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Effective Movement of Bonded Hi-Tech Goods in China



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Effective Movement of Bonded Hi-Tech Goods in China

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1. INTRODUCTION

With increased globalization and offshore sourcing, global supply chain management is becoming an important issue. Firms are operating in multiple locations, having an array of global suppliers, and serving customers around the world. To benefit from the globalization tide, many developing countries have established bonded areas whose strategic locations and pro-business policies have made them key nodes of supply chains for global high-tech firms. Being the largest developing country and the manufacturing hub of the world, bonded areas in China are growing rapidly.

However, these bonded areas such as free trade zones and bonded warehouses are also often bottlenecks of the global supply chains for many Multinational Corporations (MNCs) operating in China. As China is the factory of the world, the bulk of high-tech products sold on the global market such as electronics are made or assembled in China. The nature of these products (high in design value but low margins for production and assembling) makes the bonded areas the natural production and distribution locations. With the development of the Western inland regions, many MNCs have moved inland and extended their China supply chains significantly, resulting in significant volume increases of bonded goods movement across the different bonded areas. While there are many benefits for the MNCs to operate in bonded areas, especially in the Western regions with cheaper land and pro-business policies, moving bonded goods across China becomes a serious drawback for the MNCs. As the import duties for the bonded goods are suspended, they have to be stored in bonded warehouses under the supervision of Customs. The movement of goods in and out of these zones has to be approved and tracked by Customs. With the rapid volume increase of bonded goods movement, limited resources, and the outdated customs procedures, most customs branches are lagging in the managing of bonded goods. As a result, companies have often experienced difficulty and delays in moving their goods out and between the bonded areas, and in turn the responsiveness of their global supply chain is severely affected.

This paper intends to provide an overview of the movement of bonded goods in China with a specific focus on the high-tech industry. It investigates industry practices both in China and other countries, and explores issues which affect the effective movement of bonded high-tech goods in China.

2. METHODOLOGY

As research is scant on this topic, a qualitative approach is taken. A semi-structured interview gives respondents the freedom to share experience and opinions, but at the same time provides focus and scope on the discussion. We thus mainly rely on the semi-structured interviews for first-hand information from people at the management and operation level. Open-ended questionnaires are also used for feedback from the managers located in China. We interviewed representatives from companies in Singapore and phone-interviewed several experienced managers and government officials in China. In addition, some companies participated in the study through written questionnaires. We have also searched both English and Chinese secondary sources for supplementary information.

The participant group makeup is as follows:

- Large multi-national manufacturers with significant operations in China in the high-tech sector. Their suppliers or products are often subject to high customs duties and as such have to be moved as bonded goods in China for processing or distribution.
- Multi-national logistics service providers (3PLs) operating in China. They normally serve MNCs operating in China with greater coverage over the various provinces in China and multiple industries.
- Domestic 3PLs in China. They normally focus on a few locations to serve both domestic and international firms in China. Some of them also subcontract for foreign 3PLs with their strong local networks. They have more local knowledge and are more familiar with Chinese customs rules and regulations, both written and unwritten.
- Management officials of the bonded zones including customs officials. From the perspective of the operators of the bonded areas, we can eke out a better understanding of some of the current practices.

3. MANAGEMENT OF BONDED GOODS MOVEMENT IN CHINA

3.1. Overview of bonded areas in China

With globalization, global supply chains are a reality. From the perspective of MNCs, their supply chains have to be both efficient and responsive, with low supply chain cost and fast responsiveness to their global operations. Therefore, their selection of key nodes in the global supply chain must satisfy the following conditions according to the international business literature:

- proximity to transportation collectors;
- near key markets;
- cheap labor and land;
- integrated functions of warehousing, export processing, distribution, and international trading.

Seeing the benefits of foreign investment to the economic growth and development, many developing countries have used various policy incentives to attract the direct investment of MNCs. One common approach is to establish a number of Special Customs Surveillance Areas (SCSAs), commonly known as bonded areas. In China, the bonded areas are approved by the State Council and monitored by the General Administration of Customs (GAC). They are developed with three key objectives: i) to build platforms for international business, ii) to be the engine for industrial agglomeration and regional development, and iii) to build logistics and port facilities in strategic locations with potential for key nodes in the MNC global supply chain.

The bonded areas can also have an agglomeration effect as their integrated functions of logistics services can attract a large number of well-known 3PLs as well as manufacturers and traders who require reliable logistics support.

There are four main types of bonded areas: i) free trading port areas (FTPAs), ii) integrated free trading areas (IFTAs), iii) export processing zones (EPZs), and iv) bonded logistics parks (BLPs) or centers (BLCs). Table 1 presents the policies and functions in the bonded areas in China.

Table 1: Policies and functions in bonded areas

Characteristics	FTPAs	IFTAs	EPZs	BLPs
Export tax rebate	Yes. Entering goods is considered as exported.	No. Rebate is available when goods are exported.	Yes. Entering goods is considered as exported.	Yes. Entering goods is considered as exported.
Customs	Managed by a single customs.	Port and the bonded area are managed by two separate customs.	Port and the bonded area are managed by two separate customs.	Port and the bonded area are managed by two separate customs.
Port	Inside the bonded area	Not inside the bonded area	Not inside the bonded area	Possible to link with port by a logistics channel
Trading and logistics firms	Allowed	Allowed	Not allowed	Allowed
Manufacturing firms	Allowed	Allowed	Allowed	Not allowed
Container value-added services	LCL consolidation and unloading, transshipment and other services.	Not available	Not available	LCL consolidation and unloading, limited transshipment services
Multi-modal transportation	Yes	Not available	Not available	Limit to water-road
Area (km ²)	5-10	5-10	2	1-2

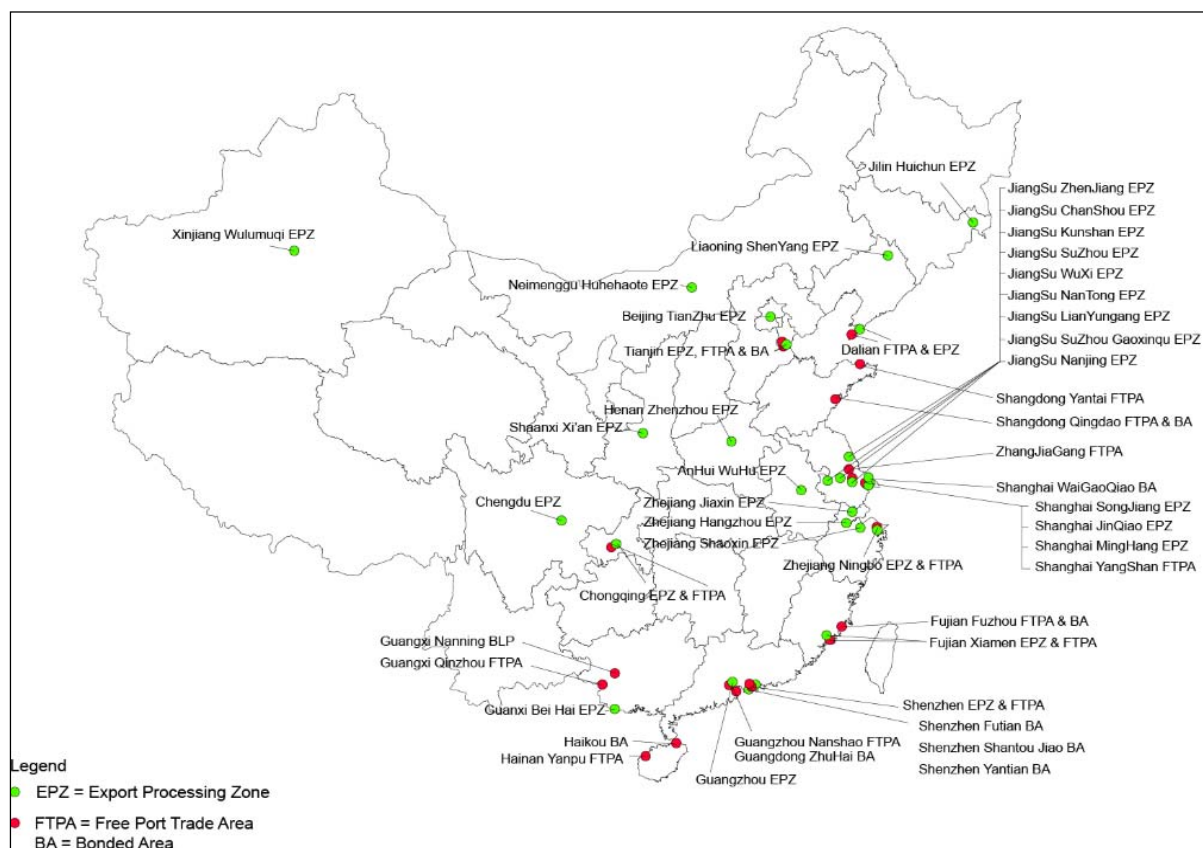
Note: LCL refers to less than container load.

For foreign investors, particularly large MNCs with extensive global supply chains, the bonded areas are often attractive as they meet their requirements for global supply chain operations such as

- multiple and integrated functions in logistics, export processing, and international trading;
- tax preferential policy advantages such as tariff exemptions from value-added tax and consumption tax;
- low-cost labor and land, broad hinterland, convenient land, sea and air transportation facilities, which may lower transportation cost;
- various value-added services including advanced information communication services;
- more efficient customs services such as on-site services for imports and exports.

Currently, most bonded areas are located in the coastal areas. However, to support the development of the inland regions, more bonded areas have been approved and established in Central and Western China in line with the government's program for Western development under the Great Western Development Strategy. The location of the major bonded areas (IFTAs, FTPAs and BLPs) and export processing zones (EPZs) are presented in Figure 1.

Figure 1: Locations of major bonded areas in China



Source: 2010 China Free Trade Zone and Export Processing Zone Yearbook.

A detailed description of the four types of bonded areas is presented below.

A. Free trade port areas

The Free Trade Port Areas (FTPAs) are established as key nodes in the global supply chain to lead and promote the development of the adjacent areas and hinterland. Currently, 14 FTPAs are mostly located in the coastal cities, except the Chongqing Cuntan (寸滩) FTPA.

An FTPA possesses all the functions of the container hub port, free trade zone, export processing zone, and bonded logistics park. Firms inside the FTPA can undertake international transfer, procurement and distribution, trade, carrying trade, exhibition of duty free commodities, and export processing. It is equivalent to a free port based on international practice.

An FTPA enjoys the most favorable policy, namely:

- the goods in the area is bonded;

- the goods exported from the area exempt from any export taxes;
- a tax-rebate exists for domestic goods entering the FTPA;
- no value-add tax for products produced in the area;
- goods leaving the FTPA to the domestic market will be considered as an imports and need to go through customs formalities based on the actual status of the goods;
- goods entering the area will be considered as export and could be charged with export tariffs if imposed by the customs;
- goods can be moved around in the FTPA;
- building materials, mechanical equipment and a moderate amount of office consumables purchased from abroad by the enterprises in the FTPA for their own use are exempted from tariff, import value-added tax, and consumption tax;
- no import/export and domestic commodity turnover taxes will be imposed on the bonded goods that are moved between the FTPA and other SCSAs; some FTPAs may have specific policies based on the policies set by the GAC.

Table 2 lists all the major FTPAs and main industries inside. It shows that the high-tech industry is the most popular industry in almost all the FTPAs. The other main industries include automobile, and oil & petrochemicals. Supporting industries for efficient import /export, shipping, and logistics services are also present in these FTPAs though not listed.

Table 2: Major FTAs and main industries

No	Name	Area (km ²)	Approved in	Date of operations	Electronics / high-tech	Automobile	Oil & Petrochem	Light Industries	Food & Beverage	Others
1	Shanghai Yangshan	8.14	2005-06	2005.12	√	√		√		non-ferrous metals
2	Tianjin Dongjiang	10	2006-08	2007.12		√			√	solar photovoltaic products
3	Dalian Dayaowan	6.88	2006-08	2007.8	√	√	√			
4	Hainan Yangpu	9.21	2007-09	2008.10			√			Paper & pulp
5	Ningbo Meishan	7.7	2008-02	2010.6	√		√	√		non-ferrous metals, ores
6	Guangxi Qinzhou	10	2008-05	2011.2	√	√	√		√	non-ferrous metals
7	Xiamen Haichang	9.51	2008-06	2011.1	√			√		stone processing
8	Qingdao Qianwan	9.72	2008-09	2009.9	√		√		√	
9	Shenzhen Qianhaiwan	3.71	2008-10	2009.7	√					Container
10	Guangzhou Nansha	7.06	2008-10	2009.8.	√			√	√	Bio-medical products
11	Chongqing Cuntan	8.37	2008-11	2010.8	√	√		√		Bio-medical products
12	Zhangjiagang	4.1	2008-11	2009.12		√	√		√	Wood
13	Yantai	7.26	2009-09	2010.7	√		√		√	
14	Fuzhou	9.2	2010-05	2011.5	√		√	√		Building materials

Source: 2010 China Free Trade Zone and Export Processing Zone Yearbook.

B. Integrated free trade areas

The Integrated Free Trade Areas (IFTAs) play a role as key nodes in promoting the development of the adjacent area and the focused industry clusters. Currently, 16 IFTAs have been approved.

The main functions of the IFTA include: (a) bonded warehousing, and temporarily stored goods which have not undergone customs clearance; (b) export processing; (c) international purchasing and distribution; (d) import and export trading and re-exports; (e) international transition; (f) goods inspection; (g) product exhibition.

The policies for the IFTA are very similar to the FTPA, except on the following two aspects:

- tax-rebate for domestic goods that leave the area for export;
- products manufactured with 100% imported materials are taxed as imports. If only part of the materials is from overseas, the final product will be taxed based on the imported materials.

C. Export processing zones

The purpose of the EPZ is to attract foreign investment and advance technology and develop the export-oriented manufacturing sector. This is to allow the local government to benefit from industrialization and economic development. The main functions include export processing, processing of related logistics, research on manufacturing, and goods inspection.

The major policies for the EPZs are very similar to the FTPA as tax rebates for domestic goods are allowed when they enter the EPZ.

D. Bonded logistics parks

The Bonded Logistics Parks (BLPs) are specially established to develop modern international logistics. Many BLPs in China have been recently upgraded to IFTAs to have processing functions too.

The main functions of the BLPs are: (a) to store imports and exports and other goods that have not been cleared by customs; (b) to carry out simple processing and value-added services; (c) entrepot trade, including re-export; (d) international procurement and distribution; (5) international transit; (f) goods inspection; (g) product exhibition; (h) other services allowed by customs.

The major policies for the BLPs are very similar to the EPZ as tax rebates for domestic goods are allowed when they enter the BLPs.

E. Bonded logistics centers

The Bonded Logistics Centers (BLCs) (Type A and B) refer to the areas operated by domestic firms specializing in bonded warehousing and storage. It is a type of bonded area that has both customs port and bonded warehousing functions. A Type A of the BLC is operated by a domestic firm which has elusive rights to conduct business on bonded warehousing and related logistics activities. A Type B of the BLC is operated by a domestic firm, but other firms are allowed to enter and run bonded warehousing and related logistics activities. The major policies for BLCs are same as that for the BLPs.

3.2. Moving bonded goods—some international practices

From the definition of the bonded area, goods moving into or out of are counted as exports or imports subject to possible tariffs and duties, but moving goods from one bonded area to another one is duty-free. To suspend the payment of related duties or taxes for goods leaving a bonded area, customs have to track the movement of the bonded goods across the different bonded areas to ensure its movement to the declared location. Thus tracking the movement of bonded goods by customs is a common requirement in most countries. Many developed countries have established a robust customs operating procedure to enable 24 x7 operations to serve companies better.

However, it would be troublesome for customs to track every movement of goods in every bonded warehouse physically in daily operations even under a 24x7 operation. It may expend the limited manpower and other customs resources given the sheer volume of bonded goods. On the other hand, the declaration and checking processes can be troublesome for manufacturers and 3PLs if they have to declare each bonded goods movement.

Thus it is a common practice for customs to get the goods owner, either the manufacturers or 3PLs to share the burden of tracking the goods. Concerning the huge duty or tax revenue loss if the goods owner were dishonest, customs thus rate companies into several categories according to their capabilities and compliance records, and give trustworthy companies more privileges by less customs reporting and inspection. It thus greatly improves the efficiency of customs processing for goods from large companies with a good track record. With a good IT infrastructure, many customs also use online reporting and book checking to replace traditional hardcopy reports and physical on-site inspection.

In the US, the movement of bonded goods is also governed by customs. According to US laws, bonded warehouses can be used to store all merchandise subject to duty except for perishables and explosives. While the warehouse can be either public or private, full accountability for all merchandise entering a customs bonded warehouse must be maintained. The merchandise will be inventoried and the proprietor's records will be audited on a regular basis. Bonded merchandise may not be commingled with domestic merchandise and must be kept separate from other merchandise. Merchandise held in bond may be transferred from one bonded warehouse to another in accordance with the provisions of customs regulations.

In the day to day operations, US customs also differentiate firms according to their track record and capabilities. Taking its cargo security program C-TPAT (Customs-Trade Partnership Against Terrorism, a program initiated after the terrorist attack of 11 Sept 2001) as an example, it has given participating firms advantages such as the reduced number of customs inspections, resulting in reduced border delay times. Though firms have to invest significant effort to be certified, the literature suggests that most participating organizations have benefited from C-TPAT certification through border inspections, lower costs, and higher customer satisfaction. These firms also reported improved relationships with their supply chain partners and better security among international partners (Sheu et al., 2006).

In the European Union which has separate customs administration, the treatment of bonded goods is also an important area for trade facilitation. There is a pan-European e-Customs Initiative which

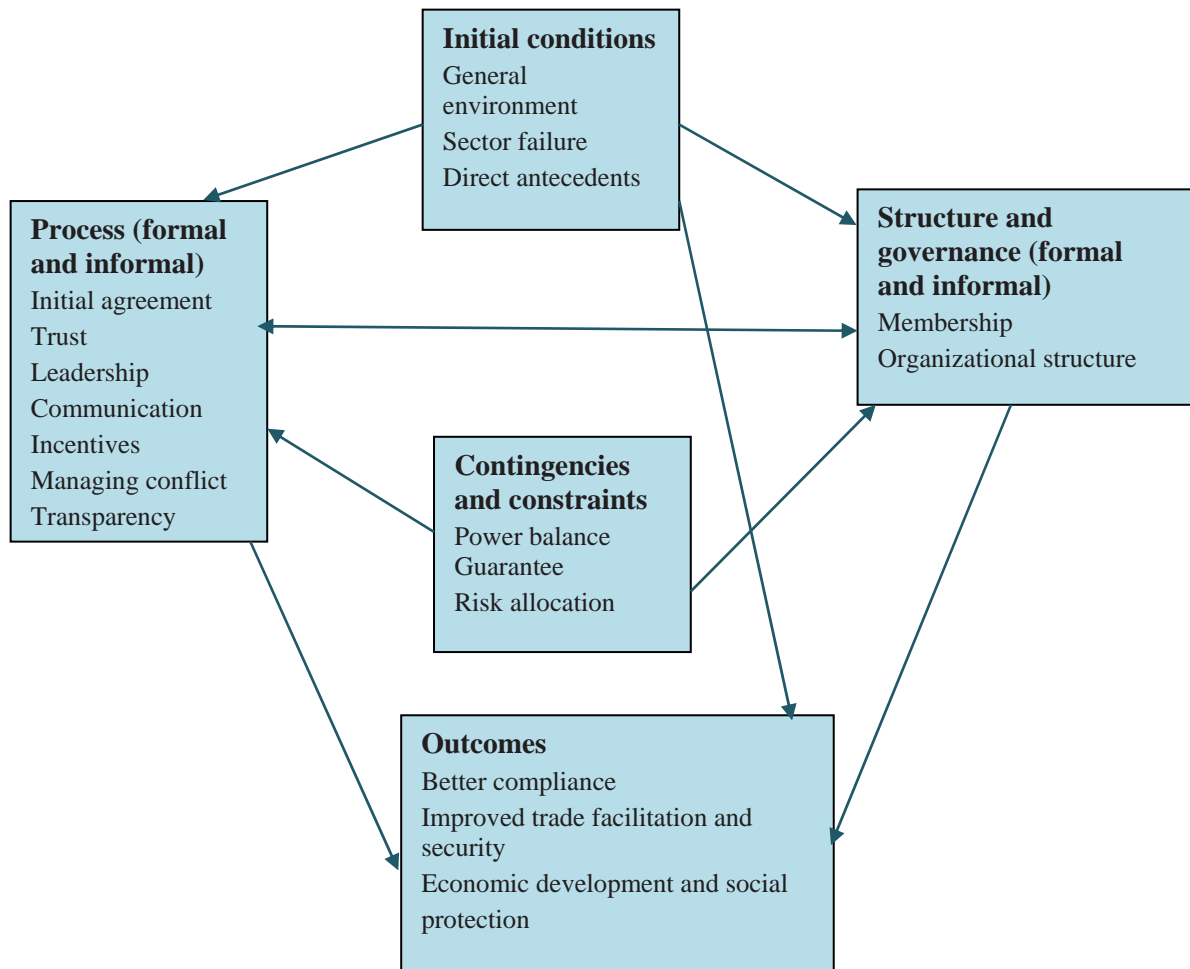
enables traders to use a uniform Internet portal and thereby the possibility of simple access to all provisions and procedures in one location without the involvement of the different customs authorities (Wolfgang and Ovie, 2007).

The September 11 attack has caused another aspect of customs law reform with the aim of introducing more security aspects to secure the international supply chain. One important policy initiative in Europe is the introduction of the Authorized Economic Operator (AEO) Scheme. Firms can submit the application to customs authorities with requirements on a record of compliance of customs provisions, a satisfactory system of commercial and transport records, and evidence of appropriate security standards. Firms certified with an AEO status are granted customs simplifications or reduced inspections or both. Once the status is authorized, it is recognized in the European Community and may be recognized by other countries such as the US (Wolfgang and Ovie, 2007).

The AEO scheme also rates firms beforehand to give preferred treatment in customs procedures. All these can be classified as a type of Customs-Business partnership (CBP). In general, the World Customs Organization (WCO) has actively promoted CBP at the global level since 2005. It is recognized as one of the two pillars supporting the WCO's Framework of Standards to Secure and Facilitate Global Trade (WCO, 2007).

More formally, a collaborative governance framework has been proposed as shown in Figure 2 (Zhang and Preece, 2011), which consists of five groups of key factors for forming the CBP.

Figure 2: Customs-business partnership (CBP): a collaborative governance framework



The first group “Initial conditions” refers to reasons why the CBP approach has emerged. This cluster focuses on environmental factors such as globalization. The second factor “section failure” refers to the understanding that a one-sided effort is not sufficient to solve the problem. The third factor “direct antecedents” refer to events leading to a particular CBP initiative.

The second group “process” refers to the various aspects in the partnership building process, including forging initial agreements, building trust, leadership, communication, mutual benefits and incentives, conflict management, and transparency.

The third group is “structure and governance”. Bryson, Crosby and Stone (2006) argued that structure is influenced by context, including system stability and the availability of resources. Another factor to be considered is that structures are likely to be dynamic because of the ambiguity and complexity that is inherent in collaboration.

The fourth group is “contingencies and constraints”. There are two major factors relevant to CBP: power imbalance and risk allocation. According to Huxham and Vangen (2004), power imbalance among the collaborating partners can be a source of mistrust and therefore have an impact on effective collaboration. The relationship between customs and business is traditionally dominated by

customs which can create barriers to an equal partnership and can be a source of conflict. Therefore, a CBP is more likely to succeed when it builds in resources and tactics to deal with power imbalances.

Besides the mutually achievable objectives and benefits which can be shared, there may be risks of failure to meet the objectives and of not receiving benefits in the partnership. These risks need to be understood and mitigating strategies need to be assigned to each party.

Finally, we look at the “outcomes” group. In regard to the CBP, the expected outcomes are better compliance, improved trade facilitation and security, and ultimately, economic development and social protection. To achieve these outcomes, a CBP is more likely to create ‘public value’ when it is built on the self-interests and characteristics of both customs and business.

3.3. Current practices on moving bonded goods in China

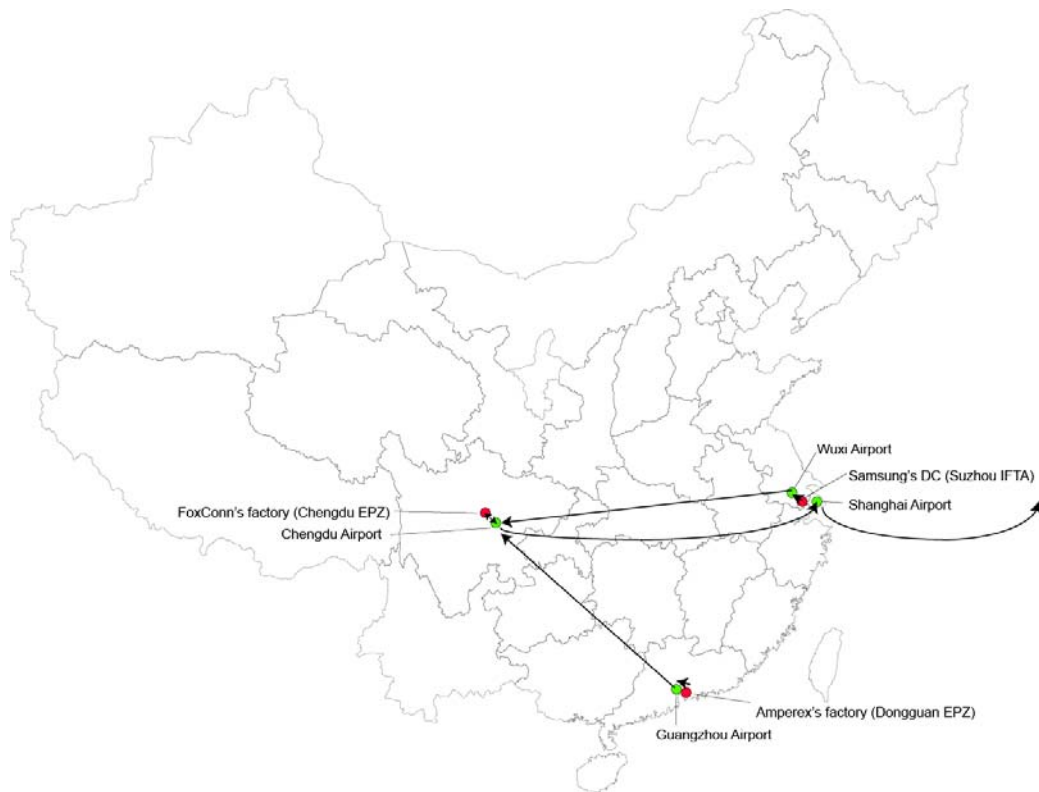
In the context of China, Chinese laws require companies operating in bonded areas to apply to customs for permission to move bonded goods between the different bonded areas and for import /export. For example, Samsung has an electronics product distribution center in the Suzhou IFTA which provides international and domestic distribution services which link it to other bonded areas in China. Next, the supply chain of Apple includes products such as the iPad, which consists MNCs such as Samsung, Broadcom, LG, Amperex, Infineon, Texas Instruments, and Foxconn Electronics as the main assembler¹ (Clark, 2010). While these firms are headquartered in different continents, most of the components are believed to be shipped from their factories or distribution centers in China to maintain the supply chain as efficient as possible since the final assembly of Apple products are done in China. As the final assembly of iPad is done in Foxconn’s new Chengdu factory (Chang, 2011), and we would see the movement of supplies from the various locations in China to Chengdu, which may include the movement of Samsung’s flash memory from the Suzhou IFTA to Wuxi Airport by bonded trucks, shipped by domestic flight to Chengdu Airport, and then transferred by bonded trucks to Foxconn’s factory, an EPZ in Chengdu. Similarly, Amperex Technology’s battery may be shipped from its factory in Guangdong Dongguan (most likely an EPZ) to Guangzhou Airport by bonded trucks, shipped by domestic flight to Chengdu Airport, and then transferred by bonded trucks again to Foxconn. The supplies from the other companies use similar truck-air-truck processes.

After the assembly and testing, the final products are then shipped by bonded trucks to Chengdu airport first and flown to the final international destination. But they may have one more transit in another Chinese city such as Shanghai for consolidation with other cargo.

Going by this example of two suppliers and the final product, the iPad supply chain requires 10 “moves” through customs. Given the hundred or so suppliers of the iPad, the real interaction with customs can be in the thousands. The movement of selected bonded goods for Apple’s iPad is presented in Figure 3.

¹ The list of Apple suppliers is not official as Apple bars its suppliers from publicly talking about their relationships. Researchers rely on teardowns to identify the major components of Apple products and their suppliers. The exact shipping locations of supplies are also not sure but we assume they are from the main China DC of relevant suppliers.

Figure 3: Selected supplies' movements for Apple's iPad in China



In general, China customs do not collect duty and value-add-tax (VAT) on the bonded goods imported under export processing contracts according to Chinese laws. China customs will collect duty and VAT if the bonded goods used in export processing remain in the country after the permitted one-year grace is over. Since some firms involved in export processing can import goods without the payment of duties and taxes, they need to pay a security deposit for the importation of bonded goods. The bonded goods are thus under customs supervision throughout the permitted period in China. A firm can apply for the lifting of customs supervision over the bonded goods after the goods have been re-shipped out of China or payment of import duty and VAT, to turn the bonded goods into general import-export goods. Customs would verify the claim preceding the lifting of customs supervision over the bonded goods. The firm can redeem the security deposit afterwards.

At the operations level, the movement of goods between the bonded areas can be divided into three types: i) those imported in one bonded area and transited to another bonded area; ii) those declared for export in one bonded area and transited to another bonded area for export; iii) those already in the warehouse of one bonded area be transited to another bonded area. If we treat the first type as an example, the transition processes are as follows:

- (1) The imported goods receiver or its agent complete the "Imported Goods Declaration Form" and send it to the customs of the port where the cargo will be imported.
- (2) The destination customs process the pre-declaration after receiving the form.

- (3) For pre-declared goods, the customs at the ports where the goods are imported would input the number and the name of the vehicle, put on the customs lock, record the declaration number in the Vehicle and Transportation Record, and sign the "Import & Transit Goods Checking and Releasing Record".
- (4) Bonded goods are transported to the destination from where it is imported.
- (5) Once the bonded goods arrive at the destination, the destination customs would sign on the Vehicle Transportation Record, remove records of the transit bonded goods and related vehicles from the system, check and release the customs lock, and go through the custom clearance processes for imports such as taxing and inspection.

Currently, China Customs has established a national system and procedure for the movements of bonded goods between bonded areas. Similar to other developed countries, manufacturers with a import/export business as well as 3PLs are categorized into 5 classes, from AA, A, B, C, to D according to their track record and firm size. Firms with a higher category would enjoy more preference treatment in moving bonded goods such as less on-site physical check and lower security deposits. For example, "AA" or "A" class firms can enjoy the benefit of "local declaration and port clearance" which would expedite the customs processing for the firm. Firms in the "AA" class would further enjoy preferential policies and services such as no special bank account required for processing the trade business and unrestricted import and export goods releasing based on guarantee letters. These measures save time and money for the companies, and at the same time reduce the customs clearance costs.

On the categorization of foreign firms, manufacturers are categorized by country as an MNC would be treated the same in each province. But 3PLs are categorized by province, and the preference for 3PLs is less than shippers in general. Global 3PLs such as UPS and DHL have to apply for preferential treatment individually in each province. According to a senior official of a global 3PL, it may not be a disadvantage as one bad local event would not affect the entire operation of the firm in China.

Overall, it is recognized that China customs have improved after the WTO entry. They now largely follow international practices, and are more transparent. Some local customs are also efficient at the operations level. In the Suzhou IFTA, the customs processing time for normal imports, exports, or transits is about 3 minutes per batch where the paper declaration can be done before or after the goods pass customs. The on-site physical checking time is about 20 min per batch if the customs officers decide to check the goods.

Many MNCs feel that the procedure of moving bonded goods across China is still burdensome as it delays goods movements significantly, which force MNCs to take much longer time to deliver to customer's destination than direct shipping by truck or air. However, they are still relocating and extending their supply chains. For example, Intel relocated its Shanghai production lines to Chengdu in Sichuan province and now half of its chips produced worldwide are tested and packaged in the Chengdu plant. HP's Chongqing facilities began operations in 2010 to assemble computers for both the Chinese and global markets (HKTDC, 2011). Moving bonded goods in such a vast region would pose a great challenge to their supply chain management while China customs have been struggling to catch up with international best practice as well.

4. ISSUES IN THE MOVEMENT OF HIGH-TECH BONDED GOODS IN CHINA

Our study shows that there are still some important issues in the operations of bonded areas which affect the effective movement of bonded goods in China. They are summarized into the following five groups.

4.1. Lagging of national regulations on bonded areas

According to the interviewees in Guangxi and Hainan, the legal status of bonded areas is not clearly defined and regulated by national legislation. The management committees of the bonded areas are normally branches of provincial or municipal governments while the bonded areas are regulated by national laws, ministerial regulations as well as provincial rules. For example, the management board of Shanghai IFTA (covering bonded areas in three zones, Yangshan Port, Waigaoqiao, and Pudong Airport) is a branch of the Shanghai Municipal Government, and headed by a vice-mayor. As a result, the bonded areas in different provinces are often managed under different provincial rules and with different management modes due to the lack of a well-defined legal status. As firms often operate in multiple bonded areas, their operations could be regulated by inconsistent or even conflicting rules, resulting in confusion in the movement of bonded goods through different provinces.

Another problem is the lack of a national level standardization of important procedures. While China customs have worked hard to issue many new regulations after the WTO entry, some old regulations need updating to cope with the dynamic changes in the supply chain landscape. One example is the moving of bonded goods by the domestic air network. The existing procedure on bonded logistics is based on goods moving on bonded trucks, which is prevalent ten years ago when most MNCs operated in the coastal area with limited connection to other locations in China. The movement of bonded goods was largely restricted to the movement between the bonded area and the nearby sea or air port by bonded trucks. The provincial authority could coordinate the movement well as both customs branches were under its administration. However, with the rapid expansion of China's supply chains by many MNCs in the past decade, cross-provincial bonded movement is more wide spread. As high-tech products are typically high value albeit small volume, shipping by air is a more reasonable choice for the MNCs. However, there is no customs facility in most airports for domestic flights. A senior manager in a global 3PL gave following feedback,

Moving bonded goods by air is do-able but the procedures are harder than road transportation. You have to get two customs to discuss the issue. It is a one-time arrangement and case by case for the processes. Both sides need to sign an MOU for it.

Another manager of a high-tech MNC shared the same concern as he mentioned,

No clear existing regulation, guidelines, and processes for moving bonded goods via China's domestic air network is one key area that we believe the government agencies can improve to make bonded goods movement faster and more efficient.

4.2. Variations in policy interpretation and implementation

Though customs policies are enacted by the GAC, customs in the provinces may have their own understanding and interpretation. Such differences may reduce the full impact of the policy benefits,

and even adversely affect firms operating in the bonded areas. It is reported that the movement of bonded goods is much more efficient in the same province due to identical policies, regulations, and operating rules. Based on interviews with the managers of bonded areas in Guangxi, Jiangsu and Hebei, the differences in the interpretation of strategic level policies would lead to variations in the implementation details of these policies at the provincial and state levels. As told by the domestic 3PLs, these variations have caused inefficiency in the movement of bonded goods between provinces since companies have to follow multiple and even conflicting operational rules on the ground. A senior manager of a 3PL, located in Jiangsu but with operations in Chongqing, Chengdu, and Xian, mentioned that the company had to employ dedicated staff or even setup an office to deal with these issues in some bonded areas. A senior manager in a global 3PL gave following remarks,

There are variances on regulations interpretation between customs officials in different locations. For example, the same goods may be categorized and valued differently by two customs. Then you need to spend time for the two sides to reach a consensus. If customs and shippers hold different views on goods valuation, you have to start a negotiation process for an agreement.

Besides the variation in rules, some beneficial policies are not well implemented. For example, materials entering the bonded area are considered as exports, and firms should enjoy tax rebates for the consumption of all local materials including water, electricity, and gas. However, it is required to declare per batch or per order in some bonded areas, which makes the declaration cost higher than the tax rebates, and the clearance process of bonded goods at customs is costly and time consuming (Wu, 2007). As commented by one 3PL operating in Guangxi, there are no dedicated customs officers for rebate processing in some newly established bonded areas and the rebate claiming process is troublesome and difficult. To claim the tax rebate becomes a value-adding service of the 3PL.

Furthermore, a recent shift in China's macro-economic policy may affect the movement of bonded goods also. With the rapid increase of trade surplus and foreign exchange reserves, policies have gradually shifted from attracting foreign direct investment (FDI) and boosting export-oriented industries to slow export growth, encourage certain imports, and discourage FDI in areas inconsistent with the long-term development goals (Smith, 2008). As a result, China Customs have issued various export-related rules and regulations to reduce incentives on some export-oriented industries, discourage the expansion of these industries, and boost customs revenues at the same time. Independent third-party auditors are employed to perform compliance audits, and processing-trade enterprises have to seek customs approval before moving goods to other manufacturers (Kerr, 2009). Knowing that some foreign firms had benefited from the lax application of regulations in the past, China Customs have been strict on enforcement in recent years and generated huge duties thereby (Lian, 2011). Such a policy shift would lead to stricter customs supervision on bonded goods. When many MNCs have called for the extension of post-declaration procedures, one senior official in a global 3PL gave following commented,

As for post-declaration, it is applicable to the whole country but not under the current category system (from AA to D). The requirement is so high that very few companies can qualify. When China customs are encouraging firms to apply for the status, it is highly risky

for customs due to the many irregularities by foreign firms in China. There is a high suspicion of foreign firms for under-declaration or using other approaches to lower taxes.

4.3. Customs inefficiency at the operational level

Besides the rules and regulations, China Customs' operations are still lagging best practices. Complex and vague clearance procedures have an adverse impact on customs efficiency. An advanced and connected information system will help streamline and improve the monitoring, checking, and clearance processes of bonded goods.

In addition, although a standard customs information system, developed by the GAC, has been installed in most customs branches, there still exist variations in the information required by the local customs, especially for transiting goods, based on feedback from a customs officer in Guangxi. Moreover, most information is un-computerized and not shared among customs in different locations. The current information system in most local customs offices does not support the online connection of multiple terminals, which is essential for goods visibility, auto approval, and post-declaration as suggested by some MNCs. A senior manager in a global 3PL gave following observations,

At the operations level, the reconciliation process on shipping information between two customs is very time consuming. While it is ideal to develop a new national online system, local customs are not eager to upgrade their systems due to the conflicts of interest as their current systems have been largely outsourced and managed by related external parties. They would have lost business if customs changed the systems.

Labor shortage is also an often quoted reason for customs inefficiency. Existing customs officers cannot meet the increasing demand due to the rapid expansion of the bonded areas and increasing cargo volume. A 3PL operating in Jiangsu and Shanghai said,

Labor shortage is quite common due to the expansion of customs operations, which often cause delays in customs processing and inefficiency of the bonded goods movement on both lead time and cost.

Moreover, the qualification of the customs officers is lagging requirement. People with good education and experience in customs operations practices, especially with a sound understanding on international practices are in high demand.

Further, the short operations duration in some customs is also a bottleneck for the movement of bonded goods. While some customs work 7 days /week and 24 hours /day in Shanghai and Suzhou, it is not so in most inland cities as commented by the domestic 3PLs.

4.4. Low utilization of many bonded areas

The economic success of a bonded area is determined by the viability of the firms operating in the area, which in-turn requires sufficient cargo volumes. However, most bonded areas in China are under-utilized and operate below the designed capacity, resulting in low profitability and intense competition among the bonded area operators (Wu, 2007).

Industrial clustering and over development are found to be two major reasons for the low utilization of many bonded areas. Many bonded areas are similar in function and industry type, and most EPZs focus on high-tech as the major industry. The similarity of industry concentration among the bonded areas results in intensive competition. Many bonded areas often compete with one another through attractive concessions such as cheap land and extension of tax holidays. Such competition leads to a loss in tax revenue (Wu, 2007).

Over development refers to the over development of the bonded area compared to its surrounding regions. One official from a bonded area in Guangxi said,

Cargo volumes in the bonded areas in the Central and Western China are still low due to the underdevelopment of the surrounding region. The establishment of trading, logistics and export processing businesses has not yet generated sufficient demand. How to increase cargo volumes is very challenging for the managers of the bonded areas.

Our interviewees also noted that the service capacity and quality of 3PLs in these areas are often below the expectation of the MNCs, which affects potential cargo volumes. Even in the more developed provinces such as Jiangsu, the utilization of logistics facilities in the bonded areas is still low due to the newly established bonded areas and the upgrading of existing ones in recent years. One senior manager of a 3PL in Jiangsu said,

The competition among the bonded areas is very intensive. There are about 20 bonded facilities in an area within 200km of Suzhou. However, the demand for bonded logistics is increased slowly. We are often asked by managers of the bonded areas whether we want to rent their bonded facilities.

On hindsight, the establishment of bonded areas should be better planned and coordinated among the various ministries and provinces. The low utilization of a bonded area would reduce the trucking frequency of the 3PLs and lower the service quality in bonded goods movement. It may also be one reason for the inadequate customs services in some inland areas as one senior manager of a global 3PL mentioned,

The business volume in some inland locations is an issue also as customs do not have sufficient volumes to justify the long operating hours or more system upgrading.

4.5. Low financial contribution of bonded areas to local government and neighboring regions

Although the bonded area benefits the development of its neighboring region in the long run, the direct financial contribution of the bonded area is currently very low. From the perspective of the local government, the income from a newly established bonded area is often lower than the expense. A director of the provincial Economy Development Bureau in Central China made the following comments,

To develop the bonded area, the government has to invest heavily and bear a high initial cost. In addition, it still needs to invest on the management and maintenance down the road.

Even in the more developed regions such as Suzhou, the contribution of taxes is also quite limited due to the various incentive policies, and most income derived from the bonded areas are personal income taxes.

Next, the bonded area is not well integrated with the surrounding region. Most domestic firms operate outside the bonded area, and seldom use facilities in the bonded area. The bonded area's connection with the regional economic development is still not intimate (Yu, 2006). Some bonded areas operate like enclaves. An executive director of the Management Committee for a bonded area in Western China made the following observation,

For the bonded area, the integration of the logistics, processing, and trading functions still takes time. Externally, the area is not well-integrated with the neighboring regions, and has very limited spillover.

At the operations level, 3PLs operating inside the bonded area are often not well coordinated with partners outside the area, and the information system for logistics within the area is often not compatible with the system used by the external logistics firms, resulting in poor information sharing between firms.

5. CONCLUDING REMARKS

With the establishment of many new bonded areas in Western China and the “Go West” movement of the high-tech MNCs, the volume of bonded logistics is expected to increase significantly in the next decade with more production of bonded goods inside China and more transfer of the bonded goods. Bonded logistics would have a stronger impact on the MNCs' supply chain performance. High-tech MNCs and their logistics service providers have to be more proactive in managing their bonded goods movements. They have to understand the existing environment, establish a supply chain network balancing the requirement of cost and responsiveness, and build a close and constructive relationship with customs in all their locations. While customs has improved significantly since the WTO entry, it still takes some time for a more consistent and standardized national regulations and procedures to prevail across all customs branches for the management of bonded logistics effectively. The MNCs and their 3PL partners have to work with China customs for an effective and robust trade facilitation regime. At the same time, they have to consider the current constraints when organizing their production and logistics facilities. For high-tech manufacturers, they should be aware of the significant expansion of its supplier network and the associated loss of chain responsiveness. As Figure 3 has shown, when Apple's final assembler Foxconn moved from Shenzhen to Chengdu to reduce the assembling cost, hundreds of suppliers have to bear the extra shipping costs and longer lead times. While it is traditional for many MNCs to establish at most one distribution center in any country, it may be optimal to establish a second distribution center domestically. Operating in China requires new paradigmatic thinking.

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