招银国际 CMB INTERNATIONAL
招商银行全资附属机构 A Wholly Owned Subsidiary Of China Merchants Bank

China Technology

OUTPERFORM (Maintain)

Implications of the US's updated chip restrictions to global/domestic SPE and GPU companies

The US Department of Commerce announced a new set of restrictions on 17 Oct (link) that strengthens 1) export controls on advanced chips with new "parameters" and expansion to 40 more countries, 2) export controls of chip manufacturing equipment to 21 more countries, and 3) addition of 13 Chinese entities onto the US Entity List. We believe new rules are largely in-line with expectations and news media on 3 Oct (link). Overall, this is an update to US restrictions released in Oct 2022 (our note), which we believe aims to limit the access to advanced chips/tools, in line with new Dutch and Japanese rules (our note), and close loopholes in export restrictions on tailored-made AI chips (e.g. A800, H800). In our view, the US's recent export controls and CHIPS Act will accelerate the localization of semi equipment/foundries in China given supply chain security concerns and geopolitical tensions. Despite recent macro weakness and short-term cyclical downturn, we believe semi localization remains the structural growth driver in the long run.

- **What are the new rules? 1) "Parameter" changes for advanced chips:** the existing parameter "interconnect bandwidth" for advanced chips is replaced by a new parameter "performance density threshold" to prevent workarounds like chiplets technology**. 2) Expansion of advanced chip/tool export controls to 40/21 more countries:** this rule aims to restrict chip exports to firms with parentco headquartered in China**. 3) 13 Chinese firms added to the US Entity List:** the list includes two GPU companies, Biren Tech and Moore Threads, which aims to restrict the development of domestic AI chips, on top of access limits to Nvidia/AMD AI chips.
- **Diverse impacts on global/domestic GPU companies.** While Nvidia/ AMD/Intel's advanced chip exports to China will be impacted in the near term, the updated rules do not restrict access to US or allied cloud computing services through IaaS in the meantime. For domestic names, two Chinese GPU companies (Biren Tech/壁仞科技, Moore Threads/摩尔线程) are added onto the Entity List, and their major products are general-purpose GPUs designed for servers in the China market. We believe this restriction will impact their production plan and customer base expansion overseas. We expect they will move from overseas foundries (TSMC/Samsung) to domestic advanced process foundries (SMIC) for foundry services, similar to Cambricon/寒武纪 and Loongson/龙芯.
- **Limited impact on global SPE; positive to domestic SPE/foundry.** ASML stated the new rules would apply to "a limited number of fabs in China" involved in advanced chips manufacturing, and did not expect a material impact on its financial outlook for 2023 and for longer-term scenarios. For domestic names, we expect Naura and AMEC to continue to benefit from accelerated SPE localization and domestic IDM/foundry expansion.

Valuation Table

Name	Ticker	Mkt Cap (US$ mn)	Price (LC)	P/E (x) FY23E	P/E (x) FY24E	P/B (x) FY23E	ROE FY23E
SMIC	981 HK	30,361	20.55	21.7	21.4	1.0	4.7
Hua Hong Semi	1347 HK	5,922	19.68	12.4	13.9	0.8	7.1
Naura	002371 CH	17,867	246.67	36.7	28.2	5.7	15.9
AMEC	688012 CH	14,044	166.20	63.9	55.7	6.0	9.7
Cambricon	688256 CH	6,575	115.47	-	-	9.9	(14.0)

Source: Company data, CMBIGM estimates

China Technology Sector

Alex NG
(852) 3900 0881
alexng@cmbi.com.hk

Claudia LIU
claudialiu@cmbi.com.hk

Hanqing LI
lihanqing@cmbi.com.hk

Related Reports:

1. Implications of Dutch additional export control - 3 Jul 2023 (link)
2. Implications of US's new chip export restrictions to China - 10 Oct 2022 (link)
3. U.S. may broaden AI chips export restrictions - 14 Sep 2022 (link)

Figure 1: US BIS to strengthen restrictions on advanced computing semiconductors, semiconductor manufacturing equipment, and supercomputing items to countries of concern

FOR IMMEDIATE RELEASE
October 17, 2023
https://bis.doc.gov

BUREAU OF INDUSTRY AND SECURITY
Office of Congressional and Public Affairs
Media Contact: OCPA@bis.doc.gov

Commerce Strengthens Restrictions on Advanced Computing Semiconductors, Semiconductor Manufacturing Equipment, and Supercomputing Items to Countries of Concern

Updates to Modify and Reinforce Restrictions Initially Released on October 7, 2022, to Address National Security Concerns Posed by PRC Military Modernization

Washington, D.C.--Today, the U.S. Department of Commerce's Bureau of Industry and Security (BIS) released a package of rules designed to update export controls on advanced computing semiconductors and semiconductor manufacturing equipment, as well as items that support supercomputing applications and end-uses, to arms embargoed countries, including the PRC, and to place additional related entities in the PRC on the Entity List.

"Today's updated rules will increase effectiveness of our controls and further shut off pathways to evade our restrictions. These controls maintain our clear focus on military applications and confront the threats to our national security posed by the PRC Government's military-civil fusion strategy," **said Secretary of Commerce Gina M. Raimondo.** "As we implement these restrictions, we will keep working to protect our national security by restricting access to critical technologies, vigilantly enforcing our rules, while minimizing any unintended impact on trade flows."

"Export controls are a powerful national security tool, and the updates released today build on our ongoing assessment of the U.S. national security and foreign policy concerns that the PRC's military-civil fusion and military modernization present," **said Under Secretary of Commerce for Industry and Security Alan F. Estevez.** "BIS will continue to assess the security environment and technology landscape and will not hesitate to act as appropriate."

"The Bureau of Industry and Security will continue to demonstrate global leadership in the regulation of advanced computing and artificial intelligence technologies. These technologies inherently serve as force multipliers for humanitarian good and also for undermining global security and advancing repression," **said Assistant Secretary of Commerce for Export Administration Thea D. Rozman Kendler.** "By imposing stringent license requirements, we ensure that those seeking to obtain powerful advanced chips and chip manufacturing equipment will not use these technologies to undermine U.S. national security. We will continue to hone these controls as technology evolves so that our technology is not used to threaten global peace and security."

Source: US BIS (bis.doc.gov)

Rule 1: Advanced Computing Chips Rule (AC/S IFR)

The effective date for this rule will be November 16, 2023, and the deadline for public comments is 60 days from the date the rule is put on public display.

The AC/S IFR retains the stringent PRC-wide licensing requirements imposed in the October 7, 2022 rule and makes two categories of updates:

1) **Adjusting the parameters** that determine whether an advanced computing chip is restricted;
2) Imposing new measures to address risks of circumvention of the controls, including an **expansion of controls to additional countries.**

Part 1: Parameter Changes:

Based on public comments, recent technological developments, and analysis of the prior rule's national security impact, the AC/S IFR **removes "interconnect bandwidth"** as a parameter for identifying restricted chips. The rule also:

- Restricts the export of chips if they exceed either of two parameters:
  1) The pre-existing performance threshold set in the October 7 rule; or
  2) A new "**performance density threshold**," which is designed to pre-empt future workarounds
- Creates a **license exception for shipments of certain lower-performance chips**. Under new License Exception Notified Advanced Computing (NAC), following receipt of notification for exports and re-exports to Macau and destinations identified as subject to a U.S. arms embargo (including China), the US government will determine within 25 days whether the transaction may proceed under the license exception or instead require a license. License Exception NAC may be used for exports, re-exports, and transfers (in-country) to or within other countries without prior notification.

As part of these updates, **an exemption that will permit the export of chips for consumer applications** was also introduced.

Part 2: Circumvention Prevention:

- Establishes a **worldwide licensing requirement** for any company that is headquartered in Macau or a destination subject to the US arms embargo (including the PRC), or whose ultimate parent company is headquartered in those countries, to prevent firms from countries of concern from securing controlled chips through their foreign subsidiaries and branches.
- Creates new red flags and additional due diligence requirement under the US persons controls. This will make it easier for foundries to assess whether foreign parties are attempting to circumvent the controls.
- Imposes additional license requirements on exports to **more than 40 additional countries** that present a heightened risk for diversion to China. This will help address potential transshipment by non-PRC companies purchasing chips for resale to China and provide greater visibility into procurement networks and customers of these chips.
- Improves understanding about transactions by **collecting information on the export of less advanced chips** through the notification process described above for exports and re-exports to Macau and destinations subject to US arms embargo.
- Includes a request for public comments on multiple topics, including infrastructure as a service (IaaS) providers, additional compliance guidance that could be provided to foundries receiving chip designs, the application of controls on deemed exports and deemed re-exports, and defining headquartered companies.

Rule 2: Export Controls on Semiconductor Manufacturing Items Interim Final Rule (SME IFR):

The effective date for this rule is 30 days after public inspection on the Federal Register website (except the Temporary General License), and the deadline for public comments is 60 days from the date that the rule is put on public inspection.

Key changes made to the October 7, 2022 rule include:

- Imposes controls on additional types of semiconductor manufacturing equipment.
- Refines and better focuses the US persons restrictions while codifying previously existing agency guidance.
- Expanding license requirements for semiconductor manufacturing equipment to apply to additional countries beyond the PRC and Macau, to 21 other countries for which the US maintains an arms embargo.

Rule 3: Additions to the Entity List

The effective date for this rule is October 17, 2023.

- BIS is adding to the Entity List **two PRC entities and their subsidiaries (a total of 13 entities)** involved in the development of advanced computing chips that have been found to be engaged in activities contrary to US national security and foreign policy interests. These entities will also be subject to restrictions on foreign-produced items made with US technology.
- **Foundries producing chips for these listed parties will need a BIS license** before the foundries may send such chips to these entities or parties acting on behalf of these entities as a result of applying the "footnote 4" Entity List foreign direct product rule designation.

Figure 2: 13 new entities to be added onto US BIS's Entity List

	English Name	Chinese Name
1	Beijing Biren Technology Development Co., Ltd.	北京壁仞科技开发有限公司
2	Guangzhou Biren Integrated Circuit Co., Ltd.	广州壁仞集成电路有限公司
3	Hangzhou Biren Technology Development Co., Ltd.	杭州壁仞科技开发有限公司
4	Light Cloud (Hangzhou) Technology Co., Ltd.	光线云（杭州）科技有限公司
5	Moore Threads Intelligent Technology (Beijing) Co., Ltd.	摩尔线程智能科技（北京）有限公司
6	Moore Threads Intelligent Technology (Chengdu) Co., Ltd.	摩尔线程智能科技（成都）有限公司
7	Moore Threads Intelligent Technology (Shanghai) Co., Ltd.	摩尔线程智能科技（上海）有限公司
8	Shanghai Biren Information Technology Co., Ltd.	上海壁仞信息科技有限公司
9	Shanghai Biren Integrated Circuit Co., Ltd.	上海壁仞集成电路有限公司
10	Shanghai Biren Intelligent Technology Co., Ltd.	上海壁仞智能科技有限公司
11	Superburning Semiconductor (Nanjing) Co., Ltd.	超燃半导体（南京）有限公司
12	Suzhou Xinyan Holdings Co., Ltd.	上海新之砾企业发展有限公司
13	Zhuhai Biren Integrated Circuit Co., Ltd.	珠海壁仞集成电路有限公司

Source: US BIS, CMBIGM

Figure 3: Moore Threads' announcement

声明

摩尔线程 2023-10-17 21:55 发表于北京

我们关注到美国商务部于当地时间10月17日将摩尔线程列入"实体清单"的消息，对此我们表示强烈抗议。

摩尔线程作为中国GPU领域的领军企业，专注于研发和设计全功能通用型GPU芯片，致力于打造赋能下一代互联网的元计算平台。

摩尔线程自成立以来，严格遵守相关国家和地区的法律、法规，始终秉持合法、合规的企业文化和管理理念，建立了完善的出口管制合规管理体系和工作流程指引。

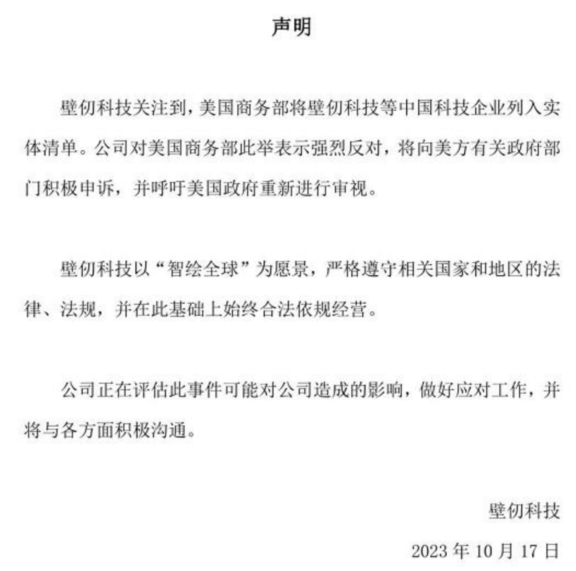
目前公司正在与各方积极沟通，对于该事项的影响我们正在评估。

摩尔线程智能科技（北京）有限责任公司

2023年10月17日

Source: Bloomberg, CMBIGM estimates

Figure 4: Biren Technology's announcement



声明

壁仞科技关注到，美国商务部将壁仞科技等中国科技企业列入实体清单。公司对美国商务部此举表示强烈反对，将向美方有关政府部门积极申诉，并呼吁美国政府重新进行审视。

壁仞科技以"智绘全球"为愿景，严格遵守相关国家和地区的法律、法规，并在此基础上始终合法依规经营。

公司正在评估此事件可能对公司造成的影响，做好应对工作，并将与各方面积极沟通。

壁仞科技

2023年10月17日

Source: Bloomberg, CMBIGM estimates

Figure 5: Biren Technology's GPUs: BR100 and BR104

Source: Company data, CMBIGM

Figure 6: Moore Threads' GPUs: MTT S80 and MTT S3000

Source: Company data, CMBIGM

Disclosures & Disclaimers

Analyst Certification

The research analyst who is primary responsible for the content of this research report, in whole or in part, certifies that with respect to the securities or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about the subject securities or issuer; and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific views expressed by that analyst in this report.
Besides, the analyst confirms that neither the analyst nor his/her associates (as defined in the code of conduct issued by The Hong Kong Securities and Futures Commission) (1) have dealt in or traded in the stock(s) covered in this research report within 30 calendar days prior to the date of issue of this report; (2) will deal in or trade in the stock(s) covered in this research report 3 business days after the date of issue of this report; (3) serve as an officer of any of the Hong Kong listed companies covered in this report; and (4) have any financial interests in the Hong Kong listed companies covered in this report.

CMBIGM Ratings

BUY	: Stock with potential return of over 15% over next 12 months
HOLD	: Stock with potential return of +15% to -10% over next 12 months
SELL	: Stock with potential loss of over 10% over next 12 months
NOT RATED	: Stock is not rated by CMBIGM
OUTPERFORM	: Industry expected to outperform the relevant broad market benchmark over next 12 months
MARKET-PERFORM	: Industry expected to perform in-line with the relevant broad market benchmark over next 12 months
UNDERPERFORM	: Industry expected to underperform the relevant broad market benchmark over next 12 months

CMB International Global Markets Limited

Address: 45/F, Champion Tower, 3 Garden Road, Hong Kong, Tel: (852) 3900 0888   Fax: (852) 3900 0800

CMB International Global Markets Limited ("CMBIGM") is a wholly owned subsidiary of CMB International Capital Corporation Limited (a wholly owned subsidiary of China Merchants Bank)

Important Disclosures

There are risks involved in transacting in any securities. The information contained in this report may not be suitable for the purposes of all investors. CMBIGM does not provide individually tailored investment advice. This report has been prepared without regard to the individual investment objectives, financial position or special requirements. Past performance has no indication of future performance, and actual events may differ materially from that which is contained in the report. The value of, and returns from, any investments are uncertain and are not guaranteed and may fluctuate as a result of their dependence on the performance of underlying assets or other variable market factors. CMBIGM recommends that investors should independently evaluate particular investments and strategies, and encourages investors to consult with a professional financial advisor in order to make their own investment decisions.
This report or any information contained herein, have been prepared by the CMBIGM, solely for the purpose of supplying information to the clients of CMBIGM or its affiliate(s) to whom it is distributed. This report is not and should not be construed as an offer or solicitation to buy or sell any security or any interest in securities or enter into any transaction. Neither CMBIGM nor any of its affiliates, shareholders, agents, consultants, directors, officers or employees shall be liable for any loss, damage or expense whatsoever, whether direct or consequential, incurred in relying on the information contained in this report. Anyone making use of the information contained in this report does so entirely at their own risk.
The information and contents contained in this report are based on the analyses and interpretations of information believed to be publicly available and reliable. CMBIGM has exerted every effort in its capacity to ensure, but not to guarantee, their accuracy, completeness, timeliness or correctness. CMBIGM provides the information, advices and forecasts on an "AS IS" basis. The information and contents are subject to change without notice. CMBIGM may issue other publications having information and/ or conclusions different from this report. These publications reflect different assumption, point-of-view and analytical methods when compiling. CMBIGM may make investment decisions or take proprietary positions that are inconsistent with the recommendations or views in this report.
CMBIGM may have a position, make markets or act as principal or engage in transactions in securities of companies referred to in this report for itself and/or on behalf of its clients from time to time. Investors should assume that CMBIGM does or seeks to have investment banking or other business relationships with the companies in this report. As a result, recipients should be aware that CMBIGM may have a conflict of interest that could affect the objectivity of this report and CMBIGM will not assume any responsibility in respect thereof. This report is for the use of intended recipients only and this publication, may not be reproduced, reprinted, sold, redistributed or published in whole or in part for any purpose without prior written consent of CMBIGM.
Additional information on recommended securities is available upon request.

For recipients of this document in the United Kingdom
This report has been provided only to persons (I)falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended from time to time)("The Order") or (II) are persons falling within Article 49(2) (a) to (d) ("High Net Worth Companies, Unincorporated Associations, etc.,) of the Order, and may not be provided to any other person without the prior written consent of CMBIGM.

For recipients of this document in the United States
CMBIGM is not a registered broker-dealer in the United States. As a result, CMBIGM is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. The research analyst who is primary responsible for the content of this research report is not registered or qualified as a research analyst with the Financial Industry Regulatory Authority ("FINRA"). The analyst is not subject to applicable restrictions under FINRA Rules intended to ensure that the analyst is not affected by potential conflicts of interest that could bear upon the reliability of the research report. This report is intended for distribution in the United States solely to "major US institutional investors", as defined in Rule 15a-6 under the US, Securities Exchange Act of 1934, as amended, and may not be furnished to any other person in the United States. Each major US institutional investor that receives a copy of this report by its acceptance hereof represents and agrees that it shall not distribute or provide this report to any other person. Any U.S. recipient of this report wishing to effect any transaction to buy or sell securities based on the information provided in this report should do so only through a U.S.-registered broker-dealer.

For recipients of this document in Singapore
This report is distributed in Singapore by CMBI (Singapore) Pte. Limited (CMBISG) (Company Regn. No. 201731928D), an Exempt Financial Adviser as defined in the Financial Advisers Act (Cap. 110) of Singapore and regulated by the Monetary Authority of Singapore. CMBISG may distribute reports produced by its respective foreign entities, affiliates or other foreign research houses pursuant to an arrangement under Regulation 32C of the Financial Advisers Regulations. Where the report is distributed in Singapore to a person who is not an Accredited Investor, Expert Investor or an Institutional Investor, as defined in the Securities and Futures Act (Cap. 289) of Singapore, CMBISG accepts legal responsibility for the contents of the report to such persons only to the extent required by law. Singapore recipients should contact CMBISG at +65 6350 4400 for matters arising from, or in connection with the report.