Services Trade Liberalization and Product Mix Adjustment: Theory and Evidence from Chinese Exporting Firms

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TIISA

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Motivation

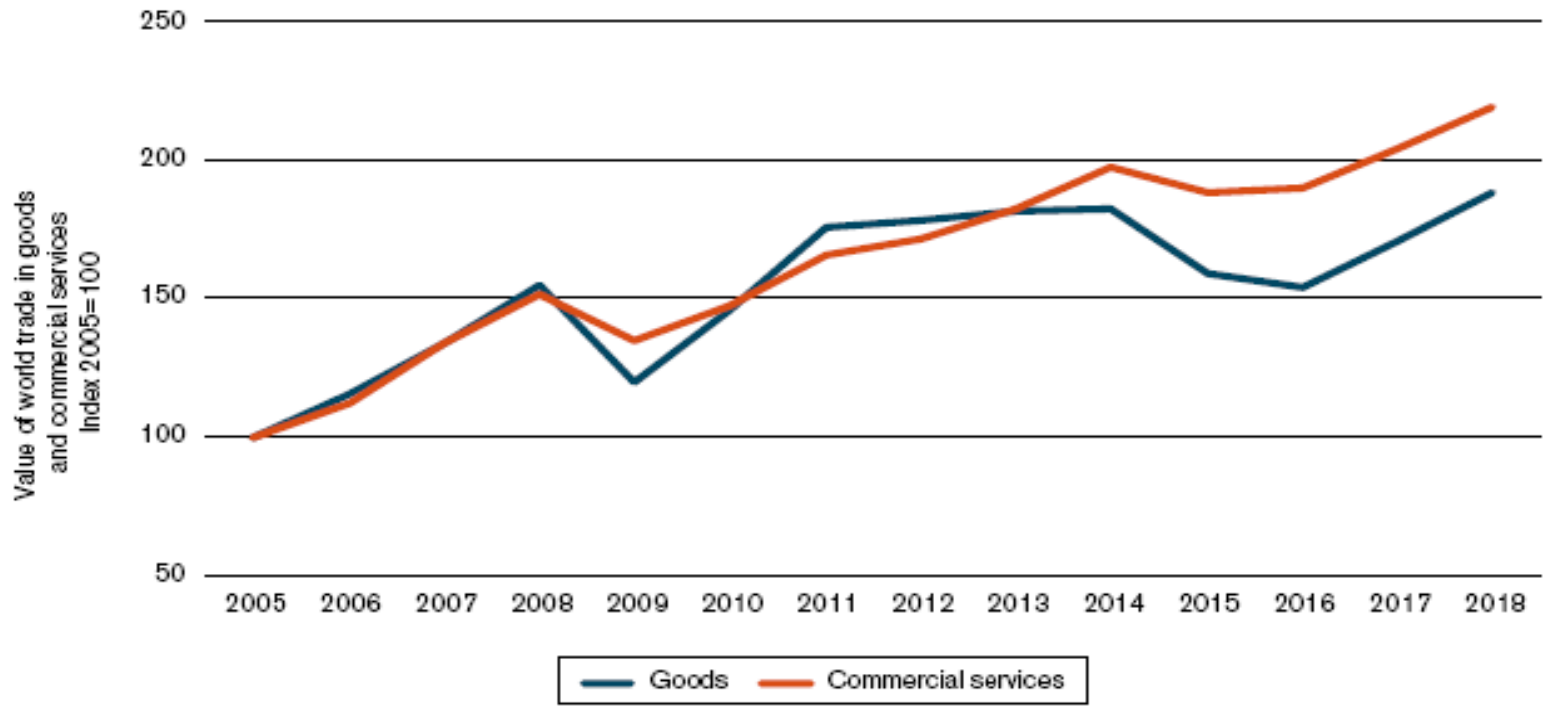
- Services generate more than 2/3 of economic output
- Services attract over 2/3of foreign direct investment
- Services provide almost 2/3 of jobs in developing countries and 4/5 in developed ones.”
- The services share of world trade has grown from just 9 % in 1970 to 20% now.

——World Trade Report 2019

Motivation: Services Trade

Figure A.1: Trade in goods has grown more slowly than trade in commercial services

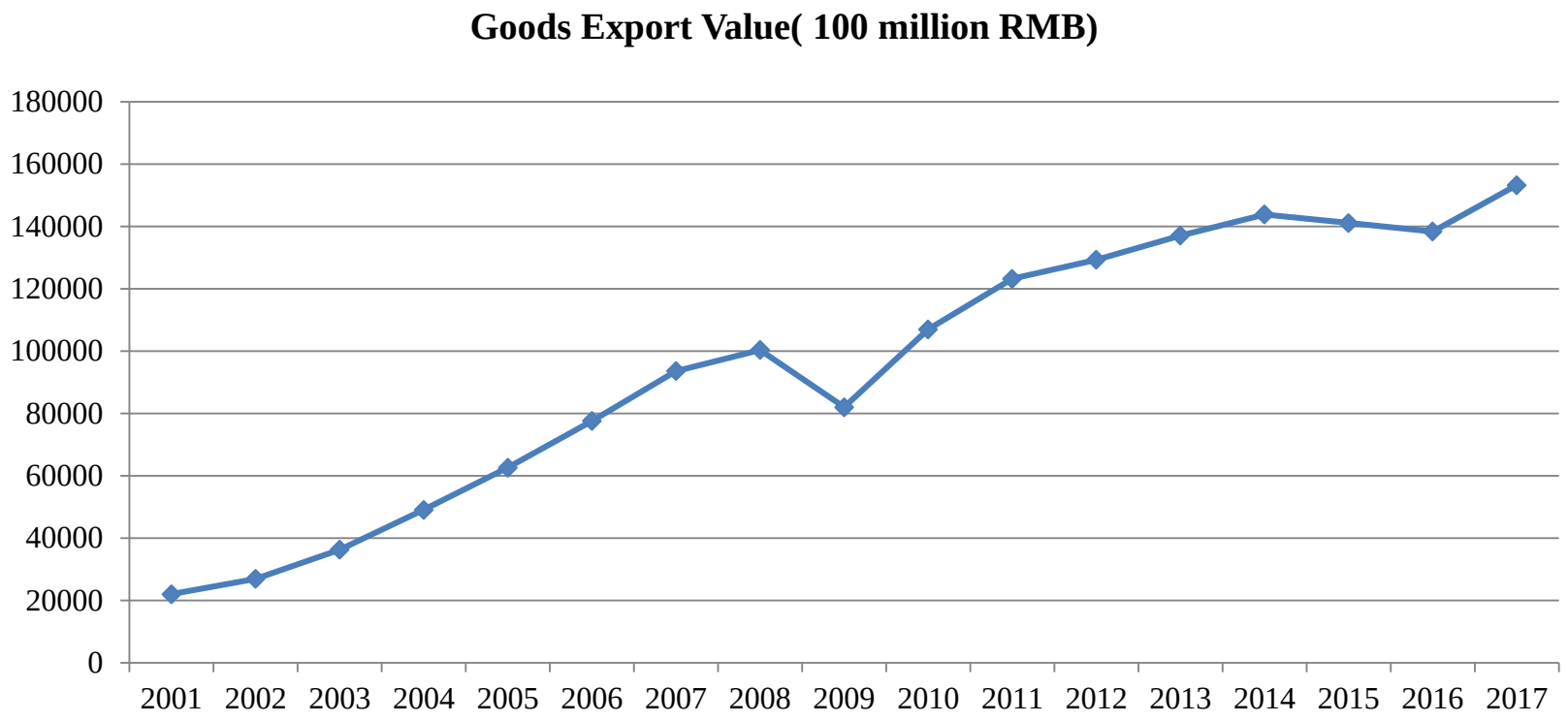
Growth of world trade in goods and commercial services



Source: WTO-UNCTAD-ITC estimates.

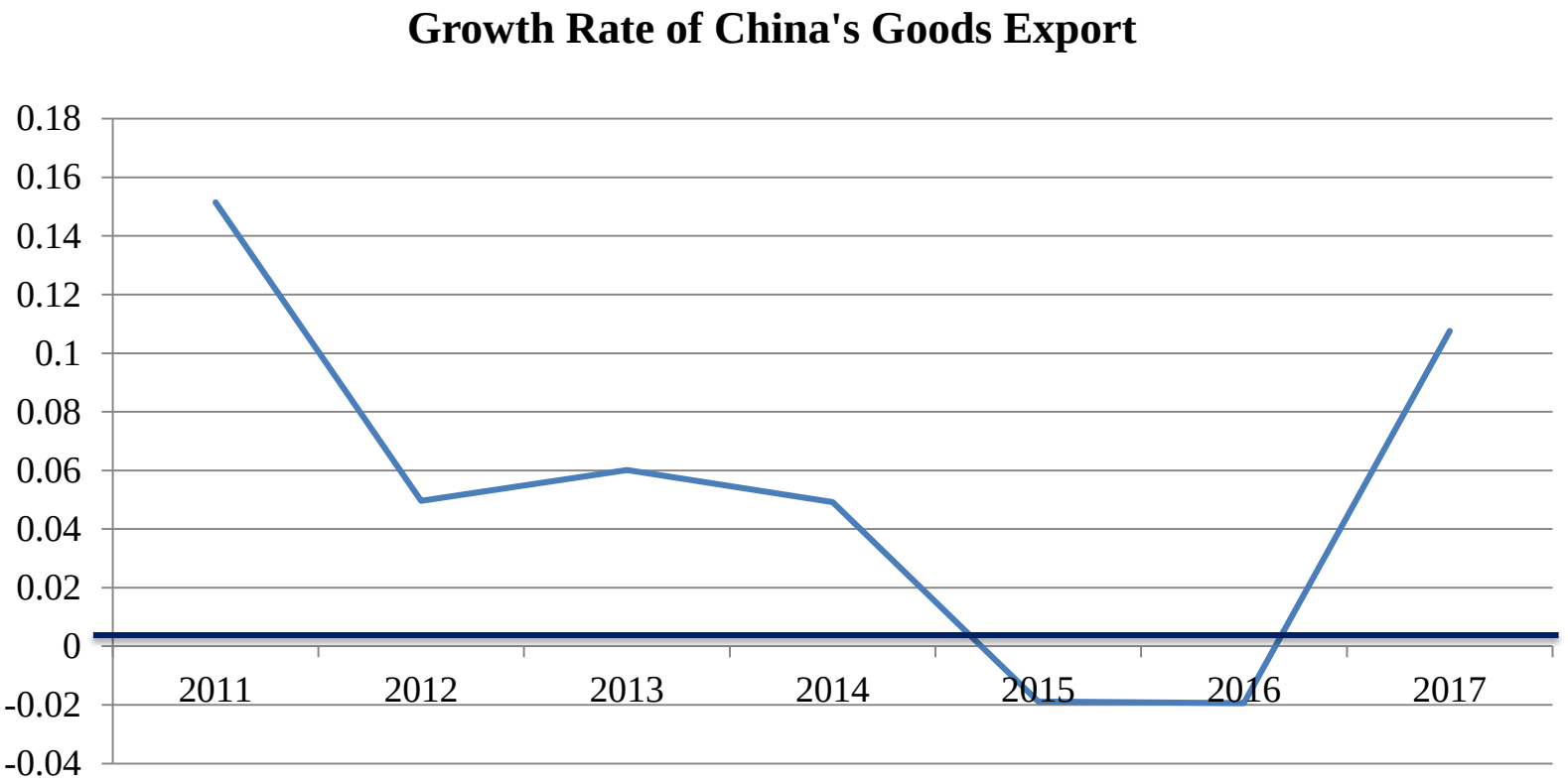
Note: World trade is calculated as the average of world exports and world imports.

Motivation: China's export grows



China's exports grew at a high rate before 2008 and experience a substantial decline in 2008 because of financial crisis. Although the export increased after 2008, the growth rate was smaller than before and even declined. It seems that China's export experience an adjustment period after 2010.

Motivation



The growth rate of China’s export declined during 2010-2016, when China’s goods export experienced an adjustment period.

Motivation


China Exporter’s product scope
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
2010
2011
2012
2013
2014
2015
2016

Motivation: Research Questions

- What are the effects of services trade liberalization on China’s export product strategy?
- Focus on Services trade liberalization on destination country.
- What are the mechanisms?

Motivations: Previews of main conclusions

Empirical results

- Services trade liberalization promotes exporting firms' product diversity by increasing their product varieties, decreasing the export-value skewness ratio, and switching their product mix more frequently.
- Services trade liberalization increases the relatedness of diversication for the OECD countries, but lowers the relatedness of diversication for the non-OECD countries.
- Services trade liberalization has larger effects on product diversication in the destinations with better institution environment.

Motivations: Previews of main conclusions

Theoretical Mechanism

- Services trade liberalization lowers the firms' marginal cost on sales, i.e., financing cost, transportation cost, information collection cost, management cost, and so on.
- A reduction in the marginal cost will increase both the export value and scope for each firm in the destination country.
- However, this positive effect is heterogeneous among different varieties. The core product increase in less proposition, while the margin product increases in a higher proposition.

Literature Review

- Goods trade liberalization

✓ liberalization of goods trade, usually measured in terms of tariffs reductions will lead to export growth
(Khandelwal et al., 2013; Bustos, 2011; Yu, 2014; Feng et al., 2016).

✓ Trade liberalization and product strategy

Output liberalization promotes market competition, shrink their product diversification
(Bernard et al., 2011;Nocke and Yeaple, 2014; Lopresti, 2016)

Input liberalization promotes export value and export product scope
Bas (2012), Bas (2014a), Damijan et al. (2014), and Feng et al. (2016).

Literature Review

- Services trade liberalization and export
  - ✓ goods export probability and export value (Bas, 2014b; Francois and Hoekman, 2010; Hoekmanand Shepherd, 2017; Ariu et al., 2019)
  - ✓ value added of exports (Daz-Mora et al., 2018; Lee, Hoekman and Shepherd (2017)
  - ✓ Export quality (Hayakawa et al., 2020),
  - ✓ services trade (Nordas and Rouzet, 2016)
  - ✓ Some investigate effects of certain services sectors, such as distribution and retail services (Javorcik and Li, 2013; Head et al., 2014), and Internet and telecommunication (Ricci and Trionfetti, 2012)

- Services trade liberalization and exporting product strategy?

Main contributions

- Advances the literature on trade liberalization and export performance
- Enriches the literature on the effects of services liberalization
- Investigates the mechanisms of services trade liberalization for a multiproduct firm's export product strategy

Background of Services trade liberalization

OECD FDI Restrictiveness Index

- Four types of measures

(i) foreign equity restrictions

(ii) screening and prior approval requirements

(iii) rules for key personnel

(iv) other restrictions on the operation of foreign enterprises.

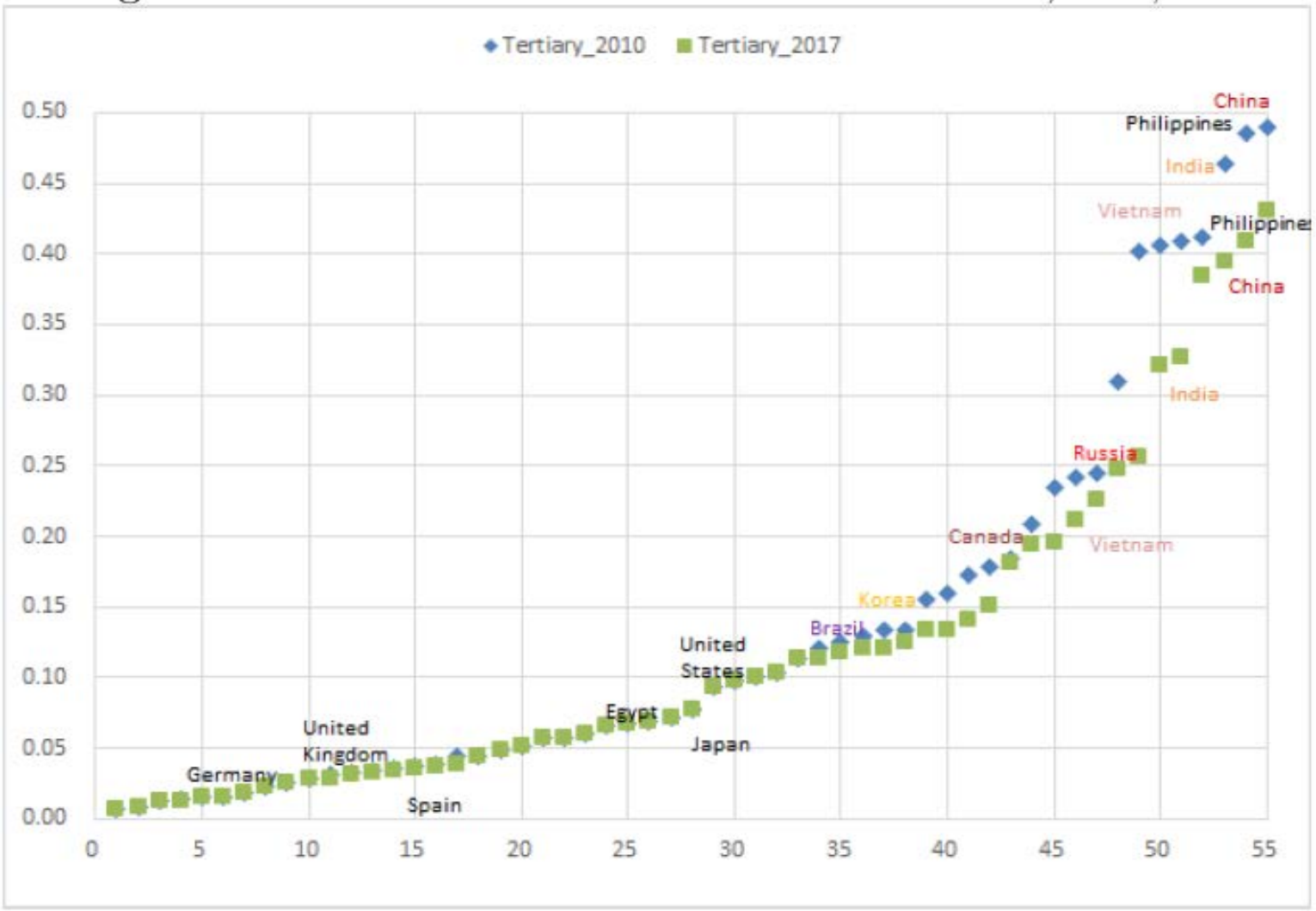
- covers 8 major sub-sectors of the services industry, including distribution, transport, hotels & restaurants, media, communications, financial services, business services, and real estate investment.
- The value for the index ranges from 0 to 1. A higher value indicates a higher restriction level.

Background of Services trade liberalization

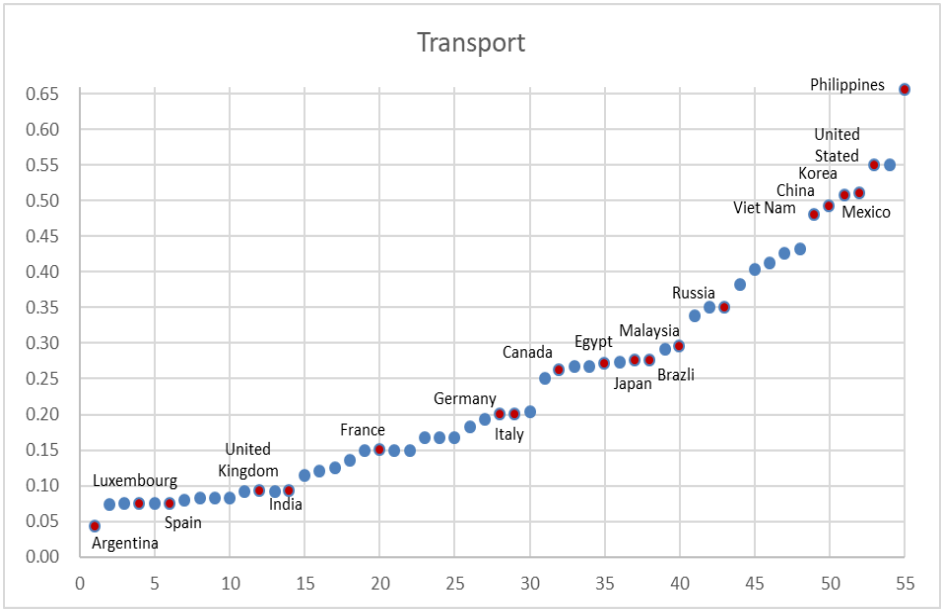
A rising trend of the services trade liberalization globally

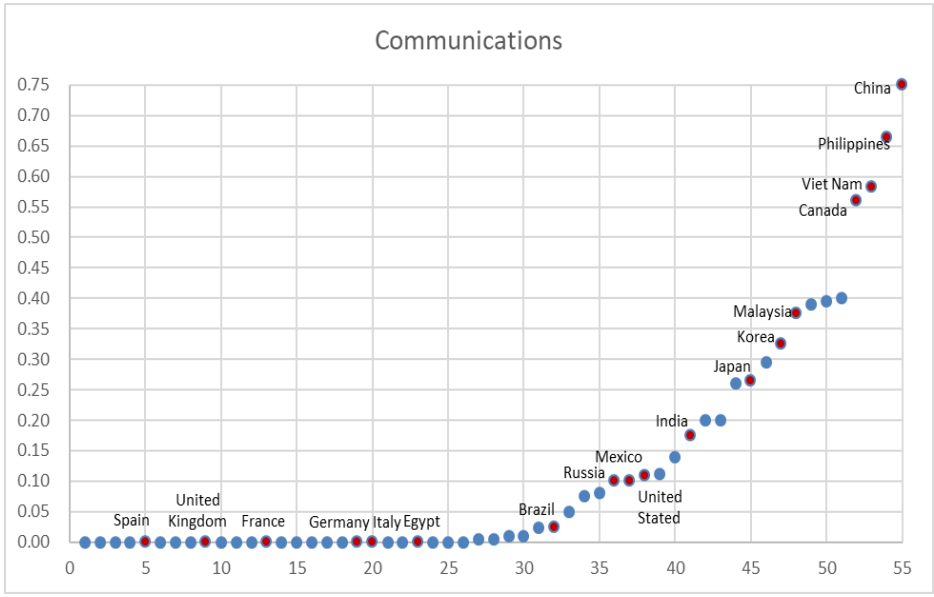
Background of Services trade liberalization

Figure 1: FDI restrictiveness index for countries,2010,2017



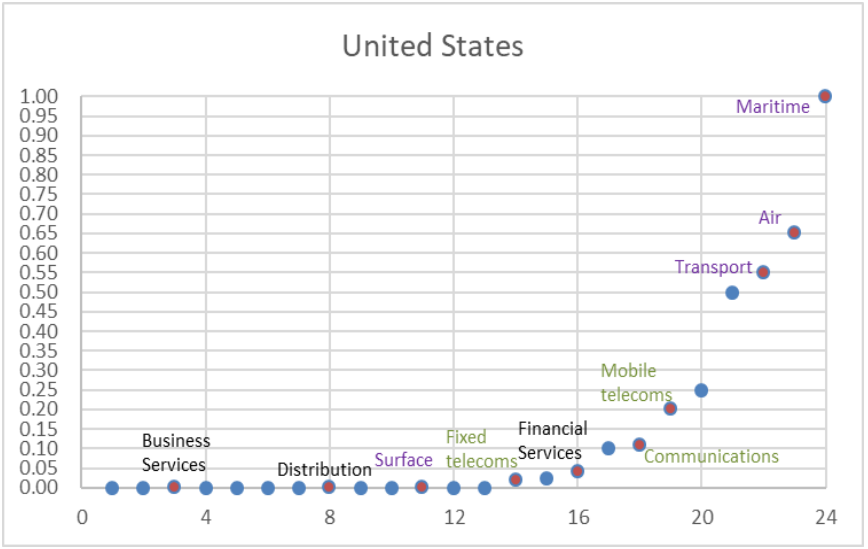
Background of Services trade liberalization

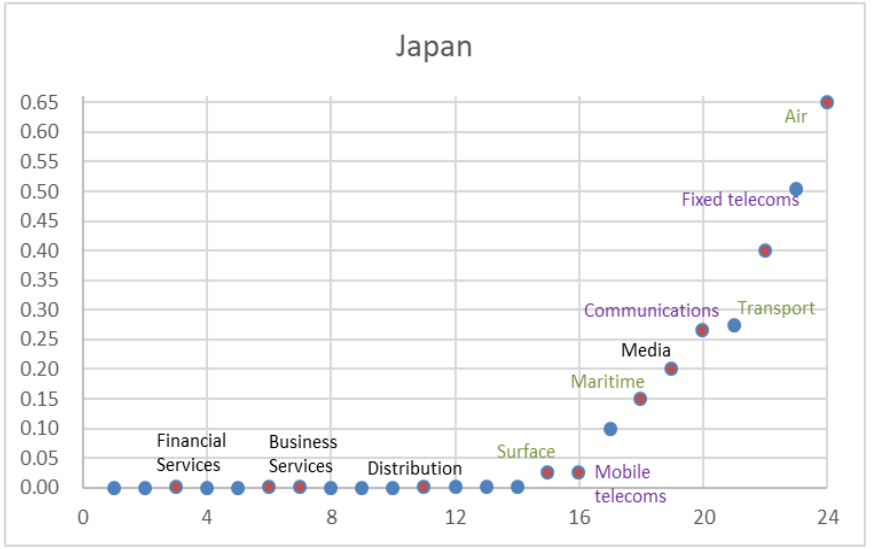


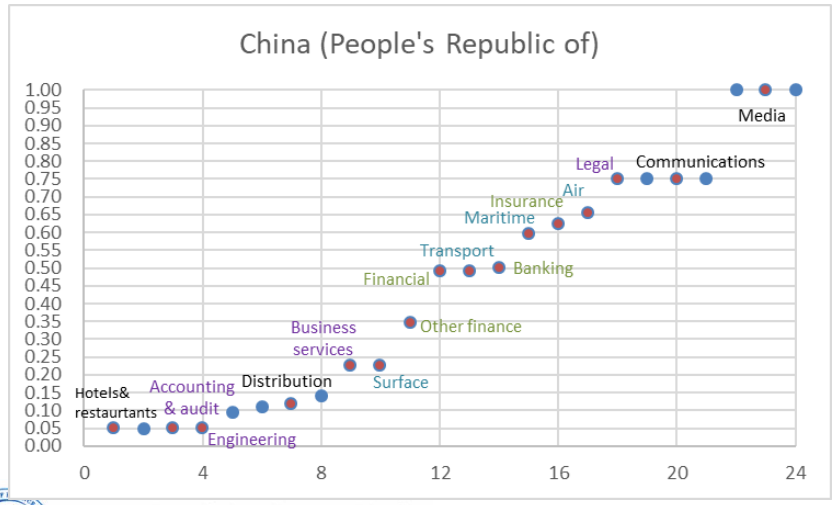


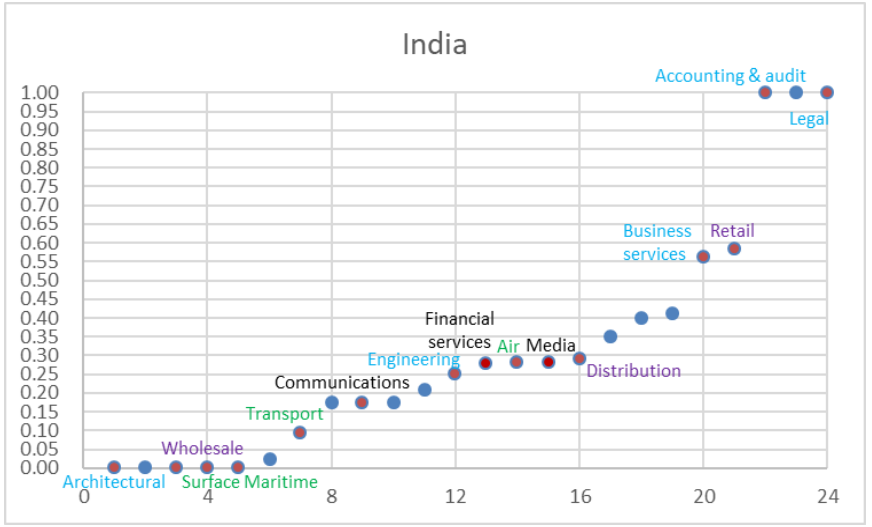
In each sub-sector, the openness levels are quite different among countries

Background of Services trade liberalization









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In each country, the openness levels are also different among the sub-sectors

The case of Haier

Destination	UK	Philippines
Service Liberalization Level	FDI restrictiveness index: (0.029)	FDI restrictiveness index: (0.43)
Product Variety	Refrigerators (28 types; more high-end types)	Refrigerators (8 types; more low-end types)
	Washing machines (18 types; more high-end types)	Washing machines (7 types; more high-end types)
		Air conditioner (15 types)
		TV (13 types)
Product strategy	Related diversification	Unrelated diversification

The case of Haier

export to UK

American Style Fridge Freezers
HRF-630IM7

American Style Fridge Freezers
HRF-800DGS8

American Style Fridge Freezers
HRF-522WS6

Multi Door Fridge Freezers
HB16FMAA

Multi Door Fridge Freezers
HB18FGSAAA

Multi Door Fridge Freezers
HTF-456DM6

Washing Machines
HWD100-BP14636

Washing Machines
HW70-B1239

Washing Machines
HD80-A636

Export to Philippine

Two Door

Two Door

Two Door

Twin Tub
HW-1000XP

Twin Tub
HW-800XP

Twin Tub
HW-700XP

Data

- China customs database for 2010-2016. The database includes detailed information on each transaction of exporting firms, such as export products (8-digit HS code), export value, export destination country, export firm, etc.
- OECD FDI Restrictiveness database for 2010-2016 , covers 22 sectors in 60 countries, including distribution, transport, hotels & restaurants, media, communications, financial services, business services, real estate investment and other services.
- The input-output table of China's provinces in 2012.

Key variables: Services Trade Liberalization

- Services liberalization in destination exporting country

$$DSL_{dt} = 1 - FDI\_res_{dt}$$

- China services liberalization (Arnold et al. 2011; Zhang et al. 2013)

$$CSL_{\imath rt} = \sum_{s} \alpha_{\imath sr} \left(1 - FDI\_res_{st}\right)$$

$\boldsymbol{\alpha_{i,s,r}}$ is a measure of input use of services by manufacturing sector i in region r

Export product Strategy (6 measures)

- **Product scope**: The number of product variety exported to the destination countries (Mayeret al., 2014； Iacovone & Jacorcik, 2010).
- **Product diversity index** (Lopresti, 2016; Baldwin and Gu, 2009; Bernard et al., 2011)

➢ HHI index:

$$div\_hh_{fdt} = 1 - \sum_i \left(\frac{v_{fidt}}{\sum_i v_{fidt}} \right)^2$$

➢ Entropy index:

$$div\_en_{fdt} = 1 - \sum_i \left(\frac{v_{fidt}}{\sum_i v_{fidt}} \right) ln \left(\frac{v_{fidt}}{\sum_i v_{fidt}} \right)$$

Key var: Export product Strategy (6 measures)

- **Skewness** (Mayer et al., 2014):

$$sk01_{fdt} \equiv \frac{v_{fdt}^{m=1}}{v_{fjt}^{m=2}} \qquad sk02_{fdt} \equiv \frac{v_{fdt}^{m=1}}{v_{fdt}^{m=3}}$$

- **product switch (**Mayer et al. ,2014): adding and exiting product
- **Relatedness of diversity** (Zahavi and Lavie ,2013)

$$relatedness_{fdt} = \sum_{i}^{N_{ft}} \sum_{k}^{N_{ft}} S_{fidt} S_{fkdt} r_{fikt}$$

Empirical specification

$$DV_{fhrjt} = \beta_0 + \beta_1 DSL_{jt} + \beta_2 CSL_{hrt} + \beta_3 des\_tar_{jt} + \beta_4 China\_Intar_{ht} + \beta_5 China\_Outtar_{ht} + \beta_6 des\_FDI_{jht}$$

$$+ \beta_7 China\_FDI_{jht} + \beta_8 GDP_{jt} + e_f + e_j + e_t + \varepsilon_{fjt} \quad (6)$$

f denotes firm, *h* denotes the industry, *r* denotes Chinese province, *d* denotes the export destination, *t* denotes year

DV can be export value, export product scope , product diversication, product skewness, product relatedness

The main explaining variable is the services trade liberalization index of exporting destination country (*DSL*).

Control variables include China's services trade liberalization (*CSL*), the import tariffs of China (*Chinatariff*), the import tariffs of destination country(*destariff*), GDP, and GDP per capita of the destination countries

firm fixed effects (e_f),destination fixed effects(e_d)and year fixed effects (e_t).

Empirical Results: baseline

Table 1: Services trade liberalization and export diversification: baseline results

VARIABLES	export	scope_hs6	scope_hs4	scope_hs2	div_hh	div_en	skew01	skew02	fcpadd	fcpdrop
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
DSL	0.618***	0.326***	0.267***	0.147***	0.0339***	0.182***	-0.155*	-0.299***	0.741***	0.230***
	(0.0708)	(0.0324)	(0.0297)	(0.0238)	(0.00964)	(0.0229)	(0.0807)	(0.105)	(0.0534)	(0.0557)
CSL	0.144***	0.0154	-0.00813	-0.0425*	0.0146*	0.0403**	-0.245***	-0.0985*	0.0582	0.0196
	(0.0525)	(0.0294)	(0.0278)	(0.0234)	(0.00835)	(0.0195)	(0.0615)	(0.0592)	(0.0372)	(0.0413)
Des_tar	-0.00818	-0.00486**	-0.00217	-0.000197	-0.00331***	-0.00645***	0.0226***	0.015	-0.000117	-0.0101**
	(0.00508)	(0.00239)	(0.00221)	(0.00185)	(0.000781)	(0.00172)	(0.007)	(0.00915)	(0.00448)	(0.00447)
China_Outtar	-1.139***	-1.423***	-1.414***	-1.163***	1.340***	-0.920***	-12.12***	-6.709***	-0.735***	-0.706***
	(0.15)	(0.0865)	(0.0811)	(0.0672)	(0.0437)	(0.0612)	(0.38)	(0.297)	(0.00881)	(0.00856)
China_Intar	0.826***	1.874***	1.895***	1.605***	-3.015***	1.205***	25.58***	14.39***	1.947***	1.891***
	(0.213)	(0.121)	(0.113)	(0.0929)	(0.0671)	(0.086)	(0.696)	(0.592)	(0.0179)	(0.0171)
China_FDI	0.523*	-0.360**	-0.439***	-0.401***	0.0175	-0.325***	-1.271***	-0.671**	-0.242***	-0.194***
	(0.29)	(0.164)	(0.152)	(0.123)	(0.0381)	(0.113)	(0.279)	(0.295)	(0.0425)	(0.0426)
Des_FDI	0.209***	0.211***	0.210***	0.164***	0.0155**	0.116***	-0.00153	-0.0327	0.690***	0.656***
	(0.0639)	(0.0343)	(0.0317)	(0.025)	(0.00771)	(0.0259)	(0.0337)	(0.0462)	(0.0564)	(0.0585)
GDP	0.745***	0.276***	0.248***	0.169***	0.0460***	0.144***	-0.0397	-0.208***	0.0631**	0.407***
	(0.0313)	(0.0142)	(0.0129)	(0.0105)	(0.00439)	(0.00992)	(0.0381)	(0.0496)	(0.0249)	(0.0249)
Constant	7.029***	-2.011***	-2.008***	-1.560***	3.589***	-0.106	-27.17***	-12.59***	-2.554***	-4.736***
	(0.345)	(0.176)	(0.162)	(0.132)	(0.0844)	(0.123)	(0.935)	(0.85)	(0.176)	(0.177)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,557,604	2,557,604	2,557,604	2,557,604	2,557,604	2,557,604	1,889,524	1,364,565	1,132,761	1,110,586
R-squared	0.466	0.641	0.623	0.615	0.62	0.657	0.438	0.486	0.533	0.54

Empirical Result: by services sector

Table 5: Services trade liberalization and export diversification: Main services sectors

VARIABLES	scope_hs6				
	(1)	(2)	(3)	(4)	(5)
distribution_lib	0.189***				
	(0.0190)				
transportation_lib		0.180***			
		(0.0280)			
information_lib			0.0485***		
			(0.0150)		
finance_lib				0.334***	
				(0.0251)	
business_service_lib					0.0562**
					(0.0248)

Empirical Result: Export diversity relatedness

Table 2: Services trade liberalization and export relatedness of product diversification

VARIABLES	fcrelate		
	Full Samples	OECD	Non_OECD
	(1)	(2)	(3)
DSL	-0.00412	0.0173	-0.0139**
	-0.00527	-0.0109	-0.00638
CSL	0.00059	0.000204	0.00159
	-0.00213	-0.00236	-0.00373
Des_tar	-0.000682*	0.000174	-0.00348***
	-0.000407	-0.00045	-0.00107
China_Outtar	0.00496	0.00958	-0.00618
	-0.00567	-0.00623	-0.00957
China_Intar	-0.0230**	-0.0304***	-0.00418
	-0.00988	-0.0108	-0.017
China_FDI	0.0775***	0.0803***	0.0684*
	-0.023	-0.0251	-0.0368
Des_FDI	-0.00519**	-0.00732**	-0.00534*
	-0.00214	-0.00343	-0.00284
GDP	0.00653***	0.00305	0.00126
	-0.00172	-0.00212	-0.00435
Constant	0.0279	0.0248	0.0644*
	-0.0171	-0.0244	-0.0375
Firm FE	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observation	1,826,860	1,344,870	481,990
R-squared	0.501	0.531	0.528

Empirical Result: Robustness check

- More controls
- For multiproduct firms
- Cluster on country-time, country-firm level
- Firm ownership
- Other measures: STRI

Empirical Result: Heterogeneity by K/L

capital intensive industry

VARIABLES	(1) Full Sample	(2) scope_hs6 OECD	(3) Non-OECD	(4) Full Sample	(5) scope_hs4 OECD	(6) Non-OECD
DSL	0.164***	0.0402	0.207***	0.136***	-0.0909	0.176***
	(0.0551)	(0.160)	(0.0606)	(0.0511)	(0.145)	(0.0560)

labor intensive industry

VARIABLES	(1) Full Sample	(2) scope_hs6 OECD	(3) Non-OECD	(4) Full Sample	(5) scope_hs4 OECD	(6) Non-OECD
DSL	0.372***	1.097***	0.345***	0.293***	0.974***	0.274***
	(0.0478)	(0.149)	(0.0540)	(0.0436)	(0.137)	(0.0493)

Empirical Result: Heterogeneity by tech-intensity

high-tech

VARIABLES	(1)	(2) scope_hs6	(3)	(4)	(5) scope_hs4	(6)
	Full Sample	OECD	Non-OECD	Full Sample	OECD	Non-OECD
DSL	0.288***	0.328	0.335***	0.257***	0.226	0.338***
	(0.0810)	(0.243)	(0.0940)	(0.0760)	(0.224)	(0.0880)

low-tech

VARIABLES	(1)	(2) scope_hs6	(3)	(4)	(5) scope_hs4	(6)
	Full Sample	OECD	Non-OECD	Full Sample	OECD	Non-OECD
DSL	0.339***	0.728***	0.262***	0.273***	0.599***	0.203***
	(0.0364)	(0.122)	(0.0420)	(0.0331)	(0.111)	(0.0382)

Theoretical Model

Empirical Findings

Services trade liberalization in destination countries.

– Promotes firms' export.

– Diversifies firms' export.

– Reduces products' relatedness in developing countries.

–Enhances products' relatedness in developed countries.

Theoretical model: Demand

Following Melitz and Ottaviano (2008), Dhingra (2013), and Qiu and Yu (2014), we assume the consumers' utility function for country j is the form of the quasi-linear preference:

$$U_d = q_{d0} + \int_{i\in\Omega_d} (\alpha + z_i)\, q_{di} di - \frac{1}{2}\beta_A \left(\int_{i\in\Omega_d^A} q_{di} di \right)^2 - \frac{1}{2}\beta_B \left(\int_{i\in\Omega_d^B} q_{di} di \right)^2 - \frac{1}{2}\gamma \int_{i\in\Omega_d} q_{di}^2 di \qquad (7)$$

the demand function for variety i belonging to industry χ in country d is

$$q_{di} = L_d q_{di} = L_d \left(\frac{\alpha + z_i}{\gamma} - \frac{1}{\gamma} p_{di} - \frac{\beta_\chi}{\gamma} Q_d^\chi \right)$$

Theoretical model: manufacturing firms

The cost function for the representative firm f is composed of two parts:

$$C_f = \int_{d \in J_f} \left[\int_{i \in \Omega_f} \left(\frac{c}{\varphi_i} q_{di} di + F_i \right) di \right] dj$$

we can write the profit function for firm f as follows:

$$\pi_f = \int_{d \in J_f} \left\{ \int_{i \in \Omega_f} \left[\delta_d p_{di} q_{di} - \frac{c}{\varphi_i} q_{di} - F_i \right] di \right\} dj$$

we can further solve for the total number of varieties

$$M_j^* = \begin{cases} \delta_j \left(\frac{\kappa}{c}\right) \left(\alpha + z_L - \beta_A Q_d^A\right) & if\ \beta_B Q_d^B \geq \alpha + z_L \geq \beta_A Q_d^A \\ \delta_j \left(\frac{\kappa}{c}\right) \left(\alpha + z_L - \beta_B Q_d^B\right) & if\ \beta_A Q_d^A \geq \alpha + z_L \geq \beta_B Q_d^B \\ \delta_j \left(\frac{\kappa}{c}\right) \left[\sum_{\chi} \left(\alpha + z_L - \beta_\chi Q_d^\chi\right) \right] & if\ \alpha + z_L \geq \max_{\chi} \left\{ \beta_\chi Q_d^\chi \right\} \end{cases}$$

Theoretical model: Service sectors and liberalization

- The manufacturing firm will choose a service supplier that offers the lowest price:

$$p_{d\nu}^{S} = \min_{\iota} \left\{ \left(1 + \tau_{d\nu\iota}^{S}\right) p_{d\nu\iota}^{S} \right\}$$

- this firm chooses the service usage from each sub-sectors by solving the following problem

$$min \sum_{\nu} p_{d\nu}^{S} x_{d\nu}^{S} \qquad \text{s.t.} \qquad \left[\sum_{\nu} \left(x_{d\nu}^{S}\right)^{\frac{1}{\theta}} \right]^{\theta} \geq \bar{X_{d}^{S}}$$

- The services composite price index is

$$P_{d}^{S} = \left[\sum_{\nu} \left(p_{d\nu}^{S}\right)^{-\frac{\theta}{1-\theta}} \right]^{-\frac{1-\theta}{\theta}}$$

Theoretical model

- To explicit how quantity, export scope, and export skewness ratio change in response to service liberalization?

$$
\begin{cases}
\frac{\partial q_{di}}{\partial \delta_d} = & \frac{c}{\delta_d^2 \varphi_i} - \beta_\chi \frac{\partial Q_d^\chi}{\partial \delta_d} \\
\frac{\partial M_d^{\chi\star}}{\partial \delta_d} = & \frac{\kappa}{c}\left[2\left(\alpha + z_L\right) - \beta_\chi \left(Q_d^\chi + \delta_d \frac{\partial Q_d^\chi}{\partial \delta_d}\right)\right] \\
\frac{\partial M_d^{\star}}{\partial \delta_d} = & \frac{\kappa}{c}\left[2\left(\alpha + z_L\right) - \sum_\chi \beta_\chi \left(Q_d^\chi + \delta_d \frac{\partial Q_d^\chi}{\partial \delta_d}\right)\right] \\
\frac{\partial sk_d}{\partial \delta_d} = & \frac{\left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_2}\right)\left(\frac{c}{\delta_d^2 \varphi_1} - \beta_\chi \frac{\partial Q_d^\chi}{\partial \delta_d}\right) - \left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_1}\right)\left(\frac{c}{\delta_d \varphi_2} - \beta_\chi \frac{\partial Q_d^\chi}{\partial \delta_d}\right)}{\left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_2}\right)^2}
\end{cases}
$$

Developing countries

$$
\begin{cases}
\frac{\partial q_{du}}{\partial \delta_u} \gtreqless 0 \\
\frac{\partial M_u^{\chi\star}}{\partial \delta_u} > 0 \\
\frac{\partial M_u^{\star}}{\partial \delta_u} > 0 \\
\frac{\partial sk_u}{\partial \delta_u} < 0
\end{cases}
$$

Developed countries

$$
\begin{cases}
\frac{\partial q_{in}}{\partial \delta_n} \gtreqless 0 \\
\frac{\partial M_n^{A\star}}{\partial \delta_n} > 0 \\
\frac{\partial M_n^{B\star}}{\partial \delta_n} < 0 \\
\frac{\partial M_n^{\star}}{\partial \delta_n} \gtreqless 0 \\
\frac{\partial sk_n}{\partial \delta_n} < 0
\end{cases}
$$

Theoretical model

- To explicit how quantity, export scope, and export skewness ratio change in response to service liberalization?

$$
\begin{cases}
\dfrac{\partial q_{di}}{\partial \delta_d} = & \dfrac{c}{\delta_d^2 \varphi_i} - \beta_\chi \dfrac{\partial Q_d^\chi}{\partial \delta_d} \\
\dfrac{\partial M_d^{\chi\star}}{\partial \delta_d} = & \dfrac{\kappa}{c}\left[2\left(\alpha + z_L\right) - \beta_\chi \left(Q_d^\chi + \delta_d \dfrac{\partial Q_d^\chi}{\partial \delta_d}\right)\right] \\
\dfrac{\partial M_d^{\star}}{\partial \delta_d} = & \dfrac{\kappa}{c}\left[2\left(\alpha + z_L\right) - \sum\limits_\chi \beta_\chi \left(Q_d^\chi + \delta_d \dfrac{\partial Q_d^\chi}{\partial \delta_d}\right)\right] \\
\dfrac{\partial sk_d}{\partial \delta_d} = & \dfrac{\left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_2}\right)\left(\frac{c}{\delta_d^2 \varphi_1} - \beta_\chi \frac{\partial Q_d^\chi}{\partial \delta_d}\right) - \left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_1}\right)\left(\frac{c}{\delta_d \varphi_2} - \beta_\chi \frac{\partial Q_d^\chi}{\partial \delta_d}\right)}{\left(\alpha + z_L - \beta_\chi Q_d^\chi - \frac{c}{\delta_d \varphi_2}\right)^2}
\end{cases}
$$

Developing countries

$$
\begin{cases}
\dfrac{\partial q_{du}}{\partial \delta_u} & \gtreqless 0 \\
\dfrac{\partial M_u^{\chi\star}}{\partial \delta_u} & > 0 \\
\dfrac{\partial M_u^{\star}}{\partial \delta_u} & > 0 \\
\dfrac{\partial sk_u}{\partial \delta_u} & < 0
\end{cases}
$$

Developed countries

$$
\begin{cases}
\dfrac{\partial q_{in}}{\partial \delta_n} & \gtreqless 0 \\
\dfrac{\partial M_n^{A\star}}{\partial \delta_n} & > 0 \\
\dfrac{\partial M_n^{B\star}}{\partial \delta_n} & < 0 \\
\dfrac{\partial M_n^{\star}}{\partial \delta_n} & \gtreqless 0 \\
\dfrac{\partial sk_n}{\partial \delta_n} & < 0
\end{cases}
$$

Intuition

- Services products are inputs for manufacturing firms in both the home and destination countries.
- Services trade liberalization reduces firms' production and sales costs.
- Due to heterogeneous demand elasticities, sales of margin products increase more than core products in response to a price reduction.
- Services liberalization enhances the comparative advantages of developed countries.

Conclusions

- The empirical results show that service trade liberalization in destinations has a significant and positive impact on product diversication of China's export.
- Services trade liberalization increases the relatedness of diversication for OECD countries, but lowers the relatedness of diversication for non-OECD countries
- Service liberalization has larger effects on product diversication in the destinations with better institution environment.
- With a conventional multi-product firm model, the mechanisms are explored behind all our empirical findings

Thanks!

Comments are welcome

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