chinese were able to announce that they have built their own lithography machine, (vital for mass production of chips) when the most important player in the world of that product, ASML, once ridiculed China as being unable to make that machine even if ASML gave them the plans. That was a bit of hubris crushed...
- 5) And as reported in my Daily Report yesterday, China is rapidly reducing its imports of chips and expanding its exports of China made semi-conductors. This is a strong indication that domestic Chinese chips are becoming viable.

Here is an editorial from China Daily regarding their view of the Chip Wars:

### **Washington's desperate bid for hi-tech hegemony to incur loss of the world: China**

Daily editorial

chinadaily.com.cn | Updated: 2023-03-23

*To further squeeze the space for the development of China's technology sector, the United States has proposed rules to prevent the country and other foreign nations of concern from taking advantage of a \$52 billion federal government fund under the US Chips and Science Act aimed at boosting the domestic manufacture of semiconductor chips in the US.*

*The US Commerce Department said on Tuesday that grant recipients will be prohibited from investing or expanding semiconductor business in countries such as China, and they are not allowed to engage in joint research or share technology related to semiconductors with these nations. The world's major memory-chip makers such as Samsung Electronics and SK Hynix, as well as Taiwan Semiconductor Manufacturing Corp, which have production facilities on the Chinese mainland, are all expected to be subjected to the restrictions.*

*The latest US move is part of Washington's strategy to constrain the development of China's technology sector, all for the purpose of maintaining the US' high-tech hegemony.*

*Apart from cracking down on Chinese telecommunications giant Huawei and other high-tech companies globally, the US has in recent years basically banned all exports to China of advanced chips, the equipment to make them, and even foreign-made chips that used US technology during the production process in the name of safeguarding national security. Just months ago, the US persuaded Japan and the Netherlands to join its restrictions on the export of chip-manufacturing technology to Chinese companies.*

*The sweeping technological blockade that the US has imposed on China, which violates trade rules, has disrupted global industry and supply chains, given that **China remains the world's largest semiconductor market that accounts for more than 30 percent of global chips sales.** The ongoing efforts of Washington to shift processor chips production from Asia to the US is also expected to double the cost of chips, as TSMC founder Morris Chang estimated, which will undoubtedly harm the semiconductor industry's ecosystem. "When the cost goes up, the pervasiveness of chips will either stop or slow down considerably," he said.*

*Yet **US efforts to strangle China's high-tech sector will only strengthen the country's resolve to hasten the building of its own semiconductor industry in pursuit of chip self-sufficiency.** China is already able to mass-produce 14-nanometer chips, which can basically meet the country's demands from new energy vehicles, smart cities and the internet of things, and it is accelerating its efforts to make breakthroughs in more advanced manufacturing processes. **It is expected that its chip self-sufficiency rate will reach 70 percent by 2025. History will prove the US' tech war to be both futile and a grave misjudgment.***

Knowing the Chinese, they don't say things like in the above editorial unless they have some foreknowledge of the strong probability of technological breakthroughs. Given the time span in which things have happened, it seems clear that China Daily, a mouthpiece of the government, already know of imminent breakthroughs.

By last week, the middle of May, the Chinese internet was agog with news of the country's development of a lithography machine, and I have reported on that in my last weekly commentary. Throughout the week, more news emerged to confirm the early publicity on the breakthrough.

There should be no doubt about what is happening. But that is not the point of this week's commentary. The thing that is truly surprising is how the planners of the Chips War on the US side did not think through what the effect of starving China of chips will have on

American companies who supply them. They have effectively shot themselves in the foot, exactly like they did with the sanctions on Russia in response to the Ukraine war. Those sanctions on Russia, mostly about cutting off Russian energy supplies to the world and intended to isolate them and deprive them of export earnings to continue the war, only had the effect of plunging all of Europe into an energy crisis, lifting the core inflation rate throughout the world and causing dissension among EU members seeking a common position to handle Russia. Russia has been driven into a close alliance with China, not something the west would want. Most importantly, it warned all countries in the Global South about the deleterious effects of becoming a target in American foreign policy and swung 87% of humanity on the planet to essentially side with Russia. More ominously for the US, it has also solidified the formation of an economic bloc, BRICS, that could counter the G7 comprised of the collective west, and also a de-dollarization movement that will eventually hurt the US' dominant position in the global financial system. The blunders on the Russia sanctions have propelled a multipolar world forward, damaging the empire that the sanctions were supposed to preserve; and the Chip sanctions on China are about to do the same.

As it is turning out, and similarly with the Russian sanctions, the immediate losers in this Chip War are not Chinese but American companies, including the once mighty Intel. Intel has fallen into a deep hole, caused in no small part by the restriction of the US government on it to stop selling to China hence limiting the market in which it can seek profits. Not selling to China is one thing; asking Intel to forego 40 percent of its revenues is another. But that is exactly what has happened.

Here is a Wall Street Journal report on the situation at Intel:

### **Intel Faces a Long Climb Back from the Bottom**

*Downtrodden stock jumps on better-than-feared results, but lots of work lies ahead*

By [Dan Gallagher](#)

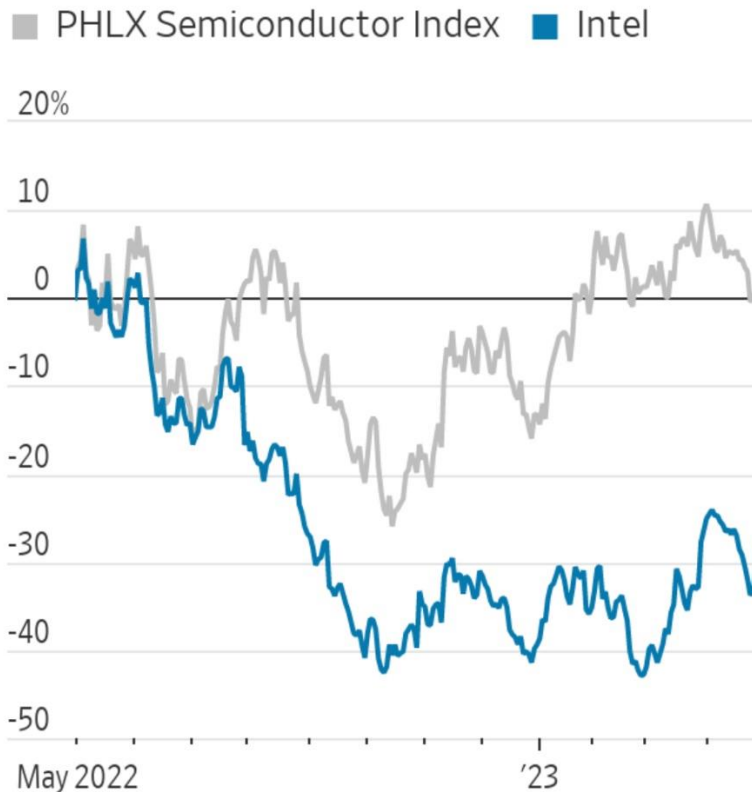
April 28, 2023 11:59 am ET

*Intel INTC 0.31% increase; green up pointing triangle hitting rock bottom isn't a pretty sight, but it is still a welcome one.*

*The chip maker's first-quarter results late Thursday took the "better than feared" concept to a new level. Revenue plunged 36% year over year—the company's worst quarterly drop since at least the early '90s, which is as far back as data from S&P Global Market Intelligence goes. Its operating loss of nearly \$1.5 billion was also a record over that time frame. In another first, Intel actually lost money in its data-center segment—a business that generated operating margins of 50% in the same quarter just three years prior.*

## Chipped Off

Share-price and index performance



Source: FactSet

*Chipped Off* Share-price and index performance Source: FactSet

May 2022 '23 -50 -40 -30 -20 -10 0 10 20% PHLX Semiconductor Index Intel

Still, those results were better than Wall Street had anticipated, and overall revenue was even a bit better than Intel's brutal forecast three months ago. Thus, Intel's stock price jumped nearly 5% Friday morning. It was overdue for some upside. Intel's market value has been decimated over the past two years as the company has embarked on an expensive and risky turnaround plan to regain its manufacturing edge and build up a new business making chips designed by others, called a foundry. Before Thursday's results, *Intel's stock price had shed one-third of its value over the previous 12 months—the worst performance of any tech company* with a market value exceeding \$100 billion, according to FactSet.

To be sure, Intel still has a deep hole to climb out of. To get its manufacturing process caught up with market leader Taiwan Semiconductor Manufacturing, or TSMC, Intel is pursuing a plan to advance through five so-called manufacturing nodes in four years. The company's latest node, which it calls Intel 4, is on track to start volume production in the second half of this year, and is Intel's first using the extreme ultraviolet, or EUV, lithography technology vital for producing the most advanced semiconductors. Pierre Ferragu of New Street Research calls this "a major milestone" that will improve Intel's competitiveness.

*But Intel 4 is still based on 7-nanometer technology, while TSMC is already shipping more advanced 5-nanometer chips at high volume. The chip giant even previewed its 3-nanometer technology earlier this week, at a trade show less than 2 miles from Intel's Silicon Valley headquarters.*

*Intel's deep roots in advanced chip making make such a gambit plausible—if a long shot. But the company can't afford more stumbles on that path. And it has to fund that effort while also coping with a sharp downturn in demand for both PC and data-center processors, which combined account for more than 80% of its revenue. PCs at least may start getting a little better. Intel Chief Executive Pat Gelsinger said on Thursday's analyst call that the bloated inventory in the PC market that has depressed chip sales there "is tracking to be at a healthy level by the end of Q2."*

*Intel has ruled the market for central processing units since the 1980s. But rival AMD overtook Intel in market value last year, thanks in part to an expensive bet on chip design. WSJ's Asa Fitch explains the companies' battle for the brains of your computer.*

*The data-center business may remain a tough market for Intel this year. Cloud giants like Microsoft, Amazon and Google are now focusing their capital spending on building up generative artificial-intelligence capabilities, which require more of the graphics processors made by Nvidia rather than the CPU processors that Intel specializes in. And even success in its rapid catch-up effort may create new challenges; Ed Snyder of Charter Equity noted that "releasing five nodes in four years will probably be too fast for customers to absorb the new products anywhere close to the rate of past upgrades." For Intel at least, that would finally be a high-quality problem to have.*

The kind words WSJ has for the company cannot mask the deep problems the company faces. Intel is not the only American company suffering from the decline in the semiconductor market and the restrictions to access the market in China. Qualcomm is another one.

## **Qualcomm Sees No Immediate Smartphone Demand Recovery**

*Mobile-phone chip maker is diversifying into new areas as its core market slows*

By [Asa Fitch](#)

Updated May 3, 2023 6:38 pm ET

*Mobile-phone chip maker Qualcomm QCOM -0.42% decrease; red down pointing triangle gave a gloomy sales outlook as it signaled the market for smartphones was more turbulent than expected.*

*Qualcomm, which sells communication and data-processing chips crucial in phones from Apple and Samsung, has been whipsawed in recent quarters by flagging handset sales even as it sees growth in newer markets for its chips, including the automotive industry.*

*"The evolving macroeconomic backdrop has resulted in further demand deterioration, particularly in handsets, at a magnitude greater than we previously forecasted," Chief Executive Cristiano Amon said on an earnings call Wednesday.*

*The company reported sales of \$9.28 billion in its fiscal second quarter, down 17% compared with a year before. Profits tumbled 42% to \$1.7 billion in the period. Revenue came in ahead of Wall Street expectations, according to a survey of analysts by FactSet, but the profit figure fell short.*



*The company also gave a tepid outlook for its current quarter, projecting between \$8.1 billion and \$8.9 billion of revenue, short of analyst estimates of around \$9.1 billion.*

*Qualcomm said weaker demand for handsets globally were weighing on the outlook, as well as problems in the wider economy and other issues.*

*Mr. Amon also said that although the smartphone market in China is widely expected to rebound later this year, **Qualcomm has seen no signs of that recovery. Qualcomm sells chips to leading Chinese handset makers.***

*Global handset shipments this year are likely to fall between 5% to 10%, Qualcomm signaled, worse than initially projected. “Until demand normalizes and visibility improves, we anticipate that customers will remain cautious with purchases,” Qualcomm Chief Financial Officer Akash Palkhiwala said on the call.*

*The company is cutting operating expenses by 5% this fiscal year, Mr. Palkhiwala said, and could make more cuts as market conditions evolve. He also warned that some of the problems weighing on sales this quarter could last into the next one, too. The company’s shares fell more than 4% in after-hours trading.*

*The muted outlook also reflected a larger-than-expected decline in revenues due to the timing of purchases by a customer that only buys cellular modems from Qualcomm, the company said. Apple fits that description, though Qualcomm didn’t name the customer. The iPhone maker reports quarterly results Thursday.*

*International Data Corp. last week said smartphone shipments in the first quarter fell year-over-year for the seventh straight period and were down about 14.6% globally. Demand should recover by the end of the year, IDC said.*

*Many chip makers have been hurt by a swing in the market that began last year as consumers held back on purchases of computers, smartphones and other electronics after buying them like hot cakes at the outset of the pandemic. Intel, the U.S.’s largest chip maker by revenue, last week reported its worst-ever loss in its fiscal first quarter, although it pointed to signs that its key PC market was recovering.*

*Qualcomm’s disappointing numbers came a day after Advanced Micro Devices spooked investors with its outlook, too, showing the turmoil in the chip sector is broad-based. AMD shares slumped more than 9% on Wednesday.*

The situation is so bad that both Intel and Qualcomm have announced plans to make new, even better quality but cheaper chips dedicated to the Chinese market. This will contradict the government ban on such sales. It is at the same time an acknowledgement that the two companies want to build bridges to their customers in China and will even ignore Washington’s instructions to break off the commercial relationships with China. A third company, NVIDIA, is also doing the same. The reason? Survival is more important than politics or heeding the words of an incompetent government.

Even non-American companies have been affected by the White House orders to stop selling to China. There is firstly, the Taiwanese company, TSMC, which was on a roll, until it got embroiled in geopolitics.

## **TSMC's Tough Quarter Complicates Its U.S. Chip Ambitions**

*Company's outlook is reminder that the chip slump will last for a while*

*By Jacky Wong*

*The latest results from the world's largest contract chip manufacturer confirm the grim outlook facing the semiconductor industry. Taiwan Semiconductor Manufacturing Co.'s TSM 0.00% increase; green up pointing triangle weak earnings could also make already difficult negotiations with Uncle Sam over big chip sector investments in the U.S. even more fraught.*

*The scramble for chips has turned into a glut at an inconvenient time. TSMC is an industry bellwether that supplies Apple and Nvidia, and is negotiating with Washington for a hefty chunk of the chip manufacturing subsidies recently authorized by Congress. Its revenue in dollar terms for the three months ended in March fell 5% from a year earlier, figures released Thursday showed, or a 16% decline quarter over quarter.*

*One key sticking point for TSMC's planned investments in Arizona is a requirement that it would share any excess profits—i.e. returns above projections—with the government if it takes federal money. Such a requirement makes subsidies easier to sell politically but may be galling for companies to swallow in a down cycle, particularly given the very hefty capital expenditures needed up front to build cutting-edge chip plants.*

*TSMC expects its capital expenditure this year will decline to between \$32 billion and \$36 billion, unchanged from its guidance at the beginning of 2023. Its capex last year was \$36.3 billion. The extent of the pullback will ultimately depend on how long the downturn lasts.*

*And TSMC expects sales to remain sluggish this quarter. At the midpoint of its guidance, revenue in dollar terms will drop around 7% from last quarter while margins will also shrink. TSMC forecasts revenue will fall by a low-to mid-single digit percentage year over year for the whole of 2023.*

*While TSMC's earnings still managed to beat analysts' expectations on S&P Global Market Intelligence, its gloomy outlook is a reminder that the chip industry's hangover will be more than a one morning affair.*

*Semiconductor companies are still digesting massive inventories. By the end of 2022, companies in the semiconductor supply chain needed 132 days to turn over their inventory, compared with a historical average of around 85 days, according to Morgan Stanley.*

*Meanwhile, consumer demand for gadgets is still looking soft. Global smartphone shipments fell 12% year on year in the first quarter of 2023, according to research firm Canalys. PC sales dropped 29% from a year earlier, according to International Data Corp. Demand from cloud computing is also slowing.*

*The reopening of China has helped. But it isn't enough to save the day. Revenue from China accounted for 15% of TSMC's total in the latest quarter, compared with 12% the quarter before.*

*TSMC makes many of the world's most advanced chips and trades at a relatively cheap 15 times forward earnings, against almost 27 times for the Philadelphia Semiconductor Index. But the stock must also contend with geopolitical overhangs: Its operations are primarily in Taiwan, directly atop one of the world's strategic hot spots, and it has to contend with pressure from Washington, too.*



*TSMC's formidable technology and market position are undeniable but it is operating in an increasingly geopolitically fraught industry in a dangerous neighborhood. Those headwinds don't seem likely to abate soon.*

And then, there is Samsung, which suffered a 96% decline in profits in Q1. In English, that means it is making zero profits.

### **Samsung forecasts a shocking 96 percent drop in profits for Q1 2023**

***Memory inventories are piling up, so Samsung is cutting production.***  
**RON AMADEO - 4/8/2023, 3:19 AM**

*Samsung's next quarter is shaping up to be even worse than Samsung's last quarter, which was already at an eight-year low. **The company warned investors today that it's a shocking 95.8 percent year-over-year drop in operating profit for Q1 2023. If that expectation holds, this will be the company's worst quarter since 2009, which dates back to the company's pre-smartphone era.***

*Samsung doesn't have much explanation for the drop other than a weakening economy and lowered demand for chips. Preliminary results have the company making only 600 billion won (\$450 million) in profit for Q1 2023, compared to 14.12 trillion won in profit (\$10.7 billion) for Q1 2022.*

*While phones and TVs are probably Samsung's biggest consumer-facing products, **the company's nigh-invisible component business makes up most of Samsung's profits.** Components like RAM and NAND storage chips don't just ship in Samsung products, but also land in most other phones, laptops, desktops, TVs, and other electronics from Samsung's competitors. A DigiTimes breakdown of Samsung's business for 2022 has the memory division at 55 percent of profits, mobile at 22 percent, and displays at 11 percent, **so Samsung's profits mostly go up and down with the memory business.***

*Lowered chip demand has Samsung's inventory piling up, with Bloomberg and other financial outlets reporting that Samsung will cut chip production while it sorts through its piles of unsold chips. Other memory vendors like Micron and Hynix are suffering, too, and they have already cut production.*

*Samsung's full earning report will be out later this month.*

The simple conclusion in the above financial news on the key players is that the planners in the White House did not see this coming. Hurting China was the declared plan, but instead, everybody who was forced to abide by the plan, from American giants like Intel and Qualcomm, to the companies caught in the middle, including Samsung, TSMC and other companies selling to China and having to obey the White House' orders not to, have instead been hurt, and are suffering from the fact that nobody can afford not to sell to China when they provide up to 40% of their orders.

How did these "planners" overlook this important dimension of the global semiconductor market? Perhaps they were living in the past, derisive of China's capabilities, and considering them to be copy cat imitators which lack innovative products of their own. The high value of their imports of chips

could also have misled them, thinking that cutting off those imports would crush Chinese chip makers. They did not understand that the market was not for a single product, but that instead, the market was highly segmented. There are high end chips in which companies like TSMC excelled in, where they controlled 90 percent of that segment of the market. But that segment is relatively small; 95% of the overall market comprise low end and mid level chips, which was controlled by China, both in terms of demand and in China's own ability to make them. And most of the downstream products, such as cars, low end phones, laptops and other things that China makes do not need the highest end chips.

China can in fact control the bulk of the semi-conductor market, by shifting its own demand to domestic companies, bypassing all those who are in the war on the US side. Yes, the Chinese companies can no longer access the highest end chips but those are not critical for the time being. These Chinese chip companies are enjoying a bonanza in sales and are flush with cash to do R&D and to make investments. On the flip side, the disappearance of the Chinese market caused huge inventories of unsold product to build up at the US firms, leading to their slashing prices massively and taking a big hit in their bottom lines. They are now also retrenching heavily, losing talent that will be gone forever. They are being starved of profits and R&D/expansion funds. And that is a disaster caused, in no small part, by the Chips Act.

Well, it seems like China is not so passive in this war after all. It has found ways to deal with the US sanctions. For example, while it may not have access to TSMC chips, better still, it has access to their talent pool. Word is that China has hired nearly 3000 Taiwanese engineers to work for its companies in Shanghai and elsewhere. And this will obviously continue. TSMC has sent 300 of its Taiwanese staff to its new Arizona plant; but if the above statistic is correct, then China has acquired ten times more talent from Taiwan than the US got. Not just rank and file engineers, but also the top executives who can help organize production lines for high end products at places like SMIC, the largest chip maker in China. For these engineers, it is probably more attractive to relocate to Shanghai where they will have cultural affinity than they get in Arizona, especially since, I suspect, they would all be paid better than in the US. Lousy pay in China? Nah...not for chip (cheap?) talent since Chinese companies' earnings are not being crushed, unlike their American counterparts, which as noted above are retrenching.

And the large pool of Chinese talent that stayed in America after graduate studies there and which helped power the semiconductor industry in earlier years are now being attracted in a reverse brain drain back to China. Some of these individuals going back are very prominent names in the business. This loss to the US is a huge gain to China.

It is also said that the measures which the White House has taken to attract (actually force) companies to be based in the US are more like those one would expect from a dictatorship than the champion of the free will and free markets. TSMC was made to set up a plant in Arizona to manufacture 3nm chips and by 2026, a second plant to make 2nm chips. The Chairman of TSMC, Morris Chang, had said that the US plants would not be competitive, given the high cost structure in the US. But the deal was sweetened by the Biden team promising lots of subsidies to TSMC, obviously to lower their cost and offset the huge capital expense. The condition for the subsidy was for TSMC to surrender confidential data to the US government.

Up till now, TSMC has not received a single penny from the Biden government which now wants TSMC to share profits with it, once it exceeds the numbers achieved in their business plan. This is apparently for the White House to justify the subsidy to the electorate. Needless to say, TSMC is having second thoughts. Until all these things fall in place, the TSMC investment in Arizona is likely to be a money loser.

The story on TSMC above is not just about TSMC. In fact, it illustrates why the entire semiconductor industry, which grew out of truly creative efforts by the early players like Intel in America, was relocated outside the country. It is because costs in the US are too high and labor is non-efficient for the cost incurred. The best parts of the entire industry are now based in East Asia – Taiwan, Japan, S Korea and China – for a reason. Given that this cost structure is unlikely to be changed any time soon, it is highly improbable that America is going to win this chips war with China because basic economics are at play. Biden's team is not clever enough to unravel the economics of the chip market, but deluded themselves to think they would be successful simply by using counter-free market sanctions to prevent the transfer of technology. They did not figure that China can develop its own technology. The amount of STEM talent China has is ten times that available to the US, all domestically cultivated at home.

It is the space technology race being repeated all over again.

Now, with China's ability to make its own lithography machines, that gap in technological abilities will soon be bridged. It is foreseeable. Three years, maybe five years from now, China will be at the forefront of chip technology as well as masters of the mass market chips. Complete dominance.

If I am right, the last week's events have blunted and neutered Biden's chip war on China. When China inevitably gears up technologically, the economics that it has in its favour will enable it to assert its dominance in this highly important technological sector. Watch it happening in real time...

*By:*

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*Fintech Entrepreneur, Money Manager and Blogger*

*Un-Influencer in a World full of Hubris*