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Re: Interim Final Rule – Implementation of Additional Export Controls: Certain Advanced Computing and Semiconductor Manufacturing Items; Supercomputer and Semiconductor End; Entity List Modification (October 7, 2022) (RIN 0694-AI94)

Onto Innovation is the 4th largest U.S. semiconductor equipment manufacturer and a global leader in process control. The company makes a breadth of products that include metrology tools, inspection tools, lithography tools, wafer tools, as well as software solutions for semiconductor manufacturing. We proudly manufacture approximately 95% of our equipment by revenue in the United States and directly spend about 67% of our supply chain costs on U.S. based suppliers.

Onto Innovation is an export driven company, deriving only 16% of its revenue from domestic sales.[1] While we sell products that are predominately not export controlled, we have nonetheless, been negatively impacted by the export controls, which restricted our selling of all our products to entity listed companies over the past few years. Our non-U.S. based competitors have not been impacted by these previous export controls and have gained market share in China at our expense. The October 7th regulations will exacerbate this trend.

Foreign Availability – Restricting Our Sales Does Not Stop China From Accessing the Technology

For a few years now, our China sales have been impacted by export control entity listings that limit our ability to easily sell products to certain companies, while our foreign competitors have no such restrictions. Our foreign competitors can provide equipment to the Chinese companies in place of our equipment. Our main competitors are in Israel, but we also have competitors in Japan, South Korea, Taiwan, and China.

As such, the export controls, even more so with the October 7th regulations, are not having the intended policy goal of restricting Chinese access to technology because they can buy similar products from Onto Innovation's foreign competitors. Rather, the October 7th regulations are hurting the growth of an American company. We have detailed the losses to foreign competitors and the foreign availability to the Commerce Department and we can update those details confidentially again (the estimated impacts of the October 7th regulations are discussed in the last section). We also showed the Commerce Department the rapid growth of domestic Chinese equipment companies that are stepping in to fill the void left by American companies that cannot sell to Chinese semiconductor companies, which is further exacerbated by the October 7th regulations. As such, the export control regulations are hurting American companies, while strengthening China and our foreign competitors.

Commerce should lessen the impact of the October 7th regulations on American companies where there is foreign availability of the equipment. Commerce can effectuate this by permitting licenses where foreign availability can be shown because the regulations won't have the intended effect if the technology can be readily purchased from others. Otherwise, it just hurts American jobs.

[1] Onto Innovation 10K SEC Filing. Available at https://investors.ontoinnovation.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=15602726 Accessed 12/5/2022.

Multilateral Export Controls are the Only Way to Impact China's Access to Technology

The October 7th regulations are a unilateral approach, consistent with previous approaches to export controls. Such unilateral controls have not had the same impact of improving National Security as a multilateral approach would yield. This is because the technology is readily available from foreign countries who did not enact similar export controls. Unilateral export controls will have little effect as long as the Chinese companies can buy the equipment from non-U.S. suppliers. A blanket rule is not as effective, when there is foreign availability so we propose that either: 1) the rules be enacted by foreign allied countries including Israel, or 2) by permitting U.S. equipment sales by license where foreign availability can be proved.

Furthermore, due to the export control regulations, including the October 7th regulations, our customers in China are moving to our competitors at our allied countries or new Chinese companies that are entering the market and growing very rapidly. We have seen the U.S. unilateral policy encouraging indigenous growth in China to meet the demand of the Chinese customers. Even now, three months after the October 7th regulations went into effect, it does not appear that any allied countries have adopted our new export controls. In fact, the Dutch have decided that they will not follow the U.S. export controls one-by-one, but will make up their own decision[2]. Without a multilateral approach, the U.S. equipment manufacturers are unilaterally being hurt as are American jobs.

NAND Memory – What is National Security Concern of a Commodity Product Easily Obtained on Open Market?

NAND memory is a commodity product that is used in toys, phones, USB flash drives, and computer storage. Furthermore, there is ample availability of such memory from multiple global vendors. Due to this foreign availability, Chinese companies can easily purchase the latest NAND memory regardless of the restrictions on Chinese memory manufacturers. The October 7th policy that limits equipment sales to NAND memory providers will not have any impact on National Security, but will cause harm to U.S. equipment manufacturers, loss of American jobs, and loss of American companies' global competitiveness.

There does not appear to be a National Security basis for excluding equipment sales to NAND memory fabricating facilities in China because it is so widely available on the commercial market. Unilaterally targeting Chinese NAND manufacturers who make a commercially available commodity product that is already behind the leading memory manufacturers will not have the intended effect of improving National Security. This regulation will harm American companies and American jobs while boosting the market share gain of our allies where the majority of NAND memory is manufactured.

Economics – How can we compete by giving up market share?

Over the last few years, export controls have been used to constrain the ability of American semiconductor equipment companies to sell into China. As a U.S. manufacturer that abides by the regulations, our sales have suffered because we are restricted from selling by U.S. export controls. Furthermore, Chinese companies consider American companies less reliable and choose to buy from non-U.S. competitors. We detailed the lost business in a prior report to the Commerce Department, but would be happy to update and submit confidentially.

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[2] Cagan Koc and Debby Wu. "Dutch Minister Says US Can't Dictate Approach to China Exports." Bloomberg. https://www.bloomberg.com/news/articles/2022-11-18/dutch-minister-says-us-can-t-dictate-approach-to-china-exports?leadSource=uverify%20wall Accessed 12/5/2022.

The October 7th regulations are expected to cost us approximately $10M in sales in Q4 2022 and approximately $80M in 2023.[3] This is significant when viewed in light of our 2021 annual revenue of $789M, and our 2021 annual China revenue was approximately $149M.[4] China as a percentage of revenue has decreased from 26% of revenue in 2019 to 19% of revenue in 2021.[5] This shows how much prior export control restrictions have impacted our market share. The October 7th regulations will have further ramifications based on the estimated approximately $80M impact and our 2021 China revenue of $149M. These regulations have the unintended effect of unfairly restricting us from the second largest semiconductor equipment market in the world.[6]

Meanwhile, our competitor Nova (NVMI) who largely develops and manufactures outside the US, remains unaffected by U.S. export controls and has utilized this fact to their advantage. NVMI has steadily grown their China revenue from 18% of revenue in 2019 to 21% of revenue in 2021.[7] In fact, in their earnings calls Nova explains how little impact the U.S.-China trade war has had on them: "Regarding the political issue with the trade war, as I said before, the – Nova is an Israeli company. So therefore, we are – continue to ship regularly to China."[8] and on the October 7th regulations "As we continue to evaluate the impact of such restrictions on our U.S.-based activity and global export conditions, our initial assessment is that the direct impact on Nova's overall business plan for 2023 is marginal …."[9]

For another foreign competitor, Camtek, the impact is even less:

> "But at this point, when we discuss with customer in China, it looks like business as usual and utilization is okay. And the PO [ph] everything look like normal. So, I believe it's still too early to understand if this restriction, it'll affect the whole industry or specific area we don't know yet. But as I said, for at this point it looked like business as usual.[10]

The unilateral policy is not having any meaningful impact on Nova and Camtek, who reside in Isreal, represent our primary competitors in our major market segments, and provide significant the foreign availability to China. The U.S. government should be pressing all of our allies to join multilateral export control restrictions on China if we really want to stop China from accessing the technology that we sell. The October 7th regulations are going to impact us, while our competitors keep shipping similar technology to China so China still accesses the technology.

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[3] Onto Innovation Q3 2022 Earnings Call Transcript. Seeking Alpha. https://seekingalpha.com/article/4550199-onto-innovation-inc-onto-q3-2022-earnings-call-transcript Accessed 12/5/2022.

[4] Onto Innovation 10K SEC Filing. Available at https://investors.ontoinnovation.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=15602726 Accessed 12/5/2022.

[5] Ibid.

[6] "Global Total Semiconductor Equipment Sales on Track to Record $118 Billion in 2022, Semi Reports." Semi. Available at: https://www.semi.org/en/news-media-press-releases/semi-press-releases/global-total-semiconductor-equipment-sales-on-track-to-record-%24118-billion-in-2022-semi-reports Accessed on 12/5/2022

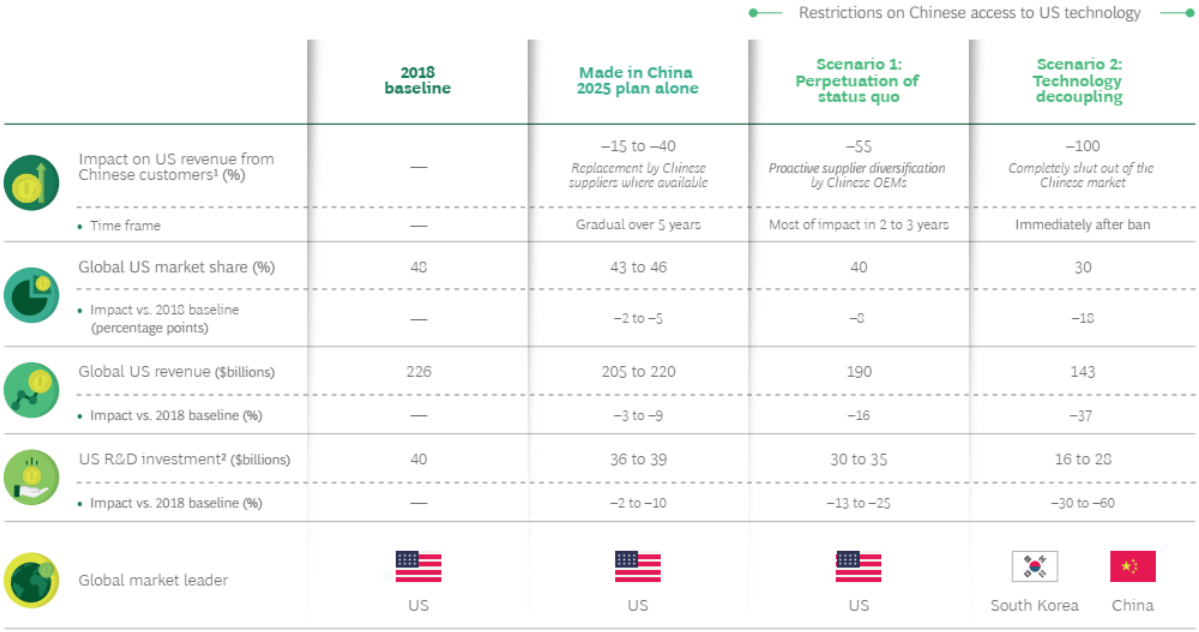
[7] Nova 20-F SEC Filing. Available at: https://www.sec.gov/ix?doc=/Archives/edgar/data/1109345/000117891322000869/zk2227355.htm Accessed on 12/5/2022

[8] Nova Q2 2022 Earnings Call Transcript. Available at: https://seekingalpha.com/article/4530985-nova-ltd-nvmi-ceo-eitan-oppenhaim-on-q2-2022-results-earnings-call-transcript Accessed on 12/5/2022

[9] Nova Q3 2022 Earnings Call Transcript. Available at: https://seekingalpha.com/article/4553697-nova-ltd-nvmi-q3-2022-earnings-call-transcript Accessed on 12/5/2022.

[10] Camtek Q32022 Earnings Call Transcript. Available at: https://seekingalpha.com/article/4558789-camtek-ltd-camt-q3-2022-earnings-call-transcript Accessed on 12/5/2022.

The chart below is two years old, but shows how such unilateral measures will cost the U.S. leadership in the equipment manufacturing space and severely impact the revenue available for R&D. Unless we get cash infusions from the government to make up for our lost revenue, we will lose our advantage, while China grows stronger from sourcing the equipment from the rest of the world. Furthermore, with the CHIPS for America Act, there could be a preference given to applicants that commit to buying American equipment for their fab when available. This would help offset some of the China losses.



	2018 baseline	Made in China 2025 plan alone	Scenario 1: Perpetuation of status quo	Scenario 2: Technology decoupling
Impact on US revenue from Chinese customers[1] (%)	—	–15 to –40 *Replacement by Chinese suppliers where available*	–55 *Proactive supplier diversification by Chinese OEMs*	–100 *Completely shut out of the Chinese market*
• Time frame	—	Gradual over 5 years	Most of impact in 2 to 3 years	Immediately after ban
Global US market share (%)	48	43 to 46	40	30
• Impact vs. 2018 baseline (percentage points)	—	–2 to –5	–8	–18
Global US revenue ($billions)	226	205 to 220	190	143
• Impact vs. 2018 baseline (%)	—	–3 to –9	–16	–37
US R&D investment[2] ($billions)	40	36 to 39	30 to 35	16 to 28
• Impact vs. 2018 baseline (%)	—	–2 to –10	–13 to –25	–30 to –60
Global market leader	US	US	US	South Korea, China

Source: BCG analysis, using market data from Gartner and company reports.

[11] Antonio Varas and Raj Varadarajan "How Restrictions to Trade with China Could End US Leadership in Semiconductors." BCG Report. March 2020 available at https://web-assets.bcg.com/img-src/BCG-How-Restricting-Trade-with-China-Could-End-US-Semiconductor-Mar-2020_tcm9-240526.pdf Accessed on 12/5/2022