Empirical Studies on the Internationalization and Performance of Japanese Firms

日本企業の国際化と企業パフォーマンスの実証分析

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1

1

Introduction (1)

- Stylized facts: Internationalized firms outperform domestic firms
- There are numerous studies on the positive relationship between internationalization and firm performance.
  - Self-selection or learning
  - Channels through which trade impacts firm performance
- Previous empirical studies find heterogeneities across firms and across countries/regions.
- Many studies on Japanese firms confirms that positive (non-negative) relationships between trade (and/or FDI) and firm performance (productivity, innovation, employment).

2

2

Introduction (2)

- In Japan, the trade-to-GDP ratio has been increasing.
- More and more Japanese firms have been getting engaged in international trade and activities.

→The Japanese Economy has been more and more internationalized.

→However, why can't the Japanese economy return to a growth path?
→Why can't the Japan's productivity grow again?
→Why has been Japan's technological capabilities "relatively" declining?

3

3

Key Messages

- Export-Innovation nexus is stronger than import-innovation nexus
- Japan should put more effort into expanding exports

- What's the problem? What should we do?
  - Increase and diversify trade partners ← Government support?
- Further detailed studies required
  - Growth of frontier firms
  - Firm-level pattens on offshoring and domestic production
  - Proximity between production and innovation

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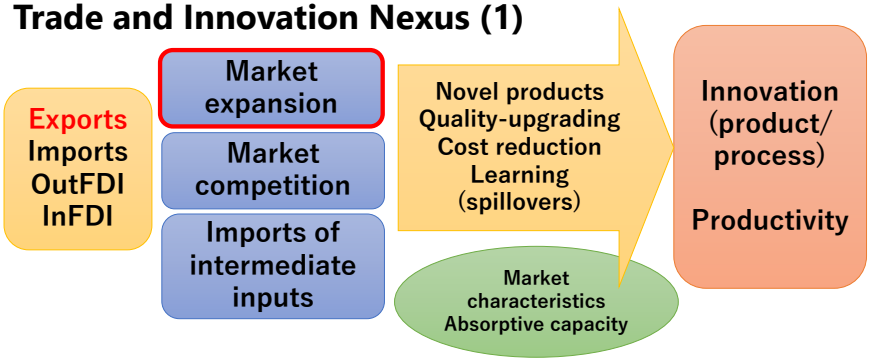
4

4

Trade and Innovation Nexus (1)



Empirical evidence → Exports are more likely to foster domestic innovation relative to imports

Sources: Shu & Steinwender (2019); Geng & Kali(2021), etc.

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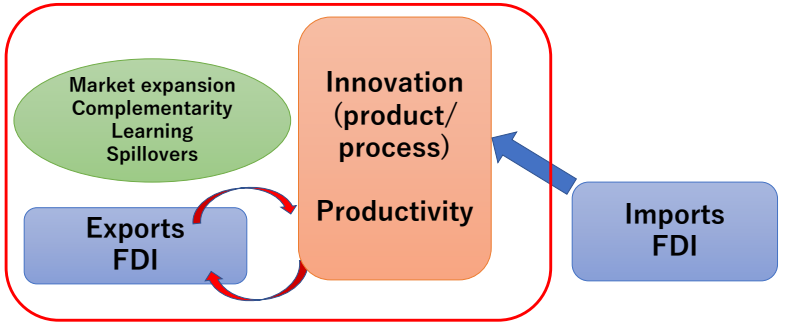
5

Trade and Innovation Nexus (2)



Focus on the impact of exports on domestic innovation

6

6

Learning by exporting

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7

Export starters and upgrading of product portfolio

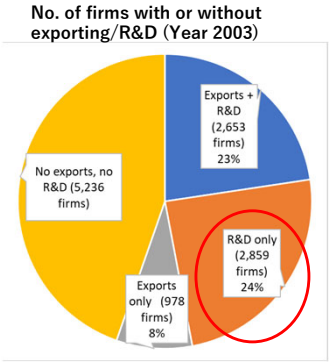
- What are the **channels of learning by exporting**?
  - Exporting and quality upgrading (Verhoogen 2008, etc.)
  - Exporting and product scope contracts (Baldwin & Gu 2009) or expansion (Iacovone and Javorcik 2010)
- Hahn and Ito (2020) : **Exporting promotes the upgrading of a plant's product portfolio.**
  - *2002-2007 Census of Manufacture*
  - Plant-level performance measured by "product characteristics" (*c.f.* Hausmann, Hwang & Rodrik's (2007) PRODY & EXPY)
  - PSM-DID
  - Export starters are more likely to add & drop products, but **more adding**
  - Added products tend to have higher product attributes

8

8

Can anyone learn from exporting?

- Ito and Lechevalier (2010): **Firms with R&D improved productivity after starting exporting** while firms without R&D did not.
  - Basic Survey of Japanese Business Structure and Activities
  - PSM-DID
  - Complementarity of exports & innovation ← Aw et al. (2005, 2011)
  - **Fixed costs of export market entry seem to be higher** than fixed costs of starting R&D for Japanese firms. ← Export support



Source: Ito and Lechevalier (2010) Table 1

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9

Overseas activity, market expansion, and innovation efficiency

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10

Overseas activities and Innovation

- Haneda and Ito (2014): **Firms with overseas activities are more efficient in R&D**
  - 2009 National Innovation Survey
  - Innovation Accounting (Mairesse & Mohnen 2001, 2002) c.f. Growth Accounting
  - Residuals of the knowledge production function is interpreted as "innovation efficiency"

Innovation Output = Structural factors + Residuals

Product/Process Innovation (Yes/No)

Sales of new products

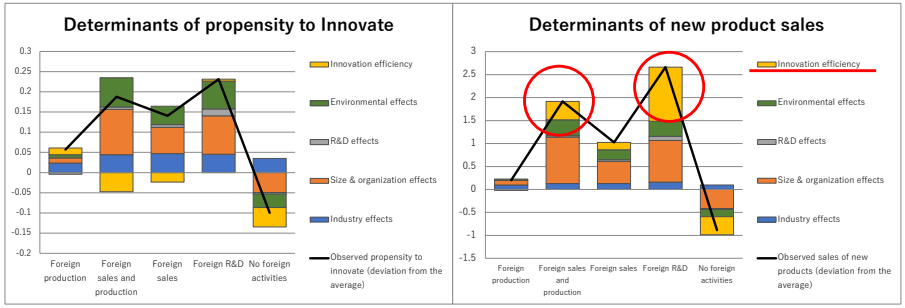
Firm size, R&D expenditure, Industry characteristics, market competition, intra-/inter-firm corporation

Innovation efficiency

11

11

Accounting for Innovation



Innovation efficiency explains a significant part of the advantage in the sales of new products of firms with foreign activities

12

12

Why firms with overseas activities are more efficient in innovation?

- Firms with overseas activities are more efficient innovation particularly when **innovation quality/size of innovation outcome** taken into account.

- Why?
  - **Market expansion**
  - **Diversity of innovation partners**
    - Both foreign and domestic partners
    - Suppliers/customers + foreign commercial laboratories + foreign competitors + universities

13

13

Global value chains and domestic innovation

14

14

Japan's position in GVCs and domestic innovation

- Ito et al. (2022): Becoming a **key supplier in the GVC network** would be important to benefit from **knowledge spillovers from downstream foreign customers.**
  - Having access to a greater breadth of customers would be beneficial to developing new technologies.

- Being central in GVCs is more important than vertical specialization for knowledge creation

➔ The volume of exports, number and diversification of downstream customers matter! Being connected to more "central" customers is important!

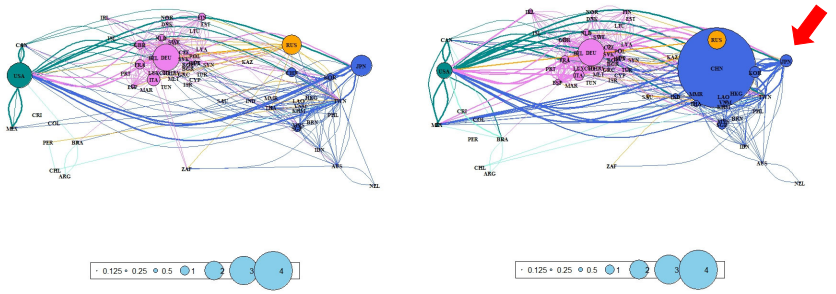
15

15

Forward GVC Centrality in 1995 and 2018

1995 manufacturing

2018 manufacturing



Source: Author's calculation based on the OECD ICIO 2021 Edition.

16

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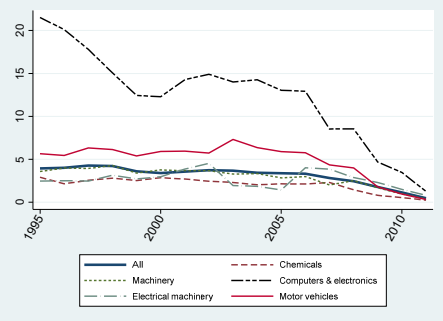
Average citation-weighted No. of patent applications per firm



- The **fall in the forward GVC centrality** explains 37% of the **decline in citation-weighted patent applications** between 1995 and 2011.
- **Forward** GVC participation is positively related to patent applications.
- Backward GVC participation is negatively related to patent applications.

17

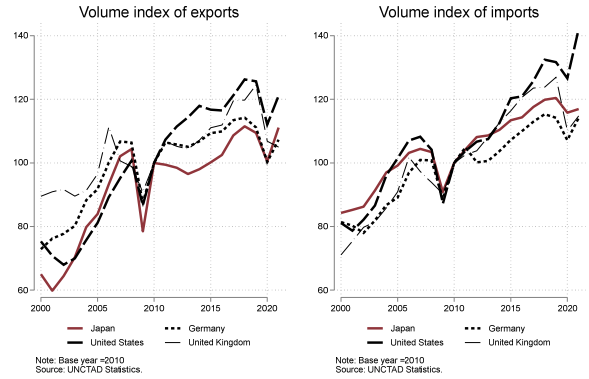
17

Recent trends of Japan's exports

18

18

What happened to Japan's exports?



Japan's export growth is the lowest.

Note: Merchandise trade only

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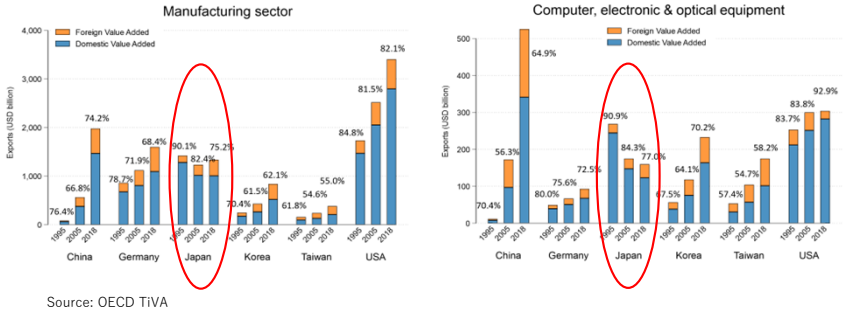
Gross exports and the origins of value added



Source: OECD TiVA

- **Domestic VA declining** → FVA share (GVC participation) increasing

20

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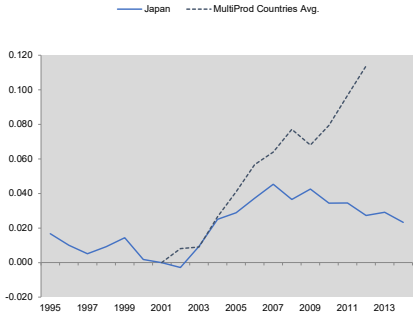
Why are Japan's exports not increasing?

- Japan has failed to achieve a virtuous cycle of exports and innovation. Why?
- Hypothesis: Growth of frontier firms stagnated?
  - Inadequate reallocation of resources
    - Various reasons: lack of domestic investment, labor market rigidity, etc.

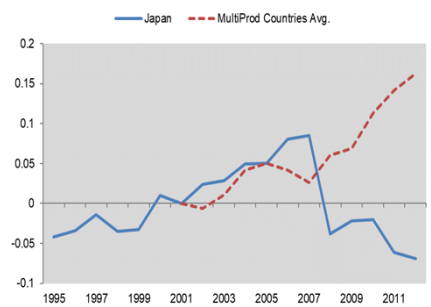
21

21

TFP Gap (10-90 percentile)



Olley-Pakes reallocation efficiency



(出所)池内ほか（2019）『日本における雇用と生産性のダイナミクス：OECD DynEmp/MultiProd プロジェクトへの貢献と国際比較』RIETI Discussion Paper Series 19-J-066, 独立行政法人経済産業研究所。

22

22

What should we further investigate?

- **The impact of vertical specialization on domestic production and exports** should be further examined.

1. Relatively large amount of intra-firm trade (less diversified trade partners)? ← (Matsuura et al. 2022)
2. Offshoring substitutes or compliment domestic production? ← (Bernard et al. 2020; Bellone et al. 2022)
3. Offshoring reduces the efficiency of domestic R&D? (proximity between production and R&D)? ← Branstetter et al. (2021; Fort et al. 2020)

23

23

1. Intra-firm trade

Intra-firm trade share: Japanese MNEs vs. US MNEs

子会社から親会社への輸出比率	平均値	標準偏差	中位数	75ﾊﾟｰｾﾝﾀｲﾙ	95ﾊﾟｰｾﾝﾀｲﾙ
日系	17.5%	31.4%	0.0%	18.0%	98.6%
米系	0.7%	19.0%	0.0%	2.0%	49.0%
子会社の親会社からの輸入比率					
日系	14.1%	23.0%	1.0%	19.7%	68.3%
米系	10.0%	11.0%	6.0%	15.0%	31.0%

Source: Matsuura et al. (2020) Non-technical summary for RIETI DP 20-E-026.

The Intra-firm trade share is larger for Japanese MNEs than US MNEs.

- Matsuura et al. (2022) find that Japanese MNEs tend to choose to procure intermediate goods through intra-firm trade in industries with low contractability.
- Foreign insourcing has a positive effect on productivity, while no such effect in the case of foreign outsourcing (Hijzen, Inui, Todo 2010).
- **How about the impact of inter-/intra-firm exports** on firm performance?
- International Comparison?

24

24

2. Offshoring substitutes or compliments domestic production?

- Bernard et al. (2020): **Firms continue domestic production** of the same goods they offshore to low-wage countries.
  - Denmark firm-level imports & domestically produced goods
  - The quality of domestically produced varieties is improved.

→Offshoring complements domestic production

- Bellone et al. (2022): China import competition induced both **product down-sizing and product exit** within Japanese manufacturing plants.
  - Japan Census of Manufacture
  - Plant-level imports information not available

→ Offshoring substitutes domestic production

25

25

3. Proximity between production and R&D

- **Spatial proximity of production and innovation within a firm** is likely to increase patenting.
  - Branstetter et al. (2021): Taiwan electronics industry
  - Fort et al. (2020): US Census
- **R&D offshoring** is also likely to have a positive impact on firm productivity and patent filings. But, no clear answer yet.
  - Wakasugi & Ito (2011); Tomiura (2014); Belderbos et al. (2016), etc.
  - Yamashita & Yamauchi (2019), Ito et al. (2021): Location of offshore R&D matters.

26

26

Summary & Conclusions

- The internationalization of Japanese firms has certainly progressed.
- Many previous studies confirm that internationalized firms outperform domestic firms.
- **The export-innovation nexus is particularly important. However, Japan's exports are stagnating.**
- It is necessary to analyze in more detail the impact of vertical specialization on domestic production, exports, and R&D.
- Data issues… but, we should send a strong message that **we need an accurate understanding of current challenges based on in-depth data analysis**.

27

27

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28

28

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