Title: GTAP-MRIO: Illustrative Application of CP-TPP expansion

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Abstract: A key characteristic of the GTAP Data Base is the accounting of protection measures, such as tariffs. The GTAP-Multi-region Input-Output (MRIO) extension distinguishes bilateral trade of goods between countries by end-user, namely: firms, private households, government, and investors. In addition, the GTAP-MRIO extension also distinguishes bilateral tariffs on goods between countries by end-user. The latter is important because private and intermediate uses may be subject to heterogeneous tariffs. This study employs the static GTAP-MRIO Model and GTAP-MRIO Version 11 to assess the effects of a CP-TPP expansion focused on Japan and other Asian economies. Version 11 represents the latest MRIO, with a reference year of 2017. The geographic coverage of 160 regions and 65 sectors will be simplified by aggregating them into a smaller and consistent dimension with other studies in this session. One of the goals of this session is to contrast the results obtained when using the GTAP-MRIO against other studies since different assumptions have been made to obtain the additional dimension of the MRIO, based on the OECD-ICIO.

Background and Motivation:

Over the past three decades, Japan and other Asian economies have been deeply integrated through cross-border supply chains and production networks. These networks are characterized by vertical specialization, trade in intermediate goods, and multinational production, serving as crucial drivers of the region's economic growth, technological dissemination, and productivity gains. Japan has assumed a particularly significant role as a provider of capital, technology, and high-quality intermediate inputs, functioning as a hub coordinating complex production stages across East and Southeast Asia.

However, the operational landscape for these production networks has undergone significant alterations in recent years. Rising geopolitical tensions have introduced new sources of uncertainty, including tariffs, export controls, investment screening, and wider concerns regarding economic security. Consequently, these developments have led firms and governments to reevaluate the structure, resilience, and strategic direction of supply chains, with increased attention to diversification.

Meanwhile, the regional trade agreements in Asia continue to evolve. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CP-TPP) and the Regional Comprehensive Economic Partnership (RCEP) represent significant institutional developments. The CP-TPP was signed by 11 countries in the Asia-Pacific region on March 8, 2018.[1] The entry into force of RCEP and the ongoing expansion of CP-TPP membership represent such developments in the Asia-Pacific. These agreements have the potential to alleviate some of the disintegrative effects of geopolitical tensions by reducing trade costs, harmonizing rules of origin, and providing a more predictable framework for cross-border production. Analyzing how these trade agreements interact with geopolitical forces to influence supply chain decisions is now a central research and policy question.

Recent advances in computable general equilibrium (CGE) modeling with multi-regional input–output (MRIO) structures offer powerful tools to quantify how shocks, such as tariffs, export controls, or

[1] The agreement has been signed by 11 partners: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.

changes in rules of origin, propagate through fragmented production networks across countries and sectors.

This application implements a stylized version of the CP-TPP. Our implementation of CP-TPP consists in changes to tariffs and non-tariffs measures using the latest GTAP-MRIO framework of GTAP 11. In terms of the regional aggregation, 34 corresponds to individual countries, 11 of which are part of the CP-TPP treaty, the remaining regions represent the EU 27 members, Rest of East Asia, and Rest of the World. Countries not party of the TPP include China, Korea, India, Argentina, Brazil, US and UK among others. In terms of sectors, we consider 41 sectors that match the classification of the OECD to facilitate the comparison of results.