What's Unique About China's Trade with the United States? A Multi-Dimensional Perspective Using China's Customs Data

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Abstract

The U.S.-China merchandise trade balance vis-à-vis China has been a perennial source of debate for decades. This paper aims to add context to that debate, by describing unique attributes of the U.S.-China merchandise trade relationship. To do so, it uses a specialized dataset from the General Administration of Customs of the People's Republic of China (China Customs) in the 1995-2017 period to uncover important trends. With respect to ownership characteristics, we have found that foreign-invested enterprises (FIEs) have played a disproportionately large role in China's trade with the United States relative to China's trade with other considered regions (e.g., Europe, Asia, Latin America, Africa). This is explained by high concentrations of FIEs along global value chains that are conducting business in both countries. Also, China's state-owned enterprises (SOEs) have played a less dominant role in China's trade with the United States relative to China's trade with the rest of the world, especially in comparison to Africa and Latin America where Chinese SOEs have been importing large quantities of primary commodities. With respect to customs regime characteristics, we found high concentrations of processing trade patterns with respect to China's trade with the United States, Europe, and Asia. China's imports from Asia, however, are not only larger than those from the U.S. or any other region but are characterized by unusually high concentrations of intermediary inputs that are used for further assembly and re-exportation once processed in China. We have also found that Asian FIE's entryway into China has been largely through Chinese export processing zones which are prominent with respect to China-U.S. and China-EU trade, but not nearly to the same extent. Use of official Chinese data for this exercise should not be considered an endorsement of its validity, since U.S. and Chinese trade flow differentials have been well publicized and subject to methodological differences. It was used given its essential role in facilitating a comparison of China's trade with the United States to China's trade with its other prominent regional trading partners.

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Overview of U.S.-China Merchandise Trade

The U.S. merchandise trade balance vis-à-vis China has been a perennial source of debate for decades.[1] Questions regarding its magnitude, composition, growth, and economic effects have been longstanding.[2] Moreover, methodological differences regarding the official manner in which each countries' merchandise trade flows have been calculated have challenged researchers to reconcile their differences.[3]

Irrespective of these debates is the fact that the United States' bilateral goods deficit with China has remained unambiguously large compared to U.S. trade with other countries.[4] Before narrowing as a result of bilateral trade tensions and COVID-19 pandemic, the U.S.'s bilateral goods deficit with China peaked at $419.5 billion in 2018.[5] This represented about half of the U.S.' overall goods deficit in that year, and was five times larger than the U.S.' deficit with Mexico (which possessed the second largest U.S. bilateral deficit). In fact, the size of the U.S. deficit with China in 2018 amounted to nearly the same amount as the U.S.' goods deficit with its top ten deficit countries (after China), combined. Using Chinese statistics, we see that its surplus vis-à-vis the United States amounted to about half of its overall reported surplus in goods in recent years.

The literature is rich with analyses explaining the size and growth of the U.S.-China trade deficit. Some have explained that it is helpful to consider it within the context of (a) intermediary and value-added goods trade along global supply chains,[6] (b) foreign firm participation and growth of U.S. manufacturing offshoring in China,[7] (c) a macroeconomic accounting phenomena that includes the U.S. and China's

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[1] Congressional Research Service, "What's the Difference? – Comparing U.S. and Chinese Trade Data," May 20, 2020; Congressional Research Service (Sutter), "U.S.-China Trade and Economic Relations-Overview," November 19, 2019. USTR, "U.S. Trade Representative and the U.S. Department of Treasury Respond to the 'White Paper' Issued by China on June 2, 2019," June 3, 2019.

[2] Jiming and Posen, "U.S.-China Economic Relations: From Conflict to Solutions," January 2019; Lighthizer, "Evaluating China's Role in the World Trade Organization Over the Past Decade," Testimony from U.S.-China Economic and Security Commission Hearing, June 9, 2010; "McBride and Chatzky, "The U.S. Trade Deficit: How Much Does it Matter?" Council on Foreign Relations, March 8, 2019.

[3] Congressional Research Service, "What's the Difference? – Comparing U.S. and Chinese Trade Data," May 20, 2020; Ferrantino and Wang, "Accounting for Discrepancies in Bilateral Trade: the Case of China, Hong Kong, and the United States", *China Economic Review* 19, 2008, 502-520; Fung, Lau, and Xiong, "Adjusted Estimates of U.S. -China Bilateral Trade Balance-An Update," Stanford Center for International Development Working Paper, April 2006; and Hammer, Jones, and Wang, "Methodology of U.S.-China-Hong Kong Triangular Merchandise Trade Statistic Reconciliation," U.S. International Trade Commission, *Research Note*, August 2013..

[4] Congressional Research Service, "What's the Difference? – Comparing U.S. and Chinese Trade Data," May 20, 2020; Feldstein, "Resolving the Global Imbalance: The Dollar and the U.S. Savings Rate," *Journal of Economic Perspectives* 22(3) 113-123, 2008;

[5] USITC's Dataweb (accessed various dates).

[6] Koopman, Powers, Wang, and Wei, "Give Credit Where Credit Is Due: Tracing Value Added in Global Production Chains," NBER *Working Paper* 16426, December 2011; Koopman, Wang, and Wei, "How Much of Chinese Exports is Really Made In China? Assessing Domestic Value-Added When Processing Trade is Pervasive," NBER *Working Paper* 14109, June 2008; Word Bank, IDE-JETRO, OECD, UIBE, AND WTO, *Global Value China Development Report: Measuring and Analyzing the Impact of GVCs on Economic Development*, 2017.

[7] Chang, *Multinational Firms in China: Entry Strategies, Competition, and Firm Performance*, Oxford University Press, 2015; Enright, *Developing China: The Remarkable Impact of Foreign Direct Investment*, Routledge, 2017; Hammer, "Why Have U.S. Firms Offshored to China?" U.S. International Trade Commission *Executive Briefing on Trade*, June 2017; and Hammer, "The Size and Composition of U.S. Manufacturing Offshoring to China," U.S. International Trade Commission *Executive Briefing on Trade*, June 2017.

broader savings-investment differentials;[8] (d) associated manufacturing output and employment effects;[9] (e) connections between the bilateral trade deficit and Chinese purchases of U.S. treasury bills and private sector real estate transactions;[10] and (f) other factors. While this paper is more descriptive in nature, its insight into the compositional elements of the bilateral trade flows adds information and context to the literature in much the same way as prior papers have [Hammer 2006, Yao 2008]. Moreover, the analysis in this paper builds upon the previous findings of the referenced 2006 paper, by including nearly a decade and a half of more recent data, by reflecting revisions to data that have taken place in overlapping years, and, most importantly, by broadening the scope of the analysis to compare China's U.S. trade against China's trade with other regions.[11] This paper also provides a literature review to add definitions, background, and context to the observed trade patterns.

The aim of this paper is to describe unique attributes of the bilateral trade flows. To do so, it utilizes highly detailed Chinese merchandise trade statistics (1995-2017), acquired from the General Administration of Customs of the People's Republic of China (China Customs), to assess what has been different about this bilateral trade relationship relative to China's other major trade partners. Short of conducting reciprocal trade analysis of all of China's training partners, such an endeavor could only be accomplished using Chinese trade statistics. Even if reciprocal trade analysis were conducted, its analytic contributions would be limited, as it would be unable to reveal the attributes of trade flows that are inherent to China's Customs data. Such attributes, after all, have been used to analyze characteristics related to (a) ownership (e.g., foreign-invested firms, state-owned enterprise, private enterprises); (b) customs regime (e.g., ordinary trade, processing trade, warehousing trade); and (c) incentive scheme (e.g., special economic zones). These attributes place context to the general product-specific trade trends that are commonly conducted, and are explained in subsequent parts of this paper.

Figure 1 provides an overview of U.S.- China merchandise trade flows, highlighting the fact that the two countries report different magnitudes of trade flows.[12] While it is true that most countries' bilateral trade information does not perfectly match, the discrepancies between these two countries' reporting statistics is large (see Box 1). Both countries' trade flows are provided below to highlight the fact that our analysis will exclusively focus on the Chinese reported trade flows which features a narrower U.S. trade deficit. While this should not be considered an endorsement of the validity of this Chinese data, there is no reason to believe that the characteristics of China's trade flows described in subsequent parts of this analysis would be materially different from what is reported by U.S. statistics.

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[8] Congressional Research Service, "U.S.-China Trade and Economic Relations: An Overview," November 19, 2019; Feldstein, "Resolving the Global Imbalance: The Dollar and the U.S. Savings Rate," *Journal of Economic Perspectives* 22(3) 113-123, 2008; Kuijs, "Investment and Savings in China," World Bank, June 2005.

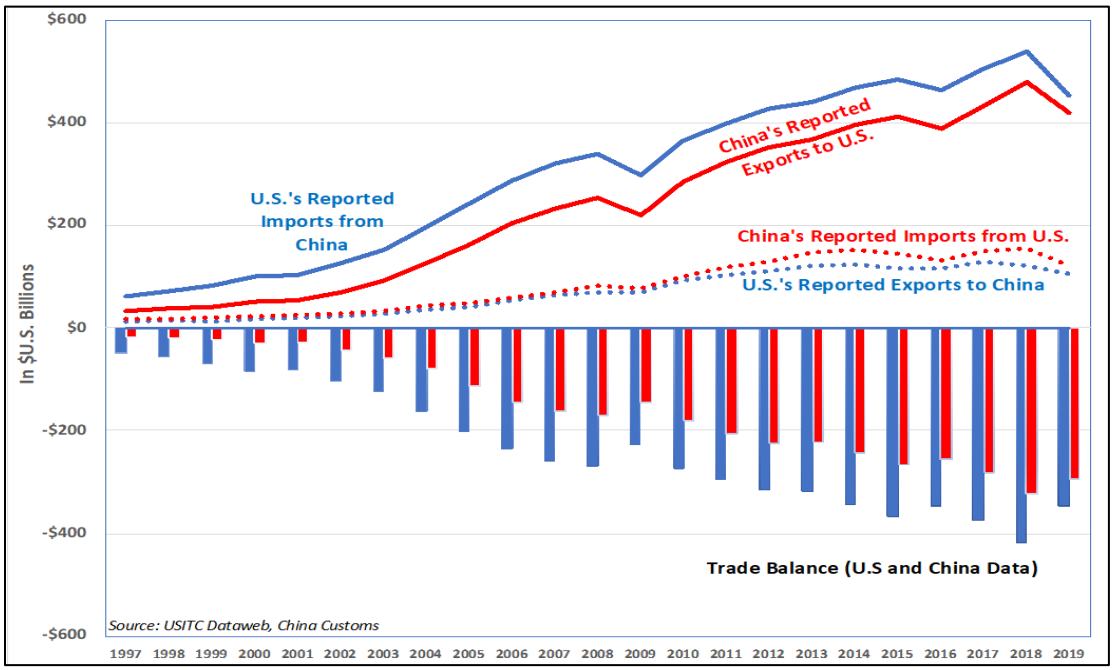
[9] Autor, Dorn, and Hanson, "The China Shock: Learning from Labor Market Adjustment to Large Changes in Trade," *Annual Review of Economics* Vol 8, 205-240, October 2016; Autor and Handson, "The China Syndrome: Local Labor Market Effects of Import Competition in the United States," *American Economic Review*, October 2013; Oxford Economics and the U.S.-China Business Council, *Understanding the U.S.-China Trade Relationship*, January 2017.

[10] Ker, "U.S. Financial Exposure to China," U.S.-China Economic and Security Review Commission, May 9, 2017; Setser, "A Few Words on China's Holdings of U.S. Bonds," Council on Foreign Relations, January 17, 2018; Prasad, "The U.S.-China Economic Relationship: Shifts and Twists in the Balance of Power," Testimony Before the U.S.-China Economic and Security Review Commission (USCC), March 10, 2010

[11] Hammer, "The Dynamic Structure of U.S.-China Trade," U.S. International Trade Commission *Working Paper Series*, June 2006.

[12] As our analysis focuses on the goods components only, services trade data has been intentionally excluded. Its inclusion would reveal a slightly smaller U.S. bilateral trade deficit vis-à-vis China, irrespective of which countries' data were used. Also, like other official statistical agencies, China's authorities do not publish highly disaggregated or categorized services data, which would further inhibit the usefulness of an expanded scope.

Figure 1. China's Merchandise Trade with the United States (Using U.S. and Chinese Data)



Both countries trade statistics confirm well known trends in the types of goods being sold across countries. Like most of its other major trading partners, China exports a great deal of electronics (telephones and related equipment, computers and their parts), machinery, and apparel to the United States. In exchange, the U.S. exports mostly civilian aircraft, engines, automobiles, semiconductors and related equipment, and soybeans.[13]

The data flows reported by the Chinese authorities displayed in Figure 1 also serve as an important frame of reference for our analysis, given that subsequent parts of this paper will describe the shares of China's reported trade flows. To gain a sense of the magnitude of compositional flows in value terms (e.g., specific values of China's processing trade exports to the United States), one need only take the below referenced shares and compare them to the dollar denominated overall exports to the U.S. from in Figure 1.

[13] China Customs data (1995-2017); Congressional Research Service (CRS), "China-U.S. Trade Issues," July 30, 2018; Hammer, "Exporting U.S. Innovative Capacity to China? A Case Study of Semiconductor Manufacturing Equipment," Chapter 8 in the Center for Strategic and International Studies (CSIS)'s *China's Uneven High-Tech Drive: Implications for the United States*, February 2020; USITC, *The Year in Trade 2018: Operations of the Trade Agreement Program*, Chapter 6: China, October 2019; and USITC's Dataweb 1995-2019 (accessed various dates).

Box 1. Why Are U.S. and Chinese Official Trade Statistics Different?

Figure 1 above highlights the fact that official data from the United States and China are dissimilar. In the last five years of available data, U.S. goods exports to China were considered higher by Chinese statistics by a margin of 16.3 percent – 29.1 percent, while the U.S.' reported imports from China were higher than China's reported exports to the United States by a margin of 11.0 percent – 20.1 percent. While such disparities exist with many country-pairs, the size of these differences is large. Of course, trade between the world's two largest economies is already likely to be substantive given the size of their economies' and China's export-oriented growth strategy for several decades. However, even in relative terms (e.g. the differences between reported trade flows as a share of individual U.S. trade flow values), considerable discrepancies exist.

The U.S.' reported exports to China are smaller than China's reported imports from the United States, for several reasons. Most importantly, China's imports reflect U.S. exports to Hong Kong, which the U.S. considers a separate entity.[14] Second, as in other bilateral trade relationships, discrepancies associated with timing (given shipments that leave at the end of one year and arrive at their destination the following month),[15] and valuation differentials exist. More specifically, U.S. merchandise exports are calculated on an f.a.s. (free alongside ship) basis, while Chinese import statistics report flows on a "cost, insurance, and freight (c.i.f.) which includes shipping costs.[16] Finally, definitional differences including China's consideration of Puerto Rico as a distinct trading partner has contributed to data differentials, at least on the margin given how little that territory trades with China.

The United States reported imports from China are also larger than China's reported exports to the United States. This is partially explained by the methodological reasons identified above, as well as the fact that some researchers have found that under-invoicing (for tax benefits) and illicit trade have also affected the differentials.[17]

Finally, the information displayed in Figure 1 also serves as an important juxtaposition against China's trade flows with the rest of the world that are shown in Figure 2. As can be seen in the outermost years, China's merchandise trade balance with the United States has been comparable in size to China's merchandise trade balance with the rest of the world. Meanwhile, in the past five years, China's exports to the rest of the world have been about five times larger than its exports to the United States, while its imports from the rest of the world have been about ten times larger than its imports from the United States. As shall be seen in subsequent parts of our analysis, most of China's imports are from other Asian countries, and represent intermediary inputs traded along global supply chains.

China's Customs statistics show comparable trade trends to what has been reported from African, Asian, European, and Latin American sources. With respect to the type of trade China conducts with the rest of the world, it is not materially different than what it exports to the United States. China exports a

[14] Brookings, "What Can Shipping Containers Tell Us About the U.S.-China Trade War? An Interview with Lori Ann LaRocco by David Dollar," Brookings, Dollar and Sense Podcast, February 5, 2020; and LaRocco, *Trade War: Containers Don't Lie, Navigating the Bluster, Marine Money, Inc*, 2019.

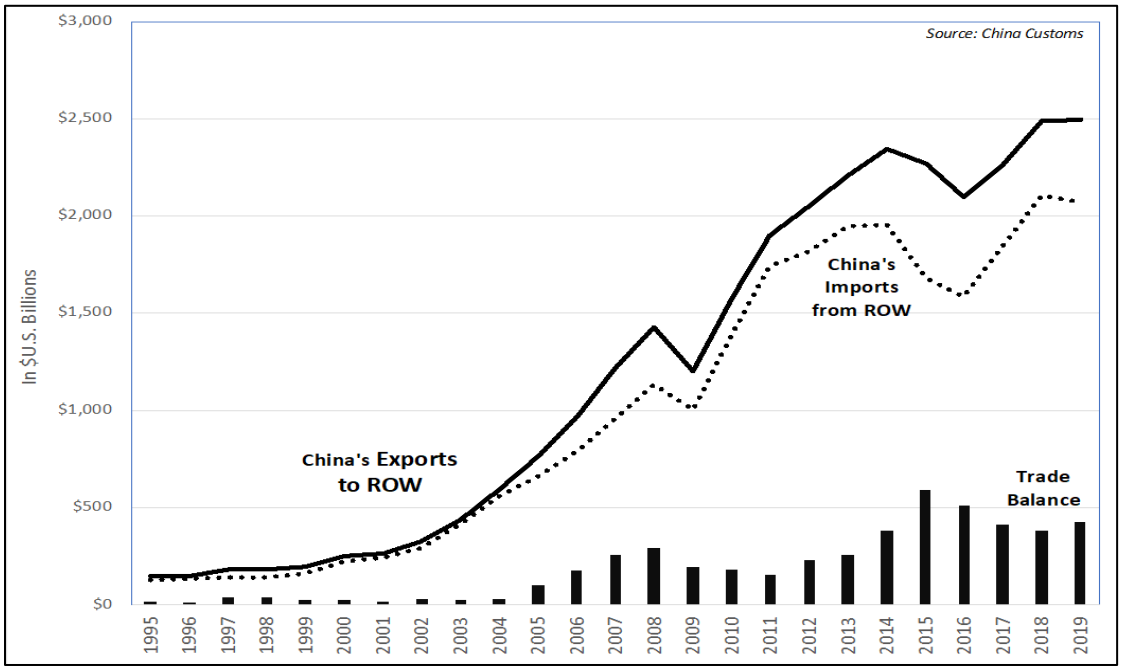
[15] It typically takes less than one month for direct transport shipments between the United States and China.

[16] Shipping costs are known to be more expensive going into China than going out of China. See Hammer, Jones, and Wang, "Methodology of U.S.-China-Hong Kong Triangular Merchandise Trade Statistic Reconciliation," U.S. International Trade Commission, *Research Note/Working Paper*, August 2013.

[17] Passas, "Trade and Illicit Flows: A Case Involving the United States, China and Mexico," Chapter 10 in Klasen (Editor) in *The Handbook of Global Trade Policy,* Wiley Blackwell, December 2019.

great deal of electronics (telephones and related equipment, computers and their parts) as well as manufacturing equipment and apparel to the rest of the world in exchange for intermediary electronics inputs from Asia, the United, States, and Europe; machinery, vehicles, and other manufactured goods from Asia, the United States, and Europe; and mostly commodities from Africa and Latin America.[18]

Figure 2. China's Merchandise Trade with the Rest of the Word (Using Chinese Data)



Decomposing U.S.-China Merchandise Trade Flows by Ownership Characteristics

Classifying China's exports and imports to/from the United States by the type of firm that has been conducting the trade reveals major structural changes that have unfolded over the past few decades. Before analyzing these changing trade trends, however, it is useful to explain what is meant by these different forms of enterprise, and to summarize the contemporaneous transformations that have occurred within the Chinese economy as they relate to structural changes in ownership.

[18] China Customs data (1995-2017); CEIC Database (accessed various times); Dollar, "China's Engagement with Africa: From Natural Resources to Human Resources," Brookings, 2016; Eurostat, "China-EU International Trade in Goods Statistics," March 2020; Garcia-Herrero *et al*, "EU-China Trade And Investment Relations In Challenging Times," Bruegel, June 4, 2020; Hammer, "Distinctive Patterns & Prospects in China-Latin America Trade," USITC *Journal of International Commerce and Economics (JICE),* September 2006; and the World Integrated Trade Solutions (WITS) database (accessed various times).

A. Background and Context

Throughout its era of central planning and in the early phases of its market-oriented reforms starting in 1978, China's state-owned enterprises (SOEs) formed the basis of economic activity in China.[19] China's National Bureau of Statistics has defined these forms of enterprises as "noncorporate economic units whose assets are owned by the government" and they exist at the national, provincial, and local levels.[20] But as market-oriented reforms took root, and Chinese domestic firms and foreign-invested enterprises (FIEs) emerged, these SOEs have faced progressive degrees of domestic and international competition.[21] Although many SOEs managed to exhibit growth in the face of such competitive pressures, the disproportionally faster growth of other forms of enterprises had crowded out SOEs' influence on economic and trade activities.[22] Naughton has characterized such as phenomenon as "growing out of the plan," while Lardy and others have documented the major structural changes that moved China further and further away from SOE dependence between 1979 and China's 2001 WTO accession.[23]

These structural changes reversed course around 2004 after the Chinese government exhibited a "renewed emphasis on the desirability of maintaining a strong and robust state sector for the long term" and consolidated SOEs into strategic sectors, often with monopolistic powers in the chosen sectors and often directed by varying levels of government.[24] As reported in *The Economist*, by 2012 these SOEs, which dramatically shrank in number by that time, gained considerable market power in certain sectors from a concerted effort to consolidate national champions into select industries ranging from telecommunications to shipbuilding.[25] Researchers such as Economy, Lardy, and Leutert have chronicled even clearer signs of SOE resurgence after 2013, once Xi Jinping came to power and identified SOEs as an essential component of China's ongoing structural transformation.[26] As of 2016, Hammer and Jones have

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[19] Lin, Lu, Zhang, and Zhang, "State-Owned Enterprises in China: A Review of 40 Years of Research and Practice," *China Journal of Accounting Research*, Elsevier, March 2020; Song, "State-Owned Enterprise Reform in China: Past, Present and Prospects," Chapter 19 in Garnaut, Song, and Fong (Editors)'s *China's 40 Years of Reform and Development*, Australian National University Press, 2018; Szamosszegi and Kyle, "An Analysis of State-owned Enterprises and State Capitalism in China," U.S.-China Commission on Economic and Security, 2011.

[20] National Bureau of Statistics, *China Statistical Yearbooks* (1995-2019).

[21] Garnaut, Song, Tenev, and Yao, *China's Ownership Transformation: Process, Outcomes, And Prospects*, World Bank, 2005.

[22] Bell, Khor, and Kochtar, *China at the Threshold of a Market Economy*, IMF, 1993; Garnaut and Song, *China's Third Economic Transformation: The Rise of the Private Economy*, Routledge Curzon, 2004; Garnaut, Song, Tenev, and Yao, *China's Ownership Transformation: Process, Outcomes, And Prospects*, World Bank, 2005; Holz, *China's Industrial State-Owned Enterprises: Between Profitability and Bankruptcy*, World Scientific, 2003; Lardy, *Markets Over Mao: The Rise of Private Business in China*, Peterson Institute for International Economics, September 2014; Peterson Institute, *China's Economic Transformation: Lessons, Impact, and the Path Forward*, October *2015;* and Yusuf, Nabeshima, and Perkins, *Under New Ownership: Privatizing China's State-Owned Enterprises*, World Bank, 2006.

[23] Bell, Khor, and Kochtar, *China at the Threshold of a Market Economy*, IMF, 1993; Garnaut and Song, *China's Third Economic Transformation: The Rise of the Private Economy*, Routledge Curzon, 2004; Garnaut, Song, Tenev, and Yao, *China's Ownership Transformation: Process, Outcomes, And Prospects*, World Bank, 2005; Holz, *China's Industrial State-Owned Enterprises: Between Profitability and Bankruptcy*, World Scientific, 2003; Lardy, *Markets Over Mao: The Rise of Private Business in China*, Peterson Institute for International Economics, September 2014; Peterson Institute, *China's Economic Transformation: Lessons, Impact, and the Path Forward*, October *2015;* and Yusuf, Nabeshima, and Perkins, *Under New Ownership: Privatizing China's State-Owned Enterprises*, World Bank, 2006.

[24] Naughton and Tsai (Editors), *State Capitalism, Institutional Adaptation, and the Chinese Miracle*, Cambridge University Press, 2015; and the U.S.-China Economic and Security Commission, "SOE Megamergers Signal New Direction in China's Economic Policy," May 2018.

[25] *The Economist*, "State-Owned Enterprises: The State Advances," October 6, 2012.

[26] Economy, *The Third Revolution: Xi Jinping and the New Chinese State*, Council of Foreign Relations and Oxford University Press, 2018; Lardy, *The State Strikes Back: The End of Economic Reform in China?* The Peterson Institute for International Economics, Jan 2019; and Leutert "Challenges Ahead in China's Reforms of State-Owned Enterprises," *Asia Policy*, January 2016.

found that with respect to trade, Chinese SOEs have been most concentrated in the iron and steel; minerals and oils; shipbuilding; rail; aircraft and parts; and fertilizer sectors.[27]

Following the diminution of SOE influence in the early part of China's reforms, and its partially offsetting resurgence by the mid-2000s, SOEs' influence has been estimated by the World Bank to now account for 23.1 percent of China's GDP by 2017, and 14.7 percent of domestic employment.[28] These shares confirm the fact that SOEs have remained capital intensive.

China's collective-owned enterprises (COEs) are unique entities that some researchers have classified in China's "state sector" and whose contributions to the Chinese economy have almost entirely faded in the last decade. They have represented quasi-public, quasi-private firms whose assets were equally owned by a community of people.[29] COEs thrived in the early stages of reform, largely because of their ability to absorb rural surplus labor from the agricultural sector, and compete against less efficient and typically small state-owned enterprises.[30] COEs consist of a large array of enterprise types, including township-village enterprises (TVEs), SOE subsidiaries, and enterprises partially owned by both central and provincial governments.[31] The share of COEs' total domestic economic activity fell from approximately 12 percent in 2000 (estimated by the World Bank's International Finance Corporation) to negligible levels in recent history as they are no longer even classified in the National Bureau of *Statistics' China Statistical Yearbooks*.[32] Their demise has largely been attributable to rising competition from enterprises in the non-state sector of the economy (China's private firms and foreign-invested enterprises).[33]

As private companies were nationalized in the 1950s, their resurgence in China's pre-1995 economy was unusual.[34] This changed after China's WTO ascension, once the government legalized the status of these "profit-making economic units invested and established by people".[35] Since then, private enterprises have been proliferating in China, and their influence over the entire economy has grown.[36] Currently, many forms of enterprises are categorized as private, including private limited liability corporations, private share-holding corporations, private partnership enterprises, as well as private-

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[27] Hammer and Jones, "State-Owned Enterprises Play a Smaller, But Still Strategic Role in China's External Sector," U.S. International Trade Commission's *Executive Briefings on Trade*, January 2018.

[28] Zhang, "How Much do State-Owned Enterprises Contribute to China's GDP and Employment?" World Bank, July 15, 2019. Holz has estimated the SOE share of GDP to be about 39 percent in 2015 using value-added calculations. With respect to employment, estimates have been based on Zhang's reported statistics from financial SOEs, non-financial SOEs, and government and public service units. Holz, "The Unfinished Business of State-owned Enterprise Reform in the People's Republic of China," Hong Kong University of Science and Technology *Working Paper*, December 2018.

[29] USITC, "China: Description of Selected Government Practices and Policies Affecting Decision-Making in the Economy", Investigation 3362-492, December 2007.

[30] Chen, " Township and Village Enterprises," *Oxford Bibliographies*, February 2016; Xu and Zhang, "The Evolution of Chinese Entrepreneurial Firms," International Food Policy Research Institute, *Discussion Paper* 854, April 2009.

[31] Mygind and Faigen, "The Development of Employee Ownership in China," *International Journal of Emerging Markets,* July 2017; Weitzman and Xu, "China's Township and Village Enterprises as Vaguely Defined Cooperatives," *Journal of Comparative Economics*, Elsevier, Apr 1994; Kang, *China's Township and Village Enterprises*, Foreign Language Press, 2006.

[32] World Bank (International Finance Corporation), *China's Emerging Private Enterprises: Prospects for a New Century*, 2000.

[33] Kung and Lin, "The Decline of Township-Village Enterprises in China's Economic Transition," *World Development*, Elsevier, April 2007.

[34] Schumpeter, "China's Private Sector Faces An Advance By The State," *The Economist*, December 8, 2018.

[35] Garnaut, Song, Yao, and Wang, *Private Enterprise in China*, Australia National University Press, 2012; Milhaupt and Zheng, "Beyond Ownership: State Capitalism and the Chinese Firm," *Georgetown Law Journal* 103-665, 2015.

[36] Lardy, "Private Sector Development," Chapter 18 in Garnaut, Song, and Fong (Editors)'s *China's 40 Years of Reform and Development*, Australian National University Press, 2018; Lardy, *Markets Over Mao: The Rise of Private Business in* China, Peterson Institute for International Economics, September 2014; *New York Times, "*Private Businesses Built Modern China. Now the Government is Pushing Back," October 3, 2018; and Yusuf, Nabeshima, and Perkins, *Under New Ownership: Privatizing China's State-Owned Enterprises*, World Bank, 2006.

funded enterprises.[37] These private enterprises accounted for an estimated 60 percent of China's economy by 2017, and employ an estimated 43.9 percent of China's workforce.[38]

Foreign-invested enterprises in China emerged after the opening of the Chinese economy in 1978 and have played an important role in the countries' rapid economic growth. China's integration into the world economy predominantly transpired via foreign invested enterprises (FIEs), or foreign firms operating in China whose assets where predominantly owned by foreign entities.[39] Much of China's economic growth has been attributable to FIE participation, as they have helped Chinese firms fill technology and managerial knowledge gaps, have facilitated China's industrial transformation and manufacturing surge, and have helped establish connections between Chinese firms and multinational production companies through FDI and the formation of many joint-venture operations along global supply chains.[40] Currently, FIEs consist of wholly-owned FIEs (WOFEs) and joint ventures such as Sino-Foreign Contractual Joint Ventures and Sino-Foreign Equity Joint Venture. Along with private enterprises, they have become the dominant exporters and importers of Chinese merchandise as shall be shown. The World Bank has estimated that by 2017, their contributions to GDP was around 9.7 percent despite only employing about 3.3 percent of China's workforce. [41]

B. Trends by Ownership Composition (from the China Customs data)

In line with the long-term, diminishing share of SOE contributions to GDP between 1995 and 2017 (which was partially offset by an SOE resurgence starting in the mid-2000s), SOE's contributions to Chinese exports has also diminished since 1995. Figure 3 and Figure 4 highlight these changes vis-à-vis China's trade with the United States and its trade with the rest of the world. A few of the trends are particularly noteworthy.

First, despite the resurgence in the SOE share of China's broader economy since at least 2013, China's SOE trade in both exports and imports has been consistently diminishing. This is probably attributable to the fact that SOE activities are concentrated in strategic sectors that provide upstream monopolistic good and services (e.g., electricity, oil, transportation) to the domestic economy, as explained above. Hammer and Jones have explained that although their overall influence has been diminishing in trade, SOEs have had disproportionately influential roles in China's iron and steel; minerals and oils; shipbuilding; rail; aircraft and parts; and fertilizer exports.[42]

Another noteworthy observation is that SOE trade has constituted a lower share of China's exports and imports with the United States than its trade flows vis-à-vis the rest of the world. Appendix-1 show that this is true for every region considered (e.g., Africa, Asia, Europe, and Latin America) and the regional

[37] China's National Bureau of Statistics, *China Statistical Yearbooks* (1995-2019).
[38] Zhang, "How Much do State-Owned Enterprises Contribute to China's GDP and Employment?" World Bank, July 15, 2019.
[39] China's National Bureau of Statistics, *China Statistical Yearbooks* (1995-2019).
[40] Chang, *Multinational Firms in China: Entry Strategies, Competition, and Firm Performance*, Oxford University Press, 2015; Enright, *Developing China: The Remarkable Impact of Foreign Direct Investment*, Routledge, 2017; Nolan, *Transforming China: Globalization, Transition, and Development*," Anthem Press, 2004.
[41] Zhang, "How Much do State-Owned Enterprises Contribute to China's GDP and Employment?" World Bank, July 15, 2019.
[42] Hammer and Jones, "State-Owned Enterprises Play a Smaller, But Still Strategic Role in China's External Sector," U.S. International Trade Commission's *Executive Briefings on Trade*, January 2018.

differences are especially high when compared against China's imports from Africa and Latin America where Chinese SOEs have been highly involved in commodity importing.[43]

Third, we see that FIE trade has been disproportionately greater in China's trade with the United States compared to China's trade with the rest of the world. Appendix 1 also captures this dynamic, showing that it has been especially evident on China's export side. There, China's share of trade being conducted by FIEs is highest with respect to its exports to the United States, even relative to corresponding trade to Asia and Europe.

Finally, it is worth noting how influential China's FIE and private sector trade have been to its overall trade profile, especially on the export side. Although most prominent vis-à-vis the United States, China's FIE-related exports have constituted nearly half of all of its exports trade with its largest trade partners. This was even greater before the 2008-09 Financial Crisis, peaking at more than 70 percent, but has more recently leveled off given the surging influence of private sector firms in its trade.

With respect to the referenced growth of the private sector, we note their growth influence with respect to China's exports and imports with the United States and the rest of the world. Their influence on China's trade patterns materialized in 2001 (at the time of WTO accession), and now make up the second highest forms of China's exports and imports with the United States, and the highest forms of exports vis-à-vis the rest of the world.

[43] Devlin, Estevadeordal, and Rodriguez-Clare (Editors), *The Emergence of China: Opportunities and Challenges for Latin America and the Caribbean*, Inter-American Development Bank and Harvard University's Center for Latin American Studies, 2006; Dollar, "China's Engagement with Africa: From Natural Resources to Human Resources," Brookings, 2016; Hammer, "Distinctive Patterns & Prospects in China-Latin America Trade," USITC *Journal of International Commerce and Economics (JICE),* September 2006; Santiso (Editor), *The Visible Hand of China in Latin* America, OECD Development Centre Studies, 2007; Sing and Chen, State-Owned Enterprises And The Political Economy Of State–State Relations In The Developing World," *Third World Quarterly,* June 2017; Lin, "China's Development, Transition, and Divergence," Cambridge University *Marshall Lectures*, Fall 2007; Rotberg (Editor), *China Into Africa: Trade, Aid, and* Influence, 2008; Sun, *The Next Factory of the World: How Chinese Investment is Reshaping Africa, Harvard Business Review Press,* 2017; United Nations Conference on Trade and Development (UNCTAD), *Trade and Development Report: Structural Transformation for Inclusive and Sustained Growth,* 2016; and United States-China Economic and Security Commission, "Chinese State-Owned and State-Controlled Enterprises" Hearing, February 15, 2012.

Figure 3. China's Merchandise EXPORTS to the USA and ROW (by Firm Type)

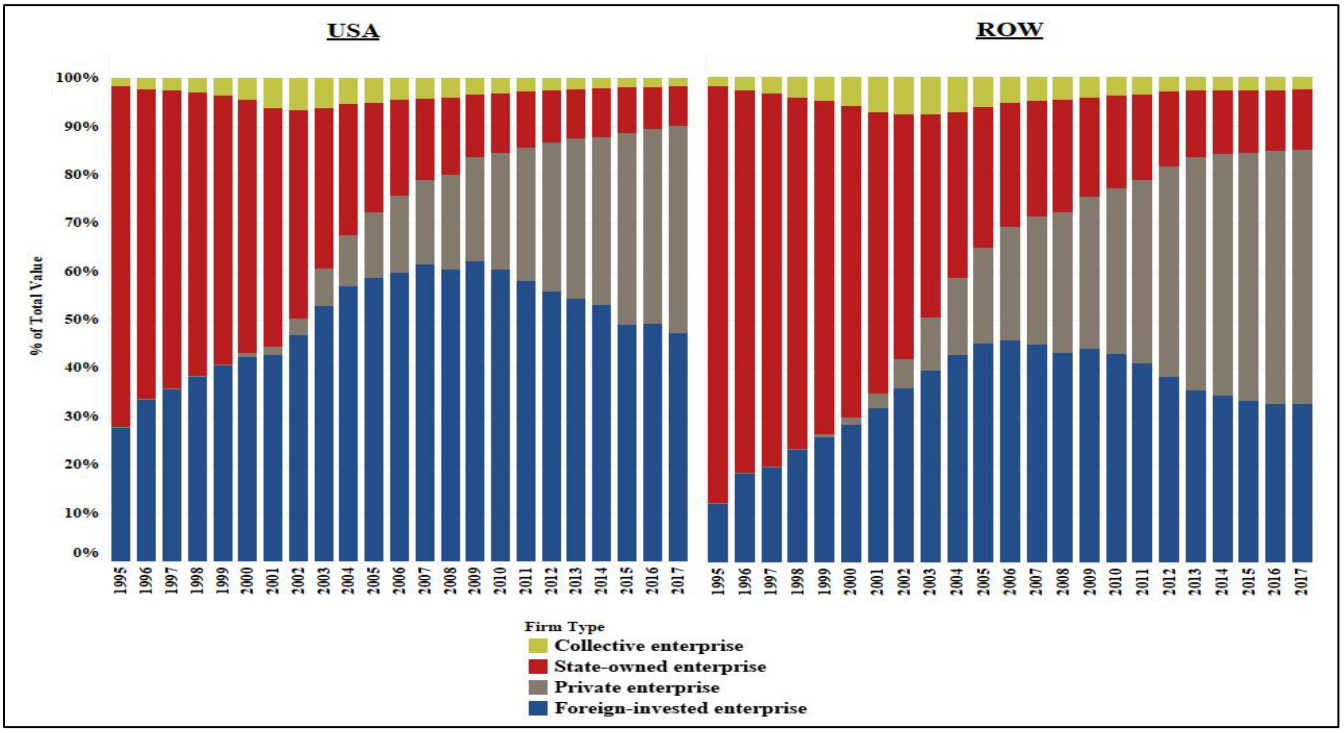
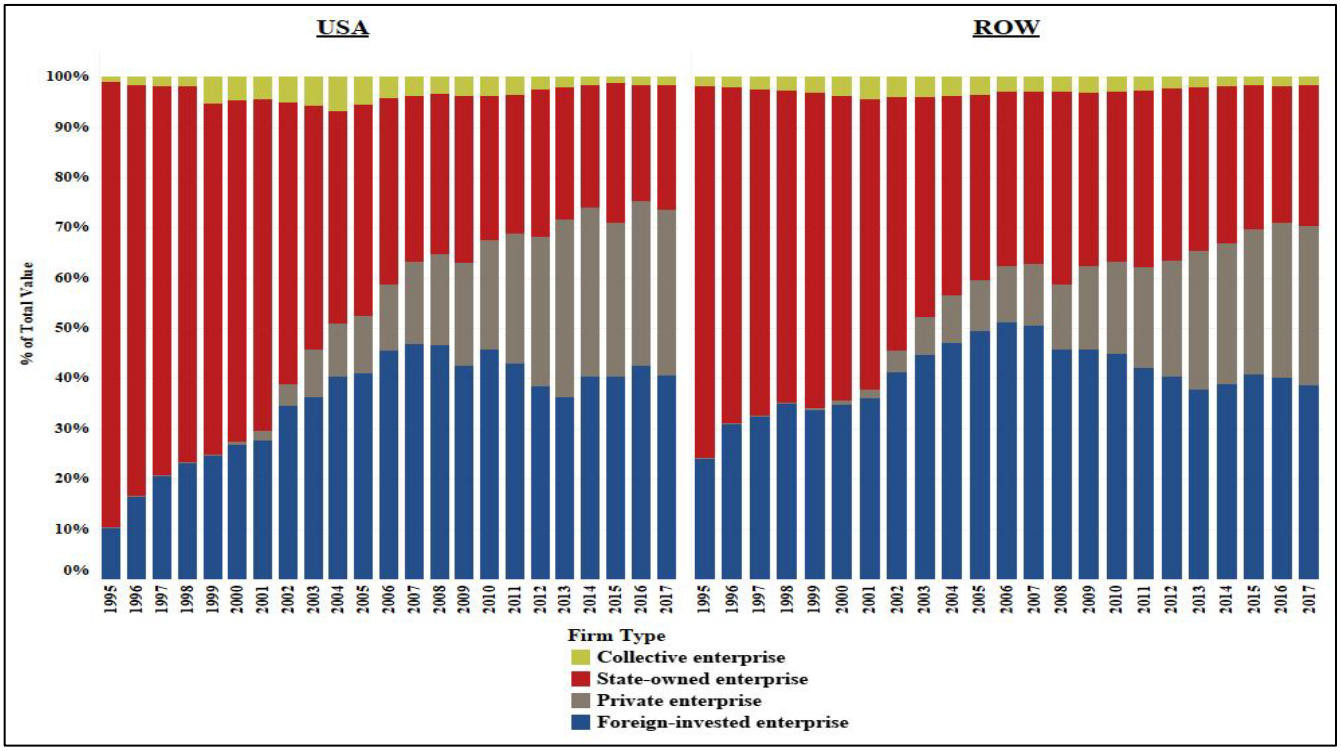


Figure 4. China's Merchandise IMPORTS from the USA and ROW (by Firm Type)



Decomposing China-U.S. Trade by Customs Regime

The next part of our analysis relates to the customs regimes that have been associated with China's trade data statistics. Before delving into the findings, we provide some background and context.

A. Background and Context

Classifications of the different types of trade in China do not offer the same parallels to its domestic economy and associated structural transformations as the ownership criteria described above. That is mostly attributable to the fact that these categories are unique to China's external sector. It is worth mentioning, however, that our analysis of the trends in these categories provide context to China's export-oriented growth strategy of the past, which has largely benefitted from trade of manufactured goods along global supply chains.[44] China's trade data is broadly composed of the following types of customs regimes, which include "ordinary trade", "processing trade" (sub-divided into "processing and assembly" and "processing with imported parts," and other miscellaneous categories such as warehousing trade. These categories are further explained below.

- Ordinary Trade. This is the main type of trade in China that is not characterized by any special regime attributes. According to China Customs, this type of trade simply refers to imports intended for China's domestic market, as well as exports from mostly Chinese inputs.45
- Processing Trade. According to China Customs, this refers to imports of goods that are intended to be assembled or transformed in China, and subsequently re-exported (all within international assembly and subcontracting operations). The imported inputs are generally exempt from customs tariffs, while the finished goods are intended to be sold outside of China's market.46 Manova and Yu explain that this type of customs regime was introduced in the mid-1980s to incentivize re-exportation through reduced import duties.47 China Customs' processing trade categorization is subdivided into two related groups:
    - Processing and Assembly. Under this category, Chinese firms receive foreign inputs (without paying duties or incurring other costs), process the goods, and resend them to the same foreign supplier without assuming ownership of goods during its processing period.48 This type of trade is mostly conducted by FIEs and, to a lesser extent, SOEs.
    - Processing with Imported Parts. Under this category, the Chinese firms independently sources and pays for the imported parts and are free to use them to manufacture goods for domestic absorption into China's economy or for re-exportation to purchasers which

[44] Guo and N'Diaye, "Is China's Export-Oriented Growth Sustainable?" IMF *Working Paper*, WP/09/172, August 2009; Wei, *Vertical Specialization and Trade Surplus in China*, Elsevier, 2013; and Wei, "The Evolving Pattern Of China's Free Trade From A Vertically Specialized Perspective During The Transition To Inclusive Growth In China," Chapter 2 in *Achieving Inclusive Growth in China Through Vertical Specialization*, Elsevier, 2016.
[45] General Administration of Customs, PRC (China Customs), "Explanatory Notes, 2020" (accessed June 15, 2020).
[46] General Administration of Customs, PRC (China Customs), "Explanatory Notes, 2020" (accessed June 15, 2020).
[47] Manova and Yu, "How Firms Export: Processing vs. Ordinary Trade with Financial Frictions," NBER *Working Paper*, Feb 2016.
[48] Manova and Yu, "How Firms Export: Processing vs. Ordinary Trade with Financial Frictions," NBER *Working Paper*, Feb 2016.

are not necessarily the same as their suppliers. 49 Such trade is sometimes referred to as "import and assembly," and is mostly conducted by FIEs.

- Warehousing Trade. This form of trade refers to transitory trade that is stored in warehouses and subsequently re-exported without any processing in China. According to China Customs, it refers to goods imported into or exported from the customs bonded warehouses (including bonded logistics centers) located outside a bonded area.[50]
- Other Trade. There are a variety of other forms of customs regimes in the China Customs dataset, including compensatory trade, international aid, donations, goods on lease, goods on assignment, and barter trade. None of these represents major sources of trade to China's main trading partners, and as such have not been the focus of our analysis. [51]

B. Trends by Customs Regime (from the China Customs data)

Other than observing that "warehouse" and "other" trade regimes assume negligible components of China's overall trade flows, three main sets of observations have been found with respect to these export and imports. Most generally, we see that China's concentration of processing trade (which includes both "processing and assembly" and "processing with imported parts") is considerably higher on China's export side compared with its import side.

Second, with regard to exports, China's concentration of processing trade to the United States and the rest of the world is roughly similar as shown in Figures 5 and 6. However, a closer inspection of the region differentiation reveals that this is only true for its largest trading partners (Europe and Asia). China's exports and imports vis-à-vis Africa and Latin America, by contrast, are much less dependent upon processing regimes, largely because its firms have been excluded, up until now, from being major partners along integrated global supply chains.

Moreover, with respect to its exports to the United States (and all other regions for that matter), China's "processing with imported materials" has been substantially greater than its "processing and assembly" exports. This suggests that these forms of exports China is sending the United States are either finished goods that were processed in China, or intermediary inputs sent to U.S. firms which were not owned by similar U.S. suppliers before being processed in China.

China's "process and assembly" imports from Asia also stand out as an important story. The disproportionately greater concentration of this form of imports from Asia reflect a global supply chain story of predominantly Asian suppliers exporting their intermediary inputs to China, often for final assembly. This trend is compounded by the fact that China's imports from Asia (approximately one $1.0

[49] Manova and Yu, "How Firms Export: Processing vs. Ordinary Trade with Financial Frictions," NBER *Working Paper*, Feb 2016.
[50] General Administration of Customs, People's Republic of China (China Customs), "Explanatory Notes, 2020" (accessed June 15, 2020).
[51] General Administration of Customs, PRC (China Customs), "Explanatory Notes, 2020" (accessed June 15, 2020).

Figure 5. China's Merchandise EXPORTS to the USA and ROW (by Customs Regime)

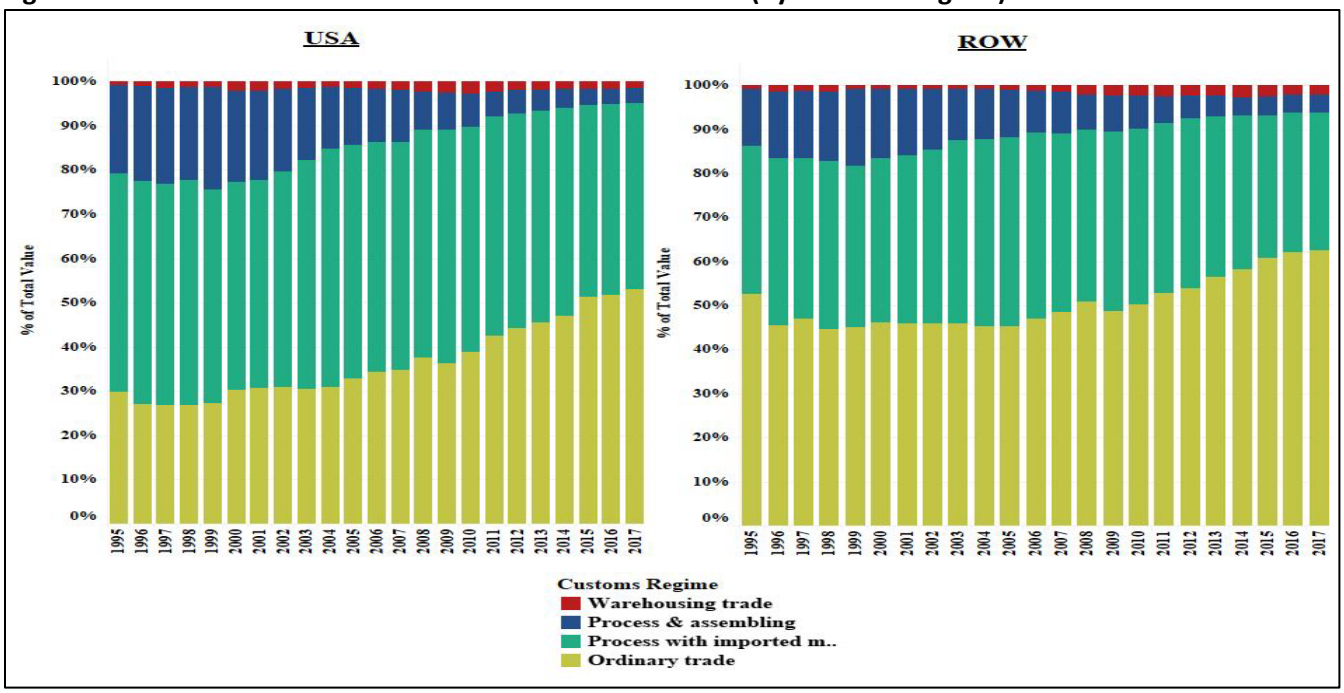
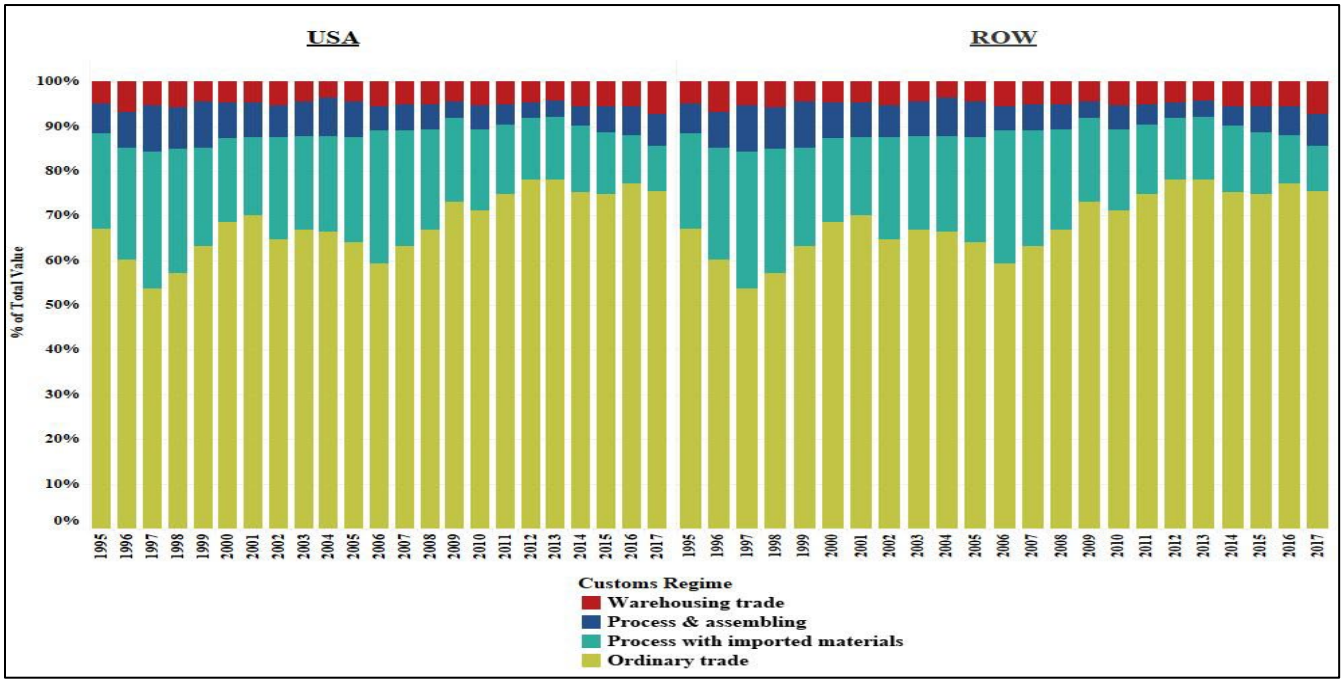


Figure 6. China's Merchandise IMPORTS from the USA and ROW (by Customs Regime)



trillion in 2017) were nearly seven times greater than its imports from the United States ($153.9 billion) and more than three times greater than its imports from Europe (approximately $327.1 billion) in 2017.

Finally, warehousing trade plays the most important role with respect to China's imports from Latin America, in large part because of the imported commodities it stores.

Decomposing China-U.S. Trade Flows by Incentive Scheme

The third and final part of our analysis relates to incentive schemes, or economic zones, that China has created to facilitate trade flows. Before proceeding to its associated trends, we provide some background information for context.

A. Background and Context

A central component of China's economic reform strategy entailed the gradual opening of its economy to international trade and investment, and China's economic zones were the key mechanisms for that.[52] Zeng explains that this is because the economic zones allowed Chinese firms to experiment with less-centrally planned economic systems lying outside of China's state-dominated price and official decision-making system during the initial stages of reforms.[53] He also explains that the local and central government's strong commitment to the success of the new economic zones, their active promotion, and practical development strategies helped the zones success, as they could effectively serve as important conduits to international trade, FDI, and joint-venture operations with foreign based multinationals.[54]

At the dawn of its economic reform process in 1978, China created four "Special Economic Zones" (SEZs), three in Guangdong province which borders Hong Kong (Shenzhen, Zhuhai, and Shantou), and one in Fujian province (Xiamen). These original zones were modeled after those in other developing countries at the time.[55] They offered foreign-based multinationals entry into China's promising economy at the time and low labor costs. They also offered low (sometimes zero) taxes and tariffs, modern infrastructure built by foreign firms, flexible labor and wage policies, and minimal bureaucracy.[56] Given the early success of these four SEZs, fourteen others were established along China's coastline near urban centers in the mid-1980s. However, as reports of large trade deficits, foreign exchange losses, financial mismanagement, and corruption took hold, further expansions were put on hold by national and provincial based governments.[57] It wasn't until the late 1980s and early 1990s that China's zone policies and growth resumed, in large part because of the new found success of firms connected to global supply chains. Since then, the success of Chinese zones in promoting expedited and cheap trade along global supply chains, and increased demand for inland free trade zones to be established, led to a proliferation of such various

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[52] Fernandes and Tang, "Determinants Of Vertical Integration In Export Processing: Theory And Evidence From China," *Journal of Development Economics*, November 2012.

[53] Farole and Akinci (Editors), *Special Economic Zones: Progress, Emerging Challenges, and Future Directions*, World Bank, 2011; Zeng, *Building Engines for Growth and Competitiveness in China: Experience with Special Economic Zones and Industrial Clusters*, World Bank, 2010.

[54] Zeng, *Building Engines for Growth and Competitiveness in China: Experience with Special Economic Zones and Industrial Clusters*, World Bank, 2010.

[55] Sit, "The Special Economic Zones of China: A New Type of Export Processing Zone?" *The Developing Economies*, March 1985.

[56] Crane, *The Political Economy of China's Economic Zones*, Routledge, 1990; and Sit, "The Special Economic Zones of China: A New Type of Export Processing Zone?" *The Developing Economies*, March 1985.

[57] Crane, *The Political Economy of China's Economic Zones*, Routledge, 1990; and Sit, "The Special Economic Zones of China: A New Type of Export Processing Zone?" *The Developing Economies*, March 1985.

types of zones.[58] There are now hundreds of such zones in operation, of which 4 are pilot free-trade areas, 6 are "special economic zones", 14 are coastal cities' "economic and technological development areas", 31 are bonded areas, 85 national eco-industrial parks, 114 are national high-tech development parks, and countless others are high-technology industrial development areas and others. According to the World Bank, as of 2014, all of China's zones contributed 22% of China's GDP, 45% of China's FDI, and are estimated to have created over 30 million jobs. They have broadly been credited for accelerating the pace of industrialization, agricultural modernization, and urbanization in China.[59]

One of the most pathbreaking developments with respect to such zones happened in 2013 with the creation of Shanghai Pilot Free Trade Zone. It consolidated four prior bonded areas around Shanghai and established a region that was free of duties and customs clearance procedures (granting importers considerable flexibility). Moreover, it created considerably more inviting investment conditions. For the first time in China, [60] multinationals were given the option of investing in any sector that was not on a so called "negative list" (which was dramatically more expansive than the customary "positive list" of select government permitted sectors).[61] The government's experimentation with such changes are rare, and could be considered representative of what the next generations of investment zones could look like in China.[62] It remains to be seen whether escalating frictions with the United States and the COVID-19 outbreak will precipitate or inhibit further policy developments along this line.

B. Trends by Incentive Scheme (from the China Customs data)

Several trends can be observed from the Customs data as they related to China's exports and import through the various zones. First, as can be seen in Figures 7 and 8, a considerable portion of such trade flows through these zones. For example, about a quarter of China's exports to the United States occur through these zones, which is roughly the same as China's trade with the rest of the world. This is large by objective standards, as the prominence of economic zones typically does not encompass such a large share of the countries' overall exports. On the import side, these zones also represent about a quarter of China's imports from the U.S., and slightly more vis-à-vis China's imports from the rest of the world. Appendix-3 highlights the fact that China's zone related trade is most concentrated in its exports to Asia, and least concentrated in its exports to Africa and Latin America. The import statistics

[58] Ye and Zhang, "The Successful Cases of Inland Free Trade Zones and Inspirations to China," Proceedings of the International Academic Conference on Frontiers in Social Sciences and Management Innovation, February 2020.
[59] World Bank, "Experience Gained in the Development of China's Special Economic Zones," 2015.
[60] JP Morgan, "China: Highlights of the Shanghai Free Trade Zone," *Asia Pacific Economic Research,* 2014.
[61] JP Morgan, "China: Highlights of the Shanghai Free Trade Zone," *Asia Pacific Economic Research,* 2014.
[62] JP Morgan, "China: Highlights of the Shanghai Free Trade Zone," *Asia Pacific Economic Research,* 2014; and Zhang, "Further Disapplying Differentiated Treatment of Foreign Investment in China: Is This the Only Way out for the Shanghai Free Trade Zone," *International Business Law Journal*, 2016.

Figure 7. China's Merchandise EXPORTS to the USA and ROW (by Incentive Scheme)

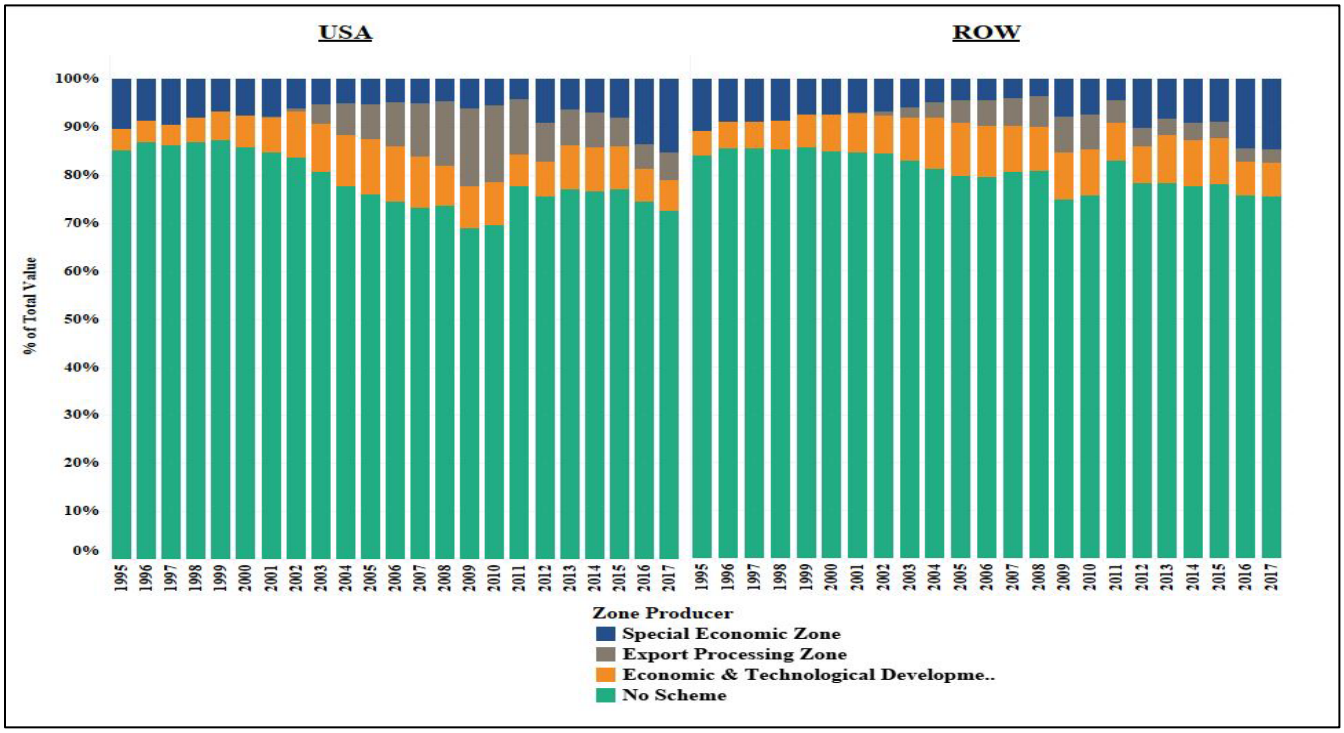
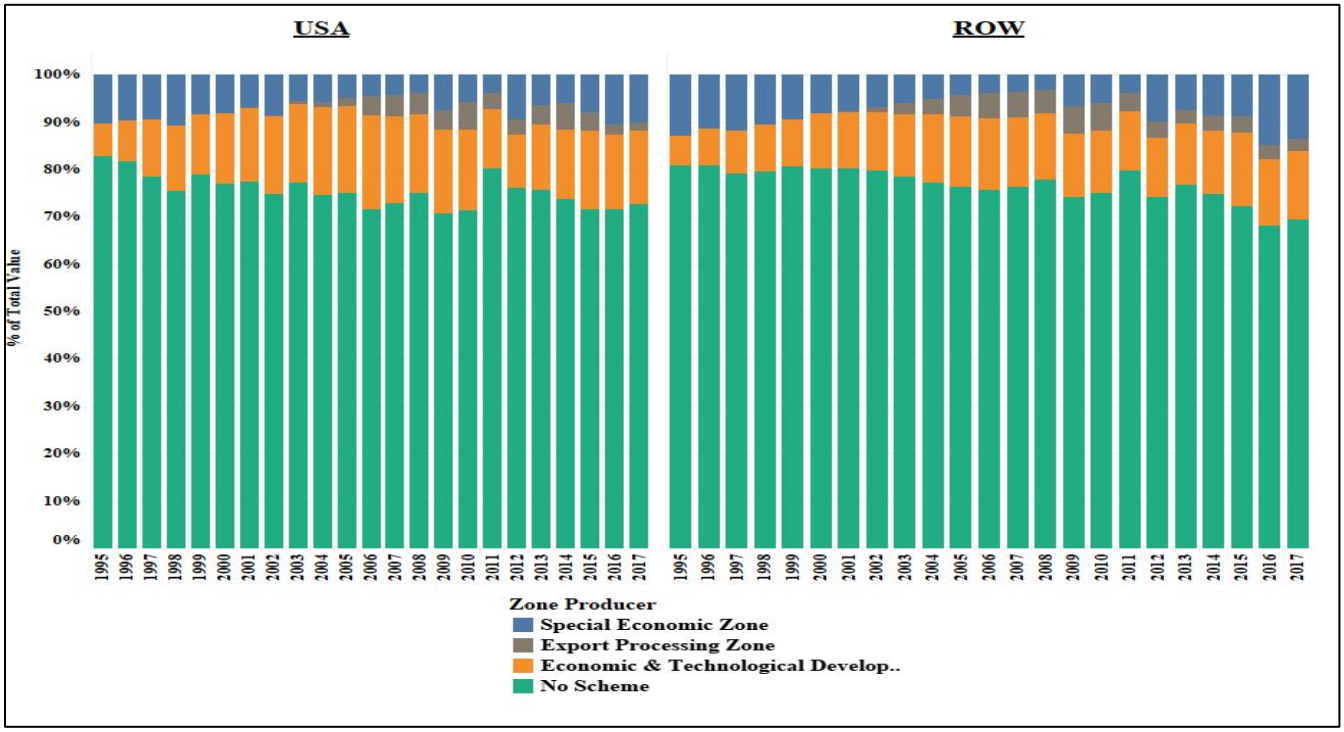


Figure 8. China's Merchandise IMPORTS from the USA and ROW (by Incentive Scheme)



reveal a much starker regional contrast. There, while zone related trade accounts for 23-35 percent of China's imports from the U.S. and Europe, it accounts for a staggering 85% from its Asia sources.

With respect to the type of zone trade being conducted, we can see that since 2015, approximately three quarters of zone related exports from China to the United States have come from SEZs, while China's exports to the rest of the world are more evenly split between SEZs and "economic and technological development areas". Appendix-3 reveals the fact that a substantially larger share of China's exports to Asia (relative to other regions) flow through export processing zones. Asia's exports take on a disproportionately higher weight as it represents China's exports' largest destination.

China's share of imports of zone related goods from the U.S. were slightly smaller than China's share of corresponding imports from Europe, but significantly greater than China's concentrations of imports from Africa and Latin America. Moreover, China's imports from Europe are more concentrated in trade from economic and technological development areas relative to the United States.

Conclusions

This paper explored China's highly detailed Customs trade statistics over the 1995 to 2017 period, and revealed important trends that deepen our understanding of bilateral trade conditions with the United States. Building upon the findings of a related 2006 paper, this analysis provided a decade and a half worth of new data, revisions to the old data, and a more focused comparison of China's trade trends with the United States to those in other regions (e.g., Africa, Asia, Europe, Latin America) to distinguish unique patterns. It also built upon well-documented trends in product-specific trade flows, and provided focused reviews of the literature to place the observed trade trends into historical and economic context. This is particularly important for China, as it has undergone transformational changes to its economy in the past few decades.

In this paper, we found that China's trade with the United States has been distinguished by several key features. With regard to ownership characteristics, China's trade with the United States has been disproportionally reliant on exports from foreign-invested enterprises relative to China's exports to Asia, Africa, Europe, and Latin America. Relatedly, China's concentration of exports from SOE was lower with regard to products being sent to the United States relative to products China has shipped to the other major trading partners. Africa and Latin America's higher concentration of SOE imports, which derived mostly from commodity imports, represented the strongest contrast with corresponding U.S. trade flows.

With regard to the type of trade being conducted, referred to as its "customs regime", China's exports to the United States have not been markedly different from those sent to Asia and Europe. This is not the case on the import side however, as China's imports from Asia are overwhelmingly concentrated in this type of processing trade. This fits a broader narrative that suggests that many of China intermediary imports stem from Asia, and are processed, assembled, and shipped to large consumer markets in the United States, Europe, and Asia. These finished products that have been assembled in China are also increasingly being absorbed by its domestic economy given rising per capita income levels.

With respect to the dependence upon trade orchestrated through economic zones, China's exports to the United States have not been markedly different from China's exports to Europe and Asia, though exports to these three regions were markedly more dependent on zone trade than China's exports

to Africa and Latin America. Regarding China's imports, China's purchases from Asia are characterized by an overwhelmingly high share going through export processing zones. This confirms the narrative identified above, and suggests that the massive volumes and concentrations of intermediary inputs coming from Asia are disproportionately coming through China's economic zones relative to other major trading partners, including the United States.

The use of official Chinese data for this paper should not be considered an endorsement of its validity, since U.S. and Chinese trade flow differentials have been well publicized and subject to methodological differences. Rather, its use is explained by the fact that comparing China's trade with the United States to China's trade flows with other countries/regions using similar characteristics would not have been possible.

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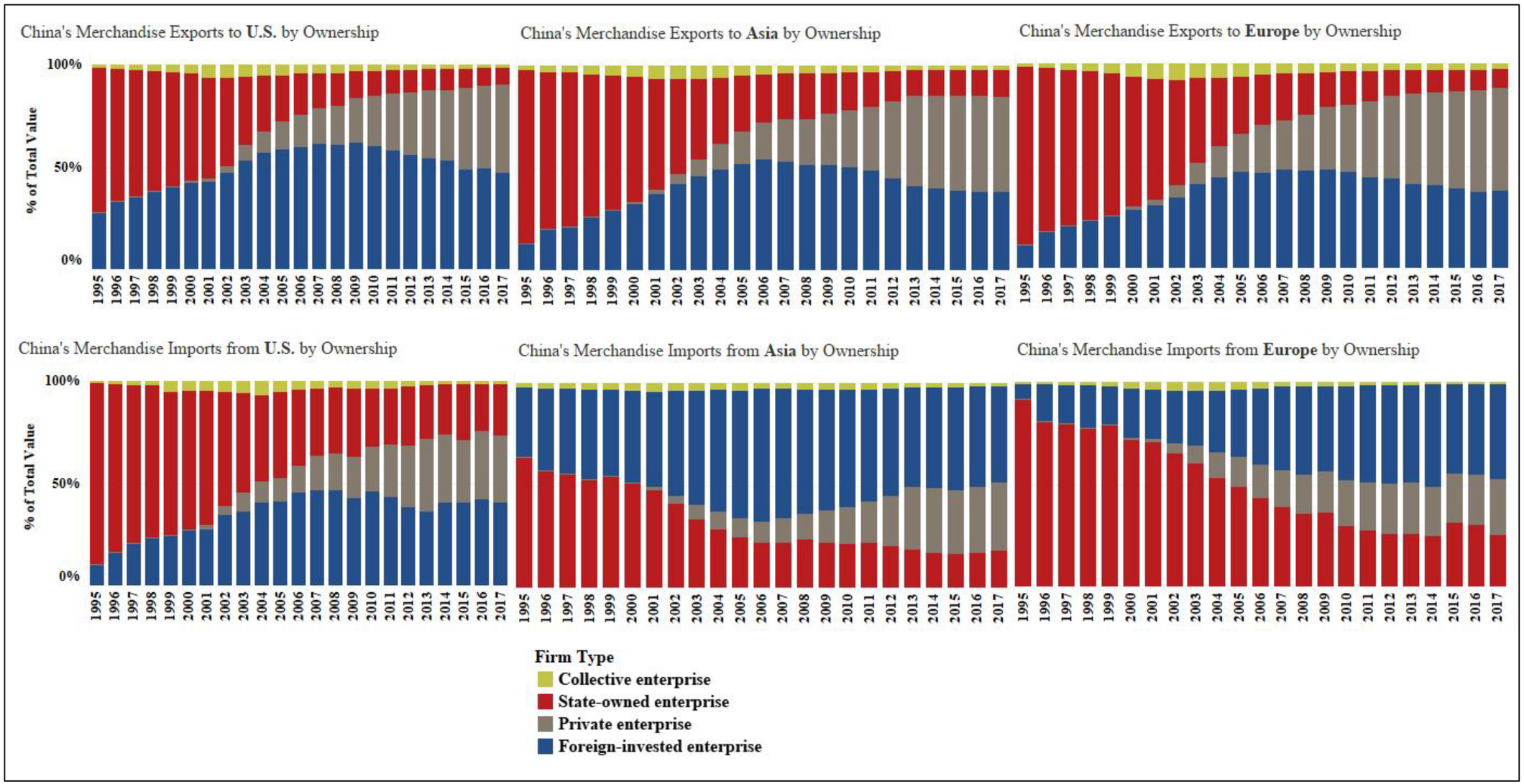
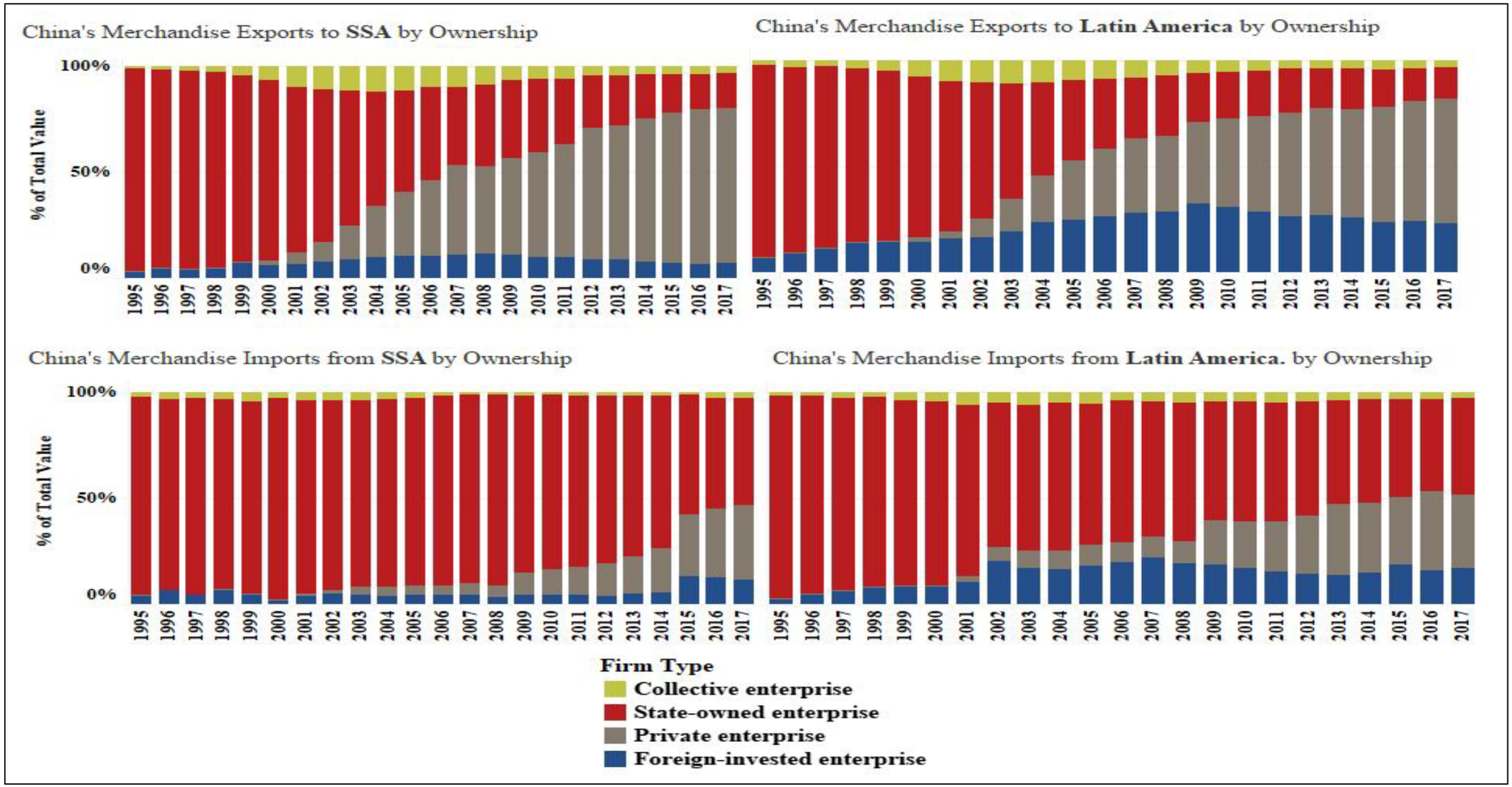
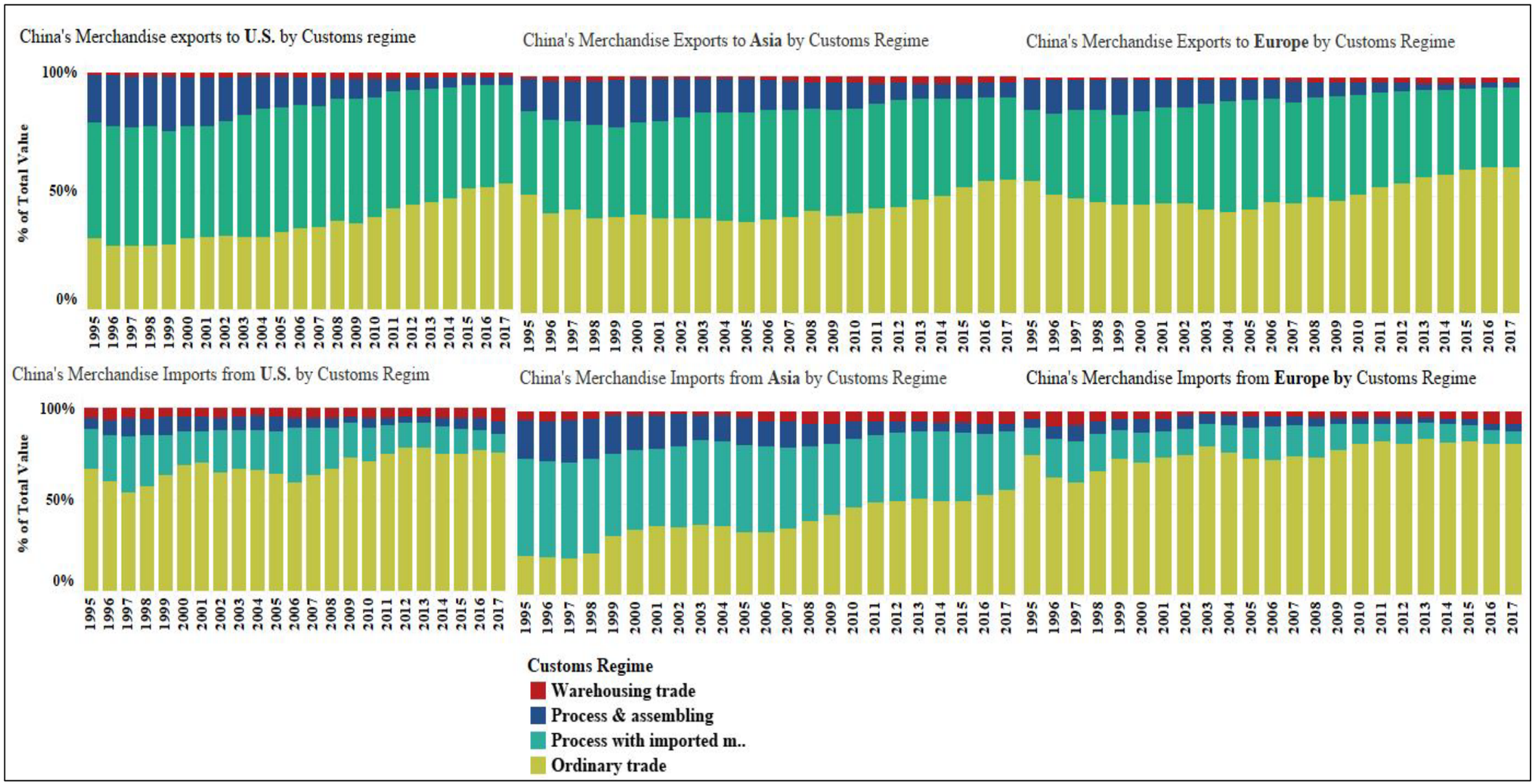
Appendix 1a. China's Merchandise EXPORTS & IMPORTS to USA, Asia, and Europe (by Firm Type)



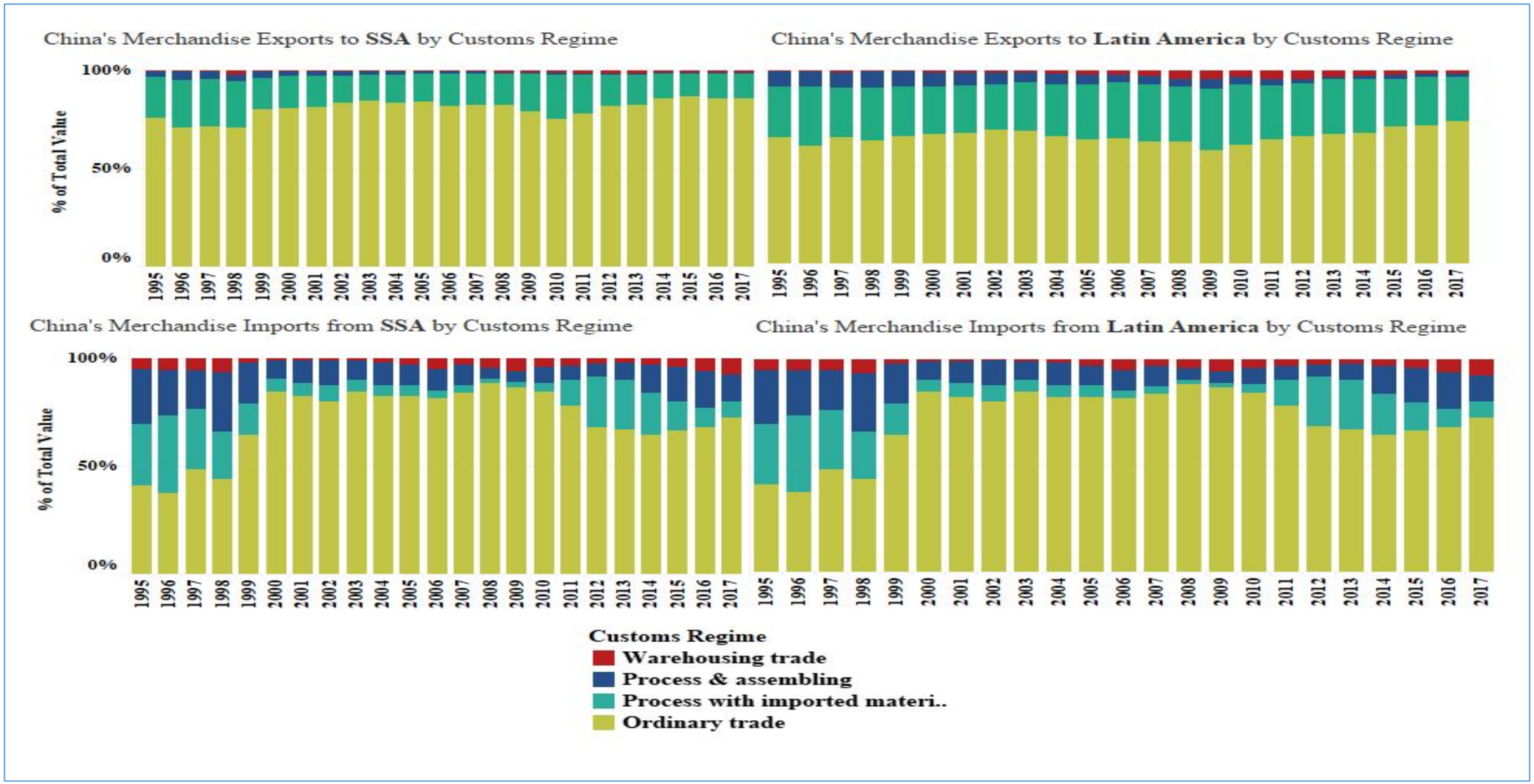
Appendix 1b. China's Merchandise EXPORTS & IMPORTS to Africa and Latin America (by Firm Type)



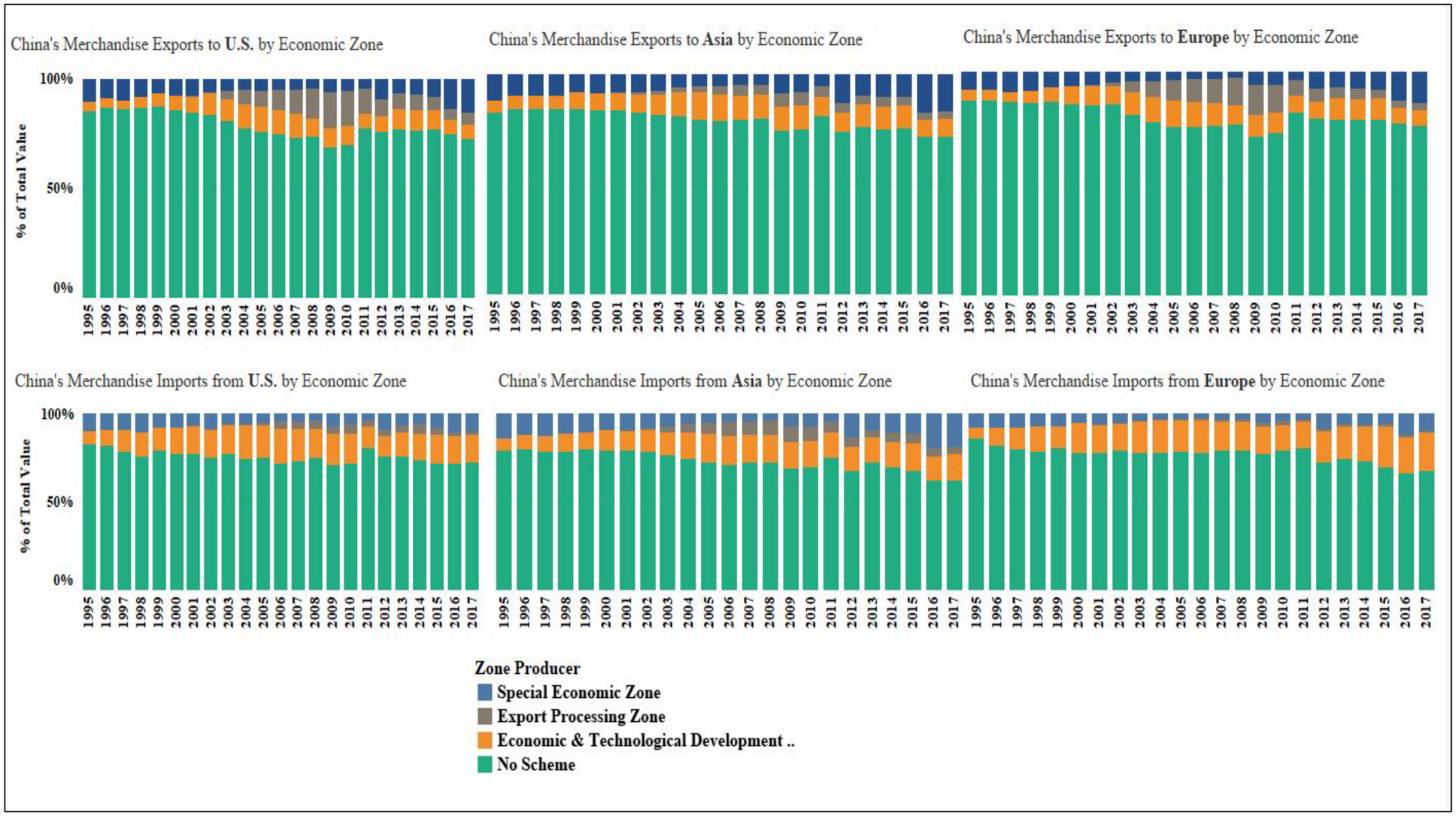
Appendix 2a. China's Merchandise EXPORTS & IMPORTS to USA, Asia, and Europe (by Customs Regime)



Appendix 2b. China's Merchandise EXPORTS & IMPORTS to Africa and Latin America (by Customs Regime)



Appendix 3a. China's Merchandise EXPORTS & IMPORTS to USA, Asia, and Europe (by Incentive Zone)



Appendix 3b. China's Merchandise EXPORTS & IMPORTS to Africa and Latin America (by Incentive Zone)