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Decomposing China–Japan–U.S. trade: Vertical specialization, ownership, and organizational form[★]

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ABSTRACT

We use the US International Trade Commission's uniquely detailed 1995–2007 Chinese Customs data to better understand the pattern of trade between China and its two largest trading partners, Japan and the United States. Our review finds that only a small share of these flows can be characterized as arm's length, one-way trade in final goods. Instead, we find extensive two-way trade, deep vertical specialization, concentration of trade in computer and communication devices, and a prominent role for foreign-invested enterprises. While these characteristics define both bilateral relationships, important differences between the two pairs do emerge, suggesting that trade costs influence the method by which multinationals choose to integrate their production with China. Consequently, we argue that dialogue on East Asian trade liberalization should include the possibility of significant production gains for the US from its inclusion in any regional agreements.

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1. Introduction

China's ongoing transitions, from bureaucratic socialism to market economy and from a rural to an urban society, have transformed the country into a global economic power.² This transition has affected virtually every aspect of the world economy—which goods are made, what they cost, and the wages earned by those engaged in their production. The impact of China's economic emergence on its trading partners, however, goes well beyond the textbook treatment of liberalization of trade in final goods. Widely recognized is China's unique mode of entry, characterized by unprecedented foreign direct investment inflows and heavy reliance on processing inputs as the fuel for explosive trade growth.³

These unique features of China's global engagement suggest that rather than simply changing *where* goods are made, China's opening permitted shifts in *how* goods are made. Trade theorists have emphasized two aspects of these shifts in the organization of production—the fragmentation of the production process and the internalization decisions of multinational

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¹ The views expressed here are those of the authors. They do not necessarily represent the views of the USITC or the views of any of the individual Commissioners.

Naughton (2007) emphasizes the dual nature of China's transition and its implications.

³ Dean et al. (2008) emphasize China's unique trade profile. They report that the current dollar value of China's exports plus imports rose from \$280.9 billion in 1995 to \$1760.4 billion in 2006, a growth of about 537%.

firms. Fragmentation of production, sometimes referred to as "slicing of the value chain," is viewed as a consequence of trade liberalization in developing countries (e.g. Jones & Kierzkowski, 2001) as well as a determinant of the welfare effects of that liberalization on all partners (e.g. Deardorff, 2001, 2005). Similarly, the internalization decisions of multinationals, specifically the choice to produce inputs abroad through a foreign subsidiary versus purchasing inputs from an unaffiliated foreign subcontractor, not only arise from the liberalization of trade and investment policies, but also themselves shape the overall pattern of economic activity and its rewards.⁴

In this paper, we use uniquely detailed 1995–2007 China Customs data to better understand the pattern of trade between China and two of its largest and most advanced trading partners, the United States and Japan, emphasizing the distinct nature of these flows. The analysis reveals the extent to which bilateral trade is due to fragmented production and foreign-invested enterprises (FIEs), as well as the organizational form of China's processing trade relationships with Japan and the US. Using recent theoretical models as lenses through which we explore the bilateral trade flows, we uncover commonalities and differences in the production sharing strategies of American and Japanese firms, as evidenced in bilateral trade patterns.

Section 2 presents an overview of US–China and Japan–China bilateral trade. We quantify aspects of these trade flows that do not fit into neoclassical explanations, specifically the importance of processing trade and the significant role of FIEs. In Section 3, we focus on trade in production "fragments," highlighting transport costs as a factor driving differences in the share of processing trade across the two bilateral relations. We also discuss new evidence on the vertical specialization of China's exports to the US and Japan. We turn then to exploring the role of foreign enterprises in China's bilateral trade flows in Section 4. We ask if the trade data provide insight into how American and Japanese firms serve the local market and whether transport costs and product differentiation illuminate the differences. Finally, in Section 5, we exploit a unique feature of the China Customs data to explore the organizational form of multinational firms engaged in processing trade, specifically comparing flows to the US with those to Japan. We conclude by summarizing our comparisons of the bilateral relationships and drawing implications for further research on the distributional gains from offshoring and for further dialogue on an East Asian regional trade and investment agreement.

2. Unique features of China-Japan-US trade

Commercials relations with China are important both to the United States and to Japan. By 2007, China was the third most important export destination and the top source of imports for the United States. Similarly, China was the second most important export destination and the top source of imports for Japan. China's official trade data⁵ records exports and imports at the HS 8-digit level, by country of final consumption and country of origin, respectively. These data are disaggregated by transport mode, customs regime, firm-type, incentive zone, and intra-provincial location of producer/consumer. Table 1 shows China's bilateral import and export values and growth rates over the 1996–2007 period. In current dollars, the value of China's exports to all destinations grew at an average annual growth rate of 20.9%. Exports to the United States grew somewhat faster, at an average annual growth rate of 21.7%, while exports to Japan grew more slowly, at an average annual rate of 11.5%. In comparison to the growth of exports to the European Union (24.5%) and ASEAN (22.3%), the growth of Chinese exports to Japan is relatively low.

China's imports from all sources also grew at a rapid rate over the period, averaging growth in current dollars of 18.3%. Imports from both the United States and Japan grew more slowly, averaging 14.1% and 14.9%, respectively, only slightly below the growth of imports from the EU15. Over the same period, Chinese imports from ASEAN grew much more rapidly, at an annual average of 23.3%.

The relatively rapid growth of net exports to the United States is reflected in the US trade deficit with China, which grew at an average annual rate of 28.1% from 1996 to 2007. Over the same period, Japan saw rapid growth in its trade surplus with China, which changed from a small deficit in 1996 to a \$31.9 billion surplus in 2007. As with Japan, China's trade with ASEAN grew rapidly, with ASEAN's small trade deficit in 1996 shifting to a surplus of \$14.2 billion by 2007.

Japan and the United States are extremely important to China's trade growth over the past decade. As shown in Fig. 1a, by 2007 the United States was the most important individual-country market for Chinese exports, moving up from the third largest destination in 1996. Hong Kong received the second largest share of exports by value, although some of these goods were re-exported. Japan received the third largest share, importing more than twice as much as the next larger importer of Chinese goods, South Korea. There is some evidence of an East Asian supplier network even in these aggregate trade statistics. Japan, South Korea, and Taiwan are China's largest import sources, followed by the United States (Fig. 1b). While

⁴ Recent contributions to the literature are reviewed by Helpman (2006) and Antràs and Rossi-Hansberg (2009).

⁵ These data were purchased from China Customs Statistics Information Center in Hong Kong. Detailed information can be found at http://www.hktdc.com/info/mi/ccs/en/.

⁶ Data are also recorded by country of immediate destination and most recent point of departure. The two sets of location records allow the identification of entrepôt trade

⁷ Locations are usually counties (districts) within provinces (province-level cities).

⁸ References to the EU refer specifically to the EU15 comprised of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

⁹ Our Chinese dataset allows us to observe re-exports through Hong Kong and to identify and attribute them to their final destinations. However, the size of the share of exports with Hong Kong as their final destination suggests that some exports destined for other markets may still be included in these figures.

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