

Weekly Commentary 18 – May 2023

The semiconductor race – are the Chinese being left behind?

This week's commentary will be short, as I am very busy paying out dividends to shareholders as well as the fact that I had two very good friends visiting from the US over the weekend. But my analysis this week will be simple. The chip wars seems to have an early outcome.

Over the last week, there were multiple announcements and media coverage (not from mainstream media in the west of course) of China's break through in EUV technology.

First the background.

Bloomberg reported on 20 April 2023 that Yellen Says China Security Worries Eclipse Economy Interests:

“Treasury Secretary Janet Yellen said the Biden administration was prepared to accept economic costs as it sought to protect US national security interests from threats posed by China, even as she appealed to Beijing to cooperate on shared global concerns.

“National security is of paramount importance in our relationship with China,” Yellen said in a speech Thursday in Washington. “We will not compromise on these concerns, even when they force trade-offs with our economic interests.”

The remarks, set against a backdrop of deteriorating relationships with Beijing, outline three priorities in dealing with Beijing, outline three priorities in dealing with China. The administration will defend its national security interests and express concerns over China's behavior; seek healthy and fair economic competition; and aim to engage on issues like climate change and debt relief in the developing world.

Adam Posen, president of the Peterson Institute for International Economics, said Yellen's comments on national security and economic costs, if they truly capture the Biden administration's stance, were the most important passage in the speech.

“A US strategy that recognizes China’s right to modernise and acknowledges that there are economic costs in the pursuit of worthy national security goals is a reality-based, sustainable starting point for a strategy that is neither a crusade nor a fantasy,” said Posen – who on Saturday hosted China’s central bank chief for an event in Washington.

China Reaction

Another China watcher, Jeremy Mark, a senior fellow in the Atlantic Council, said Beijing’s reaction to the national security points will set the tone for US-China economic ties.

“It will be interesting to see how China responds to Secretary Yellen’s very clear assertion of the paramount importance of the US national security interests,” he said. “It’s not a new position, but it will resonate in Beijing because of who is saying it this time.”

Yellen repeated that she planned to travel to China “at the appropriate time.” Such a visit has been in the works for months, but has been complicated by the escalation in tensions earlier this year over China’s alleged spy balloon.

“My hope is to engage in an important and substantive dialogue on economic issues with my new Chinese government counterpart following the political transition in Beijing,” she said, referring to a recent government reshuffle under President Xi Jinping.

Championing US

Mark said he believed it’s up to China to decide whether the trip will take place. “The ball is in Beijing’s court.”

The Treasury chief set a defiant tone in some of her remarks, contesting predictions that China would eclipse the US as the world’s largest economic power and lead to a “clash between nations.”

“Pronouncements of US decline have been around for decades, but they have always been proven wrong,” she said in the address at Johns Hopkins University’s School of Advanced International Studies in Washington. “The United States has repeatedly demonstrated its ability to adapt and reinvent to face new challenges. This time will be no different.”

She also spoke about US grievances over China's "expanded support for its state-owned enterprises and domestic private firms to dominate foreign competitors" and its alleged theft of intellectual property.

No Containment

She tempered that by declaring the Biden administration wasn't motivated in its actions by a desire to hold back China's development. And she said the US wasn't seeking any full-blown "decoupling" with China's economy, something that would be "disastrous for both countries" and "destabilizing for the rest of the world."

"These national security actions are not designed for us to gain a competitive economic advantage, or stifle China's economic and technological modernization," she said.

Posen was skeptical such reassurances would be believed in Beijing, but said they were more important for US allies and countries in the developing world to hear.

By Christopher Condon and Viktoria Dendrinou

And here is a report on the China response just one day after the Yellen speech:

Voice of America

April 21 2023

Yinan Wang

WASHINGTON - China on Friday did not reciprocate U.S. Treasury Secretary Janet Yellen's appeal for the world's two biggest economies to resume official communications. In a speech detailing the Biden administration's economic priorities on China a day earlier, Yellen said the U.S. seeks constructive and fair economic ties with China without compromising its national security.

Chinese Foreign Ministry spokesperson Wang Wenbin responded by [accusing the U.S.](#) of now using technology and trade issues between the two economies as a tool and weapon "in the name of national security."

"The U.S. has been building 'small yards with high fences' and pushing for decoupling and fragmenting industrial and supply chains," Wang said at a daily briefing Friday. "The true intention

of the U.S. is to take away the right to development from China and maintain U.S. supremacy for its selfish interests.”

In recent years Washington has focused on increasing controls over technology trade with China, arguing that some advanced technology such as 5G, artificial intelligence, and quantum computing with substantial military applications should only be purchased from allied nations. Even more ordinary technology like the popular TikTok app is under scrutiny because of suspicions China’s government uses it for surveillance or other purposes.

Gary Hufbauer, a senior fellow at the Peterson Institute for International Economics, said Beijing’s unenthusiastic reaction to Yellen’s statement is not a surprise.

“From the Chinese standpoint, they see the U.S. definition of national security as quite expansive and they don’t quite know what it will cover,” he told VOA Mandarin. “Their concern is that a lot of the national security measures do, in fact, limit their technology and limit their prospects for growth.”

David Dollar, an economist at the Brookings Institution, told VOA that China will be cautious in responding positively to the U.S. “as there are still a lot of hostile voices in the U.S.,” but “it is likely that sometime soon high-level dialogue between the two countries will resume.”

Earlier this month, senior officials from the Department of Commerce [traveled to Beijing and Shanghai](#) to lay the groundwork for a potential trip by Commerce Secretary Gina Raimondo later this year.

A call to resume dialogue

U.S.-China relations entered a downward spiral in recent years, with each side increasingly seeing the other as its top strategic and economic threat. President Joe Biden met with Chinese President Xi Jinping last November in an effort to stabilize the relationship, but any progress was sidelined in February when the U.S. shot down an alleged Chinese spy balloon over American territory. The incident led to the cancellation of Secretary of State Antony Blinken’s trip to China, and delayed Yellen’s planned visit to Beijing.

In her Thursday speech at Johns Hopkins University’s School of Advanced International Studies in Washington, Yellen said that the U.S. does not seek to “decouple our economy from China’s.”

“A full separation of our economies would be disastrous for both countries. It would be destabilizing for the rest of the world. Rather, we know that the health of the Chinese and U.S. economies is closely linked. A growing China that plays by the rules can be beneficial for the United States,” [she said](#).

She added that she plans to travel to China “at the appropriate time.”

The Brookings Institution’s Dollar said Yellen’s softer tone shows the administration’s willingness to resume dialogue with Beijing on global issues.

“The U.S. wants to reestablish dialogue on economic issues, especially global concerns such as climate change, developing country debt problems, and macroeconomic policy coordination,” he told VOA Mandarin.

Hufbauer with PIIE described Yellen's speech as having "a friendly tone without much substance."

"It basically amounts to an invitation to China to talk with her," he told VOA.

Edward Alden, a senior fellow specializing in U.S. economic competitiveness at the Council on Foreign Relations, told VOA that the speech was also geared toward U.S. policymakers.

"I think this speech was an effort to reconcile the two contradictory elements at the heart of the current U.S. policy towards China, which sees China as a security rival but potentially as an economic partner or a worst competitor," he told VOA.

Some have criticized Yellen's soft tone with China. U.S. Senator Tom Cotton, a Republican, described Yellen's wish to resume conversation with China as "out of touch with reality."

"There can be no 'healthy relationship' with communists who want America to fail," he tweeted.

It is obvious to every financial analyst that Yellen is trying to get to Beijing to stop China from selling more US Treasuries from its reserves. To put things in context, China (and Japan) have both been selling these bonds, due to the rise in the US interest rates, and in the case of China, the attitude seems to be, if you keep bashing us, why should we help you finance your debt with our hard-earned savings. There may not even be the thought that "we can sabotage your debt problem with our sales", but at least, why should there will be some in China who will think, why bother to help the Americans when all they do is badmouth China, and never live up to any conciliatory talk and promises of goodwill made by Biden and his team. And Tom Cotton, quoted above by VOA, is not a rare instance of animosity.

Of course, the sales of treasuries by China will not make a material difference to the budgetary problems that Yellen faces going into the debt crisis by the end of this month. By commercial criteria, the entity for which she handles the finances will go bankrupt in three weeks. China cannot help her avoid that. The US treasury market is about \$24 trillion, and China used to hold more than 1 trillion of these. After one year of selling portions of these bonds every month, that holding is now reduced to about \$860 billion. Yes, it is just 3.5% of the total market in US treasuries, but when no one else is buying and there is the holder of 3.5% selling, it will be a disaster. Clearly, Yellen sees the leverage China has on any ideas she might have on how to solve the problem on massive debt problem she faces. If she is to be an effective Treasury Secretary, it is very obvious she has to build bridges to China, the 3.5% shareholder. For those in the State Department or Congress who don't understand this, it would be easy to conclude that they don't have much brains when they continue to bash China.

Unfortunately, while she seems to be the one most willing to reach out to the Chinese with an olive branch, her boss and her team mates are not educated in economics and finance, and

continue to be ideological. So her initiatives are unlikely to be reciprocated, as least for now. She is unlikely to make a trip to China before 1 June. Or anytime soon...

Getting back to the central message in her speech, she has to say that she too supports the technological face-off with China. The costs, however, won't be small, even if she imagines them to be. The Biden White House thinks that the Chips Act will be able to hold back China's technological progress. Well, they thought the same when they prevented China from participating in space projects, but now, China is way ahead in that department.

Will this be repeated in the semiconductor industry?

Here is a look at news emerging from China after Yellen's speech:

(translated by machine and lightly edited by me)

EUV lithography machine announced a breakthrough, Chinese Academy of Sciences fulfilled its promise, ASML did not expect it to be so fast

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Chip manufacturing has always been the biggest shortcoming of the domestic semiconductor industry, and most of the chips we use, about 50% are purchased from the United States at high prices. According to statistics, from 2019 to 2020, the total value of chips imported exceeded \$300 billion, accounting for about 40% of the global semiconductor consumer market. This far exceeds oil imports!

However, the Americans, who have made a lot of money from the Chinese market, would not tolerate the rise of domestic high-tech companies such as Huawei. While industrial channels have enabled Huawei to have top-notch chip design skills, but the sanctions have limited progress.

The reason why we are trapped in the chip ban is largely due to the lack of EUV lithography equipment. However, ASML, a Dutch company that is the only producer of EUV equipment in the world, is restricted by "export control" due to the American technology accessories embedded in its production, so that it has never been able to sell the equipment to us.

After Huawei was cut off, Ren Zhengfei (CEO) visited the Chinese Academy of Sciences and appealed for help. The two sides reached a clear consensus: The key to breaking the stranglehold on domestic chips is the EUV lithography machine.

In order to realize the rise of "China Core Technologies", the Chinese Academy of Sciences took the initiative to take over the task and established a special EUV core technology research team, which is bound to complete the breakthrough in the shortest time.

Unexpectedly, when ASML learned that we were going to develop EUV on our own, they would say: Even if they give the Chinese the drawings (plans), they will not be able to make them. In response engineering academician Wu Hanming said: EUV is the crystallization of global wisdom, it is very unrealistic for us to research and develop on our own.

However, in the face of America's technological suppression, we who are "stucked" have no room to "fall behind" at all. More importantly, the development of EUV is not only to clear the obstacles on the road to the localization of chips, but also to safeguard the dignity of the nation!

Therefore, any doubts and ridicules cannot obliterate the determination of Chinese scientists to break through the EUV monopoly.

Sure enough, the good news came soon. Huazhuo Precision Technology took the lead and independently developed a dual-stage system, one of the core technologies of EUV, and became the second company in the world to master this technology after ASML.

Witnessing China's R&D progress in the field of lithography, ASML, which once poured cold water, also immediately changed its tune. Not only did it extend olive branches to the Chinese market five times, it even began to avoid American sanctions, saying: If the United States continues sanctions, China will be alone within 15 years.

However, ASML obviously still underestimated the perseverance and strength of Chinese scientists, and never expected breakthroughs to happen so fast. In just one year, China's EUV lithography machine is about to be launched.

In addition to the dual work stage system, EUV equipment has two core technologies, namely the light source and the optical lens.

In terms of light sources, the scientific research team led by Professor Tang Chuanxiang of Tsinghua University successfully explored a new type of particle accelerator light source "steady-state micro-bunching" in February this year. Ultraviolet light is the working light source of EUV. What's more commendable is that China's independent light source technology is not only suitable for EUV, but also has a wider range of application scenarios.

Only less than 6 months later, CCTV reported great news related to optical lenses.

The first domestic high-energy radiation light source equipment independently developed by the Chinese Academy of Sciences has officially completed installation and commissioning.

At the same time, the linear Lloyd lens coating device and nano-focusing lens coating device developed by Zhongke Kemei have also been put into use.

These two devices combined with high-radiation light source equipment can almost meet the physical lens technology of all process requirements, including Zeiss lenses.

This means that the three core technologies of EUV lithography machines have all been broken, and the Chinese Academy of Sciences has also fulfilled its promise.

Although EUV claims to have more than 100,000 precision parts, but can this be more numerous than aircraft carriers? China has built aircraft carriers, so EUV cannot be more difficult than that. This is not a big problem for the huge Chinese manufacturing capabilities which exists.

Looking back over the past seventy years, under the blockade of the West, China's scientific and technological development road has been very bumpy, but it has never stopped. One by one, the first achievements were made. One super project has won the world, and scientific breakthroughs have benefited mankind. "Turning in circles, competing with hundreds of rivers" is the most appropriate description of China's science and technology sector. A small EUV lithography machine is no big deal!

There was also an announcement last week in the Chinese media that the Harbin Institute of Technology has also made key breakthroughs in EUV technology. It is estimated that such domestically manufactured machines will be available in one or two years. If that should be the case, then the Chinese chip industry will not fall behind by much. Most industries are still using chips above 28 nm, and when the sub 14 nm technologies become mainstream, the Chinese chip manufacturers will catch the wave in good time.

Perhaps we can regard all the above as Chinese media hype, but there were many sources of these reports. So we shall wait and see if it is all hubris or whether there is another Tiangong effort that will leave previous tech leaders in the dust. It will be interesting for all of us to see.

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Un-Influencer in a World full of Hubris