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Is There a Case for Industrial Policy in Pakistan?

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Sustainable Development Policy Institute (SDPI)

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Abstract

Pakistan's industrial performance has stagnated for decades, with manufacturing value added per worker growing at less than one percent annually and the sector's share in GDP remaining largely unchanged. This paper argues that the core constraint is not cyclical instability alone, but a deeper productivity and capability trap rooted in weak technological upgrading, limited export diversification, and persistent misallocation of resources. Drawing on a structured triangulation of stakeholder consultations, empirical diagnostics, and Schumpeterian growth theory, the paper develops an analytically grounded framework for industrial policy in Pakistan.

The proposed approach emphasizes innovation, competitive discipline, and strategic realism. It advances three objectives: escaping the Malthusian trap through productivity-enhancing industrial investment, fostering innovation-driven and export-led growth, and embedding economic resilience through fiscally disciplined and distortion-neutral interventions. These objectives are operationalized through five interrelated pillars—innovation and technological upgrading, labor productivity and skills, sustainability and resource efficiency, allocative efficiency, and export-oriented diversification—each derived as a response to binding constraints identified through consultations and data.

The paper outlines a sequenced set of policy instruments that prioritize low-cost, high-impact interventions, including regulatory streamlining, non-tax export facilitation, public-private partnerships, targeted foreign investment facilitation, and a National Productivity and Innovation Acceleration Platform to drive firm-level upgrading. By combining context-specific evidence with a coherent theoretical framework, the paper contributes an independent analytical benchmark to complement ongoing policy efforts. It argues that, if implemented with continuity and performance discipline, such a strategy can raise manufacturing productivity toward regional benchmarks and reposition industrial development as the central driver of Pakistan's long-term growth and economic resilience.

1. Introduction

Pakistan's industrial performance has long been constrained by chronic structural issues - underinvestment in manufacturing, a fragmented tax and tariff regime, shallow capital markets, regulatory unpredictability, and low technology absorption. These challenges, compounded by repeated cycles of macroeconomic instability, have diminished investor confidence, reduced productivity growth, and stunted export diversification. Despite the presence of a sizeable labor force and abundant entrepreneurial potential, Pakistan's industrial sector's contribution to GDP is minimal. Agriculture, once over 40 percent of GDP, has steadily declined to about 20 percent, as expected in a developing economy. Yet industry, instead of expanding and absorbing labor, has stagnated around 18–23 percent of GDP (see Figure 1). Alarming, the manufacturing

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sector contribute less than 13 percent to GDP and has yet to fully integrate into global value chains. Recent policy deliberations highlight a shared diagnosis: Pakistan must rebalance its industrial strategy by addressing legacy distortions, enabling private sector dynamism, and promoting long-term investment. Yet there is also consensus that the country can no longer afford to pursue industrial expansion through fiscal excess or protectionist inertia.



Figure 1: **Sectoral Distribution of Pakistan’s GDP and Industrial Share in GDP of Peer Economies** (Notes: Left plot shows the long-run structural shift in Pakistan’s economy, with agriculture declining, services rising, and industry stagnating around 20% of GDP. Right plot compares industry’s share in GDP across peers, highlighting Pakistan’s stagnation versus Vietnam and Bangladesh’s catch-up and Malaysia/Indonesia’s sustained high levels.)

The comparative record of peer economies underscores both the risks of inaction and the potential of deliberate industrial policy. The trajectory of industry’s share in GDP reveals that while Malaysia and Indonesia sustained high levels of industrialization—likely supported by natural resource endowments—Bangladesh and Vietnam pursued a different, policy-driven path. Bangladesh, starting with a modest base in the 1980s, steadily expanded its industrial share after 2000 through a focused strategy around garments. Export processing zones, duty-free machinery imports, preferential trade agreements, and targeted incentives transformed it into a global garment powerhouse, exporting to 167 countries.

Vietnam’s *Doi Moi* reforms in 1986 represented a decisive transition from a centrally planned, import-substitution model to a market-oriented, export-led growth strategy. Early reforms liberalized agriculture and private enterprise, while subsequent laws facilitated foreign direct investment and the creation of export-processing zones (Perkins and Anh, 2010; Tran and Norlund, 2017). Integration into ASEAN and accession to the WTO in 2007 further anchored Vietnam in global markets, supporting a rapid structural shift in which industry’s share of GDP rose from under 25 percent in the mid-1980s to nearly 38 percent by the early 2010s (Vladimir, 2013; Tran and Norlund, 2017). Although this expansion relied heavily on FDI-led, labor-intensive manufacturing—especially in garments and electronics—the experience underscores that late-comer economies can achieve substantial industrial deepening when reforms are pursued with consistency and strategic focus (Bring, 2023; Tran and Norlund, 2017). These cases show that even latecomers can achieve industrial deepening through consistent, strategic interventions.

Pakistan’s path diverged. Despite similar starting points, its industrial share has stagnated at around 20 percent of GDP, reflecting missed opportunities and weak policy follow-through. Growth rates tell a similar story. Since the mid-1980s, Pakistan’s manufacturing sector has grown at just over 5 percent annually, well below Vietnam (8 percent) and Bangladesh (7.7 percent). Moreover, its growth has been more volatile, with frequent downturns erasing temporary spurts. This volatility, combined with weak trend growth, has discouraged investors and left industry unable to anchor long-term transformation (see Figure 2).

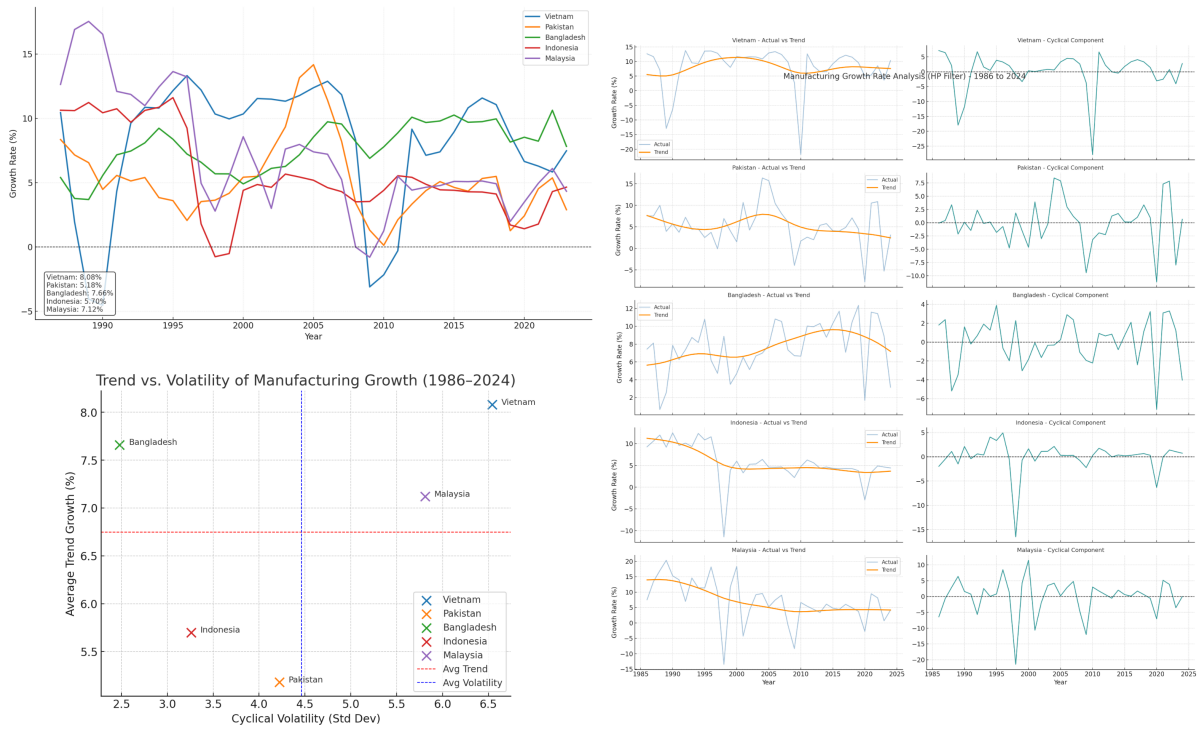


Figure 2: **Manufacturing Growth Dynamics Across Countries (1986–2024)** (Notes: The top-left plot shows smoothed growth rates with a 3-year rolling average, highlighting cross-country divergence and persistent volatility in Pakistan and Indonesia. The bottom-left plot contrasts long-run growth trends with cyclical volatility, while the right panel decomposes fluctuations into structural trends and short-run cycles, underscoring Vietnam’s upward trajectory versus Pakistan’s stagnation.)

Pakistan’s long-run growth challenge is best understood as a structural productivity dilemma rooted in a failure of industrial transformation, rather than a purely macroeconomic or cyclical issue. Across the literature, a consistent narrative emerges: despite episodic growth, Pakistan has been unable to build productive capabilities, diversify into higher-value activities, or sustain manufacturing-led growth (Hamid and Khan (2015); Ishtiaq and Chaudhry (2018)).

At the core of this problem is a persistent concentration in low-value, low-complexity sectors, particularly textiles, which continue to dominate exports and industrial employment. This narrow production structure limits technological upgrading and learning opportunities, keeping Pakistan trapped in the periphery of the global product space (Ishtiaq and Chaudhry, 2018). The consequence is not just slow growth, but repeated balance-of-payments crises and weak external competitiveness, reflecting the economy’s inability to generate high-value exports.

This structural weakness is compounded by what Hamid and Khan (2015) describe as premature deindustrialization, where manufacturing stagnates at low income levels, cutting off the primary channel through which productivity growth historically occurs. Manufacturing growth has slowed significantly, its share in GDP has plateaued or declined, and employment absorption remains insufficient. Critically, this is not merely the result of external competition or trade liberalization, but of deep internal constraints, including energy shortages, taxation biases, and weak export competitiveness. The literature further shows that these outcomes are closely tied to the nature of industrial policy itself. Pakistan’s policy regime has oscillated between protectionism and partial liberalization without achieving either discipline or dynamism. Protectionist policies have often shielded inefficient, rent-seeking industries without enforcing performance or upgrading, while liberalization has been fragmented and unsupported by complementary reforms (Hussain and Ahmed, 2012). This has resulted in a “worst of both worlds” equilibrium - neither

competitive markets nor effective state-led transformation.

A critical but often underappreciated dimension of this failure is the misallocation of finance. The shift from state-directed finance to liberalized financial systems did not improve industrial outcomes; instead, it redirected credit away from manufacturing toward government borrowing, real estate, and consumption, undermining long-term investment in productive sectors (Naqvi, 2018). This reinforces the broader point that market-based allocation of capital, in the absence of industrial strategy, tends to favor short-term returns over structural transformation.

At the firm and sectoral level, the consequences are evident in low productivity, weak innovation, and limited value addition, especially among SMEs, which dominate the economic landscape but remain technologically stagnant and poorly integrated with research and development systems (Burki et al., 2010). The absence of upstream industries (e.g., chemicals, engineering inputs) further constrains upgrading, locking firms into low-value segments of global value chains.

Adding a further layer, the spatial dimension of industrial development reveals that productivity constraints are also geographically embedded. Industrial activity is highly concentrated in a few urban centers, while large parts of the country remain disconnected due to infrastructure gaps, weak market access, and human capital disparities (Burki et al., 2010). This spatial inequality not only limits the diffusion of productivity gains but also reduces the effectiveness of public investment, particularly in lagging regions.

The productivity data provide the clearest diagnosis of the malaise. Measured as manufacturing value added per worker, Pakistan has grown at less than 1 percent annually since 1991, leaving productivity virtually stagnant for three decades. By comparison, Bangladesh grew at more than 4 percent annually and Vietnam nearly 2 percent, while Malaysia and Indonesia also outpaced Pakistan. This is the hallmark of a Malthusian trap: as the labor force expands, output per worker fails to rise, keeping average incomes flat and preventing structural transformation. In short, Pakistan’s workers remain trapped in low-value activities, while competitors steadily move into higher-productivity sectors.

Export composition mirrors this weakness. For more than three decades, Pakistan’s share of medium- and high-tech goods in manufactured exports has remained stuck below 10 percent. Vietnam, by contrast, has expanded its share to nearly 60 percent, and Indonesia to more than 30 percent. Bangladesh presents an important nuance: despite a declining high-tech share, its productivity per worker has risen far faster than Pakistan’s, demonstrating that producing more per worker is as important as diversifying into sophisticated products. Pakistan has failed on both counts, leaving its industrial base technologically shallow and structurally fragile.

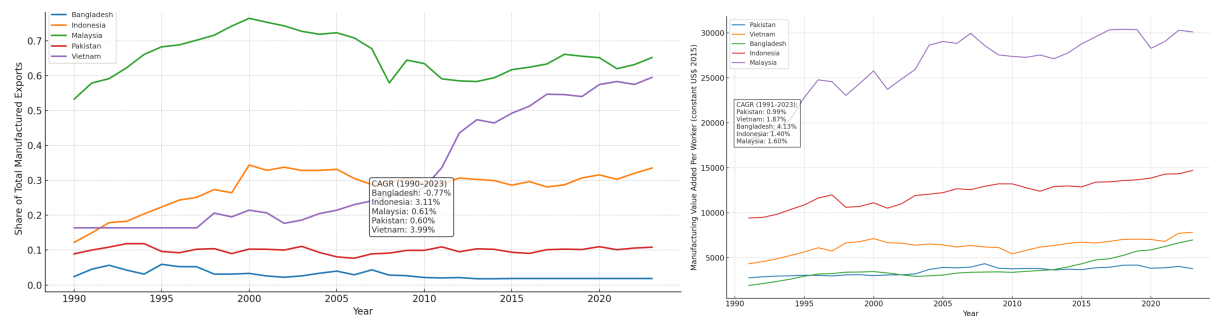


Figure 3: **Manufacturing Competitiveness in Asia (1990–2023)** (Notes: The left plot shows the share of manufactured exports, highlighting Vietnam’s sharp upward trajectory since 2010, Indonesia’s steady rise, Malaysia’s plateau after early gains, and Pakistan’s persistent stagnation. The right plot illustrates manufacturing value added per worker, where Bangladesh and Vietnam record the fastest productivity growth, Malaysia sustains high but flat levels, Indonesia improves moderately, and Pakistan remains trapped at the bottom. Together, the panels underscore Vietnam’s structural transformation versus Pakistan’s continued stagnation.)

These patterns make clear that Pakistan faces not just premature deindustrialization, but a deep productivity crisis. Productivity growth below 1 percent per year has locked the country into a Malthusian equilibrium, where demographic pressures outpace economic gains and perpetuate stagnation. Breaking out requires a Schumpeterian growth strategy—anchored in innovation, technological upgrading, and competitive value creation. This approach recognizes that the path to prosperity lies not in fiscal excess or blanket protectionism, but in building an ecosystem that rewards productivity, fosters entrepreneurship, and mobilizes both public and private capital toward high-impact sectors.

This framework blends low-cost, distortion-corrective reforms with targeted interventions in trade facilitation, foreign investment, and enterprise productivity. It advocates regulatory streamlining and predictable market signals as early actions, while sequencing more resource-intensive tools - such as cluster development, supplier linkages, and patient industrial finance - over time. The goal is not simply to revive manufacturing, but to deliver structural transformation: an economy where industry once again drives growth, creates formal employment, and generates the foreign exchange needed for stability.

In sum, Pakistan’s experience over the past three decades demonstrates that growth driven by services and consumption, without industrial deepening, cannot deliver durable prosperity. The evidence from peers is unambiguous: industrial transformation is possible, but only through coherent strategy and sustained commitment. For Pakistan, the choice is stark. Without industrial policy, it risks remaining trapped in stagnation, perpetually vulnerable to external shocks and balance-of-payments crises. With an industrial policy rooted in Schumpeterian innovation, it can shift the growth engine from low-value survival toward innovation-led, export-oriented development—breaking out of the Malthusian trap and placing productivity at the center of its future. The theoretical background for Malthusian Trap and Schumpeterian Growth are given in the Annexure.

2.Methodological Approach and Analytical Framing

This paper is grounded in an extensive and structured consultation process undertaken by the Sustainable Development Policy Institute (SDPI), to inform the formulation of Pakistan’s National Industrial Policy (NIP) - an initiative of Ministry of Industries and Production, supported by the Revenue Mobilization, Investment, and Trade (REMIT) programme. The consultation process was embedded within a broader “whole-of-government” approach, engaging federal ministries, provincial and regional governments, and a wide spectrum of industry stakeholders to capture both policy priorities and firm-level constraints.

At the public sector level, consultations covered key federal institutions - including the Planning Commission, Ministry of Commerce, Ministry of Industries and Production, Finance Division, Federal Board of Revenue, Board of Investment, and Ministry of Climate Change- as well as provincial and regional departments responsible for industry, commerce, investment, and skills across Punjab, Sindh, Balochistan, Khyber Pakhtunkhwa, Gilgit-Baltistan, and Azad Jammu Kashmir. Complementing this, targeted sectoral consultations were conducted with leading industry associations and firms across manufacturing and export-oriented sectors - including automotive, engineering, pharmaceuticals, textiles, leather, chemicals, cement, electronics, plastics, and agribusiness—focusing on identifying binding constraints to productivity, investment, and export competitiveness.

However, while the empirical foundation of this paper aligns closely with the National Industrial Policy process, its analytical approach is deliberately distinct. The NIP is inherently consensus-driven and policy-operational, aimed at reconciling stakeholder inputs into an implementable policy framework. In contrast, this paper adopts a theory-informed and analytically disciplined approach, using consultation evidence as an input rather than an endpoint.

Crucially, the objectives, strategic pillars, and policy instruments proposed in this paper are

jointly informed by three complementary sources: (i) stakeholder consultations reflecting ground-level constraints and reform demands, (ii) Schumpeterian and structural transformation theory emphasizing innovation, firm-level capability building, and competitive discipline, and (iii) the broader empirical and policy literature on industrial development and global best practices. This integrated approach ensures that the proposed framework is not only contextually grounded but also theoretically coherent and internationally informed.

Specifically, the paper is anchored in a Schumpeterian perspective, which views industrial development as a process of continuous innovation, technological upgrading, and creative destruction, supported by institutions that enable learning, knowledge diffusion, and entrepreneurial discovery. Further details of Schumpeterian framework are provided in the Annexure. At the same time, insights from comparative industrial policy experiences and development literature are used to ensure that policy recommendations are aligned with what has worked in other emerging and advanced economies.

Methodologically, the paper follows a three-step approach. First, it triangulates stakeholder perspectives with macroeconomic and sectoral evidence - such as long-run trends in manufacturing productivity, export composition, and industrial growth - to identify systemic constraints. Second, it interprets these constraints through the above theoretical and empirical lens, emphasizing innovation systems, firm capabilities, and structural transformation dynamics. Third, it translates this diagnosis into a set of policy pillars and instruments that are explicitly sequenced in line with Pakistan's macro-fiscal constraints and institutional capacity.

This approach yields two key departures from traditional industrial policy design. First, it avoids a sector-picking bias by focusing on economy-wide drivers of productivity, innovation, and competitiveness, while still recognizing sectoral heterogeneity. Second, it embeds strategic realism, aligning policy ambition with fiscal space, governance capacity, and implementation constraints—an issue also highlighted in the NIP's emphasis on institutional coordination, policy coherence, and monitoring frameworks.

The value of this paper, therefore, lies in complementing - rather than duplicating - the National Industrial Policy. While the NIP provides an official roadmap shaped by stakeholder consensus and political economy considerations, this paper offers an independent analytical benchmark that can sharpen prioritization, assess coherence, and guide adaptive implementation. By bridging wide-ranging consultations with rigorous economic reasoning, it contributes to a more disciplined, productivity-centered industrial strategy for Pakistan.

3. Proposed Objectives for Pakistan's Industrial Policy

The resurgence of industrial policy globally reinforces the imperative for Pakistan to adopt a coherent and credible strategy of its own. Recent evidence shows that over 2,500 new industrial policy measures were introduced worldwide in 2023, with advanced economies accounting for nearly half and relying heavily on subsidies to secure competitiveness, supply chain resilience, and climate objectives (Evenett et al., 2024). This trend is not limited to advanced economies: a comprehensive review of national development strategies shows that virtually all countries now target specific industries, with developing economies often using industrial policy more intensively (Fernandes and Reed, 2026). For developing countries, the lesson is clear: standing aside risks marginalization, as industrial policy has become a central instrument of economic strategy across the world economy.

At the same time, emerging evidence underscores that industrial policy is neither a panacea nor a substitute for sound fundamentals. While it is now considered more feasible and replicable than previously thought, its effectiveness depends critically on alignment with country-specific constraints - particularly market size, state capacity, and fiscal space—and on the choice of appropriate policy instruments (Fernandes and Reed, 2026). Poorly designed interventions, especially blunt tools such as broad tariffs and untargeted subsidies, can exacerbate distortions,

invite retaliatory responses, and impose significant fiscal costs. For Pakistan, therefore, the question is not whether to pursue industrial policy, but how to design one that is disciplined, productivity-oriented, and aligned with long-term structural transformation rather than short-term protectionism - anchored in the twin principles of fiscal neutrality, to avoid unsustainable budgetary burdens, and distortion neutrality, to ensure interventions correct rather than deepen existing market failures.

1. **Escape the Malthusian Trap through Industrial Investment:** Raise industrial productivity and resource efficiency by mobilizing domestic private capital and foreign direct investment, enabling economies of scale, technological upgrading, and broad-based employment generation.
2. **Promote Innovation-Driven, Export-Led Growth:** Accelerate quality upgrading and technological progress across industries to enhance export competitiveness, deepen participation in global value chains, and secure long-term economic sustainability.
3. **Embed Economic Resilience through Strategic Realism:** Safeguard macroeconomic stability by sequencing interventions in line with fiscal space and anchoring them in the principles of *fiscal neutrality*—to avoid unsustainable budgetary burdens—and *distortion neutrality*—to ensure that industrial policy corrects, rather than entrenches, existing market failures. This includes prioritizing inflation control, prudent debt management, and climate-resilient industrial diversification.

4. Key Pillars for Pakistan’s Industrial Policy

This section sets out the strategic pillars for Pakistan’s industrial policy and explains how they are derived. Rather than emerging solely from theoretical insights or global templates, these pillars are developed through a structured triangulation of three sources: (i) stakeholder consultations capturing firm-level and institutional constraints, (ii) empirical diagnostics of Pakistan’s industrial performance presented in Section 1, and (iii) the broader theoretical and comparative literature on industrial development.

The consultation process revealed a consistent set of binding constraints across sectors and stakeholders. These include weak firm-level innovation and limited technology adoption; a narrow and low-value export base; persistent skills gaps and low labor productivity; increasing exposure to climate and resource pressures; and the misallocation of financial and policy support away from productive and competitive firms. These findings are corroborated by macroeconomic evidence—particularly Pakistan’s stagnant manufacturing productivity, limited export diversification, and repeated vulnerability to external shocks.

To move from diagnosis to policy design, these constraints are interpreted through a Schumpeterian and structural transformation lens. Within this framework, the observed challenges are understood not as isolated distortions, but as manifestations of a broader productivity and capability trap, characterized by weak innovation systems, limited knowledge diffusion, insufficient competitive discipline, and incomplete structural transformation. This provides the organizing logic to translate empirical constraints into coherent policy priorities.

Global experiences with industrial policy underscore that sustained development requires more than static efficiency: it rests on continuous innovation, structural transformation, and institutional adaptability. A strong consensus across Schumpeterian and evolutionary literature is that industrial policy must be dynamic, entrepreneurial, and inclusive.

At the micro level, industrial clusters demonstrate how localized agglomeration economies, human capital, and social networks enable firms to move from quantity expansion toward quality upgrading and global competitiveness (Arif 2012). Yet such outcomes hinge on entrepreneurs’ capacity to absorb and diffuse innovations, highlighting the need for targeted skills development,

R&D incentives, and SME support. At the macro level, innovation thrives when entrepreneurial discovery is combined with access to finance and a competitive environment that balances rivalry with incentives to invest in long-term technological progress (Michael, 2017).

The state itself can play an entrepreneurial role. Evidence from East Asia shows that governments have successfully coordinated technological catch-up, mobilized resources, and enforced performance standards to sustain industrial deepening (Ebner, 2009). For emerging economies, industrial policy becomes most urgent where institutional capacity is weakest, requiring adaptive frameworks that mitigate risks of capture while enabling learning (Berglöf and Cable, 2018). The Neo-Schumpeterian perspective stresses the importance of leapfrogging into successive technological paradigms to avoid entrenching backwardness, as illustrated by the Ukrainian case where overreliance on outdated sectors impeded innovation (Bazhal, 2014).

Importantly, incumbents are not passive actors: they remain central innovators, seedbeds for spin-offs, acquirers of startups, and performers of basic research. Their role in shaping industry evolution demands a systemic policy view that integrates new entrants, established firms, and research institutions (Buenstorf, 2016). At the same time, legitimacy is central to sustaining industrial strategies. Policies must enhance dynamic competition rather than entrench privileges, relying on transparency, time-bound incentives, and performance orientation (Yang, 2025). In Europe, place-based approaches highlight how territorial “creative destruction” and decentralized innovation ecosystems are vital to managing structural shifts under conditions of climate stress, energy transitions, and digital transformation (Soete and Stierna, 2023).

Finally, the link between industrial transformation and inclusive development is critical. Industrial policy is not only about competitiveness but also about generating productive jobs, reducing poverty, and expanding capabilities. Effective strategies integrate macroeconomic stability, trade policy, and social development to ensure that innovation translates into broad-based welfare gains (Salazar-Xirinachs et al., 2014).

Against this combined empirical and theoretical backdrop, the five strategic pillars represent a structured mapping from diagnosed constraints to policy priorities. Innovation and technological upgrading respond to weak firm capabilities; export-oriented diversification addresses external fragility; labor productivity and skills tackle human capital gaps; sustainability and resource efficiency respond to emerging climate and competitiveness pressures; and allocative efficiency addresses systemic misallocation of resources.

4.1 Innovation and Technological Upgradation

Innovation and technological upgradation are central to escaping the Malthusian trap and achieving sustained, high-productivity industrial growth. These measures prioritize firm-level innovation ecosystems, sector-specific technology transfer, and R&D diffusion mechanisms—especially in high-potential, non-traditional sectors. Interventions will be sequenced to ensure compatibility with fiscal space and evolving macroeconomic conditions.

- **Market-Driven R&D Incentives (Non-Tax Measures):**

- Establish **innovation challenge funds** where firms compete for grants based on clearly defined innovation milestones.
- Create **sector-specific technology adoption vouchers** to support SMEs in acquiring and implementing advanced technologies.
- Encourage **public-private partnerships (PPPs)** where private firms co-invest with the government in R&D projects.
- Facilitate access to **venture capital and private equity** by providing co-financing for innovative startups in high-growth sectors.

- **Performance-Based Tax Measures (As Needed):**

- Introduce **performance-linked tax incentives** where firms receive benefits upon achieving specific R&D outcomes or export targets in high-growth sectors.
 - Reduce taxes on profits generated from patented innovations to encourage commercialization.
- **Adopt Industry 4.0 Technologies:**
 - Promote the adoption of robotics, Internet of Things (IoT), artificial intelligence (AI), and machine learning in manufacturing to enhance efficiency and reduce costs.
 - Support automation-assisted processes, ensuring that labor-intensive sectors transition smoothly to technology-intensive production models.
 - Establish **demonstration and training centers** to enhance awareness and skill development in Industry 4.0 technologies.
- **Focus on High-Growth, Non-Traditional Sectors:**
 - Prioritize support for sectors like IT services, renewable energy solutions, high-value agritech products, and biopharmaceuticals.
 - Develop **export-ready technology solutions** targeting niche markets in precision agriculture, medical devices, and sustainable products.
 - Facilitate **sector-specific innovation hubs** to create synergies between startups, established firms, and academic institutions.
- **International Knowledge Spillovers:**
 - Leverage trade openness and foreign direct investment (FDI) to absorb advanced technologies and global best practices.
 - Develop **strategic partnerships** with leading technology-exporting nations to facilitate technology transfer and capacity building.
 - Encourage joint ventures between domestic and foreign firms to integrate into global value chains (GVCs).
- **Intellectual Property (IP) Development and Protection:**
 - Strengthen the national IP regime to encourage innovation and protect domestic inventions.
 - Provide incentives for patent filings, especially in high-tech and export-oriented sectors.
 - Build capacity within research institutions to commercialize patents and innovations.
- **Policy Support and Governance:**
 - Align national policies with global trends in technology and innovation to ensure relevance and competitiveness.
 - Establish a **National Innovation Council (NIC)** to oversee and coordinate R&D initiatives across sectors.
 - Develop **public-private partnerships (PPPs)** to co-fund and manage large-scale technological projects.

4.2 Labor Productivity and Skill Development

Transforming abundant labor into a skilled workforce is pivotal for economic growth and industrial competitiveness, especially in emerging and high-potential sectors.

- **Align Vocational Training with Emerging Sector Needs:**
 - Develop training programs tailored to sectors like renewable energy, e-commerce, precision agriculture, and advanced manufacturing.
 - Collaborate with industry stakeholders to ensure curricula address specific skill demands in high-potential industries.
- **Expand Digital Skills Training:**
 - Offer widespread training in digital competencies, including coding, data analytics, cybersecurity, and blockchain technologies.
 - Establish **digital training hubs** in urban and semi-urban areas to bridge skill gaps in underserved regions.
- **Support High-Growth Startups:**
 - Provide financial and technical assistance to startups in sectors like IT services, fintech, and sustainable technologies.
 - Create **incubation centers** and **accelerators** focusing on non-traditional, high-growth industries to foster entrepreneurial talent.
- **Promote Lifelong Learning:**
 - Encourage upskilling programs for workers in traditional industries to transition into high-tech and knowledge-intensive roles.
 - Partner with online education platforms to provide accessible, affordable continuous learning opportunities.
- **Public-Private Collaboration:**
 - Foster partnerships between industry and educational institutions to co-design skill development programs.
 - Incentivize private sector investment in workforce training through grants or performance-based subsidies.
- **Regional Skill Development Initiatives:**
 - Establish region-specific training programs tailored to local industries and resources, such as aquaculture in coastal areas or horticulture in agricultural belts.
 - Create mobility programs to connect skilled labor in rural areas with opportunities in urban industrial hubs.

4.3 Sustainability and Resource Efficiency

Long-term economic resilience depends on reducing industrial vulnerabilities to resource depletion and climate shocks. This pillar embeds principles of green growth and gender-responsive sustainability into the industrial landscape, advancing the twin goals of environmental compliance and inclusive development. It also supports diversification into energy-efficient and circular economy sectors to reduce systemic risk and foster resilience.

- **Green Technologies:**

- Promote the adoption of renewable energy sources such as solar, wind, and bioenergy in industrial production.
- Provide **performance-based incentives** for industries reducing carbon emissions and adopting clean energy solutions.
- Encourage research and development of green technologies through public-private partnerships (PPPs).

- **Circular Economy:**

- Implement programs for waste reduction, material recycling, and sustainable supply chain management in manufacturing.
- Support industries in developing products designed for reuse, remanufacturing, and recycling.
- Introduce **eco-labeling initiatives** to certify sustainable products and encourage consumer demand for green goods.

- **Green Manufacturing as Growth Engines:**

- Prioritize green industries such as energy-efficient manufacturing, sustainable materials, and renewable energy equipment production as key growth engines.
- Provide **innovation grants** for green technology development in manufacturing sectors.
- Support adoption of eco-friendly processes in high-growth industries like electronics, automotive, and textiles.

- **Empowering Women in Sustainability:**

- Develop programs to increase women’s participation in renewable energy, agritech, and green manufacturing industries.
- Provide financial support and capacity-building initiatives for women-led startups focused on sustainability and resource efficiency.
- Establish **mentorship networks and training programs** targeting women entrepreneurs in emerging sectors like sustainable textiles, eco-friendly products, and renewable energy.

- **Sustainability Standards and Certifications:**

- Develop and enforce industrial sustainability standards aligned with global best practices.
- Facilitate access to international certification systems (e.g., ISO 14001) for eco-friendly and resource-efficient production.
- Provide technical support to help SMEs comply with green standards and access global markets.

4.4 Allocative Efficiency

A fiscally prudent industrial strategy must ensure that limited resources are allocated efficiently, especially under current macroeconomic constraints. Achieving allocative efficiency ensures that resources are directed to their most productive uses, fostering economic growth and innovation. This section highlights the role of industrial policy in optimizing resource allocation, focusing on correcting market failures while supporting viable economic actors, especially SMEs.

- **Addressing Market Failures:**

- Tackle **Marshallian Externalities** by supporting industries benefiting from agglomeration and spillovers, such as industrial clusters and innovation hubs.
- Apply **Pigouvian Subsidies** to align social and private benefits using the formula:

$$\text{Optimal Subsidy} = \text{Marginal External Benefit (MEB)} - \text{Marginal Cost (MC)}.$$

- Ensure compliance with:
 - * **Mill Test:** The subsidized industry must eventually thrive without government support.
 - * **Bastable Test:** Discounted future benefits of the intervention must outweigh the costs.

- **Focus on Viable SMEs:**

- Prioritize support for SMEs with demonstrable growth potential, based on market demand, innovation capacity, and scalability.
- Phase out support for non-performing SMEs to avoid resource misallocation and economic inefficiencies.

- **Enhancing SME Competitiveness:**

- Provide **access to affordable credit** through performance-linked financing mechanisms.
- Facilitate **capacity-building programs** to help SMEs adopt advanced technologies, meet international standards, and improve operational efficiency.
- Establish **mentorship and advisory services** to guide SMEs in scaling operations sustainably.

- **Promoting Dynamic Resource Allocation:**

- Encourage market-driven reallocation of resources toward high-growth, innovative sectors such as IT services, renewable energy, and biopharmaceuticals.
- Support labor mobility programs to transition workers from declining industries to emerging sectors with higher productivity.

4.5 Export-Oriented Industrial Diversification and Competitiveness

Export-oriented industrial diversification is a cornerstone of innovation-led growth and macroeconomic sustainability. A stronger export base enhances resilience by generating foreign exchange, raising productivity, and driving quality upgrades across sectors. This section outlines focus sectors and supporting policy measures that aim to shift Pakistan’s industrial composition toward higher-value and globally competitive segments.

4.5.a Focus Sectors

- **Textiles and Apparel (HS Codes 61, 62, 63):** Shift from low-value exports to high-value, branded goods and technical textiles. Diversification should target items such as jerseys, pullovers (HS 6110), women’s or girls’ suits (HS 6104), and made-up textile articles like travel blankets and curtains (HS 6301, HS 6303).
- **Agribusiness:** Promote value-added exports such as processed foods, organic products, and products with geographical indications (GIs).

- **Leather and Footwear (HS Code 42):** Expand into high-value leather goods such as handbags (HS 4202) and apparel (HS 4203). Emphasize premium quality and eco-friendly practices.
- **Sporting Goods (HS Code 95):** Enhance exports of recreational and outdoor sports goods, including inflatable balls.
- **Surgical and Medical Devices (HS Code 90):** Focus on higher-value products such as precision instruments and apparatus to tap into the global medical device market.
- **Pharmaceuticals (HS Code 30):** Diversify and expand into generic drugs and high-value biopharmaceuticals.
- **IT and Services:** Position Pakistan as a regional hub for software development, fintech, and e-commerce services.

4.5.b Policy Measures

- **Infrastructure Development:** Establish export processing zones (EPZs) with world-class infrastructure, streamlined one-window regulatory systems, and sector-specific clusters.
- **Trade Infrastructure:** Develop integrated logistics networks, digital customs systems, and cold chain facilities to streamline export processes, reduce costs, and enhance efficiency.
- **Strategic Trade Agreements:** Pursue agreements to secure market access, reduce tariffs, align with global standards, and support compliance through exporter training and certification.
- **Technology and R&D Investments:** Allocate funds to research in identified high-growth sectors and establish innovation hubs and technology parks.
- **Export Facilitation Schemes (EFS):** Expand EFS coverage to new sectors and ensure inclusive access for SMEs.
- **Compliance and Standards:** Invest in testing facilities, certification infrastructure, and training programs to meet international standards, especially in sustainability and green compliance.
- **Support for SMEs:** Provide access to affordable credit, market intelligence, and capacity-building programs to enable small and medium enterprises to participate in exports.
- **Skill Development:** Align vocational training programs with industry needs, focusing on high-potential sectors such as textiles, agribusiness, and IT.
- **Marketing and Branding:** Support exporters in building global brands and accessing international markets through targeted marketing initiatives.

5. Instruments for Implementation

Industrial policy implementation must reflect strategic realism, particularly under macro-fiscal constraints. Early-stage interventions should focus on low-cost, distortion-corrective instruments that address regulatory inefficiencies and unlock private sector potential. More resource-intensive tools—such as fiscal incentives and concessional financing—will be deployed selectively and phased in gradually, contingent on macroeconomic stabilization. This sequencing ensures the efficient use of public resources while advancing long-term structural transformation.

5.1 Regulatory and Procedural Reforms for Ease of Doing Business

This point focuses on streamlining regulations as a foundation for investment and competitiveness by fully leveraging Pakistan’s ongoing modernization agenda. Key actions include digitizing business registration, licensing, and customs procedures through platforms like the Pakistan Single Window to enhance transparency and reduce delays. The strategy also calls for strengthening intellectual property rights and instituting a continuous regulatory review mechanism to systematically eliminate outdated rules and reduce compliance costs for businesses.

5.2 Export Facilitation through Non-Tax Measures

While critical tax-related reforms—such as rationalizing tariffs under the National Tariff Policy (2025–30) and implementing the Export Facilitation Scheme (EFS)—are underway to reduce cost-of-doing-business and encourage export growth, non-tax instruments are equally essential to unlock Pakistan’s export potential, particularly for SMEs and high-value sectors. We further propose developing integrated trade logistics hubs with modern warehousing and cold chains, while expanding access to trade insurance and export credit guarantees. The strategy also emphasizes establishing international trade promotion offices and building local capacity for certifications to help exporters meet global standards and access high-value markets.

5.3 Public–Private Partnerships (PPPs) for Enabling Infrastructure

Given fiscal constraints, PPPs offer a pragmatic path to develop export clusters, innovation hubs, and industry services. For instance, Colombia’s Cartagena Industrial Cluster and India’s Gopalpur Industrial Park successfully leveraged PPPs to deploy clean-energy infrastructure and generate jobs. In Pakistan’s case, the PPP approach entails co-developing export-oriented industrial clusters, innovation hubs, and processing zones with private investors. Additionally, PPPs would be engaged to manage vocational training centers and provide business development services, ensuring infrastructure and skills training are aligned with private sector demands

5.4 Targeted Foreign Direct Investment (FDI) Facilitation

FDI can serve as a catalyst for job creation, technology transfer, and global integration. Vietnam’s sustained success—attracting over US\$370 billion since 1987—demonstrates how targeted FDI in electronics, textiles, and food processing can transform industrial structures. Pakistan should emulate this by offering non-fiscal facilitation and structured outreach, partnering with Pakistani embassies and diaspora networks.

5.5 Technical Assistance and Capacity Building

Robust technical assistance is essential for firms to scale, innovate, and access global markets. The EBRD’s “Go Digital” programme in the Western Balkans blends loans, grants, and training to support SMEs in digitalisation and green tech—offering a model for Pakistan. Similarly, Canada’s IRAP and Australia’s Researchers-in-Business programmes demonstrate how embedding graduates in SMEs can drive innovation

5.6 Accessing External Development Assistance

Concessional development finance can accelerate industrial upgrades, green transitions, and skills training. The UK’s UKEF-backed solar and infrastructure projects in Türkiye and Angola illustrate how export credit agencies can deliver large-scale impact while enabling home-country suppliers. Likewise, the EBRD–EU Western Balkans initiative blends digitalisation grants and loans for SMEs, with a focus on inclusion and sustainability.

5.7 National Productivity and Innovation Acceleration Platform (NPIAP)

A National Productivity and Innovation Acceleration Platform (NPIAP) should anchor firm-level upgrading by combining diagnostics, hands-on support, and innovation linkages. The programme would begin with standardized productivity diagnostics—drawing on models such as Singapore’s EDG and Korea’s consulting programmes—to identify firm-specific constraints and provide tailored improvement plans benchmarked against regional leaders. These diagnostics would be complemented by mobile lean manufacturing and energy-efficiency clinics, inspired by Kaizen and ZED approaches, demonstrating low-cost improvements in process flow, inventory management, and energy use. To sustain these gains, sectoral innovation accelerators—structured as public-private hubs with universities and industry—would support the scaling of indigenous technologies across sectors such as textiles, agribusiness, and manufacturing. In parallel, standardized continuous-improvement toolkits (5S, Kaizen, TPM, and basic digitization) would be disseminated through institutions such as SMEDA and TEVTA, enabling SMEs to adopt practical productivity enhancements with minimal cost.

To reinforce adoption and scale, the platform would combine incentives, visibility, and digital outreach. A national productivity awards programme would promote benchmarking and recognize high-performing firms, creating demonstration effects within industrial clusters. This would be supported by a central digital extension portal delivering diagnostics, advisory services, and training modules at scale, particularly for smaller firms with limited access to in-person support. Implementation would follow a phased, cluster-based approach, piloting interventions in key industrial hubs—Faisalabad (textiles), Sialkot (surgical and sports goods), Lahore (light engineering), and Karachi (chemicals and pharmaceuticals)—covering an initial cohort of firms before scaling to a wider network across districts. This structured approach ensures that productivity gains are first demonstrated, then diffused, and ultimately institutionalized across Pakistan’s industrial ecosystem.

This platform should be designed to be cost-effective, leveraging donor-funded technical assistance, existing public institutions (e.g., NPO, SMEDA, PSDF), and international twinning arrangements for skills and standards. The ultimate goal is to increase value-added per manufacturing worker—currently stagnant at around \$3,800—by 40–50% over five years, bringing Pakistan closer to regional productivity benchmarks such as India (\$6,200) and Indonesia (\$7,800).

6. Conclusion

Pakistan’s industrial future depends on its ability to break free from low-value economic traps and transition toward an innovation-driven, export-oriented growth paradigm. This paper has outlined a pragmatic yet ambitious pathway for achieving that transformation. Anchored in the principles of strategic realism, the framework recognizes that fiscal space is limited and institutional capacity uneven—but these are not reasons for inaction. Rather, they call for a phased, data-driven, and priority-led approach to industrial upgrading.

The core objectives—escaping the Malthusian Trap through productive investment, accelerating Schumpeterian innovation for export competitiveness, and embedding economic resilience through macro-fiscal discipline—are operationalized through carefully sequenced instruments. From regulatory reform and targeted FDI facilitation to public-private partnerships and firm-level productivity acceleration, the proposed tools prioritize low-cost, high-leverage interventions while laying the groundwork for deeper structural reforms. This approach adapts global lessons to Pakistan’s context, emphasizing productivity, innovation, and competitive discipline over protectionist inertia.

If implemented with continuity, institutional coordination, and performance accountability, this framework can raise industrial value-added, generate quality employment, and strengthen external resilience. However, its success will ultimately depend on sustained political com-

mitment, credible monitoring mechanisms, and effective collaboration between the public and private sectors.

Looking ahead, an important avenue for future research is to empirically test the Schumpeterian framework in the context of Pakistan. While this paper develops a theoretically grounded and policy-oriented framework, rigorous empirical validation—using firm-level data, sectoral productivity analysis, and export dynamics—will be essential to quantify the role of innovation, competition, and knowledge spillovers in driving industrial transformation. Such work can help identify the magnitude of key channels (e.g., R&D intensity, export participation, and technology adoption), refine policy prioritization, and provide evidence-based guidance for scaling industrial policy interventions. By bridging theory with empirical evidence, future research can further strengthen the case for a Schumpeterian industrial strategy tailored to Pakistan’s structural realities.

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Annexure

A.1. The Malthusian Trap: Explanation and Dynamics

The Malthusian trap, rooted in classical economics, describes a situation where population growth outpaces economic or agricultural production, leading to stagnation in per capita income and preventing sustained economic growth. The key dynamics are:

1. Income growth initially leads to higher population growth.
2. Population growth increases the labor force but puts pressure on fixed resources.
3. As a result, income per capita falls back to subsistence levels.

The basic equation for the Malthusian trap is:

$$Y = A \cdot L^\alpha \cdot R^{1-\alpha} \quad (1)$$

where:

- Y : Total economic output (e.g., agricultural output),
- A : Total factor productivity (reflecting technology or efficiency in production),
- L : Labor (or population size),
- R : Fixed resources (e.g., land),
- α : Output elasticity with respect to labor (typically between 0 and 1).

Per Capita Output and Resource Dynamics

Per capita output is derived by dividing Y by L :

$$\frac{Y}{L} = A \cdot \left(\frac{R}{L}\right)^{1-\alpha} \quad (2)$$

- As L (population) grows, R/L (resources per person) decreases, causing per capita income to decline unless offset by increases in productivity (A) or an expansion of resources (R).

Dynamics of the Malthusian Trap

1. **Productivity Improvements:** In the short term, an increase in A (due to technological advancements) raises per capita income.
2. **Population Response:** Higher per capita income leads to higher birth rates or lower mortality rates, increasing L .
3. **Return to Subsistence:** As L grows, R/L falls, pulling per capita income Y/L back to subsistence levels.

Breaking the Malthusian Trap

The Unified Growth Theory (UGT) (e.g., Galor and Weil (1999)) explains how economies transition from Malthusian stagnation through demographic change and rising productivity. Empirical evidence also supports the persistence of the Malthusian trap over long periods; for instance, Madsen et al. (2019) show that productivity improvements were historically offset by population growth, leading to centuries of stagnation. However, UGT models often treat technological progress as exogenous or abstract from firm-level innovation and quality competition. In contrast, modern growth models such as the Schumpeterian framework emphasize endogenous innovation, creative destruction, and trade-induced spillovers. These mechanisms show how sustained technological advancements can outpace population growth, enabling societies to escape the Malthusian trap. This Schumpeterian perspective forms the foundation for the industrial policy framework proposed in this paper.

A.2. Schumpeterian Growth: Innovation as the Engine

The **Schumpeterian growth model** (Grossman and Helpman (1991); Aghion et al. (2014)) emphasizes continuous innovation and quality improvements to achieve sustained growth. An open economy Schumpeterian model is given as:

$$Y = T \cdot L^{1-\alpha} \cdot X^\alpha \cdot Q^{1-\alpha}, \quad (3)$$

where:

- T : Baseline technology level, which evolves endogenously through domestic innovation and international knowledge spillovers.
- L : Labor input.
- X : Intermediate goods (domestically produced and imported), reflecting the role of trade in enhancing input variety and quality.
- Q : Quality improvements through innovation.
- α : Elasticity of output with respect to intermediate goods.

By focusing on **creative destruction**, the Schumpeterian model ensures that technological progress (T) and quality improvements (Q) continuously elevate productivity and economic output, overcoming the limitations of resource and population pressures.

The economy's innovation rate \dot{T} is determined by the combined effects of domestic R&D efforts and international knowledge spillovers:

$$\dot{T} = \lambda \cdot R + \sum_{i \neq n} \epsilon_{ni} \cdot T_i, \quad (4)$$

where:

- \dot{T} : Growth rate of the knowledge stock in the home country.
- λ : Domestic innovation efficiency, influenced by R&D infrastructure, skill levels, and government support.
- R : Domestic R&D expenditure or effort.
- ϵ_{ni} : Knowledge diffusion rate from country i to country n , reflecting trade openness and institutional quality.
- T_i : Knowledge stock in trading partner i , representing foreign innovation capacity.
- n : The home country index.

Innovation and Knowledge Diffusion

The economy's innovation rate \dot{T} is determined by the combined effects of domestic R&D efforts and international knowledge spillovers:

$$\dot{T} = \lambda \cdot R + \sum_{i \neq n} \epsilon_{ni} \cdot T_i, \quad (5)$$

where:

- \dot{T} : Growth rate of the knowledge stock in the home country.
- λ : Domestic innovation efficiency, influenced by R&D infrastructure, skill levels, and government support.
- R : Domestic R&D expenditure or effort.
- ϵ_{ni} : Knowledge diffusion rate from country i to country n , reflecting trade openness and institutional quality.
- T_i : Knowledge stock in trading partner i , representing foreign innovation capacity.
- n : The home country index.

Market Dynamics in an Open Economy

i. Trade-Induced Market Size Effect

Export participation expands the effective market size L_{eff} , amplifying the returns to innovation:

$$L_{\text{eff}} = L + \tau \cdot L_{\text{foreign}}, \quad (6)$$

where τ represents the share of foreign markets accessible through trade.

ii. Competition Effect

Trade introduces competition from foreign producers, affecting innovation incentives:

- **Positive Effect (Escape Competition):** Firms innovate to differentiate products and escape competition.
- **Negative Effect (Profit Reduction):** Intense competition reduces expected profits, potentially discouraging R&D investment.

iii. Resource Reallocation

Trade liberalization reallocates resources (labor and capital) toward sectors with comparative advantages in production and innovation.

Dynamic Gains from Trade

i. Knowledge Spillovers

Trade facilitates cross-border knowledge diffusion, enhancing Q and T :

$$Q = f(\text{domestic innovation, foreign technology adoption}). \quad (7)$$

ii. Innovation Synergies

The interaction between domestic R&D and foreign knowledge stocks boosts innovation efficiency.

Equilibrium Growth Path

The equilibrium growth rate g of the economy is determined by:

$$g = \lambda \cdot R + \epsilon \cdot \sum_{i \neq n} g_i, \quad (8)$$

where g_i is the growth rate of trading partner i . This emphasizes the importance of trade partners' innovation performance on domestic growth.

Key Implications

- **Trade-Driven Innovation:** Open economies benefit from larger markets and access to superior foreign technologies, accelerating innovation.
- **Sectoral Reallocation:** Trade realigns resources toward sectors with dynamic comparative advantages.
- **Policy Focus:** Government interventions must balance domestic innovation promotion with international trade integration to maximize long-term growth.