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REGIONAL MARKET INTEGRATION AND TRADE IN VALUE-ADDED

Toshiaki Hasegawa

Professor Emeritus of Chuo University

vinomac@tamacc.chuo-u.ac.jp

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- **1. Change in Trade Cost and Global Production Network**
- The neoclassical trade theory has explained that the flow of international trade is determined based on comparative advantage. In the case of the new trade theory which assumes that imperfect competition and economies of scale dominate, the flow of trade in the manufactured products that embody the advanced technologies, will pose a problem as to how huge initial costs can be sunk at the acceptable costs.
- **Until the final value of today's manufactured products is created**, there are numerous cross-border transactions in the intermediate goods such as materials, parts, and semi-finished products.
- Furthermore, cross-border fragmentation (fragmentation across borders in value generating processes) has developed by determining in the optimal location of each production process. Fragmentation in global production network can produce the final value of the goods and services, and the business firms seek in which region it would be procured, where it would be processed and assembled. It is necessary to judge for such business firms in which region or economy the product values might be sold.

1 Change in Trade Cost and Global Production Network (continued)

○ With the emergence of multilateral trade liberalization in the GATT-WTO framework, the rise of the EU and NAFTA has raised expectations for the regional trade agreements (RTA) in the world economy. The development of fragmentation to construct the global value chain (GVC) by multinational corporations, and to create value for goods and services across national borders has spread broadly. It is a movement to subdivide **production process** across borders in searching more efficient production location.

○ With regard to the flow of trade by industry among regions and among economies in the world, how value-added are sourced from around the world is shown with the **international input-output tables** developed since the mid-1990s. And, it is easy to understand to which region and which industry in the economy the value of the goods and services will be supplied. In the framework of the International Input-Output Tables, the sourcing of value-added by origin can be explained not only in Japan but also in relation to regions and industries by extracting data in the columns of the international input-output table. In addition, the sales of the value of goods and services created by industries in each country can be explained by extracting information from the row.

1. CHANGE IN TRADE COST AND GLOBAL PRODUCTION NETWORK (CONTINUED)

- As trade flow data has been improved, on the other hand, tariff policy has been generally considered as a standard measures of trade policy in discussions on the trade cost. However, the degree to which tariff rates affect actual trade barriers has been relatively negligible so far, at least in today's developed economies. Anderson-van Wincoop (2004) defined the trade cost as a broader barriers to cross-border economic transactions, and D. Novy (2013) developed the Bilateral Trade Cost Index. The database calculated in use of bilateral trade data and gross national product data, in the joint work of the World Bank and UNESCAP, such the bilateral trade cost data in the agricultural sector and the industrial sector of each country and the total trade are available.
- It has been shown by Novy and others that using such the trade cost data defined as trade barriers, the market integration formed as a result of the Regional Trade Agreement (RTA) would result in a reduction in trade costs drastically, which explained that the reduction in trade costs would affect the flow of trade.

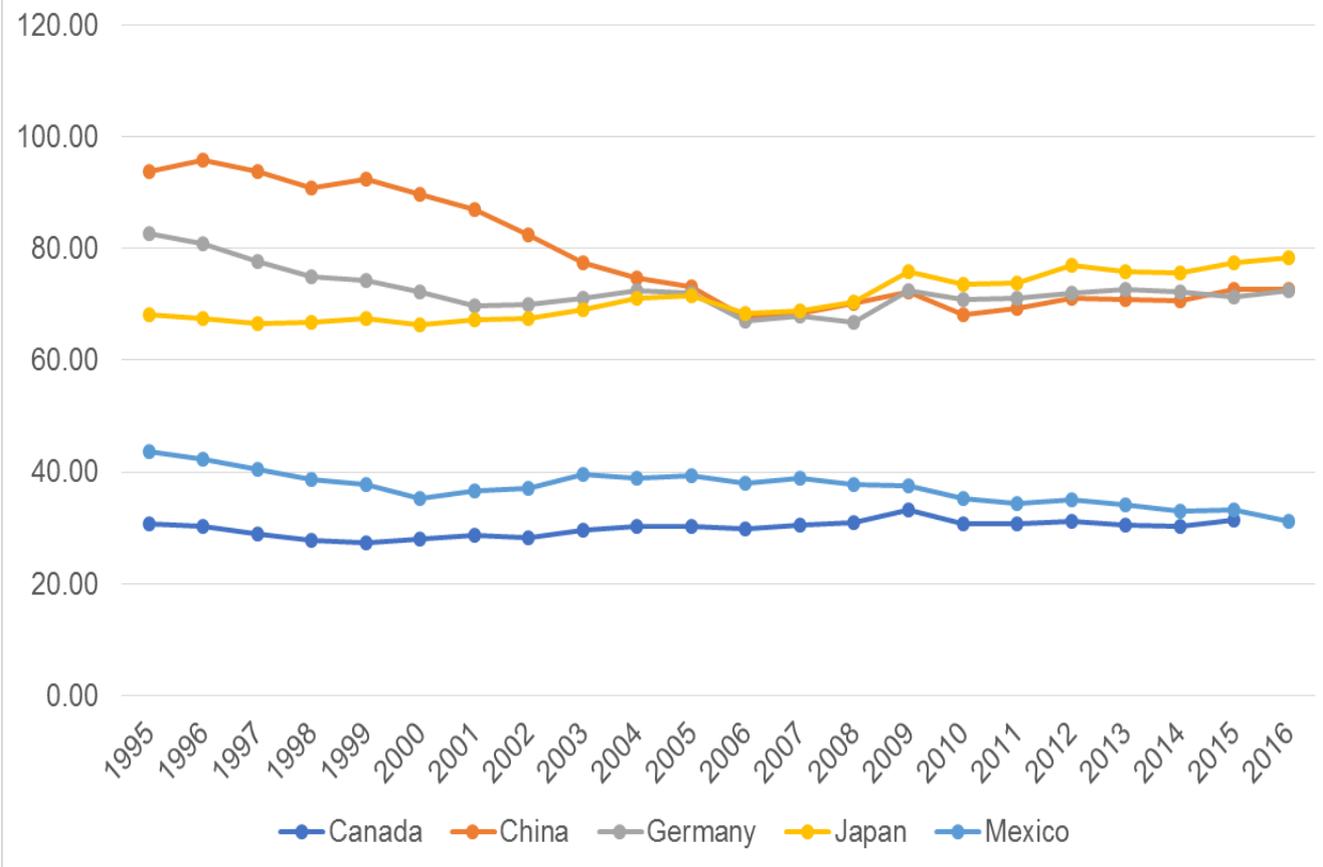
1. CHANGE IN TRADE COST AND GLOBAL PRODUCTION NETWORK (CONTINUED)

- In the explanation of trade by gravity model, the geographical distance between the trade partner and the market size have been the explanatory variables that determine the size of the trade. **However, even if a regional trade agreement has been settled, the geographical distance does not change physically between the partners who settled the agreement. The meaning in introducing geographical distance as an explanatory variable in the gravity model is only a proxy variable for transactions or trade costs.**
- Even if there is a certain amount of explanation by applying the geographical distance used in the gravity model in physics into the explanation of economic activity, the economic analysis should be explained in the measures of income and price as the explanatory variables. The mutual trade cost index was created by a joint project between the World Bank and UNESCAP, and the detailed data on the cost of international trade instead of geographical distance has become available. According to this trade cost index, it is shown that the reduction in mutual trade costs between the U.S. and Member economies in NAFTA was 80% (U.S.A. vs Canada) and 96% (U.S.A. vs Mexico) in 1970, but 25% and 33% in 2000. Although it has been such a drastic reduction through the regional trade agreement among NAFTA member countries, the trade costs for the United States and Germany changed from 95% to 70%, and United States and Japan from 85% from 65% in the same time period. It has shown that RTA of NAFTA brought about the great reduction effect in transaction costs.

1. CHANGE IN TRADE COST AND GLOBAL PRODUCTION NETWORK (CONTINUED)

- [Figure 1] shows the mutual trade costs for the United States extracted from the 1995-2016 trade costs by the World Bank-UNESCAP. Compared to the 30% trade cost of NAFTA member countries Canada and Mexico, the trade cost for the US between Japan and Germany has shown the higher cost of over 70%. Compared with these data, the regional trade agreements are expected to reduce trade costs and increase the GVCs within the regions among the members of the agreement.

Figure 1 Bilateral Trade Costs in U.S.A. total goods trade
 source: ESCAP-World Bank Database of International Trade Costs



2. REGIONAL TRADE AGREEMENT AND CHANGE IN MARKET STRUCTURE

- Useful international trade statistics are available from World Integrated Trade Solution (WITS) built by the World Bank. Figures 2 and Figure 3 show 1991 (inner pie chart) and 2017 (outer pie chart) of total exports by destination and total imports by origin in the United States. Looking at the supply channels of industries by country in the horizontal direction of the international input-output table, it shows that the share of North American regional trade in the global market increased. It shows the strength in the gross trade between the regional supply channel and the regional sourcing through Canada and Mexico, which are NAFTA members of the United States. Figure 2 shows that the share of Canada and Mexico in US gross export increased from 28% in 1991 to 34% in 2017. Share of NAFTA members in US gross import increased from 24% to 26% slightly. In the figure, the top 10 economies of trade value of trading partners are extracted, and the rest are classified as the Rest of World. China exported 22% in US gross import in 2017, and ROW in 1991 included Chinese export.
- Figure 3 shows that the share of NAFTA member countries from Canada and Mexico was 24% in 1991 in US gross imports, but the share increased slightly to 26% in 2017. It becomes clear that the largest dependence in US imports is China's 22%.

Figure 2 Share of Gross Export by Destination in U.S.A. in 1991 and 2017

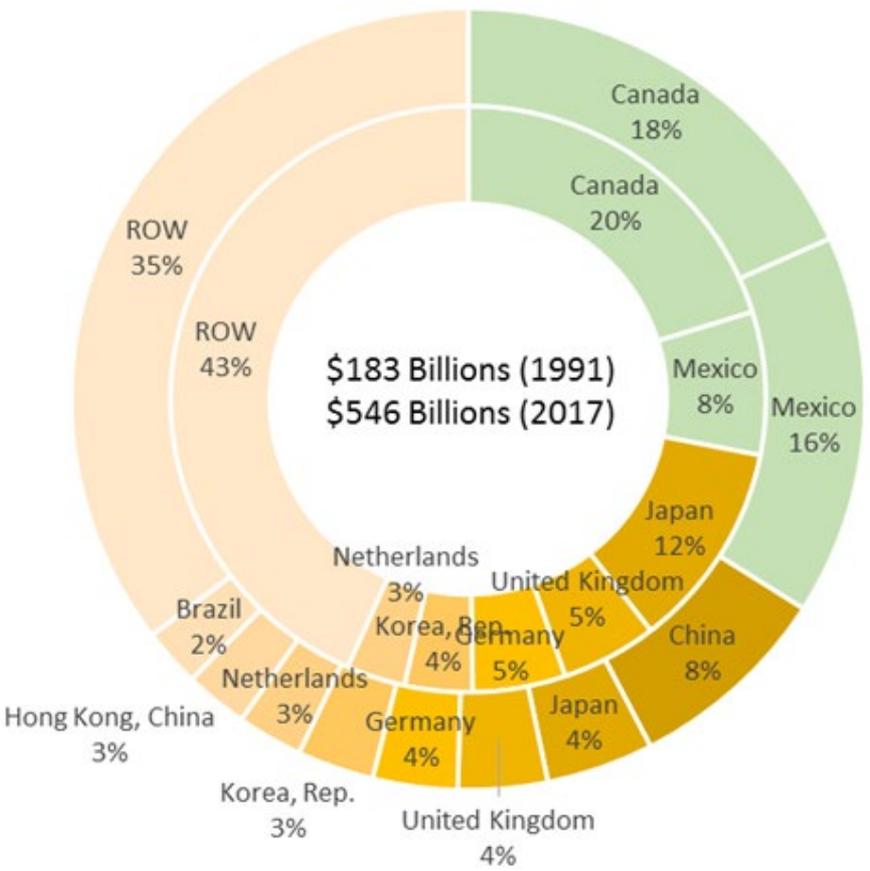
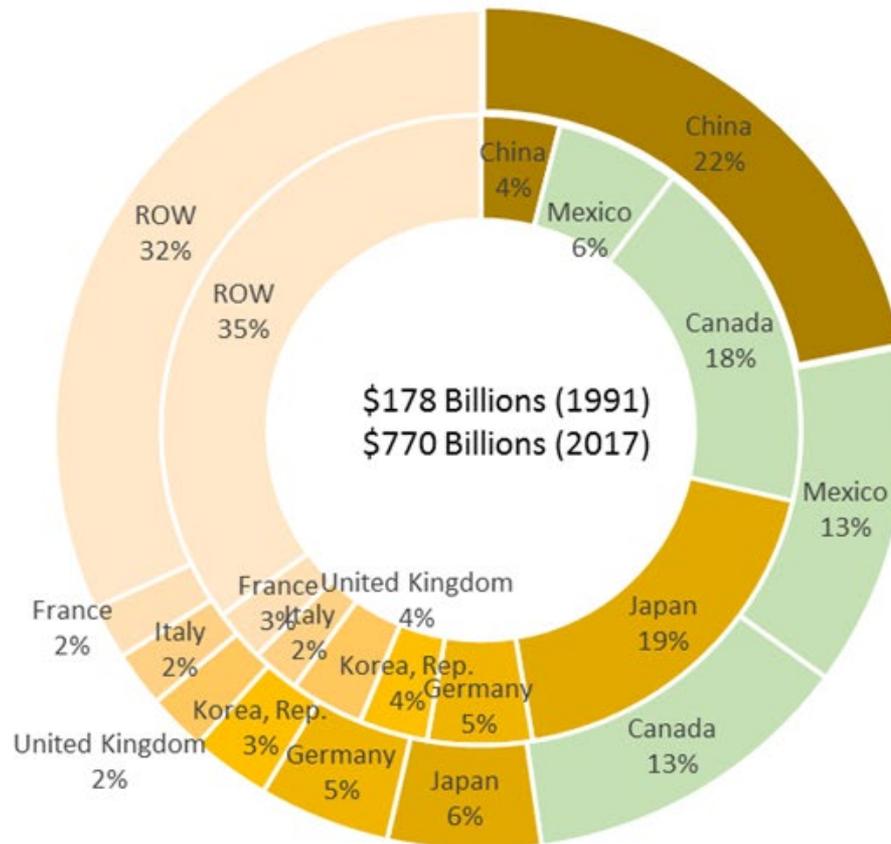


Figure 3 Share of Gross Import by Origin in U.S.A. in 1991 and 2017



3. CHANGE IN VALUE-ADDED PRODUCTION NETWORK ACROSS NATIONAL BORDERS

- In Figure 2 and Figure 3, we have only observed the share of total export by destinations and total import by sourcing in the United States. In the following four figures, Figure 4 to Figure 7 show the origins of Value-Added in total exports in Japan, the United States, Germany, and Vietnam.
- The data of the value-added by origin are available from the OECD-WTO TiVA (the Trade in Value-Added) statistics database and the EU WIOD (World Input-Output Data). In both cases, the international input-output table that links the economies of countries around the world with the same industry classification has been constructed in their criteria. This statistic is based on ISIC Rev.4 and publishes 36 industry sectors for 64 economies from 2005-2015.
- The share of Value-Added domestically procured in Japan's gross exports is overwhelmingly the same as in the United States, but Japan does not depend on value-added procurement from the United States or China so much. It can be seen that Japan's procurement from the rest of APEC economies has increased. The total US export shown in Figure 5 shows that procurement from NAFTA is increasing. Compared with the US and Japan, Germany's dependence on EU shown in Figure 6 is very high. Lastly, Figure 7 shows changes in procurement in Vietnam. It shows that the dependence on procurement in the ASEAN region is progressing.

Figure 4 Value-Added by Origin in Gross Export in Japan
unit: US Dollars

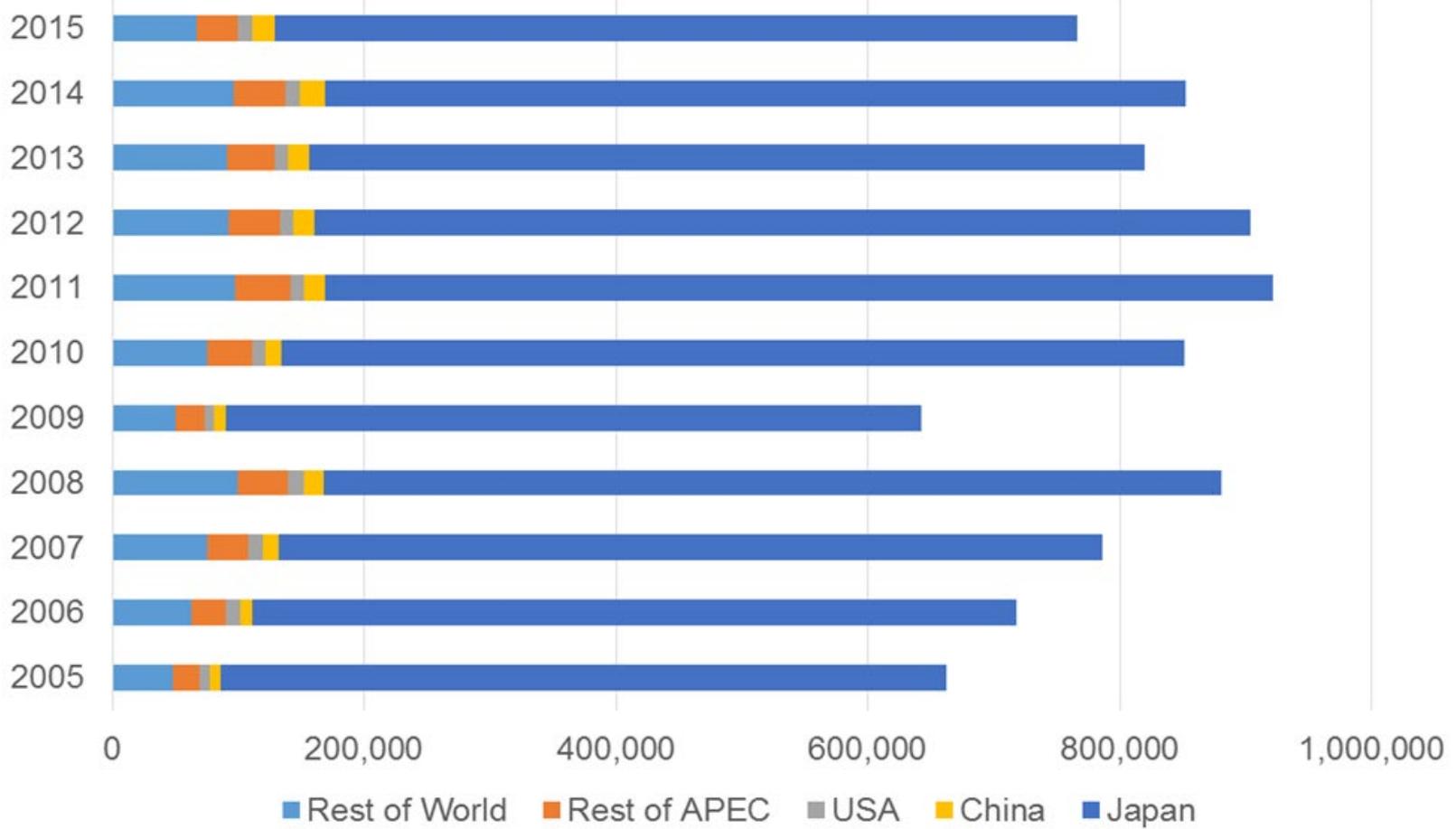


Figure 5 Value-Added by Origin in Gross Export in U.S.A.
unit: US Dollars

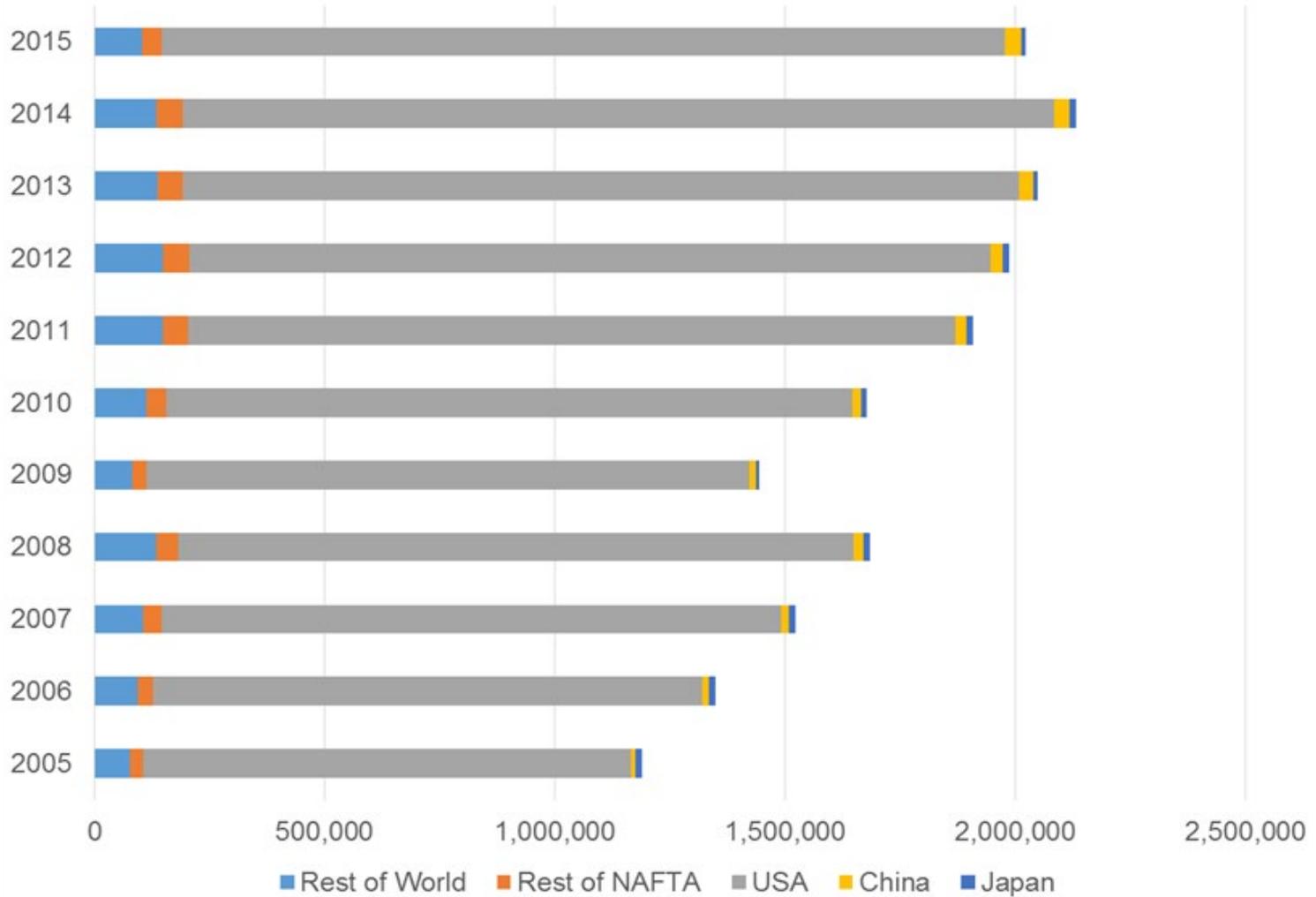


Figure 6 Value-Added by Origin in Gross Export in Germany
unit: US Dollars

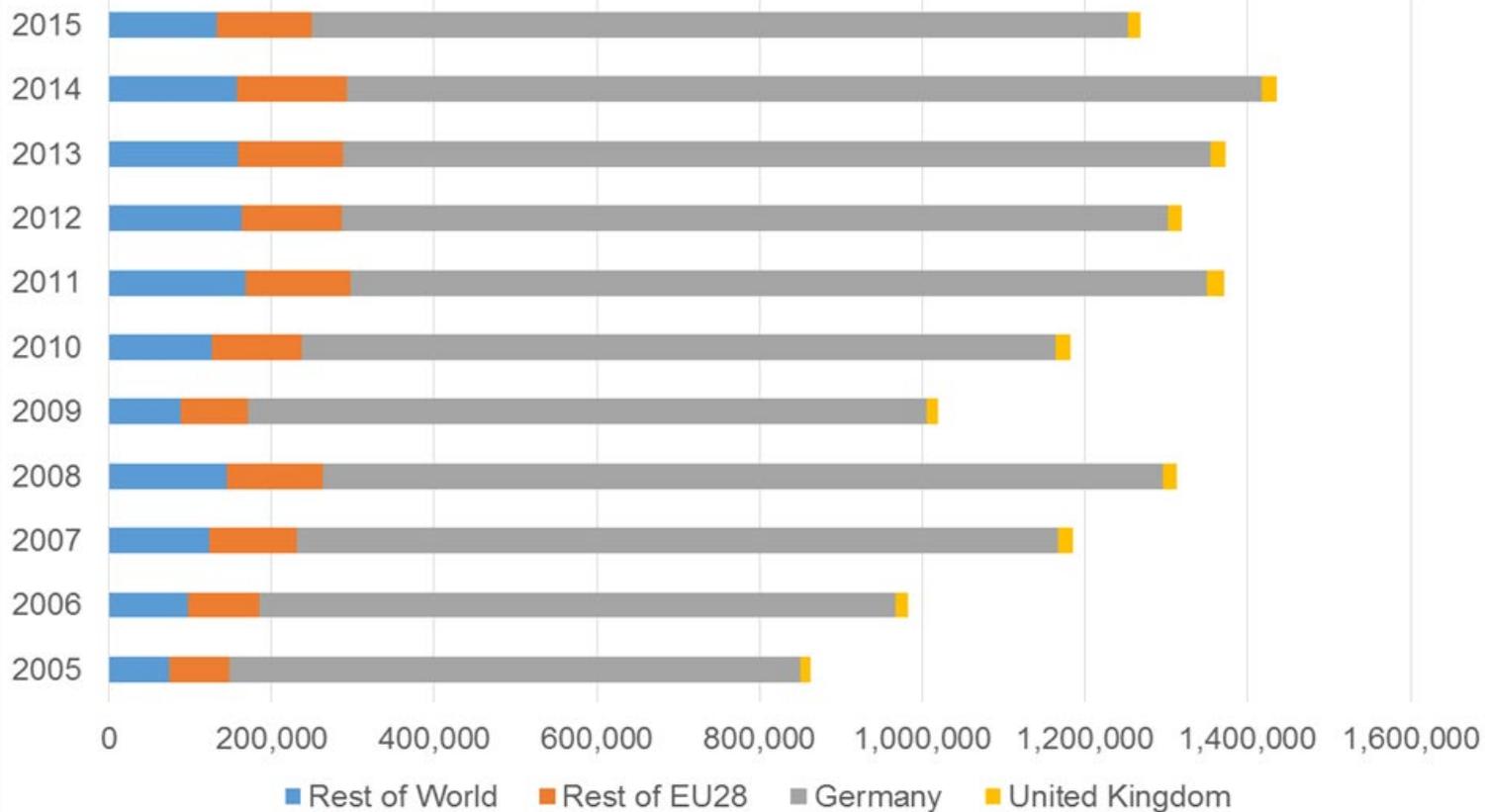
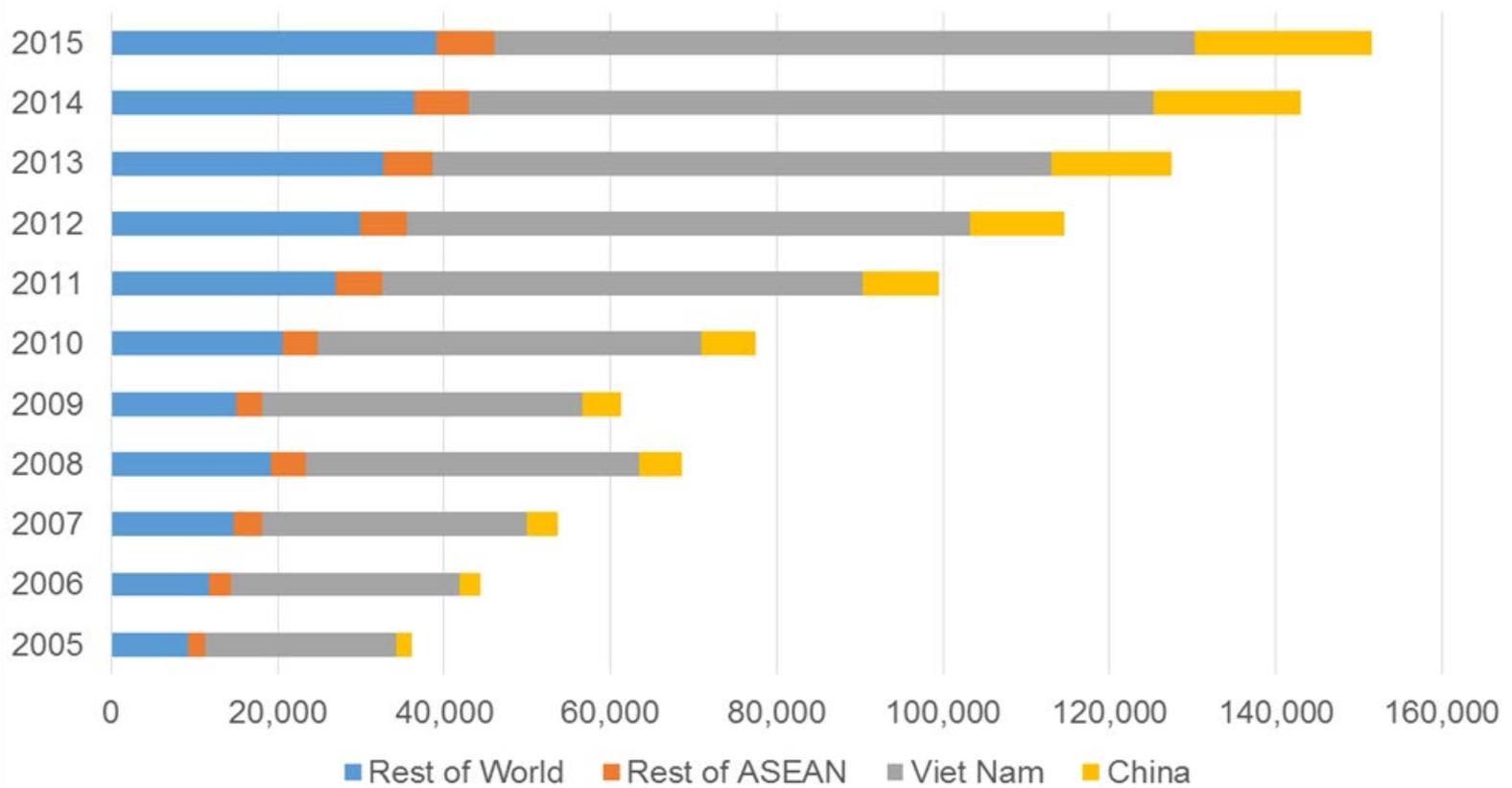
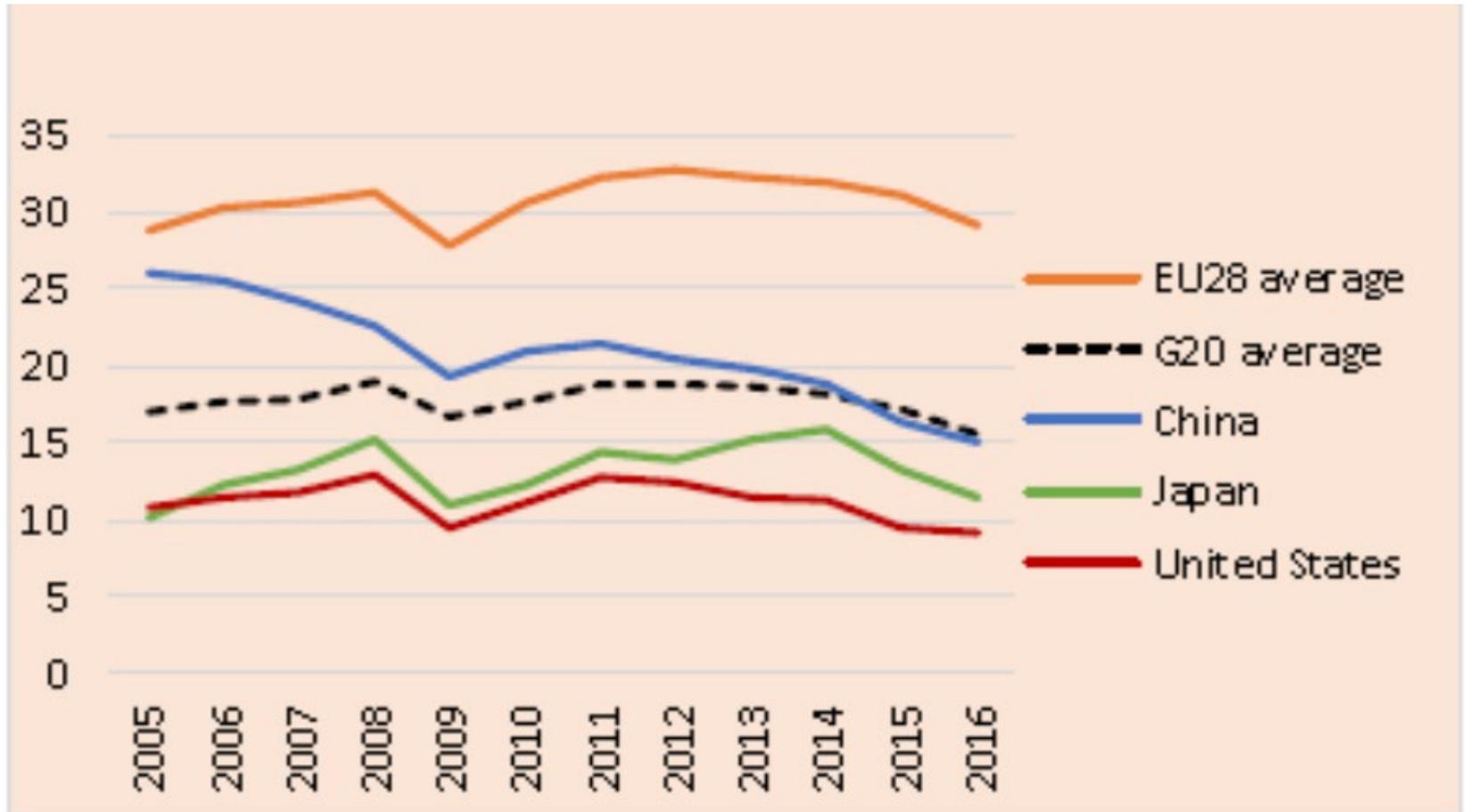


Figure 7 Value-Added by Origin in Gross Export in Viet Nam
unit: US Dollars



- The current TiVA (value-added trade) database shows the trend in value-added trade statistics up to 2015. The 2016 figures are provisional statistics from the OECD. **Figure 8** shows the ratio of foreign value added in the gross exports of EU28, G20, China, Japan and the United States. While Japan and the United States are extremely low in procurement from overseas, China, which did not show much difference from EU28 in 2005, shows a rapid decline in their overseas procurement ratio. The average value based on the data for the total industry shown in this figure might reflect the difference in the industrial structure and trade structure of each country, using the revealed comparative advantage index and trade concentration degree for procurement by industry.

FIGURE 8 SHARE OF FOREIGN VALUE-ADDED IN GROSS EXPORT



- Cross-border economic transactions are affected by changes in trade costs. For multinational firms, restructuring the international production network will be forced to respond immediately to changes in trade costs. Changes in the business environment due to the review and revision of RTA, the regional trade agreements such as NAFTA, which has been promoted by the Trump administration in North America, the exit of the UK from the EU, BREXIT, will be immediately reflected in changes in trade costs. The institutional framework of today's regional trade agreements is not limited to Free Trade Agreement, as the reductions in tariff rates. It extends to a wide range of content that directly affects the inter-regional production network that shifts the origin and sourcing. With the deepening of regional trade agreements, the impact on inter-regional value-added production and trade dependence can be explained in the fact that Germany's inter-regional dependence in the European market has deepened in this paper.