



# آراء فى القضايا الاقتصادية المعاصرة

سلاسل القيمة العالمية و أثرها علي  
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## CONTEMPORARY ECONOMIC PERSPECTIVES

Global Value Chains and Innovation  
in Developing Countries

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## Global Value Chains and Innovation in Developing Countries

### 1. Background

Global Value Chain (GVC) participation refers to the fragmentation of the production process in multiple offshore locations. In this respect, GVC involves a series of production stages, adding value, with at least two stages produced in different countries. One means to measure trade in value-added is using intermediate goods' trade data in input-output tables. Through firms' interlinkages, GVC participation enables the transfer of foreign knowledge, making it a key driver of innovation in developing economies.

Two main reasons underscore the importance of focusing on GVC participation:

- **Innovation Concentration:** Advanced economies dominate global innovation, requiring mechanisms to transmit knowledge to developing regions.
- **Knowledge Transfer Through Trade:** GVCs facilitate intangible capital flows, leading to foreign knowledge transmission across borders.

Despite the learning benefits of GVC participation, the extent of its impact depends on domestic absorptive capacities and external policy conditions. Developing countries with scarce innovation inputs rely heavily on foreign knowledge spillovers, making GVC participation essential for their technological progress.



### 2. Innovation and GVC Participation

GVCs transfer knowledge through imported and re-exported goods, helping compensate for limited domestic innovation in developing countries. In Africa, low R&D spending and limited GVC participation, focused on primary goods, hinder innovation. By contrast, countries like China and India achieve higher innovation due to greater R&D investment. Innovation output, measured by resident patents, highlights disparities:

- 97% of global patents originate from high/upper-middle-income countries.
- Lower-middle and low-income countries contribute just 2.4% and 0.19%.

Figure 1: Resident patents on average across income groups (1990-2019)

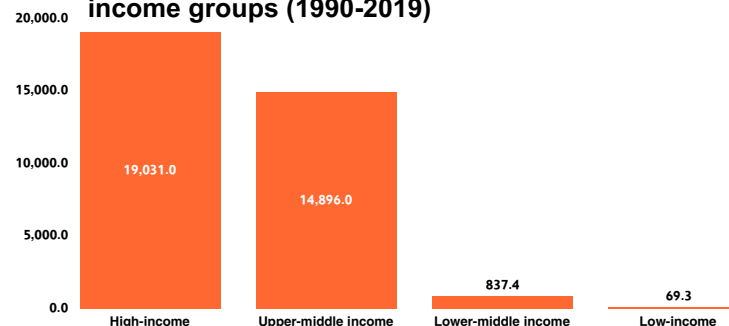
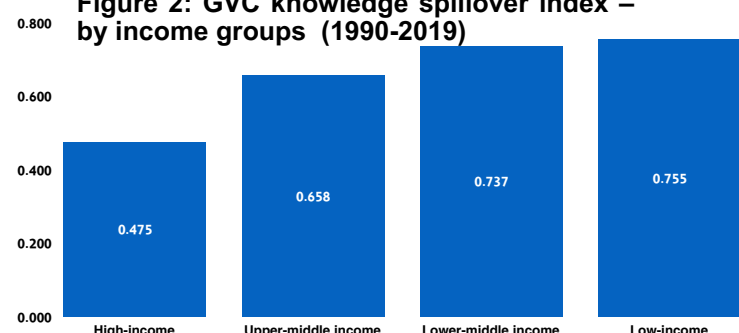


Figure 2: GVC knowledge spillover index – by income groups (1990-2019)



This gap underscores the need for foreign knowledge to bridge technological divides. Using an R&D-weighted GVC index, combining EORA 26 input-output tables with R&D stock data, we find spillovers strongest in low-income countries. Research shows this index significantly boosts innovation, with low-R&D economies seeing a 2% patent increase per unit rise in GVCRD, compared to 0.23% in average-capacity economies (Eissa and Zaki, 2023).

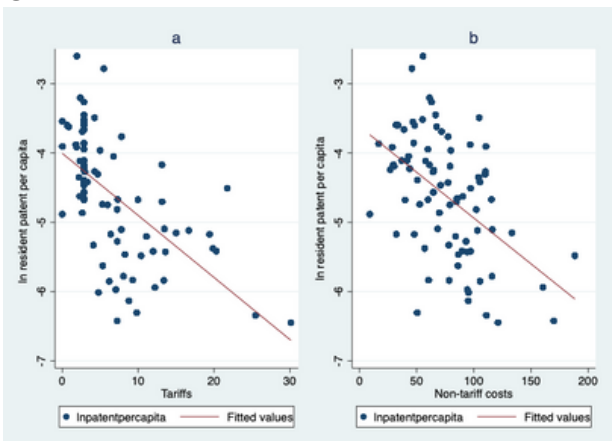
### 3. The Role of Policy in Inclusive Innovation

Tacit knowledge embedded in traded intermediate goods bridges the innovation gap across countries, this learning effect is conditional on trade, competition, and innovation policy.

#### a. Trade policy

- High trade costs, both tariffs and non-tariff measures (NTMs), obstruct GVC and constrain the flow of foreign knowledge critical to innovate.
- Despite reduced tariffs under multilateral agreements, regions like MENA face the world's most restrictive NTMs, including sanitary, phytosanitary, and technical trade barriers.
- Increased trade costs, compounded by inconsistent standards, red tape, and weak institutions, limit both regional and international trade.
- Reducing trade costs enhances GVC benefits, as the figures below shows tariffs and NTMs are negatively associated with resident patents per capita

Figure 3: Trade costs and domestic innovation



#### b. Competition policy

- Competition policy is about enforcing rules and regulations guaranteeing fair competition across countries.
- Fair competition encourages investors to innovate and carve their unique products to maintain an adequate market share.
- One main area of competition policy is the anti-monopoly law.
- Previous studies introducing the effectiveness of the anti-monopoly law index as a de jure measure of competition as a determinant of innovation depict an inverted U-shaped relationship between competition and resident patent per capita (Eissa and Zaki, 2023).
- Empirically, the effect of competition on domestic innovation is complex, non-linear, and unexpectedly changes (Aghion et al., 2002).
- From a theoretical standpoint, as the de jure competition index increases, inventors (leaders) expect new entrants and hence engage in patenting to protect their inventions. Yet, a competition-driven increase in patents is unguaranteed for two reasons:
  - Innovation is spatially concentrated in high-income countries and new entry is endogenous to absorptive capacities.
  - Alternative to patenting, leaders can choose to engage in trade secrets to protect their monopoly power at higher competition (Crass et al., 2019)

Figure 4: Competition policy and domestic innovation



Figure (4) presents the country's average resident patent per capita against competition proxied by the effectiveness of the anti-monopoly law index, showing a positive association between the two variables.

### c. Innovation policy

- A platform for international cooperation in intellectual property rights (IPR) are provided by treaties like the World Intellectual Property Organization WIPO and Trade-related Aspects of Intellectual Property Rights (TRIPs).
- Although both memberships share the aim of protecting properties, they differ in their enforceability frameworks.
- WIPO treaties are not legally binding in trade-related contexts. While WIPO members are encouraged to adopt the outlined IPR standards, there is no legal mechanism guaranteeing enforcement.
- In contrast, TRIPs is a trade-related agreement establishing minimum standards for protection and enforcing copyrights, trademarks, and patents. Non-compliance with these standards, results in trade sanctions and disputes under WTO Dispute Settlement Mechanism.

**Figure 5: Competition policy and domestic innovation**

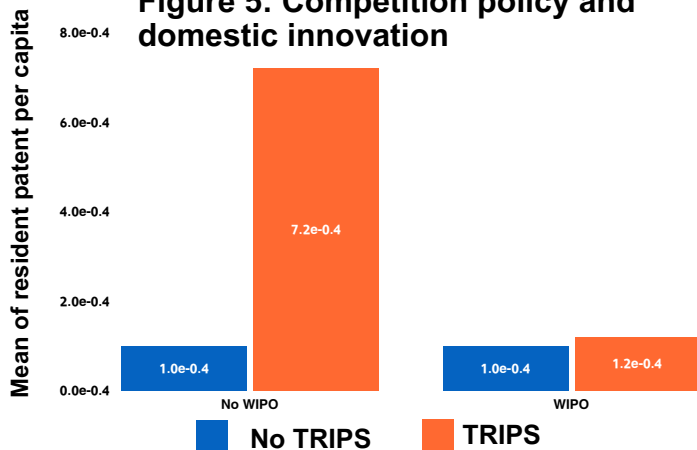


Figure (5) presents resident patents per capita against two IPR agreements: WIPO and TRIPS. Data evidence conflicting trajectories of the two agreements in motivating innovation. In fact, countries involved in TRIPS exclusive of WIPO are achieving the highest innovation output. In addition, across WIPO membership, higher innovation output is only guaranteed to TRIPs members.

## References

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## 4. Policy recommendations

Fostering innovation performance in developing countries through the foreign knowledge transmission mechanism of GVC participation, requires policy recommendations at a threefold level:

Governments can facilitate GVC integration by lowering trade barriers, improving infrastructure, and fostering a competitive business environment. Reducing tariffs and unnecessary trade costs enhances knowledge transfer, while enforcing competition laws ensures fair practices and supports innovation. Investment policies, such as funding R&D and providing tax incentives, further support innovation and encourage R&D.

At the international organizations level, designing inclusive frameworks for knowledge transmission and technological collaboration is important to disseminating foreign knowledge necessary for domestic innovation in developing countries.

At the private sector level, fostering partnerships with foreign firms enhances technology diffusion. Finally, leveraging GVC participation by importing and exporting intermediate goods drives innovation performance.

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