



The Multiplier Effect, Spillover
Effects and Feedback Effects of the
Economic Relationship between
China and Thailand

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outline

- * Introduction
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- * Multiregional Input-Output Model
- * The economic relationship between China and Thailand based on that model
- * Conclusion

Introduction

- * China and Thailand are becoming more and more important in each other's trade status
- * intra-industry trade
- * Interdependency is deepening
- * some problems
 - ◆ Thailand is in a trade deficit condition for a long time
 - ◆ China's economic growth rate is becoming slower than before
 - ◆ demand for international markets is slump

Table1 The development of bilateral trade between China and Thailand

year	China and Thailand Import and export trade (billion)			China and Thailand trade accounted for the total proportion of Chinese total trade (%)			Thai-Chinese trade as a share of Thailand's total trade(%)		
	export	import	Total trade	export	import	Total trade	export	import	Total trade
2012	385.51	311.97	697.48	0.98	0.79	1.77	7.71	5.61	13.32
2013	385.23	327.15	712.38	0.98	0.83	1.81	7.83	5.66	13.49
2014	383.26	342.92	726.18	0.97	0.87	1.84	8.41	5.48	13.88
2015	372.21	383.11	755.32	0.94	0.97	1.92	9.85	5.61	15.46
2016	385.32	371.83	757.15	0.98	0.94	1.92	—	—	—

Table 2 Major commodities imported and exported from China to Thailand

HS编码	China imports a major share of imports to Thailand (%)					HS编码	China imports a major share of imports to Thailand (%)				
	2012	2013	2014	2015	2016		2012	2013	2014	2015	2016
84	27.46	19.30	18.44	18.35	18.43	84	55.62	41.86	38.88	34.84	38.21
85	15.95	17.09	19.12	22.27	22.34	85	38.84	38.90	39.97	44.18	49.49
40	15.55	16.26	13.33	10.77	9.76	40	20.16	20.12	15.72	11.12	11.58
39	8.48	9.37	10.06	9.53	7.78	39	13.74	14.77	15.04	13.05	12.89
29	6.81	7.50	6.32	4.03	3.12	29	11.21	11.42	9.86	6.41	6.05
27	4.84	6.22	3.63	2.67	2.44	90	8.30	6.82	6.62	7.21	9.87
7	3.24	3.76	4.48	4.58	2.96	72	6.56	5.71	6.13	5.30	6.93
8	2.75	3.36	2.88	3.14	2.99	27	6.39	7.72	4.58	2.91	3.35
44	2.66	3.03	3.21	3.39	3.99	8	4.86	5.75	5.10	5.96	6.06
90	1.95	2.00	2.95	4.84	6.48	87	3.91	4.35	3.57	4.16	5.84

Literature review

The Economic and trade relationships between C and T

- * Zheng yuyun(2004)
- * Yan nan(2016)
- * Chang xiang(2017)
- * Xiao guangen and Liu jingxue (2017)
- * Xu peiyuan and Liu yafang (2017)

Trade structure and industrial competitiveness of C and T

- * Huang xuezheng (2012)
- * Cheng yanwu and Xie xiaobing(2013)
- * Shen lisheng (2013)
- * Deng zhou (2016)
- * Jiang hong and Du ying(2016)
- * Zhang shuo (2016)

Research questions

- * What is the degree of economic interdependence between China and Thailand?
- * The extent to which the two countries' economic development depends on each other's spillover effect and feedback effect
- * Does the different industry departments present different characteristics?

Methodology----Multiregional Input-Output Model

			Medium input				Final input		Total output
			China		Thailand		China	Thailand	
			<i>i</i>	<i>j</i>	<i>i</i>	<i>j</i>	<i>i</i>	<i>j</i>	
Medium Input	China	<i>i</i> department	x_{ii}^{cc}	x_{ij}^{cc}	x_{ii}^{ct}	x_{ij}^{ct}	y_i^{cc}	y_i^{ct}	x_i^c
		<i>j</i> department	x_{ji}^{cc}	x_{jj}^{cc}	x_{ji}^{ct}	x_{jj}^{ct}	y_j^{cc}	y_j^{ct}	x_j^c
	Thailand	<i>i</i> department	x_{ii}^{tc}	x_{ij}^{tc}	x_{ii}^{tt}	x_{ij}^{tt}	y_i^{tc}	y_i^{tt}	x_i^t
		<i>j</i> department	x_{ji}^{tc}	x_{jj}^{tc}	x_{ji}^{tt}	x_{jj}^{tt}	y_j^{tc}	y_j^{tt}	x_j^t
Added Value			z_i^c	z_j^c	z_i^t	z_j^t			
Total input			x_i^c	x_j^c	x_i^t	x_j^t			

$$\begin{pmatrix} X^c \\ X^t \end{pmatrix} = \begin{bmatrix} L^{cc} & Y^c \\ L^{tt} & Y^t \end{bmatrix} + \begin{bmatrix} S^{ct} & L^{tt} & Y^t \\ S^{tc} & L^{cc} & Y^c \end{bmatrix} + \begin{bmatrix} (F^{tt} - 1) L^{cc} Y^c + (F^{tt} - 1) S^{ct} L^{tt} Y^t \\ (F^{cc} - 1) L^{tt} Y^t + (F^{cc} - 1) S^{tc} L^{cc} Y^c \end{bmatrix}$$

- * First term----multiplier effect
- * second term---- spillover effects
- * Third term----feedback effects

DATA sources

- * ADB-MRIO
- * WIOD



Data analysis and results

Table 4 China and Thailand's multiplier effect, spillover effect and feedback effect

	China			Thailand		
	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect
31 industries Combined	102.5352	6.9023	0.0520	72.4379	0.2826	0.0161
31 industries weighted average	2.7838	0.1989	0.0014	2.4677	0.0099	0.0005

Table 5 China and Thailand's multiplier effect, spillover effect and feedback effect when introducing real output

	China			Thailand		
	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect
Total of 31 industrial sectors	18906993.92	72822.19077	9265.1032	624034.2946	42482.2692	195.9515
Contribution rate (%)	99.57	0.38	0.05	93.60	6.37	0.03

Table6 China and Thailand's multiplier effect, spillover effect and feedback effect for 31 industries in 2011

	CHINA						Thailand					
	Regional effect	multiplier	Interregional effect	Spillover	Interregional effect	feedback	Regional effect	multiplier	Interregional effect	Spillover	Interregional effect	feedback
Agriculture, Hunting, Forestry and Fishing	2.0374		0.0741		0.0004		1.6833		0.0030		0.0001	
Mining and Quarrying	2.5117		0.0469		0.0008		1.6736		0.0044		0.0001	
Food, Beverages and Tobacco	2.8863		0.1511		0.0007		2.7128		0.0059		0.0003	
Textiles and Textile Products	5.5433		0.4082		0.0020		3.5122		0.0140		0.0009	
Leather, Leather and Footwear	5.0933		0.3091		0.0015		2.7166		0.0116		0.0007	
Wood and Products of Wood and Cork	3.4207		0.0844		0.0011		2.3042		0.0129		0.0002	
Pulp, Paper, Paper , Printing and Publishing	3.5928		0.1194		0.0012		2.5151		0.0097		0.0002	
Coke, Refined Petroleum and Nuclear Fuel	2.2488		0.0497		0.0006		2.2602		0.0072		0.0001	
Chemicals and Chemical Products	3.3506		0.1458		0.0010		2.1531		0.0056		0.0003	
Rubber and Plastics	3.9693		0.2191		0.0012		3.1677		0.0084		0.0004	
Other Non-Metallic Mineral	3.1245		0.0988		0.0010		2.1534		0.0054		0.0002	
Basic Metals and Fabricated Metal	3.2292		0.2026		0.0009		1.6951		0.0053		0.0003	
Machinery, Nec	3.8311		0.6146		0.0017		2.0276		0.0081		0.0013	
Electrical and Optical Equipment	5.4079		2.1347		0.0039		3.6068		0.0150		0.0057	
Transport Equipment	4.1963		0.4146		0.0020		2.7112		0.0104		0.0009	
Manufacturing, Nec; Recycling	5.9918		0.3186		0.0049		2.7481		0.0411		0.0009	
Electricity, Gas and Water Supply	3.0777		0.0865		0.0019		2.1386		0.0064		0.0002	
Construction	3.3518		0.2626		0.0016		2.2241		0.0071		0.0006	
Sale, Maintenance and Repair of Motor	2.2149		0.0360		0.0010		1.5143		0.0041		0.0001	
Retail Trade, Except of Motor Vehicles and	2.2198		0.0286		0.0027		1.3555		0.0123		0.0001	
Hotels and Restaurants	2.9412		0.1232		0.0009		2.5299		0.0063		0.0003	
Inland Transport	2.3672		0.1378		0.0013		2.8178		0.0087		0.0003	
Water Transport	2.9744		0.1205		0.0010		3.3596		0.0068		0.0003	
Air Transport	5.5529		0.0906		0.0033		3.3914		0.0193		0.0002	
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	2.6279		0.0562		0.0009		2.2873		0.0052		0.0001	
Post and Telecommunications	2.4305		0.0730		0.0027		1.8097		0.0071		0.0002	
Financial Intermediation	1.7921		0.0500		0.0026		1.5783		0.0062		0.0001	
Real Estate Activities	1.4683		0.0199		0.0005		1.3276		0.0023		0.0000	
Renting of M&Eq and Other Business Activities	3.2623		0.1071		0.0034		2.5285		0.0105		0.0003	
Health and Social Work	2.9451		0.1190		0.0009		1.8536		0.0049		0.0002	
Other Community, Social and Personal Services	2.8738		0.1996		0.0021		2.0807		0.0073		0.0005	

Table 7 China and Thailand's multiplier effect, spillover effect and feedback effect for 31 industries in 2011 when introducing real output

	China			Thailand		
	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect	Regional multiplier effect	Interregional Spillover effect	Interregional feedback effect
Agriculture, Hunting, Forestry and Fishing	99.71	0.26	0.02	92.59	7.38	0.03
Mining and Quarrying	99.45	0.50	0.06	91.26	8.69	0.04
Food, Beverages and Tobacco	99.82	0.17	0.02	96.59	3.39	0.01
Textiles and Textile Products	99.59	0.37	0.04	92.81	7.16	0.03
Leather, Leather and Footwear	99.73	0.25	0.02	99.03	0.97	0.00
Wood and Products of Wood and Cork	99.68	0.29	0.03	88.35	11.61	0.04
Pulp, Paper, Paper , Printing and Publishing	99.55	0.40	0.05	91.13	8.83	0.04
Coke, Refined Petroleum and Nuclear Fuel	99.46	0.49	0.06	91.71	8.25	0.04
Chemicals and Chemical Products	99.29	0.63	0.08	87.40	12.53	0.06
Rubber and Plastics	99.26	0.65	0.09	79.11	20.78	0.10
Other Non-Metallic Mineral	99.80	0.18	0.02	97.81	2.18	0.01
Basic Metals and Fabricated Metal	99.21	0.71	0.08	94.12	5.85	0.03
Machinery, Nec	99.39	0.55	0.07	90.67	9.27	0.06
Electrical and Optical Equipment	98.76	1.06	0.17	84.07	15.85	0.07
Transport Equipment	99.82	0.16	0.02	98.04	1.96	0.01
Manufacturing, Nec; Recycling	99.41	0.54	0.05	97.18	2.81	0.01
Electricity, Gas and Water Supply	99.51	0.44	0.05	95.47	4.51	0.02
Construction	100.00	0.00	0.00	99.81	0.19	0.00
Sale, Maintenance and Repair of Motor	99.71	0.26	0.03	95.50	4.48	0.02
Retail Trade, Except of Motor Vehicles and	99.71	0.26	0.03	95.32	4.66	0.02
Hotels and Restaurants	99.79	0.19	0.02	99.18	0.81	0.00
Inland Transport	99.67	0.29	0.04	96.22	3.77	0.02
Water Transport	99.57	0.38	0.05	89.56	10.40	0.04
Air Transport	99.65	0.31	0.04	94.11	5.86	0.03
Other Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	99.86	0.13	0.02	95.52	4.45	0.02
Post and Telecommunications	99.77	0.20	0.03	95.93	4.05	0.02
Financial Intermediation	99.65	0.31	0.04	95.62	4.36	0.02
Real Estate Activities	99.90	0.09	0.01	98.79	1.21	0.01
Renting of M&Eq and Other Business Activities	99.65	0.31	0.04	94.00	5.97	0.03
Health and Social Work	99.94	0.05	0.01	98.63	1.36	0.01
Other Community, Social and Personal Services	99.82	0.16	0.02	93.81	6.17	0.03

Conclusion

- * It shows that the multiplier effect, and feedback effects from the Chinese economy are greater than those from the Thailand economy, while the spillover effects from Thailand to China are higher than From China to Thailand,
- * after introducing the real output, the result is turn to the opposite. From the perspective of industrial level, the multiplier effect, spillover effects and feedback effects of most Chinese industries are bigger than those form most Thailand industries
- * while these same effects form the Thailand Agriculture , Wood and Products of Wood and Cork industry and other public service industry are just over the effect from the corresponding Chinese industries .

Suggestions

- * Continue to deepen regional cooperation and Communication
- * China should invest Thailand's Technology and knowledge-intensive industries such as Automotive and parts industry, machinery industry, new energy industry, aviation industry, electronics industry
- * Continue to promote cooperation in agriculture, food processing and high-end tourism
- * Play the role of Thai Chinese merchants