INSTITUTE OF ECONOMIC GROWTH
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Trade Networks and Regional Trade Agreements: Insights from Network Analysis

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Introduction

Regional Trading Agreements (RTAs)[1] have emerged as a cornerstone of international economic policy in recent times. Countries increasingly leverage RTAs to enhance trade flows with their partners, while aiming to secure preferential market access. At the end of 2024, 373 RTAs were in force (Figure 1).

However, this expansion coincides with rising uncertainties and recent global developments implying a retreat from multilateralism. Rising protectionist moves have fuelled "friend-shoring" and fragmentation of supply chains. These shifts raise doubts over whether RTAs still deliver their intended benefits.

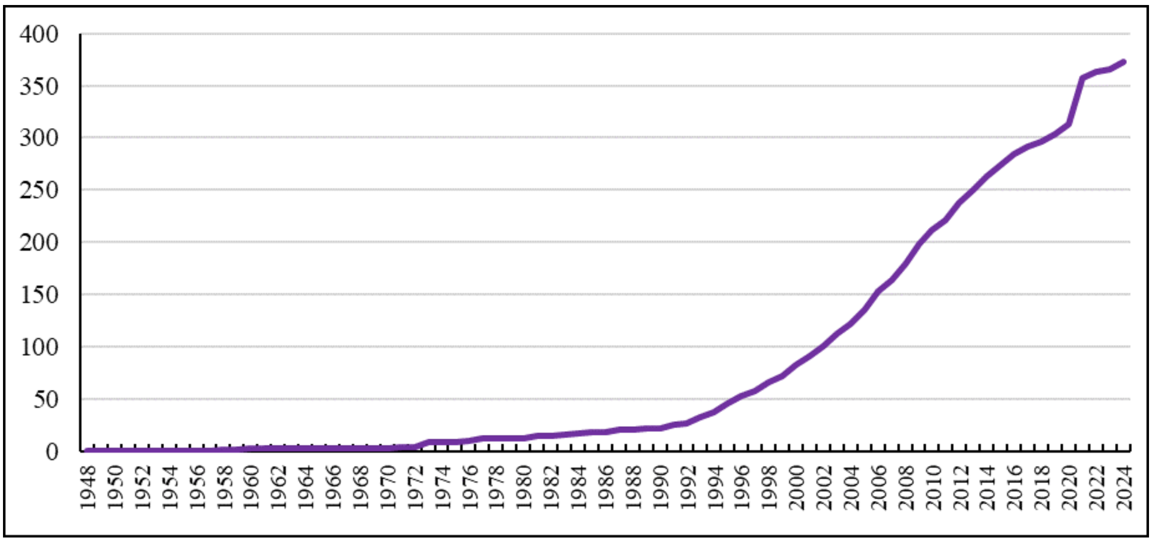
This raises a critical policy question: do these agreements actually shape global trade patterns, or do they simply coexist with them? For a developing country like India, the answer is central to designing trade strategy, prioritising agreements, and capturing the benefits of a shifting global economy.

Key Findings

Using data from the World Integrated Trade Solution (WITS) and the CEPII Gravity Database for 1995–2021, our network analysis mapped the evolution of global trade and Regional Trade Agreements (RTAs).

- **Global trade networks have become denser and shifted:** Trade links became far more interconnected between 1995 and 2021. A small set of countries act as hubs. Developing economies, especially China and South Korea, moved from the periphery to the core, while the centrality of Europe and Japan declined.
- **Trade communities remain stable:** Three major trade communities (Americas, Asia, Europe) persisted over time, shaped largely by geography and geopolitics. By contrast, RTA networks are highly fragmented, with many overlapping agreements and smaller communities.

Figure 1. Cumulative number of RTAs in force.



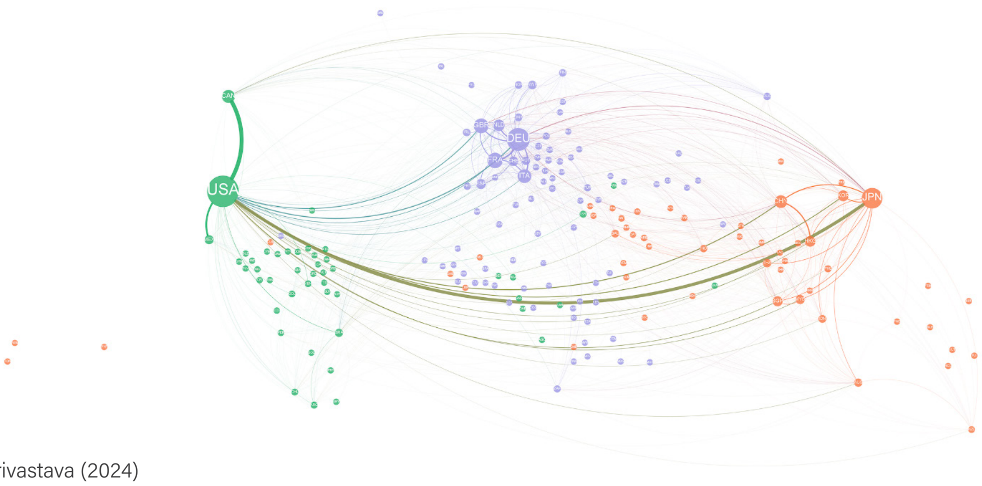
Source: WTO Secretariat (as on December 3, 2024)

[1] RTAs "...are taken to mean any reciprocal trade agreement between two or more partners, not necessarily belonging to the same region" (https: //www.wto.org/english/tratop_e/region_e/scope_rta_e.htm)

» **Weak association between RTAs and trade flows:** Analysis reveals that there is a weak correlation between the structures of trade and RTA networks. Despite the proliferation of RTAs, rising from 7.2 average connections per country in 1995 to 31 in 2021, these agreements show limited overlap with the actual community structures of global trade networks. This suggests that RTAs do not seem to be directly shaping the core patterns of trade flows. Further, the connections under the RTAs are not associated with observed intensity of trade connections.

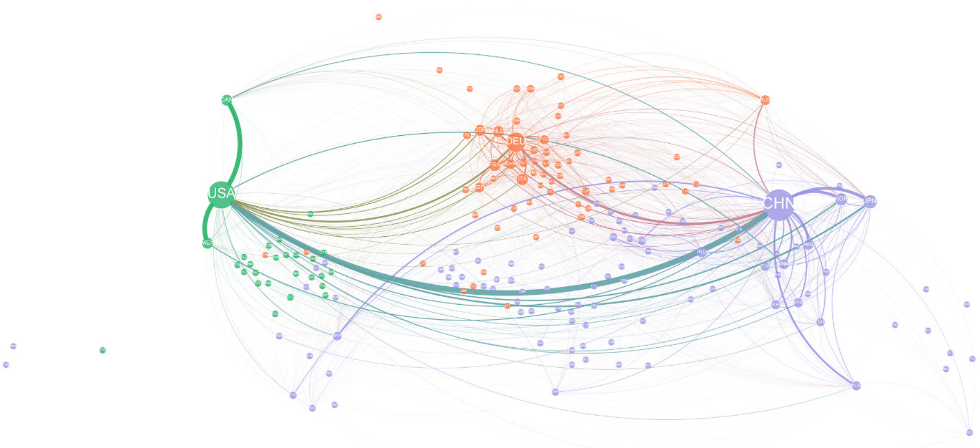
Figures 2 and 3 present the trade networks constructed for two points of time, 1995 and 2021. The nodes in the figures represent countries and the width of the connections between the nodes are proportional to the total trade flows between respective nodes during the year in consideration. The size of the nodes are proportional to the total trade flows from and to that node in the year under consideration. Thus the size of the node shows the intensity of trade by that particular node. The nodes of the same colour in these networks belong to the same community. The idea behind a community in a network is that the interactions between nodes within a community are greater than that between nodes in two different communities.

Figure 2. International trade network in 1995



Source: Rahul & Srivastava (2024)

Figure 3. International trade network in 2021



Source: Rahul & Srivastava (2024)

Key policy take-aways

- **Depth over breadth:** The analysis suggests that RTAs alone are not a sufficient mechanism for boosting trade. India should focus on improving the implementation and depth of existing RTAs rather than merely expanding their number. Given the weak correlations between RTAs and trade, India must regularly evaluate the economic impact of its RTAs and recalibrate its approach where necessary.
- **Target GVC integration:** The aim should be to position itself as a key player in the global trade network by integrating into global value chains (GVCs). This implies that India should prioritise policies that attract foreign investment in manufacturing and support GVC participation.
- **Leverage fragmentation:** The emerging global scenario, with increasing tendencies towards trade fragmentation could present headwinds in trade expansion. While presenting challenges to global trade, it also presents neutral countries such as India with opportunities to gain from friend-shoring and possibilities of 'connecting' trade between political blocs.

About the Research

This brief summarises findings from Rahul & Srivastava (2024), "Assessing the Association Between Trade and Regional Trade Agreements: A Network Approach" (Journal of Economic Integration, Vol. 39, No. 3), .

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