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Research Article

India-China Trade

India-China Trade Dynamics: Dependency, Deficit, and Decoupling Trends

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This research paper examines the evolving trade relationship between India and China, with particular focus on India's trade deficit, sectoral dependencies, and recent decoupling efforts. Using trade data from 2000-2024, this study analyzes the structural imbalances in bilateral trade, critical dependencies in key sectors, and evaluates the efficacy of India's policy responses including the "Atmanirbhar Bharat" (Self-Reliant India) initiative and targeted import restrictions. The findings reveal that while India has made progress in reducing dependencies in some sectors, significant challenges remain in achieving balanced trade relations with China. This paper contributes to the understanding of complex economic interdependencies between emerging powers and offers policy recommendations for sustainable trade rebalancing. Our findings reveal that while bilateral trade grew 47-fold to $136.2 billion by 2023, India's trade deficit reached a record $101.28 billion, exposing critical vulnerabilities in electronics, pharmaceuticals, and renewable energy supply chains. The study evaluates India's decoupling strategies, including the Production Linked Incentive scheme and trade diversification efforts, while assessing their effectiveness and limitations. We conclude with policy recommendations for achieving strategic autonomy while maintaining essential economic engagement.

Keywords: india-china trade, economic decoupling, trade deficit, supply chain resilience, geo-economics

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1. Introduction

The economic relationship between India and China represents one of the most complex and consequential bilateral dynamics in contemporary global economics, characterized simultaneously by deep interdependence and growing strategic competition. As Asia's two largest emerging economies with a combined population exceeding 2.8 billion people, their economic engagement has expanded at an unprecedented pace - growing from a modest $3 billion in annual trade at the turn of the century to surpassing $114 billion in 2023 (Ministry of Commerce and Industry, 2023), making China India's largest trading partner despite persistent geopolitical tensions. However, this remarkable growth trajectory masks fundamental structural asymmetries in the economic relationship, most visibly manifested in India's chronic and widening trade deficit with China, which reached a record $80.8 billion in 2023 and reflects an imbalanced exchange where India primarily supplies raw materials and low-value-added goods while importing sophisticated manufactured products and critical components. The 2020 Galwan Valley border confrontation served as a strategic inflection point, dramatically exposing the risks of economic overdependence and triggering a fundamental reassessment in New Delhi about the costs and benefits of deep economic integration with its geopolitical rival. Against this backdrop, recent global developments including the COVID-19 pandemic's supply chain disruptions, the US-China trade war, and the broader reorganization of global production networks have added new urgency to understanding the evolving contours of this critical economic relationship. This paper undertakes a systematic examination of three interlinked dimensions that define the current state and future trajectory of Indo-Chinese economic relations: first, the structural and persistent nature of the trade deficit that has become a defining feature of bilateral commerce; second, the critical sectoral dependencies that create strategic vulnerabilities for India's economy and national security; and third, the emerging trends of selective decoupling and supply chain diversification that are reshaping bilateral economic engagement. Our research makes several substantive contributions to the academic and policy discourse on India-China relations by providing the most current sectoral analysis of trade dependencies using comprehensive 2023-24 data across pharmaceuticals, electronics, renewable energy and other strategic sectors; by conducting a rigorous empirical assessment of the

effectiveness of India's policy responses including the Production-Linked Incentive scheme and Atmanirbhar Bharat initiative; and by developing actionable policy recommendations grounded in emerging trends of global supply chain reorganization and technological decoupling. The study addresses four pivotal research questions that are central to both academic understanding and policymaking: This research investigates four pivotal aspects of India-China economic relations: first, the structural imbalances perpetuating India's trade deficit, including China's overwhelming manufacturing advantage (with $4.86 trillion in value added versus India's $447 billion), deeper global supply chain integration (participating in 28% of global value chains compared to India's 14%), superior infrastructure (ranking 24th versus 44th in logistics performance), and strategic industrial policies that have systematically enhanced China's export competitiveness; second, India's critical import dependencies in strategic sectors like pharmaceuticals (70% of APIs), electronics (60% of components), telecommunications (75% of equipment), renewable energy (80% of solar panels), and critical minerals that create national security vulnerabilities; third, the mixed results of India's policy responses including Production-Linked Incentive schemes and the Atmanirbhar Bharat initiative, which have shown sectoral successes (12% growth in API production, 18GW solar manufacturing capacity) but limited impact on the overall trade deficit ($80.8 billion in 2023); and fourth, the pathways for strategic decoupling through phased import substitution, supply chain diversification, and technological self-reliance in critical sectors while maintaining beneficial trade in non-strategic areas - offering policymakers a framework to balance economic engagement with strategic autonomy in this complex bilateral relationship.

2. Evolution of Bilateral Trade (2000-2024)

India-China trade relations have undergone significant transformation since the normalization of diplomatic relations in 1976.

However, the most dramatic growth occurred following China's accession to the World Trade Organization (WTO) in 2001. Table 1 illustrates the growth trajectory of bilateral trade over the past two decades.

Table 1: India-China Bilateral Trade (2000-2023)

Year	Indian Exports to China (USD billions)	Indian Imports from China (USD billions)	Total Trade (USD billions)	Trade Deficit (USD billions)
2000	0.8	1.5	2.3	0.7
2005	6.5	10.8	17.3	4.3
2010	17.4	43.5	60.9	26.1
2015	9.5	61.7	71.2	52.2
2020	17.1	65.3	82.4	48.2
2021	21.2	87.5	108.7	66.3
2022	17.5	94.2	111.7	76.7
2023	16.7	97.5	114.2	80.8

Source: Ministry of Commerce and Industry, Government of India (2023); General Administration of Customs, China (2023)

This data reveals several key trends such as the bilateral trade relationship between India and China has undergone a remarkable transformation since the turn of the century, with the total trade volume surging nearly 50-fold between 2000 and 2023, reflecting the deepening economic ties between the two Asian giants. However, this impressive growth has been accompanied by a dramatically widening trade imbalance, as India's trade deficit with China reached an unprecedented $80.8 billion in 2023 - a staggering figure that represents approximately 70% of the total bilateral trade between the two nations. The COVID-19 pandemic temporarily disrupted this upward trajectory in 2020, causing a noticeable dip in trade volumes as global supply chains were disrupted and economic activity slowed. However, the post-pandemic period witnessed a sharp rebound in trade flows, with the deficit resuming its upward climb and reaching new record levels, underscoring the structural nature of the trade imbalance and raising important questions about the sustainability of this economic relationship in the long term. This persistent and growing asymmetry in trade continues to shape economic diplomacy between the two countries, even as their overall commercial engagement reaches historic highs.

The composition of bilateral trade between India and China reveals a highly asymmetrical relationship, characterized by an imbalance in the value and nature of goods exchanged.

India's export basket to China remains heavily concentrated in primary commodities and low value-added products, with iron ore and mineral fuels constituting the largest share at 29%, followed by organic chemicals (15%), cotton and textiles (12%), seafood products (8%), copper and aluminum (7%), and plastics and raw materials (6%). These export patterns reflect India's role as a supplier of raw materials and intermediate goods in the bilateral trade relationship. In stark contrast, China's exports to India are dominated by sophisticated manufactured goods and high value-added products, with electronic equipment and components leading at 28%, followed by machinery and mechanical appliances (19%), organic chemicals (15%), plastic articles (8%), pharmaceutical ingredients (7%), and fertilizers along with other manufactured goods (17%). This trade structure underscores a fundamental disparity in the economic relationship, where India primarily provides basic inputs for China's manufacturing sector while importing finished, technology-intensive products. Such a pattern mirrors historical trade dynamics typically observed between developing and developed economies, despite both nations being classified as emerging markets. The persistent concentration of India's exports in low- margin primary goods, coupled with its reliance on imported manufactured products from China, has significantly contributed to the widening trade deficit between the two countries, raising concerns about the long-term sustainability of this trade relationship and its implications for India's industrial development (Directorate General of Commercial Intelligence and Statistics, India, 2023).

This composition underscores a classic developing-developed economy relationship pattern despite both countries being classified as emerging economies. India primarily supplies raw materials or low value-added products while importing higher value-added manufactured goods, contributing to the widening trade deficit.

3. Structural Causes of Trade Imbalance

The persistent trade imbalance between India and China stems from deep-rooted structural and competitiveness disparities between the two economies. China's transformation into the "world's factory" since the 1980s through strategic industrial policies has created an overwhelming manufacturing advantage, with its manufacturing value added (MVA) reaching $4.86 trillion in 2023 compared to India's $447 billion - an

11:1 ratio that highlights the vast gap in industrial capabilities (World Bank, 2023). China's early and deep integration into global value chains, participating in 28% of global value chains versus India's 14% (OECD TiVA, 2023), combined with massive infrastructure investments that give it a significant logistics advantage (ranked 24th versus India's 44th in the Logistics Performance Index), has created formidable economies of scale and network effects. These structural advantages are reinforced by China's export-oriented policy environment, including targeted subsidies, preferential credit, and technology transfer requirements, culminating in initiatives like "Made in China 2025" that systematically build high-tech manufacturing dominance. On competitiveness factors, Chinese manufacturers maintain cost advantages through higher labor productivity (1.6 times India's level, ILO 2023), supported by integrated supply chains and superior infrastructure despite rising wages. China's substantial R&D investment (2.4% of GDP versus India's 0.7%, UNESCO 2023) has created technological leadership across multiple industries, while its firms benefit from greater economies of scale, being on average 3.5 times larger than their Indian counterparts (Hale & Long 2022). Although China's managed exchange rate policies have historically boosted export competitiveness, this factor has become less significant in recent years as the yuan has appreciated, suggesting that the trade imbalance now primarily reflects these fundamental structural differences in economic organization, industrial policy, and technological capabilities between the two Asian giants.

4. Sectoral Dependencies

India's critical import dependencies on China span multiple strategic sectors, creating substantial vulnerabilities within its economy and supply chains. The pharmaceutical industry, which forms the backbone of India's global generic medicine supply, relies on China for approximately 70% of its Active Pharmaceutical Ingredients (APIs), posing significant risks to healthcare security (Pharmaceutical Export Promotion Council, 2023). In electronics and telecommunications—cornerstones of India's digital economy—nearly 60% of electronic components and 75% of telecom equipment originate from China, with acute dependencies in semiconductor chips, display panels, and mobile phone parts (Electronics and Computer Software Export Promotion Council, 2023). The renewable

energy sector, crucial for India's climate commitments, imports over 80% of solar panels and components from China, potentially jeopardizing its ambitious energy transition goals (Ministry of New and Renewable Energy, 2023). Further compounding these vulnerabilities, China dominates global processing of rare earth elements and critical minerals essential for advanced technologies, while also supplying 32% of India's machinery imports, including specialized equipment for manufacturing and infrastructure development (Engineering Export Promotion Council, 2023). These dependencies create multifaceted strategic risks: supply chain fragility (as starkly revealed during COVID-19 disruptions), technology access constraints in sensitive sectors with national security implications, and potential economic leverage for China during bilateral tensions— evidenced by informal trade restrictions during 2020 border clashes. Perhaps most consequentially, this import reliance structurally constrains India's industrial development, as domestic manufacturers face overwhelming competition from established Chinese supply networks, creating a self-reinforcing cycle of dependency that undermines India's aspirations for technological self-reliance and manufacturing competitiveness across critical sectors.

5. Policy Responses and Decoupling Efforts

In response to growing trade imbalances and strategic vulnerabilities, India has implemented a multi-pronged policy framework aimed at reducing dependence on Chinese imports and strengthening domestic manufacturing capabilities.

The centerpiece of this strategy includes the Production-Linked Incentive (PLI) schemes, launched in 2020 with a $26 billion outlay across 14 critical sectors such as electronics, pharmaceuticals, and telecom equipment (Ministry of Commerce and Industry, 2023), complemented by the broader Atmanirbhar Bharat (Self-Reliant India) initiative that encompasses domestic manufacturing promotion, infrastructure development, and preferential procurement policies. These measures have been reinforced by targeted import restrictions, heightened tariffs on Chinese goods, bans on over 200 Chinese mobile applications, and stricter FDI screening mechanisms requiring government approval for investments from neighboring countries—policies that have contributed to a dramatic decline in Chinese direct investment from $2.1 billion in 2019 to just $263 million in 2023 (Department for

Promotion of Industry and Internal Trade, 2023). While the trade deficit with China reached a record $80.8 billion in 2023, indicating persistent structural challenges, sectoral assessments reveal promising developments: a 12% increase in domestic API production (2020-2023), 17.9% CAGR growth in electronics manufacturing that has reduced consumer electronics import dependency, and a six-fold expansion in solar panel manufacturing capacity from 3GW to 18GW during the same period. Furthermore, Indian firms have begun diversifying supply chains, with Vietnam, Taiwan, and South Korea emerging as alternative sources for electronics and machinery imports (Confederation of Indian Industry, 2023), suggesting that while comprehensive rebalancing remains a long- term challenge, India's policy mix is gradually reshaping trade patterns and industrial capabilities in targeted sectors.

6. Challenges and Opportunities in Rebalancing

The rebalancing of India-China trade dynamics presents significant challenges alongside strategic opportunities. A primary challenge is India’s persistent and widening trade deficit, which exceeded $100 billion in 2023, fueled by heavy reliance on Chinese imports of electronics, machinery, and critical industrial inputs.

This dependency creates vulnerabilities, particularly in sectors like pharmaceuticals (where 70% of APIs are sourced from China), renewable energy (90% of solar modules), and telecom equipment, exposing India to supply chain risks amid geopolitical tensions. Structural barriers further complicate rebalancing, as India’s exports to China remain dominated by low-value raw materials like iron ore and cotton, while manufactured goods face non-tariff barriers and limited market access. Geopolitical friction, including border disputes and China’s strategic use of economic statecraft—such as rerouting trade through third countries— adds another layer of complexity to decoupling efforts. However, these challenges also present opportunities for India to strengthen its economic resilience. The Production- Linked Incentive (PLI) scheme and "Make in India" initiatives can boost domestic manufacturing in electronics, semiconductors, and green technologies, reducing import dependency. Diversifying trade partnerships with the US, EU, and ASEAN offers pathways to integrate into alternative supply chains, while India’s growing capabilities in IT services and pharmaceuticals could help rebalance trade relations. Additionally, global

supply chain shifts and China’s rising labor costs create openings for India to attract manufacturing investments and position itself as a competitive alternative. Strategic policy measures, coupled with enhanced R&D and infrastructure investments, will be crucial to transforming these opportunities into sustainable economic gains, enabling India to reduce asymmetries in its trade relationship with China while advancing its long-term strategic and economic interests.

7. Future Scenarios and Policy Recommendations

Looking ahead, India's trade relationship with China could evolve along three distinct trajectories depending on policy effectiveness and structural transformation. In Scenario One: (Continued Dependency), failure to achieve meaningful import substitution coupled with persistent Chinese manufacturing competitiveness could see the trade deficit balloon to $100 billion by 2027, exacerbating existing vulnerabilities.

Scenario Two: (Selective Decoupling) presents a more balanced outcome where India successfully reduces dependencies in strategic sectors like pharmaceuticals, electronics and telecommunications while maintaining trade in other areas, potentially stabilizing the deficit at $60-70 billion. The most optimistic Scenario Three: (Substantial Rebalancing) envisions successful implementation of manufacturing policies and export promotion measures that could slash the deficit to $40-50 billion through significant trade restructuring. To navigate toward favorable outcomes, India requires a nuanced policy framework combining calibrated decoupling strategies with economic security considerations—including targeted import substitution programs for essential sectors, supply chain diversification through multilateral partnerships with trusted allies, and substantial investments in technological self-reliance through enhanced R&D funding (particularly in semiconductors and advanced materials). This approach should be complemented by differential tariff regimes distinguishing strategic from non-strategic imports, establishment of secure border trade zones, and phased implementation timelines balancing security needs with economic stability. Future research priorities should focus on developing sector-specific vulnerability metrics to guide decoupling efforts, analyzing comparative case studies of successful economic rebalancing, modeling potential transition impacts, and evaluating policy effectiveness—particularly

regarding international governance frameworks for managing technological dependencies and optimizing technology transfer mechanisms in this complex geopolitical-economic relationship. The path forward demands both strategic patience and urgent action to transform India's position in this critical bilateral trade dynamic while minimizing disruption to its economic development trajectory.

8. Research Findings

1. Growing Trade Deficit: Despite bilateral trade reaching record highs (over $136 billion in 2023), India’s trade deficit with China has widened significantly, driven by heavy reliance on Chinese imports in critical sectors like electronics, machinery, pharmaceuticals, and chemicals.

2. Strategic Dependency: India remains heavily dependent on China for key industrial inputs, including active pharmaceutical ingredients (APIs), telecom equipment, and solar panels, exposing vulnerabilities in supply chain resilience.

3. Limited Export Growth: India’s exports to China remain concentrated in low-value raw materials (iron ore, cotton, and seafood), while high-value-added exports face market access barriers, limiting trade balance improvements.

4. Partial Decoupling Efforts: Post-2020 geopolitical tensions and supply chain disruptions have accelerated India’s efforts to reduce dependency through production-linked incentives (PLI), import restrictions, and diversification strategies, but structural challenges persist.

5. Sectoral Shifts in Trade: Some industries (e.g., smart phones, electronics) show early signs of import substitution due to PLI schemes, while others (e.g., EVs, semiconductors) remain deeply reliant on Chinese inputs.

6. Geopolitical Influence on Trade: Political tensions (Galwan clash, BRI disputes) have not drastically reduced trade volumes but have spurred India’s alignment with Western- led supply chain initiatives (e.g., IPEF, QUAD economic corridors).

These findings highlight the complexities of India-China trade relations, emphasizing the need for nuanced policy measures to mitigate risks while leveraging emerging opportunities in a shifting global economic landscape.

9. Conclusion

The India-China trade relationship epitomizes the complex dynamics of modern economic interdependence, where China serves as both India's largest trading partner and primary source of strategic vulnerabilities due to structural trade imbalances. While India's recent policy initiatives - including the Production-Linked Incentive scheme and Atmanirbhar Bharat program - demonstrate a concerted shift toward selective decoupling and enhanced strategic autonomy in critical sectors like pharmaceuticals, electronics, and renewable energy, the persistent $80.8 billion trade deficit (2023) highlights the formidable challenges in restructuring deeply entrenched supply chains and economic dependencies. The ultimate success of India's rebalancing strategy hinges on three key factors: effective execution of domestic manufacturing

capacity-building programs, successful attraction of foreign and domestic investments in targeted high-priority sectors, and the development of globally competitive export capabilities that can reduce reliance on Chinese imports. As this economic reconfiguration unfolds, its implications will extend far beyond bilateral relations, potentially reshaping regional economic integration patterns across Asia and influencing the broader global reorganization of supply chains in an era of geopolitical tensions. For Indian policymakers, navigating this transition requires striking a delicate yet crucial balance between necessary strategic decoupling in sensitive sectors and maintaining mutually beneficial economic engagement in non-strategic areas - a challenge that will critically test India's economic statecraft and industrial policy frameworks throughout the coming decade.

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