



Sixth Medium Term Plan

RIETI's Activities on Economic Security

RIETI Highlight | EDITION 2024

What is **RIETI** Highlight?

RIETI's public relations magazine RIETI Highlight is published in Japanese on a quarterly basis, featuring RIETI's most recent activities with the objective of disseminating our research outcomes to a wider audience. This RIETI Highlight Special Edition is written in English and published annually as an overview of RIETI's undertakings for our international readers. We hope this Special Edition will be helpful not only in spreading information on our activities and research findings but also in deepening international readers' understanding of our mission as a leading Japanese policy think tank.

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• All titles and affiliations are as of the day of the event.

• Events and interviews are held online unless otherwise noted.

• Views expressed in this issue are solely those of the individual authors and do not necessarily represent the views of RIETI.

NEWS

Presentation of Research Results during the Period of the Fifth Medium-term Plan

The COVID-19 crisis was an unprecedented shock and has had a major impact on the economy and society for more than four years since 2020. Although economic and social activities in Japan have largely normalized since when the Japanese government downgraded COVID-19 to a Class 5 infectious disease in May 2023, various positive and negative hysteresis effects are believed to exist.



RIETI hosted a RIETI Policy Symposium titled "The Japanese Economy and Policy Issues after COVID-19" on February 29, 2024. This symposium brought together the program directors, including Chairman Kyoji Fukao and President Eiichi



Presentation by FUKAO Kyoji, Chairman, RIETI

Tomiura, who oversaw RIETI's research activities during the four-year period of the 5th Medium-term Plan, to review research results, reflect on the Japanese economy and economic policy, and to discuss policy issues based on the lessons learned.

Presentation by TOMIURA Eiichi, President and CRO, RIETI

Symposium on the World Trade Order and Economic **Security**



Presentation by Dr. Beatrice WEDER di MAURO (President, CEPR / Professor, the Graduate Institute of Geneva)

The RIETI-CEPR Symposium was held in April 2024. The geopolitical landscape has shifted due to significant global events that are currently ongoing. COVID-19, the conflict in Ukraine and rising tensions among major powers such as the U.S. and China, have resulted in changes in the trend of globalization. This joint symposium hosted by RIETI and the Centre for Economic Policy Research (CEPR) explored these topics under the theme of "The Future of Global Trade Order and Economic Security," and provided valuable insight into these topics. The symposium began with special remarks from the Director General of the Trade Policy Bureau from the Ministry of Economy, Trade and Industry (METI) of Japan, followed by presentations and discussions with some of the world's leading experts on matters of economic security and global trade.



The Research Institute of Economy, Trade and Industry (RIETI) is a policy think tank established in 2001. Our mission is to conduct theoretical and empirical research, to maximize synergies with those engaged in policymaking, and to make policy proposals based on evidence derived from such research activities. RIETI has developed an excellent reputation both in Japan and abroad for its work in these areas.

Chairman's Message

My name is Kyoji Fukao, and I have succeeded former Chairman Shujiro Urata as chairman of the Research Institute of Economy, Trade and Industry (RIETI).

RIETI, Japan's first policy think tank established as an independent administrative agency in 2001 for the purpose of conducting effective and efficient research on economic and industrial policy, entered a new mid-term objective and mid-term plan period in April. What is required of us in the next five years is the ambitious goal of further advancing our world-class research, which has been recognized as top class in Asia, while undertaking our most important mission, which is making policy contributions.

In a 1997 publication by RIETI's predecessor, the Research Institute of International Trade and Industry (MITI/RI), former Director Ryutaro Komiya and new Director Masahiko Aoki respectively wrote that "MITI/ RI's central mission is to academically analyze policy issues facing the Ministry of International Trade and Industry (MITI)" and "as institutional reform has become a problem for Japan as a whole, MITI/RI is called upon to go back to the roots of this dynamism and academically clarify the issues of trade and industry policy."

The world is currently undergoing an epochal transition due to the confrontation between China, Russia, and the West, the rise of the Global South, and the emergence and spread of new technologies such as AI, big data, and robotics. The Japanese economy is in a state of crisis in that it has been largely left behind by the technological frontier countries due to 30 years of stagnation, but as



Chairman, RIETI Profile:



in the past, when the Meiji restoration opened up the country, and at the end of World War II, the existence of a large gap with the technological frontier countries is itself an opportunity for Japan, which is exiting from a long deflationary period.

In order to survive the turbulent world and to exit from economic stagnation, it is important for industry, government, and academia to work together, as they have done during the past two economic crises. In this new, unprecedented era, it is necessary for academia, which tends to look at issues from a medium- to long-term perspective, to help provide direction for policy changes. In this sense, RIETI is becoming increasingly important.

RIETI will actively strengthen its policy advisory functions through the EBPM Center, conduct analyses that open up "new opportunities for economic and industrial policy," and propose institutional reforms from a medium- to long-term perspective, with the ultimate goal of becoming the first policy and research institution that policy makers and industry turn to for both advice and to access research results.

RIETI Highlight English Edition 2024

President's Message

RIETI has conducted and accumulated research on economic and industrial policy since its establishment in 2001. This April, we entered a new medium-term objective and medium-term plan period, with the goal of continuing to promote high-level research while strengthening our contribution to policy. I am aware of the gravity inherent in the responsibility of being appointed president at a time such as this, and I intend to fulfill my duties.

During the long period of stagnation since the bursting of the bubble economy, Japan has been left behind by the economic development of other countries. Not only is the situation expected to become more serious as the population declines and ages, but new technologies are beginning to have a broad impact on the world, and the era of the accelerating globalization since the end of the Cold War between the U.S. and the Soviet Union is coming to an end. We are at a historical turning point. Therefore, it is necessary to find a path to achieve longterm development by adopting new and innovative policy measures based on deep consideration of the situation.

In this context, RIETI needs to reaffirm its mission of taking economic and industrial policy in a better direction for our country through research and the promotion of research activities. For this reason, we hope to enhance our advisory function so that our policies can withstand academic criticism. In particular, we will provide input into policy formation from a mediumto long-term perspective through research centered on data-based empirical analysis. At the same time, as an independent administrative agency, we will continue to evaluate policies and propose reforms to ensure that the implemented policies are effective for our country. We will also strive to maintain the highest quality of research, since involvement in policy is only possible when backed up with academic findings. We also hope that closer exchanges of views with policy makers will stimulate our academic research. It is more important than ever before to collaborate with various parties in order to tackle this series of difficult issues and therefore, I thank you in advance for your guidance and advice.

TOMIURA Eiichi

President and Chief Research Officer, RIETI



Leveraging our Strengths as a "Knowledge Platform" to Contribute to the Formulation and Implementation of Public Policy

IKEYAMA Shigetoshi



Vice Chairman, RIETI

Today, in addition to the transformation of the international order, domestic labor force trends and other changes in the macro environment, we are witnessing a shift in government policies toward commencing large-scale, long-term support focused on the resolution of social issues. Given such circumstances, the tide has changed from past trends, and it is vital to adopt a policy approach that will link this movement to sustainable growth. From this perspective, economic and industrial administration has a crucial role to play. In addition to conventional policy formulation, it is necessary to incorporate knowledge and values from diverse sources within Japan and overseas into policy that is both based on innovative ideas and underpinned by a theoretical framework.

To achieve this, it is necessary to conduct research into mediumand long-term economic institutional reform with a focus on current issues. It is also essential to provide a platform for delivering research outcomes and recommendations built on theoretical and analytical foundations to inform policy debate and the policy formation process. It is vital that this platform obtains input from a diverse range of experts, from government officials to first-class researchers within Japan and overseas, and experts in a wide range of fields such as industry and NPOs/NGOs, as well as opinions and specialized knowledge from the general public.

The Research Institute of Economy, Trade and Industry (RIETI) was established in 2001 to serve as such a platform. The Act on the Research Institute of Economy, Trade and Industry, Independent Administrative Agency, which formed the basis for RIETI's establishment, clearly defines our purpose to conduct efficient and effective research on economic and industrial policy and utilize the results of the research to contribute to the formulation of economic and industrial policy in Japan.

The Research Institute of International Trade and Industry (MITI/ RI), RIETI's predecessor, was established as an internal research organization within the Ministry of International Trade and Industry (MITI) in 1987 for the purpose of strengthening the theoretical backbone of the various policies implemented by MITI. MITI/RI performed various functions, such as building close cooperative relationships with academia, centering on theoretical economics; however, with the growing need for policy development transcending the conventional administrative framework described above, it became necessary to radically revise the structure through which MITI/RI conducted research.

For this reason, the Ministry of Economy, Trade and Industry (METI) chose the form of an independent administrative agency employing non-government staff for RIETI to ensure that it maintained a healthy distance from policymaking authorities and to enable it to recruit first-class researchers from within Japan and overseas in an agile and flexible way, and thus perform its functions in the most effective manner.

Independent administrative agencies are independent incorporated bodies established by the government to perform duties that require implementation from public perspectives, such as safeguarding the livelihood of citizens and socioeconomic stability, and their independence from the government is ensured. Full consideration is also given to the autonomy of the operation of independent administrative agencies so that they can perform their work efficiently and effectively.

RIETI makes full use of this format to conduct efficient and effective policy research through streamlined human resources management and flexible budget execution.

Some of the features that set RIETI apart from other research institutes, universities and other organizations include its accumulation of problem awareness and research results which it has gained from its close and sustained interaction with policymaking authorities, actively providing policy recommendations and academic insights that are utilized in economic and industrial policy, and the environment it has established to facilitate access to the policy-related information collected and accumulated by METI itself. Additionally, RIETI has the necessary environment for panel data analysis and other analyses using the individual data from official statistics.

Unlike administrative bodies within the government, RIETI is able to flexibly reorganize its structure to deploy personnel in accordance with current trends in government needs. As a result, it recruits firstrate human resources from a wide range of fields, such as academia, research bodies, NGOs and the private sector, in addition to policy practitioners from METI and other ministries. This enables it to generate synergies between its academic competence and its policy competence, while also serving as a bridge connecting research outcomes with policymakers.

The institute receives budgetary allocations from the government, ensuring that it is able to steadily conduct its work; however the end use of these funds is not specified by the government, enabling RIETI to respond accurately to diverse and changing policy issues as they arise.

In the sixth medium-term goal period that began in April 2024, we will continue to leverage the strengths we have developed as a "knowledge platform" while renewing our commitment to contributing to policy formulation and implementation as our key focus. In addition to strengthening the policy advisory function of the RIETI EBPM Center, we will support the government's mediumand long-term policy development through research and analysis and further advance initiatives to make research results increasingly accessible and useful to policymakers.

Achievements of the Fifth Medium-term Plan Period

In RIETI's Fifth Medium-term Plan (FY2020-2023), we have been particularly focused on research contributing to the integration of social science elements and industrial technology (the integration of humanities and sciences) and to Evidence-Based Policy Making (EBPM). Our mission is to enhance our system as a "platform of knowledge," contribute to the formulation of economic and industrial policy, and aim to ever improve our output and our international reputation as a leading policy think tank.

However, just before RIETI entered the Fifth Medium-term Plan period, a severe shock occurred in the form of the global spread of the novel coronavirus infection (COVID-19). In uncertain societal circumstances where the situation can change drastically from one day to the next, even though RIETI's activities were subject to various constraints, we were able to promote online work and working from home and to achieve results that significantly surpassed our initial goals.

The following are the main achievements of the Fifth Medium-term Plan period.

Research Activities

Discussion Papers on COVID-19

In April 2020, a Fast Track system was established to publish urgent papers on COVID-19 as a major social issue in a timely manner and to utilize them in the government's COVID-19 countermeasures. 53 Fast Track papers were published, 26 of which were accepted and published in peer-reviewed journals and received high academic recognition. In addition, some of these results were used in white papers, government council documents and as important basic data showing the economic impact of the COVID-19 pandemic. The RIETI Discussion Paper "Who Does Not Want to be Vaccinated Against COVID-19? - An Internet Survey in Japan" (SEKIZAWA Yoichi (Senior Fellow, RIETI)) et al., May 2021 21-J-026) garnered attention from multiple Japanese television networks, newspapers and magazines.

Integration of Humanities / Sciences and Interdisciplinary Analytical Research

In January 2021, we concluded a joint research agreement with the Graduate School of Medicine, Kyoto University and implemented a project that combined antibody testing and social scientific investigations on medical workers at Kyoto University and civic members at Nagahama City, Shiga Prefecture (those participants formed the "Nagahama Cohort"). This project aimed for progress in understanding the actual situation of COVID-19 from both medical and social scientific perspectives. On May 26, 2022, the RIETI Workshop "Integrating Social and Natural Science Research on COVID-19: Infection Spread and Behavioral Changes" was held. The workshop focused on the importance of detecting asymptomatic infections during the COVID-19 pandemic and understanding the behavior patterns reflecting norms and altruism, and an overview of comprehensive research based on these factors was presented. Also, on December 19, 2022, the Kyoto University-RIETI Joint Symposium "A Fusion of Humanities & Sciences Research on the COVID-19 Pandemic: Prospects for a with-COVID-19 society" was held. Among the results presented, the detection of the global spread of asymptomatic infections was first uncovered based on the results of blood tests using the Nagahama Cohort. Furthermore, the final results considering the subsequent progress were announced under the title "Integrating Natural and Social Sciences-towards the Creation of an Innovative Society" at the RIETI/Kyoto University International Conference in December 2023.

Related Book

Socio-Life Science and the COVID-19 Outbreak Edited by YANO Makoto, MATSUDA Fumihiko, Anavaj SAKUNTABHAI, HIROTA Shigeru Springer, December 2021 RIETI's Sixth Medium-Term Plan Begins!

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Global Intelligence Project

In this project, we conducted interdisciplinary and cross-sectoral research from the perspectives of international political science, economics and international economic law focusing on themes that are expected to have a significant impact on the future formation of the international order in such fields as economic security and industrial, science, and technology policies, empirical research on the Chinese economy comprehensive research on border carbon pricing systems to combat climate change, and research on digital transformation. For example, in the "Comprehensive Study of Border Carbon Pricing Schemes for Climate Change," Faculty Fellow Toshi H. Arimura and his colleagues uncovered how the introduction of the EU's Carbon Border Adjustment Mechanism (CBAM) will affect Japan's economy and industries. Additionally, they aimed to clarify the issues for institutional design when implementing carbon border adjustment in Japan and show its relationship to the WTO.

Public Relations / International Cooperation

Events

During the COVID-19 pandemic period in which outdoor activities were restricted, RIETI was quick to hold its events online. A total of 267 symposiums and seminars were held. The recorded video footage, along with video interviews, were released on RIETI's YouTube channel, rietichannel. The number of video views for the entire fifth period exceeded 640,000, and the number of channel subscribers increased 90% to 6,580.

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The "BBL Ambassador Series" was launched in FY2022, with speakers H.E. Mr. Peter Tan, Ambassador of the Republic of Singapore to Japan (FY2022), and H.E. Mr. Jean-Eric Paquet, Ambassador of the European Union (EU) to Japan (FY2023) as speakers. In the Nordic 5 Countries Embassy Seminar hosted by the Embassy of Sweden in Japan / the Embassy of Finland in Tokyo / the Embassy of Iceland in Tokyo / the Norwegian Embassy in Tokyo / the Danish Embassy in Tokyo, RIETI cosponsored the event and introduced RIETI fellows.

BBL Webinar



The Future of Japan and Singapore

(September 14, 2022) Speaker: H.E. Mr. Peter TAN (Ambassador of the Republic of Singapore to Japan)

BBL Webinar



Innovation: A key pathway to Europe's green deal and economic security (July 19, 2023) Speaker: H.E. Mr. Jean-Eric PAQUET (Ambassador of the European Union (EU) to Japan)

The RIETI Policy Symposium "The Japanese Economy and Policy Issues after COVID-19" was held on February 29, 2024. RIETI Program Directors who oversaw RIETI's research activities during the four-year period of the Fifth Medium-term Plan met to examine the various positive and negative effects of the COVID-19 pandemic, which had major impacts on the global economy and society for over three years from 2020. They also reviewed the Japanese economy and economic policies and discussed policy issues based on the lessons learned. In addition, we published the book titled "*The Japanese Economy and Policy Challenges in the Post COVID-19 Era*," which summarizes the results of RIETI's research over the past four years.

RIETI Policy Symposium The Japanese Economy and Policy Issues after COVID-19

(February 29, 2024)



RIETI's Achievements



The Japanese Economy and Policy Challenges in the Post COVID-19 Era Edited by MORIKAWA Masayuki University of Tokyo Press March 2024 (in Japanese)





Consumption Analysis in Contemporary Japan: Where we are now in life cycle theory Written by UNAYAMA Takashi Publisher: Keio University Press Inc. Published: May 2023 (in Japanese)

Publications

During the Fifth Medium-term Plan period, 26 books were published as compilations of RIETI's research findings. Notably, *The Economics of SME Finance* (authored by Faculty Fellow lichiro Uesugi) won the 65th Nikkei Prize for Excellent Books in Economic Science, along with *Economics of Invention* (authored by Program Director / Faculty Fellow Sadao Nagaoka), which was published in March 2022. *Consumption Analysis in Contemporary Japan* (authored by Faculty Fellow Takashi Unayama) won the 66th Nikkei Prize for Excellent Books in Economic Science. The Nikkei Prize for Excellent Books in Economic Science is co-sponsored by the Nikkei Shimbun and the Japan Center for Economic Research to promote scientific and professional knowledge in economics, management and accounting since 1958.



Economics of Invention: Knowledge Creation for Innovation Written by NAGAOKA Sadao Publisher: Nippon Hyoron Sha Co., Ltd. Published: March 2022 (in Japanese)

The Economics of SME Finance: The roles of financial institutions and the government Written by UESUGI lichiro Publisher: Nikkei Business Publications, Inc. Published: June 2022 (in Japanese)

Research Collaboration with Leading Overseas Think Tanks

In addition to the Center for Economic Policy Research (CEPR) and the Australian National University (ANU), with whom we have been cooperating, we strengthened relationships with worldclass think tanks in Europe and the U.S., including the Brookings Institution, the Peterson Institute for International Economics, and Bruegel, and jointly held symposiums and workshops. We also established ties with the Economic Research Institute for ASEAN and East Asia (ERIA) in Indonesia, the ISEAS-Yusof Ishak Institute in Singapore, the Free University of Brussels (VUB) in Belgium, the Konrad Adenauer Foundation (KAF) in Germany, the China Center for International Economic Research (CIEE) in China, and the China Institute of Economic Research (CIER).



The RIETI-Brookings Symposium was held on October 3, 2023, under the theme "De-risking the Economic Relationship with China: Views from the Indo-Pacific."

Visitors to RIETI

With the end of the COVID-19 pandemic, there has been a rapid increase in the visits of overseas dignitaries to Japan from fiscal year 2024. This increase was largely due to the effective efforts made by RIETI to disseminate information in English to this point, which enabled the exchange of opinions with various overseas dignitaries, including Deputy Prime Minister Hen Swee Keat of Singapore and Director Jeromin Zettelmeyer of Bruegel.



Dr. Jeromin ZETTELMEYER (Director, Bruegel)

March 19, 2024



Mr. KIM Sang-sik (Korea Trade-Investment Promotion Agency (KOTRA))

February 6, 2024



Professor Sir Mike GREGORY (center), (Babbage Symposium Chair Cambridge)

November 20, 2023



Dr. Inkyo CHEONG (front row left) (President of the the Korea Strategic Trade Institute (KOSTI))

November 13, 2023



The Centre for Security, Diplomacy and Strategy, Free University of Brussels (VUB- CSDS)

October 20, 2023



The members of the China Center for International Economic Exchanges (CCIEE)

October 11, 2023



H.E. Mr. ONG Eng Chuan (Ambassador of the Republic of Singapore to Japan)

October 3, 2023



Dr. André SAPIR (Senior Fellow, Bruegel / Professor, Université Libre de Bruxelles (ULB))

June 28/July 10, 2023



The members of the Chung-Hua Institution for Economic Research (CIER)

RIETI's Achievements

June 28, 2023



The members of the Chinese Academy of Social Sciences (CASS)

June 27, 2023



The members of the Korea-Japan Parliamentary Diplomacy Forum

May 11, 2023



Dr. Mary E. LOVELY (Anthony M. Solomon Senior Fellow, PIIE) and Dr. Cullen S. HENDRIX (Senior Fellow, PIIE)

May 9, 2023



H.E. Mr. Raza Bashir TARAR (Ambassador of the Islamic Republic of Pakistan to Japan)

April 27, 2023



H.E. Mr. HENG Swee Keat (Deputy Prime Minister and Coordinating Minister for Economic Policies, Singapore)

November 25, 2022



Mr. Andrew WYCKOFF (Director for Science, Technology and Innovation, OECD)

October 25, 2022



H.E. Dr. Ashurboy SOLEHZODA (the third from the right), (First Deputy Minister of Economic Development and Trade of the Republic of Tajikistan)

October 18, 2022



Business, Energy and Industrial Strategy Select Committee, the House of Commons, UK

October 6, 2022



Mr. Stephen QUEST (the third from the left), (Director-General of the Joint Research Centre, EU)

September 29, 2022



Dr. Rebecca Fatima STA MARIA (center), (Executive Director, APEC Secretariat)

September 27, 2022



H.E. Mr. Jan SKOPEČEK (the second from the right), (Member of the Chamber of Deputies of the Parliament of the Czech Republic)

RIETI'S SIXTH MEDIUM-TERM PLAN

FY2024 to FY2028

In our Sixth Medium-term Plan (FY 2024–2028), RIETI will undertake research using the following framework.

The most important focus of our role will be to contribute to policy planning and implementation, while making maximum use of our strengths cultivated as a "knowledge platform" (by accumulating high-quality research results, maintaining a rich research network, ensuring high recognition inside and outside the country, providing various useful databases, and other functions). We will conduct our research activities based on the government's medium- and long-term policy issues (in particular, the "New Direction of Economic and Industrial Policies," which aims for sustainable economic growth through the resolution of societal issues), and also with future policy issues in mind.

The "Research Programs" (see the figure below) have been established for policy research fields that have a certain cohesiveness, and multiple research projects are being conducted under the following nine research programs inherited from the Fifth Medium-term objectives period.



Introduction of the Nine Research Programs

Research Process

RIETI provides discussion forums (e.g., at the launch of research projects and discussion paper/policy discussion paper seminars) and invites policymakers to these forums to improve the quality of our research and build linkages between our research and policy.



Introduction of the Nine Research Programs

As of October 31, 2024

Program I

Macroeconomy and Low Birthrate/Aging Population

Program Director: KOBAYASHI Keiichiro

Faculty Fellow, RIETI / Professor, Faculty of Economics, Keio University / Research Director, The Canon Institute for Global Studies / Research Director, The Tokyo Foundation for Policy Research



Active Projects

Macroeconomic Policy and Political Philosophy toward Economic Growth Project Leader: KOBAYASHI Keiichiro (Faculty Fellow)

Firm Dynamics and Aggregate Fluctuations

Project Leader: SENGA Tatsuro (Fellow (Specially Appointed))

 $\label{eq:conomic_star} \ensuremath{\mathsf{Economics}}, \ensuremath{\mathsf{and}}\ensuremath{\mathsf{Policy}}\ensuremath{\mathsf{Responses}}\ensuremath{\mathsf{and}}\ensuremath{\mathsf{Policy}}\ensuremath{\mathsf{and}}\ensuremath{\mathsf{Policy}}\ensuremath{\mathsf{and}}\ensuremath{\mathsf{Policy}}\ensuremath{\mathsf{and}}\ensuremath{\mathsf{Policy}}\ensuremath{\mathsf{and}}\ensuremath{\mathsf{a$

Project Leader: Willem THORBECKE (Senior Fellow)

Household Heterogeneity: Individuals, families and macroeconomy Project Leader: KITAO Sagiri (Senior Fellow (Specially Appointed))



International Trade and Investment

Faculty Fellow, RIETI / Professor, Faculty of Political Science and Economics, Waseda University



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Active Projects

Research on Relationships between Economic Networks and National Security Project Leader: TODO Yasuyuki (Faculty Fellow)

Program Director: TODO Yasuyuki

Comprehensive Research on the Current International Trade/Investment System (pt.VI)

Project Leader: KAWASE Tsuyoshi (Faculty Fellow)

Structural Changes in the World Economy and Responses from Japanese Firms and the Government

Project Leader: URATA Shujiro (Distinguished Senior Fellow (Specially Appointed))

Economic Policy Issues in the Global Economy Project Leader: ISHIKAWA Jota (Faculty Fellow)

Globalization and Regional Economies Project Leader: MATSUURA Toshiyuki (Faculty Fellow) Empirical Analysis of Japanese Firms' Relationships with China and Their Responses to Changing Globalization Project Leader: TOMIURA Eiichi (President and CRO)

Micro-data Analysis of the U.S.-China Conflict

Project Leader: ZHANG Hongyong (Senior Fellow)

Studies on the Current Issues for Firms' Global Activities and the Impacts of Foreign Direct Investment Project Leader: JINJI Naoto (Faculty Fellow)

Comprehensive Research on Japanese Climate Policy: GX, EU carbon border adjustment mechanism and U.S. policy Project Leader: ARIMURA Toshi H. (Faculty Fellow)

Supply Chain Management and Economic Social Security: Analyses from the viewpoint of productivity and human capital Project Leader: INUI Tomohiko (Faculty Fellow)



Regional Economies



Program Director: HAMAGUCHI Nobuaki

Faculty Fellow, RIETI / Professor, Research Institute for Economics and Business Administration (RIEB), Kobe University



Active Projects

Regional Economies as Platforms for the Emergence of Innovation Project Leader: HAMAGUCHI Nobuaki (Faculty Fellow)

Development of Quantitative Framework for Regional Economy Based on the Theory of Economic Agglomeration Project Leader: MORI Tomoya (Faculty Fellow)

Evidence-Based Policy Making for Regional Revitalization Project Leader: KONDO Keisuke (Senior Fellow)

Innovation, Globalization and Employment Project Leader: SAITO Yukiko (Senior Fellow (Specially Appointed)) Sustainable Development of Local Businesses and the Role of Regional Financial Institutions

Project Leader: YAMORI Nobuyoshi (Faculty Fellow)

Urban Agglomeration Economies and Policy Project Leader: NAKAJIMA Kentaro (Faculty Fellow)

SME Resilience to Disasters: An empirical investigation Project Leader: NAKATA Hiroyuki (Faculty Fellow)

Program IV Innovation



Program Director: **NAGAOKA Sadao** Faculty Fellow, RIETI / Professor Emeritus, Hitotsubashi University



Active Projects

Assessment of the Innovation Capability of Japanese Industry from an International Perspective Project Leader: NAGAOKA Sadao (Faculty Fellow)

Penetration of Quantitative Performance Indicators of the Impact of "Design" on Organization Management

Project Leader: WASHIDA Yuichi (Faculty Fellow)

Entrepreneurship in High-tech and High-growth Start-ups Project Leader: HONJO Yuji (Faculty Fellow)

Research on Digital Innovation Models Project Leader: MOTOHASHI Kazuyuki (Faculty Fellow)

Program V Industry Frontiers



Program Director: OHASHI Hiroshi

Faculty Fellow, RIETI / Vice President, Professor, Graduate School of Public Policy, The University of Tokyo / Professor, Faculty of Economics, The University of Tokyo

Active Projects

Design and System Analyses of the Electricity Market and Its Implications for Japan

Project Leader: OHASHI Hiroshi (Faculty Fellow)

Institutional Design to Achieve a Society of Well-being Project Leader: MANAGI Shunsuke (Faculty Fellow)

Dynamics of Price in Crypto Assets and Real Economy and Their Underlying Complex Networks

Project Leader: AOYAMA Hideaki (Faculty Fellow)

Study Group on Corporate Finance and Firm Dynamics Project Leader: UESUGI lichiro (Faculty Fellow)

Heterogeneity of Economic Agents and Challenges for the Japanese Economy Project Leader: UNAYAMA Suguru (Faculty Fellow)

A Study on Japan's Food Security Project Leader: YAMASHITA Kazuhito (Senior Fellow (Specially Appointed))

Program VI Raising Industrial and Firm Productivity



Active Projects

East Asian Industrial Productivity Project Leader: FUKAO Kyoji (Chairman)

Firm Dynamics, Industry, and Macroeconomy Project Leader: HOSONO Kaoru (Faculty Fellow) **On Productivity Growth through Comprehensive Capital Accumulation** Project Leader: MIYAGAWA Tsutomu (Faculty Fellow)

Revitalization of the Japanese Non-metropolitan Economies Project Leader: OKUBO Toshihiro (Faculty Fellow)

Program VII Human Capital



Faculty Fellow, RIETI / Professor, Graduate School of Business & Commerce, Keio University



Active Projects

Employment and Educational Reform in the AI Era Project Leader: TSURU Kotaro (Faculty Fellow)

Research on Diverse Work Styles, Health and Productivity Project Leader: KURODA Sachiko (Faculty Fellow)

Program VIII

Integrated Research



Active Projects

Basic Research for Exploring Ideal Interventions in Medicine and Health Project Leader: SEKIZAWA Yoichi (Senior Fellow)

Frontiers in Corporate Governance Analysis

Project Leader: MIYAJIMA Hideaki (Faculty Fellow)

Program IX

Policy Assessment

Performance

Program Director: KAWAGUCHI Daiji

Faculty Fellow, RIETI / Professor, Graduite School of Economics, The University of Tokyo / Graduate School of Public Policy



Active Projects

Comprehensive Research on Evidence Based Policy Making (EBPM) Project Leader: SEKIZAWA Yoichi (Senior Fellow)

Implementing Evidence-Based Policy Making in Japan Project Leader: OHTAKE Fumio (Faculty Fellow)

Project Leader: KONDO Ayako (Faculty Fellow)

Evaluation of the Effects of Institutional and Environmental Factors on Family Formation, Parental Labor Market Performance and Children's Academic

Analysis on Policies to Improve Firm Productivity: The case of Lao Textile industry and initial analysis on Japanese firms' foreign study tours Project Leader: TANAKA Mari (Faculty Fellow)

Economic Analysis on the Problem of an Aging Population and a Declining

Challenges to Achieve a Sustainable Society: Exploring solutions through a

social science approach utilizing experiments and data Project Leader: ONO Yoshikuni (Faculty Fellow)

Birthrate in China and Japan in the COVID-19 Pandemic

Project Leader: YIN Ting (Fellow)

Future Challenge and Empirical Analysis of Corporate Taxation Project Leader: SATO Motohiro (Faculty Fellow)

Microeconometric Analysis of Education Policy Project Leader: TANAKA Ryuichi (Faculty Fellow)

Special Projects

Active Projects

RIETI Data Management Project Project Leader: SEKIGUCHI Yoichi (Senior Fellow)

The Policy-Making Process of the Industrial Competitiveness Policies in Japan Project Leader: WATANABE Junko (Faculty Fellow)

Causes of and Countermeasures to Gender Inequality in Labor Markets: Theories and quantitative studies from the perspectives of human capital, education, corporate personnel policy, and occupational skill Project Leader: YAMAGUCHI Kazuo (Visiting Fellow) Economic Regime Changes and Their Implications on Firm Dynamics and Productivity

Project Leader: OKAZAKI Tetsuji (Faculty Fellow)

The History of Policy Related to Semiconductor Industry in Japan from the late 1990s to the 2010s

Project Leader: ISHII Susumu (Faculty Fellow)

Activities of the **RIETI EBPM Center**

About the RIETI EBPM Center

Amid growing uncertainties caused by the climate crisis, geopolitical risks and the pandemic, there is a need to redesign economic policy to include public-private partnerships for "Moon Shot" type large-scale advanced R&D initiatives, new institutional designs to create new markets and promote innovation, and measures to strengthen supply chain resilience.

In furtherance of effective change to meet these pressing needs, RIETI inaugurated the RIETI EBPM Center on April 1, 2022. In collaboration with domestic and overseas researchers

and policymakers, the Center will strengthen retrospective policy assessments and develop new analytical tools to facilitate the prospective assessment of the economic effects of largescale projects considered for implementation through publicprivate partnership, including, for example, decarbonization, and to propose the data design necessary to evaluate each potential project. Through these efforts, RIETI aims to evolve Evidence-Based Policy Making (EBPM) and to play a core role as a policy research institute that supports the advancement of economic and industrial policies through effective analysis and recommendations.

Organization Chart



About EBPM Center Activities

Adhering to the concept of the "new direction of economic and industrial policy" promoted by the Ministry of Economy, Trade and Industry (METI), the RIETI EBPM Center provides advice to policymakers in a collaborative manner even before projects are launched. The advice targets policies that are thought to need EBPM analysis with a focus on "mission-oriented industrial policies" that provide large-scale, long-term and planned support.

In addition to ex-post evaluation of policies using causative inference through cooperation between researchers and policymakers, we provide assistance in the ex-ante evaluation of large-scale projects implemented through public-private partnerships, as well as the data and design necessary for such projects. As specific examples of our efforts, we have provided advice through public announcements regarding verification scenarios set by METI for the High-performance Semiconductor Fund Project and the Green Innovation Fund Project.

To date, we have worked on network construction primarily involving researchers engaged in EBPM. In fiscal year 2023, we formed a "Discussion group to promote EBPM" that includes knowledgeable persons, such as members of private think tanks and consulting firms. The discussion group conducted debates on the roles that private enterprises and RIETI should undertake in implementing EBPM.

Achievements

RIETI EBPM Practitioners Network Symposium Trends in EBPM in the UK and U.S., and Examples of Public-private Collaboration in Japan (July 18, 2024)

The RIETI EBPM Center established the "Study Group for EBPM Promotion" in 2023, where it invited members of private think tanks and consulting companies that support EBPM in government administrations to discuss issues, engagements and future directions of EBPM practice in Japan, also taking into consideration overseas trends.

In this symposium, based on discussions of the above study group, while introducing UK and U.S. efforts regarding EBPM, speakers who are EBPM personnel from private think tanks and consulting firms discussed topics such as achievements and challenges of EBPM in government administrations, and the ideal form of EBPM in Japan, from a practical perspective.



RIETI EBPM Center advice concerning the verification scenarios for the Green Innovation Fund: First draft (November 2022) Second draft (September 2023)

RIETI EBPM Center advice concerning the verification scenarios for the High-performance Semiconductor Fund Project:

First draft (November 2022) Second draft (September 2023)

The RIETI EBPM Center works in collaboration with domestic and foreign researchers and policymakers. In addition to the expost validation type of policy effect studies based on accumulated data, the Center plans to propose methods of analyzing policy effects in tandem with policy authorities of large-scale projects realized through public-private partnerships. The center has outlined basic blueprints concerning necessary data and design.

We have released advice concerning METI's verification scenario for the High-performance Semiconductor Fund Project and Green Innovation Fund Project, as the first phase (pilot initiative).

Contemplating and verifying the effects of policies using an Agile (Note) approach, not after the completion of a project but prior to and during its execution, is an unprecedented initiative. This can be evaluated as a cutting-edge initiative. However, as we are at the halfway point as an evaluation method for long-term projects, we think there is room for further improvement.

Note: Agile is a concept originally borrowed from software development which aims to control uncertainties by undertaking evaluation in short cycles and repetition of smaller unit implementation and testing, rather than long-term approaches that are highly dependent on prior plans (i.e. Waterfall model). First proposed in the U.S. in 2001, Agile development has widely been applied to business and technical development areas in recent years.



International Instituti with RIETI

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EUROPE

United Kingdom

Centre for Economic Policy Research (CEPR) London office Chatham House

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Saïd Business School, University of Oxford

Durham University

University of Sussex

France

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Banque de France Center for Economic Policy Research (CEPR) Paris office Fondation France-Japon de l'EHESS Institut national de la santé et de la recherche médicale (INSERM), Creme3 Institut Pasteur Organisation for Economic Co-operation and Development (OECD)

Germany

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IZA Institute of Labor Economics (IZA) German Development Institute

Deutsche Gesellschaft für Auswärtige Politik Institut für Mittelstandsforschung

Kiel Institute for the World Economy
 Italy

European University Institute

Switzerland

Graduate Institute, Geneva IMD Business School University of St. Gallen

Netherlands

Clingendael Institute Utrecht University School of Economics

Belgium

Bruegel Centre for Security, Diplomacy and Strategy, Free University of Brussels (VUB-CSDS) European Commission (EC) European Corporate Governance Institute (ECGI)

Sweden

Varieties of Democracy (V-Dem), University of Gothenburg

Russia

New Economic School

OCEANIA

Australia

Australian National University

20 University of Adelaide

ons that Collaborated in 2024



ASIA

Republic of Korea

Korea Institute for Industrial Economics and Trade (KIET)

Taiwan

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Taiwan Institute of Economic Research (TIER)

China 10

Institute of Japanese Studies, Chinese Academy of Social Sciences (IJS, CASS) Peking University Tsinghua University University of International Business and Economics

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Asia Global Institute

The Mongolian National Development Agency (NDA)

Singapore

Asia-Pacific Economic
 Cooperation (APEC)
 Secretariat
 ISEAS -Yusof Ishak Institute
 Middle East Institute, National
 University of Singapore

Indonesia

 Economic Research Institute for ASEAN and East Asia (ERIA) Indonesia Research Institute for Decarbonization (IRID) University of Indonesia

India @

Centre for Policy Research Research and Information System for Developing Countries

NORTH AMERICA

NORTH AMERICA

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United States of America Council on Foreign Relations (CFR) Asia Society Policy Institute (Washington, D.C. Office) Brookings Institution Georgetown University George Washington University German Marshall Fund of the United States International Food Policy Research Institute International Monetary Fund (IMF) Peterson Institute for International Economics

Johns Hopkins University

Syracuse University
Yale University
Harvard University
University of Chicago
Portland State University
University of California San Diego

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Canada

Centre for International Governance Innovation

SOUTH AMERICA

Brazil

(A)

Fundação Dom Cabral

- Centro de Estudos de Integração
- e Desenvolvimento
- BRICS Policy Center

Argentina

63

Escuela Argentina de Negocios

Universidad Nacional de La Plata

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Institutions in blue are institutions with which RIETI has signed Memorandum of Understandings (MOUs) to date.



RIETI'S Activities on Economic Security



Recently, there is a growing global interest in economic security. In this field, where geopolitics, technology, trade and industrial policy have become intricately intertwined, policy competition among countries is intensifying. In this special feature, we interviewed policymakers from the Ministry of Economy, Trade and Industry, international and domestic researchers and top RIETI executives about the international environmental changes underlining the rise in interest, the objectives and methodologies of major countries' policies, the roles Japan should take and challenges it should take on, and how policy bodies and think tanks can collaborate.

We also introduce the research results and seminars relevant to economic security conducted at RIETI.



RIETI's Activities on Economic Security



RIETI Special Roundtable

Economic Security and the Role of Think Tanks



NISHIKAWA Kazumi

Principal Director, Trade and Economic Security Bureau, METI

FUKAO Kyoji Chairman, RIETI



FUKUDA Kazunori Coordinator for International Affairs, RIETI

Moderator:

TOMIURA Eiichi

Against the current backdrop of global uncertainty, interest in economic security is growing worldwide. To prevent a country's industrial and technological infrastructures from threats and risks arising from national tension and conflict, it is necessary to strengthen industrial competitiveness and enhance national power, which requires dialogue with industry and collaboration with like-minded countries. In 2023, the "Action Plan for Strengthening the Economic Security Infrastructure for Industry and Technology" was set up. The Action Plan emphasized the importance of industrial promotion, industrial protection, and building international frameworks. This roundtable introduced the background, overall picture and importance of economic security and discussed the roles and contributions expected from think tanks and academia.

Growing Importance of Economic Security Policy

FUKUDA: First of all, Mr. Nishikawa, could you tell us about the background to the current global focus on economic security and the policy trends in major countries?

NISHIKAWA: Economic security is a multi-faceted concept. The current attention on economic security refers to international interest in economic security as an element of national security. A century ago, during President Franklin D. Roosevelt's administration, economic security was about how to protect the people's livelihoods and the economy in the Great Depression. During the Clinton Administration about 30 years ago, freely conducting international trade, investment and economic activities was considered economic security. On the other hand, national security these days covers not only military security, diplomatic security, and information security, but also economic and technological security. In this context, the definition of economic security is considered the status of, and actions taken to protect a country's own industrial and technological

infrastructures from various threats and risks. Thus, there is a growing desire to maintain technological superiority by keeping the next generation of technology within domestic environments. Furthermore, growing concerns about the supply chain disruption caused by the Russian Invasion of Ukraine and the COVID-19 pandemic have heightened the interest in economic security. In this context, we think that a situation has arisen in which, if we do not pay attention to the industrial and technological aspects of economic security, not only people's livelihoods but also economic and governmental activities will be negatively affected.

FUKUDA: How do you perceive the gradually growing interest in economic security within think tanks and academic communities?

FUKAO: Economic security is becoming the most important theme within think tanks, and there is a trend toward joint research and joint symposiums on this topic. I would like to consider issues of economic security in the future in cooperation with overseas research institutions on a global scale.

TOMIURA: Traditionally, very few people in the world of





economics have taken an interest in security. This is because security issues have essentially dwindled as globalization progressed and market economy systems were adopted around the world after the end of the Cold War between the United States and the Soviet Union. However, now that we are facing a backlash against global integration, including the advanced technology rivalry between the U.S. and China, security-related trade controls, and supply chain disruptions, I think we will be working on this theme for quite a while as a trend in economics.

Policy Initiatives and Future Directions for Economic Security

FUKUDA: Over the past few years, in particular, I think that the Japanese government and the Ministry of Economy, Trade, and Industry (METI) have made every effort to strengthen measures on economic security. Could you briefly summarize the government's progress over these past few years?

NISHIKAWA: Although Japan's national security strategy has emphasized diplomacy, defense and intelligence, there is a trend of increasing importance within the Japanese government in terms of including economic and technological perspectives, akin to the "DIME (Diplomacy, Information, Military, and Economic)" approach used in the U.S. from 2020 onward, the government established an economic division in the National Security Secretariat (NSS), appointed a Minister in charge of Economic Security, formulated the Economic Security Promotion Act, and revised the National Security Strategy. These items together represent a shift in government policy. Additionally, METI has developed an action plan to promote economic security through public-private partnerships, with industry and government working together, and is currently in the process of working with industry. In protecting Japan's industrial and technological assets and infrastructures from various threats and risks, it is essential to collaborate with the industries that actually possess them.

FUKUDA: How do you perceive the upcoming issues related to economic security and the role and position of Japan in global policy competition?

NISHIKAWA: I would like to discuss this from two perspectives; one from a broad perspective and the other from the perspective of specific initiatives. From the broad perspective, it is extremely important to enhance national power by strengthening industrial and technological bases through the private sector. In this respect, implementing strategies which both defend and support industries is vital. Given the complex nature of global innovation and supply chains, no company or country can accomplish these goals



independently; therefore, it is necessary to collaborate with likeminded or allied countries and regions. Maintaining a perspective that combines the three elements of industrial defense measures, industrial support measures, and coordination with partner countries is key.

From the perspective of specific initiatives, it is necessary for the government to intervene exceptionally in particularly important areas for security while maintaining a central policy focus on free trade and the market economy. To do this, it is vital to implement a 'small yard, high fence' strategy. For that purpose, we prioritize the following four points.

The first point is to carefully analyze and identify threats, generally dividing them into three categories, and responding as appropriate. These three categories include events within global or geopolitical movements that could potentially disrupt Japan's industrial and technological bases; supply chains, or ensuring autonomy by mapping the dynamic movements of the ever-changing supply chain; and finally, critical technologies, or conducting technological analysis, focusing not only on traditional security sectors such as defense and space but also on securing advantages in three emerging technologies of computing, clean tech and biotech, which are essential, as emphasized by both Jake Sullivan, U.S. National Security Advisor to President, and Ursula von der Leyen, President of the European Commission.

The second point focuses on identifying particularly important supply chains, innovation chains, and infrastructures, by prioritizing and organizing important industrial and technological infrastructures.

The third point is to draw up and implement a strategy to concentrate policy resources for industrial support and industrial protection measures in areas that will protect and nurture Japanese industrial and technological infrastructures from threats and risks.

The final point is to strengthen the intelligence activities and system that will support the abovementioned efforts. This not only involves the government but also the need to robustly support and revitalize private-sector intelligence activities.

This summer, METI has created the Trade and Economic Security Bureau, which is an organizational reform deemed necessary for taking forward the four points raised above.



METI's Expectations for Think Tanks and Academia

FUKUDA: As mentioned earlier, economic security policy covers a wide area that includes both industrial support and defense, the development and management of technological infrastructure, international cooperation, and rulemaking. What kind of contributions are expected from think tanks and academia?

NISHIKAWA: In order to create effective policies, it is incredibly important to enhance intelligence on threat and risk analysis. I think it is very important to nurture economic security experts in Japan who can move between government and non-government sectors, and we refer to these posts as revolving-door economic security experts. For example, China has strengthened its export control exercised on gallium, germanium, and graphite. The government alone does not have sufficient resources to analyze all supply chains, so we hope to have industry professionals and experts, including those from RIETI, join the government and work together to address the challenges of economic security.

FUKUDA: RIETI has been advancing research relevant to economic security, so could you provide an overview of the primary initiatives?

TOMIURA: One area relates to the analysis of global supply chains, and the accumulation of this research is considerable. While much of this research has been conducted from a lens of determining economic mechanisms that are relevant during the process of globalization rather than from the perspective of economic security, such existing analysis can be instructive in grasping the potential impacts of supply chain disruptions.

Another area is research on international economic rules. While RIETI has traditionally conducted trade law research on rules dating back to the GATT and WTO, I think the security exceptions will be an important theme going forward. To improve visibility of this issue, RIETI has consolidated various research findings, which had not been previously classified under economic security, into a special section on their website, titled "Special Feature on Economic Security."





Focusing on the vulnerability and disruption of global supply chains, we intend to deepen economic and industrial analyses, leveraging existing research. Future work will focus on integrating this with the firm-level micro-data to enhance the quality and effectiveness of policy discussions. Furthermore, there is a need for further analysis of trade controls, not only for those targeting goods but also technology and other service transactions, and regulations on foreign direct investment, for which progress has been very slow due to lack of data.

FUKUDA: RIETI disseminates our research findings to the public through symposiums and BBL seminars. Looking forward, to what extent will RIETI be able to increase its engagement with economic security?

FUKAO: I have conducted empirical research on the reduction of U.S. and Japanese exports to China due to security trade controls. It has been quite difficult. In the U.S., the research involved comparison of the Federal Register with HS 10-digit trade statistics, while in the case of Japan, export control lists were compared with the HS 9-digit trade statistics. However, since the regulated items are often very limited, trade statistics alone, whether HS 9 or HS10 codes, are too coarse to fully capture the impact. The degree of elasticity of substitution also depends on the goods being imported.

On the other hand, analyzing how certain items can be substituted when imports are restricted is a topic that I find very interesting as an academic. One approach is to use micro-level company data to look at the trading partners that each company imports and exports to, which is a new research trend. In terms of risk and supply chain vulnerability, for example, when analyzing the impact of the Great East Japan Earthquake using an interregional input-output table, the results will depend critically on what assumptions are made and the ease of substitution between outputs from other prefectures. Ultimately, the results strongly depend on the elasticity of substitution, making it very important to consider how to account for this elasticity of substitution when thinking about economic security.

Conversely, the difficulty in obtaining substitutions for critical components also significantly affects the location decisions of multinationals, as is the case with the recent increase in





Japanese firms exiting China, with a current annual exit rate of approximately 4%. It is possible that this phenomenon is being influenced by "small yard, high fence" trade control policies. Therefore, it is important not only to examine trade statistics but also to analyze direct investment and data on multinationals. Moreover, strengthening research on China's economy and subsidy policies is crucial for RIETI research. Given the increasing difficulty of undertaking independent policy research within China, the significance of conducting Chinese studies in Japan is increasing.

NISHIKAWA: While the focus of the government including METI is naturally drawn to how to protect Japan, there are many issues that we would like academics to help with, particularly as it is difficult to obtain detailed insight into how other regions approach economic security, or how they did so in the past.

FUKUDA: I am sure that many young people in think tanks and academia may want to conduct research on economic security. Could you highlight any issues they need to address in pursuing this field of research?

TOMIURA: One high barrier for this field compared to others can be the constraints in data, as trade statistics alone may not provide sufficiently detailed information. Additionally, economic analysis usually involves assessing costs and benefits but constructing risk scenarios based on economics can be challenging. Therefore, it is very important to engage with policy making authorities. It is also often fruitful to demonstrate unexpected effects of complicated economic interactions to policymakers as they often lack this expertise. Since private firms operate according to their own individual incentives, economists are uniquely placed to explain what dynamics are at play in a deregulated environment and show how they affect the economy as a whole. Connecting analytical results with policy discussion constructively is therefore an exceedingly valuable form of economic analysis.

Think Tanks' Expectations for METI

FUKUDA: What expectations does RIETI have towards METI as it deepens its collaboration with policy authorities in its mission to strengthen its policy contributions in the area of economic security?

FUKAO: Continual communication regarding METI's needs in terms of policy and the specific interests of policymakers would be highly constructive. There are young people who would like to engage in this kind of research, but one problem with using micro data from government statistics and customs statistics is that application and approval procedures take time. While security procedures are naturally necessary, having a clear path to publication after authorization could be considerably effective in gaining cooperation from young researchers.

NISHIKAWA: I agree with the points raised by Chairman Fukao. Building a strong, trusting relationship between the government and academia is invariably crucial. We want to establish a framework for collaboration with academics centered around the newly formed Trade and Economic Security Bureau. Additionally, in terms of economic analysis, I regard analyses from an EBPM perspective, as conducted by RIETI and with which I was also involved with in the past, as very significant when it comes to assuring accountability in policy fulfillment.

In terms of current needs, Japan still lacks a theoretical framework or guidelines on how the government should intervene in business operations from the standpoint of economic security and where escalation of intervention should be avoided, among other issues. Researchers and academics analyzing trade rules, international laws, and trends in other countries could greatly assist in this theoretical investigation.

FUKUDA: I have had the impression that there will be numerous opportunities for collaboration between think tanks, academia, and industry going forward. With today's discussion in mind, I invite you to each share some final words.

NISHIKAWA: Economic security still has many areas that need to be clarified and addressed, and the concept itself is still developing. On the other hand, in situations of turmoil, information tends to be collected by the government, think tanks, and firms that are proactive in leading the way. I believe that RIETI's leadership will bring together a variety of ideas, concepts, and networks from Japan and overseas which will turn out to be important assets for us. Therefore, we would appreciate redoubled efforts on the part of all influential parties into the future.

FUKAO: We aim to continue disseminating information through BBL seminars and various symposiums. I think it is also important for RIETI to amass information on the requests made by private firms and recent trends in their behavior. In addition, given the high caliber of the young fellows at RIETI, we would like to encourage them to participate in advancing research projects on economic security in collaboration with the government. Maintaining the free trade system is also a significant theme for RIETI in addition to economic security and I feel that it is important to conduct a more sophisticated analysis of the intersection between these two fields and present the findings to society. **RIETI's Activities on Economic Security**



COLUMN



Key Issues in Economic Analysis in an Increasingly Turbulent Security Environment

TOMIURA Eiichi

President and CRO

Shift toward Divided Global Trade

Recent trends in world trade reveal that the rapid growth witnessed at the beginning of this century appears to have ended, ushering in a phase of stagnation. While the factors that brought about such a paradigm shift should be cautiously identified, it is undeniable that soaring wages in China, which has been supplying vast amounts of low-wage labor to the global economy since the adoption of reform and open policy in the 1980s, and changes in China's fundamental policies concerning market economy and international order, have had a significant impact.

The conflict between the U.S. and China has intensified. Not only has the Biden administration continued to maintain the majority of U.S. tariffs against China imposed abruptly during the Trump administration, but export controls targeting advanced technology have been strengthened. As First Deputy Managing Director of the International Monetary Fund (IMF), Gita Gopinath described the current situation as "Cold War II" (Gopinath 2023), it might be correct to say that we have stepped into an era that can be called the Second Cold War, transitioning away from the era of deepening globalization that followed the end of the U.S.-Soviet Cold War.

Indeed, trade between the U.S and China turned to decline in 2023, and foreign direct investment (FDI) into China experienced a sharp decrease. The global value chains, which rely on the intricate international division of labor incorporating imported intermediate goods into exports, have shifted to a phase of stagnation or reversal due to the apparent vulnerability to disruption which has been revealed in recent years. The U.S-China rivalry has escalated beyond the past economic disputes that characterized the Japan-U.S. trade friction into national conflicts involving security concerns including dual-use technology. This is increasing the division of the global economy into the following two rival blocs: market economies with well-developed

institutions based on the rule of law and economies in which the state commonly intervenes and has wide and deep involvement in economic and social activities.

I would like to discuss the challenges related to conducting economic analyses in such circumstances.

Economic Analysis of Economic Security

There doesn't seem to be a well-established definition of economic security, but it can be understood as either securing the economic welfare of the nation (economic aspects of a nation that need protection) or as utilizing economic measures to secure national security. Securing national security is more relevant to recent discussions involving economic coercion. There are various economic measures employed in this context, but trade restrictions are pivotal. When large countries impose import or export restrictions, the terms of trade effect amplify impacts on trade.

The main topics of economic analysis concerning economic security all involve clarifying the extent and nature of impacts of security-oriented measures on the economy. A typical example is the analysis of the impact of supply restrictions or import regulations on the production in other countries connected through global supply chains. According to the Ministry of Economy, Trade and Industry (METI) White Paper on International Economy and Trade 2024, it is important to measure not only how dependent the overall trade of a country is on other specific countries, but also to determine on a granular level of item classifications and specific input-output relationships the degree of such dependence.

In addition to directly regulated trade, it is necessary to consider the wider effects of reduced efficiency and increased costs resulting from rerouting and substitution. The increased security requirements narrow the range of choices available to



firms for profit maximization and optimization. Furthermore, measures adopted to reduce risks, such as stockpiling, also incur costs. The benefit of importing a wide variety of goods from around the world at low prices is also diminished, representing a significant burden on consumers, which should also not be overlooked as a significant sacrifice.

As long as we expect that the global conflict can be managed as a cold war rather than leading to kinetic combat like in Ukraine, the scope of regulation should be kept as narrow as possible (as with the "small yard, high fence" concept). It is important for the international division of labor and international trade to continue in relation to a wide range of goods that are not considered advanced strategic technologies in order to mitigate the burden of economic security concerns.

However, the impact of the global division due to this cold war extends beyond trade. One phenomenon characterizing the globalization that has occurred since the end of the last century is the rapid increase in FDI. Recently, FDI is beginning to show a significant decline, and particularly toward China, and since many multinational firms from developed countries, including Japan conduct much of their production of goods outside of their home country, the impact on FDI is a crucial topic alongside trade.

Regarding trade, it is important to consider not only goods recorded by traditional customs data but also the impact on trade in services, including intellectual property. While the global trade in goods has entered a period of stagnation, the importance of services in the global economy is increasing as trade in services continues to grow. If the distribution of goods, funds, technology, and information, and even labor are affected, there are concerns that a long-term productivity decline could have persistent negative impacts beyond any decline in short-term production.

International competition for foreign investment based on government subsidies to attract production is increasing in intensity, and advanced semiconductors are a prime example of that competition. A wide range of domestic industrial policies are indirectly related to economic security, so it is necessary to exercise caution to prevent discussions on economic security from expanding too far afield. Regarding domestic support measures, it is necessary to deepen consideration of the economic effects of increased domestic production, of the security risks related to procurement from like-minded allied nations, and the necessity and effectiveness of industrial policy interventions themselves.

Research Activities at RIETI

At RIETI, research related to economic security has been conducted, particularly focusing on the global supply chains which characterized the globalization that has occurred since the end of the last century. Professor Yasuyuki Todo of Waseda University, the Program Director for the International Trade and Investment Program at RIETI, and his colleagues have pointed out the possibility of experiencing a decline in domestic production that greatly exceeds the amount of imported intermediate inputs in the event of a disruption in Japan, using data from Japan's input-output tables and other sources. In practice, changes in prices and technology will lead to goods substitutions from other sources, so it would be beneficial to undertake and accumulate estimates based on alternate scenarios going forward.

Furthermore, while the input-output tables compile detailed data on the transactions between industries, it should be noted that the tables are ultimately aggregated industry figures, representing averages of heterogeneous companies in the same industry. In light of this, there is a need for the use of microdata concerning transaction networks at the firm level. Additionally, the analysis of the influence of security-related export controls on trade flows is closely related to economic security. Senior Fellows Hongyong Zhang and Willem Thorbecke have been focusing on this research area at RIETI.

As economic security has been composed of a broad range of topics that are typically unsuited to economic analysis, RIETI, which primarily focuses on economic analysis, is also engaged in legal research related to trade rules under the leadership of Faculty Fellow Tsuyoshi Kawase (Professor, Sophia University) and his colleagues. With the increasing number of trade restriction measures taken under the justification of economic security and the need to rebuild the now-dysfunctional dispute settlement mechanism in the WTO, it is necessary to hold detailed discussions to maintain a rules-based international order.

Research Collaboration with Think Tanks in Likeminded Countries

Aiming for globally recognized, high-level research, RIETI has been conducting research exchanges with think tanks around the world. Recently, there has been a noticeable trend toward topics related to economic security in such research exchanges with RIETI. Almost all of the international symposiums and workshops held by RIETI recently can be said to be related to economic security. It is important for RIETI to further deepen research collaboration with think tanks from "like-minded countries" that face a similar security environment in mature market economics underpinned by the rule of law, as there are many common topics that must be analyzed and issues that need to be addressed.

Visualization of Relevant Research Findings

Because of the recent situation, RIETI is prioritizing research on economic security as a critical issue for Japan's economy and industries. However, since comprehensive research is inevitably very time-consuming, RIETI has established a "Special Feature



on Economic Security" on our website. The site highlights and visualizes the relevant research findings that RIETI accumulates. We hope that this information will be of help to those who are interested in economic security in their search for relevant information.

The Berlin Wall stood for 30 years from construction to collapse. The subsequent progress in globalization also lasted for approximately 30 years. Similarly, many factors indicate that the current new Cold War between the U.S. and China could last for a long period. On the other hand, the security situation is everchanging, and we must be prepared for the unexpected. RIETI

intends to promote research on economic security in a way that is agile enough to contribute to policy through close exchanges of views with policy makers, while simultaneously ensuring that the research can withstand future academic scrutiny.

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Special Feature on Economic Security on **RIETI** Website



Our society, as an international community, is at a historical turning point, as the modern era of globalization that began with the end of the Cold War comes to a close. Economic security has become an important theme as geopolitical risks increase. The security environment surrounding Japan is also becoming particularly severe. In this international context, the Research Institute of Economy, Trade and Industry (RIETI) is expected to have a deep understanding of the impacts of these geopolitical risks and economic security considerations on the economy and industry through various types of economic analysis, including data-based empirical analysis, and to make recommendations for economic, trade, and industrial policies from its academic insights. For this reason, we have compiled and "visualized" the research conducted at RIETI which is relevant to these topics as a special feature.









Propagation of Overseas Economic Shocks through Global Supply Chains: Firm-level evidence

INOUE Hiroyasu University of Hyogo / RIKEN Center for Computational Science TODO Yasuyuki Faculty Fellow, RIETI



The discussion paper on which this non-technical summary is based is available on the RIETI website.

This Non Technical Summary does not constitute part of the above-captioned Discussion Paper but has been prepared for the purpose of providing a bold outline of the paper, based on findings from the analysis for the paper and focusing primarily on their implications for policy. For details of the analysis, read the captioned Discussion Paper. The affiliation(s) and position(s) of the author(s) are as of the time of writing

In recent years, the import of parts and components from China and ASEAN countries has been frequently disrupted due to economic and social restrictions associated with the COVID-19 pandemic, leading to the substantial reduction in production in Japan. Factors such as the deepening of the U.S.-China tensions and the Russo-Ukrainian War have also resulted in trade restrictions based on national security concerns, which have led to reductions in imports and exports, as well as rising concern over the future.

Given this state of affairs, this paper uses simulations to analyze the impact on the Japanese economy of a potential exogenous shock leading to a reduction in Japan's materials, parts, and components imports, as well as its product exports.

The most notable feature of this paper is the way that we fit detailed supply chain data contained by more than 1 million firms in Japan into an economic model to consider the possibility that a reduction in imports and exports could be propagated and amplified through domestic supply chains. Data limitations meant that previous studies either considered only domestic supply chains without accounting for imports and exports by individual firms or considered only relationships between industries without accounting for corporate supply chains. This study solves these problems for the first time by linking together inter-firm domestic supply chain data from Tokyo Shoko Research with per-firm import and export amounts from the Basic Survey of Japanese Business Structure and Activities (Kigyo Katsudo Kihon Chosa, hereafter the BSJ) conducted by the Ministry of Economy, Trade and Industry (METI).

As a result, we found that disruptions in the import of parts and components propagate through supply chains to affect downstream firms, and therefore lead to a larger decline in production than export disruptions. This propagation through supply chains means that the impact of import disruptions increases dramatically as the level or duration of the disruption increases.

For example, if 80% of imports from around the world are disrupted for four weeks, Japan's value added production only decreases by about 2.9% during this period, but if the disruption continues for two months, this decrease rapidly worsens to about 26%. On the other hand, if the contraction is mild, with a disruption of 40% of imports, production only decreases by about 2%, even if the disruption continues for two months. The impact of export disruptions was relatively slight compared to import disruptions,

with a decrease in production of only 4.4% even in the case of an 80% disruption lasting two months.

Moreover, an examination of the impact of two-month import and disruptions of 80% of imports from China and other Asian countries reveals an overwhelmingly large impact. (We have been unable to conduct an analysis for individual countries, except for China, as the information on trade partners in the BSJ is classified by region into China, Asia excluding China, North America, Europe, the Middle East, and other regions.)

Figure 1(A) shows the relationship between the decrease in production amount resulting from import disruptions and the value of imports disrupted for each exporting region. There is no apparent simple relationship indicating that larger amounts of imports disrupted lead to larger decreases in production amount. A clearer correlation is visible between the decrease in production amount and the number of firms that import from each region (Figure 1(B)) and the number of customers of these firms (Figure 1(C)), indicating that decreases in production due to import disruptions are dependent on the supply chain structure.

These results also show that firms can mitigate some of the domestic production impacts of import disruptions if they are able to substitute for the affected goods through procurement from domestic suppliers. For example, in the case of a disruption of 80% of imports from around the world lasting two months, the decrease in production (the "reduction rate") improves from 26% to 20%.

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Figure 1: Relationship between the Reduction Rate Due to Import Disruptions and the Structure of Supply Chains







Impact of Technological Decoupling between the United States and China on Trade and Welfare

JINJI Naoto Faculty Fellow, RIETI OZAWA Shunya Kyoto University

The discussion paper on which this non-technical summary is based is available on the RIETI website.

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In the late 2010s, the United States (U.S.) and China initiated a process of decoupling within global supply chains due to political and security concerns. The impact of this decoupling extended beyond the U.S. and China themselves to affect other countries. Decoupling is progressing on a variety of fronts, but an especially controversial issue is the safeguarding by the U.S. and China of their respective technological assets to prevent their unauthorized dissemination to foreign firms. For example, in the U.S., the Export Control Reform Act (ECRA) was enacted in 2018 to regulate the export of technologies that possessed dual-use characteristics, that is, those applicable for both civilian and military purposes. ECRA primarily focuses on technologies within high-tech industries, including artificial intelligence and quantum information technology. Similarly, China imposes restrictions on the export of such technologies through the Foreign Trade Law and Export Control Law. China has also introduced a set of rigorous technology protection policies, notably, the Cyber Security Law and the Data Security Law.

Given these circumstances, this study performs a quantitative analysis of the impacts of technological decoupling between the U.S. and China, coupled with the technology protection policies implemented in both countries on international trade within sectors subject to export control laws, international technology transfers, and the economic welfare of the U.S., China, and other countries. For our analysis, we constructed a model based on a dynamic quantitative general equilibrium model of international trade developed by Anderson et al. (2019). The model developed by Anderson et al., which incorporates the accumulation of physical capital and technology capital, accounts for foreign direct investment (FDI) in the form of technology and intellectual property transfers, allowing for an analysis of international technology transfer restrictions. In this study, we extended their model by introducing a segmentation of output into the intermediate goods sector and the final goods sector. This approach is based on the assumption that only the intermediate goods sector utilizes technology capital and is the main target of technological decoupling and technology protection policies. We calibrated the main parameters of the model based on data from 89 countries for 2016, before technological decoupling was introduced. We then conducted a counterfactual analysis covering several scenarios to quantify the impact of trade and technology transfer restrictions between the U.S. and China, technology protection policies in China, and the export control laws in both countries. We examined the impact of policies in steady state equilibria.

The results of this counterfactual analysis indicated that the economic welfare of the U.S., China, and the world as a whole deteriorates when bilateral decoupling between the U.S. and China, accompanied by related policies, restricts both trade and technology transfer. Moreover, it became clear that China's technology protection policies have a significant impact, not only on countries that receive substantial technology transfers from China but also on countries that are heavily dependent on technology capital for production. Countries with a higher share of imports from the U.S. and China experienced more substantial declines in the amount of imports of intermediate goods targeted under the bilateral export control policies. However, we also found that the bilateral export control policies did not always lead to a deterioration in economic welfare in third countries, as the decline in imports could be partially supplemented by an increase in domestic output in some countries.

Table 1. Impact on Japan of the technological decoupling between the U.S. and China (%)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Scenarios	Economic welfare	Import	Export	Inward FDI	Outward FDI	Output of final goods	Output of intermediate goods
Restrictions between the U.S. and China of	nly						
1. Technology transfer restrictions	0.0497	-1.1264	1.6629	0.4017	-0.2258	-0.0242	0.4017
2. Trade restrictions	0.0495	0.0439	1.3497	0.2363	0.4470	-0.0005	0.2363
3. Both restrictions 1 and 2	0.1033	-1.0772	3.1265	0.6571	0.2579	-0.0246	0.6571
Global restrictions by the U.S. and China							
4. Technology restrictions by China	-0.1637	-3.9002	3.8867	0.8315	-6.7940	-0.2578	0.8315
5. Export restrictions by China	0.1410	-16.5567	6.8689	1.8783	1.4680	-0.2270	1.8783
6. Export restrictions by the U.S.	0.0600	-8.7063	2.3728	1.1131	-0.9973	-0.1564	1.1131
7. All restrictions 4 to 6	0.0707	-29.4886	14.2947	3.9701	-6.1352	-0.6866	3.9701

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RIETI's Activities on Economic Security

Source: Extracted from Table 14 in the Discussion Paper.







The Evolution of the European Union's China Strategy: Challenges in an era of economic security

TSURUOKA Michito Keio University



The discussion paper on which this non-technical summary is based is available on the RIETI website.

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The strategy of European Union (EU) toward China is undergoing a rapid and substantial transformation. While Japanese experts and officials have often criticized Europe of being too soft on China for many years, Europe is changing, albeit belatedly. What does the EU seek to achieve in its relations with China, particularly in the field of economic security?

Obviously, the EU's most immediate policy goal is to safeguard its own economic interests. In addition to this, a more general policy goal can be described as protecting the "European way of life." This also applies to its relationship with China. While it is only natural that the EU will seek to safeguard its own economic interests in a quantitative sense, underlying this aim is the fundamental attitude that Europe must remain European.

Since the middle of the 2010s, the EU has been introducing a series of measures to strengthen its investment screening and export controls and to counter state aid by foreign countries and economic coercion in recent years, amid a dramatic deterioration in China's image in Europe. Brussels also pursued negotiations with China concerning the Comprehensive Agreement on Investment (CAI), although these negotiations eventually reached an impasse. While those measures, such as investment screening and export controls, are global in scope, there is no doubt that the EU's practical focus is always on China. Behind these measures lies the problem of security, including economic security. Yet, the fact that the human rights concerns, particularly regarding the forced labor issues in Xinjiang province, are also playing an important part in Europe's deliberations on China also needs to be highlighted. The overlap between economics, politics, and security is growing.

Tools introduced, strengthened, and applied by the EU in relation to China

Investment screening	EU-level information sharing and screening and stronger structures in each country
Foreign Subsidies Regulation (FSR)	EU-level information sharing and screening to ensure a level playing field
Anti-Coercion Instrument (ACI)	Incorporates countermeasures such as market access restrictions, mainly intended to be adeterrence
Export controls	Human rights-related items such as cyber-surveillance technology and coordination with the United States for semiconductor manufacturing equipment (member states)
Cyber sanctions	Sanctions in response to specific cyberattacks
Human rights sanctions	Use of the "European Magnitsky Act" regarding the ethnic Uyghurs in Xinjiang
Comprehensive Agreement on Investment (CAI)	Although negotiations have reached an impasse, improving investment conditions for EU business remains an important agenda

Japan has been emphasizing shared values such as freedom and democracy with the West, including the EU, as a way to differentiate itself from China that does not share such values. With European perceptions of China deteriorating, the value of Japan as a partner for Europe is increasing. This is providing a tailwind that will benefit both Japan itself and the relationship between Tokyo and Brussels. Economic security is often highlighted as a priority area for Japan-EU cooperation in recent years. However, to develop this cooperation beyond just words and into a concrete framework promoting each partner's key interests, the starting point must be a correct understanding of the EU's China strategy.



Security Exceptions and WTO Reform



Consulting Fellow, RIETI

Abstract

This paper discusses the status of security exceptions in the WTO, their actual implementation and interpretation, and desired responses for the international trade system.

In order to maintain the balance between security exceptions and free trade, it is essential to restore the WTO's legislative function, strengthen its monitoring and surveillance function, and quickly restore its dispute settlement function.

The expansion of security exception measures is largely due to the sluggish legislative function of the WTO, and it is important to realize the results in such areas as the JSI (Joint statement initiative), as well as to specify negotiation issues such as trade remedy measures.

Moreover, the dialogue on matters of specific trade concern (STC) at WTO committees based on the TBT Agreement and other agreements has been effective and has also been helpful in resolving disputes, and is expected to be utilized for security exceptions. The establishment of new National Security Committee is also an issue for consideration.

With regard to the restoration of the dispute resolution function, in order to prevent the abuse of the security exception and the acceleration of its black-boxing, it is essential to take into account its political nature and the U.S. position on the issue of justiciability, and it may be necessary to consider introducing a compensation mechanism on the grounds of non-violation. In disputes related to security exceptions, there is currently a strong possibility that the losing party will file an appeal into the void, which will further hollow out the dispute settlement function of the WTO. It is necessary to consider the option of introducing a binding, one stage dispute settlement system into the WTO dispute settlement to avoid this.

I Background

Japan's trade policy has developed based on the GATT/WTO and the multilateral trade regime, but since the beginning of the 21st century, FTAs have gained importance as complementary pillars to the GATT/WTO and have come to be positioned as the two wheels of the cart in trade policy.

Since the late 2010s, the rapid narrowing of the economic and technological gap between the U.S. and China has triggered a constant confrontation between the two countries, and various measures have been introduced from a security perspective, positioning the security trade perspective as the third pillar.

This trend was accelerated by the Russian-Ukraine conflict of 2022 and the introduction of countermeasures in various countries. While it is indisputable that the security perspective is extremely important as the basis of a country's existence, it is also important to properly harmonize it with the trade policy that has been the foundation of Japan's prosperity and development, as well as the global economy. Contrarily, we must not forget to protect and nurture the free trade and global value chain (GVC) that has supported the Japanese economy and the global economy overall.

Security is one of the most important challenges for the WTO, the principle of which is stipulated in the security exception of GATT Article 21 (similar provisions have been introduced in GATS Article 14-2 and TRIPS Article 73). However, owing to its sensitive nature, this issue has not been fully discussed in the past and has been operated in an extremely restrained manner.

Recent changes in the situation require a discussion on the issue of security exceptions.

Japan also introduced the Economic Security Promotion Law in 2021, and the perspective of trade restrictions from a security perspective is emerging.

Under these changing circumstances, we should seriously consider how to harmonize security and free trade without abusing the security concept; how to consider the necessity, limitations, and risks of the security concept; and what should be done to protect free trade.

Another reason is the paralysis of the WTO's rule-making and judicial functions. The long period of stagnation in the formation of rules necessary to regulate international trade (paralysis of the legislative function) and the malfunctioning of dispute settlements to interpret existing rules (paralysis of the judicial function) have led to the abuse of measures based on security exceptions, such as the U.S. Trade Act Section 232.

Of course, the need for protectionist measures is increasing because of international tensions, but if the legislative and judicial functions of the WTO were functioning smoothly, the abuse of security measures would have been less severe.

Resolving this situation is an urgent task for the WTO.

To read full text









The Impact of Export Controls on International Trade: Evidence from the Japan-Korea trade dispute in the semiconductor industry



MAKIOKA Ryo Research Associate, RIETI

ZHANG Hongyong Senior Fellow, RIETI

Trade restrictions have increasingly been used for national security reasons in recent years. This column studies the impact of export controls in the semiconductor industry applied by Japan on South Korea in 2019. It finds these controls drastically cut trade of affected chemical inputs between Japan and South Korea, but increased trade of both countries with the U.S. Furthermore, the production of affected chemicals increased in South Korea, following a government program to promote domestic production. Ultimately, policy considerations need to take into account these complex trade reallocation effects, particularly for industries where global value chains are pervasive.

Trade policy being used to address national security concerns has been pervasive in recent years. Notable examples are the U.S. trade restrictions against China in 2018, the U.S. trade sanctions against Russia following its invasion of Ukraine in 2022, and the U.S. export controls on the Chinese semiconductor industry in 2019. Research on trade policies has also been growing over the last 10 years (e.g. Amiti et al. 2019, Fajgelbaum et al. 2020, Bown 2021, Fajgelbaum et al. 2021, Latipov et al. 2022, Hayakawa et al. 2023). While most of the research analyzes the effect of tariffs on domestic economies, there is still relatively little empirical evidence on the effect of nontariff trade policy on exports and imports in an industry with extensive global value chains (GVCs). What is the effect of such trade policy on international trade in an industry where the production process is characterized by global value chains? Is unilateral export control effective in an industry where firms change their production and sourcing patterns in response to export controls? In a recent paper (Makioka and Zhang 2023), we investigate the effect of nontariff trade policy implemented in the name of national security on international trade in an industry characterized by global value chains-the semiconductor industry. We use a recent Japan-Korea trade dispute as a case study.

In July 2019, the Japanese government announced potential export controls on South Korea for three chemical inputs, namely hydrogen fluoride, photoresist and fluorinated polyimide, all of which are essential in semiconductor production. As a result, Japanese exporters of these three chemical materials are required to apply for individual export licenses, rather than bulk export licenses, reporting information on end-user, product specifications, technology and so on for each export contract. The semiconductor industry has what is a typical example of a global value chain. The U.S., Taiwan and China have dominant sales shares in all design, manufacturing and outsourced semiconductor assembly and test (OSAT) stages, while the design stage itself tends to be located in Europe and Japan, the manufacturing stage in Israel and South Korea, and the OSAT stage in Singapore and Japan. Given its sequential features, protectionist trade measures can potentially affect the entire production process and input sourcing patterns.

The semiconductor industry in South Korea was heavily dependent on these three chemical materials imported from Japan before the Japanese export control was introduced. For instance, Japanese firms supply more than 90% of South Korean imports of two out of the three key materials. The materials are then used in semiconductor production in South Korea, which comprises 20% of South Korea's total exports. We use a difference-in-differences approach and the synthetic control method to determine the causal effect of the export control on Japanese export, and Korean import and export. We also provide some preliminary statistics to investigate the response of domestic production in Japan and South Korea to the export controls.

Findings

There are five findings. First, the Japanese exports of hydrogen fluoride to South Korea declined by 87.9% due to the export control, but this was not the case for the other two restricted chemical materials, photoresist and fluorinated polyimide. The latter could be partly because the Japanese Ministry of Economy, Trade and Industry allowed, in December 2019, three-year bulk export licenses for some photoresist transactions.

Second, the restrictions increased Japanese exports of hydrogen fluoride to the U.S., and thus did not cause, on average, a decrease in the Japanese production of semiconductor-related products. It also suggests the possibility that Japanese firms substituted their exports of restricted chemical materials to the U.S. or exported the materials to South Korea through the U.S. (roundabout trade). The latter possibility is consistent with the next finding.

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China's Ban on Imports of Japanese Fishery Products is an Act of Economic Coercion—Japan should use MPIA and file a WTO complaint



KAWASE Tsuyoshi Faculty Fellow, RIETI

On August 24, 2023, China imposed a ban on imports of all Japanese fishery products, rather than on imports of products only from Fukushima and surrounding regions, citing the discharge into the sea of ALPS (Advanced Liquid Processing System)-treated water from Tokyo Electric Power's Fukushima Daiichi Nuclear Power Station (FDNPS) (Note 1). Hong Kong and Macau followed suit in imposing a similar ban (Note 2). On China's motives, Professor Ichiro Korogi of Kanda University of International Studies pointed out that in addition to trying to diffuse domestic discontent with the real estate market slump and the rising unemployment rate among the Chinese people by directing their anger at Japan, China is using the ban as a "sort of economic sanction measure imposed in retaliation against the deepening of the Japan-U.S.-South Korea relationship and the Japanese and U.S. restrictions on semiconductor exports" (Note 3). This suggests that the measure is an act of economic coercion.

The Japanese government has responded by calling for an immediate removal of the ban. Prime Minister Kishida and other senior leaders of the government and the ruling and opposition parties pointed out the need for China to present scientific evidence to justify the measure (Note 4). Some government officials are calling for a diplomatic resolution, while others are proposing that dispassionate discussions should be held among experts (Note 5). However, in my opinion, it is necessary to go beyond those steps: now is the time for Japan to file for WTO dispute settlement procedures with respect to this case.

MPIA and Economic Coercion

The reason why I recommend that option is that Japan is a participant in the MPIA (Multi-Party Interim Appeal Arbitration Arrangement) (Note 6). The Appellate Body, as the centerpiece of the WTO's dispute settlement procedures, has remained dysfunctional since the end of 2019 as efforts to fill vacancies on the body have been obstructed by strong U.S. opposition. As a result, many dispute cases have remained unresolved due to the use of the "appeal into the void" (appeal to the dysfunctional Appellate Body) tactic, which prevents further review of cases following panel decisions.

To resolve this situation, major WTO members, including the EU, Australia, Brazil, Canada and China, concluded the MPIA in April 2020, and as of now, 26 WTO member countries and regions are participating in the arrangement (however, India,

South Korea, and the ASEAN member countries have refrained from joining the MPIA). When complaints with panel reports regarding disputes between MPIA participants arise, the countries participating in the MPIA have agreed to refer their complaints to arbitration based on the MPIA, rather than file an appeal with the Appellate Body. As a result, the referred cases can in effect undergo an examination process similar to those implemented in the case of an appeal.

In March 2023, Japan decided, albeit belatedly, to join the MPIA with the aim of cooperating with conscientious WTO members, such as the EU and Canada, to maintain the free multilateral trade system based on the rule of law, in the absence of a functioning Appellate Body. In particular, for Japan, a country that is geopolitically wedged between the United States and China and is unable to unilaterally engage in such power games, it goes without saying that maintaining this trade system benefits its own national interests. Moreover, by joining the MPIA, Japan has acquired an important means to contain Chinese attempts at economic coercion through the rule of law because China is also an MPIA participant (Note 7).

To read full text



Footnote(s)

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Restoring the Global Trading System with Collective Action



Visiting Fellow, RIETI

If truth is the first casualty of war, international trade may be the first casualty of geopolitics.

The return of Great Power rivalry and geopolitics has turned international trade and economic exchange into a tool in the pursuit of geopolitical advantage. With China and the United States locked into strategic rivalry, geoeconomic carrots and sticks are seen as a way to gain advantage, align friends and punish those that are not on-side.

At stake is not just the efficient international division of labor but escape from poverty through the growth potential of the global economy. There's no country anywhere that should understand this better than Japan. Global prosperity has been built from communities and countries specializing in their comparative advantage and benefiting from economies of scale in trade with the rest of the world. That has resulted in high trade shares and concentrated markets internationally which are now seen as a risk because international interdependence is being weaponized. A retreat from specialization and trade will slow and potentially reverse economic growth and harm prosperity.

The use of economic tools for geopolitical ends will make the world poorer and less safe. Economic interdependence has brought prosperity and security to much of the world. East Asia and the European Union in particular have enjoyed the pacifying effects of trade and economic integration. Economic cooperation that has deepened integration raises the costs of war and market forces constrain the behavior of states and political actors everywhere.

The unraveling of economic interdependence in East Asia risks relaxing constraints on countries and feeding conflict. Northeast Asia has managed high trade shares and interdependence despite the political ups and downs that come from regional rivalry, unresolved history and political system differences.

Efforts to diversify trade and de-risk interdependence have thus far largely failed outside of the China-U.S. relationship. Mexico this year overtook China as the largest source of U.S. imports and China's share of U.S. imports fell to its lowest since 2006, thanks to the U.S. tariffs on imports from China. Chinese parts and components are now being shipped to Vietnam, Mexico, Thailand and other countries before finding their way to the United States as inputs in manufactures produced in those countries. Imports into the United States continue to grow. And China's trade with the rest of the world continues to grow as its value-add in global value chains continues to increase as it sheds lower cost manufacturing to other developing countries. The trade data shows that many supply chains have become longer and not necessarily more resilient.

Trade in goods as a share of GDP may have plateaued, leading many to think that globalization is in retreat, but the world is becoming more globalised in areas outside of simple goods trade. The digital economy and cross border data flows continue to grow rapidly, for example, and that is a new source of much needed productivity growth. That new source of growth is at risk of fragmentation with different approaches to data localization, artificial intelligence governance and protecting privacy.

Foreign investment, trade in services and cross border data flows are not separate from trade in goods. The economic reality is that supply chains are becoming more complex between countries and in their composition. Global governance of supply chains is still lacking despite the policy focus on supply chain resilience.

The bigger challenge for managing the reality of global economic interdependence today is that many governments now view concentrated markets and high trade shares as a risk. The policy efforts to diversify and de-risk will likely accelerate given the attempts to weaponize interdependence.

A more assertive China has added to the uncertainty many countries feel around its economic and political rise. Its use of economic coercion has resulted in a breakdown of trust between China and many countries and shaken confidence in China as a reliable trading partner.

The United States has gone from enforcer to spoiler of the global trading system with its focus on domestic challenges and rivalry with China for primacy. Former President Donald Trump's America First protectionist policies, with its tariffs against China and steel and aluminium tariffs against the rest of the world, have been escalated under the Biden administration with extra-territorial unilateral sanctions on China's high-end semiconductor industry.

To read full text





Promote Multifaceted Japan-EU Cooperation on Supply Chain Resilience



Consulting Fellow, RIETI

On July 4, 2023, the Delegation of the European Union (EU) to Japan, RIETI and the EU-Japan Centre for Industrial Cooperation (EUJC) jointly hosted a seminar entitled "Resilient Supply Chains in Times of Geopolitical Tensions" at the EU Delegation.

Resilient Supply Chains in Times of Geopolitical Tensions (https:// www.eu-japan.eu/events/resilient-supply-chains-times-geopoliticaltensions-0)

This seminar was organized on the occasion of the visit to Japan of EU Commissioner Thierry Breton, in charge of the Internal Market, Industry, Small and Medium Enterprises (SMEs), Digital Defense and Space.

Commissioner Breton has broad authority and was in Japan for the first Japan-EU Digital Partnership Ministerial Council meeting. This seminar was a follow-up to the seminar held last September on "EU-Japan Industrial Cooperation for Economic Security and Open Strategic Autonomy," with the aim of further deepening shared understanding and strengthening partnership with the Japanese side. EU-JAPAN Industrial Cooperation for Economic Security and

Open Strategic Autonomy (https://www.eu-japan.eu/events/eujapan-industrial-cooperation-economic-security-and-open-strategicautonomy)

RIETI—Promote Japan-EU Cooperation on Economic Security (https://www.rieti.go.jp/jp/special/special_report/180.html (in Japanese))

The program was as follows:

Keynote speech on the EU side:

- Thierry BRETON, Commissioner, European Commission Japanese view:

- URATA Shujiro, Chairman, RIETI

Panel Discussion:

- Thibaut KLEINER, Director for Policy, Strategy and Outreach, DG Connect, European Commission
- TAKAHARA Ichiro, Chairman and CEO, Japan Organization for Metals and Energy Security (JOGMEC)
- Nikolaus BOLTZE, Country Representative, thyssenkrupp Japan K.K.
- WATANABE Shoichiro, Executive Vice President/Chief Technology Officer (CTO), Panasonic Energy Co., Ltd.

Moderator: IIDA Kaori, Head of Digital News Department, Japan Broadcasting Corporation (NHK)

I was in charge of planning this seminar and provided the closing remarks.

Below is a summary of the main presentations and discussions of the seminar.

Presentation by Commissioner Breton:

 During this visit to Japan, I discussed the EU-Japan Digital Partnership with Minister of Digital Affairs of Japan, Taro Kono, and the Minister for Internal Affairs and Communications, Takeaki Matsumoto, and signed a memorandum of cooperation (MOC) on submarine communication cables with Minister Matsumoto and on semiconductors with METI Minister Yasutoshi Nishimura. Discussions with Minister Nishimura focused on strengthening supply chain resilience in such fields as critical minerals and batteries, as well as advancing cooperation in the space and defense industries.

METI and the European Commission (EC) Sign MOC on Semiconductors in the Presence of Minister Nishimura and Mr. Breton, Commissioner for Internal Market, the EC (https://www.meti.go.jp/english/press/2023/0704_004.html)

- In light of the recent geopolitical situation, economic security has become an issue. There is a risk of being overly dependent on a particular country for critical items, and the supply chain needs to be diversified.
- The European Commission's Economic Security Strategy, published on June 20, 2023, calls for (1) promoting the EU's economic base and competitiveness, (2) including in the digital space, protecting citizens against risks, and (3) partnering with like-minded partners.

An EU Approach to Enhance Economic Security (europa.eu) (https:// ec.europa.eu/commission/presscorner/detail/en/ip_23_3358)

- Along these lines, we have already addressed the Chips Act, Single Market Emergency Instrument, Green Deal Industrial Plan, Critical Raw Material Act, Net-Zero Industry Act, and Act in Support of Ammunition Production.
- The EU cannot realize this ambition alone but must work together with like-minded partners, and Japan is very important in this regard. We have already concluded both an EPA (Japan-EU Economic Partnership Agreement: 2019) and an SPA (Japan-EU Strategic Partnership Agreement: 2019) with Japan.

To read full text



*The affiliations and positions of people in the column are as of the time of writing.

RIETI Highlight English Edition 2024







Data Uncovers Xi Jinping's Policy Agenda: How has the concentration of power changed policy?

In the autumn of 2022, the Xi Jinping administration entered its third term. Since taking office as general secretary of the Communist Party in October 2012, Xi Jinping has overturned the traditional practices and rules that defined power relations within the Communist Party leadership, concentrating power in his own hands. This is why he has earned the moniker "the most powerful leader since Mao Zedong."

Consequently, many studies have explored the factors that led to the concentration of power in Xi Jinping. However, empirical examination of the impact of this power concentration on Chinese politics and administration remain insufficient. In this essay, we introduce our analysis of Xi policy agenda (Lim, Ito, and Zhang 2024 or Lim, Ito, and Zhang 2023 in the RIETI Policy Discussion Paper version) to examine the relationship between power dynamics and policy. Our study confirmed clear changes in the content and structure of the policy agenda from the first Xi Jinping administration to the second one.

Politics and Policy in the Xi Jinping Era

The concentration of power in the hands of a single leader is not unique among authoritarian regimes. However, given that the essence of elite politics lies in the competition and cooperation among elites over power sharing, the excessive concentration of power in one individual suggests that some problems have arisen within elite politics. Particularly during China's reform and opening-up period, efforts were made to establish a collective leadership system and curb the concentration of power as a reflection on the Mao Zedong era. In this context, the concentration of power in Xi Jinping represents a conundrum that warrants thorough examination.

There are competing views regarding this conundrum. One argument focuses on the peculiarities of the internal and external situation in which the Chinese Communist Party found itself at the beginning of the Xi Jinping administration. Specifically, it posits that a sense of crisis within the party, driven by factional conflicts within the leadership, widespread corruption and growing U.S.-China confrontation, prompted the concentration of power in the hands of Xi Jinping (Shirk 2023). Another argument focuses attention on how the Xi Jinping administration came to power. It emphasizes that Xi Jinping's appointment as general secretary was not dependent on the support of a particular leader or faction but was the result of collective choice by a broad range of elites (Shih 2022).







LIM Jaehwan Aoyama Gakuin University

ZHANG Hongyong The University of Tokyo Senior Fellow, RIETI

On the other hand, the consequences of the concentration of power, especially its impact on policy, have not yet been fully discussed. As a matter of course, many studies have noted that the Xi Jinping administration reformed policy making processes significantly (Dickson 2021; Cabestan 2021). However, there has been little discussion about how the concentration of power in Xi Jinping's hands and the changes in the policy processes have affected the substantive content of policy, although some studies pointed to changes in the frequency and timing of policy changes (Chan, Lam, and Chen 2021).

Moreover, many existing studies tend to view Xi's power consolidation as inevitable. This perspective, however, may be too static to fully capture the power dynamics within the Communist Party. Instead, the concentration of power should be understood as a dynamic development resulting from Xi Jinping's own motivations and strategies in response to the situational and institutional conditions as described above.

Given the current state of research and Xi's own orientation and choices to consolidate power, we analyzed the changes in the policy agenda under the Xi Jinping administration. What kind of policy agenda has Xi Jinping presented and pursued since he came to power? How has the policy agenda changed over time? In this essay, we introduce the data and methods used and present the results of the analysis regarding these questions.

Data and Methodology

The data used for this study are from Xi Jinping Xilie Zhongyao Jianghua Shujuku (hereinafter referred to as "Xi-Database"), published on the website of the Chinese Communist Party newspaper network. The database contains more than 10,000 documents, such as speeches, activity reports, field visits, press conferences, overseas trips and congratulatory telegrams by Xi Jinping since he became general secretary. Although caution should be exercised regarding potential bias and political propaganda in this database, as it consists of articles from Chinese state media, it is valuable for its high frequency and high-dimensionality, allowing for empirical analysis of the Xi Jinping administration (Ito, Lim, and Zhang 2024a).

To read full text



RIETI's Activities on Economic Security



Strengthening National Security Has Become a Top Priority for the Xi Jinping Administration —Can it be compatible with economic development?



Consulting Fellow, RIETI

I. Introduction

The Xi Jinping administration has positioned national security as an issue of equal if not greater importance than economic development in order to overcome increasingly severe internal and external challenges and to strengthen the rule of the Chinese Communist Party (CCP). Based on General Secretary Xi Jinping's concept of "comprehensive national security," which emphasizes not only traditional security areas, such as politics, military and territory, but also non-traditional security areas, such as economy, society, and science and technology, China is developing relevant laws while strengthening economic controls, increasing military power and aiming to achieve more self-sufficiency in technology. However, these measures will inevitably have a negative impact on the economy as they place new restrictions on the business activities of a wide range of companies-particularly foreign companies doing business with China-making it difficult for China to achieve both national security and economic development at the same time.

II. A Return from Prioritizing Economic Development to Prioritizing National Security

Since the Communist regime came to power in China in 1949, the leadership's top priority has gone through three stages: from national security to economic development and now back to national security.

At the beginning of the Communist regime, China faced serious difficulties, including economic blockades, political isolation and military threats. In the Cold War era of "war and revolution," the leadership prioritized national security in order to defend the country against external military aggression, preserve national territory, and maintain sovereign independence and the stability of the regime.

By the end of the 1970s, with the shift to reform and opening up, China entered an era of "peace and development," and the most important issue for the leadership shifted from national security to economic development. Thanks to a peaceful international environment, China achieved high growth over a long period of time. With the end of the Cold War and the retreat of the traditional ideology of socialism, economic development and the accompanying dramatic improvement in people's lives provided Communist Party rule with legitimacy and the regime with stability.

However, in response to changes in domestic and international circumstances, national security has once again become the foremost concern for the Xi Jinping administration, which came to power after the 18th National Congress of the Communist Party of China (Party Congress) in November 2012.

Domestically, the country faces serious challenges, including slowing economic growth, instability in social and ethnic minority areas, and environmental pollution. General Secretary Xi Jinping has emphasized national security as key to addressing these challenges and promoting social stability. In addition, while economic growth has long been a priority, national security is taking its place as the most critical force bolstering the legitimacy and power of the Communist Party. Furthermore, ensuring national security is essential for fulfilling General Secretary Xi Jinping's commitment to realizing "the great revival of the Chinese nation" and turning China into the most powerful country in the world.

Meanwhile, in foreign relations, the conflict between China and the United States has intensified in a variety of areas, including economic, technological and military. General Secretary Xi Jinping seeks to counter the U.S. threat by strengthening national security. For a long time, China has shown concern that the United States and other Western adversaries are plotting to tumble its political regime and socialist system from within through a process of "peaceful evolution," which involves "political propaganda," "economic support" and "cultural exchange." This concern has deepened under the Xi Jinping administration against the backdrop of the escalating U.S.-China confrontation (Note 1).

To read full text



Footnote(s)

1. The "Circular on the Current Situation in the Ideological Domain" (Central Office of the Communist Party of China), distributed within the Communist Party on April 22, 2013, soon after the Xi Jinping administration took office, lists as dangerous ideas that could overthrow the Communist Party's power: Western constitutional democracy (separation of powers, plural party system, universal suffrage, judicial independence, and the nationalization of the military), universal values (freedom, democracy and human rights in the West), civil society, neoliberalism, freedom of the press, historical "nihilism" (historical perceptions that deviate from the official Communist Party position), and doubts about reform and opening up. Buckley, Chris, "China Takes Aim at Western Ideas," *The New York Times*, August 19, 2013.

<https://www.nytimes.com/2013/08/20/world/asia/chinas-new-leadership-takes-hard-line-in-secret-memo.html?_r=0>







Intelligent Unilateralism is the Right Response to Geopolitical Rivalry



Professor of International Trade at University of St Gallen

As geopolitical rivalry sharpens, many governments are looking for safety in numbers—that is, by forming alliances and strengthening certain commercial ties and, in some cases, weakening others. This search for friends and distancing from foes overlooks a strategic option to all governments—namely, to improve their business environments so as to enhance the capacity of local firms to respond to geopolitically-inspired disruption. Australia and Lithuania's response to economic coercion in recent years highlights the importance of supply side resilience.

As geopolitical rivalry has intensified, the siren song of insular, zero-sum thinking gains in prominence (Strain 2024). This flies in the face of decades of experience where our standards of living have been enhanced by doing business with foreign buyers and sellers (Irwin 2024). Exports augment national sales and make jobs more secure. Import competition keeps local firms on their toes—complacent local oligopolists tend to rip off citizens (Levinsohn 1993). No country in the past half a millennium has become an economic superpower by its firms hiding behind borders (Zakaria 2024).

Yet, even for economies as large as Japan, there is still the question: how best to react as China and the United States vie for primacy? For better or for worse, at least since the Global Financial Crisis, the world is in an era of trade policy unilateralism. The painstaking monitoring of commercial policy by the Global Trade Alert has shown this (Global Trade Alert 2024). Sadly, there remains no appetite for pathbreaking multilateral opening of markets. Sushi-sized reform is what the WTO has on the menu, and likewise, regional trading agreements. Recently, World Bank analysts reported that the number of newly signed regional accords has been falling as this century unfolds (Kose and Mulabdic 2024). Reciprocal approaches to trade reform are out, alas. Unilateralism is in.

But, like cholesterol, there are two types of unilateralism. Stupid unilateralism involves erecting trade barriers to imports and other ruses that seek to tilt the commercial playing field in favor of local firms. The fact that the idea for these ruses often comes from local firms says a lot about their competitiveness. Successful managers think of new ways to create more value for customers, they don't go running off for help from officials who are largely clueless in the ways of commerce (Evenett 2024).

What every government can influence constructively is their national business environment. Unlike trade accords, which take years to negotiate, governments can assess and benchmark their national business environment right away. Fortunately, there are well-regarded measures and rankings of national competitiveness, such as the one produced by IMD Business School in Lausanne, Switzerland (IMD 2023). Economists may fight like cats and dogs about the best short-term macroeconomic policy, but when it comes to the drivers of long-term economic growth, there is a remarkable degree of agreement (Jones 2023). Smart governments should capitalize on this consensus.

Improving national business environments involves more than raising productivity, although it is vital (McKinsey Global Institute 2024). Many factors affect the capacity of firms to adjust to disruption, including geopolitical disruption. Information about new and underserved markets abroad is needed as well as expertise to exploit opportunities when they arise. National education and labor market institutions might be able to adapt to new circumstances. Reputations for reliability and quality should be nurtured over time.

Consider Switzerland, a country with one of the highest standards of living. Switzerland's population is too small to support its many successful firms. Switzerland has to export. Therefore, everyone there understands that Switzerland must be competitive no matter what. So, if Germany offers huge subsidies to its energy-intensive firms (as it did after the invasion of Ukraine), since the Swiss don't have as deep pockets, it's state must operate differently. That involves making sure the transport and digital infrastructure is top notch, that the corporate tax and regulatory burden is fit for purpose, and that Switzerland has the strongest possible ties to the markets of the future as well as to the behemoths of today. IMD (2023) reveals how well Switzerland fares relative to over 60 other economies.

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Economic Security and Geopolitics: Insights into Japan-Korea cooperation based on "Economic Security Indicators" (Date: June 20, 2024)



Byung Yeon KIM Distinguished Professor in the Department of Economics, Seoul National University (SNU)

The Supply Chain Dominance Index: Assessing power and vulnerability

The economic security indicator to be presented was developed by the Economic Security Cluster at the Institute for Future Strategy of Seoul National University (SNU). This cluster was established to promote South Korea's resilience and competitiveness in response to the fragmentation trend of the world trade order.

In order to prepare for turbulence that may occur, assessing the degree of strength and resilience of the South Korean economy is crucial. We examined power and vulnerability as two critical factors. Power is a country's capacity to perturb or influence another country's established status quo. The opposite concept is vulnerability, which is a country's susceptibility to the disruptive actions of another country.

Supply Chain Dominance (SCD) means measuring these two concepts by using bilateral trade data. In this case, UN Comtrade data was utilized to look at each country's trade flows.

We set the threshold of classifying expert power and import vulnerability as follows: (1) Country A is defined to have export power over Country B in a product if the share of its export of a product exceeds 10% of the world export of the same product; (2) Country B is defined to be subject to import vulnerability to Country A in the product if it imports more than 40% of the same product from Country B. For example, China accounts for more than 40% of South Korea's total lithium imports, China possesses export power and South Korea is vulnerable. Another example would be Russia. In 2021, Russian exports of natural gas made up about 25% of total global natural gas exports, while at the same time 45% of the EU's natural gas imports came from Russia. In this case as well, Russia had the power to control natural gas, and the EU was vulnerable to any disruptive actions of Russia. The data on power and vulnerability is available on the website of the Institute for Future Strategy of SNU.

Other institutions, such as the Harvard Growth Lab, compute economic complexity, which is a related concept. Economic complexity usually means competitiveness. If a country produces highly complex products, it means that it is very competitive. However, nowadays, this kind of complexity can be also regarded as an indicator of vulnerability. Today's world trade order is fragmented, and imports of parts, equipment and materials that are necessary for the production of highly complex products may easily be disrupted. Unfortunately, these days it can be said that "big is beautiful" and being a large economic power is desirable, but Japan and South Korea are relatively small compared to the United States and China. The economic complexity ranking shows that Japan has consistently maintained the No.1 ranking in terms of complexity from 2001 to 2021, while South Korea was 20th in 2001 and is in third place in 2021. For the United States, complexity decreased relatively while China actually climbed up in the ranking from 39th in 2001 to 18th in 2021, while also becoming more competitive.

Countries were ranked using the Supply Chain Dominance Index that was computed. China tops this SCD ranking in terms of export power. In 2001, China was number three, but now it is number one, followed by Germany and the United States. Japan is in sixth place. Meanwhile, the vulnerability China faces is fairly low as it ranks 56th in the vulnerability ranking. The total score of export power of China is about four times that of Germany and eight times that of the United States. This situation is very different compared to 2001, when the United States was number one in export power, while it is now in third place.

China's Rise in Supply Chain Dominance and Its Implications

China's export power score is formidable, and the gap is increasing over time. It increased by a factor of eight from 2001 to 2021, while the export power score of the United States decreased by 50%. On the other hand, China's vulnerability is low, which means that China's economy cannot be easily disrupted by other countries' actions, such as sanctions.

What about other sorts of materials, especially critical materials? The government of the United States published a list of critical products, which includes products related to health and biological preparedness, ICT, energy and critical minerals. These industries were translated into six-digit HS codes, and the countries were examined and ranked. China is still number one in many sectors minerals and materials, energy, public health, ICT.

In comparison, Japan and especially South Korea are much more vulnerable, ranking in the top five in every category. These countries, which enjoyed economic complexity in the era of globalization, are vulnerable to other countries' actions in case of turbulence or disruptions. China is especially dominant in producing key minerals which are needed to produce a variety of products. Therefore, as an exporter of these critical materials China can use them to perturb



other countries' trade and economy, and possibly security. China has similar power in most industries.

Economic Security

Regarding the extent of this export power in terms of the democracy index, while non-liberal China's GDP per capita and export power was low in 1995 as a non-liberal country, and liberal countries such as the United States, Germany, France and Japan, dominated global trade in the same year, nowadays, China remains a non-liberal country, but it is very dominant in world trade.

What kind of implications can be drawn from this analysis? Given the export power China possesses, decoupling is nearly impossible and would incur high costs. Some people argue that de-risking is a safe approach, but it may not fully serve the United States' strategic interests. Perhaps the optimal policy from the perspective of the United States is a strategy that combines decoupling in the area of key advanced technologies with de-risking in other industries. But this situation is not favorable to South Korea and Japan because these countries can be most easily disrupted by the rivalry between the United States and China, and also by China's possible retaliation.

We must think about how long this rivalry will continue and what will happen afterwards. Regarding the question of how long this rivalry will continue, Dr. Feulner—the founder of the Heritage Foundation—replied simply by saying it would be an indefinite duration. Perhaps we can expect at least another decade of this rivalry. Since Japan and South Korea are two countries which are very advanced in key manufacturing areas, their strategy should focus on remaining key producers of technologies and manufactured goods.

Current Geopolitical Challenges and the Issue of North Korea

Today's geopolitical challenges are very serious. Nowadays the world is divided into liberal and non-liberal countries, not only in terms of politics but also in the economic sector. China's export power has been directed more toward non-liberal countries than liberal countries. While its export power toward liberal democracies has increased by 15 times from 2001 to 2021, exports toward nonliberal countries increased by 21 times. This indicates a fragmentation of trade into two blocs.

Concerning North Korea, which is relevant considering Putin's recent visit to the country, two areas need to be looked at: economy and geopolitics. South Korea and Japan face a similar challenge from North Korea. While challenges from China may be more important in terms of the global impact, challenges from North Korea could be more urgent and perhaps more unpredictable for the two nations.

Based on estimates, North Korea's GDP declined by 25% from 2017 to last year as a result of sanctions and the impact from the country's COVID-19 policies. Also, North Korean authorities shifted economic policies from pragmatic ones to self-reliance in 2019, after the North Korea-United States Hanoi Summit. Now, geopolitics are changing, perhaps in favor of North Korea, due to an improvement of relations with Russia and China. This could help North Korea to

resist pressure from other countries economically, diplomatically and militarily. Current estimates show that North Korean economic conditions are very poor which may have implications for Kim Jong-Un controlling the society, as the income of elites may have dropped by as much as 50% for the last seven years due to the sanctions and policies mentioned above. The Institute for Peace and Unification Studies at SNU surveys newcomers from North Korea who settle in South Korea, asking questions about popular support for their leaders. Kim Jong-Un's popularity was highest in 2018 at 73%. It declined in 2019 and 2020, perhaps because positive outcomes expected from the Hanoi Summit were not achieved. It can be assumed that this decline continued in 2021 and 2022, so his popularity may be below 50%, lower than his father's popularity.

In the long run, another problem Kim Jong-Un may face is marketization. North Korean households survive by trading and gaining an income at markets. This informal marketization nurtures a capitalist mindset among North Koreans. Analysis shows that among North Korean refugees living in South Korea, those who experienced market activities while they were still living in North Korea tend to support the market economy over socialism. This indicates that even though they have been living in North Korea—a socialist country their mindset is half capitalist.

Cooperation between South Korea & Japan: Similar values and challenges

Keeping this background and the resulting challenges in mind, greater cooperation between South Korea and Japan in the realms of economy and security is both prudent and sensible. While Europe is united economically through the European Union (EU) and also in terms of security through the North Atlantic Treaty Organization (NATO), Asia is divided. South Korea and Japan are both democratic countries but we are now facing potential issues originating from non-democratic countries like China. If South Korea and Japan are divided, effectively countering geopolitical challenges or economic challenges will not be possible. It is time for the two countries to exert dual leadership to initiate joint actions before we are unable to do so, and new, unshakable frameworks for cooperation that will irreversibly improve our relations are essential for our continued prosperity.

Not only do the two countries face similar challenges, but they also share similar values. Our core values are reflected in our constitutions and the market economy is a core foundation of our respective institutions. Closer cooperation could affect elections as well because young people in South Korea—the so-called MZ generation—are very responsive to change. Given the existing challenges, cooperation is not an option, but a must.

Japan and South Korea are also economically complementary.

To read full text



The Cost of Conflict: Economic implications of a Taiwan



Joris TEER Associate Analyst for Economic Security and Technology, European Union Institute for Security Studies (EUISS)

Navigating Economic Security in an Increasingly Interconnected World

military crisis (Date: June 6, 2024)

In this deeply interconnected world of today, Europe should look toward East Asian countries such as Japan, Taiwan, and South Korea for best practice examples of industrial policy to increase prosperity and security. East Asian countries have distinct ways in which governments and industries work together to fortify the economy for this new age of great power competition. Today's world is much more economically interdependent than many people believe and merely focusing on trade figures is not the right way to look at it. At the EU Institute for Security Studies (EUISS) and at the Hague Center for Strategic Studies (HCSS), the focus of Joris Teer's work is on helping governments and companies to conduct risk assessments for determining feasible geopolitical risk premiums. Setting up semiconductor manufacturing in Arizona instead of Taiwan may not be the most cost-efficient way. So why is it done? It is an upfront cost to have guaranteed supply if a crisis occurs in East Asia. Governments and companies are both faced with the question of how much should be paid for our geopolitical risk premium and how this can be carried out in a smart way without inadvertently competing with like-minded countries or creating subsidy races between collaborative nations. The analysis presented assesses war scenarios and the impact they could have on supply chains, trying to craft policies on the basis of this knowledge.

Lessons Learned from the Russian Invasion of Ukraine

Europe's experience of the situation with Russia and the crisis in Ukraine is a great lens through which to understand the new problems of the world. The underestimated economic costs that the Ukraine crisis brought about have impacted Europe significantly. Around April or May 2022, the Azovstal steel factory in Mariupol became a symbol for the war because Ukrainian soldiers were sheltering here for 82 days while they were bombarded by the Russian military. It is also a symbol for what can be called "geopolitical breaking points,"—when tensions between two competing parties reach such a high level that normal trade comes to a halt. In this case, key commodities could no longer be produced at this factory, which not only produced steel, but also neon gas, which is used in the production

of semiconductors. In fact Ukraine's various facilities were responsible for 50% of the world's neon production.

One lesson that should be learned from the war in Ukraine is that in this time of deep economic interdependence, warrelated disruptions can destroy a lot of value. What really hurt the European economy was the dependence on Russian gas and Putin's decision to reduce the gas supply to Europe, resulting in soaring energy prices. According to Bloomberg, the Ukraine crisis and the resulting compensation schemes have already cost the EU 1,000 billion (1 trillion) U.S. dollars (in 2022 alone). Even though tensions were rising leading up to this war, European leaders failed to recognize the need to diversify their energy supply. While the dependance of gas imports from Russia was about 20% in 2011 or 2012, this figure rose to around 45% at the eve of the Ukraine war, despite the seizure of Crimea in 2014. In hindsight, paying a geopolitical risk premium to reduce the dependence on Russia would have been favorable, but now it is too late.

An Analysis of Semiconductor Supply Chain Dependencies in East Asia

Another important case where tensions could result in a crisis is East Asia. The supply chain to look at in this region is semiconductors and the critical raw materials used for their production, as opposed to gas in the case of Russia. Semiconductors are essential for the production of wind turbines, medical technologies and defense equipment. From a Western perspective, looking at the supply chain of semiconductors, the weaponization of interdependence of front-end manufacturing is not the main concern. Front-end production is dominated by companies from the U.S., Taiwan, and South Korea, as well as Japan and Europe. However, China has become increasingly strong in the area of back-end fabrication and the front-end production of foundational chips. Estimates range between 29% and 40% of total back-end manufacturing of semiconductors in China. While a chip may be designed in the U.S. and the front-end production done by Taiwanese parties, the back-end manufacturing of a lot of chips still happens in China, which provides them with significant leverage. In the supplemental layer that is supporting the semiconductor value chain, there is





even less risk because equipment mostly comes from European and American companies, and Japan is also a big player for wafers and processed chemicals. The real problem lies at the bottom of the value chain. Many of the specific raw materials semiconductors are made of come from China. According to estimates by the U.S. Geological Survey, China mines 97% of all germanium. Around 68% of rare earths are extracted in China, and around 90% of rare earths are refined in China. For permanent magnets, China's dominance ranges between 85% and 90%. Japan is also able to produce these, but on a different scale. Furthermore, while 70% of all cobalt comes from the Democratic Republic of Congo, many mines are either majority-invested or owned by Chinese companies, or Chinese companies exploit those mines. Subsequently, most of the cobalt is transported to China, where refining takes place.

Why should this particular value chain be looked at? Critical raw materials and semiconductors can be described as the oil of the 21st century. Critical raw materials are the skeleton of the world's economy-without them it is very difficult to produce anything because they are needed for semiconductor production. Semiconductors are the central nervous system of the world economy and global manufacturing-without them the discussed critical goods cannot be manufactured. This can be described as different countries or regions in the world controlling different building blocks of a structure that we are trying to build together. It must be recognized that some parties see this from the point of view where collaboration allows for the most efficient outcomes and so the behavior is economically "rational" and therefore continued collaboration is the only possible course of action, while other parties see this very differently. Prior to the Ukraine war, many European economists and energy experts said that Russia would never weaponize gas delivery because it would be irrational from an economic perspective of mutual benefit, ignoring other national incentives. And so there are two issues that we must come to understand. Number one is the world is more interconnected than many believe, and number two is that some leaders are once again prioritizing a sense of national glory or hard security considerations over mutual economic gain. The two consequences of this are that if a crisis hits, war-related disruption destroys a lot of value, and two, this subsequently puts countries at odds with each other, so they start weaponizing economic interdependence during a crisis. These are the two problems that we are now faced with. East Asia and Taiwan are of particular interest, because East Asia has become the global manufacturing hub in the world. Over 75% of all front-end manufacturing and more than 70% of the back-end manufacturing of semiconductors is carried out here. A lot of the resources for antibiotics and other vital medicine also come from China, which is a painful dependency. 35% of all manufactured goods are produced in China, meaning that a conflict in this

region would have much greater effects than the current conflicts are having. The analysis presented in this seminar is based on reports compiled for the Dutch Parliament and other reports to create a comprehensive picture of what the cost of conflict would be for the EU and provide policy recommendations. It was written on the basis of what we call a "military crisis stress test."

Stress Test Analysis of Invasion and Blockade Scenarios of Taiwan by China

The most extreme scenario that was looked at in the stress test analysis is an invasion of Taiwan by China. China's rapidly proceeding military modernization and other powerful trends makes this scenario a possibility. While China's and Taiwan's defense spending was the same in 1991, in 2021 China spent 21 times more on defense than Taiwan. China's military intimidation of Taiwan in 1995/1996 was easily stopped when U.S. President Bill Clinton sent two aircraft carrier battle groups to the Taiwan Strait. Nowadays, there is more reluctance on the part of the U.S. to put highly valuable military assets close to China's shore at times of high tension, indicating a new power balance in the region. In this war scenario we basically assume that China's goal is still reunification with Taiwan but that it no longer has faith in "reunification" through peaceful means, and Beijing has decided that an invasion is a more likely path to success rather than a blockade. We assumed that the Chinese invasion will be unsuccessful. Yet, the economic fallout will still be enormous because the East China Sea and the South China Sea would turn into a no man's land where two great powers contest each other. Trade within the region becomes incredibly dangerous and therefore close to impossible. This scenario basically entails the grinding to a halt (or downright destruction of) of Taiwan's semiconductor industry.

To read full text



*This abstract and summary was compiled by RIETI Editorial staff.

**Visuals of what Taiwan military crises would look like can be found here: https://hcss.nl/wp-content/uploads/2024/04/Slide-Deck-EN-The-Cost-of-Conflict.pdf
*** Underling research can be found here:

- https://hcss.nl/report/cost-of-conflict-economic-implications-of-taiwan-military-crisisnetherlands-eu/

⁻ https://www.iss.europa.eu/content/preventing-war-east-asia



Hidden Exposure: Measuring U.S. supply chain reliance (Date: December 19, 2023)



Richard BALDWIN Professor of International Economics, IMD Business School, Lausanne

Global Framing of Supply Chain Disruption Issues

Historically, global supply chains were perceived as drivers of productivity and growth, benefiting both developed and developing nations. However, the contemporary perspective has shifted, now characterizing them as potential sources of vulnerability. The recent G7 Communique underscored the significance of supply chain resilience, acknowledging it as a critical concern. Heads of state are increasingly vocal about supply chain disruptions and the inherent vulnerabilities they introduce.

What led to the shift from a positive perception to one of uncertainty and vulnerability? The focus lies in the concept of supply chains as "links" and disruptions as "shocks." The problem doesn't stem from the links themselves. Rather, there has been a noticeable trend toward de-fragmentation in the global supply chain. Between 1995 and 2013, production fragmentation increased, but in the last decade, this trend has reversed. Presently, world supply chains are experiencing a shift towards localization: they are becoming less "involved."

Analyzing Japan's reliance on imported industrial inputs from 1995 to 2020 reveals that the percentage of Japan's industrial inputs has remained relatively stable since 2015. There is no discernible escalation in the extent of dependence on foreign imports. Additionally, the proportion of Japan's imports of industrial inputs in relation to all industrial imports demonstrates a declining trajectory. It becomes evident that the challenge posed by foreign shocks does not arise from an increase in the links to foreign sources.

The crux of the issue lies in the nature of the shocks themselves. In the past, shocks were predominantly idiosyncratic, confined to specific sectors or nations, such as earthquakes or strikes. However, the contemporary landscape presents more systemic and prolonged shocks, concurrently impacting numerous sectors and nations simultaneously. Instances like U.S. tariffs, Brexit, the COVID-19 pandemic, and events like the Russian invasion of Ukraine and now the war in the Middle East exemplify this shift. While businesses could navigate idiosyncratic shocks, systemic shocks prompt governmental involvement due to their widespread and enduring impact.

We have classified these shocks into six distinct combinations based on their source: supply, demand, or the connectivity between supply and division. Furthermore, we classify the shocks as either idiosyncratic or systemic in nature. It's crucial to emphasize that these shocks are not mutually exclusive and in fact can have causal interlinkages. While the media recently attributes these shocks almost exclusively to supply-related issues, we contend that the problem is more intricate and extends beyond such simplistic characterization.

We identify three primary sources of impending systemic shocks. Firstly, geopolitical tensions, exemplified by the ongoing U.S.-China dynamics. Secondly, the impact of climate change, illustrated by potential trade disruptions in the Panama Canal due to low water levels or severe storms affecting vital trade ports. Lastly, the digital realm, particularly cyber-attacks, poses a significant threat to critical infrastructure, such as pipelines, airports or shipping facilities.

Measurement Issues and New Indicators

The U.S. government, particularly national security agencies and the Department of Commerce, is significantly concerned regarding supply chains, particularly in the realm of semiconductor production. Because these agencies view the approach through the lens of a conventional business value chain, their focus centers on individual firms engaged in the entire process of purchasing, manufacturing and selling products.

As economists, we contend that this perspective is incomplete, and that supply chains are not simple, linear chains but intricate networks of firms that are buying and selling goods throughout. In the 1990s and 2000s, policymakers posed the question, "Where is the work actually done?" This inquiry prompted a focus on "value-added trade" and gauging the extent of value contributed by a specific country to the subject country's exports. Consequently, indicators such as backward and forward linkages emerged. Fast forward to the 2020s, and policymakers began asking, "How vulnerable are my supply chains?" This question asks where the production occurs for the subject country's inputs. In response to this evolving query, we developed indicators based on gross trade instead of value-added trade.

Gross trade is a measure of all international trade, while value added trade removes imported intermediates to ascertain the specific contribution of Japanese value added. The Organization for Economic Cooperation and Development (OECD) has incorporated our indicator into the 2023 Trade in Value Added (TiVA) database update.

Estimations of impacts of shocks based on value added trade exclusively have been shown to be incorrect in recent years. In a



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simulation of the inflationary impacts in the UK stemming from COVID-related shocks in China, the Bank of England enormously underestimated the impacts. Their estimation was based only on backward linkages, or value-added trade originating from China. However, disruptions did not just halt Chinese value added; they affected the entire flow. Consequently, the actual price impact turned out to be significantly larger than anticipated. When evaluating disruptions, it is imperative to consider the entirety of the flow, or gross trade, rather than isolating specific value-added components.

The primary differentiator of our indicators lies in the reliance on gross trade rather than value-added trade. A noteworthy illustration of the value of gross trade comes from the Ambassador Bridge strike in 2022. During this event, the Teamsters obstructed the main bridge linking Canadian and American auto industries for six days. This not only impeded Canadian value added but impacted the entire gross value added. If the significance of this blockade were assessed using only value-added metrics, it would lead to an underestimation of the actual impact experienced. Therefore, our approach, centered on gross trade, provides a more comprehensive understanding of the real repercussions in such scenarios.

The second notable distinction in our indicators involves differentiating between "face value" exposure to foreign production, which refers to direct purchases from another country, and "look through" exposure, which refers to indirect purchases of foreign goods with intermediate production stages in a third country. In the case of U.S.-China trade, this approach reveals a more intricate and interconnected dependency of U.S. industry on China than it previously seemed.

The third critical distinction lies in our inclusion of imported intermediates used in production for domestic consumption and not only exports. Unlike approaches such as backward linkages, which solely focus on the content of exports, our methodology considers all imports of intermediate goods. In the context of disruptions, the emphasis is on the impact on domestic production, whether or not the good is exported later. Our presentations to government mostly focus on indicators on the import side because that tends to be the focus of their attention, but globally, where systematic embargoes and counter-retaliation exist, the reliance on foreign production as a demand factor may also become increasingly significant.

U.S. Global Supply Chain Engagement

Expanding on how look-through-based indicators are important is the fact that they reveal hidden sources of exposure. as the data from 2018 indicates. There is a hidden source of exposure, at face value, the U.S. has significant exposure to Chinese shocks, but other trade partners like Mexico or Canada also represent significant, if not smaller inputs. However, when employing a look-through approach, China emerges as the overwhelmingly dominant player, and U.S. production is reliant on them in every sector except pharmaceuticals, because often, the other trade partners were also using Chinese intermediate parts. This nuanced analysis underscores that the U.S. exhibits a far higher level of exposure to China than conventional statistics may imply.

A reason for the fact that this exposure has been hidden is simply the speed with which this exposure has shifted to China. When comparing face value versus look-through value in 1995 and 2018, a notable transformation becomes apparent. In 1995, neither face value nor look-through value featured China; instead, Japan held a significant position, with over half of the U.S. exposure due to Japanese production. However, by 2018, China had become the dominant player, occupying over 90% of the U.S. exposure to foreign shocks, showcasing the accelerated shift in the geographic concentration of sourcing over this period. This evolution highlights how the dynamics of international trade have rapidly transformed, underscoring the need for a comprehensive understanding of hidden exposures.

On a global scale, when assessing the percentage of manufactured intermediate production in the world, China has experienced a swift and substantial increase, establishing actual global dominance. Since approximately 2014, China's production of manufactured intermediates has surpassed that of all developed countries combined. This fact is largely unknown.

Creating Policy

The crucial consideration is determining when policy intervention is justified, especially as firms are continually optimizing their supply chain risk to the degree that they are able. There are different perceptions of risk from the private sector (firms) and governments. Perhaps because firms are already engaged in supply chain risk management, their perception of risk is a better approximation of when action should be taken than the perception of governments. As firms seek more cost savings, they concentrate production in lowcost regions, simultaneously increasing risk. From a private sector standpoint, the optimal scenario involves maximizing cost savings while minimizing risk, resulting in an ideal diversification of supply chain risk. If the public sector has a higher perception of risk than the private sector, it might be a reason that the government would intervene in supply chain diversification and resilience.

Governments have recently decided to intervene in many sectors so we should carefully examine for which sectors this is appropriate.

Governments around the world have consistently implemented costly, persistent and intrusive policies to diversify supply risk in both farming, the defense sector and the financial sector. In all of these sectors the public sector perception of risk is more cautious, resulting in government action.

The financial sector exemplifies another domain where private sector perception of risk is not accepted by the public sector. It is important to determine if semiconductors or medical supplies have gained those criteria.

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RIETI Highlight English Edition 2024



"Chip War" and Its Implications for Japanese Industrial and Security Policies (Date: January 27, 2023)



Chris MILLER Associate Professor, International History, Fletcher School, Tufts University

The History of Semiconductors

The semiconductor chips we associate with consumer devices like smartphones and PCs actually emerged from a United States commitment to miniaturizing computing power during the Cold War. The first semiconductors were applied to military systems, and a deep relationship between defense industries and advances in semiconductor technology has continued. It was only in the 1970s onwards that consumer electronics and corporate computers started consuming a larger share of chips, although defense industries still played a large role in buying chips and R&D. In 1965, Gordon Moore, co-founder of Intel, noted that the number of transistors that fit on a chip double every year or two. This observation, known as Moore's Law, has continued at a similar rate, enabling the miniaturization of computing we know today. This is relevant for both civilian and military systems that demand ever smaller transistors and ever more advanced semiconductors.

In the 1970s, the first precision guided strikes took place during the Vietnam War, revolutionizing military attitudes to technology. Over the past 50 years, almost every military system has started to include an extraordinary amount of computing power in terms of processor and memory chips required for sensor data processing. The Russia-Ukraine war has highlighted that communications sensors and precision guided munitions continue to transform the way wars are fought, and many key tactics that have worked for Ukraine in this war stem from capabilities produced by semiconductors. For example, even older systems like the Javelin anti-tank missile from the 1970s and 1980s, have several hundred semiconductors. And Ukraine leans very heavily on high-tech military weapons, communications and cyber defense systems that are enabled by advances in computing power. For Example, Starlink, the low earth orbit satellite system started by Elon Musk, gave Ukrainians access to widespread satellite communications that were unable to be cut off, jammed or hacked by Russia. Militaries today demand long-distance, secure communications systems enabled by semiconductors, such as HIMAR precision guided missiles. The U.S. and others give Ukraine an extraordinary amount of signals intelligence, processed into coordinates of potential Russian targets. When entered into the HIMAR guidance computer, the missile does the rest of the work. This computerized warfare wouldn't be possible without semiconductors. Advanced computing capabilities are also at the core of Ukraine's cyber defenses. Government data is stored on

cloud computing systems defended by Microsoft and Google, which allowed it to stay functional in the early days of the war. These cloud data centers, vast warehouses full of semiconductors, are protected by some of the most advanced cyber defense systems ever produced.

Defense planners and policymakers today in Washington and Beijing envision battlefields of the future to depend even more on sensors, communications capabilities and computing power. Militaries transfer and process huge quantities of data, from rapidly increasing numbers of infrared, LIDAR, radar and optical sensors. Some military systems are gaining the partial autonomy to fly themselves or automatically locate and identify potential targets. Such advancements require new semiconductors, both for the autonomous systems and for the GPU chips used in the data centers to train these autonomous systems. With the U.S. and China both considering this, there is an inevitable relationship between computing technologies, intelligence capabilities and military power, reflected in accelerating geopolitical tensions between China and its neighbors. A number of countries have imposed restrictions on investment, transfer of information or workers, and the export of certain types of chips and machines into China. Meanwhile, China is spending very heavily to boost its chip industry and make it more self-sufficient. Most advanced semiconductors require machine tools, materials, designs and software from the Netherlands, Japan and the U.S., with Taiwanese or Korean fabrication capacity. China plays a role in lagging edge, less sophisticated semiconductor orders, relying on imported machine tools. Since 2014, semiconductors have been a core priority for China's economic policy, leading to increased capacity to produce less sophisticated chips, but its dependance on imports of advanced chips and machine tools, chemicals, designs and chip design software continues. The rest of the world is also reliant on a few facilities to produce semiconductors. Around 90% of advanced processor chips for smartphones, PCs, data centers and telecoms infrastructure are produced in Taiwan by TSMC (the Taiwan Semiconductor Manufacturing Company) with the other 10% produced by South Korea's Samsung.

Supply Chain Resilience

As tensions rise between China and Taiwan, the concentration of cutting edge chipmaking in Taiwan is a growing source of concern. The U.S. is limiting the ability of Chinese companies to acquire U.S. tools or software, and other international chip firms are also changing



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investment patterns. Semiconductor manufacturing countries integrate themselves very deeply into international supply chains, but this is an increasingly difficult strategy for Chinese firms. Therefore, the government is implementing massive capital investment into national and local subsidies. It is questionable whether China can sustain this level of funding, and any domestic cutting-edge supply chain would likely spill over into the military sphere as tensions escalate. With Chinese pressure and military power intensifying each year, the risk of a blockade or conflict in the Taiwan Strait that could impact Taiwan's ability to export semiconductors is growing. This has sparked debate about what governments can do to provide resiliency in the case of a Taiwan crisis that would disrupt semiconductor supply chains with costly effects worldwide. Governments and companies are rethinking their reliance on a small number of geographically concentrated chip makers, as reflected in policy and corporate investment trends. The U.S. has passed legislation, such as the Chips and Sciences Act, devoting \$40 billion to manufacturing and over \$10 billion to R&D, to reduce the cost gap between producing in the U.S. versus Taiwan or South Korea. Industrial cost differentials between facilities are driven by tax policy differentials, as costs for specialized machine tools and labor do not differ significantly. The CHIPS Act is intended to provide a generous tax policy to make it competitive to produce semiconductors in the United States, with the goal of supply chain resilience. DARPA, the Defense Department's R&D arm, has launched an electronics resurgence initiative to fund cutting edge chip production, and new controls have been imposed on transfer of technology to China. These measures are intended to consolidate semiconductor technology leadership in the United States and allied countries and make supply chains more resilient in case of a crisis. Other major governments are also diversifying the geography of semiconductor fabrication. India is subsidizing lagging edge fabrication, the European Union is preparing a large Chips Act, Japan has promoted the opening of a new facility by TSMC, and Taiwan and South Korea are providing tax credits. Companies in the U.S., Japan and Europe are beginning to change their investment patterns, and TSMC is as a result of this is building new facilities in the U.S., Japan and possibly Germany.

Customers are also demanding supply chain resilience. Dell is phasing out Made in China chips by 2024. Apple is expanding assembly capabilities in Vietnam and India. Mexico is trying to attract some assembly capacity for computers, and India is building a semiconductor fab. Across the electronics industry, there is more focus than ever on supply chain diversification. The chip industry itself is also changing. Moore's Law used to cheaply provide doubled computing power each year, but this is no longer the case. Advanced semiconductor production costs have not declined, so designing chips is becoming more expensive for companies. This could concentrate the industry and deter innovation, so open-source architectures are trying to provide cost-effective production methods capable of comparable advances. Computer architectures have also shifted, and specialized chip designs like GPUs optimized for artificial intelligence offer an opportunity for an industry reset and for new companies to rise based on their capabilities. Packaging of multiple different chips together to provide faster interconnect speeds with better performance is another key trend in the chip industry, making this traditionally low value, less capital-intensive packaging side of the industry, increasingly important.

Future Implications

A driver of growth for the future of the semiconductor industry is in data centers and cloud computing capabilities, which we increasingly rely on in our daily lives. Automobiles are another major growth segment, as electric vehicles gain popularity, with autonomous driving features requiring advanced semiconductors. The Moore's Law era of general-purpose chips is becoming a differentiated landscape, with chip design, software, tools and packaging arranged in different ways. This means traditional players are finding it harder to compete. Tech firms in the semiconductor space and their customers in the electronics industry must adapt to technological shifts while simultaneously de-risking supply chains from excessive dependence on China and Taiwan.

Q&A

Q: When thinking about semiconductors, geopolitical outlook is very important. How long do you think the U.S.- China semiconductor conflict will last? How will it end?

Chris MILLER: The key driver of the semiconductor conflict is the military balance in East Asia. This military balance has swung from the U.S. to China, which has built more advanced military systems and expanded its navy, air force and missile forces. As China's military has expanded quantitatively, it's become more important for the U.S. to maintain its edge qualitatively. That's why the U.S. establishment is set on retaining advantages in semiconductor capabilities, to achieve military systems that are good enough to offset the sheer number of Chinese military systems in the Taiwan Strait. Until the military situation becomes clearer, technological tensions are unlikely to diminish, as both key parties are trying to deploy advanced technologies to military systems.

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Fellow		
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KOIZUMI Hideto	Fellow (Policy Economist)	Public Economics
LIU Yang	Fellow	Labor Economics, Migration Policy
MATSUMOTO Kodai	Fellow (Policy Economist)	Labor Economics, Public Assistance Policy

Name	RIETI Title	Expertise
SENGA Tatsuro	Fellow (Specially Appointed)	Macroeconomics, Macro-Finance, Firm Dynamics
SUMIYA Kazuhiko	Fellow (Policy Economist)	Labor Economics, Public Economics, Applied Microeconometrics
YAMADA Takahiro	Fellow (Policy Economist)	Interests, Economic Development
YIN Ting	Fellow	Macroeconomics, Household Economics, Chinese Economy, Labor Economies
Research Associate		
GOTO Yasuo	Research Associate	Industrial Organization, Small and Medium Enterprise (SME) Research, Financial Economics
ITO Banri	Research Associate	International Economics, Research and Development (R&D), Innovation
IWAMOTO Koichi	Research Associate	 Digital Economics 2. Offshore Wind Power 3. German Economy (Hidden Champion, Industry 4.0) Regional Economy and Employment Issues, Small and Medium Enterprises (SMEs) 5. Research on Germany's High Productivity 6. Telework and Digital Reskilling
KAMEI Kenju	Research Associate	Experimental Economics, Behavioral Economics, Business Economics, Public Economics, Applied Economics
KATO Atsuyuki	Research Associate	Economic Growth, Productivity Analysis, Trade and Development
KAWAMURA Satoshi	Research Associate	Economic History of Japan, History of Transportation Industry, Industrial Safety Administration
KIYOTA Kozo	Research Associate	International Economics and Data Science
KODAMA Naomi	Research Associate	Applied Microeconomics, Labor Economics
MAKIOKA Ryo	Research Associate	Applied Microeconomic, International Economics
NISHITATENO Shuhei	Research Associate	International Economics, Environmental Economics, Applied Microeconometrics
ODA Keiichiro	Research Associate	Game Theoretic Analysis of Investors' Strategic Interactions in Financial Markets
OKIMOTO Tatsuyoshi	Research Associate	Financial Econometrics, Macroeconometrics, Energy Economics
ONUMA Hiroki	Research Associate	Environmental and Energy Economics, Climate Change Policy, Disaster Management
TANAKA Ayumu	Research Associate	International Trade, Foreign Direct Investment, Natural Disasters
TSUKADA Naotoshi	Research Associate	Economics of Innovation, Industrial Organization
WAKABAYASHI Midori	Research Associate	Social Security, Welfare Economics
YAMAUCHI Isamu	Research Associate	Innovation, Research and Development (R&D) Management, Intellectual Property
YOKOO Hide-Fumi	Research Associate	Environmental and Resource Economics
YUDA Michio	Research Associate	Health Economics, Public Economics, Applied Microeconometrics
Faculty Fellow		
AOYAMA Hideaki	Faculty Fellow	Theoretical Physics, Econophysics
ARIMURA Toshi H.	Faculty Fellow	Environmental Economics, Energy Economics, Applied Econometrics, Climate Policy
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HONJO Yuji	Faculty Fellow	Entrepreneurship and Small Business, Business Economics
HOSONO Kaoru	Faculty Fellow	Banking Regulations, Corporate Finance, Monetary Policy, Aggregate Productivity
INUI Tomohiko	Faculty Fellow	Economic Policy, Productivity, International Economics

Name	RIETI Title	Expertise
ISHII Susumu	Faculty Fellow	History of Japanese Economy
ISHIKAWA Jota	Faculty Fellow	International Trade Theory
JINJI Naoto	Faculty Fellow	International Economics, Environmental and Natural Resource Economics, Industrial Organization
KAWAGUCHI Daiji	Faculty Fellow	Labor Economics, Empirical Microeconomics
KAWAHAMA Noboru	Faculty Fellow	Antitrust Law, Competition Policy
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KOBAYASHI Keiichiro	Faculty Fellow	Endogenous Growth Theory, General Equilibrium, Business Cycles, Bad Debt Problem, Debt Control Policy, Macropolitical Economy
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KURODA Sachiko	Faculty Fellow	Labor Economics, Applied Microeconomics Research Topics: Work Hours, Time Allocation/Time Use, Mental Health and Workplace, Health and Productivity Management
KWON Hyeog Ug	Faculty Fellow	Productivity Analysis, Industrial Organization
MANAGI Shunsuke	Faculty Fellow	Environmental Economics, Resource Economics, Applied Microeconomics
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MIYAGAWA Tsutomu	Faculty Fellow	Macroeconomics, Japanese Economics, Asian Economic Trends
MIYAJIMA Hideaki	Faculty Fellow	Japanese Economy, Economic History of Japan, Corporate Finance, Corporate Governance Comparative Financial Systems
MORI Tomoya	Faculty Fellow	Spatial Economics, Urban and Regional Economics
MOTOHASHI Kazuyuki	Faculty Fellow	Applied Microeconomics, Economic Statistics, Econometrics, International Comparison of Productivity, Economic Analysis of Information Technology, Technological Innovation and Economic Growth, Innovation System, Input-output Analysis
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NAKAJIMA Kentaro	Faculty Fellow	Spatial Economics, Urban Economics
NAKAMURO Makiko	Faculty Fellow	Educational Economics
NAKATA Hiroyuki	Faculty Fellow	Microeconomic Theory, Financial Economics
NIREI Makoto	Faculty Fellow	Macroeconomics
NISHIMURA Kazuo	Faculty Fellow	Nonlinear Economic Dynamics, Educational Economics, Neuroeconomics
OHASHI Hiroshi	Faculty Fellow	Industrial Organization, Competition Policy, Science & Technology Innovation Policy, Trade Policy, Economic Policy
OHTAKE Fumio	Faculty Fellow	Behavioral Economics, Labor Economics
OKAZAKI Tetsuji	Faculty Fellow	Economic History, Development Economics, Comparative Institutional Analysis
OKUBO Toshihiro	Faculty Fellow	International Trade, Globalization, Economic Geography, Regional Economy, Digitalization
ONO Yoshikuni	Faculty Fellow	Japanese Politics, Electoral Systems, Voting Behavior
OWAN Hideo	Faculty Fellow	Personnel Economics, Organizational Economics, Labor Economics, Innovation Economics
SATO Motohiro	Faculty Fellow	Public Finance, Local Public Finance

Name	RIETI Title	Expertise
TANAKA Mari	Faculty Fellow	Labor Economics, Development Economics, International Economics
TANAKA Ryuichi	Faculty Fellow	Labor Economics, Economics of Education
TODO Yasuyuki	Faculty Fellow	International Economics, Development Economics, Japanese Economy, Applied Microeconometrics
TSURU Kotaro	Faculty Fellow	Comparative Institutional Analysis, Organizational Economics, Labor Market Institutions
UCHIYAMA Yu	Faculty Fellow	Japanese Politics, Comparative Politics
UESUGI lichiro	Faculty Fellow	Banking, Corporate Finance, Small and Medium Enterprises (SMEs), Japanese Economy
UNAYAMA Takashi	Faculty Fellow	Household Behavior, Applied Econometrics, Index Theory
WASHIDA Yuichi	Faculty Fellow	Marketing, Diffusion of Innovation, Design Research, Foresight Studies
WATANABE Junko	Faculty Fellow	Economic History, History of Economic Policy, History of Industry, Business History
YAMORI Nobuyoshi	Faculty Fellow	Empirical Research on the Japanese Financial System
YOKOYAMA Akihiko	Faculty Fellow	Power Systems Engineering and Power System Economics
Consulting Fellow		
AKAHOSHI Yasushi	Consulting Fellow	International Trade and Investment, Economic Growth (Innovation, etc.)
AMBASHI Masahito	Consulting Fellow	Applied Microeconomics, Industrial Organization, Industrial Policy, Innovation, Economic Development (Asian Economy)
ANDO Haruhiko	Consulting Fellow	Innovation and Architecture Related to New Energy, 3Rs, Cross-industrial Exchange and Startup Companies, etc., Intellectual Property System, Industrial Competitiveness
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AOYAMA Tatsufumi	Consulting Fellow	Hospital Management, Health and Medical Services, Life Science Industry, Innovation
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Chi Hung KWAN (C. H. KWAN)	Consulting Fellow	China's Economic Reform, Regional Integration in Asia, Yen Bloc
ENDO Noriko	Consulting Fellow	Policy Development for Regional Industries, Entrepreneurship, Marketing, Organization (Network, Community, Nonprofit organization)
ENOMOTO Shunichi	Consulting Fellow	International Business, Servitization under Internet of Things (IoT), Digitalized Production
ETO Manabu	Consulting Fellow	Management of Technology, Standardization, Innovation Policy
FUJI Kazuhiko	Consulting Fellow	Effects of Trends in Crude Oil and Natural Gas on International Affairs, Impacts of Super Aging Society on Japan (Including community theory), China's Political Economy, U.S. Political Economy, Energy Cooperation with Russia (Natural gas pipeline project in Sakhalin)
FUKUNAGA Kai	Consulting Fellow	Macroeconomics, Firm Dynamics, Network, Industrial Organization, Labor Market, Causal Inference, Machine Learning
FUKUNAGA Yoshifumi	Consulting Fellow	International Economic Law, International Political Economy, Regional Economic Integration of ASEAN and East Asia
FUKUOKA Noriyoshi	Consulting Fellow	Industrial Policy, Healthcare Policy, Energy Policy
FUKUYAMA Mitsuhiro	Consulting Fellow	Globalization, International Political Economy, Trade, U.SChina Relations, Regional Integration, Poverty Reduction
HARA Keishiro	Consulting Fellow	Future Design, Technology Policy and Innovation, Environmental and Energy Policy, Sustainability Science
HARADA Takashi	Consulting Fellow	Intellectual Property Policy, Small and Medium Enterprise (SME) Policy, Innovation Policy, Organizational Design Theory, Public Relations

Name	RIETI Title	Expertise
HASHIMOTO Kenji	Consulting Fellow	Human Resources, Education, Human Capital, Productivity, Artificial Intelligence (AI), Labor Market
HASHIMOTO Shinji	Consulting Fellow	Globalization of IP Strategies
HATA Shigenori	Consulting Fellow	Innovation Policy, Research and Development (R&D) Evaluation
HASHIMOTO Yasuhiro	Consulting Fellow	African Area Studies, Development Economics, Trade Policy, Industrial Human Resource Development
HATTORI Takashi	Consulting Fellow	International Relations, Trade Policy, Environment and Energy Policy
HAYAFUJI Masahiro	Consulting Fellow	Trade and Related Policies, Trade Regimes, Economic History, Environmental Economics
HIBIKI Akira	Consulting Fellow	Environmental and Resource Economics, Law and Economics (In the Area of Accident Law)
HIRAI Hirohide	Consulting Fellow	Industrial Policy, Energy Policy
HIRAYAMA Yuka	Consulting Fellow	Design and Art Policy, Organizational Design Theory, Innovation Policy, Public Relations and Public Affairs, Industrial Human Resources Policy
HIRONO Ayako	Consulting Fellow	Global Research Trends in Economics and Management, Journalism, Innovation
HIROSE Kozo	Consulting Fellow	Energy Policy, Innovation Policy, Innovation in Emerging Economies, Use of Design Processes in Policymaking, Behavioral Economics
HISHINUMA Takeshi	Consulting Fellow	Intellectual Property, Private International Law and International Relations
HORI Tatsuya	Consulting Fellow	Policy for Culture, Policy for Content Industry, Policy for Human Resource
IDEYAMA Yuki	Consulting Fellow	Corporate Disclosure Systems, Accounting Standards, Capital Market Policies, Corporate Governance, Sustainability, Evidence-Based Policy Making (EBPM), Econometrics, Data Science, Macroeconomics, Local Development, Industrial Taxation
IKARI Hiroshi	Consulting Fellow	Development Finance, Capital Formation, Pension, Asset Management
IKEDA Yoko	Consulting Fellow	Policy and Institutions for Innovation, Rulemaking, Global Governance
INUKAI Shinya	Consulting Fellow	Public Economics, Labor Economics, Applied Microeconomics
ISHII Yoshi(aki)	Consulting Fellow	Small and Medium Enterprise (SME) and Venture Business Policy, Industrial Organization, Innovation Policy
ISHIKAWA Toshiki	Consulting Fellow	Official Statistics, New Statistics Development with Utilizing Big Data, Data Visualization, Design Policy, Design Management
ІТО Којі	Consulting Fellow	Firms' International Activity (Trade, Foreign Direct Investment (FDI), etc.), Economic Sanctions
IWASAKI Fusanori	Consulting Fellow	International Relations, Trade Negotiations, East Asia Economic Integration
KAMEI Hiromichi	Consulting Fellow	Macroeconomy, Tax, Finance, Social Security
KANKE Masaru	Consulting Fellow	Corporate Behavior, Productivity, International Trade
KANNEN Masato	Consulting Fellow	Regional Economics, Smart Agriculture
KAWASAKI Kenichi	Consulting Fellow	Economics (Economic Model Analysis)
KAWASHIMA Yusaku	Consulting Fellow	Artificial Intelligence (AI), AI Ethics, Data Science, Statistics, Finance, Economics, Technology Policy, Leadership, Design Thinking, System Dynamics, Foresight Methodologies
KIDO Fuyuko	Consulting Fellow	Quantum Chemistry, Innovation
KIKUCHI Yasuyuki	Consulting Fellow	Macroeconomics, Monetary Policy, Regional Finance, Growth Theory
KIMURA Fukunari	Consulting Fellow	International Trade, Development Economics, East Asian Economies
KIMURA Takuya	Consulting Fellow	Trade and Investment Policy, Rulemaking, Management

Name	RIETI Title	Expertise
KITAMURA Kenta	Consulting Fellow	Energy Policy, Industrial Policy
KOBAYASHI Hirokazu	Consulting Fellow	Learning Organization, Innovation, Southeast Asia and Indo-Pacific Affairs
KOBAYASHI Masanori	Consulting Fellow	International Public Policy, Regional Economy, Urban Policy, Real Estate Studies, etc.
KOBAYASHI Yohei	Consulting Fellow	Public Economics, Applied Econometrics, Tax Policy, Public Finance, Social Security, Evidence-Based Policy Making (EBPM), Urban Economics
KOMATSU Keita	Consulting Fellow	Heath Economics, Finance, Molecular Biology, Bioinformatics
KOMETANI Kazumochi	Consulting Fellow	International Economic Law (Trade Law, Investment Law and Others), International Administrative Law, Competition Law
KUNITO Takayuki	Consulting Fellow	Economic Security, Economic Interdependence Theory (International Relations), Decision-Making Theory (Game Theory, Behavioral Economics), Regional Security Architecture
KUTSUZAWA Ryuji	Consulting Fellow	Urban Economics, Analysis of Real Estate Prices, Real Estate Investment Trusts (REITs) and Institutions for Innovation
MASAKI Yusuke	Consulting Fellow	Policy Making, Evidence-Based Policy Making (EBPM), Public Management, Local Administration, Economic Growth
MASUDA Kosuke	Consulting Fellow	Evidence-Based Policy Making (EBPM), Using Text as Data in Administrative Record Information for EBPM, Theory of Small and Medium Enterprise (SME), Active Labor Market Policy, Foreign Human Resources, Education Policy
MATSUMOTO Hideyuki	Consulting Fellow	International Financial Markets, Multinational Investment Banking, Global Strategic Information Systems Management, Offshoring and Outsourcing, Cross-cultural Studies
MATSUMOTO Rie	Consulting Fellow	Geopolitics of Technology (Technology Security), Industrial Digital Transformation and Talent Development, Israel's Innovation Ecosystem
MATSUNAGA Akira	Consulting Fellow	Economic Growth Theory, International Trade, Industrial Policy
MATSUYAMA Masayuki	Consulting Fellow	Management Accounting, Sustainability Disclosure, Impact Finance, ESG Investment, Financial Systems Theory
MIURA Satoshi	Consulting Fellow	Commodity Markets, Industrial Organization Policy, U.S. Political Economy, Evidence-Based Policy Making (EBPM)
MIYOSHI Yoshiyuki	Consulting Fellow	Public Finance, Regional Economics, Macroeconomics, Housing Policy, Infrastructure Policy
MIZUNO Masato	Consulting Fellow	Science, Technology and Innovation Policy, Venture Policy
MIZUNO Ryota	Consulting Fellow	Historical Evaluation of Industrial Policy, Comprehensive Evidence-Based Policy Making (EBPM) Research, EBPM Formation for Regional Development
MONDEN Yuichiro	Consulting Fellow	Use of Simulation Technologies (e.g., Agent-based Modeling and System Dynamics) for Policymaking, Information Technology Industrial Policy, Competition Policy, Intellectual Property Policy, High Field Science, High Energy Density Science
MORIMOTO Takuya	Consulting Fellow	Small and Medium Enterprise (SME) Financial Policy, Labor Economics
MUNAKATA Naoko	Consulting Fellow	International Trade Regime, Economic Security, Innovation, Intellectual Properties, Risk Management, Data Governance
NAGAMACHI Daisuke	Consulting Fellow	Macroeconomics, Public Investment, Public Policy
NAKADATE Naoto	Consulting Fellow	Science, Technology & Innovation Policy / Start-up Supporting Policy / Research of Disruptive Technologies / Gene Editing and Synthetic Biology / Uncertain Management under Pandemic, Disaster & Accident / Diversity Leading to the High Quality of Organizational Decision / Food Tech / Middle East Oil Money to Japanese Deep Tech / Production Management & Manufacturing
NAKAGAMI Yasunori	Consulting Fellow	Corporate Governance Theory, Corporate Strategy, Corporate Finance
NAKAJIMA Atsushi	Consulting Fellow	Macroeconomic Finance Analysis, International Finance
NAKAMURA Yoshiaki	Consulting Fellow	Industrial Theory, Industrial Policy, Management of Technology
NAKANISHI Tasuku	Consulting Fellow	Trade/Investment Agreements, Industrial Development

Name	RIETI Title	Expertise
NAKATOMI Michitaka	Consulting Fellow	International Economy, Trade Law, Trade Policy, Intellectual Property and International Standards, Investment Policy, Technology Policy, Digital Economy, Global Value Chains, Industrial Policy
NAKAZAWA Norio	Consulting Fellow	Economic Thought, Market Analysis, Public Finance, Personnel Economics
NAMBU Tomoshige	Consulting Fellow	Public Finance, Tax Policy, Trade Policy
NISHIGAKI Atsuko	Consulting Fellow	Governance Structure, Internet of Things (IoT), Design Policy, Work-life Balance (WLB) Policy
NISHIOKA Takashi	Consulting Fellow	Social Security
NUMAMOTO Kazuki	Consulting Fellow	Policy Design, Design Management, Startup Policy (Finance, etc.), Aircraft Industry Policy
ODAKI Kazuhiko	Consulting Fellow	Human Capital and Productivity, Real Estate and Finance
OGURO Kazumasa	Consulting Fellow	Public Economics
OIKAWA Keita	Consulting Fellow	Macroeconomics, International Economics, Econometrics, Public Economics, Industrial Organization
OKADA Yo	Consulting Fellow	Macroeconomic Policy and Analysis, International Trade and Investment Policy, Corporate Tax and Financial Accounting Policy
OKAMURO Hiroyuki	Consulting Fellow	Empirical Studies in Industrial Organization and Business Economics, Especially on Small Business, Start- ups, Innovation, Research and Development (R&D) Collaboration, and Innovation Policy
OKAWA Tatsuo	Consulting Fellow	Startup Innovation in China, Industrial Policy
OOTA Yuto	Consulting Fellow	Environmental & Energy Policy, Corporate Finance (Passed Uniform U.S. Certified Public Accountant Exams of New York State in 2023), Start-up Finance
OSABE Yoshiyuki	Consulting Fellow	Bibliometrics, Intellectual Property Rights, Science, Technology and Innovation (STI) Policy
SAITO Takashi	Consulting Fellow	Official Statistics, New Statistics Development with Utilizing Big Data
SAKAMOTO Masazumi	Consulting Fellow	Sustainable Development, History
SANO Tomoki	Consulting Fellow	Economic Growth Theory, Productivity, Trade Policy, Development Economics
SATO Katsuhiro	Consulting Fellow	Strategic Management, Corporate Finance, M&A
SATO Yukihiro	Consulting Fellow	Science and Technology, Innovation, Science Advisory System, Information Industry, Technology Diffusion
SEKIGUCHI Kunio	Consulting Fellow	Evidence-Based Policy Making (EBPM), Small Business Analysis, Regional Economic Analysis, Supply Chain Analysis
SHIRAI Hiroaki	Consulting Fellow	Urban Economics, Infrastructure Planning, Disaster Risk Management
SHONO Yoshihisa	Consulting Fellow	Macroeconomics, Econometrics, Policy Evaluation, Economic Inequality
Stanley lat-Meng KO	Consulting Fellow	Applied Econometrics, Social Network Model and Analysis, Financial Econometrics
SUGIYAMA Seiji	Consulting Fellow	Regional Economic and Industrial Policy, Productivity Analysis, Information Policy
SUZUKI Kenichi	Consulting Fellow	Operations Research (Project Management, Network Analysis)
TADOKORO Hajime	Consulting Fellow	Finance, Financial and Capital Market, Small and Medium Enterprise (SME) Management
TAKAGI Seiji	Consulting Fellow	International Trade Policy in Asia Pacific, Economic Security Policy, Finance
TAKEDA Takuya	Consulting Fellow	Trade Policy, Economic Cooperation Policy, Economic Security Policy, Southeast Asia
TAKEGAHARA Keisuke	Consulting Fellow	Sustainable Finance, Environmental Economics, Environmental Policy, Industrial Policy
TAKEGAMI Shiro	Consulting Fellow	International Relations, Joint International Research Management and Planning, Industry-University Cooperation, Innovation, Medical Device and Healthcare Innovation, Regional Industrial Development, Security Export Control, Startup Support Program, Research Project Management

Name	RIETI Title	Expertise
TAKEUCHI Maiko	Consulting Fellow	Economic Sanctions, Economics and National Security, Strategic Trade Control, Non-proliferation, Arms Control
TAMURA Suguru	Consulting Fellow	Innovation, Evidence-Based Policy Making (EBPM), Data Science, Competitive Strategy
TANABE Yasuo	Consulting Fellow	Trade Policy, Energy Policy, International Relations, International Governance
TANI Midori	Consulting Fellow	Consumer Policy, Environment Policy
TASHIRO Takeshi	Consulting Fellow	Japanese Economy, Financial Administration Crisis, Financial Crisis
TOMOZAWA Takanori	Consulting Fellow	Economic Growth, Innovation, Energy & Environment, Mobility, Digital, System Design
TSUDA Hirokazu	Consulting Fellow	Evidence-Based Policy Making (EBPM), Behavioral Economics, Entrepreneurship, Regional Economy
TSURUTA Hitoshi	Consulting Fellow	Tariff Policy, International Trade Law, International Trade
UNO Yuya	Consulting Fellow	Public Economics
YAMADA Keigo	Consulting Fellow	Cultural Heritage, Cultural Capital, Cultural Economics, Human Resource Development Theory, Information Industry Policy, Management Strategy Theory, Climate Change Countermeasures, Energy and Environmental Economics
YAMADA Masato	Consulting Fellow	Work-Life Balance (WLB), Intellectual Property Policy, Consumer Policy, Regional Economies, Energy Policy
YOSHIDA Hiroki	Consulting Fellow	Digitalization of Government Service, Design Thinking for Government Service, Management Strategy for Corporations and Government Agencies
YOSHIDA Ryohei	Consulting Fellow	Macroeconomy, Japanese Economy, Monetary Policy, Social Security Policy
YOSHIDA Yasuhiko	Consulting Fellow	Trade Policy, Trade Control, Infrastructure Export, Small Businesses, Manufacturing Industry, Industrial Development Policy
YOSHIOKA Masatsugu	Consulting Fellow	Corporate Law, Contract Law
Visiting Fellow		
YAMAGUCHI Kazuo	Visiting Fellow	1. Quantitative Methodology (Event-History Models and Models for Categorical Data) 2. Work and Family, Work-Life Balance (WLB) 3. Models of Rational/Purposive Social Action 4. Life Course and Occupational Career 5. Social Stratification and Social Inequality 6. Contemporary Japanese Society 7. Social Network, Exchange, and Diffusion 8. Epidemiology of Drug Abuse 9. Longitudinal Analysis of Drug Use History
Non-Resident Fellow		
Shiro ARMSTRONG	Non-Resident Fellow	International Trade and International Economic Policy, Foreign Direct Investment, East Asian Economy, Japanese Economy, Chinese Economy, Cross Straits Economic Relations, South Asian-East Asian Economic Integration, Australia-Japan Relations
Richard BALDWIN	Non-Resident Fellow	International Trade, Globalization, Regionalism, WTO, Economic Geography, Political Economy, Global Value Chains, Global Economic Policy, European Integration and Growth
ITO Hiroyuki	Non-Resident Fellow	International Macroeconomics, International Finance, Monetary Economics
Bart VAN ARK	Non-Resident Fellow	International Comparative Productivity Measurement and Analysis, Innovation and Technology, Digital Transformation, Economic Growth, Development Economics, Economic History and International Economics and Business



Editorial Note:

Thank you for reading RIETI Highlight 2024 (English Edition). We hope that your interest in RIETI's activities increases through reading the articles in this edition.

By the time this PR magazine is published, the scorching summer will have come to an end and the signs of autumn will be tangible. In 2024, we have initiated our Sixth Medium-term Plan, and the new chairman, Dr. Kyoji Fukao, and new president and CRO, Dr. Eiichi Tomura, have also taken office, marking a new chapter for RIETI. We usually publish the English edition of our PR magazine around February every year, but we decided to publish it earlier to "highlight" RIETI's rejuvenation.

This edition features our Sixth Medium-term Plan, but we also cover RIETI's activities related to economic security, which has become an important theme due to the recent increase in geopolitical risks. The results of related research conducted at RIETI and our events are presented within, and we hope that our activities will continue to pique the interest of our followers as we strive to produce more insightful and interesting work into the future.

(RIETI Highlight Editorial Team)



Research Institute of Economy, Trade & Industry, IAA





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https://www.youtube.com/user/rietichannel

