Abstract

This paper empirically examines the change in trade structure of China, Japan, and Korea.

Title: Measuring trade network in East Asia :

What China has learned from Korea and Japan by processing trade?

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Studying the motivation and result of trade are major topics in international economics literature. Classical theory suggests that difference in comparative advantage (Ricardo, 1817) or factor endowment (Heckscher, 1919) is a major cause. Result of trade in classical theory is specialization in many cases which run counter to the real world. New trade theory after Dixit and Norman(1980), which is a standard at now, has introduced product differentiation, scale of economies, and firm heterogeneity (Melitz, 2003). It gives an appropriate explanation to intra-industry trade. No matter what is the reason of trade, mainstream of international economics has been advocated international trade by insisting gross welfare gain (Samuelson, 1939, Dixit and Stiglitz, 1977, Deardorff, 1980).

For developing economies, there is a controversial prospect. Since their products can be more ubiquitous and less technology intensive, their power in the market and net return may smaller than the others. Overcoming those structural differences is a major issue in development economics. A strand of literature supports importance of structure. Prebisch-Singer hypothesis (Prebisch, 1949, Singer, 1950) which has served as a pillar of dependency theory postulates that terms of trade can be deteriorated by trade. Bhagwati (1958) proved the possibility of immiserizing growth theoretically.

Postponing a judgement of effectiveness of trade on economic growth of a country, it is evident that a developing country cannot catch up developed economies without changing its production structure. Thus, measuring sophistication level of production structure is prior to make a policy.

How can measure the sophistication level of production? Hausman, Hwang, and Rodrik (2007) constructed two indices that measure level of sophistication at product and country level. Underlying idea of the measure is that a country with higher per capita GDP will consume more complex products irrespective of its origin.

Hausman and Hidalgo(2011) suggested that capabilities, which means non-tradable inputs, determines production structure as they assume a country makes the products for which they have required capabilities.

-Change in production frequently reflected change in export, and using a detailed product level export data instead relatively coarse production data is common in related research.

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Trade network in East Asia is special in volume and its

China has been the largest exporter of goods since 2009.

In 2015, % of total export of China was related with processing trade.

Enterprises that conduct processing trade in China import raw materials, parts and components, and related materials and re-export processed or assembled products.

Generally, distinct from normal trade, the subject of processing trade is importer of final goods.

It is common that foreign importer has a production plan and required technologies.

Processing trade has been recognized as utilization of relative cheap labor force by foreign enterprises.

It is evident that over 1/3 of China’s export is still related with processing trade. Especially,

How will China deal with the dilemma has received attention. 12th and 13th five-year plan of China (ref) points domestic oriented economic growth which implies avoiding processing trade.

This paper

The remaining part of the paper is organized as follows. Section II provides a definition, trend of processing trade in China. Section III provides an analysis of structural catch-up of export of China. Section IV reports empirical results. Finally, concluding remarks may be found in Section V.

Ⅱ. Trend of processing trade in China

1. Definition of processing trade

China customs classifies each trade into 19 modes by nature thereof. Range of processing trade is different by viewpoints. Only a few kinds of modes have significant share in total trade. We consider five modes of trade which consist 97 percent of total trade in 2014.

Most natural concept of trade is ordinary trade(10, 一般贸易). We consider that mode as the opposite concept to processing trade. There are four important concepts of processing trade. Processing and assembling trade with customer-supplied materials(14, 来料加工) and processing trade with imported materials (15, 进料加工) are most common and do not require a location constraint to firms in China. In case of first one, a production firm compensated only with processing cost. In the other case, a firm decides their return by pricing finished goods. As the first case has less profitability, its portion has been halved in recent 7 years (9.4% in 2007, 4.4%in 2014). The latter one also has lost its portion, 35.9% in 2007 dropped to 28.4% in 2014.

In relation with bonded warehouse, inbound/outbound (33, Chinese term will be added) and storage of transit (34, Chinese term will be added) are most significant concepts. The one is distinguished from another by the regional scope. i.e., the latter one exclusively counts trade conducted in Special Economic Zone.

Table 1

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| --- | --- |
| Code | Trade mode |
| 10 | Ordinary Trade |
| 11 | Aid & Donations from Other Countries/Regions or International Organizations |
| 12 | Other Material Donations |
| 13 | Compensation Trade |
| 14 | Processing and Assembling Trade with Customer-Supplied Materials |
| 15 | Processing Trade with Imported Materials |
| 16 | Trade by Consignment and Proxy |
| 19 | Petty Frontier Trade |
| 20 | Equipment Imports by Processing Trade |
| 22 | Exports for Contracted Foreign Projects |
| 23 | Leasing Trade |
| 25 | Imports by Foreign-Invested Enterprises as Investment |
| 27 | Processing Trade with Exported Materials |
| 30 | Barter trade |
| 31 | Tax-Free Foreign-Exchange Goods |
| 33 | Inbound/Outbound Goods in Bonded Warehouses |
| 34 | Storage of Transit Goods in Bonded Warehouses |
| 35 | Equipment Imports by Export Processing Zones |
| 39 | Others |

2. Trend of processing trade in China

Rapid growth of processing trade had been leaded growth of total trade. Its significance has been seemingly reduced due to the emergence of ordinary trade. In 2007, both ordinary import and export value were smaller than processing trade. Soon after, from 2008, import for processing trade overtook the other and the same happened for export after 2013.

In fact, China cannot maintain surplus in trade balance without processing trade. In 2007, trade balance of processing trade was 180 billion dollars and total trade surplus was 264 billion dollars. This ratio is unchanged in 2014. Conversely, processing trade balance with Korea is in red and deteriorated last three years while the same with Japan turned into surplus since 2012.

Data: China Customs

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Table 2 shows that more than 60% of trade between China and Korea is related with processing trade.

These two type of trade… (will be added later)

………..

For instance, among trade classified as the code 33, the portion of chapter 27 which contains aviation fuel is over one quarter in 2014.

Ordinary trade, which consist 53.8% in 2014, is the concept which contains all cases not specified elsewhere.

Ⅲ.

Revealed comparative advantage (RCA) index suggested by Balassa (????) measures relative intensity of export of a country in a specific market. Without a note, the market refers the world market. Technically, export statistics consistently used for the calculation of trade indices.

Footnote: A trade flow can be measured as an import or an export. Using import statistics is more common for a calculation of trade indices because of its relation with tariff. To utilize the China Customs statistics divided by trade modes, export were chosen.

A country classification provided by World bank was used.

World, OECD, ASEAN

Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ

In this section,

Trends of processing trade in China

Dependent to production plan, demand, and technology.

production designing

which distinct from normal trade in the

Processing trade has been played as a major growth engine of China’s export.

Thanks to the OECD-WTO Trade in Value-Added(TiVA) initiative, there are many attempt to measure China’s trade in the notion of domestic value added.

Koopman et al. (2008) tried to evaluate China’s export in terms of value-added.

(Chapter 3) Who made that product? Competitiveness, intra industry trade and processing trade

(Chapter 4) What they have learn from processing trade

-a : Descriptive statistics

-b : panel regression(AB)

(Chapter 5) Conclusion