

**International Cooperation in the Semiconductor Sector
During a Period of Intensified Official Support**

**Alan Wm. Wolff
Peterson Institute of International Economics**

A presentation to representatives of the governments and authorities of China, Chinese Taipei, the European Union, Japan, Korea and the United States, and of their respective semiconductor industries

at the

The Governments and Authorities Meeting on Semiconductors (GAMS) and the World Semiconductor Council (WSC) and its Joint Steering Committee (JSTC)

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Personal background: I was trade counsel to the U.S. Semiconductor Industry Association from February 1980 until I moved to Geneva to become Deputy Director General of the WTO in August 2017. I was a participant in seeking to shape government policies in the United States and abroad throughout that earlier period as they affected this industry. I attended the WSC, JSTC and GAMS meetings from the inaugural meeting in Hawaii through to August 2017. I have no affiliation with the industry at present nor have I had any during these last five years.

This story is about how the industry addressed public policy issues throughout those nearly four decades and considers what tools it and its authorities' officials have at present, and could design, to respond to turbulent times, in particular the turbulence that can be caused by subsidies. The opinions and ideas expressed are my own (unless otherwise indicated) and do not necessarily reflect the positions of any other person or institution.

Some Relevant History – Seeking Mutual Understanding and Cooperation and the Absence of Friction

Semiconductors, since they became commercialized in the 1970s, have had a special place in the global economy. Semiconductors made possible the dawning and growth of the information age. The two leading producers in that timeframe were Japan and the United States. They fueled Japan's pre-eminence in consumer electronics. They were the foundation of Silicon Valley. Chips are high-value, low-weight, and low bulk products that can travel physically across borders with ease. Trade in semiconductors was an imperative for both countries. While that period was an era characterized by trade friction between the United States and Japan, and semiconductor trade was no exception, nevertheless, the first joint public policy initiative by the governments of Japan and the United States at the request of their respective industries, was to

remove all tariffs on semiconductors through a trilateral agreement.¹ It was applied on an MFN basis.

The most important part of this story, however, as carried forward into the present, is the fact that the U.S. and Japan found common ground in an arrangement for semiconductors reached in Vancouver, Canada, in August 1996. The agreement was unprecedented in format. It envisaged the creation of two parallel venues, intergovernmental meetings (GAMS) and an industry council (ultimately, the WSC). Representatives of the European Commission,² suspicious of what the US and Japan might agree to, were nearby in another hotel. To allay their concerns, I kept them currently informed.

I and my counterpart, the counsel for the Japanese industry, jointly drafted a charter for the industry council. I proposed a series of purposes, which were debated by the two associations and adopted. It was contemplated from the outset that other regions would join. This was not an arrangement for special status for either Japanese or American producers. It was to be inclusive and nondiscriminatory. The price for entry into membership was according duty-free trade to semiconductors. Market forces and fair trade were to determine competitive outcomes. The foundational principle was that “The competitiveness of companies and their products, not the intervention of governments and authorities, should be the principal determinant of industrial success and international trade.”

The European Electronic Component Manufacturers Association (EECA) and the Korea Semiconductor Industry Association (KSIA) became formal participants at a meeting in Hawaii in April 1997. The venue was then named the World Semiconductor Council, consisting of CEOs of semiconductor companies in the four regions, and staffed by a group of mid-level company executives, meeting three times a year in a configuration known as the Joint Steering Committee (JSTC).

Meetings of the WSC followed annually, with hosting shared on a rotating basis. The next meeting was in Carlsbad, California. At the Fiugi (Italy) meeting in 1999, the Charter was updated and Taiwan Semiconductor Industry Association (TSIA) became a member. The officials representing the five parties, the three governments (U.S, Japan, Korea) and two authorities (EU Commission and Chinese Taipei), present at a subsequent 1999 meeting in Brussels issued a new Joint Statement as their operational inter-governmental agreement.

A major objective of the WSC was to bring China into the Council, as it was a major market for chips and aspired to become a major producer as well. The China Semiconductor Industry Association (CSIA) joined the WSC in 2006 in San Francisco, and the same year joined the GAMS.³ The way had been smoothed five years earlier by China acceding to the WTO and

¹ This agreement joined by Canada, on the invitation of the primary parties.

² “Mogens Peter Carl.” Jacques Delors Institute. <https://institutdelors.eu/en/tous-les-contributeurs/mogens-peter-carl/>

³ The final text of the WSC Charter when China joined is to be found at <http://www.semiconductorcouncil.org/wp-content/uploads/2016/04/WSC-May-06-Charter-Amendment-SIGNED.pdf>.

the ITA at the same time. The industry also succeeded in 2006 in obtaining an agreement of the six GAMS members to eliminate the tariffs on multi-chip packages (MCPs) on an MFN basis.⁴

The WSC, with the support of the GAMS, worked for the expansion of duty-free treatment of later generations of chips in the Information Technology Agreement (ITA 2). The Council also addressed common issues to improve the environmental impact of semiconductor production, fought counterfeiting, supported customs facilitation efforts, and worked for the removal of other barriers, including when they took the form of regulations applicable to encryption. Antitrust rules were strictly adhered to, starting with the earliest meeting of the Japanese and American industry CEOs, when Bob Galvin, CEO of Motorola, had the former dean of the University of Chicago School of Law sit in on the meetings.

The GAMS/WSC/JSTC structure has been maintained by generations of officials and industry executives. It is a one-of-a-kind structure, never replicated for other industries, designed to foster international cooperation in support of an industry critical to all six regions and globally.

During the last decade, JSTC and WSC's attention turned as well to subsidies, known in group discussions as "regional support". Government support in terms of financial outlays was not a major part of the competitive picture during when the GAMS and WSC were formed. There was no mention made of the subject in the WSC Charter. Subsidies for industries engaged in the use of emerging technologies were not unknown or by any means confined to this sector. As an example, a report on Conflict and Cooperation in National Competition for High-Technology Industry was issued the same year as the Vancouver meeting jointly by the U.S. National Academies, the Hamburg Institute for Economic Research and the Kiel Institute for World Economics recommended that it was inadvisable to have all R&D subsidies free from disciplines, without regard to whether the support was for basic or applied research.⁵ On behalf of the National Academies, I chaired the U.S. delegation that prepared the report.

Subsidies are a particularly difficult issue to address in trade policy, as they are generally considered a matter of domestic policy, within the sovereignty of trading countries. There are also serious definitional as well as measurement problems. The JSTC was attempting, for their industrial sector, to begin fill a hole in the disciplines of the international trading system through which subsidies poured in copious quantities.

International Efforts to Deal with Domestic Subsidies

The GATT and WTO Rules on Industrial Subsidies

Export subsidies are prohibited. The same is true for subsidies paid to consumers to buy domestic products. Beyond that, subsidies can be actionable, meaning a case can be brought

⁴ "Multilateral (06-401) – Agreement on Duty-Free Treatment of Multi-Chip Integrated Circuits." US Department of State. <https://www.state.gov/06-401>.

⁵ "Conflict and Cooperation in National Competition for High-Technology Industry." National Academies of Sciences, Engineering, and Medicine. 1996. Washington, DC: The National Academies Press. <https://doi.org/10.17226/5273>.

against them if they cause or threaten to cause “serious prejudice”, that is they harm a domestic industry of a complaining WTO Member (or earlier, GATT Contracting Party). The remedy is only available after the harm has become apparent. Therefore, the remedy has not been very effective.

The other route to offset foreign subsidies, which is far more common, is unilateral – applying domestic countervailing duties on a case-by-case basis. The amount of the subsidy on a product-by-product basis can be offset by an extra import duty in like amount provided that material injury or the threat of material injury can be shown. The result can be made subject to a case at the WTO (or previously the GATT) to determine whether there was a subsidy, whether it was measured correctly, and whether the injury determination was appropriate. Again, the “remedy” exists only after much of the initial harm has occurred. So, it is often of limited effect.

Countervailing duties cannot be applied to offset the loss of a third-country market. An industry that lost out in third markets could ask the importing country to apply additional duties. But that is an unlikely route to pursue successfully, as there would be little motive on the part of the importing country to prevent its consumers from benefitting from the foreign subsidy. In U.S. law, a Section 301 case could be brought to retaliate against the subsidizing country, but it is unlikely that this would comply with WTO/GATT rules. Notionally, a case of loss of market share abroad can be the subject of a “serious prejudice” case.

The bottom line: as a general proposition, under WTO rules countries are largely free to subsidize domestic industries.

Part of the reason for this lack of effective disciplines is that subsidies are not inherently contrary to the common good, but also because they are difficult to define and limit. Here is what two experts have written (Bown and Hillman):

[R]ules on subsidies would require more nuance than the GATT’s approach to tariffs. First, targeted subsidies can be a first-best domestic policy to address market failures or externalities in ways that tariffs cannot. For example, to the extent that research and development (R&D) generates positive externalities, they will be underprovided in a competitive market, and thus merit an appropriately sized subsidy. Second, the new technologies or scientific knowledge that create demand for these subsidies evolve over time in ways that require policy flexibility. This implies that narrow subsidy binding limits—a potential analogue to rigid tariff bindings—would be inefficient. Third, even in the ranking of policy instruments, a subsidy is not as bad as a tariff because the latter distorts both production and consumption decisions. Fourth, subsidies may be subject to greater political-economy discipline because they face budget financing constraints that tariffs do not.⁶

⁶ Chad P. Bown and Jennifer A. Hillman. "WTO'ing a Resolution to the China Subsidy Problem." Peterson Institute for International Economics. October 2019. <https://www.piie.com/sites/default/files/documents/wp19-17.pdf>
The article from which this quotation is taken is ostensibly about China and subsidies, but it is much broader in its application and worth reading for its broader analysis as well.

Measuring subsidies in the semiconductor sector is particularly difficult. The OECD staff engaged in a substantial effort to do so, especially with respect to provisions by government of equity. In its extensive 2019 study of subsidies to semiconductor production⁷, the OECD explained its methodology –

By its very nature, below-market equity is probably among the hardest forms of support to identify and quantify. This report chooses to assess the benefit to firms of this support ex post, by comparing over time the observed financial returns of government-invested firms against the returns that market participants might reasonably expect semiconductor firms to achieve. The approach used here, however, is only one possible way of identifying and quantifying government support provided through the equity channel. Other approaches are generally ex ante, focusing instead on whether the decision by the government authorities to invest in a firm was consistent at the time with market principles.

The OECD returned to the subject of measurement of subsidies in 2021⁸. Semiconductors featured prominently in the study, which states that --

Below-market equity returns were found to be more prevalent in high-tech sectors that rely on intangible assets and equity financing. This is particularly the case for semiconductors....

Not all semiconductor producing regions are OECD Members. They are all, however, GAMS and WSC members. One way in which the WSC can be helpful to the understanding of subsidies is to provide views and agreed measurement methodology for calculating regional support in the form of equity.

Case Studies – subsidies in other major industries

Airbus/Boeing – The WTO’s Largest Trade Case

Airbus is an example of governments (France, the UK, Germany and Spain) creating a successful internationally competitive industry with launch aids. Around 1981, I tried to convince Boeing to have the US government bring a GATT case against the EC, without success. Boeing finally did ask the US to bring a case against the EU in 2005. This caused the European Communities to counter with a case in the same year against the United States for American state-level subsidies to Boeing, as well as due to alleged spillovers of Defense Department expenditures on military aircraft. The cases caused substantial friction between the transatlantic trading partners. The matter was only settled during the Biden Administration in March 2022 after the better part of two decades had elapsed. Whether the rules of the trading

⁷ “Measuring Distortions in International Markets: The Semiconductor Value Chain.” OECD. May 2021. https://www.oecd-ilibrary.org/trade/measuring-distortions-in-international-markets_8fe4491d-en

⁸ “Measuring Distortions in International Markets: Below-Market Finance.” OECD. May 2021. [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC\(2020\)5/FINAL&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/TC(2020)5/FINAL&docLanguage=En).

system succeeded or failed might differ depending on the point of view of the observer or participant. The facts at present are that two major industries dominate the market for large commercial aircraft, with China working towards joining them. In my view, 17 years of WTO litigation, with exchanges of retaliatory tariffs and threat of additional tariffs, were not an effective or efficient way to deal with this subsidization. Apparently, the two sides, Europe and the U.S., could not come to an agreement until they were both tired of the fight, and the commercial effects of the subsidies were largely already imbedded.

Steel

In the 1960s and 1970s, steel subsidies in Europe, parts of Asia (e.g., Korea), and Latin America were of epidemic proportions. It was said that the British Government spent as much subsidizing steel at one period as the U.S. spent on its manned space flight program, with the result that the British landed steel on the U.S. East Coast and Gulf Ports, and the U.S. landed a man on the moon. (In all, 24 American astronauts made the trip from Earth to the Moon between 1968 and 1972.⁹) To maintain employment in depressed regions, Labour governments kept British mills open at a loss. Margaret Thatcher reversed that policy. The most recent chapter is that British Steel Corporation has been purchased in 2020 by the Chinese group, Jingye.¹⁰

With global steel heavily subsidized and nations investing in excess capacity, in 1979, I proposed on behalf of the United States government the formation of a Steel Committee at the OECD. The idea was to have sufficient transparency in national investment plans so that governments and businesses could have more complete information on expected global capacity when they invested in new mills or when updating old ones. I was elected to be the first Chair of the Committee. Excess global capacity did not disappear, although its source shifted. At the September 2022 meeting, presentations showed continuing increases in capacity, in part due to overseas investment by Chinese companies, and predicted a shift to India of future growth in capacity.¹¹ In 2016, the G20 nations called for the creation of the **Global Forum on Steel Excess Capacity (GFSEC)**, an international platform to discuss and find collective solutions to the challenge of excess capacity and enhance market functioning in the steel sector. The forum includes eight of the ten largest steel-producing countries (not China).¹²

Next to Airbus, steel has been the industrial product most discussed for the effects of subsidies, with no clear result.

Judging the effectiveness, or lack thereof, of the international response, needs to take into account the Trump and Biden Administrations' national security restrictions on steel imports.

Sectoral Subsidies Agreements

⁹ "Who Has Walked on the Moon?" NASA. July 20, 2022. <https://solarsystem.nasa.gov/news/890/who-has-walked-on-the-moon/>

¹⁰ "Where We've Come From." British Steel. <https://britishsteel.co.uk/who-we-are/where-weve-come-from/>

¹¹ "2021 GFSEC Ministerial Report." Global Forum on Steel Excess Capacity. 2021. <https://www.steelforum.org/events/gfsec-ministerial-report-2021.pdf>.

¹² "About the Global Forum." Global Forum on Steel Excess Capacity. <https://www.steelforum.org>

The immense difficulty of agreeing to international disciplines on subsidies is illustrated by the fact that it took close to 22 years to negotiate a partial agreement on fisheries subsidies, and at the WTO's Ministerial Conference this last June (MC12), the important category of input subsidies was dropped from the text in order to at least reach an interim agreement.

Otherwise, subsidies disciplines agreements on a sectoral basis are rare but do exist.¹³ The Arrangement on Officially Supported Export Credits (for Aircraft) is a "gentlemen's agreement" among Australia, Canada, the European Union, Japan, Korea, New Zealand, Norway, Switzerland, Turkey, the United Kingdom, and the United States. The purpose of the Arrangement is to provide a framework for the orderly use of officially supported export credits by fostering a level playing field in order to encourage competition among exporters based on quality and prices of goods and services exported, rather than based on the most favorable officially supported export credits. The Arrangement places limitations on the financing terms and conditions (repayment terms, minimum premium rate, minimum interest rates) to be applied when providing officially supported export credits as well as on the use of tied aid by the participants. The Arrangement contains various transparency provisions among participants to ensure that these limitations are effectively applied. Sectoral arrangements emerged from this process as follows: ships (1969), ground satellite communications stations (1972), nuclear power plants (1984), and civil aircraft (1986).

The OECD Arrangement goes a step further by virtue of the fact that the OECD participants agree to implement a program to provide *ex ante* and *ex post* transparency over the use of untied ODA credits that finance the provision of goods and services in developing countries. Recognizing that the arrangement and its companion transparency agreement apply to the purchase of goods financed by official development assistance, there are nevertheless lessons to be learned about how government can assure greater transparency. One of the provisions concerns responsiveness to requests for information: *OECD Participants which have received an enquiry from another Participant concerning an individual untied ODA credit notification should, on a best-efforts basis, respond promptly (e.g., within 14 calendar days) and fully, providing all information relevant to the request, including information concerning donor financing of services related to the design and implementation of the project.*¹⁴

Transparency

It is generally acknowledged that WTO Members are forthcoming in notifying (in advance) product standards in draft that they propose to implement. There ensues a discussion in the Technical Barriers to Trade Committee, at the option of interested Members of whether the standard goes beyond what is necessary in terms of adverse trade effects to accomplish its objective. The WTO has the opposite experience with respect to the notification of subsidies to

¹³ "Evolution of the Arrangement of Officially Supported Export Credits." OECD. January 20, 2020. [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=tad/pg\(2020\)2&doclanguage=en](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=tad/pg(2020)2&doclanguage=en)

¹⁴ "Arrangement on Officially Supported Export Credits." OECD. March 10, 2005. [https://one.oecd.org/document/TD/PG\(2005\)8/en/pdf](https://one.oecd.org/document/TD/PG(2005)8/en/pdf)

the Subsidies and Countervailing Duties Committee. Subsidies notifications may be inadequate, late, or not made at all. Under-reporting, when there is reporting, appears to be common.¹⁵

What are the differences between standards and subsidies that cause a reluctant country to be non-transparent with respect to subsidies? Subsidies often have more of a political element than standards. Subsidies are decided at a policy – not technical – level, and there is less of an ongoing cooperative relationship among those who deal with subsidies in various jurisdictions and those who deal with standards. In addition, standards issues relatively rarely end up being subject to dispute settlement cases while subsidies can often give rise to disputes and offsetting actions, causing a defensive wariness in providing information on subsidies.

Beyond the notification requirement, the Subsidies and Countervailing Measures Agreement (SCM) provides with respect to subsidies that:

25.8 Any Member may, at any time, make a written request for information on the nature and extent of any subsidy granted or maintained by another Member (including any subsidy referred to in Part IV), or for an explanation of the reasons for which a specific measure has been considered as not subject to the requirement of notification.

25.9 Members so requested shall provide such information as quickly as possible and in a comprehensive manner, and shall be ready, upon request, to provide additional information to the requesting Member. In particular, they shall provide sufficient details to enable the other Member to assess their compliance with the terms of this Agreement. Any Member which considers that such information has not been provided may bring the matter to the attention of the Committee.

25.10 Any Member which considers that any measure of another Member having the effects of a subsidy has not been notified in accordance with the provisions of paragraph 1 of Article XVI of GATT 1994 and this Article may bring the matter to the attention of such other Member. If the alleged subsidy is not thereafter notified promptly, such Member may itself bring the alleged subsidy in question to the notice of the Committee.

Trilateral Recommendations for WTO Subsidies Reform

In January 2020, the trade ministers of the United States, Japan and the European Union released the following recommendations with respect to improving WTO subsidies disciplines:

¹⁵ Gary Horlick and Peggy A. Clarke. “Rethinking Subsidy Disciplines for the Future.” E15 Task Force on Rethinking International Disciplines – Policy Options Paper. E15 Initiative. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum. 2016.

https://www3.weforum.org/docs/E15/WEF_Subsidy_Disciplines_Future_report_2015_1301.pdf

For example, Germany notified 11 subsidies for 2006 to the WTO, worth a total value of €1.25 billion. Yet a case study carried out for the Global Subsidies Initiative of the International Institute for Sustainable Development (Thöne and Dobroshke 2008) identified some 180 specific subsidy programs, worth almost €11 billion, that should have been identified (and there is no reason to believe that Germany is an unusual case).

2. *Certain other types of subsidies have such a harmful effect so as to justify a reversal of the burden of proof so that the subsidizing Member must demonstrate that there are no serious negative trade or capacity effects and that there is effective transparency about the subsidy in question. Subsidies having been discussed in this category include, but are not limited to: excessively large subsidies; subsidies that prop up uncompetitive firms and prevent their exit from the market; subsidies creating massive manufacturing capacity, without private commercial participation; and, subsidies that lower input prices domestically in comparison to prices of the same goods when destined for export. If such subsidy is found to exist and the absence of serious negative effect cannot be demonstrated, the subsidizing Member must withdraw the subsidy in question immediately. Ministers agreed to continue working on the scope of such provisions, and to identify additional instances of harmful subsidization and their scope.*

3. *The current rules of the ASCM identify in Article 6.3 instances of serious prejudice to the interests of another Member. However, these instances do not refer to situations where the subsidy in question distorts capacity. An additional type of serious prejudice linked to capacity should be therefore added to Article 6.3 ASCM. Further, work will continue on a provision defining the threat of serious prejudice.*

4. *The current rules of the ASCM do not provide for any incentive for WTO Members to properly notify their subsidies. Therefore, the state-of-play of subsidies notifications is dismal. Hence, a new strong incentive to notify subsidies properly should be added to Article 25 ASCM, rendering prohibited any non-notified subsidies that were counter-notified by another Member, unless the subsidizing Member provides the required information in writing within set timeframes. (Emphasis supplied).¹⁶*

The Ministers further indicated that they would work to develop rules involving subsidies through state-owned enterprises (the “public body” issue) and deal with forced technology transfer. The Trilateral Recommendations have not been finalized.

Reversal of the burden of proof smooths the way for a resort to dispute settlement, as does a link to a subsidy creating excess capacity. Added to this set of proposals is a stiff penalty for the failure to notify a subsidy. What is missing is consideration of the fact that the threat of serious prejudice will occur once the subsidy is granted and when the construction of new plants is initiated, and before production comes on-stream. This is part of the complexity of trying to find a way to deal effectively with the distortions caused by subsidies.

Current Circumstances

¹⁶ "Joint Statement of the Trilateral Meeting of the Trade Ministers of Japan, the United States and the European Union." Directorate General for Trade of the European Commission. January 14, 2020. https://trade.ec.europa.eu/doclib/docs/2020/january/tradoc_158567.pdf

Everyone in this room will be familiar with headlines of recent time announcing subsidies in the semiconductor field -- the signing of the \$52 billion CHIPS Act by President Biden on August 9, 2022; Japanese Prime Minister Kishida's supplementary budget has earmarked \$6.8 billion for new semiconductor facilities;¹⁷ the EU earmarking \$33 billion of its own to support semiconductor production and research,¹⁸ Taiwan's \$300 million program to step up education of semiconductor engineers,¹⁹ Korea's announcement of \$450 billion in a k-semiconductor belt,²⁰ and China's reported \$33 billion in semiconductor subsidies in 2020.²¹ I am not vouching for the accuracy of these stories, or even saying that they are the most important of the subsidy programs. Nor did subsidies affecting trade in the sector start with these announcements. The OECD in its 2019 study of Semiconductor Subsidies identified tens of billions of dollars already expended by governments in the years 2014-18.

More generally, the 28th Annual Report of the Global Trade Alert²² find subsidies reaching epidemic proportions. The Report's authors state that they –

“are drawn to the conclusion that the status quo is a recipe for an increasingly distorted world trading system. Indeed, one might ask how much more global goods trade and how much more recrimination between nations need occur before concluding that the . . . the serious business of systematic deliberation about the nexus between subsidies, market access, and the potential for enhanced international cooperation”.

Subsidies as trade distortions will be deliberated in the OECD, the WTO and other international organizations. The members of the GAMS/WSC each have a major stake in weighing in and being heard when their industry's sector's interests are involved.

Regional Support Guidelines and Update

¹⁷ “Japan Earmarked US \$6.8 Billion to Invest in Domestic Semiconductors Through the Most Expensive Supplementary Budget in History.” Shanghai Metals Market. November 28, 2021.

<https://news.metal.com/newscontent/101677840/japan-earmarked-us-68-billion-to-invest-in-domestic-semiconductors-through-the-most-expensive-supplementary-budget-in-history>

¹⁸ “Semiconductors: Brussels Wants to Plough Billions into Making More Microchips in the EU.” Euronews.

February 8, 2022. <https://www.euronews.com/my-europe/2022/02/08/semiconductors-brussels-wants-to-plough-billions-into-making-more-microchips-in-the-eu>

¹⁹ “Taiwan to invest \$300m in grad schools to stem chip brain drain.” Nikkei Asia. July 16, 2021.

<https://asia.nikkei.com/Business/Tech/Semiconductors/Taiwan-to-invest-300m-in-grad-schools-to-stem-chip-brain-drain#>.

²⁰ “S. Korea to offer tax benefit, subsidy to chipmakers for 450 bln USD investment by 2030.” Xinhua News. May 13, 2021. http://www.xinhuanet.com/english/asiapacific/2021-05/13/c_139943361.htm.

²¹ “Eyeing US, China wields \$33bn subsidies to bolster chips, defense.” Nikkei Asia. May 17, 2021.

<https://asia.nikkei.com/Politics/International-relations/US-China-tensions/Eyeing-US-China-wields-33bn-subsidies-to-bolster-chips-defense>.

²²The 28th Global Trade Alert Report - Subsidies and Market Access: Towards an Inventory of Subsidies by China, The EU and The USA.” Global Trade Alert. October 25, 2021. <https://www.globaltradealert.org/reports/gta-28-report>

At least as early as 2015, at the WSC meeting in Hangzhou, serious discussions of “regional support programs” were being discussed in the WSC and GAMS.

While WSC supports appropriate stimulus measures by the respective governments and authorities, WSC confirms its view that government actions should be guided by market principles and avoid adoption of protectionist or discriminatory measures. WSC confirms that competitiveness of companies and their products, not the intervention of governments and authorities, should be the principal determinant of industrial success and international trade, and that assistance should be provided in a market-oriented fashion. Per the request of the GAMS, the WSC notes that it may recommend consultations on issues of concern to the GAMS and will continue to discuss a consultation procedure for the semiconductor industry.²³

In 2017, the WSC and GAMS agreed to a framework for dealing with regional support. The bedrock principle underlying the agreement was reiterated, that:

The competitiveness of companies and their products, not the interventions of governments and authorities should be the principal driver of industrial success and international trade.

To achieve this end, the parties agreed that governments' and authorities' programs –

1. should be consistent with WTO rules,
2. should be transparent and non-discriminatory, and
3. should not distort trade and investment.

Importantly, the guidelines apply equally to semiconductor services, which comprise a substantial share of semiconductor trade. This differs from the WTO’s subsidies rules, which do not apply to services.

On the other hand, the Guidelines are only that; they are not binding obligations. They are designed to foster international cooperation.

The voluntary code applies explicitly to equity infusions as well. The Guidelines build on the definitions used in the WTO SCM, stating that the term includes:

any provision of equity whether from a central or local government or authority, or entity over which the government or authority exercises control, direction or substantial influence;

Importantly, the Guidelines seek to go beyond the WTO subsidy agreement by specifying conduct that should govern actions taking place in this industrial sector:

²³ "Joint Statement of the 19th Meeting of World Semiconductor Council (WSC)." World Semiconductor Council. May 21, 2015. <http://www.semiconductorcouncil.org/wp-content/uploads/2016/04/19thWSCJointStatementMay2015Hangzhou-public.pdf>

A GAMS member should not provide subsidies in its own territory either directly or indirectly, with respect to part or all of the semiconductor sector, if it is prohibited by the WTO/SCM Agreement or causes or threatens with respect to the industry of another GAMS member “adverse effects” in accordance with the WTO/SCM including if there is a substantial risk that it could create capacity that is not commercially justified. (emphasis supplied).

The language is hortatory – it uses “should not” rather than “shall not”. It goes further than the WTO in defining “adverse effects” – namely, where “there is substantial risk that it could create capacity that is not commercially justified.”

With respect to transparency, the Regional Support Guidelines move from “should” to “an expectation” of compliance, a potentially important shade of difference:

Upon written request of another GAMS member, a GAMS member is expected to provide in writing, to GAMS information requested regarding a particular support measure, financial assistance program or provision of equity, involving part or all of the semiconductor sector. It is the common understanding shared by all GAMS members that the request shall only be on subsidies and/or particular support measures, the details of which are not made publicly available by that GAMS member. Where public information is available, it is understood that the GAMS member publishing the information will identify the location of the information.

Such information should be sufficiently specific to enable the requesting GAMS member to understand the operation of a policy, program or measure and evaluate its effects or potential effects on its trade or investment.

It is expected that the information provided pursuant to a request would include the following: the form of the assistance or equity capital provided under the policy or program, grant or loan; names of the agencies or entities providing the assistance or equity capital; details on current recipients and eligibility criteria; the legal basis and policy objective of the policy or program providing the assistance or equity capital; the current and planned size of the program and its duration; the amount of loans, if any, indicating costs to the borrower; prices for goods supplied, if any; the amount of equity capital invested, if any and a description of the nature, circumstances and justification for the investment; and any exemptions from law provided for recipients.

What is not a suggestion, but a requirement, is that:

Each GAMS member shall consult on any government support measure at the request of any other GAMS member.

The idea of notionally permitted (green-lighted) subsidies, is revived in the guidelines. These include:

1. Grants for basic research and R&D that support the expansion of demand for semiconductors.²⁴
2. Financial support for pre-competitive research consortia.
3. Training and education programs, including university-based programs to develop the talent pool.
4. Support for road-mapping (industry/government/university identification of long-run technological hurdles).
5. Supporting the expansion of demand for semiconductors (in a manner that does not discriminate against foreign goods or services), such as measures taken to support the digital economy, AI, autonomous vehicles, robotics, medical and health applications, environmental goods and green/sustainable energy.

The global environment has changed in ways that make the Regional Support Guidelines more important than ever. It is not just the subsidies announcements that have been made, it a shift in politics that gives little emphasis to market openness and talks more of security of supply, supply resilience, near-shoring, “friend-shoring” and on-shoring. There were always going to be swings in supply and demand, but the effects of COVID-19 lockdowns both on factories and consumers were also unknown and unknowable. There are increased pressures on planning for companies and trade associations, both for these reasons and because for the first time, two WTO Members are at war. Geopolitical factors have become important more generally among trading partners. In this business environment, there is no substitute for direct engagement. The chief skill is, perhaps, the ability to listen very carefully to all the parties to find common ground. This is what took place in drafting the Regional Support Guidelines”.

General Recommendations Within the GAMS/WSC/JSTC Framework

In a time of deeper official involvement in providing financial support to this industry for public policy reasons:

²⁴ Imbedded footnotes in the guidelines:

In general, basic (also known as fundamental or pure) research is driven by a scientist's curiosity or interest in a scientific question. The main motivation is to expand human knowledge, not to create or invent something. It is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. There is no obvious commercial value to the discoveries that result from basic research.

In general, the term “pre-competitive research” includes work that is aimed not at producing products but rather at providing the information and data that enable others to develop future products. Examples include work to develop industry standards and test procedures; work to understand the characteristics of new technologies or materials; and work that overcomes basic obstacles that prevent a technology from being used in commercial applications. Pre- competitive is not work that is designed to provide a differential advantage for one competitor over another or work that a company insists must be held as proprietary. It also does not include routine or periodic alterations to existing products, production lines, manufacturing processes, services, and other on-going operations even though those alterations may represent improvements.

- **Seek to assure to the maximum extent possible that market forces determine investment decisions. This will assure better outcomes for those granting subsidies, those receiving them, and those whose competitive positions are affected by them.**

Subsidies are one tool that governments can use to assure supply, whether of chips for automobiles or more advanced chips for sophisticated applications. The question is how best to help craft domestic policies to meet perceived public needs while not replacing market outcomes with government-induced decisions.

- **Notify - in as much detail as is feasible - within the GAMS/WSC all proposed “regional support” measures under active consideration (that is, well prior to adoption) by governments and authorities that could affect trade in the sector.**

This may be seen as an unrealistic objective, but it is not a bad starting point. Just as a standard is known before it is promulgated, so are subsidies. The sharing can be at the program level initially, or by category. It is better to consider how much can be shared reasonably than how little.

- **Consider “regional support” to include subsidies that are of valid material concern to any Member, including but not limited to equity infusions, tax credits or other benefits for promoting R & D or meeting environmental objectives.**
- **Make sure that there is in place a timely consultative mechanism (in a hybrid or virtual meeting format) that is able to convene at the request of any participant more quickly than the scheduling of a regular JSTC meeting to discuss specific regional measures, open to all WSC/JSTC participants.**
- **Jointly underwrite a non-governmental effort, such as is available in the Global Trade Alert²⁵, sponsored by the University of St. Gallen, to track all indications of subsidies in the sector and report on them publicly.**

St. Gallen has pioneered the effort of technically proficient web-based searches. It is able to throw a wide net for information gathering. This will not obviate the need for individual GAMS and WSC Members to provide, scrub and analyze information, but would give something closer to a common set of facts on the increasingly important subject of regional support.

- **Support OECD, WTO and IMF efforts to evaluate subsidies in the sector and report on them publicly.**

The 2019 OECD reports recommended that “Enhanced transparency should focus, in particular, on (i) the extent to which governments own shares in semiconductor companies and their financial backers. . .”. [I]t is not always evident which semiconductor firms are state enterprises or government-invested.

²⁵ "About Global Trade Alert." Global Trade Alert. <https://www.globaltradealert.org/about>.

The considerable opacity in the ownership structures of many semiconductor firms in China in particular complicates efforts to discipline the provision of government support to and by state enterprises through trade rules.” If this is a misunderstanding, it would be correctable with the provision of information.

Any information-gathering and analysis effort will require substantial resources whether at international organizations (IOs) or an NGO.

Recommendations for WTO reform

The WSC should --

- **Monitor ongoing deliberations that may affect subsidies in the semiconductor sector taking place in the WTO, World Bank, OECD, and IMF, or in other venues and seek to formulate joint positions where relevant.²⁶**

The WSC should urge GAMS members to --

- **Work collectively to support more effective WTO subsidy disciplines at the WTO,²⁷ including through**
 - **Requiring notifications of subsidies under active consideration and before adoption, with as complete information as possible, as well as upon the grant of any subsidy.**
 - **Seeking to assure a higher degree of transparency with respect to subsidies in this product sector through creating incentives for compliance and potential disincentives for non-compliance of notification requirements.**

²⁶ “Subsidies, Trade, and International Cooperation.” International Monetary Fund, OECD, World Bank, and World Trade Organization. 2022. https://www.wto.org/english/news_e/news22_e/igo_22apr22_e.pdf

²⁷ “Semiconductors and the World Trade Organization: How Global Trade Rules Have Spurred Semiconductor Growth and Innovation.” Semiconductor Industry Association. November 2020. <https://www.semiconductors.org/wp-content/uploads/2020/11/The-WTO-and-the-Semiconductor-Industry-Nov-2020.pdf>

SIA (in the U.S.), in its report published at WTO at 25, suggested:

Key areas of subsidy reform should include:

- 1) *Restoring the “dark amber” category for certain types of highly trade-distorting domestic subsidies that are deemed to cause “serious prejudice” under SCM Article 6;*
- 2) *Improving enforcement by establishing a presumption of serious prejudice for programs that governments fail to notify;*
- 3) *Addressing subsidies provided by and to SOEs by defining “public body” based on an objective control standard;*
- 4) *Expanding prohibited assistance (non-commercial assistance) to more effectively capture government assistance that creates excess capacity or leads to market displacement; and*
- 5) *Clarifying the provisions of the SCM Agreement in Footnote 13 regarding “threat” of serious prejudice to cover situations in which government subsidies are likely to cause future adverse effects or future injury to a targeted industry.*

One means of incentivizing notifications is shifting burdens of proof in dispute settlement, but the goal is to have an early ability to comment and to avoid trade friction through greater understanding of concerns.

- **Creating an enhanced forensic research capability and an independent evaluation mechanism in the WTO Secretariat to determine what subsidies exist and whether they may have trade effects of potential concern.**

Notifications are not sufficient to obtain full information.²⁸ For a detailed discussion of enhancing the intelligence capabilities in the WTO Secretariat see my PIIE Working Paper, *WTO 2025: Enhancing Global Trade Intelligence*²⁹, also covered in Wolff, “Revitalizing the World Trade Organization”, Cambridge University Press to be published in Spring, 2023.

The WSC should also urge GAMS Members to work together to --

- **Support restoration of deliberative and negotiating functions of the multilateral trading system at the WTO, so that an ITA 3 is more likely to be adopted.** See: Wolff, PIIE Working Paper: *Getting back to the negotiating table*, a PIIE Working Paper.³⁰
- **Support restoration of binding WTO dispute settlement that is acceptable to all GAMS members.** See: Wolff, PIIE Working Paper *WTO 2025 --Restoring Binding Dispute Settlement*.³¹

Maintain a Balanced Perspective

Not all subsidization is bad. It may provide a market distortion in a positive direction from the viewpoint of public policy. It may prove to be much better, and less trade-distortive, than other potential measures. A colleague of mine has suggested coordinated national subsidies pursuant to an international agreement to assure adequate supplies of vaccines during the pandemic.³² It would be unusual, but conscious collaboration in the use of subsidies can in certain circumstances produce a public good, were there problems where the solutions can be for the common good – producing more STEM graduates, more basic R&D, are examples.

²⁸ An UNCTAD paper proposed this for the WTO fisheries subsidies negotiations. "Transparency in Fisheries Subsidies: Notification-Driven Analytics of Country Performance and Disclosure Requirements." United Nations Conference on Trade and Development Research Paper No. 36 (UNCTAD/SET.RP/2019/8). September 2019. https://unctad.org/system/files/official-document/ser-rp-2019d8_en.pdf

²⁹ "WTO 2025: Enhancing Global Trade Intelligence." Peterson Institute for International Economics. April 2022. <https://www.piie.com/publications/working-papers/wto-2025-enhancing-global-trade-intelligence>.

³⁰ "WTO 2025: Getting Back to the Negotiating Table." Peterson Institute for International Economics. May 2022. <https://www.piie.com/publications/working-papers/wto-2025-getting-back-negotiating-table>.

³¹ "WTO 2025: Restoring binding dispute settlement." Peterson Institute for International Economics. April 2022. <https://www.piie.com/publications/working-papers/wto-2025-restoring-binding-dispute-settlement>.

³² Chad Bown. "The WTO and Vaccine Supply Chain Resilience During a Pandemic." Peterson Institute for International Economics. September 2022. <https://www.piie.com/sites/default/files/2022-09/wp22-15.pdf>

The world needs a secure and reliable multiple vendor base for semiconductors, built to compete and operate fully in accordance with market principles. Unnecessary pain caused by overcapacity, as the steel sector has found out, should, if possible, be avoided.

This industry is an investment in the planet's future in that it supplies the continuing information technology revolution. There is no going back. A question for the GAMS/WSC is how to manage the process going forward to reduce unnecessary trade friction.

Take Full Advantage of This Extraordinary Forum

All of the likely parties for and against any particular measure are at the table in the GAMS/WSC. This presents an extraordinary opportunity if there is sufficient vision to find areas of agreement and cooperation.

The alternative: It is always possible with subsidies to have a competitive approach, matching subsidies with more subsidies. It is difficult to unilaterally decide not to subsidize where international competition is involved. It would be far better to negotiate downward the level of subsidization on a mutually advantageous basis through the adoption of agreed disciplines.

Conclusion

In the middle of the last century, a wise management consultant, Peter Drucker, told CEOs that it was part of their responsibility to seek to manage the external environment. This is still good advice. The GAMS/WSC format was designed to assist both businesses through their regional associations and officials from their regions to do exactly what Drucker was advising. It has worked well in many respects. Where participants saw tariffs and other impediments to trade, they acted collectively to remove them. Where companies saw ways to improve the global environment in their use of chemicals and gases, or use of electricity, they learned from each other to make improvements in the way they operated. They did together what could not be accomplished as well separately for the industries to serve their customers and for the benefit of the public more generally. There are new challenges, which require fresh efforts. The GAMS/WSC/JSTC is a unique and valuable framework that should be used for new collective efforts to meet these challenges.

Annex

REGIONAL SUPPORT GUIDELINES AND BEST PRACTICES

November 2, 2017

I. Objectives and Scope

These guidelines are in furtherance of the purposes and objectives of the Joint Statement establishing the GAMS. It is in the common interest of all GAMS and WSC members to improve transparency and mutual understanding of different support programs of GAMS members for semiconductors to:

- maximize opportunities for collaboration, and
- minimize the risks of creating harmful trade distortions.

These Guidelines seek to establish enhanced cooperation. They are not intended to create binding substantive obligations for GAMS members.

These Guidelines do not alter the rights and obligations that any GAMS member has under the rules of the World Trade Organization (WTO), including the Subsidies and Countervailing Measures Agreement (SCM), or any other agreement to which it is a party.

II. Basic Principles

- A. Governments' and authorities' programs --**
1. should be consistent with WTO rules,
 2. should be transparent and non-discriminatory, and
 3. should not distort trade and investment.
- B. Markets should be open and free from discrimination.**
- C. The competitiveness of companies and their products, not the interventions of governments and authorities should be the principal driver of industrial success and international trade.**

III. Specific Guidelines for Regional Support Measures

Preamble: Scope of Guidelines

These guidelines for regional support measures:

(1) apply equally to goods and semiconductor services³³ in the semiconductor sector³⁴; and

(2) cover subsidies as defined in the WTO SCM, including any provision of equity whether from a central or local government or authority, or entity over which the government or authority exercises control, direction or substantial influence; and

(3) cover any other measures that apply directly or indirectly to the semiconductor sector.

A. Competitive outcomes should be determined by the market.

- 1. Purchases and sales of semiconductor products and semiconductor services, and equipment and materials used for semiconductor products should be made in accordance with commercial considerations.**
- 2. GAMS members should not favor the sale or consumption of domestic commercial semiconductor products or semiconductor services.**
- 3. Consistent with the national treatment requirement of the WTO, GAMS members should not discriminate in favor of all or part of their domestic semiconductor sector with regard to regulatory or administrative actions including, but not limited to:**
 - (a) competition policy measures (e.g. relating to antimonopoly and/or, antitrust);**
 - (b) product standards, certification and accreditation, inspection and testing requirements; and**
 - (c) measures for the protection of intellectual property.**

Section A does not apply to government procurement.

- B. GAMS members reconfirm their commitment to full implementation of the WTO Subsidies and Countervailing Measures Agreement (SCM) and agree that all relevant disciplines contained in that Agreement apply to services for the purposes of these Guidelines.**

³³ Semiconductor services refers specifically to design, contract manufacturing and test and assembly.

³⁴ The “semiconductor sector” includes semiconductor design, manufacturing, packaging, test and assembly, distribution, sales and marketing, semiconductor production and processing equipment, materials and semiconductor services.

A GAMS member should not provide subsidies in its own territory either directly or indirectly, with respect to part or all of the semiconductor sector, if it is prohibited by the WTO/SCM Agreement or causes or threatens with respect to the industry of another GAMS member “adverse effects” in accordance with the WTO/SCM including if there is a substantial risk that it could create capacity that is not commercially justified.

This Section B does not apply to subsidies that are generally available.

IV. Notification and Consultation to Increase Transparency

- A. In accordance with existing WTO disciplines, GAMS members should promptly notify GAMS and other WTO members of all subsidies that are subject to the full WTO notification requirements as contemplated by Article 25 of the WTO/SCM Agreement.**

Whether or not subject to the foregoing, all provision of equity covered by these Guidelines should be notified to the GAMS.

- B. The following is in furtherance of Article II.7 of the Joint Statement establishing the GAMS, which provides “in order to increase transparency among GAMS members and in line with the GAMS principles, GAMS members are encouraged to supply appropriate information to GAMS on relevant support programs in the semiconductor sector:”**

Upon written request of another GAMS member, a GAMS member is expected to provide in writing, to GAMS information requested regarding a particular support measure, financial assistance program or provision of equity, involving part or all of the semiconductor sector. It is the common understanding shared by all GAMS members that the request shall only be on subsidies and/or particular support measures, the details of which are not made publicly available by that GAMS member. Where public information is available, it is understood that the GAMS member publishing the information will identify the location of the information.

Such information should be sufficiently specific to enable the requesting GAMS member to understand the operation of a policy, program or measure and evaluate its effects or potential effects on its trade or investment.

It is expected that the information provided pursuant to a request would include the following: the form of the assistance or equity capital provided under the policy or program, grant or loan; names of the agencies or

entities providing the assistance or equity capital; details on current recipients and eligibility criteria; the legal basis and policy objective of the policy or program providing the assistance or equity capital; the current and planned size of the program and its duration;

the amount of loans, if any, indicating costs to the borrower; prices for goods supplied, if any; the amount of equity capital invested, if any and a description of the nature, circumstances and justification for the investment; and any exemptions from law provided for recipients.

- C. GAMS members should publish all laws, regulations and other measures that apply to the semiconductor sector and make this information easily accessible to the public.**
- D. Each GAMS member shall consult on any government support measure at the request of any other GAMS member.**

V. Best Practices for Promoting Innovation

Consistent with the principles and guidelines outlined above and the shared view of the GAMS members that government action should be guided by market-based principles and that competitiveness of companies and their products and not the interventions of government and authorities should be the principal driver of industrial success and international trade, there are government actions that can promote innovation and an efficient global value chain.

Examples include:

- 1. Grants for basic research and R&D that support expansion of demand for semiconductors.³⁵**
- 2. Financial support for pre-competitive research consortia.³⁶**
- 3. Training and education programs, including university-based programs to develop the talent pool.**
- 4. Support for road-mapping (industry/government/university)**

³⁵ In general, basic (also known as fundamental or pure) research is driven by a scientist's curiosity or interest in a scientific question. The main motivation is to expand human knowledge, not to create or invent something. It is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. There is no obvious commercial value to the discoveries that result from basic research

³⁶ In general, the term "pre-competitive research" includes work that is aimed not at producing products but rather at providing the information and data that enable others to develop future products. Examples include: work to develop industry standards and test procedures; work to understand the characteristics of new technologies or materials; and work that overcomes basic obstacles that prevent a technology from being used in commercial applications. Pre-competitive is not work that is designed to provide a differential advantage for one competitor over another or work that a company insists must be held as proprietary. It also does not include routine or periodic alterations to existing products, production lines, manufacturing processes, services, and other on-going operations even though those alterations may represent improvements.

identification of long-run technological hurdles).

- 5. Supporting expansion of demand for semiconductors (in a manner that does not discriminate against foreign goods or services) such as measures taken to support the digital economy, AI, autonomous vehicles, robotics, medical and health applications, environmental goods and green/sustainable energy.**