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Bilateral Japan-US Relationship in the 1980s and the Foundation of the World Semiconductor Council[1]

1980'lerde Japonya-ABD İlişkisi ve Dünya Yarı İletken Konseyinin Kuruluşu

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ABSTRACT

Integrated circuits (ICs or microchips) are indispensable for high-tech consumer electronics such as computers and automobiles. In the history of IC manufacturing, the 1980s featured rapid improvement and spreading of the chip manufacturing technology around the globe. This led the United States manufacturers, which had been the incumbent leaders so far, to face new rivals, especially from Japan. By the mid-1980s, Japanese manufacturers effectively captured both the US and the world market. In reaction, the US manufacturers filed complaints to the Office of the US Trade Representative for an official protection initiative. Under the threat of being cut out of the US market, the largest electronics market at the time, the Japanese government agreed to sign the 1986 Japan-US Semiconductor Agreement, with significant demands placed on its industry. The agreement was renewed once in 1991, and by 1996, the expectation on the US side was another renewal. Instead, Japan proposed founding the World Semiconductor Council (WSC). This major framework change from a bilateral trade agreement between governments to a multilateral forum of private sector representatives begets

[1] This paper was produced from the author's presentation at the "International Graduate Student Symposium: East Asian Politics in a Changing Global Context" organized by the Department of Political Science of National Chengchi University in Taiwan between October 3-4, 2019. The original content of the presentation has been extended with a focus on the diplomatic relations between the United States and Japan while the photographic visual data has been left out for clarity.

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the question of "why." This paper presents a historical analysis of the factors that led to the Japanese proposal for the foundation of the WSC. In this analysis, explanation factors are divided into international and domestic factors from the viewpoint of Japan. It is concluded that the effect of the US diplomatic advantage in the 1986 agreement and Japan's own domestic, political, and economic transformation culminated in the WSC proposal.

Keywords: semiconductors, Japan-US relations, Japanese politics, international trade, trade agreements

Öz

Entegre devreler (IC'ler veya mikroçipler), bilgisayar ve otomobil gibi yüksek teknoloji içerikli tüketici elektronik cihazları için vazgeçilmezdir. Mikroçip endüstri tarihinde 1980'ler, çip üretim teknolojisinin dünya çapında hızlı bir şekilde gelişmesine ve yayılmasına sahne olmuştur. O döneme kadar sanayi lideri olan Amerika Birleşik Devletleri (ABD) üreticileri, özellikle Japonya'dan gelen yeni rekabetle karşı karşıya kalmıştır. Japon üreticilerinin 1980'lerin ortalarında hem ABD hem de dünya pazarını etkin bir şekilde ele geçirmelerine tepki olarak, ABD'li üreticiler resmi bir koruma girişimi talebiyle ABD Ticaret Temsilciliği Ofisi'ne şikayette bulundular. Dünyanın en büyük elektronik pazarı olan ABD'den men edilme tehdidi altında, Japonya hükümeti 1986 Japonya-ABD Yarı İletken Anlaşması'nı imzalamayı kabul etmiş, Japonya mikroçip endüstrisine ciddi engellemeler getiren bu anlaşma 1991'de yenilenmiştir. 1996 yılına gelinince ABD tarafında beklenti anlaşmanın ikinci kez yenilenmesi doğrultusunda iken Japonya, Dünya Yarı İletken Konseyi'nin (WSC) kurulmasını önermiştir. Hükümetler arasındaki ikili anlaşmadan özel sektör temsilcilerinden oluşan çok taraflı bir foruma giden bu büyük değişiklik, "neden" sorusunu gündeme getirmektedir. Bu makale, Japonya'nın WSC'nin kurulması önerisine yol açan faktörlerin tarihsel bir analizini sunmaktadır. Ele alınan açıklama faktörleri Japonya açısından uluslararası ve yerel faktörler olarak ikiye ayrılmaktadır. 1986 anlaşmasındaki ABD diplomatik üstünlüğünün ve Japonya'nın kendi iç siyasi ekonomik dönüşümünün etkisinin WSC önerisinde etkili olduğu sonucuna varılmaktadır.

Anahtar Kelimeler: Yarı iletkenler, Japonya-ABD ilişkileri, Japon siyaseti, uluslararası ticaret, ticaret anlaşmaları

Introduction

An integrated circuit (abbreviated as 'IC', also referred to as a 'microchip') is a set of electronic circuits on one small flat piece (also referred to as a 'wafer') of semiconductor material. Most modern electronic devices incorporate ICs, and the evolu-

tion of high-tech electronics has been interlinked with changes in IC manufacturing. Generally, Moore's Law forecasts a doubling of IC capabilities every year (Moore, 1965). However, it was the 1980s which featured particularly major changes in global IC manufacturing. As IC manufacturing technology spread throughout the globe, the incumbent industry leaders in the United States faced new rivals. Japanese IC manufacturers proved to be the gravest threat in this period. The IC industry of Japan rose to global prominence in the 1980s with the commercial success of multiple Japanese manufacturers such as Toshiba, Hitachi, Fujitsu, NEC, Matsushita, etc. (Semiconductor History Museum of Japan, 2022). In response to this challenge, US manufacturers applied for official protection from the US government. The negotiations between Japan and the US resulted in a bilateral trade agreement titled the 1986 Japan-US Semiconductor Trade Agreement, which limits Japanese IC manufacturing in exchange for access to the US electronics market. The agreement was renewed in 1991, and by 1996, the expectation on the US side was another renewal. In a surprising move, the Japanese negotiators brought a proposal which would lead to the foundation of the World Semiconductor Council.

This study aims to answer the question of why Japan proposed the multilateral World Semiconductor Council (WSC) in 1996 instead of renewing the 1986 semiconductor agreement framework with the US. The main novelty of the analysis is bringing together external and internal factors from the perspective of Japan to present a holistic explanation of the foundation of WSC, a question in the literature which has remained understudied. The explanatory factors of this study are the diplomatic advantage of the US in 1986, the rise of semiconductor industries in other countries, and the political and economic transition Japan underwent in the 1980s. In the first section, the Japan-US relationship predating the 1986 Semiconductor Trade Agreement is explained. This is followed by a quantitative and historical analysis of the rise of semiconductor industries in other Asian countries and their linkages to Japan. And lastly, the political and economic transition Japan underwent in the late 1980s is discussed, together with its effect on WSC's creation.

Methodology

A mixture of quantitative and qualitative data has been collected and analyzed in this study. The entire body of data has been collected from publicly available resources and the existing literature in English and Japanese. The qualitative data from both English and Japanese literature on the Japan-US relationship, the semiconductor industry in Japan, and the reforms in the Japanese political system are used to build the logical process which led to the foundation of the WSC. The technical terminology and Japanese terms are explained in the footnotes for improved brevity of the text.

Within the scope of this study, quantitative data from both English and Japanese sources have been used to illustrate time-dependent trends. In order to illustrate the change in the shares of the world supply of semiconductors by different countries, data sets from the Semiconductor History Museum of Japan and the World Semiconductor Trade Statistics Blue Book have been utilized. Original graphs with trendlines have been created by the author to support relevant points in the discussion. The division between the Japanese private sector and public sector investment in Japanese government-led projects has been supported by summarizing the data given in Scott Callon's Divided Sun (Callon, 1995). The original dataset of the amount of total collected tax in Japan between 1986-1997 by the Ministry of Finance is publicly available in Japanese; therefore, the author has translated the text to create the graph, which illustrates the declining tax revenues in Japan. All the graphs in this study were created in Microsoft Excel software included in the official Microsoft Office 2016 bundle.

The Japan-US Relationship Leading to the 1986 Japan-US Semiconductor Trade Agreement

Yoshida Doctrine[3] has defined the Japan-US relationship in the post-Second War period where "Japan would ally with the West, do the minimum necessary for defense cooperation with the US, and focus on reviving the Japanese economy" (Green & Szechenyi, 2011, p. 332). Thus, economic recovery and development took precedence in Japan. However, this dynamic led to an adverse US reaction when several industries in the US were shortly overtaken by Japanese exports, such as the semiconductor industry. After holding trade negotiations with the US in the 1980s, Japan realized that the asymmetrical power dynamics in its alliance with the US favored its partner. This section lays down the historical account of the changes in the reactions of the US in the context of Japan-US semiconductor trade frictions and explains how these changes led to the multilateralism feature of the WSC.

The Japan-US semiconductor trade disputes initially started in 1959 when the Japanese transistor radios hit the US market. Similarly, the dispute over the DRAM[4] type ICs in the 1980s was due to the market being dominated by Japanese manufacturers. Losing dominance in consumer electronics was seen as undermining US economic and political authority in the Cold War. The qualitative lead of the US over the USSR in firepower was said to depend on semiconductors (Okimoto, 1984, p. 3). Therefore, in

[3] Yoshida Doctrine refers to the set of policy guidelines put forth by Prime Minister Shigeru Yoshida who was the longest serving prime minister in post-WWII Japan.

[4] Dynamic random-access memory (DRAM) microchips are typically used for storage of the data or program code that a computer processor needs to function. DRAMs are vital components in personal computers and internet servers.

the US, Japan's capture of the merchant[5] semiconductor market was interpreted as a threat to national security.

After the first Japanese DRAMs arrived in the mid-1970s, US chip manufacturers formed the Semiconductor Industry Association (SIA) in 1977 to lobby the US government. Lobbying led to an International Trade Commission investigation which found that Hitachi, Fujitsu, and Nippon Electric Corporation (NEC) held 40% of the 16K DRAM market in the US in 1979. At a related investigation hearing in San Francisco, IBM's Robert Noyce drew comparisons between Middle East oil and Japanese microchips, stating that both were beneficial for the US until total dependence (Flamm & Reiss, 1993, p. 258). Noyce was not the only industry leader who expressed grave concerns (Callon, 1995, p. 166). Publication of various 'Japanese threat' themed works followed shortly; thus, 'Japan, Inc.' discourse took hold in the US. The automobile export disputes in the background did not help this image of Japan in which the state and firms were perceived to be cooperating in a grand collective strategic plan.

As the 'Japan, Inc.' discourse emerged, the US response became aggressive and decisive action via formal channels was launched when the DRAM prices declined severely in 1985[6]. The SIA filed a Section 301 complaint to seek retaliation against Japan's unfair trade practices, joined by two private dumping complaints. If these investigations went ahead, the US would have legitimate grounds to shut its market to Japan. Thus, a formal agreement became the least damaging way out. After year-long negotiations, the STA was officially signed on September 1, 1986.

The Japan-US Relationship Leading to the WSC

Conditions imposed by the STA soon created problems. The complaints from the US manufacturers had been dropped in exchange for foreign companies supplying 20% of the Japanese market, in addition to the Japanese export prices having to follow price floors – foreign market values (FMVs) – set by the US Commerce Department, even when exporting to third countries. The latter point immediately caused the European Community to lodge a complaint to the General Agreement on Tariff and Trade (GATT). Altogether, these conditions resulted in severe supply shortages in the tightening semiconductor market in 1988.

5 Merchant market refers to the market where companies sell their microchips to other companies. The reverse situation where the entire production is consumed within the same company is called the captive market.

6 At this time, any decline in the price of DRAMs was treated as a result of collective dumping by the Japanese manufacturers. Whether there was collusive behavior among Japanese firms took place or not is out of the scope of this paper.

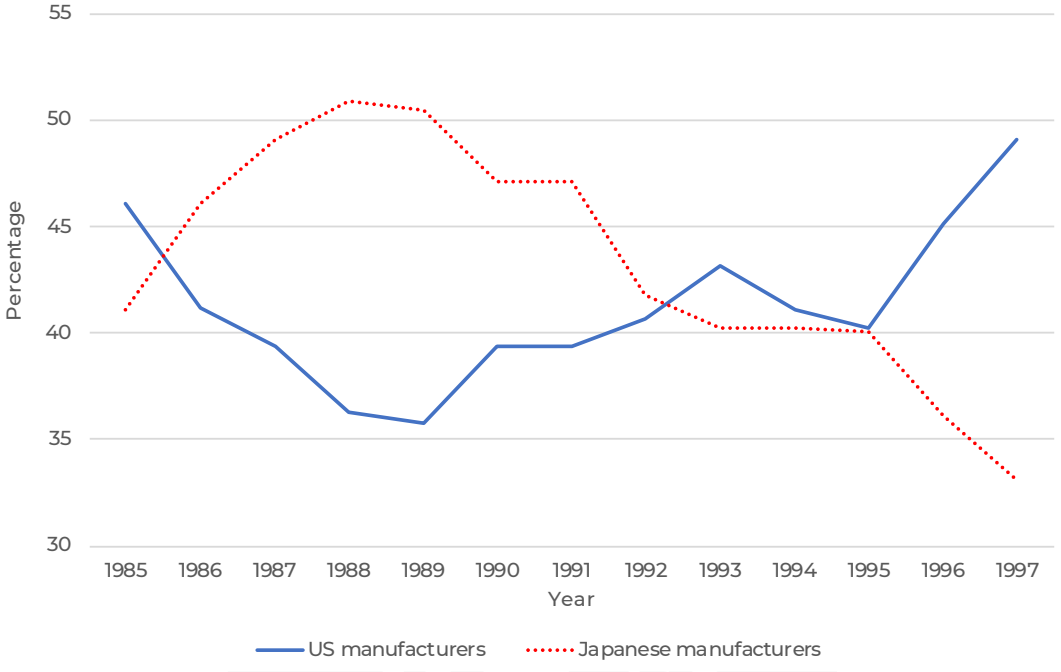
The nature of the US responses was also informed by the domestic political environment. In 1986, the GDP per capita of Japan had exceeded that of the US. This fact fueled more of the Japan-as-a-threat-frenzy, part of what some scholars call the 'yellow peril politics' (Heale, 2009). The Toshiba submarine incident in 1987 worsened the situation.[7] It was revealed that alongside the Norwegian Kongsberg Vapenfabrik, a Toshiba subsidiary had sold machinery which was used to make USSR submarines harder to detect. In response, members of the US Congress held a photo-op on the Congress lawn in which they hammered a Toshiba cassette player. US Senate passed a bill to ban Toshiba imports for two years which was vetoed (Miller, 1987). The adversarial stance against Japanese microchips became particularly influential in this period, exacerbating the policy response levels.

The peak would come in 1991. During the Gulf War, the focal point was that the US military was going to war against Iraq with equipment containing foreign microchips. There was deep distrust and criticism regarding this dependence. Furthermore, due to the STA conditions, the main structural dynamics of the Japan-US semiconductor trade had remained the same, with Japanese DRAMs still constituting a sizeable threat. In this highly tense environment, the Japanese government was not able to alter the 1986 STA framework, which continued with some minimal alterations. However, the Gulf War ended shortly with a decisive win for the US, and the commotion surrounding the national security concerns started to lose its frenzy. More importantly, when the Cold War officially ended on December 25, 1991, the main driving factor behind the national security concerns disappeared. US government became more preoccupied with rebuilding the international political landscape rather than dealing with the Japanese semiconductor industry.

In addition to the disappearance of the USSR threat, the semiconductor market shares of the US and Japan reversed in 1993, and the US returned to its leadership position in world markets (Makimoto, 2008). As seen in Figure 1, the market performance gap widened in the following years after 1995. After the peak performance of the Japanese firms was left behind and the US firms no longer felt the danger of being overtaken, the US government became more relaxed about direct trade controls. This was paired with the new reality of the post-Cold War world in which there was no substantial backing to national security concerns since no large source of existential threat against the US existed. The response level of the US to the Japanese semiconductors finally leveled off.

[7] Toshiba Machinery-Kongsberg incident refers to the export of electric machinery to be used in the USSR submarines between 1974-1985 which violated the rules of Coordinating Committee for Multilateral Export Controls (CoCom). CoCom controlled the machinery and technology export to the Eastern Bloc. The involvement of Toshiba's subsidiary was revealed in May 1987 which resulted in the resignation of the Toshiba's president and CEO.

Figure 1: Shares of the world supply of semiconductors by the Japanese and the US manufacturers, 1985-1997



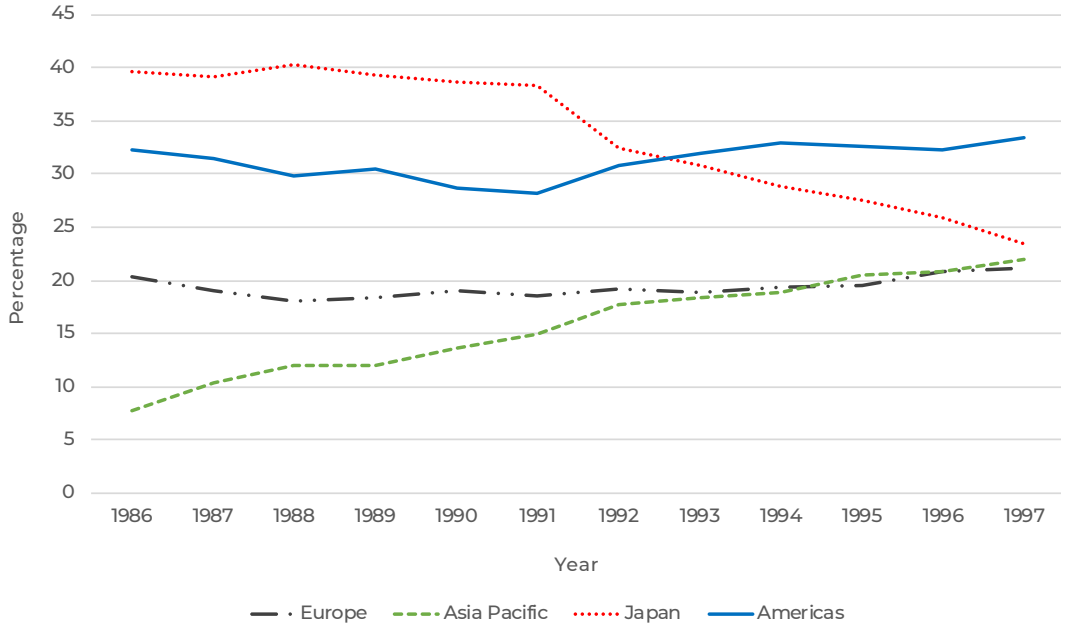
Source: (Semiconductor History Museum of Japan, 2022).

The negotiations for the 1986 STA and its renewal took place under conditions where each side acted to protect its national interest. The diplomatic background of the negotiations can be viewed as a demonstration of realist international relations theory which sees the negotiation process as a zero-sum game (Pfetsch, 2007, p. 1). Due to the national security and industrial survival concerns, the US government's reaction was heightened throughout negotiations for the 1986 STA and its continuation in 1991. In turn, asymmetrical power dynamics and the fact that the US was its largest export target market did not allow Japan to ignore the actions or demands of the US; cutting off the major export market would have meant severe damage to the Japanese industries, which were intricately tied together in backward-forward linkages to the semiconductor industry. The downfall of the USSR and the end of the Cold War provided an opening for Japan to further its hand in the next round of negotiations. Japan started to look for a way to balance the power dynamics in its semiconductor trade since it was clearly disadvantageous facing off the US alone in bilateral settings. The solution which benefited Japan was to bring together more players on the table with different dynamics and relations with Japan, in other words, founding a multilateral framework.

The Rise of Other International Markets

This section explains the other external factor which helped push Japanese policymakers towards a multilateral semiconductor consortium framework rather than continuing with a bilateral trade agreement: The rise of other semiconductor markets in the world. The reconsolidation of the European market and the emergence of other Asian semiconductor industries in China, South Korea, and Taiwan drew the Japanese industry's attention and helped the Japanese policymakers find other players to balance out the influence of the US on the trade negotiations.

Figure 2: Shares of the total world billings in the semiconductor market for Europe, Asia Pacific, Japan, and the Americas regions, 1986-1997



Source: (World Semiconductor Trade Statistics Inc., 2022).

Europe had experienced a surge in Japanese semiconductor exports at the same time as the US. However, the relationship between the European and Japanese semiconductor industries was relatively more peaceful. This was partially possible due to the fragmented status of the European market, where Japan had more of an even footing in negotiations. By the early 1990s, the dynamics underlying Japanese-European relations changed as the European Union (EU) unified major European countries under a single market with centralized political representation of economic interests. Since then, Japan sought effective engagement opportunities (Gilson, 2011, p. 352),

and the inclusion of the European Semiconductor Industry Association (ESIA) in the WSC was a move in this direction.

During the Cold War, South Korea and Taiwan were allied with the US, and their defense from the Communist threat was a primary concern. Located very close to these two countries, Japan was a key US ally whose economic recovery followed the norm of developmentalism, as described in the theory of Chalmers Johnson's seminal work MITI and the Japanese Miracle (Johnson, 1982). The colonial history between the three countries carried its fair share of tensions; however, all three were dedicated to economic development and technological catch-up. This common mentality allowed Japanese, Korean, and Taiwanese firms to take advantage of the economic opportunities. For example, when the 1986 STA pushed the Japanese semiconductor market to be opened to imports, it had not specified the required origin of the products; the US negotiators had assumed that Japan would naturally import from the US. Instead, mostly South Korean and Taiwanese products entered the Japanese market. These products were the results of long-standing FDI projects and outsourcing, processes which fit the theoretical description of the "flying geese model" of economic growth (Kojima, 2000).

In the case of the inclusion of China in the WSC framework, Japanese business and political interests developed rapidly in the 1990s. On October 23, 1992, Emperor Akihito became the first Japanese emperor to visit China. More steps towards mending the bilateral relations during the Hosokawa administration in 1993-1994 were taken (Hook et al., 2001, pp. 170-171). Having entered a rapid economic development process by keeping up the economic reforms after Deng Xiaoping started them, China was rapidly catching up to the international technological standards. By connecting to the world, the Chinese electronics industry got its start and soon came to perform well in export markets. For Japan, the familiar trend of climbing trade tensions with additional military flavoring between the US and China meant that China could be potentially depended on to balance US hegemony, at least in areas related to trade.

The strengthening of the European market and the rise of Asian markets for the Japanese semiconductor industry in the 1990s meant opportunities for both business and international relations. The semiconductor industry is fast-paced in terms of both know-how and market trends, characterized by an increasingly decentralized trade. Thus, for the Japanese semiconductor manufacturers, building information networks with the newcomers in other countries was an important objective. Furthermore, Japan had to find a way to balance its asymmetrical relationship with the US when it came to trade negotiations. The multilateral WSC framework combined these objectives; in the end, Japan achieved a platform for annual high-level information exchange between major international semiconductor business associations and firms and any initiative towards formally binding agreements featuring more than two countries.

The Internal Factors Leading to the World Semiconductor Council

Unlike bilateral trade agreements, the main participants in the WSC are the major semiconductor business associations. Governments take the backseat; they are involved in the annual information sessions where they hear out the developments in the industry as determined by the business associations. How did Japan, a country famous for state-led economic development and the so-called Japan, Inc. model of government-business relations, come to propose such a framework? The answer lies in the domestic trends of Japan observed in the late 1980s and mid-1990s. This section explains the specific domestic factors and their link to the emergence of the WSC framework.

The spreading of neoliberalism in Japan was a prominent domestic factor which had its roots in the trade frictions between the US and Japan. In most cases, the US demanded structural reform of the Japanese economy in adherence to the principles of a free market and less government involvement. For the private sector, moving towards such principles was beneficial for its growth. Thus, after finding a steadfast ally in Keidanren[8], who expressed commitment to the principal tenets of neoliberalism such as free market, trade liberalization, and financial liberalization openly by 1994 (Keidanren, 1995), it was a matter of time for the neoliberal ideology to find followers among policymakers next.

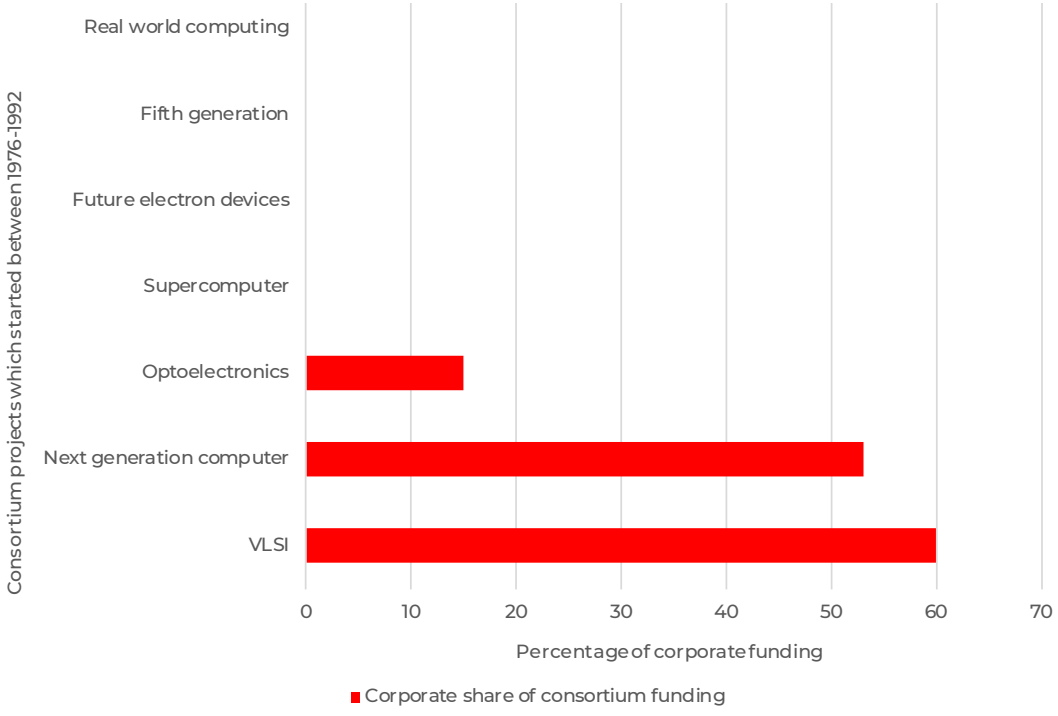
The spread of the neoliberal doctrine in the Japanese political thought system can be attributed to a type of feedback loop called the "idea trap". An idea trap, as summarized in Wakatabe, features a triangle of an idea, reality, and policy which continuously shape each other via feedback (Wakatabe, 2015, pp. 15-16). Perceptions of reality are affected by ideas; policies are then made to respond to the perceived reality, whose results in return make an impact on reality. The usual start of this loop is a crisis since crises create opportunities for challenging existing institutions by agents who carry an ideology that lends itself to the creation of new institutions and policies. The crisis periods of Japan's economic downturns and governmental instability in the 1980s and 1990s marked the beginning of an idea trap shaped by neoliberal thought.

Japanese industrial transformation was considered the result of deliberate public policy (Rothwell, 1986, p. 66). At the forefront, MITI was the main actor; the industrial policy was under its control for decades. MITI's power and influence during the high growth period were well researched in works such as Chalmers Johnson's "MITI and the Japanese Miracle". However, after the mid-1980s, MITI underwent great changes. As the power to grant licenses, set quotas and other authorities that previously held existential influence were taken away from MITI, the nature of the relationship

[8] Keidanren is the Japanese abbreviation of Nihon Keizai Dantai Rengōkai (Japan Federation of Economic Organizations, JFEO). As the largest business association in Japan, it represents majority of the Japanese private sector.

between the ministry and industries changed. As direct governmental control instruments were being removed, MITI lost its rein on the actions of the companies in the projects. Intercompany hostilities meant that bureaucrats had to provide incentives or find creative methods to build rapport among participants, such as VLSI consortium leader Masato Nebashi's utilization of drinking parties (Callon, 1995, pp. 87-88). Even in cases where MITI relied on the strategy of funding the entire consortium project, as seen in Figure 3, it proved impossible to get competitors like Fujitsu, NEC, and Hitachi to work alongside each other. The goals of projects were often not met as the funds for group laboratories in the projects were, in fact, divided between each firm's research laboratory, and each firm worked on technologies benefitting themselves.

Figure 3: The lack of corporate funding contributions in MITI High-Tech Consortia Projects

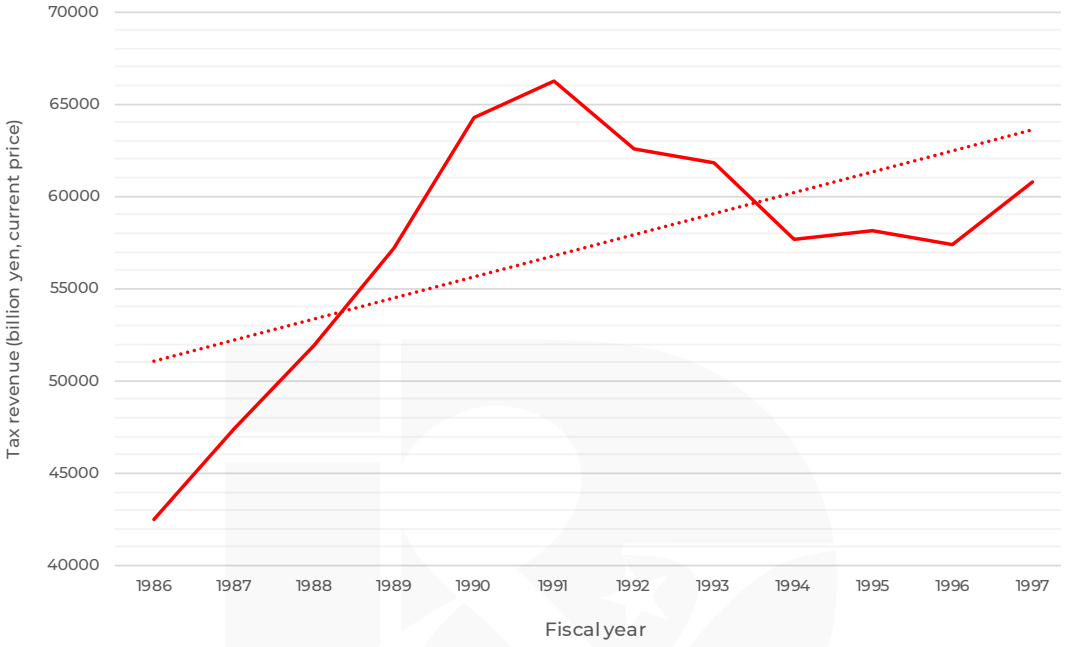


Source: (Callon, 1995, p. 152).

MITI's ability to offer fully state-funded projects with large budgets slowly disappeared as the state budget failed to grow. This point is especially relevant in considering the changing nature of the MITI-private sector cooperation. Potential loss of funds after 1991, as can be inferred from the declining tax revenue in Figure 4, meant the loss of the carrot MITI was able to incentivize the companies with earlier. The weakening of state finances is therefore certainly linked to the less-than-stellar per-

formances in government-private sector cooperative projects after the 1980s, such as the Next Generation Computer project.

Figure 4: The total amount of total collected tax in Japan, 1986-1997



Source: (Ministry of Finance National Tax Agency, 2022).

In addition to shrinking general tax revenue, fiscal austerity born during the Nakasone government adversely affected MITI's funding. In 1987, the budget only saw an anemic 0.02% increase, where USD 201.8 billion out of 335.09 billion was earmarked for general spending, which meant no funding for special projects. The final nail in the fiscal coffin came when more funds out of the budget started to be allocated to political parties due to the Political Party Subsidy Law passed in 1994 (Gaunder, 2011, p. 376). Altogether these meant MITI simply could not afford to lead the industry via large technology consortium projects.

Another area where MITI was previously influential was antitrust exemptions. The Antimonopoly Law and associated policies were hibernating until the 1990s (Beeman, 2003, p. 113). Defying the Antimonopoly Law and Fair-Trade Commission as it saw fit, MITI was able to develop plans for structurally depressed industries to receive an antitrust exemption in adjusting their excess capacity (Higashi & Lauer, 1990, p. 166). However, as more foreign factors favorable to opening the Japanese economy mounted and the policymakers caught in the neoliberal idea trap came to value the

benefits of allowing the market forces to shape industries, the environment became more supportive of private sector competition and less of governmental intervention to set up depression cartels to rescue declining industries.

In the early 1990s, the postwar 1955 system[9] ended, bringing uncertainty and a lack of political focus as various groups pushed for their own reformist agenda. The restraints on the institutional redesign, such as the lack of public challenge to policies, and the complacency on the part of policymakers broke down (Cargill & Sakamoto, 2008, pp. 126-127). Reformist leaders swept in one after another; however, their primary focus was on internal political affairs.

Prime Minister Nakasone was at the helm when the 1986 STA was crafted. To understand his role in the process, attention must be paid to his reformist agenda. As a fiscal conservative, he successfully cut government spending in 1984 via the "starve-out" strategy[10]. He then became preoccupied with US trade conflicts. His solution was to turn the export orientation of the Japanese market towards domestic demand. He commended a unified front in his party, as seen in 1985 when the US DRAM dumping complaint caused serious friction; then-chairman of the LDP's Policy Board publicly stepped up to declare the necessity of voluntary export restrictions in automobiles and semiconductors (Flamm & Reiss, 1993, p. 267). Nakasone's reformist agenda extended into the neoliberal ground with his Maekawa Commission Report, which, in 1986, put forth policy recommendations such as deregulation, liberalization and internationalization of the nation's financial markets.

A period of prominent scandal-fueled government changes emerged after Nakasone. Scandals such as the Recruit scandal[11] and Sagawa Express scandal[12] felled successive LDP governments between 1987-1993. The 38-year LDP rule finally croaked under the weight of scandals and ended in August 1993. It took three years for LDP's Ryutarō Hashimoto to take on the prime minister role. Riding the reform wave, Hashimoto pursued six large administrative reforms, one of which targeted the national bureaucracy. Hashimoto followed Nakasone's tried-and-succeeded route by establishing an advisory council named Council on Administrative Reform to set his

9 The 1955 system refers to the period between 1955-1993 when the successive LDP governments were in power. One of the characteristics of the 1955 system was the iron triangle, where the three-legged relationship between politicians, bureaucrats, and big business is predominant in policy making and politics (Gaunder, 2011, pp. 372-373).

10 A strategy in which fundings for all ministries are frozen, thereby causing subsidies and personnel to be reduced without any complaints of unfairness.

11 The Recruit scandal, or also known as Recruit Cosmos scandal, occurred in 1988 when it was revealed that Recruit Cosmos traded stocks for political and bureaucratic favors. 47 MPs of mostly LDP origin resigned, and the PM Takeshita fell from power.

12 Trucking company Sagawa Kyūbin made donations to politicians which exceeded the legal amounts in exchange for political influence.

reforms as the main political agenda. As Hashimoto's reforms gained traction and threatened their power base, bureaucrats in the council tried to sabotage the proceedings. Hashimoto's response was to remove them from the council. The problem that stopped Hashimoto rose when a politician with ties to the Lockheed bribery scandal entered his cabinet in September 1997 (Shinoda, 2013, p. 56). Hashimoto's support drained away, and his term ended in 1998. Out of Hashimoto's original agenda, reduction in the number of ministries, reforms in ministerial structures, the establishment of the Cabinet Office, and empowerment of the Cabinet Secretariat, as well as the prime minister, were achieved. However, the process was not completely successful, leaving behind structural continuity issues in areas such as the House of Councilors and local electoral systems (Noble, 2016, p. 186).

The period between 1986-1997 period had politically stable, reformist governments at the beginning and the end. When the 1986 STA was signed, Nakasone was in charge. His reformist agenda, close personal relationship with President Reagan, and commitment to the continuation of the bilateral relationship, as mentioned by Hook et al. (Hook et al., 2001, p. 98), meant that Japan was able to navigate stably on the road to the 1986 STA. The subsequent Japanese governments were not necessarily able to push for improvement of the agreement conditions even when they were of the same party due to intraparty conflicts; thus, the renewal of the STA in 1991 coincided with a lack of political leadership. However, when it came to the negotiations in 1996, a relatively more stable Hashimoto government was at the helm. Since his reform focused on domestic administration, Hashimoto was not reluctant to let the private sector step forward in the negotiations. Consequently, the private sector stepped up into its new representative role.

There were other points that redirected the Japanese state's focus. In the post-Cold War environment, the Japanese government was embroiled in changes involving the Japan-US relationship. After the Gulf War ended, Japan dispatched the Maritime Self-Defense Forces in a peacekeeping capacity and overall spent USD 13 billion to support the war effort. Instead of recognizing its contributions, Japan was accused of "checkbook diplomacy" (Green & Szechenyi, 2011, p. 333). The added effect of the previously discussed US reaction to the Japanese success in semiconductors made the Japanese government seek a redefinition of its relationship with the US. Steps towards change included episodes such as the Hosokawa government's review of defense policy which traditionally had focused on the Japan-US alliance, bringing a new multilateral diplomacy perspective. Among these developments, the Heisei period started off with various crises in Japan. For example, only in 1995, Great Hanshin Earthquake, the Tokyo Metro sarin gas attack, and the All Nippon Airways Flight 857 hijacking incident occurred. Simply put, the amount of attention Japanese policymakers could pay to the ongoing semiconductor trade issues decreased.

The final domestic factor pushing Japan towards the WSC framework was the maturation of its semiconductor industry. As a latecomer, the Japanese semiconductor industry faced numerous disadvantages in the beginning, mainly the learning curve effect and lack of chance to expand freely into the market. The Japanese manufacturers had lacked the experience, information, capital, and organizational capacity to build a market existence, and therefore, cooperation with the central government was a given in such conditions. This strategy proved successful when the 1976 VLSI consortium project helped Japanese manufacturers arrive first in the 64K DRAM market in 1978 rather than as a follower (Weinstein et al., 1984, p. 39).

The Japanese semiconductor industry featured fierce domestic competition. But it helped that the domestic market was insulated from foreign interruptions while firms were building their competitive advantages and catching up to world standards. This setup slowly changed. Foreign investment in Japan was liberalized in 1974, and quantitative import restrictions were phased out by 1976. Adding the 20% import rule brought in by the 1986 STA, Japanese chip producers had to face serious competition from abroad. Instead of drowning against the foreign competition, Japanese manufacturers worked out methods to stay afloat. According to Dong et al., Japanese firms broke out of the follower mold by taking advantage of changing consumer tastes, technological changes, their free-rider position in consumer education, information spillover, skipping trials and errors, the incumbent inertia, and enhanced level of information via resourcefulness (Cho et al., 1998, p. 493). As a result, after 1986 STA, Japanese DRAM manufacturers even moved on to market sharing strategies instead of market capturing ones (Flamm & Reiss, 1993, p. 283). This highlighted the growing clout of the Japanese firms.

The semiconductor industry of Japan had started its IC journey by supplying the US transistor market. When the computer industry gained prominence, product lines shifted to accommodate the needs of this new industry. US company IBM had entered the personal computer business in 1981; within two years, the entire market grew approximately 200% to 1.4 million units sold in 1984. By 1990, this figure would reach 6 million (Forester, 1993, pp. 90-91). The demand for computers meant the demand for microchips, and the Japanese semiconductor industry rose to meet it. The Japanese manufacturers moved in tandem with the Japanese government's goal of fostering the domestic computer industry as it benefitted their infant-stage needs. It was when new market trends emerged that the Japanese industry had to develop new business models on its own as it matured.

Working in tandem with the rising game console industry proved successful, and the different approaches in IC technology opened new channels of revenue for the semiconductor manufacturers. Although much attention was paid to the grand consortium projects for Japanese supercomputers at the time, one of the symbols of

Japan's success in the world market came to be the gaming consoles (Morris-Suzuki, 1995, p. 221). During the same period, another strong signal for the industry to follow the market trends instead of ministerial guidance came in the form of software development. Until the 1990s, MITI had not paid attention to the potential of the software, and the private sector had followed MITI's lead. NTT, the public corporation of the time, was also content with its monopoly in the Japanese computer market, which was built on the Japanese-made hardware carrying the US-origin Windows operating system. As the private sector became aware of the lack of progress in Japanese software development (Toyoda, 1984, pp. 148-149), MITI initiated a consortium project called TRON which failed due to a combination of limited funding and significant bureaucratic turf struggle. Another example came with the flash memory's invention in the late 1990s; capitalizing on its invention, Toshiba dominated the flash memory field. Game consoles or flash memory areas were not target areas set by any ministry, yet firms successfully met the market demand. Thus, the confidence of the now mature industry was boosted.

The coming of age of the Japanese semiconductor industry coincided with the loss of trust in the bureaucracy. The bureaucracy was unable to foresee the new technological trends and act on them to give direction to the industry, given the internal turmoil caused by administrative reforms and fiscal downsizing. What nailed the coffin was the end of the bubble economy.[13] Japanese capital markets went through major upheaval as the bubble hit its peak on December 29, 1989, as Nikkei 225 hit an all-time high and rapidly went bust in 1990. Tokyo stock market's value halved in two years. The inability of any state organ to foresee or quickly remedy the aftermath of this financial catastrophe caused damage to the reputation of previously canonized bureaucrats. MITI, MOF, and Bank of Japan were regarded as the main culprits. Capital seemed to evaporate, and liquidity crises halted the economic activity. Without capital, the capital-intensive semiconductor industry could not afford to expand R&D and open new foundries on the same scale as before; the R&D expenditure of Japanese manufacturing firms decreased by approximately 10% between 1990 and 1993 (Hemmert, 1998, pp. 131-132). The private sector's confidence may have been hurt by the bubble's burst; however, the ambitious spirit that had birthed the expression "We should write Made in Japan bigger" still held on (Shimura, 1986, p. 70). Furthermore, there was a brief period of recovery in the economy that may have helped a sense of business back to normal in the mid-1990s. According to Yoshikawa's division of phases of the first lost decade, this slight recovery period is sandwiched between two periods of recession, the last one starting in the second quarter of 1997 (Yoshika-

[13] The bubble economy was the high growth era in 1980s when abundant capital and a real estate bubble coincided to create the most economically prosperous period in Japanese history. Record high on the NIKKEI stock exchange was recorded on December 29, 1989, and stock prices started plummeting in 1990. The bubble economy is commonly accepted to have ended in 1992, although alternating views exist regarding as to when exactly it started, ended, and what factors have caused it.

wa, 2001, p. 11). Achieving an annual economic growth rate of 5.1% in 1995-1996 after experiencing 0.6% following the burst of the bubble acted as a signal for the private sector to hope to resume business as usual. This short period of recovery just prior to the semiconductor trade negotiations in 1996 meant the breakaway from the bureaucratic mandate and solidification of the strive to handle own prospects for the semiconductor industry had a chance to affect the proceedings.

The negotiations regarding the second renewal of the 1986 STA started with these developments in the background. The Electronics Industry Association of Japan (EIAJ) representatives faced US's SIA; the entourage included industry leaders from companies such as Sony and Toshiba. Although discussions between the two governments were also held in parallel, it was decided to prioritize the consensus between the two industries. US side stuck to the minimal government involvement principle, arguing for its necessity regarding market share monitoring and dumping prevention. On the other hand, the now mature and confident Japanese side claimed that government involvement was unnecessary and that the basis of the new framework should be the free market mechanism. Going forward with the new framework idea, Japanese representatives proposed a multilateral mechanism centered on private sector representation from major semiconductor industries of the world; an opportunity for the top executives of the world's semiconductor industry to gather together without hindrance from politics, diplomacy, or bureaucratic red tape. Despite some pushback from the US side, the first meeting in the new framework was held in Hawaii in April 1997 with the additional participation of semiconductor industry associations of Europe and South Korea. At last, WSC was born (Makimoto, 2008, p. 5).

Conclusion

Instead of relying on state representation to handle its trade issues, the Japanese semiconductor companies participate directly on the global stage at the WSC; they exchange information, discuss global issues, and build networks. Throughout the paper, the emergence of this framework has been explained by historical analyses of key factors.

External and internal factors were both effective in bringing about change to Japan. Foreign factors from outside of Japan were mainly the US conduct against Japan during the semiconductor trade frictions and the rise of other countries' semiconductor industries. The climbing tensions in Japan-US relations featured episodes of US government intervention and treatment of Japanese semiconductor products as threats. The majority of these episodes were fueled by national security discourse; when the Cold War ended, the discourse lost its policymaking steam. However, throughout the 1986 STA negotiations and its renewal in 1991, Japan came to real-

ize the importance of balance on the negotiation table. New partners in the form of other semiconductor industries emerged one by one in the 1990s, and Japan did not neglect to include them in the WSC framework to build balance and take advantage of the opportunities they offered.

Most of the analysis in this paper has been dedicated to domestic factors. The ideological transformation of Japanese policymaking, the related decline of the MITI's strength, political influx, shuffling of state priorities, and the maturation of the industry were the domestic factors taken into consideration. By the late 1970s, neoliberal ideology characterized by its emphasis on the free market and reduced state role was on the rise among advanced economies; it was a matter of time until the US pressure to structurally alter the Japanese economy would lead some Japanese policymakers to adopt neoliberalist ideology in varying amounts for their political agenda. As the entire political environment within Japan split between pro-reformers and anti-reformers, political instability emerged. A few prime ministers were able to push their reforms through, cutting down the clout of the ministries. Amongst these developments, MITI, the ministry in charge of industrial policy, lost its ability to lead the industry via successful consortium projects. Its role transformed from one of 'leading' to one of 'supporting.' Alongside this, after years of success in international markets, the private sector outgrew its infant industry status and started demanding to control its own actions outside of bureaucratic intervention. Perhaps this industrial maturation process would have stopped in its tracks when the largest financial crisis in the postwar Japanese history hit in the early 1990s; however, the role of the state within the policymaking circles had been already altered by the neoliberal idea trap. The Japanese semiconductor industry would lead itself from then on.

Several points, such as whether there was a legitimate need for reforms in Japan in the 1990s or the exact nature of the relationship between South Korean, Taiwanese, and Japanese semiconductor industries, were left out of the analysis. They remain relevant areas for further research. The main aim of this paper was to put forth factors which had led to Japan's move from the 1986 STA bilateral trade agreement framework into a less state interaction-oriented, private sector-led, multilateral framework in the semiconductor industry in 1997. To conclude, it was the combined effects of these domestic and international factors that resulted in a transformed state-industry relationship in the Japanese semiconductor industry.

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