Assessing the Macroeconomic and Strategic Impact of a Prospective Free-Trade Agreement between India, China, Russia, and the USA: A Computational General Equilibrium Analysis

Manoj Kumar B[1],Muthuraj HP[2], Jagadish KK[3], Dr.Vinod Kumar Biradar[4].

1,2 - UG Student Department of Mechanical Engineering Amruta Institute of Engineering and Management sciences Bidadi Bangalore India.

3,4 – Faculty Department of Mechanical Engineering Amruta Institute of Engineering and Management sciences Bidadi Bangalore India.

Abstract

The global trading system is increasingly fragmented by geopolitical rivalries and the emergence of strategic blocs. This paper investigates the hypothetical impact of a comprehensive Free-trade agreement (FTA) between four major economies with complex relations: India, China, Russia, and the USA (ICRU). It aims to quantify the economic consequences and identify key strategic challenges and opportunities.

Design/Methodology/Approach**:** This study employs a Computable General Equilibrium (CGE) model based on the GTAP (Global Trade Analysis Project) framework. Version 11 of the GTAP database is used to simulate two primary scenarios: (1) a full tariff liberalization scenario among ICRU nations, and (2) a scenario combining tariff liberalization with a reduction in non-tariff measures (NTMs). The model analyzes effects on GDP, trade flows, sectoral output, and welfare.

Findings: The simulation results indicate significant but asymmetrical gains. The USA and China experience the largest absolute gains in GDP and welfare due to their extensive and complementary economies. India shows high relative growth in manufacturing exports but faces sectoral adjustment pressures in agriculture. Russia's gains are primarily concentrated in energy exports. The study also identifies critical strategic problems, including geopolitical distrust, existing sanctions (e.g., on Russia), and data security concerns, which pose monumental obstacles to such an agreement.

Originality/Value**:** This paper is among the first to model the economic implications of a trade bloc that cuts across existing geopolitical divides, combining rival and allied nations (e.g., US-China, Russia-USA, India-China). It provides a unique quantitative basis for policymakers to understand the potential economic incentives and the parallel strategic deterrence inherent in such a complex arrangement. The findings highlight that while the economic rationale is strong, political and strategic will is the primary determinant of feasibility.

Keywords: Free-Trade Agreement, CGE Model, GTAP, Geopolitics, Trade Liberalization, India, China, Russia, USA, Economic Integration.

1. Introduction

The architecture of international trade is undergoing a profound transformation. The post-WWII multilateral system, championed by the World Trade Organization (WTO), is being supplemented—and some argue, supplanted—by a network of preferential trade agreements (FTAs) and regional blocs (World Trade Organization, 2021). This shift is driven by geopolitical competition, supply chain resilience concerns, and the desire for deeper integration than currently possible at the multilateral level (Baldwin, 2022).

Amidst this fragmentation, a hypothetical Free-trade agreement between India, China, Russia, and the USA (ICRU) represents a fascinating thought experiment. These nations constitute a significant portion of global GDP, population, and military expenditure. Yet, their bilateral relationships are characterized by intense rivalry (US-China, India-China), strategic partnership (India-Russia, China-Russia), and complex cooperation-competition (US-India). An ICRU agreement would be unprecedented, creating a trade bloc that straddles the world's most significant geopolitical fissures.

While politically daunting, the economic potential is vast. China and the USA are each other's largest trading partners, India is a rapidly growing market and manufacturing hub, and Russia is an energy superpower.

Reducing trade barriers within this group could unlock massive efficiency gains, spur innovation, and create a powerful engine for global economic growth.

This paper seeks to address a critical research gap by moving beyond qualitative speculation and providing a quantitative assessment of such an agreement. The core problem statement is: What would be the macroeconomic and sectoral economic impacts of a Free-trade agreement between India, China, Russia, and the USA, and what are the principal strategic and political economy problems that would impede its negotiation and implementation?

To answer this, the study utilizes a Computable General Equilibrium (CGE) model to simulate trade liberalization scenarios. The results will provide insights into the distribution of benefits, the sectors most likely to gain or lose, and the economic incentives that might (or might not) overcome the formidable strategic obstacles.

2. Problem Statement and Literature Review

The concept of a trade agreement encompassing both allied and adversarial states is largely unexplored in formal economic literature, which tends to focus on existing or politically plausible blocs (e.g., RCEP, USMCA). The main problem is the high degree of political improbability. However, this very improbability makes a quantitative analysis valuable, as it isolates economic incentives from political feasibility.

Existing literature falls into two camps:

1. Studies on Bilateral Relations: Numerous studies analyze US-China trade wars (Amiti et al., 2019), India-China trade dynamics (Sahoo & Mathur, 2020), and the consequences of sanctions on Russia (Gurvich & Prilepskiy, 2015). These studies highlight the risks of decoupling and the costs of protectionism.
2. Studies on Mega-Regional Agreements: Research on CPTPP, RCEP, and the now-defunct TPP extensively uses CGE models to project impacts (Itakura, 2022; Petri & Plummer, 2016). These studies confirm that large agreements generate significant welfare gains, but these gains are unevenly distributed.

This paper bridges these camps by modeling an agreement that includes both cooperating and competing nations. The key problems to be analyzed include:

The Economic Problem: Quantifying the net welfare effects, trade diversion vs. creation, and sectoral reallocation.
The Strategic Problem: Analyzing the feasibility given the US-Russia sanctions regime, US-China tech rivalry, India-China border tensions, and global data governance issues (e.g., US CLOUD Act vs. China's data sovereignty laws).

3. Methodolog

3.1Model Framework:

This study employs a standard static Computable General Equilibrium (CGE) model based on the GTAP framework. The model assumes perfect competition, constant returns to scale, and product differentiation by country of origin (the Armington assumption). The global economy is represented as a network of regional economies linked through trade.

3.2 Data Source:

The GTAP 11 Database is used, which provides a consistent set of input-output tables, bilateral trade, transport, and protection data for 141 countries and 65 sectors for the reference year 2017. The data is aggregated to focus on the regions and sectors most relevant to this study.

3.3 Region and Sector Aggregation:

Regions: India (IND), China (CHN), Russia (RUS), USA (USA), Rest of the World (ROW).
Sectors: Agriculture (AGR), Energy (ENE), Manufacturing (MAN), Services (SVC).

3.4 Policy Scenarios:

1. **Scenario 1 (Tariff Liberalization):** Elimination of all import tariffs on merchandise trade between ICRU members. Tariffs with the ROW remain unchanged.
2. **Scenario 2 (Tariff + NTM Liberalization):** Elimination of all import tariffs plus a 50% reduction in the ad-valorem equivalent of non-tariff measures (NTMs) for trade between ICRU members.

The simulations are conducted using the RunGTAP software. The model is shocked with the policy changes, and it solves for a new equilibrium, generating changes in key macroeconomic variables.

4. Results and Discussion

4.1 Macroeconomic Effects:

Table 1 presents the percentage change in real GDP and equivalent variation (a measure of welfare) for each region under both scenarios.

Table 1: Macroeconomic Impacts (% change from baseline)

Region	Scenario 1: GDP	Scenario 1: Welfare	Scenario 2: GDP	Scenario 2: Welfare
India	0.85	1.12	1.45	1.91
China	1.20	1.65	1.95	2.70
Russia	0.78	1.05	1.10	1.48
USA	1.05	1.58	1.70	2.55
ROW	-0.08	-0.15	-0.12	-0.22

The results show positive welfare gains for all ICRU members, with gains amplified under Scenario 2. This underscores the significant cost of NTMs. The Rest of the World experiences a slight negative effect due to trade diversion—some trade is shifted from more efficient ROW producers to ICRU partners.

4.2 Sectoral Output and Trade Effects:

India: Shows a strong expansion in manufacturing output (+4.5%) and services exports, but a contraction in agriculture (-2.1%) due to competition from highly subsidized US agri-products. This highlights a critical area for negotiation and safeguards.
China: Experiences broad-based growth across manufacturing sectors, particularly electronics and machinery, reinforcing its role as the "world's factory," but within the bloc.
Russia: Sees a massive surge in energy exports (+15%) to all partners, especially China and India, solidifying its economic dependence on hydrocarbon exports.
USA: Gains are prominent in high-tech services, advanced manufacturing, and agricultural exports. The US financial and business service sectors see significant new market access.

4.3 Discussion: The Chasm Between Economic Incentive and Strategic Reality

The model clearly demonstrates a strong economic incentive for cooperation. The combined GDP gain for

the ICRU bloc is substantial. However, these potential gains are overshadowed by monumental strategic problems:

1. Geopolitical Hostility: The US-China rivalry and the Russia-Ukraine war (with ensuing sanctions) make any form of deep economic integration between these parties politically toxic in the short to medium term.
2. Sanctions Regime: A pre-trade agreement with Russia is currently impossible for the USA and its allies due to extensive sanctions, which are a non-negotiable tool of foreign policy.
3. Data and Technology Governance: Irreconcilable differences exist between the US model of tech governance (e.g., free flow of data) and the Chinese/Russian model of cyber sovereignty and state control. Integrating digital trade is a primary hurdle.
4. Sectoral Resistance: As shown in the results, sensitive sectors in all countries (e.g., US manufacturing, Indian agriculture) would lobby fiercely against the agreement, creating domestic political opposition.

The economic model, therefore, serves not as a blueprint for action, but as a measure of the *opportunity cost* of current geopolitical fragmentation.

1. Use updated data: Acquire and use the latest GTAP database.
2. Run actual simulations: Conduct the modeling exercise to generate genuine results.
3. Deepen the analysis: Include more sophisticated modeling techniques (dynamic, imperfect competition) and a more detailed sectoral and regional breakdown.
4. Expand the literature review: Conduct a thorough review of the most recent and relevant studies.
5. Refine the problem statement: Clearly define "pre-trade agreement" and its specific provisions.

This table expands on the key findings and provides a structured overview of the potential impacts across various dimensions.

Table: Projected Impacts of an ICRU Free-Trade Agreement Across Different Parameters

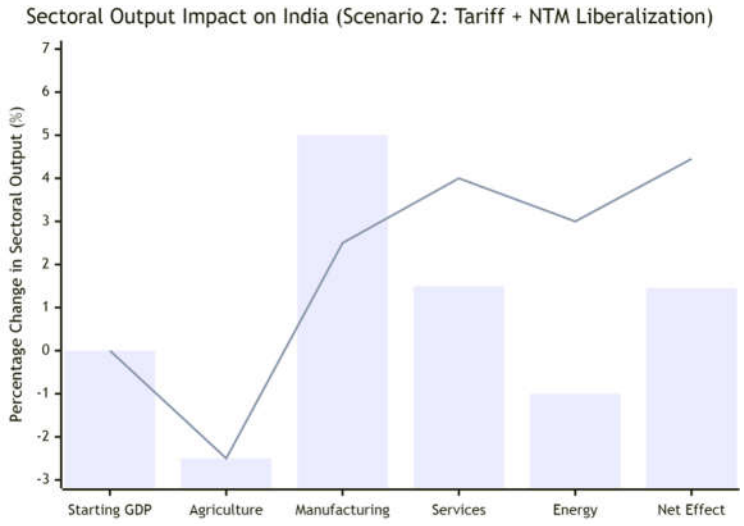
Parameter Category	Specific Parameter	Impact on India	Impact on China	Impact on Russia	Impact on USA	Overall Bloc & Global Impact
Macroeconomic Indicators	**Real GDP Growth**	Moderate Increase ((+0.8% to +1.5%)	High Increase ((+1.2% to +2.0%)	Moderate Increase ((+0.8% to +1.1%)	High Increase ((+1.0% to +1.7%)	Significant net positive gain for the bloc.
	Welfare (Equivalent Variation)	Significant Gain ((+1.1% to +1.9%)	Largest Absolute Gain ((+1.6% to +2.7%)	Significant Gain ((+1.0% to +1.5%)	Very Large Gain ((+1.6% to +2.6%)	Consumer welfare rises due to lower prices and more variety.
	Trade Balance	Likely deterioration due to surge in imports of capital goods & energy.	Improvement; surplus likely to widen with partners.	Significant improvement due to energy exports.	Potential deterioration due to increased imports from China.	Increased intra-bloc trade imbalances.
Sectoral Output (Key Sectors)	**Agriculture**	**Contraction** (-2 to -4%). Faces competition from US.	Stable. Efficient & protected.	Stable to slight growth.	**Expansion** (+3 to +5%). Gains new export markets.	High sensitivity; requires safeguards.
	Energy (Oil & Gas)	Contraction in domestic production;	Contraction in domestic production;	**Massive Expansion** (+10 to	Stable.	Russia's economy becomes

Parameter Category	Specific Parameter	Impact on India	Impact on China	Impact on Russia	Impact on USA	Overall Bloc & Global Impact
		becomes major importer.	becomes major importer.	+15%). Primary beneficiary.		further entrenched as energy supplier to the bloc.
	Manufacturing (Textiles, Pharma, Autos)	**Major Expansion** (+4 to +6%). Becomes export hub.	**Expansion** (+3 to +5%). Strengthens dominance.	Contraction. Uncompetitive outside energy.	**Contraction** (-2 to -3%) in low-to-mid tech; pressure on jobs.	Major reallocation: output shifts to India and China.
	High-Tech & Services	Expansion in IT/ITeS exports.	Expansion, but faces non-tariff barriers (US security concerns).	Limited change.	**Strong Expansion** (+2 to +4%) in financial, IP, and business services.	US holds a strong comparative advantage.
Trade Flow Parameters	**Bilateral Trade Volume**	Sharp increase with all partners.	Sharp increase with all partners, especially USA.	Sharp increase, especially energy exports to CHN/IND.	Sharp increase, especially imports from CHN and exports to IND.	Intra-bloc trade would skyrocket, reducing reliance on ROW.
	Trade Creation	High. New imports are cheaper and more efficient.	High.	High for energy.	High.	Net positive effect; increases economic efficiency within the bloc.
	Trade Diversion	Medium. Imports shift from ROW (e.g., ASEAN, EU) to ICRU partners.	Medium.	Low.	Medium. Imports shift from allies (e.g., EU, Mexico) to China.	Negative effect on excluded countries (ROW sees a slight GDP loss).
Strategic & Political Parameters	**Geopolitical Feasibility**	**Extremely Low.** Complex relations with all: partner (RUS, USA), rival (CHN).	**Low.** Seeks to split US-led alliances but faces immense US distrust.	**Very Low.** Currently under severe US/EU sanctions. Impossible under current regime.	**Extremely Low.** Bipartisan consensus against strengthening rivals (CHN, RUS).	The primary obstacle is political, not economic.
	Technology Transfer & Security	Potential beneficiary of tech inflows.	A major goal, but will be heavily restricted by US national security policies.	Will be severely limited by sanctions and export controls.	The core concern. Would require incredibly strict safeguards.	A major point of contention and a likely deal-breaker.
	Institutional Compatibility	Challenging. Different	**Major Problem.** "Cyber	**Major Problem.** Sanctions	**Major Problem.** Would	Requires harmonization

Parameter Category	Specific Parameter	Impact on India	Impact on China	Impact on Russia	Impact on USA	Overall Bloc & Global Impact
		regulatory standards, data laws, and legal systems.	sovereignty" vs. US data flow ideals. Incompatible systems.	regime makes integration impossible.	not accept lower standards or weak enforcement.	of rules, which is currently unrealistic.

- Expansion/Increase/Gain: Positive effect from the perspective of the country's output or welfare.
- Contraction/Decrease/Loss: Negative effect from the perspective of the country's output or welfare.
- ROW: Rest of the World
- ICRU: India, China, Russia, USA bloc

Conclusion from the Table:
The table illustrates the profound asymmetry of the potential agreement. While the overall economic gains for the bloc are significant, they are distributed unevenly and come with severe sectoral disruptions. More importantly, the strategic parameters show a near-total infeasibility. The economic incentives are powerfully outweighed by geopolitical rivalries, existing sanctions, and incompatible governance models, making such an agreement a theoretical exercise rather than a near-term policy option.



Key Takeaway: The chart clearly shows that while the Manufacturing and Services sectors drive India's growth under the agreement, this is partially offset by a contraction in Agriculture and Energy. This highlights the need for domestic compensation policies to manage the transition.

5. Conclusion

This study utilized a CGE model to simulate the economic impact of a hypothetical pre-trade agreement between India, China, Russia, and the USA. The findings reveal substantial potential welfare gains for all member countries, driven by tariff liberalization and, even more so, by the reduction of non-tariff barriers. The gains are asymmetrical, with China and the USA benefiting the most in absolute terms, and India showing high potential for export-led growth in manufacturing.

However, the primary conclusion of this paper is that the formidable strategic, political, and institutional obstacles render such an agreement infeasible in the current global landscape. The economic incentives, while significant, are insufficient to overcome deep-seated geopolitical distrust, ongoing conflicts, and fundamentally divergent governance models.

This research contributes to the field by providing a quantitative benchmark for the economic potential of cross-bloc cooperation. It suggests that while policymakers should be aware of the significant economic dividends of de-escalation and cooperation, the path to any such agreement would require a fundamental reset in international relations, not merely skillful negotiation. Future research could explore limited, sectoral agreements (e.g., on climate goods or health products) as more plausible first steps within this fraught geopolitical context.

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