

UNIVERSITY OF GOTHENBURG school of business, economics and law

Master Degree Project in International Business and Trade

The Impact of ASEAN-China Free Trade Agreement of Foreign-invested Manufacturing Locations in Asian: A case

study of Husqvarna Construction Products AB

Niklas Eskilsson and Thu Nguyen

Supervisor: Curt Nestor Master Degree Project No. 2013:3 Graduate School

ABSTRACT

Within the framework of the WTO, regional trade agreements have proliferated in recent years as a means to facilitate trade. While developed countries are struggling for growth, much attention has been directed towards the Asian emerging markets, and especially to China, in search for new business opportunities. Trade and investment policies have been reformed significantly across countries in the Asian region. Once fully implemented, the recent ASEAN-China free trade agreement (ACFTA) will form one of the largest and potentially most important free trade areas in the world. The ACFTA is likely to carry important implications for MNE locational decisions. This study explores the potential impacts of ACFTA on foreign MNEs' locational decisions in the light construction equipment sector based on the case study of the Swedish company Husqvarna Construction Products. Our contribution is threefold. First, China remains as the location of choice in the next five years. Second, neither trade nor the production network within this industry has developed extensively in the ACFTA region. Finally, tariff reductions under ACFTA and competitors' movement might impel foreign MNEs to expand to ASEAN.



i

ACKNOWLEGEMENTS

We extend our gratitude to everyone who has contributed to our research during this project. Without your help, it would have been impossible to collect the necessary data for this study.

Firstly, we would like to direct our sincerest appreciation to Professor Curt Nestor who was a vital source of information and guidance throughout the project. We would also like to thank Mr. Joakim Frisk and Mr. Eddy Lai of Husqvarna Construction Products for their invaluable assistance with our empirical findings. Furthermore, we would also like to thank the Elof Hansson Foundation for granting us a travel scholarship, which enabled us to conduct field studies in Asia.

Finally, we are grateful for the opportunity to meet with managers at Husqvarna Construction Products, Volvo Construction Equipment, Volvo Trucks, Tomra, Chua Trading, Vision Co. Ltd. and Spica Co. Ltd. Their experiences were valuable not only to our thesis but also as a source of knowledge for our future careers.

Thu Nguyen

..... Niklas Eskilsson

Gothenburg, May 22 2013



ACRONYMS

ACFTA	ASEAN – China Free Trade Area
AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
CE	Construction Equipment
СО	Certificate of Origin
ESCAP	The Economic and Social Commission for Asia and Pacific
EU	European Union
FDI	Foreign Direct Investment
FTAs	Free Trade Agreements
HCP	Husqvarna Construction Products
HS	Harmonized System
MFN	Most Favoured Nation
MNEs	Multinational Enterprises
NAFTA	North America Free Trade Agreement
NTBs	Non-tariff Barriers
OECD	Organisation for Economic Co-operation and Development
RCEP	Regional Comprehensive Economic Partnership
ROO	Rules of Origin
RTAs	Regional Trade Agreements/Areas
RVC	Regional Value Content
R&D	Research and Development
SITC	Standard International Trade Classification
UNCTAD	United Nations Conference on Trade and Development
US	United States
WTO	World Trade Organisation



EXHIBITS

FIGURES

Figure 1 – Factors affecting MNEs' choice of manufacturing locations – A conceptual framework	13
Figure 2 – China's exports of machinery and transport equipment to ASEAN, 2002 & 2011, in %.	23
Figure 3 – China's imports of machinery and transport equipment from ASEAN, 2002 & 2011, in	% 24
Figure 4 – A revised conceptual framework	52

TABLES

Table 1 – Selected corresponding HS and SITC codes	8
Table 2 – Tariff ceiling and reduction schedule under ACFTA	.17
Table 3 – HS codes and levels of liberalization under ACFTA	.18
Table 4 – China's and ASEAN's trade flows to major destinations, 2002 & 2011, in US\$ billion	.22
Table 5 – FDI restrictiveness for five countries (scored 0-1)	.29
Table 6 – UNCTAD liner shipping connectivity index and world rankings in 2012	.31



iv

Table of contents

ABSTRACT	i
ACKNOWLEGEMENTS	ii
ACRONYMS	iii
EXHIBITS	iv
1. INTRODUCTION	1
1.1 Background	1
1.2 Research purposes	2
1.3 Delimitations	3
2. METHODOLOGY	4
2.1 Research approach	4
2.2 Case study design	5
2.2.1 A single case study	5
2.2.2 Unit of analysis	6
2.2.3. Interviews	6
2.2.4 Data analysis	
2.2.5 Evaluation.	
2.5 Trade classification systems	
3. THEORETICAL FRAMEWORK	9
3.1 The rationale behind the formation of FTAs	9
3.2 The impact of FTAs on MNEs' choice of manufacturing locations	10
3.3 The East Asian production network in relation to FTAs	11
A conceptual framework	13
4. THE ASEAN-CHINA FREE TRADE AREA AND THE CONSTRUCTION EQUIPMENT INDUSTRY IN ASIA	15
4.1 The ASEAN-Child free trade area: A background	13
4.1.2 Tariff reduction schedules under ACFTA	17
4.1.3 Non-tariff barriers within the ACFTA region	
4.1.4 Trade within the ACFTA region – a focus on machinery and transport equipment	20
4.1.5 Trade in intermediate goods	24
4.2 The construction equipment industry in Asia	
4.2.1 Manufacturing locations in Asia	
4.2.2 The middle market segment	30
4.3 Regional connectivity	31
5. HUSQVARNA'S CHOICE OF MANUFACTURING LOCATIONS WITH	
RELEVANCE TO THE ACFTA: EMPIRICAL FINDINGS	33
5.1 An introduction of Husqvarna Construction Products	33
5.2 1 Tade-related factors	
5.2.1 Tarini reduction	
5.2.3 Non-tariff barriers and rules of origin	
5.2.4 Market access	
	36
5.2.5 Trade relations between ACFTA members	36
5.2.5 Trade relations between ACFTA members5.3 Production-related factors	36 36 37
5.2.5 Trade relations between ACFTA members5.3 Production-related factors	36 36 37 37



v

5.3.3 Sales and services	
5.3.4 Labour and wages	40
5.3.5 Manufacturing potential	40
5.3.6 Market potential	41
5.3.7 Government policies	
5.4 Competition-related factors	43
5.4.1 Brand strategies	43
5.4.2 Competitors' movement	44
6. DATA ANALYSIS	46
6.1 Trade-related factors	46
6.2 Production-related factors	48
6.3 Competition-related factors	50
6.4 Revisited conceptual framework	51
7. CONCLUSION	53
7.1 Our contributions	54
7.2 Future research	54
REFERENCES	56
APPENDIX	61



1. INTRODUCTION

1.1 Background

The amount of free trade agreements (FTAs) in East Asia, both between countries in the region and outside of it, has increased rapidly since the mid 2000's (Kawai & Wignaraja, 2011) due partly to the failure of multilateral trade negotiations under the framework of the World Trade Organization (WTO). East Asia is facing overlapping FTAs that have different rules of origin, applicable tariffs and margins of preference. This issue is often referred to as the 'noodle bowl' of FTAs. While the dynamic economic growth of Asian countries and the engagement of multinational enterprises (MNEs) in the Asian production network have been inspired topics to academia, two other phenomena further enhance the research attractiveness of this region: firstly, the role of China as the factory of the world and secondly, the role of FTAs in East Asia. Changes in the trade and investment relations between ASEAN and China are likely to affect international trade and the structure of international production networks. The ASEAN-China free trade agreement (ACFTA) may play a significant role for trade flows and company movement within the region, and therefore has caught the interest of the authors of this study.

ACFTA is a very recent addition in East Asia, being signed in 2002 and implemented in 2010, with the goal of eliminating tariffs between the parties to the agreement. However, not all tariffs will be removed, at least not initially, and while several studies have already examined the effects this may have on countries (e.g. Park, 2007, Devadason, 2010 and Sheng et al., 2012), few researchers have looked at ACFTA from a company perspective. During previous studies, the authors learned about the rapid expansion of Chinese firms in the construction equipment (CE) industry. With this in mind, combined with the fact that many industries now look to Asia for future growth, the authors discussed what Western firms can do to maintain their market position and whether ACFTA can help them remain competitive. Accordingly, we want to further examine the impact ACFTA might have on the directions Western CE producers choose when expanding manufacturing in Asia. Will they accept the rising wages and stay along the east coast of China, will they move west to the inland regions that are trying to catch up, or does ACFTA open up the possibility to move south into ASEAN?

Interaction with firms in the CE industry is crucial for understanding the company perspective on the subject. The Asian context is also important for the research, as this is

where a large share of the projected future growth of the industry lies, especially in the growing middle segment of the market where Western and Chinese firms clash (Bouffault et al., 2011). Generally speaking, Western firms operate in the premium segment of the CE industry while Chinese firms dominate the low-end segment. This means that while Chinese firms are progressively developing their brands and moving up the value chain, Western firms that wish to compete in the middle market might have to "move down", either with their existing brand or by developing a new brand without a premium price tag. Companies that employ dual- or multiple-brand strategy often call their new brand a value-for-money brand or in short a value brand. This has already shown in the heavy segment of the market to some extent, which has received a fair amount of attention in research by e.g. Bouffault et al. (2011) and EIU (2011). Therefore, this study will focus on the light segment of the CE industry in China and Southeast Asia. The current situation for the CE industry as a whole is that the majority of foreign firms in this sector have a significant part of their manufacturing in China where Chinese firms have an obvious advantage. As ACFTA only came into effect in 2010, we see a possibility for Western firms to move south to ASEAN where their competitors have less of an advantage while still maintaining their access (without tariffs) to the huge Chinese domestic market.

1.2 Research purposes

The purpose of this study is to examine the potential to expand manufacturing of foreign MNEs that already have operations in China. Throughout this study, the term 'foreign MNEs' implies non-Chinese multinational enterprises in China. The focus is on the light CE sector and the Swedish company Husqvarna Construction Products is employed as the case study. Based on the existing studies of FTAs in general and the ACFTA in particular, combined with the empirical data collected during our field study in five ACFTA member countries; we aim to answer the following research question:

"To what extent may ACFTA impact on foreign-invested manufacturing locations of light construction equipment in Asia?"

In order to answer this research problem, two sub-questions have been formulated. Each of them attempts to respond to one aspect of the main research question. The sub questions are as follows:

(1) In what geographical areas are foreign MNEs likely to expand manufacturing considering the ACFTA?

(2) What are the major factors that influence MNEs' locational decisions in this region?



1.3 Delimitations

In order to have a manageable research scope that suits our limited resources, we have made two major delimitations. Firstly, considering the light CE sector and choices of manufacturing locations in the ACFTA region, we excluded Brunei and the three least developed countries of ASEAN, which are Cambodia, Laos and Myanmar due to the incompatibility between their industrial capacity and the CE industry. The Philippines on the other hand is eliminated for two reasons. First, the significantly lower contribution of industry to gross domestic product compared to Indonesia, Malaysia, Thailand and Vietnam (see appendix 1) which can be linked to the so-called premature deindustrialisation, meaning that the Philippines are focusing on services instead of manufacturing while income levels are still low (Tregenna, 2011, Edsel, 2012). Second, the country's geographical distance to China makes it likely that it would be the last option when foreign MNEs expand in the ACFTA region. Singapore is not considered as a manufacturing location but serves as the regional trade hub when examining trade relations among ACFTA members. This leaves Indonesia, Malaysia, Thailand and Vietnam as potential manufacturing options for foreign MNEs in China.

Secondly, this study focuses only on the light CE sector. This can be defined as handheld or compact machines with different types of engines. They are used commonly in the construction, mining and stone industries but also for refurbishment projects or rescue purposes. This differs from the heavy CE segment, which is used for e.g. loading and unloading containers in harbours or similar. The machines used in this case are much larger, e.g. excavators, various loaders and hauler. In certain projects, such as infrastructure, both heavy and light equipment is used.

Since we have chosen to employ a single case study approach with only one unit of analysis, together with the two delimitations above, we face problems related to generalisation. The light CE industry is a niche industry and therefore the interviewees' perspective might not reflect the general perspective of companies in the heavy CE sector or in other industries. In order to improve the validity and reliability of this study, we have interviewed other companies including Volvo CE, Volvo Trucks and Tomra, to gain more general insight of foreign MNEs. In addition, the factors identified as having potential impact on MNE's choice of manufacturing locations in this study should be useful for many companies in different industries when making their own locational decisions in the ACFTA region.



2. METHODOLOGY

Creating a research question is the first and fundamental step of each and every academic paper. Approaches, paradigms and methods are then employed in order to answer the question in the best way possible. The compatibility between the research problem and the research design is vital and requires careful consideration. In this section, we will explain the process through which our study is conducted and the reasons for choosing the particular approach and method.

2.1 Research approach

The impact of ACFTA on foreign-invested manufacturing locations of CE in Asia is a rather recent and on-going process. Collecting sufficient quantitative data in order to draw unbiased conclusions would be difficult since this FTA only came in effect in 2010. The process from actual decision until a plant is operational might take several years. In addition, secondary research in these emerging markets is not as up-to-date as that in Western countries. Primary data (e.g. data collected from interviews) therefore emerges as a better solution to understand companies' perspective on the potential utilisation of ACFTA and how this FTA might affect their decisions to establish factories in Asia. Nevertheless, since ACFTA is a macroeconomic measure countries employ to facilitate trade, it would be insufficient to not include the development of trade relations among countries within the ACFTA region in this study. Relevant data e.g. tariffs and tariff reduction schedules, non-tariff barriers, ASEAN-China bilateral trade, and governments' trade and investment policies will be examined, with a focus on the CE sector. These types of secondary data will be used as a foundation from which the analysis of the empirical findings is conducted.

After considering different research approaches, the authors have decided to conduct a case study in which we take on the perspective of Western CE manufacturers who already have manufacturing facilities in China. A case study approach is suitable because companies' opinions are essential to estimate the potential utilisation of ACFTA in manufacturing location choices. Case study research, according to Yin (2009), can be used to investigate a contemporary phenomenon in depth and within its real-life context. This is applicable to ACFTA as it was recently implemented, and thus its impact on companies' choice of manufacturing location has not yet been extensively researched. By examining how companies perceive the potential benefits and challenges derived from ACFTA and whether they will consider the agreement when making investment decisions, we strive to examine the so-called real-life context of this FTA.



Moreover, we plan to conduct our study in an abductive way meaning that the preunderstanding of the theory and the empirical data will confront one another during the research process. In other words, the initial theoretical background is used as a departure from which we continue revising our conceptual framework every time we gain empirical insights. Related to this approach is also the suggestion that researchers should not begin a field study without some pre-understanding of relevant theories as this might lead to replications of previous findings, or collection of unnecessary data (Andersen & Kragh, 2010). There is also a risk of being too theoretically predetermined, which could prevent us from observing and accepting the reality that might stand against our theoretical framework. We are aware of these problems and have opted to use semi-structured interviews to reduce the risk of biased empirical findings. It is difficult to remain balanced in this regard throughout the research process; however, choosing a good data-collecting method and critically analysing both theory and empirical findings will reduce these problems to a minimum.

2.2 Case study design

2.2.1 A single case study

The context in which we conduct our study is the East Asian business environment where economic growth has been a phenomenon, regulations have become much more business-friendly and sourcing activities are undoubtedly vigorous. This environment is subject to change when more measures to facilitate trade between China and ASEAN members are implemented. It remains controversial whether Western companies can benefit from such measures or not. Although ACFTA is often compared with the single market of the European Union (EU) and the North American Free Trade Area (NAFTA), features such as the regional fragmented production network, the hub warehouse logistics system, and the complexity of overlapping FTAs makes ACFTA a special case. This indicates that what has happened under the formation of EU and NAFTA will not necessarily be replicated under the ACFTA. In addition, the increasing participation of Western multinationals in the East Asian production network and trade activities deserves in-depth examination and therefore makes a case study approach more relevant.

In this case study of the CE sector, Husqvarna Construction Products is chosen as the unit of analysis. Based on the definition of Yin (2009), this case is called a single case study. This study focuses on the Asian operation of Husqvarna Construction Products, which is subject to the implementation of ACFTA, rather than Husqvarna Group as a whole. Other entities,

which are not located in either China or ASEAN, are not likely to be affected by this FTA in the same way.

2.2.2 Unit of analysis

Husqvarna Construction Products is a suitable unit of analysis of this study due to a number of reasons. First, the company is a Western construction equipment producer currently targeting only the premium segment of the light CE sector. Second, Husqvarna Construction Products has already established production facilities in China but has not expanded to any member of ASEAN yet. Third, since the company has been in the Asian markets for quite a long time, employees understand the business environment in this region well and therefore their perspective on our research topic is valuable. Husqvarna Construction Products is also selected for this case study because the authors have access to the company during the research process.

2.2.3. Interviews

As we intend to examine the view of firms on ACFTA and its implications, a semi-structured interview approach is appropriate. By providing the interviewees with a number of headings in advance, the interview will cover the topics that are relevant to our research, but at the same time some flexibility needs to be given to the respondents in order to capture their perspective of the matter. The headings also help the interviewees know what to expect, e.g. they are more likely to agree to participate in an interview with a clear focus that will be used for research rather than a completely open interview. The headings that were used are presented in appendix 2 and the list of respondents is included in appendix 3.

In order to obtain as much relevant information from the interviewees as possible, the questions were modified to suit each interviewee considering the area where he or she is working. The questions were revised after each meeting. Questions deemed irrelevant for the purpose were replaced by new questions to better focus on the research topic and interesting findings from the previous interviews. The majority of our interviews were with general managers at several sites in Asia. Since the research question concerns strategic decisions of companies, interviewees in this position were chosen in order to obtain as much information as possible. In addition, we interviewed one purchasing manager and one manager at HCP in Sweden to capture the perspective of the headquarters on ACFTA. The general managers all have several years of experience in Asia which made them good candidates for interviews, but in hindsight it would have helped us further if we were able to interview purchasing and



logistics staff as well. Overall, the interviews went well and covered most of what we had in mind, but fell a little short on specific trade data. Based on our previous experience, we chose to not record any of the interviews as this may create an environment where the discussion is not as open. We also had the option to contact all interviewees later on if we were missing any data.

2.2.4 Data analysis

In order to structure the analysis, we have created a conceptual framework (see figure 1 on page 13) of how ACFTA might impact foreign firms in their choice of manufacturing location in Asia. This framework was used in order to draw an analogue between the theoretical background and the empirical findings in an effort to establish whether the theory and presumptions about ACFTA holds true in the case of Western CE firms. Based on this, our conceptualization was revised with the aim of contributing to further theory building regarding Western firms with manufacturing operations in Asia and especially the light CE industry.

2.2.5 Evaluation

In hindsight, there are two things that could have been done differently to further improve the quality of the study. Firstly, our focus on manufacturing within the ACFTA area turned out to be very broad despite efforts to narrow it down. The combination of ACFTA and manufacturing touches upon several theoretical fields, e.g. the formation of FTAs, trade in both finished products and components, foreign direct investment (FDI) and logistics. Further delimitations could have solved this issue.

Secondly, we would have wanted to restructure the interviews slightly if we conducted the same study again. While the general managers we spoke with were very knowledgeable about our topic as a whole, neither of them worked with imports and tariffs on a daily basis. Therefore it would have been beneficial to our empirical findings if we had the option to interview more purchasing or logistics staff. At the same time, we could not have done without the input of the general managers, and thus for future studies we would recommend to interview people in all these positions.

2.3 Trade classification systems

In this study, trade data is collected under two different trade classification systems namely the Standard International Trade Classification System (SITC) and the Harmonized System

(HS). While the SITC data is used to analyse the general trade in machinery and transport equipment of China and ASEAN as it is deemed to be more convenient, the HS data provides more detailed figures for light CE traded between China and ASEAN.

The light CE is not only used for construction projects, but also for different applications such as the stone industry, the mining industry, or rescuing purposes e.g. earthquakes or car accidents. Accordingly, they do not have their own group(s) under these two systems. Instead, they are mostly listed under SITC 71 (power-generating machinery and equipment), 72 (machinery specialised for particular industries), 74 (other industrial machinery and equipment) and 77 (electrical machinery, apparatus and appliances) or under HS 84-85 (machinery and mechanical appliances, electrical equipment and parts thereof). Table 1 below presents a number of selected HS and SITC corresponding codes considered relevant to our scope of study. It is important to mention that these groups cover most of the products, major parts and components related to light CE, but not all.

Product groups	HS codes	SITC codes
Other articles of aluminium	7616	694.4 & 699.7
Magnesium and article thereof, including waste and scrap	8104	689.1 & 699.9
Other engines and motors	8412	714.4 & 718.9
Other moving, grading, leveling, scrapping, excavating, tamping, compacting, extracting machinery for earth, minerals or ores	8430	723.4
Parts suitable for use solely or principally with the machinery of heading 8430	8431	723.9 & 744.9
Machine tools for working with stone, ceramics, concrete, asbestos cement or like mineral materials or for cold working glass	8464	728.1
Parts and accessories suitable for machines of heading 8464	8466	728.1 & 735.9
Tools for working in the hand, pneumatic, hydraulic or with self- contained electric or non-electric motor	8467	745.1 & 778.4
Machines and mechanical appliances having individual functions, not specified or included elsewhere	8479	723.4; 727.2; 728.4 & 728.5
Ball or roller bearings	8482	746.1 - 746.9
Electric motors and generators (excluding generating sets)	8501	716
Hand tools incorporating electric motors	8508	775.5
Apparatus for electrical circuits, board, panels	8534	772

Table 1 – Selected corresponding HS and SITC codes

Source: UNstats, 2013



3. THEORETICAL FRAMEWORK

This chapter presents a discussion of previous studies that are relevant to our research problem. Since trade relations and production activities are both important to our study, the theoretical background will begin with the reasons behind the establishment of FTAs and how that might affect MNEs' locational decisions followed by an overview of the East Asian production network. Our conceptual framework is presented at the end of this section.

3.1 The rationale behind the formation of FTAs

As of January 15 this year, WTO recorded 546 notifications of regional trade agreements (RTAs) of which 354 were in force. The number of RTAs has been increasing steadily, 90% of the registered agreements are FTAs and partial scope agreements while the remaining 10% are customs unions (WTO, 2013a). The proliferation of FTAs, a prominent feature of the current international trading system, is often mentioned as a remedy for the failure of trade negotiations under the WTO framework (Matsushita, 2010). The significant trade volume created by FTAs confirms the fact that FTAs are not an exception but rather a parallel system to the multilateral trade disciplines of the WTO. Very often, countries with close geographical proximity, similar culture, religion, language, history, social and economic systems are inclined to form an FTA (ibid). However, common trade interests may also lead countries to sign an FTA despite the long geographical distance between them. The Japan-Mexico FTA is a clear example for such a motive.

Matsushita (2010) argues that the increasing utilisation of FTAs is a serious problem to the WTO regime. An FTA provides members concessions that are considered discriminatory to outside countries. Although FTAs can reach agreements in the areas in which WTO negotiations are not able to, discriminatory treatment derived from FTAs creates an imbalance in competitive conditions among trading partners. The overwhelming bargaining power of powerful trade partners may pose a threat to developing countries when negotiating for an FTA. Since many FTAs often include provisions for direct investment, while providing financial resources, technology and other managerial resources, developed countries also enclose requirements that sometimes impede the development policies of the developing country partner. In addition, Matsushita (2010) emphasizes the two-sided effect of FTAs on developing country members, which is the trade-off between the increasing consumer welfare and the risk of not be able to protect domestic markets and infant industries from foreign competition. Nevertheless, entering an FTA might be an easier choice for countries that wish to enhance their trading activities instead of waiting for negotiations under WTO to conclude.



According to Baier & Bergstrand (2004), similar market size, similar factor endowments (e.g. capital and labour) and physical distances between the country members are the prominent economic determinants of the formation of FTAs. While Chen & Joshi (2010) find countries' incentives to establish an FTA with each other depend crucially on their existing FTA relationship with third countries, Baldwin & Jaimovich (2012) argue that countries sometimes sign FTAs as a defence strategy against those signed among their trade partners. Being excluded from a newly signed FTA tends to encourage or even compel a nation to sign an FTA that was previously avoided. In addition, geostrategic and diplomatic concerns are also seen as reasons behind the formation of FTAs in East Asia (Ravenhill, 2010).

FTAs are believed to provide member countries with considerable benefits e.g. opportunities to exploit comparative advantage of partner countries, more competitors creating needs for greater efficiency, and a larger market to utilise economies of scale (Jaumotte, 2004, Matsushita, 2010). Nonetheless, the elimination of tariff and non-tariff barriers under RTAs affects intraregional and interregional FDI differently. While attracting outside investors, this might reduce incentives for investors within the region because it is now easier to access the neighbouring markets. For example, the implementation of the US-Canada FTA led to a reduction in intra-regional FDI to both the US and Canada (i.e. a negative impact on bilateral FDI) but increased extra-regional FDI into Canada (i.e. a positive third-country impact) (Baltagi et al., 2007). However, if income levels are significantly different among members of an RTA, efficiency-seeking companies still search for cheaper labour in these countries.

3.2 The impact of FTAs on MNEs' choice of manufacturing locations

The foundation of the single market of EU and the NAFTA in the second half of the 20th century led to a large increase in bilateral trade volumes and FDI among the member countries. The fact that FDI increased more rapidly than trade indicates significant impact of RTAs on multinationals' foreign investment locational decisions (Baltagi et al., 2007). Setting up foreign manufacturing plants, which produce the same products as in the home country, has been a measure used by MNEs to avoid trade barriers. However, MNEs are increasingly fragmenting their production process among a number of selected countries to gain competitive advantage on a task-by-task basis (Baldwin, 2006). Low-value-added and labour-intensive activities are assigned to firms located in low-wage and labour-rich countries while high-value-added and technology-intensive ones are retained in the parent country or countries with better R&D competencies. As RTAs continue facilitating trade, this phenomenon is expected to continue.



Nowadays, multinationals decide to set up subsidiaries in a certain country not only to serve the domestic market but also to access larger markets nearby with lower trade costs. This phenomenon is called export-platform FDI in many studies including inter alia Ekholm et al. (2007), Hayakawa & Tanaka (2011) and Ito (2012). Baltagi et al. (2007, page 4) suggest that *"the design of a multinational production and sales network likely entails strategic aspects of plant location in space"*. This means that subsidiaries are located so that the total delivery cost, including both the production cost and trade cost, are minimized. The more countries MNEs choose to locate their subsidiaries in, the more complex types of FDI will be employed and therefore the more critical role RTAs will have.

Looking at the country level, Jaumotte (2004) argues that the benefits derived from increasing FDI flows into a free trade area are not distributed evenly among members. Countries with more generous investment policies and a larger domestic market are likely to benefit more. Since set-up costs are often significant, large markets are preferred with an expectation of more customers and higher returns due to economies of scale (ibid). Accordingly, improving the investment environment is vital for smaller members of an RTA to compete for FDI. Hayakawa & Tanaka (2011) believe labour costs in host countries and their trade cost with neighbouring markets are of significance. Supporting this argument, Ito (2012) argues that easier access to third countries' markets is a strong determinant when US firms evaluate potential manufacturing locations in Europe. Being a member of an FTA offers smaller economies freer access to larger members' domestic markets and thereby increases their attractiveness towards extra-regional FDI. This is considered as a '*non-obvious rarely mentioned benefit*' of smaller FTA members (Ito, 2012, page 20). Nevertheless, if there is a large discrepancy in income levels among members, the production cost motive need to be considered when evaluating the effect of RTAs on this type of FDI.

3.3 The East Asian production network in relation to FTAs

The East Asian production network is well-known for its sophisticated fragmentation (Hiratsuka, 2008). One production process is often sliced into sequential stages, which are executed by factories located across countries. In order to facilitate the regional linkages and attract foreign investment, governments have signed different FTAs with one another. Accordingly, parts and components can easily be shipped back and forth before the final products are assembled. This has resulted in an enormous increase in cross-border intra-industry trade in intermediate goods especially in machinery industries (ibid).

N. Eskilsson & T. Nguyen



Another interesting aspect of the East Asian production network is its diversity. The parties in this network are quite different in terms of economic and technological development, ranging from low- to high-income countries. In the electronics industry, for instance, multinationals have established a very efficient production-process-wise division of labour across countries based on their comparative advantage (Hiratsuka, 2008). However, in order to gain benefits from such a system, economies of scale are very important. This works in the electronics industry where volume is high, but the effect may not be the same in other industries where production volumes are lower.

Factories operated by MNEs in East Asia often apply a continuous two-shift 24-hour production operation system in which employees work 8 hours plus 4 hours overtime (Hiratsuka, 2008). Although this is not necessarily true for all factories in East Asia, it indicates a higher degree of labour utilisation compared to e.g. in Europe and North America. This means that companies make better use of their fixed costs, while they are also able to meet the "just in time" production system. In order for such a system to run smoothly, an advanced logistics system connecting suppliers and assemblers in different countries is required. The key elements of this system include the inventory management online system connecting a large number of suppliers, a 'hub' warehouse and an assembler (ibid). Since the system has been employed successfully by many global electronics assemblers, it is interesting to see how companies in other industries can utilize it to become more efficient.

The rise of the Chinese economy has radically altered the East Asian production network. China has been considered the factory of the world ever since it decided to liberalize FDI policies and participate in world trade. Today, China is trying to transform its industrial structure focusing on higher-value-added activities. As a result, the Asian giant has become more selective towards FDI, leaving space for other countries including ASEAN members to become more engaged in the regional production network. The possibility for China and ASEAN to substitute products from other trading partners by products from within the ACFTA seems to be limited since they are exporters of many comparable goods (e.g. textiles and electronics) but at the same time there is a relatively high degree of complementarity between products coming from these two regions (Estrada et al., 2012). Nevertheless, it remains controversial whether the expansion of the East Asian production network to these regions because of new FTAs will create more partners or competitors for domestic companies. Competition tends to favour more efficient firms but at the same time eliminate those lagging behind. This means the regional production network is somewhat reconstructed as a result of an RTA and countries need to prepare to either stay competitive in certain industries or become competitive in others.



3.4 The impact of ACFTA on foreign MNEs' choice of manufacturing locations – A conceptual framework

This study strives for a more pragmatic view of ACFTA and focuses on potential benefits as well as challenges perceived by companies when deciding where to expand manufacturing within the region. Based on the theoretical framework and our initial findings about ACFTA, we have identified three groups of factors related to trade, production capacity and competition. Each group consists of a number of pillars that we believe have significant impact on foreign MNEs' choice of manufacturing locations. These pillars were used as guidelines for formulating interview questions and analysing empirical data. As shown in figure 1, the three options of geographical expansion are staying in the coastal regions in China, moving west (in China) or south to ASEAN. Our research focuses on potential locations within the next five years.



Figure 1 – Factors affecting MNEs' choice of manufacturing locations – A conceptual framework

• *Trade-related factors:* This group consists of four pillars namely tariff reduction, nontariff barriers (NTBs) and rules of origin (ROO), logistics issues, and members' trade relations. The formation of FTAs often leads to substantial tariff reduction for members and modifications of NTBs and ROO. We therefore believe the first thing companies look at when examining an FTA is how it helps to reduce trade costs and simplify trade procedures.



Accordingly, logistics planning also needs to be reconsidered. Although the implication is not as visible as the first three pillars, the existing trade flows among members reflect the intensity of intra-industry trade and the degree of regional integration and therefore are presumed to have potential impact on MNEs' expanding direction.

• *Production-related factors:* This group complements the trade-related factors by comparing manufacturing and market potential of China and ASEAN members. The existing supply chain and the directions to which it is likely to expand are vital to MNEs' production. Labour availability, wage differences, and government policies help to evaluate further MNEs' options of either staying in eastern China, expanding west within China, or south to ASEAN.

• *Competition-related factors:* Competitors' movement within the ACFTA region might lead a multinational to reassess its existing organization and modify its strategies to remain competitive. In consequence, this factor is assumed to pressure companies into expanding or relocating. It might be easy to name the current competitors but much harder to identify potential challengers. Brand strategies are therefore included as a means to detect future challenges.



4. THE ASEAN-CHINA FREE TRADE AREA AND THE CONSTRUCTION EQUIPMENT INDUSTRY IN ASIA

This section initially presents a background to the ACFTA and its tariff reduction schedules. The relevant details of ASEAN-China bilateral trade for this study are covered, followed by an overview of the CE business within the ACFTA area and regional connectivity.

4.1 The ASEAN-China free trade area: A background

The ACFTA is very ambitious in the sense that it has created the third largest free trade area in the world in terms of trade volume (Sheng et al., 2012). The agreement was signed in November 2002 after years of discussion and preparation (ACFTA, 2004, Tongzon, 2005) and implemented in 2010 for ASEAN 6 (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand) and China for trade in goods, and will further cover the newer ASEAN countries (Cambodia, Laos, Myanmar and Vietnam) by 2015 (ASEAN, 2013a). ACFTA is generally believed to have positive effects on the involved parties, such as reducing the vulnerability of ASEAN and China towards their historically largest export markets, the US and EU (Estrada et al., 2012), increased exports through reduced tariffs and the possibility for ASEAN and China to act as one voice in world trade (Tongzon, 2005). Additionally, ACFTA is the Asian response to increased regionalism in other parts of the world, e.g. the single market of the EU and NAFTA (Cai, 2005). The success of China and its recent rise as "the factory of the world" is a major threat to ASEAN, which clearly shows through massive FDI inflows into China, partially on the expense of ASEAN. However, this is at the same time a great opportunity for ASEAN to grow together with China and its huge domestic market (Park, 2007).

Despite all possible benefits for the member countries, there are potential problems with the implementation of such a huge agreement. In comparison with both other FTAs in the region and the global average, ACFTA stands out as a very thin agreement. This is measured through the amount of WTO provisions FTAs cover, such as anti-dumping or countervailing measures, but also additional provisions that are not covered by WTO but normally covered by trade agreements, e.g. Intellectual property rights, investment protection and liberalization (Kleimann, 2013). In this sense, ACFTA is more focused on tariff elimination than on other measures.

In 2012, one of the more ambitious negotiations was initiated discussing the formation of "Regional Comprehensive Economic Partnership" (RCEP) to include ASEAN and its existing partners in ASEAN+1 FTAs (Australia, China, India, Japan, Korea and New Zealand) under the same agreement (Fukunaga & Isono, 2013). In this context, ACFTA is also a stepping stone towards further expanding RTAs in the Asia-Pacific region. However, many of the agreements in East Asia are overlapping, which creates the so-called "noodle bowl" problem. This has become a regional policy issue as the majority of these agreements are uncoordinated and the commitments in them are not necessarily binding. This can be both beneficial and confusing to traders as they are in some cases able to choose the agreement that is most beneficial to them, but comparing or even finding information is problematic (Lee & Okabe, 2011, Medalla, 2011, Findlay, 2011). Within the "noodle bowl" of FTAs, there are different ROO, applicable tariffs and margins of preference. This needs to be taken into account and the tariff benefits have to be compared to the administrative rules and ROO that one has to comply with (Medalla, 2011). From 2012, the ASEAN countries are using a selfcertification system for exports and imports called the ASEAN Single Window. The agreement to use this system was signed in 2004 as a means to allow for free circulation of goods within ASEAN and further establish the region as a single market and production base (JASTPRO, 2012). The self-certification system is used to cope with the FTA coordination issues and administration costs to some extent, but application of the rules remains a problem (Medalla, 2011).

While this makes trade more complicated, ACFTA could remedy the situation. If the ambitious goal of removing all tariffs is realized then many of the older FTAs may become obsolete. The fact that many of the countries involved already have FTAs in place amongst each other adds further complexity since there is a risk that they are not enthusiastic enough to push through ACFTA if they are already able to trade freely. There are however exceptions to the tariff reductions. The countries involved in the ACFTA are allowed to protect a number of products and components of strategic importance. These products are placed on the sensitive track or the highly sensitive track. Table 2 illustrates the maximum number of tariff lines that each country under the ACFTA can still protect with a tariff. The majority of these tariffs will be phased out by 2018 while some key tariff lines for each country may still retain a tariff as high as 50% by 2015 and 2018 respectively. After ACFTA was signed in 2002, the members spent two more years discussing these exceptions to the agreement and they have had time from 2004 up until the dates stated in table 2 to prepare for the reductions (ACFTA, 2004, ACFTA Annex 2, 2004).



Tariff schedules	ASEAN-6 and China	Cambodia, Laos, Myanmar and Vietnam	
Tariff ceiling - sensitive track	400 tariff lines at HS six digit level and 10% of total import value (2001)	500 tariff lines at HS six digit level	
Tariff ceiling - highly sensitive track	Max 40% of the tariff lines in the sensitive track or 100 tariff lines, whichever is lower	Max 40% of the tariff lines in the sensitive track or 150 tariff lines, whichever is lower	
Tariff reduction schedule – sensitive track	Reduce applied MFN tariff rates to 20% by January 1, 2012 and further to 0-5% by January 1, 2018	Reduce applied MFN tariff rates to 20% by January 1, 2015 and further to 0-5% by January 1, 2018	
Tariff reduction schedule – highly sensitive track	Reduce applied MFN tariff rates to no more than 50% by January 1, 2015	Reduce applied MFN tariff rates to no more than 50% by January 1, 2018	

Table 2 – Tariff ceiling and reduction schedule under ACFTA

Source: ACFTA Annex 2, 2004, Yue, 2006, Urata, 2013

ACFTA has lowered the average tariff on ASEAN exports to China from 9.8 to 0.1% in 2010. The other way around, exports from China to ASEAN, was reduced from 12.8 to 0.6% during the same time period. The reduction of tariffs does not only apply to finished goods, but also opens up freer flow of intermediate goods which benefits every stage in the supply chain (Sheng et al., 2012). This also makes it less costly for firms to establish cross-country value chains within the ACFTA area.

4.1.1 Implications for countries under the ACFTA

China sees the agreement as a win-win situation for all involved parties and claims that it is merely a result of the economic ties between the two regions that has developed over time. However, ACFTA is also seen as a strategic tool for China to ensure that it will continue to grow (Wang, 2007). The members of ASEAN see the potential of the agreement, mainly through increased access to one of the largest consumer markets in the world but also fear that China with its vast resources may outcompete ASEAN. This depends to a large extent on the similarities between the export composition of China and ASEAN. The ASEAN countries that have a similar export structure to China face a larger risk than others (Tongzon, 2005, Sheng et al., 2012). Firms with operations in ASEAN may even benefit in the sense that they have a complementary export profile to that of China, which means they can collaborate through the ACFTA. Nevertheless, the economic integration brought by the ACFTA is a big step forward in the integration process between China and ASEAN (Arakiki, 2012). Problems exist however, such as ASEAN members fearing that their markets will be flooded with cheap goods from China. This was already the case to a lesser extent before ACFTA, and scepticism is the strongest in Indonesia with its long history of protectionism (Chandra & Lontoh, 2011). Developing countries are of growing importance to China and may soon be



the main export destinations for Chinese products (EIU, 2011), meaning that most of ASEAN can expect to see more Chinese goods in their markets.

China has an obvious comparative advantage in the more labour intensive industries, such as textiles, footwear and various manufactured goods. ASEAN has an advantage over China in e.g. machinery, mineral products, electronics, and base metal and metal products. It is however important to note that China is improving in all these categories except metal and mineral products (Tongzon, 2005, Liu & Ng, 2010). Many firms choose to locate their manufacturing in China due to the size of the domestic market. With tariffs removed to a large extent under ACFTA it will be possible to produce in ASEAN without any tariff barriers to the Chinese market. The ASEAN Economic Community (AEC) was established in 2003 with the goal of creating a single market and production base as well as a highly competitive, globally integrated region (ASEAN, 2013b, ASEAN, 2013c). If ASEAN can continue to integrate under the AEC, there is an opportunity for the region to make use of the comparative advantages of its member countries to compete with China for FDI.

Table 3 shows some of the HS codes relevant to our research, and the liberalization rate achieved as of 2011. HS 84 and 85 covers machinery among other things, and as the table shows the liberalization rate is over 90%. Whether the remaining tariff lines are on the sensitive track or not may greatly impact trade in these commodities in the region.

HS		Level of liberalization achieved by			
codes	Commodifies	China vis-à-vis ASEAN10	ASEAN6 vis-à-vis China (*)		
72	Iron and steel	100%	82.70%		
73	Articles of iron and steel	100%	90.90%		
74	Copper and articles thereof	100%	98.40%		
75	Nickel and articles thereof	100%	100%		
76	Aluminum and articles thereof	100%	100%		
78	Lead and articles thereof	100%	100%		
79	Zinc and articles thereof	100%	100%		
80	Tin and articles thereof	100%	100%		
81	Other base metals; cermets; articles	100%	100%		
82	Tools, implements, cutlery, spoons	100%	100%		
83	Miscellaneous articles of base metal	94.7%	100%		
84	Nuclear reactors, boilers, machinery	99.5%	94.8%		
85	Electrical machinery & equipment &	95.6%	91.8%		

Table 3 – HS codes and levels of liberalization under ACFTA
Image: Contract of the second second

Source: Kuno, 2011

Note: (*) ASEAN6 includes Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand The reduction in tariffs will increase trade flows within the ACFTA region. Countries with a higher proportion of component trade will benefit even more from the agreement, and research shows that Singapore, Thailand and The Philippines are likely to experience the



largest trade increase. The effects of ACFTA are not limited to Asia however as increased intraregional trade will also increase trade of both ASEAN and China with the rest of the world (Sheng et al., 2012).

19

4.1.2 Tariff reduction schedules under ACFTA

As already described in table 2, the countries under ACFTA are allowed to keep certain tariff lines to protect products of strategic importance. The goal for ACFTA is to reduce the tariff of every other product to zero. Looking at the light CE industry, we have identified the HS codes we find relevant for this study and these fall under the categories 76 (aluminum and parts thereof), 81 (other base metals and parts thereof), 84 (machinery) and 85 (electrical machinery) (WTO, 2013b). However, as China does not apply any tariff under ACFTA for the products that fall under category 8508¹ (China Customs, 2013), it is very likely that ASEAN does not apply a tariff on this category either.

In order to make use of the preferential tariffs under the ACFTA, products or components are required to have regional value content (RVC) of at least 40%. Cumulation of inputs is also allowed under the ACFTA, provided that the inputs from all parties combined have at least 40% RVC (ACFTA Annex 3, 2004, Medalla, 2011). In cases where the value of a product is added partially within the ACFTA area and partially from another region, e.g. Europe, there is another rule importers have to comply with in order to make use of the preferential tariffs. *"If the total value of the materials, part or produce originating from outside of the territory of a Party (i.e. non-ACFTA) does not exceed 60% of the FOB value of the product so produced or obtained provided that the final process of the manufacture is performed within the territory of the Party"* (ACFTA Annex 3, Rule 4:2 §1). Thus in addition to a minimum of 40% RVC, the agreement also requires that final assembly takes place within the ACFTA region in order for preferential tariffs to apply. According to Medalla (2011), the ROO under ACFTA is considered more restrictive than that of the other ASEAN+1 FTAs.

Table 3 describes the general level of liberalization of these HS codes, but a more detailed look at the HS codes and applied tariffs is essential to understand how ACFTA may impact the CE industry. Accordingly, appendix 4 shows the relevant categories on a HS-6 digit level for the countries this study focuses on. These tariff lines were identified mainly by the authors of this paper based on previous knowledge of the light CE industry and its products. Additionally, Husqvarna Construction Products named some of their most important products



¹ HS 8508, electromechanical tools for working in hand, e.g. drills, saws or grinders, is not included in the tariff reduction schedules for any of the countries under ACFTA (ASEAN, 2013d).

that were incorporated with our findings. Appendix 4 shows tariffs applied within the ACFTA region before and after 2010, which is when the agreement came into effect. Important to note however is that the years displayed differ for some countries, but in all cases shows one tariff applied before ACFTA was implemented and one after. Vietnam is the exception in this case, as it, together with Cambodia, Laos and Myanmar, is not bound by ACFTA until 2015. Vietnam is also the only country in this study that still applied tariffs within the ACFTA region in 2011. Machines for removing metal, aluminum castings and electrical motors were subject to a 10% tariff into Vietnam, while a 3% tariff was applied to ball bearings. Pre-ACFTA, China applied tariffs up to 24.5% towards ASEAN for the products included in this study, while the ASEAN countries had already eliminated or reduced the majority of tariffs between each other as a result of the ASEAN Free Trade Area (AFTA). Aluminum castings and electrical motors had the highest tariff (up to 20%) between ASEAN countries before ACFTA came into effect.

For comparison, appendix 5 shows the tariffs applied for the same HS codes for products and components that are imported from outside the ACFTA region. As all the countries included in this study are WTO members, only most favored nation (MFN) tariffs are relevant. Data for the latest year available is shown in this table, but the years vary slightly depending on country. Interesting to note in this table is that Singapore is completely open for imports of all relevant tariff lines, with Malaysia, Thailand and Vietnam not far behind, applying tariffs lower than 5% for most of the HS codes displayed. Malaysia, Thailand and Vietnam have in common that they all apply tariffs of up to 20% on aluminum castings and electrical motors. Malaysia also applies a tariff of 20% on various drilling and boring equipment. China applies tariffs of over 9% on most of the relevant products and components, ranging up to 15% on e.g. drilling machines and surface grinding machines. Indonesia also applies tariffs on the majority of relevant products and components, but the tariffs only exceed 5% for electrical motors and aluminum castings.

4.1.3 Non-tariff barriers within the ACFTA region

Related to the planned tariff reductions above, there are still a number of NTBs present in the ACFTA area, such as lack of transparency in the import systems of member states, inconsistent trade policies within the region and problems with conformity among both customs and local authorities. These issues are present in all member states to some extent (Mikic, 2010). Different ROO, tariffs and administrative procedures also exist due to the "noodle bowl" of FTAs within the region (Medalla, 2011).



Non-tariff barriers have been a more prevalent issue in ASEAN after the economic crisis of 2009. Because these measures are hard to compare and define, their impact is more unpredictable than tariffs. The formation of the AEC aims to completely remove non-tariff barriers in ASEAN (Mikic, 2010); and ACFTA has a similar goal: "*The Parties shall identify non-tariff barriers (other than quantitative restrictions) for elimination as soon as possible after the entry into force of this Agreement. The time frame for elimination of these non-tariff barriers shall be mutually agreed upon by all Parties"* (ACFTA, 2004, art 8 §2). However, barriers such as arbitrary implementation of regulations and inconsistent administration still persist in ASEAN. If these barriers remain, the elimination of tariffs may be a worthless effort (Ando & Obashi, 2010), as trade could potentially remain as restricted as it was with the tariffs still in place.

4.1.4 Trade within the ACFTA region – a focus on machinery and transport equipment

Before the ACFTA came into effect on January 1st 2010, China was already one of the major trading partners of ASEAN. Due to its enormous manufacturing capabilities, China relies to a large extent on ASEAN for crude and chemical materials such as metalliferous ores and plastics (see appendix 7). China however has successfully increased its role as one of the most important suppliers of manufactured goods to ASEAN. Together with better access to each other's domestic markets under the ACFTA, this trade relation creates opportunities for both regions to enhance bilateral trade in intermediate and complementary goods.

Figures from table 4 show tremendous escalations of exports from China to major destinations in the world. Compared to 2002, China's total export to the world increased almost sixfold reaching around US\$ 1.9 trillion in 2011. Exports to ASEAN grew even faster, increasing more than seven times within the ten-year period. In 2011, exports to ASEAN accounting for approximately 43% and 9% of China's exports to East Asia and the world respectively implies that this region is an increasingly important trading partner of China. Looking at ASEAN, exports to China grew from 5% of the total export in 2002 to 11% in 2011, increasing more than six times in absolute value. This suggests that ASEAN members are expanding more rapidly in the Chinese market relative to e.g. in the EU and the US.



Trada flavra	SITC 7			All products		
1 rade nows	2002	2011	% Change	2002	2011	% Change
China to the world	127.0	902.6	611%	325.6	1,898.0	483%
China to EU	22.7	173.9	666%	53.0	356.2	573%
China to the US	28.7	161.9	465%	70.1	325.0	364%
China to Eastern Asia	34.9	230.5	561%	82.1	394.3	380%
China to ASEAN	11.5	73.5	538%	23.6	170.1	621%
ASEAN to the world	203.0	415.8	105%	405.2	1,245.0	207%
ASEAN to EU	32.2	46.2	43%	58.5	133.4	128%
ASEAN to the US	42.9	39.4	-8%	72.7	107.4	48%
ASEAN to Eastern Asia	40.8	125.8	208%	79.9	316.7	297%
ASEAN to China	8.7	47.8	451%	21.9	142.8	553%

Table 4 – China's and ASEAN's trade flows to major destinations, 2002 & 2011, in US\$ billion

Note: Reporting countries are China and ASEAN

Source: UNCTADstat, 2013

In regard to the machinery and transport equipment sector (SITC 7), China's total export has increased more than seven times between 2002 and 2011. The greatest surge can be seen in China's exports of machinery and transport equipment to the EU market, which increased almost eight times in ten years. Exports of SITC-7 products from China to ASEAN soared more than six times since 2002 with a value of US\$ 73.5 billion recorded in 2011. Interesting to note is that while in 2002, ASEAN exported roughly twice the value to the world than what China did, the situation is the opposite in 2011. This shows that the Asian giant economy is expanding more rapidly and successfully than ASEAN in this sector.

In addition, while SITC 7 accounted for almost half of the total export value from China to ASEAN in 2002, its share dropped to 43% in 2011. The same situation can be seen in exports of SITC-7 products from ASEAN to China with around 40% and 34% in 2002 and 2011 respectively. Although the share of machinery and transport equipment in ASEAN's and China's total exports to each other grew rapidly between 1980 and 2005 (Sheng et al., 2012), we find a sign of slowing down in the recent years. Such a small decline does not have a concrete reason; however, one might argue that this sector, especially production of high-tech machines and electronic devices, is where China and the more developed economies of ASEAN such as Thailand and Malaysia are competing head-on for the domestic, regional and global markets.

Figures 2 and 3 show China's trade in machinery and transport equipment with select ASEAN partners in 2002 and 2011. China recorded a trade deficit of approximately US\$ 15 billion in this sector in 2011. Up to now, ASEAN's trade with China has been dominated by Singapore, Malaysia, Thailand and Indonesia with Vietnam gradually catching up. These five countries together accounted for 89.5% of China's total exports of machinery and transport equipment to ASEAN in 2011, a slight decrease from 90.3% in 2002 (see figure 2 on page 23). Exports to the rest of ASEAN including Brunei, Cambodia, Laos and the Philippines also expanded

relatively well during this period. Among ASEAN members, China's exports to Indonesia and Vietnam have increased remarkably in both absolute and relative terms compared to ten years ago. Although exports to Malaysia also escalate, this country is no longer the second largest market of China in this region. Instead, Malaysia is growing to become a more important supplier of China in terms of machinery and transport equipment. Singapore remains as the largest export market of China in South East Asia however its share has declined slightly compared to 2002. Exports to Thailand have grown larger in value however the proportion remains about the same.





Note: China is the reporting country

Source: UNCTADstat, 2013

Regarding China's imports of machinery and transport equipment from ASEAN, Malaysia is the largest supplier from Southeast Asia with an import value of US\$ 39 billion in 2011, compared to roughly US\$ 6 billion in 2002. China's import value from Thailand is about half of that from Malaysia in 2011. Nonetheless, Thailand has surpassed Singapore and become the second most important supplier of machinery and transport equipment to China. The role of Singapore as an exporter has declined significantly from about 24% to only 14% between 2002 and 2011 (see figure 3 on page 24). This is likely a result of more direct imports from Malaysia and Thailand to China rather than passing through Singapore. In a different stage of economic development, Vietnam and Indonesia remain as importers rather than exporters of machinery and transport equipment. However, Vietnam's share in China's total import of SITC-7 products from ASEAN has improved from nearly nothing to about 4% while Indonesia's share has declined from 5% to only 2.6% over the decade.





Figure 3 – China's imports of machinery and transport equipment from ASEAN, 2002 & 2011, in %

24

Note: China is the reporting country

Source: UNCTADstat, 2013

4.1.5 Trade in intermediate goods

While the power of RTAs in facilitating intraregional trade is still debatable, there is evidence of tighter overall intraregional production networks as well as trade cooperation as a result of trade and investment linkages with China. China is considered a hub for imports of intermediate products from the region and a source of exports of final products to the rest of the world (ESCAP, 2011a).

The analysis of Sheng et al. (2012) confirms the fact that bilateral trade between ASEAN and China has shifted from primary goods to manufacturing goods especially in the most recent years. In comparison with other parts of the world, trade in parts and components has contributed considerably to the total trade growth between these two regions. Ten years ago, a study of Ando & Kimura (2003) already found very high shares of parts and components in machinery trade in this region. This type of trade offers participating countries more trade opportunities and can lead to future specialization within the regional supply chain. However, this also makes these countries depend on one another more than in other regions.

In the production of industrial machinery, metals (especially steel, aluminium and copper) and plastic materials are always in demand and are therefore very crucial. ACFTA, when opening more markets for participating countries, also offers more suppliers of material and components. Figures in appendices 7 and 8 show how trade in these products has boomed between 2002 and 2011. ASEAN-China bilateral trade in these products recovered quickly and impressively after the 2008-2009 crisis. Changes in trade flows also indicate the degree



of dependence of the two regions on each other and how trade liberalization under ACFTA has partially helped them to secure regional supplies.

25

In terms of metalliferous ores (SITC 28), China relies heavily on ASEAN given that its' imports from ASEAN have grown extensively. Under ACFTA, trade in plastic and plastic products (SITC 57 and 58) has been fully liberalized. In consequence, bilateral trade in such products has increased rapidly regardless of primary forms or finished products like tubes and pipes. In the sector of iron and steel components (SITC 67), ASEAN members are heavily dependent on China for supply of flat-rolled products. ASEAN's imports of these have grown tremendously. According to figures in appendices 7 and 8, China recorded trade deficits in SITC 28, 57 and 58 groups however it gained trade surpluses in SITC 67, 68 (non-ferrous metals) and 69 (manufactures of metals). Once again, this indicates the vital role of China and ASEAN to each other as intermediate-good suppliers.

4.1.6 ASEAN – China trade in selected HS-4digit construction equipment groups

When it comes down to more specific trade data, the HS is more detailed than SITC. Accordingly, data in this section is presented under HS-4digit codes (for the corresponding codes between these two systems, please refer back to table 1 on page 8).

In general, ASEAN – China bilateral trade has improved significantly in some products and to a lesser extent in the others indicating different levels of regional integration across product groups. Given China's role as a global supplier rather than a regional supplier, trade with developed countries such as Japan, South Korea, the US, and European countries led by Germany and Italy is significantly more important to China than trade with ASEAN countries. However, robust ASEAN – China bilateral trade flows have been recorded in many CE or CE-related products. In contrast to the total trade in machinery and transport equipment, China enjoys increasing trade surpluses in most of the light CE categories (see appendix 9).

Despite the fact that ASEAN-China bilateral trade in CE and CE-related products has increased substantially since 2002, the role of ASEAN in China's imports remains insignificant. Appendix 10 shows that the ASEAN countries in this study have a very low share in China's total trade. In very few cases, a collective share of all five countries surpasses 5% of China's imports in CE and CE-related products. Nevertheless, figures prove the fact that ASEAN members are trading more with China than they trade among themselves (see appendices 11 and 12). In fact, trade with China has much greater impact on ASEAN economies than the other way around. These countries are dependent on China for many



types of products. For example, in 2011, imports of HS-8508 products (hand tools incorporating electric motors) from China accounted for 83% of Indonesia's total import from the world, figures for Singapore, Malaysia, and Thailand are 42%, 70% and 74% respectively. A similar situation can be seen in the HS-8412 group (magnesium articles) where China supplied 84%, 91% and 91% of the total import of that of Indonesia, Malaysia and Thailand (see appendix 13). A relative high degree of dependence on China is also shown in HS 8464 (machine tools for working with stone, ceramics and concrete), 8467 (tools for working in the hand with self-contained electric or non-electric motor), 8501 (electronic motors and generators) and 8534 (apparatus for electrical circuits).

On the other hand, increasing trade flows within ASEAN also indicates stronger trade relations among ASEAN countries (see appendix 12). Singapore remains as ASEAN's trade hub, especially to Malaysia and Indonesia. The high bilateral trade volume in many product categories (e.g. aluminium and magnesium castings, parts for boring machines for earth/minerals/ores, ball and roller bearings, and apparatus for electrical circuits) suggests that Singapore is still the gateway for Malaysian and Indonesian products to enter the global market although to a lesser extent compared to ten years ago. Thailand's trade relation with Singapore and Malaysia has also been tightened. Among these ASEAN countries, Indonesia's intra-ASEAN trade has the lowest growth rate. On top of that, its imports are actually increasing faster than exports which lead to larger trade deficits. An even bleaker picture is shown in trade with China. In 2002, Vietnam was the least integrated member within the ACFTA region given the fact that its share in the total intra-ACFTA trade was the smallest. However, the situation has improved relatively well as trade with Thailand, Singapore and especially with China grows significantly. Indonesia on the other hand shows little improvement when it comes to regional integration.

4.2 The construction equipment industry in Asia

Developing countries are of growing importance to China and may soon be the main export destinations for Chinese products. At the same time, Western firms have lost substantial market shares in developing countries during the past few years, which further enable Chinese firms to grow. This does however also provide China with additional economies of scale which might be exactly what the Chinese manufacturers need to turn their focus towards developed countries again. While this is happening, foreign firms are focusing more on the domestic market in China as an entry point into developing markets (EIU, 2011). Research shows that for now, Western firms should mainly worry about competition in their overseas markets (EIU, 2011). In the CE industry, global market share of firms from the EU, the US



and Japan shrunk from 62% in 2008 to 47% in 2010, while Chinese firms grew from 15% to 32% during the same period (Kelp & Sieber, 2012), proving that the situation for Western firms could change quickly. China is still the largest CE market in the world and will remain so in the near future. ACFTA provides an opportunity for foreign firms to produce in ASEAN while still maintaining access to the Chinese market without tariff barriers.

One of the bigger issues for Western firms wanting to establish in a developing market is the cost gap between them and Chinese firms, which on average is estimated at 20-35% for all industries. Projections state that in order for foreign players to remain competitive, the gap needs to come down to 5-10% (Bouffault et al., 2011). Manufacturing in the country where the products are sold will be especially important for Western firms in developing markets, e.g. ASEAN, which are likely to be the future markets of the CE industry (Kelp & Sieber, 2012). The premium segment is smaller in developing countries, and while it will develop over time, so will the value brands from developing countries. Can Western firms really afford to just stay in the premium segment?

Other locations in the world are becoming increasingly interesting for manufacturing as labor costs continue to rise in the coastal regions of China. Despite this China is still a very attractive location both for manufacturing and sales, and the country will remain competitive for many years to come. Additionally, many firms are already heavily invested in China and it is unlikely for them to relocate due to sunk costs. It is crucial for these firms to protect the investments they have already made (AlixPartners, 2011). Foreign firms producing in China can only compete if they lower costs while simultaneously focusing on their competitive edge over Chinese firms, e.g. technology and aftermarket services. Rearranging their organizations to better fit developing markets is also becoming increasingly important (Bouffault et al., 2011). Another key issue is the supply chain. On the one hand, China has an established CE industry, and several Western firms have also been present for many years. The situation is not the same in ASEAN, and thus choosing to expand manufacturing there could be a huge challenge in terms of logistics and availability of suppliers. On the other hand, trade facilitation under ACFTA might encourage MNEs and their suppliers to source outside of China. This would expand industrial linkages from China into ASEAN.

In 2010, China was responsible for around 20% of global production in the construction machinery industry. Many industrial sectors in China started with foreign help, but CE was a domestic initiative. The heavy equipment sector is of strategic importance to the Chinese government, which means that domestic firms are assisted through standard settings, limitations on foreign ownership, financing, consolidation of the industry and laws regulating



the required share of domestic content in products (EIU, 2011). These advantages were established before China joined the WTO, and has been phased out to some extent since the accession in 2001 (Shafaeddin, 2002). Traditionally Chinese firms have an advantage in lower labor costs and large-scale production. While this is still true, China is rapidly moving up the value chain, which means increased labor costs and higher technology levels. This development is a source of growth for the CE industry through e.g. infrastructure projects where CE is crucial. With the Chinese CE market now being the largest in the world, Western firms face a tough future as the Chinese firms have an obvious advantage in their own home market. Accordingly, there is also a domestic supply chain in place, which is a big advantage for China over ASEAN for manufacturing purposes (EIU, 2011). The Chinese market is huge and accounts for up to 50% of global demand in heavy equipment industries (Bouffault et al., 2011). The outlook for the global CE market is positive, but how much it will expand is dependent on China (Kelp & Sieber, 2012). Thus, ASEAN cannot compete with China in terms of market size, but countries such as Indonesia, Vietnam or Thailand may still be key markets in the future.

Since Chinese firms have already made their move to many developing markets and are focusing their exports there, Western firms risk falling behind in these markets if they do not act promptly. The largest ones are India, Indonesia, Vietnam and the Philippines, but also some countries in Africa and South America. These markets have in common that CE manufacturing is either very limited or nonexistent, and demand is mainly in the lower price segment, which fits China perfectly. This often acts as an entry barrier for Western firms who operate mainly in the premium segment, which is not supported to a large degree in these markets (Kelp & Sieber, 2012). When Chinese firms are established on these markets they develop the necessary capabilities to go global, and then move on to developed markets with more advanced products. Even at this stage Chinese manufacturers are cheaper than Western ones due to having a much larger share of their production in low-cost countries. To hold on to their traditional markets, Western firms must find a way to counter their Chinese competitors in the developing markets, before the Chinese firms get a foothold in the developed CE markets (Zablit & Chui, 2013). While price is often the most important factor in developing markets, quality, availability of spare parts, customization and product range are also of growing importance (RolandBerger, 2011). Western firms often have the advantage in availability of spare parts and customization, and for customers looking for topnotch products these firms also have the best quality and product range. The problem then for firms in the premium segment is that in developing markets customers are often not willing to pay a very high price for a premium product; they want more value for their money. Chinese firms have a better solution for this, and research states that cost innovation, a constant strive to find a good balance between functions, quality and price is the real edge of these firms (Zablit & Chui, 2013), as opposed to the more common view that "they are just cheap".

4.2.1 Manufacturing locations in Asia

ASEAN has not been able to compete with China for FDI since the Asian economic crisis of 1998. Efficient integration of the ASEAN area through e.g. ACFTA and other regional policies could once again make ASEAN a strong competitor to China in terms of FDI (Thangavelu & Lim, 2011). When investing in manufacturing, MNEs look at criteria such as availability of suppliers, tax exemptions or other financial benefits, logistics, salaries and availability of skilled labour. Still, Vietnam and Indonesia have adopted fairly liberal FDI policies to attract MNEs and their activities, while Thailand and Malaysia are more restrictive. However, the latter countries are better locations in terms of human resources, infrastructure, policy implementation and corruption (ibid).

Table 5 below shows the level of FDI restrictiveness for five of the countries in this study in some of the relevant sectors. Singapore was not included in the index. The index is based on, among others, factors such as restrictions on foreign ownership and market access, foreign equity restriction, whether incentives are granted to foreign firms or not, screening and approval procedures and performance requirements.

Sectors	China	Malaysia	Thailand	Vietnam	Indonesia
Construction Services	0.605	0.515	0.525	0.690	0.635
Transport Services	0.215	0.0265	0.190	0.225	0.134
Manufacturing	0.527	0.618	0.637	0.588	0.527

Table 5 FDI restrictiveness for five countries (scored 0.1)

Note: A score of 1 means that the sector is 100% liberalized Source: Thangavelu & Lim, 2011

The inland provinces in China accounted for roughly 54% of China's output of construction, mining and metallurgical equipment in 2008, with Hunan and Henan as the two main regions. These provinces are thus very likely to benefit from the recent increase of exports in these segments (EIU, 2011). Inland China has another advantage. While minimum wages in China were raised by an average of 20% during 2011, this is mainly focused on the urban areas along the east coast. Research states that for MNE's who have 30-100% of their manufacturing in China, a minimum wage increase of 30% will reduce the margin of these firms by 1-5% (Wright et al., 2011). In the CE industry however, components and raw materials generally make up a larger share of total costs than wages. Either way, China's wages are still more competitive than developed countries, and firms looking for alternatives may consider Thailand, Indonesia, Malaysia or Vietnam for sourcing operations. Inland


China is also comparable to these countries – Lower costs, but also possible problems with infrastructure, suppliers and availability of labor (ibid).

Some provinces in Western China want to establish more bonded zones, covering manufacturing, logistics, R&D and sales to attract more MNEs. Bonded zones covered 45% of cross-border trade in China in 2012. The idea is to establish investment clusters to help integrate supply chains and increase the local sourcing content. There is also significant expansions in infrastructure planned, e.g. airports and railways not only to coastal China but all the way to Europe (PWC, 2012). The expansion of infrastructure is also a sales opportunity for CE firms, as their machines are needed for such projects.

4.2.2 The middle market segment

The middle market segment is exactly what the name states; the segment in between premium and low quality. This is a growing segment with a large demand for products that are "good enough" and provide value for the money spent. For MNEs to enter this segment in developing markets, they need to rethink their strategies when it comes to product quality and service levels (Bouffault et al., 2011). As previously mentioned, Chinese firms are already making their moves on this segment, and with rising wages – mainly in the highly industrialized coastal areas – China is moving up the value chain and will be able to provide products that fit this segment perfectly. The construction machinery sectors are one of the "hot zones" in Asia where Chinese manufacturers are expected to take the lead during 2012. The "hot zone" refers to markets traditionally dominated by OECD countries where Chinese firms have made a significant impact during the last three years. When assisted by heavy investment and economies of scale, China is often able to make a significant global impact within the sector it focuses on (EIU, 2011).

As Chinese firms continue to expand into the "hot zone", they will move closer to the premium segment where Western firms traditionally operate. Now this does not mean that Chinese firms will or even want to compete in the premium segment, but they are very likely to move up into the mid-market with value brands that are "good" enough and still reasonably cheap. As previously mentioned, Western firms are suggested to counter this at an early stage, and the way to do that for a firm in the premium segment would be to make a move on the mid-market as well, but from another angle. Firms moving up from the lower end segments are building their brand, so for firms that are moving down from the premium segment a secondary brand may be a good idea to not devaluate the reputation of their brand. In developing countries, the premium segment is growing as wages rise and the country becomes richer, which means that Western firms need to protect "their" segment while at the



same time competing in the mid-market. For the purpose of this study, it is important to note that while Chinese firms have made a significant impact in heavy CE, these firms have not yet penetrated the light CE segment to a large degree.

31

4.3 Regional connectivity

Geographical barriers are no longer an impediment to trade within the ACFTA region owing to efficient air and sea links (Estrada et al., 2012). As long as China and ASEAN members wish to improve intraregional trade and investment, seamless cross-border physical connectivity (e.g. multimodal transport networks connected through dry ports) is an ambition of the entire region. ESCAP (2012) recommends removing non-physical barriers to transport and improving intermodal connectivity as guidelines to enhance the efficiency of transport services and thereby regional connections.

In terms of maritime transport, the main mode of freight transportation in Asia, China owns many of the world's busiest container ports including Shanghai, Shenzhen, Ningbo, Guangzhou and Qingdao (ESCAP, 2012). This creates a need to develop other means of transport to reduce congestion at the major hubs in the future. Southeast Asian countries are led by Singapore's world-class port and logistics system. Malaysian ports however have the highest sustained growth of container trade while Vietnam has been growing rapidly in the last ten years (ESCAP, 2011b). Indonesia has doubled its container trade volume since 2000 and Thailand is impressive with a premier container port, Laem Chabang, with high productivity terminals and deep-water berths (ibid). In 2012, UNCTAD liner shipping connectivity index rates China number one followed by (in ASEAN) Singapore, Malaysia, Vietnam, Thailand and Indonesia (see table 6). China, Malaysia and Vietnam have improved substantially since 2004. This indicates that significant declines of shipping cost have helped boosting these countries' competitiveness and increasing container traffic (ESCAP, 2012). As trade between China and ASEAN is expanding, intraregional shipping is expected to become more intensified.

Gerrateiter		Index points		Average annual	Rank	Rank	
Countries	2004	2011	2012	change 2004-2012	2004	2012	
China	100.00	152.06	156.19	7.02	1	1	
Indonesia	25.88	25.91	26.28	0.05	27	48	
Malaysia	62.83	90.96	99.69	4.61	3	6	
Singapore	81.87	105.02	113.16	3.91	4	3	
Thailand	31.01	36.70	37.66	2.33	39	37	
Vietnam	12.86	49.71	48.71	4.48	55	22	

Table 6 – UNCTAD liner shipping connectivity index and world rankings in 2012

Source: UNCTAD, 2012



Land transport on the other hand is underdeveloped in this region. Governments are trying to develop roads and railways and in some cases inland waterways to not only connect the regions within a country but also to its neighbours (ESCAP, 2012). The Master Plan on ASEAN Connectivity and the Singapore-Kunming Rail Link Project draw many interests and hopes for better connection between China and Southeast Asia. Currently, China has the most extensive rail network in the ACFTA region with the highest absolute total growth in railway freight tonnage while ASEAN members are falling behind (ESCAP, 2011b). Being the region's trade locomotive and the factory of the world, more than any country, China has the greatest desire to develop intermodal facilities for strategic locations across the country. Accordingly, Chinese Railway is trying to connect inland regions with European destinations by new land bridge services. For example, the Antwerp-Chongqing Rail Freight service now takes 20-25 days, which is faster than 36 days of maritime transportation from east China's ports to west Europe (ibid). This shows the ambition behind the 'Go West' policy in attracting more FDI to the inland regions. Although the sizes of the infrastructure projects are not as large as in China, ASEAN members are trying to improve their land transport infrastructure. Several projects are currently in progress, and additional ones are in the planning stage (ibid).

In terms of efficiency, only the Malaysian railway system can compete with Chinas' while Thailand and Vietnam are among the countries with the lowest capacity. This is not surprising when Southeast Asia, by relying heavily on maritime transport, has the longest route-kilometres of missing links on the Tran-Asian Railway network (ESCAP, 2011b). Looking at what the Chinese government has done to improve land transport linkages, ASEAN members have to do more to keep up with the giant neighbour. In order to support regional trade and production network, cross-national infrastructure projects require cooperation among countries to be upgraded to a higher level.



5. HUSQVARNA'S CHOICE OF MANUFACTURING LOCATIONS WITH RELEVANCE TO THE ACFTA: EMPIRICAL FINDINGS

This section begins with an introduction of Husqvarna Construction Products. Empirical findings are then presented according to the factors identified in the conceptual framework (see figure 1 on page 13). A number of new pillars have been added as they were referred to during the interviews and deemed relevant to this study. In addition to Husqvarna, interviews were also held with Volvo CE, Volvo Trucks and Tomra. Since the respondents all have years of experience in different markets in Asia, the information given by them is not limited to the country they are currently working in.

5.1 An introduction of Husqvarna Construction Products

Husqvarna Construction Products (HCP) is a part of Husqvarna Group, one of the world leaders in forest and garden equipment e.g. chain saws, robotic mowers, garden tractors, trimmers and consumer watering products. The history of the group can be traced back to 1689 when the first Husqvarna plant was established as a weapons foundry in Sweden. Before entering the business area of forest and garden equipment in the 1950s, Husqvarna Group had produced a variety of different products including sewing machines, bicycles, motorcycles and kitchen equipment. Providing innovative, high quality and user-friendly products has been the company's mission throughout the history.

In comparison with forest and garden equipment, construction equipment is a newer and smaller segment. In 2012, HCP's net sales grew 4% year-on-year and contributed around SEK 3 billion or 10% of Husqvarna Group's total net sales (Husqvarna, 2013). HCP itself employs about 2000 people, has a sales network that covers more than 70 nations and owns 9 factories in five countries (Belgium, Portugal, Sweden, the US and China). After the 2008-2009 economic crisis, Husqvarna employed measures to revive its organisation by downsizing capacity and costs. This resulted in closures of small production facilities and moving production to larger factories. In Asia, HCP's largest manufacturing plant and warehouse are located in Xiamen, China.

Husqvarna's construction product portfolio consists of power cutters, saws (floor, tile, masonry, wall and wire), drilling equipment, floor grinding machines, demolition robots, and all types of diamond tools for the construction, mining, and stone industries. Products are sold

under two global brands – Husqvarna and Diamant Boart. Husqvarna's machines are used mainly for refurbishment, construction of commercial property and infrastructure projects. The majority of customers are rental companies and specialized dealers however HCP is trying to improve direct sales to contractors.

34

The major markets of HCP are in Europe and North America. Together these two markets contribute 80% of HCP's total net sales in 2012. There is a high expectation for growth in emerging markets. However, the latest annual report shows a mixed result with a strong demand in Brazil but a falling demand in China. Sales in the Chinese market remains insignificant compared to that in HCP's traditional markets of Europe and Americas. The two main competitors of HCP are Hilti and Stihl, from Germany. These two companies have a broad product range like HCP, while the majority of other companies in the light CE industry focus on one or a few applications, e.g. wall sawing or demolition robots.

5.2 Trade-related factors

5.2.1 Tariff reduction

Benefits derived from tariff reduction under ACFTA raises interest among the respondents. However, since the market in ASEAN is still developing *"from crawling to up going"* and sales remain low compared to China and other Asian markets, HCP does not have an actual plan on how to utilise this to reduce costs. Distributors on the other hand are more aware of the tariff reduction. Distributor E (in Malaysia) now buys blades (under HS 82 group) directly from China since they are fully liberalized under ACFTA (no tariffs). He also expects other types of products to become cheaper when produced in China as long as the 40% RVC under ACFTA is met. He argues further that the sensitive lists of the ACFTA members will not be an issue for HCP, as the light CE industry is not subject to protection in the region. For example, engines for CE are classified separately from engines for vehicles (which are protected), and therefore face lower or no tariffs. Distributor E mentions that engines, pumps and generators have become cheaper owing to lower tariffs under ACFTA.

5.2.2 Logistics issues

Mr. A (in China) thinks there is no real issue transporting products from coastal regions to inland regions of China. Yet he agrees there is a need for more infrastructure improvement in the inland regions.

In general, Singapore is still a regional trade hub for Asia. For one of the companies interviewed, shipments from Europe to China used to go via Singapore as well, but now volume is large enough to ship directly to China. As sales grow in other countries, it is reasonable to ship directly from the manufacturing country to the consuming country rather than through Singapore. Mr. D (in Singapore) sees a decreasing flow of parts and components to Singapore although sales still grow in other markets.

Husqvarna has acquired many companies, which creates certain logistics and integration problems. Logistics is not structured and market-focused enough, according to Distributor G (in Thailand). He also mentions that a large portion of components are not made in Europe but are sent back to Sweden before being distributed to their final destination. This means that certain parts go from Asia to Sweden and then back to Asia. Mr. I (in Sweden) explains that case by case, shipping back and forth does not make sense, but on a large scale it is currently the best solution. Distributor G (in Thailand) thinks HCP should establish warehouses in other locations. The Chinese warehouse is too small to serve the whole Asian market. He also believes that 'HCP is steps behind in efficient logistics'. Nonetheless, he thinks Xiamen is not a bad location for an Asian central warehouse. A substantial amount of parts and components stored in the warehouse in Xiamen comes from Sweden. The factory and the warehouse in Xiamen are two separate operations. HCP should arrange so that flows of parts from China go directly to ASEAN rather than China to Sweden and then back to Asia.

Additionally, certain products and components are manufactured in China, and then shipped to Sweden for final assembly. In some cases the finished product is then shipped back to China. Depending on what component was added in Sweden, the product may or may not have 40% RVC when it returns. HCP mentioned that products that were finally assembled in Sweden are subject to MFN tariffs when they return to China even if they have 40% of the value created in China due to no FTA in place between China and Sweden or the EU.

5.2.3 Non-tariff barriers and rules of origin

During the interviews, NTBs are referred to as import licensing requirements, documentation requirements and product specific requirements that differ between the countries covered by this study. Certificate of Origin (CO) form E is required for tariff exemption and reduction under ACFTA. In the case of Singapore where re-exports are common, CO form D or back-to-back certificate is also required. Distributor H (in Vietnam) mentions that the waiting time for the import licence is around two weeks in Vietnam, which is a problem as it prolongs customers' waiting time. In addition, the rule of origin under ACFTA, which requires



35

minimum 40% RVC, is not considered as a NTB but rather a potential measure to circumvent high tariffs. Certain products that are close to 40% RVC may be subject to a high tariff, but if enough components can be sourced from within the ACFTA region for the product to reach 40% RVC, it will be subject to lower or no tariffs at all.

36

Distributor E (in Malaysia) believes costs of handling goods and shipping remain high in China. The custom clearance process is not an issue although it requires different types of documentation. The majority of respondents think *'experience'* and *'learning'* are important when dealing with NTBs. Distributor E also mentions that customs clearance can be quite *'glitchy'* in Malaysia, and thus companies need employees that have knowledge of relevant HS codes and tariff rates to be time- and cost-efficient.

The ASEAN Single Window was discussed with all respondents in relation to customs. This system is likely to save both time and money when companies trade within ASEAN. However, as long as China is not included in the same system, trading within the ACFTA region will still use at least two separate customs systems. Distributor G (in Thailand) mentions that bureaucratic custom procedures are used as a way to earn money from companies. Connections with authorities are important to overcome such problems.

5.2.4 Market access

The respondents agree that ACFTA is a great channel for companies in China to gain access to the ASEAN markets and vice versa. Nonetheless, Mr. A (in China) thinks ASEAN is relatively open, e.g. tariff barriers and transportation costs to deliver goods to these markets were not a major issue even before ACFTA came in effect. These emerging economies have a high demand for imported CE goods, and are therefore unlikely to impose high tariffs on foreign products. According to Mr. I (in Sweden), the official right to access the Chinese market through ACFTA does not guarantee that foreign companies like HCP can sell products easily in this market. Many respondents agree that 'guanxi' (network) has an ultimate role in doing business in China.

5.2.5 Trade relations between ACFTA members

Historically, Singapore has been the trade hub of East Asia, and while this is still true, its role has diminished during the last few years. There are increasing direct transactions between Chinese operations and distributors in South East Asia because tariffs have been reduced. This is not necessarily a result of the ACFTA but rather the growing demand in ASEAN markets. Additionally, China has already had bilateral FTAs with many ASEAN countries for several years. In the ACFTA region, HCP only has manufacturing in China, and therefore orders are sent to either Sweden or the Asian central warehouse in Xiamen, China. This indicates that for HCP, more transactions are made between China and individual ASEAN members than within ASEAN, where the company does not have any plant or warehouse.

Distributor G (in Thailand) does not believe that the ACFTA can be implemented extensively because ASEAN members have difficulties to reach consent. This is especially apparent in the case of Thailand, as the country is behind Singapore, Malaysia and Vietnam in the negotiations for an FTA with the EU. He thinks this may lead to the country applying more restrictions to protect its exports rather than further efforts to reduce barriers to trade.

5.3 Production-related factors

5.3.1 Supply chain network

Some of the respondents state that establishing a new factory is not a problem but finding competent suppliers and developing a new supply chain network is both time and resource consuming. The existing supply chain in China is a huge advantage and it discourages companies to move elsewhere.

The potential of ASEAN countries as alternative manufacturing locations for China is an ongoing discussion. In order to benefit from ACFTA, more manufacturing plants, suppliers and/or sourcing operations need to be moved into the region. All HCP representatives state that they always consider the best location to produce, but that there is a lot of discussion related to what parts of production or other operations that should be moved, where it should be moved, and what should be kept '*at home*'.

According to Distributor G (in Thailand), products made in the factory in Xiamen are qualityassured and there is no quality difference compared to products from Sweden. Mr. I (in Sweden) supports the argument saying the factory in Xiamen has a very impressive performance. However, Distributor E (in Malaysia) believes that to safeguard technology, HCP needs to diversify their manufacturing locations and should not rely only on China. He illustrates using an example; if it is possible to protect a product in Sweden for e.g. twenty years, moving this to China may reduce the time by five years. His point is that even if you keep everything at home it cannot be protected forever, and by not moving you also give up certain advantages, such as cost cuts. Five years ago, most companies wanting to move their



production would choose China, but today there are many other factors that need to be taken into consideration than just lower costs, says Distributor G (in Thailand).

Systematically, products are manufactured when HCP receives a new order from customers and therefore customers need to wait. Distributor G (in Thailand) thinks HCP cannot optimize production in this way, and mentions that there are risks of losing business opportunities since customers often do not want to wait. This is a classic clash of interests between distributors and headquarters that HCP also struggles with. Distributor G also thinks that the company is too careful in building up stocks, and mentions that HCP does not have any immediate stock, which further delays deliveries. He mentions that logistics costs need to be minimized and direct import/export needs to be implemented.

Distributor G (in Thailand) points out a problem related to relocation. When companies move production from one place to another, costs are likely to rise in the initial phase. Before the supplier network in the new location is established, parts and components need to be shipped from elsewhere. In addition to this, it may take some time to optimize assembly lines and other operations. Distributor G sees this as the main problem with relocation, and mentions that in order for this to work, the company will have to take a short-term loss, as customers will not be willing to pay a higher price until production is optimized in the new location. Because of this, it might take several years until the production costs are actually lower. In this case, Distributor G thinks HCP is afraid of the short-term negative impact and therefore are not enthusiastic about either expansion or relocation.

When it comes to relations with suppliers, HCP prefers to work closely with a few suppliers highly integrated in the production process. This means that suppliers who can produce complete components rather than only separate pieces are valuable to HCP. Self-certified suppliers with their own quality control system are reliable and ideal to work with. Xiamen is a good location in China since it is possible to receive supplies from both the northern and the southern parts of China. Mr. C (in China) also mentions that suppliers are chosen region by region to improve contact. This way it is possible for HCP to visit all suppliers in one region within one week instead of having to spread the visits out over a longer period of time. He also mentions that since the company has already invested in Xiamen, no matter if a better option would be revealed in the near future, they *'have to make it work'*.

At the moment, HCP does not have suppliers in ASEAN and thus it will take time to find suppliers should they decide to expand in this region. HCP is not going to move south unless suppliers take the initiative, says Mr. I (in Sweden). HCP does not have the resources to develop a supplier network in ASEAN on their own. Nonetheless, he agrees that it is likely that Chinese suppliers will move to lower-cost countries given the rising wages in China. The possibility to expand to ASEAN largely depends on suppliers' movement. If suppliers expand then HCP might take steps towards establishing their own factory in ASEAN (for control purposes). Intellectual property rights are a key issue in this regard. HCP will only move to ASEAN before their suppliers do if any of the countries in ASEAN can offer a unique advantage over China.

39

5.3.2 Product adaptation

According to Mr. A (in China), production fragmentation is not really applicable to the CE industry as currently there are very few companies that are making components that fit in everyone's machines. HCP however specializes its factories according to products, which is illustrated by that e.g. engines are imported while simpler components are sourced locally in China. There is no mass production in this business area of HCP. Therefore, it is not rational for HCP to produce components in different countries since orders come in small quantities. HCP tries to standardize and automate production to the extent possible.

HCP is a global provider and products are designed to not need modification for specific markets as this would not be efficient in terms of production. Modification is instead available through the diamond tools, e.g. the blades for power cutters come in a wide variety depending on what material it will be used for. HCP is active in a niche segment of the CE industry, and thus have fewer competitors than firms in the heavy CE segment.

5.3.3 Sales and services

In comparison to Chinese companies, HCP has an advanced aftermarket service network with exclusive distributors and dealers across countries. In many cases, products do not function because customers use them incorrectly, which is illustrated by Mr. C (in China) who mentions that *'in China, the work is more just cut and cut until it breaks'*. These incidents might damage HCP's image. Services are therefore even more important in Asia than in Europe since European customers already have some knowledge of the products and how they should be operated. Staying close to customers and teaching them to use the equipment is crucial.

In addition, Distributor E (in Malaysia) states that HCP does not only sell machines but also know-how, and therefore does not compete on price. At the time of sales, customers are asked for their purpose of buying the machines, e.g. what material they want to cut. Suitable blades

are then recommended to fit the customers' need. As a result of this, staff with knowledge and experience is needed. According to Distributor G (in Thailand), Husqvarna has subsidiaries in Japan and China but in other countries, products are distributed through distributors that the company does not own. This is mainly because of the resources it requires to establish wholly owned subsidiaries in all markets.

40

5.3.4 Labour and wages

The CE industry is not heavily dependent on labour. Compared to the costs of raw materials and components, labour costs are insignificant e.g. accounting for less than 5% in the case of HCP. Mr. A (in China) thinks there is not much to do about the increasing wages in China since it is a normal phenomenon when a country becomes more developed. He further mentions that it is very likely that labour-intense activities will not choose China anymore, but rather countries in ASEAN (e.g. Vietnam) or somewhere else in the world. The companies interviewed have traditionally had their manufacturing in Europe, the US, Japan and South Korea, so as long as labour costs in China are lower than these locations there is no serious problem. Respondents think this will be the case for at least 3-5 more years. Becoming more efficient in production and sourcing is a way to tackle rising labour costs. In addition, Mr. C (in China) thinks it is good to be present in China because people are willing to work overtime when needed, e.g. if there is a time period with a lot of orders. It is further mentioned by the distributors that it is difficult to find skilled workers in Thailand while there is a job-hopping trend in Vietnam.

5.3.5 Manufacturing potential

Many respondents believe that it only makes sense to establish a plant in a new market if sales volume is large enough. The ASEAN countries are dispersed, and therefore cannot be seen as one single market. Manufacturing in Indonesia and selling in other ASEAN markets does not necessarily create more efficiency compared to shipping from existing factories in e.g. China.

People now accept that China can make quality products. Each step of production now has quality control, something that is too expensive to do in Europe. It is also argued by Mr. C (in China) that this type of control is needed in China to a larger extent. In relation to increasing wages Mr. C discusses efficiency in terms of production time, cost reduction in components and quality. He argues that even if wages increase, it is possible to compensate for by improved efficiency, e.g. cost cuts in other related to production. Quality is the most



important aspect, as it is both costly and time consuming if products are returned to the factory, due to e.g. faulty components.

Distributor E (in Malaysia) sees Vietnam as a quite good location for manufacturing but language could be a barrier to establishing operations here. He also compares Vietnam to Cambodia and China, arguing that Vietnam has potential. However, government policies are not investor-friendly enough and should be improved. Labour cost can be more expensive in some locations in Southeast Asia compared to China, but due to the size of China, there are large differences in wage levels within the country (he compares Shanghai and Chengdu).

Mr. I (in Sweden) emphasizes that HCP should always assess sourcing possibilities of each country in ASEAN e.g. price and performance, to make sure they are not missing out on any opportunities. ASEAN could definitely be a sourcing destination and not only a market. Mr. I argues that it would definitely be possible to buy parts in ASEAN and assemble products in the factory in Xiamen, but mentions that it will take time to find new suppliers in the region. Currently, China is still the best place to source parts and components given the already established supply chain network. Among ASEAN members, Thailand is considered as the best option for sourcing followed by Indonesia and Vietnam at the same rank. Although China is getting more expensive, it should not be a problem for the next five years. In addition, HCP wants to remove labour from the assembling process as much as possible.

5.3.6 Market potential

Mr. C (in China) sees that the market for HCP in China is growing; however, the majority of sales are imported products because Chinese customers prefer products from Europe and the US. HCP is focused on a niche segment of the CE industry and their products are mainly used for refurbishment. This means that HCP products are needed when the initial plans of a construction project changes, e.g. when a wall needs to be cut differently than what was originally planned, or things such as railways or sewers need to be repaired. In consequence, HCP does not do well in markets where construction projects are not under time pressure. Mr. C illustrates this through comparing a man with a small angle grinder and a power cutter. The power cutter may be ten times more expensive but it is also able to do the work more than ten times as fast. This means that in the long run, it makes economic sense to invest in the power cutter, but for projects that are not subject to time pressure there is no need for a power cutter. He also compares China in the past and nowadays, arguing that how long time a project took to complete used to not matter at all, whereas it is now of growing importance. This can be an opportunity for HCP and their products.



The market in China is still very focused on the coastal regions and ASEAN is a growing market of HCP. Rising wages might be a good thing for HCP since the more money people have the higher is the demand for more reliable products of higher quality. Several respondents mention that the premium segment in developing markets is growing. However, HCP may have a disadvantage in developing markets since the price is simply too high for a large share of customers.

According to Distributor E (in Malaysia), Husqvarna is the leader in handheld products in Malaysia. The Malaysian market is filled with all types of CE. Malaysia is a very diverse market that offers space for both technologically advanced brands and cheap brands depending on application. Sales are highly dependent on the construction industry, which is connected to the economic development of Malaysia. In Thailand, CE stands for 35% of Husqvarna's total turnover, which is much higher than the global average of 10%. This is explained to some degree by the difficulties to sell chainsaws (which belong to the forest and garden segment) in Thailand due to license requirements. Distributor H (in Vietnam) mentions that more products are introduced to the Vietnamese market and sales are increasing, but the market is still small. The economy is slowing down and she thinks sales of CE will not increase much. Products are considered expensive but high quality in Vietnam. CE was introduced to Vietnam 3 years ago so HCP is rather new to the market. The price of CE in Vietnam is roughly twice as high as garden equipment, and she mentions that if prices were more similar it would be much easier to sell CE. Still, she expects sales to increase around 5-10% per year for both segments together.

ASEAN is the home of approximately 600 million people and thus a huge potential market. It is mentioned by several interviewees that customers are impatient in Asian markets, and thus logistics needs to be improved to shorten lead times. Asian customers now accept products made in China as long as HCP assures the quality.

5.3.7 Government policies

Several respondents compare CE to the automotive industry. The former is subject to more flexible rules while the latter is often heavily protected. Some respondents believe that the Chinese political system is more efficient than in many other Asian countries. Things happen much faster in China, e.g. if the government decides on an infrastructure project, it is up and running very quickly. Distributor E (in Malaysia) on the other hand thinks Malaysia's policies are quite friendly to investors compared to other countries in the region. He uses Intel and Western Digital as examples of companies that decided to establish factories as a result of



42

government incentives. In Vietnam however, government policies are not investor-friendly enough and needs to be improved to attract more foreign investors.

43

According to Distributor G (in Thailand), 'nothing is happening' in Thailand despite promises to 'look into' several issues for foreign firms in the country. All sorts of rules and regulations make cross-country corporate governance more complicated. Many industries are not growing because of these restrictions. Protectionism is applied as Thais want foreigners to be dependent on them. Mr. F (in Thailand) thinks that politics and business are very separated in both Malaysia and Thailand. For instance, if there are major demonstrations or if an airport is shut down, measures are taken so that this does not affect business. He also illustrates a problem Western firms have in Asia by using Japan as an example. Japanese companies are very strong in Thailand. They negotiate with the Thai government as a representative of Japan, not as individual companies. They push things their way so that Thai regulations benefit their products but not others. Thailand wants to become a logistics hub for Southeast Asia with skilled labour because they know that they need to do something different from the lower-cost, more labour abundant countries in order to grow.

5.4 Competition-related factors

5.4.1 Brand strategies

All respondents are familiar with the dual or multiple brand strategy. It is a useful mean to capture a broader segment of the market; however, there is a risk of cannibalism meaning that the value brand might become a competitor of the premium brand. Back in 2007, HCP decided to give up many brands to focus on developing Husqvarna as their only premium brand for CE. Mr. C (in China) says that this has helped them lower inventory, reduce complexity and build a strong brand image.

For many products, there are only premium brands on the market. Customers are willing to pay more for products that are important for their projects. One of the respondents mentions the benefit of having both premium and value brands is that a company can approach the market from two directions. He also mentions that value-for-money brands can be seen as premium brands for their target customers. There is huge potential for good value brands with strong support of dealers without a premium price tag in the various Asian markets. As for HCP, their second CE brand Diamant Boart is retained for tactical reasons. In the stone industry, HCP sells directly to quarries that have been customers of Diamant Boart for many years. Accordingly, changing this brand just create complexity and confusion.



HCP will only do something very specific for large markets, and therefore will only consider a value brand if there is a real business case proving that it is worth the effort. According to Mr. I (in Sweden), there are costs to develop products for the mid-market segment. This issue is still under consideration. Nonetheless, HCP is keeping an eye on Chinese producers and how their business is going in ASEAN. The volume sold is important when considering whether to introduce a secondary brand or not. Distributor G (in Thailand) however believes entering the mid-market segment is a way for Western firms like HCP to become more competitive.

Distributor H (in Vietnam) believes the brand and its European origin is a huge advantage of HCP. Vietnamese end-users accept a higher price because the machines come from Sweden, which has a good reputation for quality. Even though some parts of the machines are produced in China, the main and important parts are still made in Sweden. The products are marketed as *'made by Husqvarna'* rather than *'made in China'*.

5.4.2 Competitors' movement

Chinese companies are described as 'aggressive' when it comes to competition. HCP faces many more competitors in the CE segment compared to the forest and garden equipment segment because the former is a very fragmented business area with many different applications. While HCP has a broad product range, competitors mainly focus on one specific application, such as cutting, wall sawing or polishing concrete. Chinese firms are also very quick to copy spare parts, and thus HCP tries to register patents for their products, but enforcing this is an issue in many developing markets.

All respondents think products by Chinese manufacturers have low quality and that they are unsafe. Nonetheless, they admit that the products of these firms are improving over time. Since HCP sells premium products, they are not competing with Chinese companies at the moment. Distributor G (in Thailand) believes that the quality advantage is slowly disappearing and therefore brand loyalty and aftermarket services are extremely important. Although Chinese products are cheaper, they do not offer the same services.

According to Mr. C (in China), some of the competitors have moved to Vietnam for further cost reduction. Manufacturing cost is very different across regions and thus choosing a good location can offer companies a significant competitive edge. Swedish products as compared to Chinese ones may have 60-70% Chinese content already, meaning that quality differences are not as huge as one may think. There is however a difference in the Chinese contents of a



product. Mr. C mentions that the Chinese content of Husqvarna's products is quality controlled and that makes them comparable to what they produce in Sweden.

Stihl and Hilti are mentioned as a major competitor many times by HCP's managers and distributors. Several Japanese companies are also mentioned. Stihl is the biggest global competitor as they also offer a fairly wide product range. According to Distributor G (in Thailand), Hilti lost its market in Thailand due to its high price concept. HCP took advantage of being a latecomer with similar products of high quality and good services, but with a lower price. Competition is more intense now than before with more choices of products, from low to high quality machines.

Finally, Mr. A (in China) believes that Chinese products are upgraded faster than the case of Japanese and Korean products in the past. Nowadays, technology and knowledge is available everywhere. Some respondents compare the Chinese manufacturers with Japanese brands like Toyota in the past. They started as a cheap, low quality brand but have moved up to become a global competitor providing high quality products.



6. DATA ANALYSIS

In this section, the empirical data is analysed based on the conceptual framework presented previously. First, trade-related factors are examined, followed by production-related factors and competition-related factors. At the end of this chapter our conceptual framework is revised based on our findings.

6.1 Trade-related factors

First of all, considering tariff reduction for CE and CE-related products under ACFTA, our study shows that there will be no tariff barriers within this region provided that the products and components have 40% RVC. This means increasing production in either China or ASEAN to reach that threshold will not only help foreign MNEs like HCP to reduce overall production costs but also to enjoy lower trade costs in regional sales. However, in situations where the premium segment of the market is not yet developed like the case of the ACFTA region to HCP, the company cannot enjoy substantial benefits from tariff reduction because the majority of finished products are shipped directly from Europe (e.g. Sweden) when orders are placed.

In addition, based on the interviews we have found that products are often assembled partly in China because a large amount of HCP's components are sourced from local suppliers. Semifinished products are shipped back to Europe for final assembly, and then redistributed to their final destination. In cases when the final destination is Asia, this means additional shipping costs and waiting time. However, companies in the premium segment like HCP need to protect their competitive edge and therefore are inclined to pay such costs.

When shipping the product back from Europe to Asia, tariffs applied differ significantly between the countries that this study covered. With China as the biggest market, we assume that much of the products sold in Asia are sold in the Chinese market. China does also apply the highest tariff rates on the products we have examined in this study, ranging from 8 to 15% (see appendix 5). Now if China is the final destination of these goods, there is a way to circumvent those tariffs through ACFTA. In terms of imports from Europe, Singapore is completely open, Malaysia is not far behind, and Vietnam only applies tariff on less than half of the products covered by this study. This is interesting if the products that are produced in China but sent to Europe for final assembly have an ACFTA RVC of 40%. By relocating the final assembly stage to any ASEAN country in this study, the products are treated as regional products rather than Europe-originated products and thereby are subject to tariff preferences



46

under ACFTA rather than MFN tariffs when arriving in China (see 4.1.2 for the ROO under ACFTA). If the product is shipped directly from Europe to China however, it is treated as a European product even with 40% RVC, and thus MFN tariffs still apply. There are several bonded zones in China to which it is also possible to import without tariffs, but interviewees mention that to get their goods from the bonded zone into China, they are still subject to MFN tariffs. With a vision of improving sales in the ACFTA region, it is even more reasonable to meet the requirement of 40% RVC in the long run.

In addition, since trade between HCP's Chinese operations (i.e. the central warehouse and factories) and Southeast Asian distributors is mainly in spare parts rather than complete machines, the company has not been able to utilise tariff reduction under ACFTA to a large extent. However, gaining access to the domestic market in China, and at the same time understanding how this market works, is one of the key reasons for HCP and other firms interviewed to be present in China. Previous research shows that China accounts for up to 50% of the global market in CE (Bouffault et al., 2011), which clearly is a huge opportunity for CE firms regardless of their country of origin. Because of this, producing in China to serve the Chinese market is currently the best option. Trade with ASEAN does not have the same priority due to the much smaller market. Moreover, ASEAN is not viewed as a unified market, and manufacturing in China is likely to remain competitive for at least five more years. This further adds to China being a much more attractive option than ASEAN. Nonetheless, as long as companies secure their position in the Chinese market both in sales and production, they have a solid foundation to increase sales and establish manufacturing in ASEAN should the market expand.

Although the implementation of ACFTA is not the only driving force behind the changes in trade patterns among member countries, it still has an impact on trade flows between China and ASEAN members both on country and company levels. Since tariffs are eliminated, there has been an increasing amount of direct transactions from China to customers in Malaysia, Thailand and Vietnam without being transhipped via Singapore. The same situation can be seen in imported products from Europe. We find HCP's choice to locate its central warehouse in one of the bonded zones a good decision since it means products are now closer to the ACFTA market but not yet subject to tariffs from either China or ASEAN. Considering how congested Chinese harbours have become, firms may want to rethink where to locate their Asian central warehouses to ensure shorter lead times. With the market growing in ASEAN, a central warehouse with efficient connections to both China and ASEAN should be considered for the future.



Previous studies mention that the existing NTBs, especially inefficient bureaucratic processes or lack of transparency in customs procedures in the ACFTA region, could erode the benefits brought by lower tariff barriers (Mikic, 2010). We however find that NTBs do not seem to discourage companies from doing business in the ACFTA region because they are considered as a part of doing business in this region. Although the ROO under ACFTA is found highly restrictive compared to other ASEAN+1 FTAs (Medalla, 2011), interviewees simply see it as a requirement that they have to comply with in order to enjoy the preferential tariffs, rather than a NTB. Furthermore, while the abundance of FTAs in East Asia raises substantial concerns to governments, the respondents of this study do not see this as a major issue for doing business. However, being a shallow agreement aiming to tackle mainly traditional barriers to trade, which are tariffs, ACFTA is not likely to eliminate any particular NTB with its ambiguous goals. ACFTA is also less committed to regional integration, which means benefits for private actors such as HCP are diminished. With the exception of tariff reductions and improved market access, we have not found any other incentives for companies to expand in the region.

6.2 Production-related factors

The electronics industry is often used as a successful example of cross-country production networks in East Asia. However, one of the main reasons that this works so well is that production volumes of electronic devices are very high. The CE industry does not apply mass production in the same way because CE is not fast moving consumer goods as such. The interviewees in this study agree that HCP is not likely to establish manufacturing in ASEAN unless the market grows substantially larger or that ASEAN can offer superior advantages over China e.g. significantly lower costs, tax exemptions, or logistically attractive locations. This makes sense when related to our previous discussion (see 3.2) regarding the uneven distribution of FDI among members of an FTA. Given that China is the largest country within the ACFTA region, it is the best location for companies to exploit economies of scale and hold on to the most attractive CE market. The Asian giant can accommodate different demands of production capacity including possibilities for expansion. The availability of resources in China actually discourages foreign-MNEs from expanding to other countries in the ACFTA region.

Looking at market potential, future sales growth in China is superior owing largely to the Chinese government's remarkable investment. Major projects, such as infrastructure, are initiated much faster in China than anywhere else in this region. The situation is not as bright in ASEAN mainly due to the lack of resources. This is part of the reason why the CE market in particular is enormous in China. As the Chinese government recently decided to prioritise the development of inland regions, the demand for CE will be there for another five years at least. Provided that China continues working on connecting its inland regions to the east coast and to the world (see 4.3), it will be even less likely for foreign MNEs like HCP to expand to ASEAN since staying close to the market is preferable. At the moment, the supply chain of the CE industry, as mentioned previously, may not be able to take advantage of the different comparative advantages of the ASEAN countries to the same extent as in e.g. the electronics industry. HCP only has suppliers in China within the ACFTA region. Looking at the ASEAN-China bilateral trade in the product categories this study covers (see appendices 10 and 11); there is evidence that the supply network of the light CE sector in ASEAN is underdeveloped. ACFTA opening up for free trade in components may lead suppliers to establish themselves in ASEAN, but for now the situation favours China.

China is the major supplier of ASEAN in many products (see 4.1.6). The heavy dependence of ASEAN on China for the majority of CE and CE-related products covered by this study shows that ASEAN countries are currently a market for CE products rather than a sourcing location. In this circumstance, it is problematic to find qualified suppliers unless companies are willing to take initiatives in developing a new supply chain in ASEAN. This is considered costly, risky and time-consuming. Accordingly, although having an FTA with a substantially larger country like China might increase the attractiveness of ASEAN countries towards extra-regional FDI, these countries are not ready to accommodate such an opportunity given the lack of CE manufacturing capacity at the moment. Instead, ACFTA is rather a means for foreign-MNEs in China to access to the ASEAN markets with lower trade costs.

Furthermore, while interviewees are more or less biased towards their own location (the country they work in), those working outside of China agree that China will remain a highly competitive location in terms of manufacturing for at least three to five more years. Nevertheless, it is crucial to continuously look towards "*the next destination*" to not miss out on opportunities in ASEAN. The academic side of this discussion is more divided. On the one hand, there is the risk that China outcompetes ASEAN in terms of manufacturing (Tongzon, 2005, Sheng et. al, 2012), and on the other hand there is an opportunity for firms to establish themselves in ASEAN to become less dependent on a single country, which is China in this case. Building up on that, some interviewees argue that if their suppliers decide to move to ASEAN, they may follow given that this leads to cost cuts, shorter supply routes and more efficient operations. However, the potential sales growth in the ASEAN markets remains as a superior motivation to expand manufacturing southwards.



Before collecting any empirical data, we assumed that the higher wages in China's coastal regions compared to Western China and ASEAN would be a substantial factor for firms considering relocating. However, wages turned out significantly less important to the production of CE, accounting for as low as 5% of total costs in the case of HCP. The company also emphasizes that they want to continue reducing labour in the production process meaning that as long as wages in the coastal regions remain lower than in e.g. the US, Western Europe or Korea where Western CE firms traditionally have the bulk of their manufacturing, China is still a preferred location

6.3 Competition-related factors

The previous section shows that it is unlikely that foreign MNEs will expand outside China in the next five years given the superior potential sales growth and the existing CE supply chain in China that cannot be found in ASEAN. Here we examine less visible factors that might alter this finding.

In many cases, companies' decision to relocate or expand to a new location is affected by their competitors' movement. This arises partly from a concern that competitors might become more competitive by relocating to other low-cost countries. Although we have found that labour costs are insignificant in the CE production process, other types of costs e.g. raw materials or overhead expenses can be significantly different across countries and thereby create a gap in total expenditure between the two locations. In the case of HCP, we find that some of their competitors have actually moved to other countries e.g. Vietnam for further cost cuts. There is no evidence showing that the decision to relocate is related to the implementation of ACFTA. However, while ACFTA increases access to the ASEAN markets for companies located in China, it also increases access to the Chinese market for companies located in ASEAN. Although the latter direction has not been exploited in the CE industry as previously discussed, it is still there for companies to utilise. The option to manufacture in other countries while still having access to the Chinese market should be a significant factor for companies looking to expand outside of China. Again, costs are rising and competition is intensifying in China. Despite this, it makes sense to remain present in China due to the importance of the market, but to avoid total dependence on China as a manufacturing base; ASEAN emerges as a reasonable option. Western China is comparable to ASEAN as an option to cut costs. Previous research states that over 50% of the output of construction, mining and metallurgical manufacturing in China came from inland regions in 2011 (EIU, 2011), clearly showing that domestic firms are moving away from the coastal regions and their rising salaries. It is not clear whether the construction part of this output is in the heavy



or light segment, or both, but nevertheless it is a clear sign that domestic firms have already moved west in China. None of the interviewees were very keen on moving west in China however, arguing that the premium segment is not as concerned with wage costs and that the infrastructure is less developed in the inland regions. This leads us to think that Western China and ASEAN are comparable options for CE firms should they decide to expand their manufacturing. Both these options provide lower costs and new market options, but are behind in infrastructure and supply chains.

There are a number of reasons that needs to be considered in terms of competition that foreign MNEs face in China. Chinese firms are often described as aggressive in their attempts to capture a larger share of the market and move up the value chain. All interviewees, representing companies in the premium segment, state that they are not competing on price and thus are not competing with Chinese firms at the moment. However, there are successful stories of Japanese, Korean and Chinese companies in other industries that have developed from a cheap, low quality brand into a high quality, globally recognized one. With developed markets nearly saturated, future growth for CE resides in developing markets where valuefor-money brands are favoured. Given that Chinese heavy CE producers are expanding in the middle market segment and many have become global players, a similar situation is likely to occur in the light CE segment in the near future. In addition, concerns about safeguarding technology mentioned by some of the interviewees lead us to believe that having manufacturing only in China is rather risky since knowledge has become much easier to obtain due to information technology. The more intense competition in China becomes, the more important role ACFTA has as a channel through which foreign MNEs can remain costcompetitive. More importantly, ACFTA ensures access to the Chinese market even with production outside of China.

6.4 Revisited conceptual framework

When formulating the initial conceptual framework, the authors expected each pillar under the three groups of factors outlined in figure 1 (see page 13) to have a considerable impact on foreign MNEs' manufacturing locational decisions. However, based on the analysis above, we realise that while the majority of the identified factors are indeed important, others turned out to be less relevant. Accordingly, the conceptual framework has been revised as shown in figure 4 on page 52.

In regards to the trade-related factors, the *tariff reduction* pillar has been replaced by *utilisation of tariff preferences* to emphasise that lower tariffs will only have major impact on

foreign MNEs' choice of manufacturing locations once they are actually utilised. *Non-tariff barriers* are removed because first, ACFTA aims primarily to remove tariff barriers and second, companies do not expect NTBs to be eliminated by such a thin agreement. The *ROO* requiring 40% RVC and *logistics issues* however are retained since they have substantial impact on whether or not foreign MNEs can benefit from tariff reduction under ACFTA. *Market access* and *trade relations among ACFTA members* have also been proven important to companies' manufacturing locational decisions in the analysis.





Source: Authors' elaboration

Arguably, the *labour and wages* pillar has been removed as it is found insignificant to the production process of light CE. The ambition to continue reducing labour involvement in the manufacturing of CE is likely to lessen the share of this factor in the total production cost. The *supply chain network* and *market potential* pillars have distinguished China's superior CE production capacity and market size from ASEAN markets while the *manufacturing potential* pillar suggests ASEAN countries as future options for expansion. At the moment, *government policies* appear to favour foreign CE producers in all studied markets given that domestic premium products are not available. With an expectation that this might change in the near future, the pillar is preserved. Finally, the analysis has confirmed that *competitors' movement* and *brand strategies* while indirectly linked to ACFTA can influence the locations of foreign-invested manufacturing in the region. Unlike other factors, these two forces might lead foreign MNEs to expand to Southeast Asia.



7. CONCLUSION

With an expectation that the ACFTA will create more opportunities for foreign MNEs to expand their manufacturing in the region and thereby remain cost competitive while at the same time maintain proximity to the growing markets of the Asian emerging economies, the authors of this study have examined the agreement from both country and company perspectives. Accordingly, a number of similarities have been found between the empirical and secondary data. First of all, ASEAN countries are more open to CE and CE-related products from outside the ACFTA region than China is. Given that China is the largest CE market in the world, manufacturing in China to serve the Chinese market is the most reasonable solution. Secondly, regarding the regional trade pattern, secondary data shows that trade in light CE and parts thereof are more intensive between China and individual countries of ASEAN than within ASEAN. More importantly, products are shipped from China to ASEAN to a much greater extent than the other way around. This pattern is confirmed in the case of HCP. These findings suggest that the production network of light CE has not yet been developed in Southeast Asia. Locally manufactured products are not available and thus the demand for CE products is covered mainly by imports. At this initial stage of implementation, the ACFTA has broadened access to the ASEAN markets for companies producing in China. The elimination of tariffs imposed on regional CE and CE-related products identified in this study (with the exception of Vietnam which is not bound by the ACFTA until 2015) somewhat discourages companies from expanding outside China. In other words, China is considered as the manufacturing location of choice for foreign CE firms in the next five years due not only to the enormous domestic CE market and the existing supply networks of the CE industry, but also due to its restrictions towards imports from outside the ACFTA region.

Although the ACFTA appears to favour China, this study also arrives at two other findings that may drive foreign MNEs in China to expand to ASEAN. Firstly, ACFTA offers foreign MNEs in the premium segment of CE a channel through which they can circumvent the MFN tariffs China applies on products originated outside the ACFTA region. To be able to utilise this channel, products need to have at least 40% ACFTA regional value content and the final assembly stage needs to be conducted within the ACFTA region. Secondly, the competitive situation in China may pressure foreign CE firms to expand to ASEAN. Chinese firms are rapidly improving their products to the point where they can capture the middle market segment. Foreign firms can potentially improve their competitive edge by expanding outside of China. This could lead to e.g. cost cuts to reduce the price gap between foreign and

Chinese firms and lessened dependency on China. Moving West in China is not yet considered an option for foreign firms.

In summary, the impact of ACFTA on foreign MNEs locational decisions in Asia is dependent mainly on the possibility to circumvent tariffs by placing manufacturing in an ASEAN country with low or non-existent MFN tariffs. Additionally, the movement of suppliers and competitors may also drive MNEs to expand south. China remains the location of choice for the next five years due to its domestic market size and established supply chain.

7.1 Our contributions

The main contribution of this study to research regarding the ACFTA and the light CE industry in Asia is the identification of relevant HS 6-digit level codes and the implications the corresponding tariffs may have on foreign MNEs with manufacturing operations in the ACFTA region. By comparing the tariffs under ACFTA and the applied MFN tariffs for imports from outside the region, this study shows that foreign MNEs in the light CE industry may reduce their trade costs in the ACFTA region by up to 20% if they relocate final assembly to ASEAN. Important to note is that this only applies to products with a minimum of 40% RVC. With China as the largest CE market today and Asia as the future centre for growth in the CE industry, circumventing such trade costs could mean significant savings. Additionally, the authors have identified a number of major factors affecting foreign MNEs' manufacturing locational decisions is not limited to the light CE industry and therefore should be useful for companies in other industries when considering expansion in the ACFTA region.

7.2 Future research

In this study, we have identified the HS codes that are relevant to the light CE industry based on our own knowledge of the industry and additional input from HCP. As for future research, expanding the identification of HS codes to cover more products and components of the light CE industry and the tariffs corresponding to these codes would lead to a better understanding of the benefits foreign MNEs might obtain from ACFTA. Our study focuses on the highest volume products of HCP, and therefore does not capture the entire light CE industry. Additionally, volume in the heavy CE segment is larger and therefore a similar identification of tariff codes and reduction schedules could also be valuable, both to research and the heavy CE industry.



Further research on Western China as a manufacturing location for the light CE industry could also prove valuable to academia, given that several authors have identified the potential of this region (e.g. PWC, 2012, EIU, 2011 and Bouffault et.al, 2011) but research regarding how foreign MNEs can expand in Western China is lacking. From the interviews, our study finds Western China comparable to ASEAN, but we did not carry out any extensive research on availability of suppliers or supply routes in neither Western China nor ASEAN for the light CE industry. Our findings suggest that mainly Chinese heavy CE firms manufacture in Western China, but if this region could also offer advantages for foreign firms is not discussed.

And finally, our study is limited to locational decisions of foreign MNEs that established operations in China before the ACFTA was implemented. Future research should include the impact of this FTA on the locational decisions of firms that have not yet expanded to the ACFTA area.



REFERENCES

ACFTA (2004) Agreement on Trade in Goods of the Framework Agreement on Comprehensive Economic Co-operation between the Association of Southeast Asian Nations and the People's Republic of China. ASEAN Official Website. Accessed 2013-04-27: www.asean.org

ACFTA Annex 2 (2004) Modality for Tariff Reduction/Elimination for Tariff Lines Placed in the Sensitive Track. ASEAN Official Website. Accessed 2013-04-27: <u>www.asean.org</u>

ACFTA Annex 3 (2004) Rules of Origin for the ASEAN-China Free Trade Area. ASEAN Official Website. Accessed 2013-04-27: <u>www.asean.org</u>

Alixpartners (2011) Defending China Supply Chain Savings. Detroit: AlixPartners.

Andersen, P. H. and Kragh, H. (2010) Sense and sensibility: Two approaches for using existing theory in theory-building qualitative research. *Industrial Marketing Management*, Vol. 39, No. 1, pp. 49-55.

Ando, M. and Kimura, F. (2003) The formation of International Production and Distribution Networks in East Asia. *National Bureau of Economic Research*. Working Paper 10167.

Ando, M. and Obashi, A. (2010) The pervasiveness of non-tariff measures in ASEAN – evidences from the inventory approach. In *Rising non-tariff protectionism and crisis recovery*. Bangkok: ESCAP.

Arakiki, R. K. (2012) China's Rise and the ASEAN-China Free Trade Area: ACFTA's Impact on Insular Southeast Asia. *Asian Politics & Policy*, No. 4, pp. 457-462.

ASEAN (2013a) Agreement on Trade in Goods of the Framework Agreement on Comprehensive Economic Co-operation between the Association of Southeast Asian Nations and the People's Republic of China. ASEAN Official Website. Accessed 2013-04-16: <u>www.asean.org</u>

ASEAN (2013b) ASEAN Economic Community. ASEAN Official Website. Accessed 2013-04-16: <u>www.asean.org</u>

ASEAN (2013c) ASEAN Economic Community Blueprint. ASEAN Official Website. Accessed 2013-04-30: <u>www.asean.org</u>

ASEAN (2013d) ASEAN-China Free Trade Area. ASEAN Official Website. Accessed 2013-05-01: <u>www.asean.org</u>

Baltagi, B. H., Egger, P. and Pfaffermayr, M. (2007) Estimating Regional Trade Agreement Effects on FDI in an Interdependent World. *Center for Policy Research*. Working paper No. 100.

Baier, S. and Bergstrand, J. (2004) Economic determinants of free trade agreements. *Journal of International Economics*, Vol. 64, No. 1, pp. 29-63.

56



Baldwin, R. (2006) Globalisation: the great unbundling(s) in Globalisation challenges for Europe. Helsinki: Secretariat of the Economic Council.

57

Baldwin, R. and Jaimovich, D. (2012) Are Free Trade Agreements contagious? *Journal of International Economics*, Vol. 88, No. 1, pp. 1-16.

Bouffault, O., Freedman, M., Jin, D. and Scalabre, O. (2011) Dueling with Dragons: China's Rapid Rise in Heavy Equipment. Boston: The Boston Consulting Group.

Cai, K. G. (2005) The ASEAN-China Free Trade Agreement and East Asian Regional Grouping. *Contemporary Southeast Asia*, Vol. 25, No. 3, pp. 387-404.

Chandra, A. C. and Lontoh, L. A. (2011) Indonesia – China Trade Relations: The Deepening of Economic Integration amid Uncertainty? *Winnipeg: International Institute for Sustainable Development*.

Chen, M. and Joshi, S. (2010) Third-Country Effects on the Formation of Free Trade Agreements. *Munich Personal RePEc*. Archive Paper No. 23507.

China Customs (2013) Conventional Tariff Rates on Import Goods 2013.

Devadason, E. S. (2010) ASEAN-China Trade Flows: moving forward with ACFTA. *Journal of Contemporary China*, Vol. 19, pp. 653-674.

Edsel, L. (2012) Rebuilding the Philippine economy. *Munich Personal RePEc*. Archive Paper No. 40082.

EIU (2011) Heavy duty – China's next wave of exports. *London: The Economist Intelligence Unit.*

Ekholm, K., Forslid, R. and Markusen, J. (2007) Export-platform Foreign Direct Investment. *Journal of the European Economic Association*, Vol. 5, No. 4, pp. 776-795.

ESCAP (2012) Growing Together – Economic Integration for an Inclusive and Sustainable Asia-Pacific Century. *Economic and Social Commission for Asia and the Pacific*. Bangkok: ESCAP.

ESCAP (2011a) Trade and Investment Report 2011 – Post-crisis trade and investment opportunities. *Economic and Social Commission for Asia and the Pacific*. Bangkok: ESCAP.

ESCAP (2011b) Review of Developments in Transport in Asia and the Pacific. *Economic and Social Commission for Asia and the Pacific*. Bangkok: ESCAP.

Estrada, G., Park, D., Park, I. and Park, S. (2012) China's Free Trade Agreements with ASEAN, Japan and Korea: A Comparative Analysis. *China & World Economy*, Vol. 20, No. 4, pp. 108-126.

Findlay, C. (2011) Overview in ASEAN+1 FTAS and Global Value Chains in East Asia. *ERIA Research Project Report 2010*, No. 29. Jakarta: ERIA.



Fukunaga, Y. and Isono, I. (2013) Taking ASEAN+1 FTAs towards the RCEP: A Mapping Study. *ERIA Discussion Paper Series*. Jakarta: ERIA.

Hayakawa, K. and Tanaka, K. (2011) Exporting Platform FDI and Firm Heterogeneity. *Institute of Developing Economies (IDE), JETRO*. Discussion Paper No. 310. Chiba: IDE-JETRO.

Hiratsuka, D. (2008) Escaping from FTA Trap and Spaghetti Bowl Problem in East Asia. Deepening Economic Integration – The ASEAN Economic Community and Beyond. *ERIA Research Project Report*. Chiba: IDE-JETRO.

Husqvarna (2013) Annual Report 2012. Husqvarna Group Official Website. Accessed 2013-02-16: <u>www.husqvarnagroup.com</u>

Ito, T. (2012) Export Platform Foreign Direct Investment: Theory and Evidence. *Institute of Developing Economies (IDE), JETRO*. Discussion Paper No. 378. Chiba: IDE-JETRO.

Ishido, H. (2011) Liberalization of Trade in Services under ASEAN+n and Bilaterals: A Mapping Exercise in Comprehensive mapping of FTAs in ASEAN and East Asia. *ERIA Research Project Report 2010*, No. 26. Jakarta: ERIA.

JASTPRO (2012) ASEAN Single Window – Hearing Survey in 2012, Issues to be studied. *Tokyo: Japan Association for Simplification of International Trade Procedures.*

Jaumotte, F. (2004) Foreign Direct Investment and Regional Trade Agreements: The Market Size Effect Revisited. *IMF Working Paper WP/04/206*. Middle East and Central Asia Department.

Kawai, M. and Wignaraja, G. (2011) Free Trade Agreements in East Asia: A Way toward Trade Liberalization. Pacific Economic Cooperation Council Official Website. Accessed 2013-04-12: <u>www.pecc.org</u>

Kelp, R. and Sieber, T. (2012) The Gamebreaker in Emerging Markets – Construction Equipment. New York: Oliver Wyman.

Kleimann, D. (2013) Beyond Market Access? The Anatomy of ASEAN's Preferential Trade Agreements. *LAW 2013/01, EUI Working Papers*.

Kuno, A. (2011) Constructing the Tariff Dataset for the ERIA FTA Database in Comprehensive mapping of FTAs in ASEAN and East Asia. *ERIA Research Project Report 2010*, No. 26. Jakarta: ERIA.

Lee, C and Okabe, M. (2011) Comprehensive mapping of FTAs in ASEAN and East Asia in Comprehensive mapping of FTAs in ASEAN and East Asia. *ERIA Research Project Report* 2010, No. 26. Jakarta: ERIA.

Liu, Y. and Ng, B. K. (2010) Facing the Challenge of the Rising Chinese Economy: ASEAN's Responses. *Review of Development Economics*, Vol. 14, No. 3, pp. 666-682.



Matsushita, M. (2010) Proliferation of Free Trade Agreements and Development Perspectives. *Law and Development Institute Inaugural Conference in Sydney, Australia.*

Medalla, E. M. (2011) Taking Stock of the ROOs in the ASEAN + 1 FTAs in Comprehensive mapping of FTAs in ASEAN and East Asia. *ERIA Research Project Report 2010*, No. 26. Jakarta: ERIA.

Mikic, M. (2010) Introduction in Rising non-tariff protectionism and crisis recovery. *Bangkok: ESCAP*.

Park, D. (2007) The Prospects of the ASEAN-China Free Trade Area (ACFTA): A Qualitative Overview. *Journal of the Asia Pacific Economy*, Vol. 12, No. 4, pp. 485-503.

PWC (2012) Go West! Processing Trade in China on the move. *Trade Intelligence Asia Pacific September/October 2012*. London: PriceWaterhouseCoopers.

Ravenhill, J. (2010) The 'new East Asian regionalism': A political domino effect. *Review of International Political Economy*, Vol. 17, No. 2, pp. 178-208.

RolandBerger (2011) Growth strategies in the global construction equipment market – Capturing growth markets in BRIC and beyond. Market survey. *Munich: RolandBerger Strategy Consultants*.

Shafaeddin, M. (2002) Some implications of accession to WTO for China's economy. *International Journal of Development Issues*. Vol. 1, No. 2, pp. 93-128.

Sheng, Y., Tang, H. C and Xu, X. (2012) The Impact of ACFTA on People's Republic of China-ASEAN Trade: Estimates Based on an Extended Gravity Model for Component Trade. Manila: Asian Development Bank.

Singapore Customs (2013) Personal correspondence with Singapore Customs.

Thangavelu, S. M. and Lim, H. (2011) Comprehensive Mapping of FTAs in ASEAN and East Asia: FDI Restrictiveness Index for ASEAN Free Trade Area (AFTA) in ASEAN and East Asia. *ERIA Research Project Report 2010*, No. 26. Jakarta: ERIA.

Tongzon, J. L. (2005) ASEAN-China Free Trade Area: A Bane or Boon for ASEAN Countries? Oxford: Blackwell Publishing Ltd.

Tregenna, F. (2011) Manufacturing productivity, deindustrialization, and reindustrialization. *World Institute for Development Economics Research*, Working paper No. 2011/57.

UNcomtrade (2013) United Nations Commodity Trade Statistics Database. Data Availability. By Commodity. Accessed 2013-04-20: <u>http://comtrade.un.org</u>

UNCTAD (2012) United Nations Conference on Trade and Development. *Review of Maritime Transport 2012.*

UNCTADstat (2013) United Nations Conference on Trade and Development. UNCTAD Statistics. International trade in goods and services. Accessed 2013-04-18:

http://unctadstat.unctad.org/

UNstats (2013) United Nations Statistics Division. Statistical Databases. Classifications Registry. Correspondence Tables. Accessed 2013-04-24: <u>http://unstats.un.org/</u>

Urata, S. (2013) Multilateralization of FTAs: An Asian Perspective. Tokyo: Waseda University.

Wang, V. W. (2007) The Logic of China-ASEAN Free Trade Agreement: Economic Statecraft of "Peaceful Rise". China in the World, the World in China International Conference. "Implications of a Transforming China: Domestic, Regional and Global Impacts", 5-6 August 2007. Institute of China Studies, University of Malaya.

World Bank Data (2013) Data. Industrial, value added (%) of GDP. World bank Official Website. Accessed 2013-05-10: <u>http://databank.worldbank.org/</u>

Wright, J., Sahni, M. and Zamora, R. (2011) Wage Increases in China: Should Multinationals Rethink their Manufacturing and Sourcing Strategies? Singapore: Accenture.

WTO (2013a) World Trade Organization. Trade topics: Regional trade agreements. WTO Official Website. Accessed 2013-05-09: <u>http://www.wto.org/</u>

WTO (2013b) World Trade organization. Tariff Download Facility. WTO Official Website. Accessed 2013-05-01: <u>http://tariffdata.wto.org/</u>

Yin, R. K. (2009) Case study research: Design and Methods. Fourth edition. *Applied Social Research Series*, Vol. 5, Sage Publications.

Yue, S. C. (2006) ASEAN-China Economic Competition and Free Trade Area. *Asian Economic Papers 4:1*. The Earth Institute at Columbia University and the Massachusetts Institute of Technology.

Zablit, H. and Chui, B. (2013) The next wave of Chinese cost innovation. Boston: The Boston Consulting Group.



APPENDIX

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Indonesia	44.5	43.7	44.6	46.5	46.9	46.8	48.1	47.7	47	47.2
Malaysia	45.1	46.6	48.5	46.4	46.5	44.6	45.1	41	41.1	40.3
Philippines	34.6	34.6	33.8	33.8	33.5	33.1	32.9	31.7	32.6	31.4
Thailand	42.4	43.6	43.4	44	44.3	44.7	44.1	43.3	44.7	41.2
Vietnam	38.5	39.5	40.2	41	41.5	41.5	39.8	40.2	41.1	40.8

Appendix 1 – Industry, value added (% of GDP) for selected ASEAN members, 2002-2011

Source: World Bank Data, 2013

Appendix 2 – Interview guide

1. Current activities in China

- China as a consumption market and sourcing location
- Expansion of product portfolio
- Plans to cope with increasing costs in the coastal region
- Western/inland China as an alternative location
- Trade of parts and components
- Aftermarket services

2. The firm's perspective on ACFTA

- ASEAN as a future market and sourcing location
- Major trade barriers when trading in this region
- Differentiation of product demand among ACFTA members
- Current and future utilization of ACFTA
- Potential synergies if the firm expands manufacturing to ASEAN
- Logistics issues, both within the ACFTA region and issues related to relocating manufacturing
- Preferred type of future investment (e.g. greenfield, M&A...)
- Implementation of the ASEAN Single Window

3. Competitor-related issues

- Competitors and their strategies in the ACFTA region
- The differences in competition from Chinese and Western firms
- Problems of being a latecomer when expanding to South East Asia

4. Other topics

- Trade in parts and components
- ASEAN as a market
- The middle market segment in the CE industry



Respondent	Interview method	Company	Location	Date	Duration
Mr. A	Face-to-face Note taking	Volvo Construction Equipment	Shanghai, China	4-Mar-13	75 minutes
Mr. B	Face-to-face Note taking	Husqvarna Construction Products	Xiamen, China	7-Mar-13	75 minutes
Mr. C	Face-to-face Note taking	Tomra Environment Protection Technology	Xiamen, China	7-Mar-13	180 minutes
Mr. D	Face-to-face Note taking	Volvo Trucks Operation Logistics Services	Singapore	12-Mar-13	75 minutes
Distributor E	Face-to-face Note taking	Chua Trading Co. Husqvarna's distributor	Kuala Lumpur, Malaysia	14-Mar-13	90 minutes
Mr. F	Face-to-face Note taking	Volvo Trucks Thai Swedish Assembly Co. Ltd.	Bangkok, Thailand	18-Mar-13	90 minutes
Distributor G	Face-to-face Note taking	Spica Co. Ltd. Husqvarna's distributor	Bangkok, Thailand	18-Mar-13	180 minutes
Distributor H	Face-to-face Note taking	Vision Co. Ltd. Husqvarna's distributor	Hanoi, Vietnam	22-Mar-13	60 minutes
Mr. I	Face-to-face Note taking	Husqvarna Construction Products	Gothenburg, Sweden	19-Apr-13	150 minutes

Appendix 3 – List of respondents and additional information



Appendix 4 – Tariff reduction schedules for six countries under the ACFTA

HC and an	Chin	China Indonesia		nesia	Singapore		Malaysia		Thailand		Vietnam	
HS codes		2012	2009	2012	2005	2012	2005	2012	2005	2012	2009	2011
7616 Aluminum castings	10%	0%	0%	0%	-	-	20%	0%	10-20%	0%	15%	10%
8104 Magnesium castings	6%	0%	0%	0%	-	-	0%	0%	1-20%	0%	0%	0%
8412 Other engines and motors												
841229 Other hydraulic engines and motors	10%	0%	0%	0%	-	-	0%	0%	20%	0%	0%	0%
8430 Other boring machines												
843069 Other machinery, not self-propelled	6%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
8431 Parts for 8425-8430												
843149 Parts of other machinery for 84-30	5%	0%	0%	0%	-	-	5%	0%	5%	0%	0%	0%
8459 Tools for drilling, boring												
845921 Drilling machines	9,70%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
845929 Other drilling machines	15%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
845940 Boring machines	9,70%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
8460 Tools for grinding, polishing												
846011 Flat-surface grinding machines	9,70%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
846019 Other flat-surface grinding machines	15%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
846021 Other grinding machines, numerically controlled	9,70%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
846029 Other grinding machines	13-15%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
8461 Tools for sawing, cutting												
846140 Gear cutting, gear grinding	9.7-15%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
846150 Sawing or cutting-off machines	12%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
846190 Machines for planing & other machine-tools	12-15%	0%	0%	0%	-	-	0%	0%	5%	0%	10%	10%
8464 Tools for stone, concrete												
846410 Sawing Machines for Working Mineral Materials	0%	-	0%	0%	-	-	0%	0%	5%	0%	0%	0%
8466 Parts for 8459-8464												
846691 Other parts for use on machines of heading 84.64	0%	-	0%	0%	-	-	0%	0%	3%	0%	0%	0%
846693 Other parts for machines of heading 85.56 to 84.61	0%	-	0%	0%	-	-	0%	0%	5%	0%	0%	0%
8467 Tools for working in the hand												
846722 Saws, with electrial motor	10%	0%	0%	0%	-	-	10%	0%	3%	0%	8%	5%
846781 Chain saws, non-electrial motor	8%	0%	0%	0%	-	-	0%	0%	20%	0%	0%	0%
846789 Other hand tools, non-electrial motor	8%	0%	0%	0%	-	-	0%	0%	3%	0%	0%	0%
8479 Industrial robots, floor polishers												
847910 Machinery for buildings	8%	0%	0%	0%	-	-	0%	0%	5%	0%	0%	0%
8482 Ball or roller bearings												
848210 Ball bearings	8%	0%	0%	0%	-	-	0%	0%	10%	0%	3%	3%
848299 Other bearing parts	6%	0%	0%	0%	-	-	0%	0%	10%	0%	0%	0%
8501 Electric motors												
8501XX	9-24.5%*	0%	0-5%*	0%	-	-	0%	0%	-	-	17%	10%
8534 Electrical circuits, boards												
853400 Printed Circuits	0%	0%	0%	0%	-	-	0%	0%	1%	0%	3%	0%

Please refer to appendix 6 for the full names of these products

Source: ASEAN, 2013d, Singapore Customs, 2013

Note: Different years: China (2010, 2012), Singapore (2005, 2012), Malaysia (2005, 2012), Thailand (2005, 2012), Vietnam (2009, 2011), Indonesia (2009, 2012)

* Depending on effect (kW)



U I	64
------------	----

Appendix 5 – Average tariff applied on imports from countries outside the ACFTA region (MFN tariffs)

HS codes	China (2010)	Indonesia (2012)	Singapore (2012)	Malaysia (2012)	Thailand (2011)	Vietnam (2012)
7616 Aluminum castings	10-12.5%	5-6.7%	0%	5-20%	10-11.2%	17.9-20%
8104 Magnesium castings	1.5-8.2%	5%	0%	0%	0%	0%
8412 Other engines and motors						
841229 Other hydraulic engines and motors	12%	5%	0%	0%	0%	0%
8430 Other boring machines						
843069 Other machinery, not self-propelled	6%	5%	0%	20%	5%	0%
8431 Parts for 8425-8430						
843149 Parts of other machinery for 84-30	5%	5%	0%	6%	5%	0%
8459 Tools for drilling, boring						
845921 Drilling machines	9.70%	5%	0%	0%	1%	0%
845929 Other drilling machines	15%	5%	0%	0%	1%	0%
845940 Boring machines	12.40%	5%	0%	0%	1%	0%
8460 Tools for grinding, polishing						
846011 Flat-surface grinding machines	9.70%	5%	0%	0%	1%	0%
846019 Other flat-surface grinding machines	15%	5%	0%	0%	1%	0%
846021 Other grinding machines, numerically controlled	9.70%	5%	0%	0%	0%	0%
846029 Other grinding machines	14%	5%	0%	0%	0%	0%
8461 Tools for sawing, cutting						
846140 Gear cutting, gear grinding	12.40%	5%	0%	0%	1%	0%
846150 Sawing or cutting-off machines	12%	5%	0%	0%	1%	5%
846190 Machines for planing & other machine-tools	14%	5%	0%	0%	1%	2.50%
8464 Tools for stone, concrete						
846410 Sawing Machines for Working Mineral Materials	0%	5%	0%	0%	1%	0%
8466 Parts for 8459-8464						
846691 Other parts for use on machines of heading 84.64	0%	5%	0%	0%	1%	0%
846693 Other parts for machines of heading 85.56 to 84.61	0%	5%	0%	0%	1%	0%
8467 Tools for working in the hand						
846722 Saws, with electrial motor	10%	5%	0%	0%	1%	10%
846781 Chain saws, non-electrial motor	8%	5%	0%	0%	1%	0%
846789 Other hand tools, non-electrial motor	8%	5%	0%	0%	1%	0%
8479 Industrial robots, floor polishers						
847910 Machinery for buildings	8%	5%	0%	0%	5%	0%
8482 Ball or roller bearings						
848210 Ball bearings	8%	0%	0%	0%	1%	3%
848299 Other bearing parts	6%	5%	0%	0%	1%	0%
8501 Electric motors						
8501XX	5-14.2%*	5.8-10%*	0%	0-15%*	1-10%*	0-20%*
8534 Electrical circuits, boards						
853400 Printed Circuits	0%	0%	0%	0%	0%	0%

Please refer to appendix 6 for the full names of these products

Source: WTO, 2013b



Note: * Depending on effect (kW) Appendix 6 – *Full HS-code names*

HS codes	Full names
7616	Aluminium castings
8104	Magnesium castings
8412	Other engines and motors and parts thereof reaction engines (not turbojets), hydraulic/pneumatic power engines/motors
841229	Other hydraulic power engines & motors
8430	Pile-drivers & extractors; snowplows & blowers; other moving, grading, leveling, scraping, extracting, boring machines for earth/minerals/ores
843069	Other machinery, for earth, minerals or ores, not self-propelled
8431	Parts suitable for use solely or principally with the machinery of headings No. 84.25 to 84.30
843149	Parts of other machinery of heading 84.26, 84.29 or 84.30
8459	Machine tools for drilling, boring, milling, treading or tapping by removing metal
845921	Drilling machines, numerically controlled, for removing metal
845929	Other drilling machines, for removing metal
845940	Boring machines for removing metal
8460	Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise finishing metal, sintered metal carbides or cermets
846011	Flat-surface grinding machines, positioning accuracy in any once axis>=0.01mm, numerically controlled
846019	Other flat-surface grinding machines, positioning accuracy in any once axis>= 0.01mm
846021	Other grinding machines, positioning accuracy in any once axis>=0.01mm, numerically controlled
846029	Other grinding machines, positioning accuracy in any once axis>=0.01mm
8461	Machine tools for shaping, slotting, broaching, gear grinding or finishing, sawing, cutting off by removing metal, sintered metal carbides or cermets
846140	Gear cutting, gear grinding or gear finish machines for removing metal
846150	Sawing or cutting-off machines by removing metal
846190	Machines for planing & other machine-tools working by removing metal or cermets
8464	Machine tools for working with stone, ceramics, concrete, asbestos cement or like mineral materials or for cold working glass
846410	Sawing Machines for Working Mineral Materials
8466	Parts and accessories suitable for machines of heading 8459 to 8464
8467	Tools for working in the hand, pneumatic, hydraulic or with self-contained electric or non-electric motor
846722	Saws, with self-contained electric motor
846781	Chain saws, with self-contained non-electric motor
846789	Other hand tools with self-contained non-electric motor
846691	Other parts & accessories for use on machines of heading 84.64
846693	Other parts & accessories for use on machines of heading 85.56 to 84.61
8479	Machines having individual functions; parts thereof pavers, finishers, spreaders, presses, rope or cable-making, humidifiers, floor polishers, vacuum cleaners, industrial robots
847910	Machinery for public works, building or the like
8482	Ball or roller bearings
848210	Ball bearings
848299	Other bearing parts
8501	Electric motors and generators (excluding generating sets)
8534	Apparatus for electrical circuits, board, panels


66

	YEAR	2002	2005	2008	2009	2010	2011	% Change
	[TOTAL] Total all products	31,197	74,994	117,003	106,714	154,678	193,021	519
	[281] Iron ore and concentrates	9.4	178.2	1,120.6	581.3	1,256.1	2,298.1	24,355
1	[282] Ferrous waste, scrape; remelting ingots, iron, steel	4.7	28.5	135.3	103.4	28.7	16.3	244
1	[283] Copper ores and concentrates; copper mattes, cemen	54.3	134.5	132.1	582.6	981.4	1,294.0	2,284
1	[284] Nickel ores & concentrates; nickel mattes, etc.	0.1	7.6	1,201.8	829.2	1,532.3	4,282.5	2,948,670
SITC 28	[285] Aluminium ores and concentrates (incl. alumina)	9.3	65.3	1,081.4	497.7	961.5	1,555.5	16,614
1	[286] Ores and concentrates of uranium or thorium	0.6	1.0	4.1	0.8	2.2	19.4	3,087
1	[287] Ores and concentrates of base metals, n.e.s.	32.8	131.9	475.7	387.7	520.1	766.4	2,240
1	[288] Non-ferrous base metal waste and scrap, n.e.s.	22.6	85.2	439.8	960.0	1,747.1	2,097.3	9,187
1	[289] Ores & concentrates of precious metals; waste, scrap	0.0	0.0	19.2	4.4	27.1	32.1	114,795,886
	[571] Polymers of ethylene, in primary forms	654.1	1,173.3	1,560.9	1,445.3	1,931.7	2,486.8	280
1	[572] Polymers of styrene, in primary forms	446.1	547.8	716.5	666.6	709.3	653.3	46
1	[573] Polymers of vinyl chloride or halogenated olefins	159.7	163.9	140.0	228.3	175.3	150.0	-6
	[574] Polyethers, epoxide resins; polycarbonat., polyesters	292.5	929.2	970.1	885.2	1,203.0	1,265.9	333
5110 57 & 58	[575] Other plastics, in primary forms	591.0	1,006.6	1,286.3	1,160.4	1,744.5	2,022.6	242
1	[579] Waste, parings and scrap, of plastics	15.2	101.8	322.3	482.3	949.3	1,034.9	6,717
1	[581] Tubes, pipes and hoses of plastics	4.0	7.1	11.7	17.0	29.0	31.3	679
1	[582] Plates, sheets, films, foil & strip, of plastics	101.9	147.9	206.9	201.5	347.0	458.8	350
	[671] Pig iron & spiegeleisen, sponge iron, powder & granu	14.7	5.4	33.2	40.4	85.1	129.4	780
1	[672] Ingots, primary forms, of iron or steel; semi-finis.	0.9	1.7	2.8	4.6	6.3	3.7	291
1	[673] Flat-rolled prod., iron, non-alloy steel, not coated	138.9	410.1	40.0	53.2	92.9	54.6	-61
1	[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	69.7	69.0	5.4	7.1	10.8	11.5	-84
SITC 67	[675] Flat-rolled products of alloy steel	47.8	94.8	67.6	41.0	66.8	69.8	46
1	[676] Iron & steel bars, rods, angles, shapes & sections	9.0	16.0	17.3	5.5	9.0	19.9	122
1	[677] Rails & railway track construction mat., iron, steel	0.2	0.1	0.3	0.0	0.0	0.1	-68
1	[678] Wire of iron or steel	8.2	8.2	6.0	7.9	26.5	38.0	365
1	[679] Tubes, pipes & hollow profiles, fittings, iron, steel	7.3	45.9	40.6	42.5	43.3	105.7	1,358
	[681] Silver, platinum, other metals of the platinum group	0.8	1.0	6.1	2.2	4.8	21.8	2,532
1	[682] Copper	253.6	582.0	958.6	920.4	1,205.4	1,544.5	509
1	[683] Nickel	0.4	3.5	9.4	3.2	1.1	0.8	139
	[684] Aluminium	86.5	70.1	57.4	125.2	73.5	71.2	-18
5110.00	[685] Lead	0.4	1.6	4.9	5.6	7.7	18.4	4,236
]	[686] Zinc	13.7	7.6	12.2	22.2	10.6	0.9	-94
1	[687] Tin	13.5	156.7	130.8	243.1	261.9	469.1	3,386
1	[689] Miscellaneous no-ferrous base metals for metallur.	0.3	1.4	1.5	1.1	3.7	21.2	8,241
	[691] Structures & parts, n.e.s., of iron, steel, aluminium	12.7	7.2	47.7	29.7	17.3	27.7	119
	[693] Wire products (excluding electrical) and fencing grills	5.9	8.6	30.5	36.0	33.1	48.9	724
SITC 69	[694] Nails, screws, nuts, bolts, rivets & the like, of metal	23.4	93.5	125.5	85.1	104.5	110.5	372
	[695] Tools for use in the hand or in machine	16.6	75.5	150.3	35.5	27.2	32.9	98
	[699] Manufactures of base metal, n.e.s.	45.6	85.1	153.5	133.9	187.5	207.2	354

Appendix 7 – *China's imports from ASEAN in US\$ million and % change between 2002 and 2011 – Selected SITC groups*

Source: UNCTADstat, 2013



67

Appendix 8 - China's exports to ASEAN in US\$ million a	and % change between 2002-2011 – Selected SITC groups
---	---

	YEAR	2002	2005	2008	2009	2010	2011	% Change
	[TOTAL] Total all products	23,584	55,367	114,317	106,297	138,160	170,076	621
	[281] Iron ore and concentrates	0.0	0.0	0.1	0.0	1.6	0.0	45
1	[282] Ferrous waste, scrape; remelting ingots, iron, steel	0.1	0.0	0.0	0.0	23.7	0.0	-91
1	[283] Copper ores and concentrates; copper mattes, cemen	0.0	0.0	0.0			0.0	423
1	[284] Nickel ores & concentrates; nickel mattes, etc.		0.2		0.1			
SITC 28	[285] Aluminium ores and concentrates (incl. alumina)	1.4	0.8	4.7	2.3	2.8	3.3	137
1	[286] Ores and concentrates of uranium or thorium							
1	[287] Ores and concentrates of base metals, n.e.s.	0.7	1.0	8.2	6.2	23.4	49.6	7,337
	[288] Non-ferrous base metal waste and scrap, n.e.s.	1.4	1.0	2.2	0.8	1.6	0.0	-99
	[289] Ores & concentrates of precious metals; waste, scrap	0.0	0.2	0.1	0.0	0.1	0.0	46
	[571] Polymers of ethylene, in primary forms	1.5	11.7	38.6	39.6	84.1	108.3	7,239
	[572] Polymers of styrene, in primary forms	1.6	11.1	33.9	16.4	21.7	29.3	1,776
	[573] Polymers of vinyl chloride or halogenated olefins	5.3	10.9	29.3	24.8	39.7	110.2	1,993
SITC 57 8 59	[574] Polyethers, epoxide resins; polycarbonat., polyesters	15.4	65.8	182.2	152.7	281.6	451.2	2,837
5110 57 & 50	[575] Other plastics, in primary forms	48.4	133.5	292.9	283.5	475.0	649.7	1,244
]	[579] Waste, parings and scrap, of plastics	0.0	0.4	1.0	1.6	2.6	2.9	5,877
	[581] Tubes, pipes and hoses of plastics	11.4	27.8	80.1	71.1	104.8	152.5	1,232
	[582] Plates, sheets, films, foil & strip, of plastics	41.8	223.9	540.1	477.4	804.2	1,136.4	2,618
	[671] Pig iron & spiegeleisen, sponge iron, powder & granu	60.8	265.3	347.0	91.5	108.0	146.7	141
	[672] Ingots, primary forms, of iron or steel; semi-finis.	105.8	1,314.8	183.4	11.8	44.9	2.2	-98
	[673] Flat-rolled prod., iron, non-alloy steel, not coated	44.0	758.3	2,334.1	676.8	1,447.7	493.3	1,021
	[674] Flat-rolled prod., iron, non-alloy steel, coated, clad	34.6	88.6	708.7	514.6	1,076.8	1,791.4	5,078
SITC 67	[675] Flat-rolled products of alloy steel	9.7	146.9	520.8	312.4	834.1	2,065.5	21,209
	[676] Iron & steel bars, rods, angles, shapes & sections	101.3	758.1	3,066.6	599.1	1,482.7	2,141.2	2,013
	[677] Rails & railway track construction mat., iron, steel	7.1	25.5	112.1	124.2	61.4	125.6	1,670
	[678] Wire of iron or steel	29.8	82.0	343.5	232.1	353.8	458.0	1,437
	[679] Tubes, pipes & hollow profiles, fittings, iron, steel	114.2	493.4	1,429.3	1,023.3	1,258.1	1,992.0	1,644
	[681] Silver, platinum, other metals of the platinum group	24.6	185.8	234.7	79.7	120.4	79.4	223
	[682] Copper	37.3	172.5	438.2	341.7	470.9	1,016.2	2,624
	[683] Nickel	3.2	13.5	38.5	110.7	223.3	46.6	1,365
SITC 68	[684] Aluminium	239.3	526.4	1,172.0	618.2	1,161.1	1,607.7	572
5110 00	[685] Lead	80.6	112.2	91.8	49.2	82.3	38.4	-52
	[686] Zinc	95.0	11.2	28.8	25.4	30.0	32.6	-66
	[687] Tin	8.3	7.3	2.5	9.7	12.1	24.5	196
	[689] Miscellaneous no-ferrous base metals for metallur.	11.3	20.6	55.9	28.9	45.0	64.9	472
	[691] Structures & parts, n.e.s., of iron, steel, aluminium	73.0	191.2	967.0	777.8	900.9	1,265.4	1,635
	[693] Wire products (excluding electrical) and fencing grills	40.2	99.8	361.7	228.3	320.4	407.0	913
SITC 69	[694] Nails, screws, nuts, bolts, rivets & the like, of metal	51.3	120.7	377.6	337.8	505.5	642.6	1,153
	[695] Tools for use in the hand or in machine	92.1	156.6	266.5	243.3	365.9	571.6	520
	[699] Manufactures of base metal, n.e.s.	235.7	550.0	1,085.3	994.7	1,377.1	1,824.3	674

Note: cells marked red – data is not available or not separately reported

Source: UNCTADstat, 2013



Partners	HS	7616	HS	8104	HS	8412	HS	3430	HS	8431	HS	8464	HS	8466
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Indonesia	1.67	19.9	-	-	-	17.2	14.0	69.0	6.4	150.5	0.39	-	2.5	6.5
Malaysia	-0.3	8.2	-	4.6	-0.5	11.1	-	-	4.7	27	0.5	-	1.9	8
Singapore	-1.8	15.9	-	1.3	3.6	6.9	0.7	59.3	-8.2	185.2	0.1	-1.8	-0.7	13.3
Thailand	-0.2	13.5	-	-	0.3	25.6	-	-	3.4	87.8	0.44	6.5	-4.3	5.4
Vietnam	-	9.8	-	-	-	11.99	-	-	-	52.9	1	-	-	6.7
World	98.8	1,655	283	1,233	-408	-1436	4.4	2,153	-361	2,479	-163	-495.3	-59.7	-1,098
Partners	HS	8467	HS	8479	HS	8482	HS	3501	HS	8508	HS	8534	ations	2013
Partners	HS 2002	8467 2011	HS 2002	8479 2011	HS 2002	8482 2011	HS 8 2002	3501 2011	HS 8	8508 2011	HS 2002	8534 2011	culations	de, 2013
Partners Indonesia	HS 2002 3.88	8467 2011 -	HS 2002 5.9	8479 2011 71.3	HS 2002 -3.4	8482 2011 59.2	HS 8 2002 31.6	3501 2011 128	HS 8 2002 14.08	3508 2011 -	HS 2002 -0.7	8534 2011 19.5	calculations	ntrade, 2013
Partners Indonesia Malaysia	HS 2002 3.88 2.9	8467 2011 - 16.7	HS 2002 5.9 -6.2	8479 2011 71.3 -60	HS 2002 -3.4 2.1	8482 2011 59.2 33.3	HS 8 2002 31.6 -9.3	3501 2011 128 147	HS 8 2002 14.08 0.9	3508 2011 - 4.8	HS 2002 -0.7 -27.2	8534 2011 19.5 54.1	ors' calculations	comtrade, 2013
Partners Indonesia Malaysia Singapore	HS 2002 3.88 2.9 1.6	8467 2011 - 16.7 20.0	HS 2002 5.9 -6.2 -76.5	8479 2011 71.3 -60 -667.2	HS 2002 -3.4 2.1 -8.6	8482 2011 59.2 33.3 30.5	HS 8 2002 31.6 -9.3 42.5	3501 2011 128 147 94.5	HS 8 2002 14.08 0.9 11.37	3508 2011 - 4.8 41.9	HS 2002 -0.7 -27.2 69.4	8534 2011 19.5 54.1 48.6	uthors' calculations	UNcomtrade, 2013
Partners Indonesia Malaysia Singapore Thailand	HS 2002 3.88 2.9 1.6	8467 2011 - 16.7 20.0 59.0	HS 2002 5.9 -6.2 -76.5 1.9	8479 2011 71.3 -60 -667.2 101.2	HS 2002 -3.4 2.1 -8.6 -36.3	8482 2011 59.2 33.3 30.5 -142.2	HS 8 2002 31.6 -9.3 42.5 -67.6	3501 2011 128 147 94.5 143	HS 8 2002 14.08 0.9 11.37	3508 2011 - 4.8 41.9 -	HS 2002 -0.7 -27.2 69.4 -13.2	8534 2011 19.5 54.1 48.6 -155.9	e: Authors' calculations	on UNcomtrade, 2013
Partners Indonesia Malaysia Singapore Thailand Vietnam	HS 2002 3.88 2.9 1.6 -	8467 2011 - 16.7 20.0 59.0 25.2	HS 2002 5.9 -6.2 -76.5 1.9 11.2	8479 2011 71.3 -60 -667.2 101.2 82.3	HS 2002 -3.4 2.1 -8.6 -36.3	8482 2011 59.2 33.3 30.5 -142.2 84.7	HS 8 2002 31.6 -9.3 42.5 -67.6 -0.3	3501 2011 128 147 94.5 143 -182	HS 8 2002 14.08 0.9 11.37	3508 2011 - 4.8 41.9 - -	HS 2002 -0.7 -27.2 69.4 -13.2 0	8534 2011 19.5 54.1 48.6 -155.9 132.9	urce: Authors' calculations	sed on UNcomtrade, 2013

Appendix 9 – China's trade balance, in US\$ million - Selected HS product groups at the 4-digit level



		HS 76	616			HS 8	104			HS	8412			HS 8	3430			HS 8	431	
Partners	Exp	ort	Imp	ort	Exp	ort	Imp	oort	Ex	port	Imp	port	Exp	ort	Imp	oort	Exp	port	Imp	ort
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Indonesia	0.9%	0.9%	0.0%	0.0%	0.2%	0.7%	-	-	0.6%	1.4%	-	0.0%	6.7%	2.4%	0.0%	0.0%	2.2%	2.4%	0.5%	0.1%
Malaysia	0.7%	0.7%	2.0%	1.5%	0.1%	0.4%	-	0.5%	0.9%	1.3%	0.2%	0.2%	0.8%	1.1%	-	-	2.2%	1.3%	0.7%	1.4%
Singapore	1.7%	0.9%	5.9%	0.8%	0.5%	0.1%	-	0.8%	9.1%	1.8%	0.5%	0.6%	0.4%	2.2%	0.0%	0.3%	4.2%	3.4%	3.4%	0.9%
Thailand	0.5%	0.7%	1.3%	0.4%	0.3%	0.3%		-	0.4%	2.1%	0.0%	0.0%	0.0%	1.0%	-	-	0.8%	1.5%	0.0%	0.2%
Vietnam	0.1%	0.7%	-	0.8%	0.0%	0.0%		-	0.1%	1.0%	-	0.0%	1.4%	1.2%	-		0.7%	0.8%	-	0.0%
World	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		HS 84	464			HS8	466			HS	3467			HS 8	3479			HS 8	3482	
Partners	Exp	ort	Imp	ort	Exp	ort	Imp	oort	Exp	port	Imp	port	Exp	ort	Imp	oort	Exp	port	Imp	ort
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Indonesia	1.1%	2.3%	0.01%	-	1.1%	0.7%	0.0%	0.0%	2.2%	2.5%	0.0%	-	2.4%	2.3%	0.0%	0.0%	1.3%	2.2%	2.0%	0.9%
Malaysia	1.9%	2.3%	0.1%	-	1.0%	0.9%	0.1%	0.0%	1.8%	1.2%	0.3%	0.7%	5.2%	1.9%	0.4%	0.5%	1.4%	2.1%	1.3%	1.5%
Singapore	1.1%	1.1%	0.2%	0.7%	1.4%	1.9%	1.4%	0.2%	1.3%	1.2%	0.9%	0.1%	1.1%	8.5%	1.6%	3.5%	3.2%	2.7%	5.0%	2.1%
Thailand	1.4%	1.8%	0.0%	0.0%	0.6%	0.9%	2.0%	0.2%	0.8%	3.8%	-	0.5%	1.1%	2.9%	0.0%	0.0%	2.3%	1.9%	8.3%	5.6%
Vietnam	2.8%	7.6%	-	-	0.6%	0.9%	-	0.1%	0.5%	1.6%	-	0.2%	4.2%	2.7%	0.0%	0.1%	0.7%	2.0%	-	0.1%
World	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		HS 85	501			HS 8	508			HS	3534									
Partners	Exp	ort	Imp	ort	Exp	ort	Imp	oort	Ex	port	Imp	port								
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011								
Indonesia	2.3%	2.1%	1.3%	1.3%	0.9%	1.1%	0.1%	-	0.2%	0.3%	0.2%	0.1%	Source	e: Autho	ors' calc	ulations	based o	n UNco	mtrade,	2013
Malaysia	1.9%	2.0%	3.4%	0.7%	0.2%	0.4%	7.6%	20.8%	1.7%	1.3%	2.4%	0.8%	Note:	(-) eithe	er not re	ported s	eparatel	y or very	y small v	alue
Singapore	3.4%	1.2%	2.2%	0.3%	0.7%	0.7%	0.1%	0.0%	8.3%	1.1%	3.2%	0.6%								
Thailand	1.8%	3.3%	7.2%	3.2%	0.9%	1.4%	-	-	0.5%	1.5%	0.9%	2.5%								
Vietnam	0.1%	1.0%	0.2%	6.0%	0.1%	1.0%	-	-	0.0%	1.3%	0.0%	0.2%								
World	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%								

Appendix 10 – ASEAN-China bilateral trade reported by China, in % – Selected HS product groups at the 4-digit level



		HS 70	616			HS 8	104			HS	8412			HS 8	3430			HS 8	431	
Partners	Expo	ort	Imp	oort	Exp	ort	Imp	oort	Ex	port	Im	port	Exp	oort	Imp	port	Exp	port	Imp	oort
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Indonesia	1.7	20.1	0.03	0.2	0.7	8.3	-	-	0.4	18.3	-	1.1	14.0	69.0	0.05	0.02	10.8	152.7	4.4	2.2
Malaysia	1.3	16.7	1.6	8.5	0.3	4.6	-	0.03	0.6	16.1	1.1	5.0	1.6	31.1	-	-	10.7	84.6	6.0	57.6
Singapore	3	20.5	4.8	4.6	1.4	1.3	-	0.05	6.1	23.3	2.5	16.4	0.8	61.0	0.1	1.7	20.6	220.4	28.8	35.2
Thailand	0.9	16.1	1.1	2.6	0.8	4.3	-	-	0.3	26.0	0.03	0.4	0.1	29.4	-	-	3.8	93.9	0.4	6.1
Vietnam	0.2	14.7	-	4.9	0.1	0.3	-	-	0.04	12.0	-	0.01	2.9	33.3	-	-	3.6	53.5	-	0.6
World	181	2,234	82	579	287	1,239	4	6	67	1,263	475	2,699	210	2,827	206	674	486	6,466	847	3,987
		HS 84	464			HS8	466			HS	8467			HS 8	3479			HS 8	482	
Partners	Exp	ort	Imp	oort	Exp	ort	Imp	oort	Ex	port	Im	port	Exp	oort	Imp	port	Exp	port	Imp	oort
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011
Indonesia	0.4	8.6	0.01	-	2.6	6.7	0.1	0.2	3.9	40.0	0.02	-	6.6	84.8	0.7	13.5	9.1	94.4	12.5	35.2
Malaysia	0.7	8.6	0.2	-	2.3	8.9	0.4	0.9	3.2	19.7	0.3	3.0	14.2	68.6	20.4	128.6	10.2	92.7	8.1	59.4
Singapore	0.4	4.1	0.3	5.9	3.3	18.5	4	5.2	2.4	20.3	0.8	0.3	3.1	313	79.6	980.5	23	118	31.6	87.5
Thailand	0.5	6.7	0.06	0.2	1.5	8.8	5.8	3.4	1.4	61.2	0.01	2.2	2.9	106	1.0	5.0	16.4	84.2	52.7	226.4
Vietnam	1	27.9	-	-	1.3	8.9	-	2.2	0.9	26.3	-	1.1	11.3	100.0	0.1	17.7	4.8	87.4	-	2.7
World	36	368	199	863.3	234	997	293	2,095	180	1,630	92	455	272	3,685	4,915	28,370	714	4,344	638	4,075
		HS 85	501			HS 8	508			HS	8534									
Partners	Expo	ort	Imp	oort	Exp	ort	Imp	oort	Ex	port	Im	port								
	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011	2002	2011								
Indonesia	51	187	19.4	59.4	14.1	60.5	0.02	-	3.3	33	4	13.5		Source	e: UNc	comtra	de, 201	3		
Malaysia	41.3	177	50.6	30.5	3.1	23.5	2.2	18.7	31.3	160.8	58.5	106.7		Note: (either 	not rep	orted seg	parately		
Singapore	75.3	109	32.8	14.5	11.4	41.9	0.03	0.02	149	136.6	79.7	88		or very	small v	alue				
Thailand	38.4	286	106	143.3	15.1	78.2	-	-	8.2	190.2	21.4	346.1								
Vietnam	3.1	91	3.4	272.7	2.1	57.2	-	-	0.7	164.1	0.7	31.2								
World	2,183	8,789	1,482	4,531	1,594	5,660	29	89.7	1,803	12,587	2,481	14,017								

Appendix 11 – ASEAN-China bilateral trade reported by China, in US\$ million – Selected HS product groups at the 4-digit level



	IND	ONESI/	4			MA	LAYSIA	1			SIN	GAPOR	E			TH	AILANI)			VIE	FNAM (*)	
110 2616	Exp	ort	Imp	ort	110 2616	Exp	ort	Imp	ort	110 7616	Ex	port	Imp	ort	110 2616	Exp	ort	Imp	ort	110 2616	Exp	oort	Imp	ort
HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011
China	0.2	0.03	0.9	15.5	China	8.6	51	8.9	97.6	China	1.5	12.9	8.5	94.6	China	0.2	9.9	13.4	105.6	China	-	4.9	0.6	14.7
Malaysia	0.1	0.8	0.1	2.3	Indonesia	1.4	4.7	1.1	2	Indonesia	-	34.7	-	11.5	Indonesia	1.5	2.3	1.9	0.6	Indonesia	-	4.3	0.2	0.7
Singapore	2	1.2	1.4	5.6	Singapore	78.5	121.1	8.9	17.2	Malaysia	23	70.7	139.9	206.8	Malaysia	1.2	18.6	23.7	62	Malaysia	1.2	0.3	0.01	3.8
Thailand	0.4	0.4	0.9	2.2	Thailand	1.1	58.6	4.9	8.3	Thailand	3.8	6.1	1.2	7.5	Singapore	3	4.6	41.5	19.1	Singapore	0.3	0.2	0.1	3.6
Vietnam	0.1	0.7	-	4.3	Vietnam	0.2	3.8	0.05	0.3	Vietnam	0.4	3.6	0.8	0.2	Vietnam	0.3	2.4	0.01	8	Thailand	0.1	8	0.03	2.4
World	6.2	9.4	7.2	56.4	World	124	357	72	299	World	48	159	315	498	World	37	140	220	447	World	4.3	na	5.8	na
TE 9104	Exp	ort	Imp	ort	TE 9104	Exp	ort	Imp	ort	110 0104	Ex	port	Imp	oort	110 0104	Exp	ort	Imp	ort	TE 0104	Exp	oort	Imp	ort
HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011	H5 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011
China	-	-	0.5	7.7	China	-	1	0.2	5.8	China	-	0.02	0.1	2	China	-	-	0.9	5.2	China	-	-	0.1	0.3
Malaysia	-	-	-	-	Indonesia	-	-	-	0.01	Indonesia	-	2.2	-	-	Indonesia	-	0.02	-	-	Indonesia	-	-	-	-
Singapore	-	-	0.06	0.6	Singapore	0.02	2.2	0.1	-	Malaysia	0.2	0.02	0.01	2.7	Malaysia	-	-	-	-	Malaysia	-	-	-	-
Thailand	-	-	-	0.02	Thailand	-	0.5	-	-	Thailand	0.6	0.3	0.01	0.03	Singapore	-	-	-	-	Singapore		-	-	0.1
Vietnam	-	-	-	-	Vietnam	-		-	-	Vietnam	-	0.07	-	-	Vietnam	-	0.1	-	-	Thailand		-	0.02	0.1
World	-	-	0.8	9.2	World	0.03	20.1	0.8	6.4	World	3.1	4.1	2.3	18.1	World	-	0.2	1.5	5.7	World	0.01	na	0.2	na
HS 8412	Exp	ort	Imp	ort	HS 8412	Exp	ort	Imp	ort	HS 8412	Ex	port	Imp	oort	HS 8412	Exp	ort	Imp	ort	HS 8412	Exp	oort	Imp	ort
115 0412	2002	2011	2002	2011	115 0412	2002	2011	2002	2011	115 0412	2002	2011	2002	2011	115 0412	2002	2011	2002	2011	115 0412	2002	2011	2002	2011
China	-	1.7	0.4	10.9	China	2.3	1.1	0.2	11.9	China	0.8	18.3	1.1	19.3	China	1	27.3	0.4	23.6	China	-	0.01	0.05	12
Malaysia	0.3	0.2	0.3	3	Indonesia	0.2	5.8	0.02	0.1	Indonesia	-	68	-	5.5	Indonesia	0.01	2.1	0.01	0.05	Indonesia	-	0.4	-	2.3
Singapore	2	4.9	1.6	46.5	Singapore	2.3	4.4	1.2	7.4	Malaysia	4	27.4	1.4	6.6	Malaysia	0.1	2.1	0.04	0.8	Malaysia	-	0.2	-	2.5
Thailand	0.01	0.6	0.01	2.9	Thailand	0.3	1.4	0.02	0.8	Thailand	2.6	10.3	0.3	0.5	Singapore	0.1	2.1	0.7	1.2	Singapore	0.01	1.1	0.5	8.9
Vietnam	0.01	2.3	-	0.4	Vietnam	0.04	2.5	-	0.2	Vietnam	0.5	8.9	0.06	1.1	Vietnam	0.01	11.5	-	0.2	Thailand	-	0.2	0.01	11.5
World	5.4	31.6	20.1	177	World	7.9	43.9	14.7	94.1	World	31.1	232	47.1	219	World	3.5	75.4	19.6	212.6	World	0.1	na	3.4	na
HS 8430	Exp	ort	Imp	ort	HS 8430	Exp	ort	Imp	ort	HS 8430	Exp	port	Imp	oort	HS 8430	Exp	ort	Imp	ort	HS 8430	Exp	oort	Imp	ort
100100	2002	2011	2002	2011	100100	2002	2011	2002	2011	110 0 100	2002	2011	2002	2011	100100	2002	2011	2002	2011	100100	2002	2011	2002	2011
China	0.04	0.07	3.6	66.1	China	0.2	1.2	-	14.4	China	3.9	11	0.4	60.8	China	0.03	0.05	0.01	31.1	China	-	-	4.8	33.3
Malaysia	2	0.4	1.8	1.3	Indonesia	0.6	8.6	-	-	Indonesia	-	59.1	-	10.6	Indonesia	0.4	0.7	-	0.2	Indonesia	-	0.05	-	0.03
Singapore	2.6	25.1	4.1	11.8	Singapore	1.9	4.3	0.7	4.9	Malaysia	11.1	48	0.6	3.9	Malaysia	2.5	11.1	0.1	1.3	Malaysia	-	0.3	0.04	1.2
Thailand	-	14.6	0.1	0.1	Thailand	0.1	4.2	0.02	-	Thailand	3.4	2.4	1.4	0.05	Singapore	17.2	36.3	1.3	1.7	Singapore	-	0.5	4.1	6.3
Vietnam	-	0.03	-	0.05	Vietnam	0.01	1.2	-	0.3	Vietnam	2.2	6.3	0.6	0.5	Vietnam	0.04	0.2	-	-	Thailand	-	-	0.7	0.2
World	5.9	92.1	22.9	284	World	5.7	29.8	34.1	105.2	World	35.9	199.8	55.1	362	World	22.1	244	25.7	956	World	0.2	na	40.2	na

Appendix 12 – ASEAN-China bilateral trade reported by ASEAN members, in US\$ million – Selected HS product groups at the 4-digit level



HS 8431	Exp	oort	Imp	oort	US 8431	Exp	oort	Imp	oort	HS 8431	Exp	oort	Imp	ort	US 8431	Exp	ort	Imp	oort	HS 8431	Exp	oort	Imp	oort
113 0431	2002	2011	2002	2011	115 0451	2002	2011	2002	2011	115 0451	2002	2011	2002	2011	113 6451	2002	2011	2002	2011	115 0451	2002	2011	2002	2011
China	3.2	7.9	3.4	169.3	China	3.2	35.4	8.7	79.2	China	51.7	249	25	280.3	China	0.03	1	3.2	103	China	-	0.6	1.5	53.5
Malaysia	0.6	13.7	0.8	17	Indonesia	1.8	17.8	0.9	8.1	Indonesia	-	1,099	-	159.7	Indonesia	4.1	6	8.5	51.6	Indonesia	-	5.5	1	3.6
Singapore	22.3	104.2	38.2	179.7	Singapore	23.5	143	4.4	62.6	Malaysia	290.1	755	38.2	299.3	Malaysia	1.5	7.7	0.8	6.5	Malaysia	0.05	3	0.3	24.5
Thailand	9	48.9	2.3	6.1	Thailand	1.1	15.5	1.7	10.2	Thailand	74.6	242	11.3	71.3	Singapore	2.3	13.3	0.7	8.7	Singapore	12.4	23.4	47.1	241
Vietnam	0.04	3.6	0.01	5.5	Vietnam	1	24.5	0.07	3	Vietnam	81	241	5.7	23.4	Vietnam	0.1	4.1	-	0.7	Thailand	0.07	0.7	0.5	4.1
World	59.6	420.7	257.3	1,389	World	48.1	473.2	111.3	543.1	World	1,178	5,024	1,617	5,179	World	31.4	145.8	77.8	392.7	World	13.8	na	89.5	na
115 8464	Exp	oort	Imp	oort	HS 8464	Exp	oort	Imp	oort	115 8464	Exp	oort	Imp	ort	115 8464	Exp	ort	Imp	oort	115 8464	Exp	oort	Imp	oort
113 0404	2002	2011	2002	2011	113 0404	2002	2011	2002	2011	13 0404	2002	2011	2002	2011	113 0404	2002	2011	2002	2011	113 0404	2002	2011	2002	2011
China	-	-	0.5	6.0	China	0.01	26.4	0.8	8.4	China	4.6	2.6	2.2	1.3	China	0.2	0.1	1.3	4.4	China	-	-	2.9	27.9
Malaysia	-	-	0.7	0.1	Indonesia	0.03	0.3	-	-	Indonesia	-	2.8	-	-	Indonesia	0.06	-	-	-	Indonesia	-	-	-	-
Singapore	0.01	-	0.4	0.1	Singapore	0.2	12.1	0.3	0.5	Malaysia	3.1	9	0.6	0.2	Malaysia	0.05	0.01	0.2	-	Malaysia	-	0.2	0.01	0.2
Thailand	0.01	-	0.01	-	Thailand	0.2	0.1	0.09	0.1	Thailand	0.3	1.1	0.01	0.01	Singapore	0.04	0.03	0.1	0.1	Singapore	-	0.07	0.4	0.4
Vietnam	-	-	0.03	-	Vietnam	0.02	0.2	-	0.2	Vietnam	0.04	0.4	-	0.07	Vietnam	0.06	0.1	-	0.02	Thailand	-	0.02	0.04	0.1
World	0.2	0.4	19.1	15.8	World	1.1	41.7	12.8	31.5	World	9.3	42.1	46.9	21.1	World	1.9	1.9	9.2	42.6	World	0.25	na	13.9	na
115 8466	Exp	oort	Imp	oort	HS 8466	Exp	oort	Imp	oort	115 8466	Exp	oort	Imp	ort	115 8466	Exp	ort	Imp	oort	US 8466	Exp	oort	Imp	oort
113 0400	2002	2011	2002	2011	113 0400	2002	2011	2002	2011	113 0400	2002	2011	2002	2011	113 8400	2002	2011	2002	2011	113 0400	2002	2011	2002	2011
China	0.04	0.03	0.6	11.4	China	4.9	26.8	3.2	30.3	China	6.5	75.8	5.7	86.6	China	2.9	5.2	0.8	7.9	China	-	2.2	0.5	8.9
Malaysia	0.3	0.1	0.2	1.9	Indonesia	0.4	1.8	0.5	0.9	Indonesia	-	66.4	-	21.3	Indonesia	0.7	1.5	0.05	0.05	Indonesia	-	0.07	0.01	0.1
Singapore	0.3	1.7	2.8	6.8	Singapore	11	31.9	10	67.8	Malaysia	27.3	46.4	6	26.4	Malaysia	1.5	53	0.3	3.5	Malaysia	-	0.7	-	10
Thailand	-	0.01	0.2	1.7	Thailand	4.4	12	2.5	11.5	Thailand	11.6	16.5	2	2.3	Singapore	1.3	5.5	0.7	2.3	Singapore	0.01	0.5	0.3	7.9
Vietnam	0.07	0.1	-	0.07	Vietnam	0.4	10	-	0.7	Vietnam	1.5	7.9	0.06	0.5	Vietnam	1.3	3.1	0.01	0.07	Thailand	-	0.07	0.01	3.1
World	1.4	4.4	124	135.5	World	45.4	190	139	371	World	116	449	239	499	World	15.5	145.6	43.9	166	World	0.04	na	4.1	na
HS 8467	Exp	oort	Imp	oort	HS 8467	Exp	oort	Imp	oort	HS 8467	Exp	oort	Imp	ort	HS 8467	Exp	ort	Imp	oort	HS 8467	Exp	oort	Imp	oort
113 0407	2002	2011	2002	2011	115 0407	2002	2011	2002	2011	113 0407	2002	2011	2002	2011	113 0407	2002	2011	2002	2011	115 0407	2002	2011	2002	2011
China	0.1	0.01	0.5	21	China	0.7	1.0	6.3	53.5	China	3.2	6.5	4.7	44	China	-	2.1	2.8	66.9	China	-	1.1	1.6	26.3
Malaysia	0.2	0.1	0.1	0.5	Indonesia	0.3	2.6	0.3	0.3	Indonesia	-	57.6	-	1.1	Indonesia	0.01	1.4	-	0.01	Indonesia	-	0.1	0.02	-
Singapore	0.4	0.4	1.2	3.6	Singapore	25	7.1	4	7.7	Malaysia	29	41.1	5.9	3.6	Malaysia	0.01	0.5	0.08	1	Malaysia	-	0.1	0.04	0.2
Thailand	-	0.03	-	0.2	Thailand	0.5	1.3	0.2	0.5	Thailand	1.6	19	0.3	0.4	Singapore	0.1	1.6	0.08	3.2	Singapore	0.01	0.03	0.3	18.8
Vietnam	-	-	-	0.1	Vietnam	0.01	0.2	-	0.1	Vietnam	5.5	18.8	0.03	0.03	Vietnam	0.4	0.2	-	0.01	Thailand	0.01	0.01	0.04	0.2
World	2.1	0.8	12.7	43.1	World	42.1	33.3	63.5	134.0	World	61	255	74.8	298	World	0.9	31.9	35	117.8	World	0.03	na	7.6	na
HS 8470	Exp	oort	Imp	oort	HS 8470	Exp	oort	Imp	oort	US 8470	Exp	oort	Imp	ort	TIS 9470	Exp	ort	Imp	oort	US 8470	Exp	oort	Imp	oort
13 04/9	2002	2011	2002	2011	13 04/9	2002	2011	2002	2011	13 04/9	2002	2011	2002	2011	no 0479	2002	2011	2002	2011	113 04/9	2002	2011	2002	2011
China	0.5	3.2	7	78.2	China	30.7	73.1	12.4	258.5	China	85	1,095	28.6	306.9	China	6.3	17.7	8	154.6	China	0.02	17.7	17.4	100
Malaysia	0.6	4	31.2	133.2	Indonesia	36.3	175.3	0.9	2.3	Indonesia	-	445.2	-	23.3	Indonesia	6	8.1	0.8	1.5	Indonesia	-	0.4		6.4
Singapore	3.6	39	7.3	62.3	Singapore	55.3	214.1	57.4	184.7	Malaysia	181.1	461.8	97.2	287.8	Malaysia	10.6	20.2	18.2	71.1	Malaysia	0.05	2.7	1.5	9
Thailand	0.2	3.2	1.9	7.5	Thailand	27.1	85.8	4.2	43.4	Thailand	57.3	200.7	23.4	28.3	Singapore	14.7	23.3	31.7	68.1	Singapore	0.2	3.7	22.9	43.2
Vietnam	0.2	6.4	0.01	0.4	Vietnam	1.1	9	0.2	2.7	Vietnam	8.6	43.2	0.6	3.7	Vietnam	2.1	8.4	0.07	0.2	Thailand	0.09	0.2	6.7	8.4
World	12.8	110.9	123.5	661	World	273.5	930	831.6	2,130	World	787	6,357	1,929	5,299	World	64.8	162	606	1,165	World	7.9	na	186.8	na



TIS 9492	Exp	oort	Imp	ort	TIS 9492	Exp	oort	Imp	oort	US 9492	Exp	oort	Imp	oort	115 9492	Exp	ort	Imp	ort	115 9492	Exp	ort	Imp	ort
115 0402	2002	2011	2002	2011	115 0402	2002	2011	2002	2011	115 0402	2002	2011	2002	2011	115 0402	2002	2011	2002	2011	15 0402	2002	2011	2002	2011
China	0.6	7.3	7.2	83.7	China	0.2	18.7	6.4	106.9	China	30.7	292.6	27.4	121.8	China	14.7	46.6	14.6	85.9	China	0.01	2.7	6.5	87.4
Malaysia	0.05	1.1	0.4	4	Indonesia	0.7	2.4	1.3	2.8	Indonesia	-	222.8	-	101.7	Indonesia	0.9	31.4	20.2	15.2	Indonesia	-	0.2	-	0.8
Singapore	78.7	96.1	10.8	50.1	Singapore	28.7	101.2	10.1	22.4	Malaysia	78.4	140.8	29.1	98.2	Malaysia	2.7	11.4	10	29.7	Malaysia	-	0.3	0.01	2.6
Thailand	3.8	6.1	0.5	32.9	Thailand	7.7	22.3	9.3	15.2	Thailand	83.1	127.5	61.8	61	Singapore	60.3	58.3	18.8	17.3	Singapore	-	1.8	9.5	75.9
Vietnam	-	0.8	-	0.2	Vietnam	0.6	2.6	-	0.3	Vietnam	14.7	75.9	0.01	1.8	Vietnam	2.7	20.5	0.03	1	Thailand	-	1	0.06	20.5
World	91.3	161.2	98.8	511.3	World	84.2	296	125	362	World	669	1,698	581	1,545	World	178.8	355.5	290	706	World	0.4	na	43.4	na
110 9201	Exp	oort	Imp	ort	110 9501	Exp	oort	Imp	oort	110 9501	Exp	oort	Imp	oort	TE 9201	Exp	ort	Imp	oort	TTC 9201	Exp	ort	Imp	ort
HS 8501	2002	2011	2002	2011	HS 8501	2002	2011	2002	2011	H5 8501	2002	2011	2002	2011	HS 8501	2002	2011	2002	2011	HS 8501	2002	2011	2002	2011
China	1.5	28	11.2	131.6	China	15.4	21	130.8	295.7	China	25.5	40.2	137.9	146.5	China	83.9	287	91.9	353	China	3.1	272.7	3.4	91
Malaysia	5.4	13.9	1.2	9.5	Indonesia	40.3	12.9	22	16.3	Indonesia	-	78.4	-	132.9	Indonesia	2.3	6.7	8.4	67.3	Indonesia	1.5	8.2	-	0.05
Singapore	196	90.6	3.5	34.1	Singapore	116.5	19	78.2	61.3	Malaysia	227.4	138.3	144	32	Malaysia	53.9	276	44.1	25.1	Malaysia	0.1	21	0.7	1.7
Thailand	4.5	65.3	1	7	Thailand	41.5	34.3	78.1	108.5	Thailand	37.5	39.9	406.4	43.5	Singapore	368.5	18.4	6	6.6	Singapore	1.9	21.8	5.9	30.6
Vietnam	0.1	0.05	0.02	8.2	Vietnam	0.5	1.7	3.3	21	Vietnam	5.7	30.6	3.1	21.8	Vietnam	1.1	11.2	12.4	55.2	Thailand	4.9	55.2	0.7	11.2
World	278	298	44.6	382	World	362	172	500	785	World	599	558	864	727	World	869	1,172	320	880	World	65.3	na	36.5	na
																	-							-
US 8508	Exp	oort	Imp	ort	115 8508	Exp	oort	Imp	oort	115 8508	Exp	oort	Imp	oort	115 8508	Exp	ort	Imp	oort	115 8508	Exp	ort	Imp	ort
HS 8508	Exp 2002	oort 2011	Imp 2002	oort 2011	HS 8508	Exp 2002	oort 2011	Imp 2002	oort 2011	HS 8508	Exp 2002	oort 2011	Imp 2002	oort 2011	HS 8508	Exp 2002	2011	Imp 2002	oort 2011	HS 8508	Exp 2002	oort 2011	Imp 2002	ort 2011
HS 8508 China	Exp 2002 0.02	2011 0.1	Imp 2002 5.5	2011 34.8	HS 8508 China	Exp 2002 0.06	2011 6.3	Imp 2002 3.7	oort 2011 34.9	HS 8508 China	Exp 2002 0.5	2011 1.1	Imp 2002 6.6	2011 33.2	HS 8508 China	Exp 2002	2011 0.2	Imp 2002 13.9	2011 97.8	HS 8508 China	Exp 2002	2011 -	Imp 2002 1.3	ort 2011 57.2
HS 8508 China Malaysia	Exp 2002 0.02 0.5	2011 0.1	Imp 2002 5.5 0.3	2011 34.8 0.02	HS 8508 China Indonesia	Exp 2002 0.06 0.01	2011 6.3 0.02	Imp 2002 3.7	2011 34.9	HS 8508 China Indonesia	Exp 2002 0.5	2011 1.1 7.9	Imp 2002 6.6	2011 33.2 0.03	HS 8508 China Indonesia	Exp 2002 -	2011 0.2 0.04	Imp 2002 13.9	2011 97.8	HS 8508 China Indonesia	Exp 2002 -	2011 - -	Imp 2002 1.3 0.01	ort 2011 57.2
HS 8508 China Malaysia Singapore	Exp 2002 0.02 0.5 0.1	2011 0.1 - 0.2	Imp 2002 5.5 0.3 0.8	2011 34.8 0.02 3.4	HS 8508 China Indonesia Singapore	Exp 2002 0.06 0.01 17.6	2011 6.3 0.02 22.8	Imp 2002 3.7 - 1.5	2011 34.9 - 1.5	HS 8508 China Indonesia Malaysia	Exp 2002 0.5 - 3.9	2011 1.1 7.9 11.6	Imp 2002 6.6 - 30.6	2011 33.2 0.03 25.4	HS 8508 China Indonesia Malaysia	Exp 2002 - - 0.02	2011 0.2 0.04 0.05	Imp 2002 13.9 - 3.2	2011 97.8 - 3.4	HS 8508 China Indonesia Malaysia	Exp 2002 - -	2011 - - 0.02	Imp 2002 1.3 0.01	ort 2011 57.2 - 0.4
HS 8508 China Malaysia Singapore Thailand	Exp 2002 0.02 0.5 0.1 0.1	2011 0.1 0.2	Imp 2002 5.5 0.3 0.8 0.03	2011 34.8 0.02 3.4 0.01	HS 8508 China Indonesia Singapore Thailand	Exp 2002 0.06 0.01 17.6 1.8	2011 6.3 0.02 22.8 0.6	Imp 2002 3.7 - 1.5 0.01	2011 34.9 - 1.5 0.1	HS 8508 China Indonesia Malaysia Thailand	Exp 2002 0.5 - 3.9 4	2011 1.1 7.9 11.6 1.3	Imp 2002 6.6 - 30.6	2011 33.2 0.03 25.4 0.8	HS 8508 China Indonesia Malaysia Singapore	Exp 2002 - - 0.02 0.04	2011 0.2 0.04 0.05 0.7	Imp 2002 13.9 - 3.2 0.05	2011 97.8 - 3.4 0.2	HS 8508 China Indonesia Malaysia Singapore	Exp 2002 - - - 0.02	2011 - - 0.02 0.1	Imp 2002 1.3 0.01 - 3.4	2011 57.2 0.4 0.5
HS 8508 China Malaysia Singapore Thailand Vietnam	Exp 2002 0.02 0.5 0.1 0.1 0.1	2011 0.1 0.2 - -	Imp 2002 5.5 0.3 0.8 0.03	2011 34.8 0.02 3.4 0.01	HS 8508 China Indonesia Singapore Thailand Vietnam	Exp 2002 0.06 0.01 17.6 1.8	2011 6.3 0.02 22.8 0.6 0.4	Imp 2002 3.7 1.5 0.01	2011 34.9 1.5 0.1 0.02	HS 8508 China Indonesia Malaysia Thailand Vietnam	Exp 2002 0.5 - 3.9 4 0.5	2011 1.1 7.9 11.6 1.3 0.5	Imp 2002 6.6 - 30.6 -	2011 33.2 0.03 25.4 0.8 0.1	HS 8508 China Indonesia Malaysia Singapore Vietnam	Exp 2002 - - 0.02 0.04 -	2011 0.2 0.04 0.05 0.7 0.01	Imp 2002 13.9 - 3.2 0.05 0.07	2011 97.8 - 3.4 0.2	HS 8508 China Indonesia Malaysia Singapore Thailand	Exp 2002 - - - 0.02	2011 - - 0.02 0.1	Imp 2002 1.3 0.01 - 3.4 0.1	2011 57.2 0.4 0.5 0.01
HS 8508 China Malaysia Singapore Thailand Vietnam World	Exp 2002 0.02 0.5 0.1 0.1 0.01 1.5	2011 0.1 - 0.2 - 0.4	Imp 2002 5.5 0.3 0.8 0.03 - 9.8	2011 34.8 0.02 3.4 0.01 - 42.1	HS 8508 China Indonesia Singapore Thailand Vietnam World	Exp 2002 0.06 0.01 17.6 1.8 - 64.1	2011 6.3 0.02 22.8 0.6 0.4 237.2	Imp 2002 3.7 - 1.5 0.01 - 14.8	2011 34.9 - 1.5 0.1 0.02 49.6	HS 8508 China Indonesia Malaysia Thailand Vietnam World	Exp 2002 0.5 - 3.9 4 0.5 37.4	2011 2011 1.1 7.9 11.6 1.3 0.5 40.7	Imp 2002 6.6 - 30.6 - - 49.3	2011 33.2 0.03 25.4 0.8 0.1 79	HS 8508 China Indonesia Malaysia Singapore Vietnam World	Exp 2002 - - 0.02 0.04 - 0.53	2011 0.2 0.04 0.05 0.7 0.01 2.1	Imp 2002 13.9 - 3.2 0.05 0.07 35.8	2011 97.8 - 3.4 0.2 - 132.6	HS 8508 China Indonesia Malaysia Singapore Thailand World	Exp 2002 - - - 0.02 - 0.4	2011 - - 0.02 0.1 - na	Imp 2002 1.3 0.01 - 3.4 0.1 14.5	0rt 2011 57.2 0.4 0.5 0.01 na
HS 8508 China Malaysia Singapore Thailand Vietnam World	Exp 2002 0.02 0.5 0.1 0.1 0.01 1.5 Exp	2011 0.1 0.2 - 0.4 0.4	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 Imp	2011 34.8 0.02 3.4 0.01 - 42.1 oort	HS 8508 China Indonesia Singapore Thailand Vietnam World	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp	2011 6.3 0.02 22.8 0.6 0.4 237.2 0ort	Imp 2002 3.7 - 1.5 0.01 - 14.8 Imp	2011 34.9 - 1.5 0.1 0.02 49.6 oort	HS 8508 China Indonesia Malaysia Thailand Vietnam World	Exp 2002 0.5 - 3.9 4 0.5 37.4 Exp	2011 1.1 7.9 11.6 1.3 0.5 40.7 port	Imp 2002 6.6 - 30.6 - - 49.3 Imp	2011 33.2 0.03 25.4 0.8 0.1 79	HS 8508 China Indonesia Malaysia Singapore Vietnam World	Exp 2002 - - 0.02 0.04 - 0.53 Exp	2011 0.2 0.04 0.05 0.7 0.01 2.1 0ort	Imp 2002 13.9 - 3.2 0.05 0.07 35.8 Imp	2011 97.8 - 3.4 0.2 - 132.6 oort	HS 8508 China Indonesia Malaysia Singapore Thailand World	Exp 2002 - - - 0.02 - 0.4 Exp	2011 - - 0.02 0.1 - na ort	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp	ort 2011 57.2 - 0.4 0.5 0.01 na ort
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534	Exp 2002 0.02 0.5 0.1 0.1 0.01 1.5 Exp 2002	2011 0.1 0.2 0.2 - 0.4 oort 2011	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 Imp 2002	2011 34.8 0.02 3.4 0.01 - 42.1 00rt 2011	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002	2011 6.3 0.02 22.8 0.6 0.4 237.2 2072 2011	Imp 2002 3.7 - 1.5 0.01 - 14.8 Imp 2002	2011 34.9 - 1.5 0.1 0.02 49.6 port 2011	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002	2011 1.1 7.9 11.6 1.3 0.5 40.7 cort 2011	Imp 2002 6.6 30.6 - - 49.3 Imp 2002	2011 33.2 0.03 25.4 0.8 0.1 79 00rt 2011	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534	Exp 2002 - - 0.02 0.04 - 0.53 Exp 2002	2011 0.2 0.04 0.05 0.7 0.01 2.1 0ort 2011	Imp 2002 13.9 3.2 0.05 0.07 35.8 Imp 2002	2011 97.8 - 3.4 0.2 - 132.6 port 2011	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534	Exp 2002 - - 0.02 - 0.4 Exp 2002	2011 - - 0.02 0.1 - na port 2011	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534 China	Exp 2002 0.02 0.5 0.1 0.1 0.01 1.5 Exp 2002 1.3	2011 0.1 0.2 0.2 0.4 0.4 0.4 0.4 0.4 0.4 0.4	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 Imp 2002 0.8	2011 34.8 0.02 3.4 0.01 - 42.1 00rt 2011 84.7	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534 China	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002 183.9	2011 6.3 0.02 22.8 0.6 0.4 237.2 2011 76.6	Imp 2002 3.7 1.5 0.01 14.8 Imp 2002 144.5	2011 34.9 - 1.5 0.1 0.02 49.6 port 2011 396.9	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534 China	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002 56.1	2011 2011 1.1 7.9 11.6 1.3 0.5 40.7 2011 2011 47.5	Imp 2002 6.6 30.6 - 49.3 Imp 2002 120.8	2011 33.2 0.03 25.4 0.8 0.1 79 2011 233	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534 China	Exp 2002 - 0.02 0.04 - 0.53 Exp 2002 22.5	2011 0.2 0.04 0.05 0.7 0.01 2.1 2011 260.5	Imp 2002 13.9 3.2 0.05 0.07 35.8 Imp 2002 31.5	2011 97.8 - 3.4 0.2 - 132.6 port 2011 370.9	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534 China	Exp 2002 - - 0.02 - 0.4 Exp 2002 0.2	2011 - 0.02 0.1 - na port 2011 31.2	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002 2.3	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011 164.1
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534 China Malaysia	Exp 2002 0.02 0.5 0.1 0.1 0.1 1.5 Exp 2002 1.3 4.5	2011 0.1 0.2 0.2 0.4 0.4 0.4 00rt 2011 0.2 4.5	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 Imp 2002 0.8 0.08	2011 34.8 0.02 3.4 0.01 - 42.1 00rt 2011 84.7 16.1	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534 China Indonesia	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002 183.9 6.9	2011 6.3 0.02 22.8 0.6 0.4 237.2 2011 76.6 21.2	Imp 2002 3.7 1.5 0.01 - 14.8 Imp 2002 144.5 15	2011 34.9 - 1.5 0.1 0.02 49.6 port 2011 396.9 33.6	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534 China Indonesia	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002 56.1	2011 1.1 7.9 11.6 1.3 0.5 40.7 2011 47.5 73.4	Imp 2002 6.6 30.6 - - 49.3 Imp 2002 120.8	2011 33.2 0.03 25.4 0.8 0.1 79 00rt 2011 233 5.5	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534 China Indonesia	Exp 2002 0.02 0.04 0.53 Exp 2002 22.5 1.8	2011 0.2 0.04 0.05 0.7 0.01 2.1 2011 260.5 19.8	Imp 2002 13.9 3.2 0.05 0.07 35.8 Imp 2002 31.5 2.7	2011 97.8 - 3.4 0.2 - 132.6 port 2011 370.9 1.9	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534 China Indonesia	Exp 2002 - - 0.02 - 0.4 Exp 2002 0.2	2011 - 0.02 0.1 - na port 2011 31.2 0.02	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002 2.3	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011 164.1 0.8
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534 China Malaysia Singapore	Exp 2002 0.02 0.5 0.1 0.1 0.1 0.01 1.5 Exp 2002 1.3 4.5 205.8	2011 0.1 0.2 0.2 0.4 0.4 0.4 0.4 0.4 0.4 0.2 4.5 160.7	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 Imp 2002 0.8 0.08 0.08 0.3	2011 34.8 0.02 3.4 0.01 - 42.1 00rt 2011 84.7 16.1 170.7	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534 China Indonesia Singapore	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002 183.9 6.9 412.1	2011 6.3 0.02 22.8 0.6 0.4 237.2 port 2011 76.6 21.2 158.3	Imp 2002 3.7 1.5 0.01 - 14.8 Imp 2002 144.5 15 143.1	2011 34.9 - 1.5 0.1 0.02 49.6 00rt 2011 396.9 33.6 164	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534 China Indonesia Malaysia	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002 56.1	2011 1.1 7.9 11.6 1.3 0.5 40.7 port 2011 47.5 73.4 202.6	Imp 2002 6.6 30.6 - - 49.3 Imp 2002 120.8 - 281.1	2011 33.2 0.03 25.4 0.8 0.1 79 00rt 2011 233 5.5 108	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534 China Indonesia Malaysia	Exp 2002 - 0.02 0.04 - 0.53 Exp 2002 22.5 1.8 28.2	2011 0.2 0.04 0.05 0.7 0.01 2.1 2011 260.5 19.8 59.7	Imp 2002 13.9 3.2 0.05 0.07 35.8 Imp 2002 31.5 2.7 26.5	2011 97.8 - 3.4 0.2 - 132.6 port 2011 370.9 1.9 41	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534 China Indonesia Malaysia	Exp 2002 - - 0.02 - 0.4 Exp 2002 0.2 - - 0.2	2011 - 0.02 0.1 - na port 2011 31.2 0.02 2.3	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002 2.3 - 0.2	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011 164.1 0.8 2.4
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534 China Malaysia Singapore Thailand	Exp 2002 0.02 0.5 0.1 0.1 0.1 0.01 1.5 Exp 2002 1.3 4.5 205.8 1.8	2011 0.1 0.2 0.2 - 0.4 0.4 2011 0.2 4.5 160.7 1.2	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 0.03 0.8 0.08 0.08 0.3 12.9	2011 34.8 0.02 3.4 0.01 - 42.1 00rt 2011 84.7 16.1 170.7 29.3	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534 China Indonesia Singapore Thailand	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002 183.9 6.9 412.1 107.5	2011 6.3 0.02 22.8 0.6 0.4 237.2 2011 76.6 21.2 158.3 126.1	Imp 2002 3.7 1.5 0.01 - 14.8 Imp 2002 144.5 15 143.1 37.5	2011 34.9 - 1.5 0.1 0.02 49.6 00rt 2011 396.9 33.6 164 156.9	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534 China Indonesia Malaysia Thailand	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002 56.1 - 332.8 24.1	2011 1.1 7.9 11.6 1.3 0.5 40.7 2011 47.5 73.4 202.6 21.1	Imp 2002 6.6 30.6 - - 49.3 Imp 2002 120.8 - 281.1 50.9	2011 33.2 0.03 25.4 0.8 0.1 79 2011 233 5.5 108 66.3	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534 China Indonesia Malaysia Singapore	Exp 2002 0.02 0.04 0.53 Exp 2002 22.5 1.8 28.2 68.8	2011 0.2 0.04 0.05 0.7 0.01 2.1 2011 260.5 19.8 59.7 42.8	Imp 2002 13.9	2011 97.8 - 3.4 0.2 - 132.6 port 2011 370.9 1.9 41 36.6	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534 China Indonesia Malaysia Singapore	Exp 2002 - - 0.02 - 0.4 Exp 2002 0.2 - - 0.2 - - 0.2 6.4	2011 - 0.02 0.1 - na Port 2011 31.2 0.02 2.3 0.3	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002 2.3 - 0.2 0.5	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011 164.1 0.8 2.4 0.7
HS 8508 China Malaysia Singapore Thailand Vietnam World HS 8534 China Malaysia Singapore Thailand Vietnam	Exp 2002 0.02 0.5 0.1 0.1 0.1 0.1 1.5 Exp 2002 1.3 4.5 205.8 1.8 0.07	2011 0.1 0.2 0.2 - 0.4 2011 0.2 4.5 160.7 1.2 0.8	Imp 2002 5.5 0.3 0.8 0.03 - 9.8 0.03 0.8 0.08 0.08 0.08 0.3 12.9 0.02	2011 34.8 0.02 3.4 0.01 42.1 2011 84.7 16.1 170.7 29.3 0.02	HS 8508 China Indonesia Singapore Thailand Vietnam World HS 8534 China Indonesia Singapore Thailand Vietnam	Exp 2002 0.06 0.01 17.6 1.8 - 64.1 Exp 2002 183.9 6.9 412.1 107.5 0.3	2011 6.3 0.02 22.8 0.6 0.4 237.2 2011 76.6 21.2 158.3 126.1 2.4	Imp 2002 3.7 1.5 0.01 14.8 Imp 2002 144.5 15 143.1 37.5 0.04	2011 34.9 - - - - - - - - - - - - - - - - - - -	HS 8508 China Indonesia Malaysia Thailand Vietnam World HS 8534 China Indonesia Malaysia Thailand Vietnam	Exp 2002 0.5 3.9 4 0.5 37.4 Exp 2002 56.1 - 332.8 24.1 0.9	2011 1.1 7.9 11.6 1.3 0.5 40.7 2011 47.5 73.4 202.6 21.1 0.7	Imp 2002 6.6 30.6 - 49.3 149.3 120.8 2002 120.8 - 281.1 50.9 5.1	2011 33.2 0.03 25.4 0.8 0.1 79 2011 233 5.5 108 66.3 0.3	HS 8508 China Indonesia Malaysia Singapore Vietnam World HS 8534 China Indonesia Malaysia Singapore Vietnam	Exp 2002 - 0.02 0.04 - 0.53 Exp 2002 22.5 1.8 28.2 68.8 1	2011 0.2 0.04 0.05 0.7 0.01 2.1 2011 260.5 19.8 59.7 42.8 22.3	Imp 2002 13.9	2011 97.8 - 3.4 0.2 - 132.6 00rt 2011 370.9 1.9 41 36.6 11.1	HS 8508 China Indonesia Malaysia Singapore Thailand World HS 8534 China Indonesia Malaysia Singapore Thailand	Exp 2002 - - 0.02 - 0.4 Exp 2002 0.2 - 0.2 6.4 8.1	2011 - 0.02 0.1 - na 2011 31.2 0.02 2.3 0.3 11.1	Imp 2002 1.3 0.01 - 3.4 0.1 14.5 Imp 2002 2.3 - 0.2 0.5 0.1	ort 2011 57.2 - 0.4 0.5 0.01 na ort 2011 164.1 0.8 2.4 0.7 22.3

Source: UNcomtrade, 2013

Note: (-) either not reported separately or very small value (*) 2011-data for Vietnam is mirror data reported by partners

(na) figures are not available



				MAT INCL																				
	IND	ONESI/	۱.			MA	LAYSIA	۱.			SIN	GAPOR	E			TH	AILANI)			VIE	TNAM (*)	
110 7616	Exp	ort	Imp	ort	118 7616	Exp	oort	Imp	oort	110 7616	Exp	port	Imp	oort	110 2616	Exp	oort	Imp	port	118 7616	Exp	oort	Imp	ort
HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011	HS /010	2002	2011	2002	2011
China	3.2%	0.3%	12.5%	27.5%	China	6.9%	14.3%	12.3%	32.6%	China	3.1%	8.1%	2.7%	19.0%	China	0.5%	7.1%	6.1%	23.6%	China	-	na	10.3%	na
Malaysia	1.6%	8.5%	1.4%	4.1%	Indonesia	1.1%	1.3%	1.5%	0.7%	Indonesia	-	21.8%	-	2.3%	Indonesia	4.0%	1.6%	0.9%	0.1%	Indonesia	-	na	3.4%	na
Singapore	32.3%	12.8%	19.4%	9.9%	Singapore	63.3%	33.9%	12.3%	5.8%	Malaysia	47.5%	44.4%	44.4%	41.5%	Malaysia	3.2%	13.3%	10.8%	13.9%	Malaysia	27.9%	na	0.2%	na
Thailand	6.5%	4.3%	12.5%	3.9%	Thailand	0.9%	16.4%	6.8%	2.8%	Thailand	7.9%	3.8%	0.4%	1.5%	Singapore	8.0%	3.3%	18.8%	4.3%	Singapore	7.0%	na	1.7%	na
Vietnam	1.6%	7.4%	-	7.6%	Vietnam	0.2%	1.1%	0.1%	0.1%	Vietnam	0.8%	2.3%	0.3%	0.0%	Vietnam	0.8%	1.7%	0.0%	1.8%	Thailand	2.3%	na	0.5%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
110 0104	Exp	ort	Imp	ort	110 0104	Exp	oort	Imp	oort	110 0104	Exp	port	Imp	oort	110 0104	Exp	oort	Imp	port	110 0104	Exp	oort	Imp	ort
HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011	HS 8104	2002	2011	2002	2011
China	-	-	62.5%	83.7%	China	-	5.0%	25.0%	90.6%	China	-	0.5%	4.3%	11.0%	China	-	-	60.0%	91.2%	China	-	na	50.0%	na
Malaysia	-	-	-	-	Indonesia	-	-	-	0.2%	Indonesia	-	53.7%	-	-	Indonesia	-	10.0%	-	-	Indonesia	-	na	-	na
Singapore	-	-	7.5%	6.5%	Singapore	66.7%	10.9%	12.5%	-	Malaysia	6.5%	0.5%	0.4%	14.9%	Malaysia	-	-	-	-	Malaysia	-	na	-	na
Thailand	-	-	-	0.2%	Thailand		2.5%	-	-	Thailand	19.4%	7.3%	0.4%	0.2%	Singapore	-	-	-	-	Singapore	-	na	-	na
Vietnam	-	-	-	-	Vietnam		-	-	-	Vietnam	-	1.7%	-	-	Vietnam	-	50.0%	-	-	Thailand		na	10.0%	na
World	-	-	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	-	100%	100%	100%	World	100%	na	100%	na
TE 9413	Exp	ort	Imp	ort	TE 9412	Exp	oort	Imp	oort	TE 9413	Exp	port	Imp	oort	TE 9412	Exp	oort	Imp	port	TE 9413	Exp	oort	Imp	ort
H5 8412	2002	2011	2002	2011	115 6412	2002	2011	2002	2011	15 6412	2002	2011	2002	2011	15 8412	2002	2011	2002	2011	115 6412	2002	2011	2002	2011
China	-	5.4%	2.0%	6.2%	China	29.1%	2.5%	1.4%	12.6%	China	2.6%	7.9%	2.3%	8.8%	China	28.6%	36.2%	2.0%	11.1%	China	-	na	1.5%	na
Malaysia	5.6%	0.6%	1.5%	1.7%	Indonesia	2.5%	13.2%	0.1%	0.1%	Indonesia	-	29.3%	-	2.5%	Indonesia	0.3%	2.8%	-	0.0%	Indonesia	-	na	-	na
Singapore	37.0%	15.5%	8.0%	26.3%	Singapore	29.1%	10.0%	8.2%	7.9%	Malaysia	12.9%	11.8%	3.0%	3.0%	Malaysia	2.9%	2.8%	0.2%	0.4%	Malaysia	-	na	-	na
Thailand	0.2%	1.9%	0.0%	1.6%	Thailand	3.8%	3.2%	0.1%	0.9%	Thailand	8.4%	4.4%	0.6%	0.2%	Singapore	2.9%	2.8%	3.6%	0.6%	Singapore	-	na	14.7%	na
Vietnam	0.2%	7.3%	-	0.2%	Vietnam	0.5%	5.7%	-	0.2%	Vietnam	1.6%	3.8%	0.1%	0.5%	Vietnam	0.3%	15.3%	-	0.1%	Thailand	-	na	-	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
HS 8430	Exp	ort	Imp	ort	HS 8430	Exp	oort	Imp	oort	HS 8430	Exp	port	Imp	oort	HS 8430	Exp	oort	Imp	port	HS 8430	Exp	oort	Imp	ort
113 0450	2002	2011	2002	2011	115 0450	2002	2011	2002	2011	115 0450	2002	2011	2002	2011	115 0450	2002	2011	2002	2011	115 0450	2002	2011	2002	2011
China	0.7%	0.1%	15.7%	23.3%	China	3.5%	4.0%	-	13.7%	China	10.9%	5.5%	0.7%	16.8%	China	0.1%	0.0%	0.0%	3.3%	China	-	na	11.9%	na
Malaysia	33.9%	0.4%	7.9%	0.5%	Indonesia	10.5%	28.9%	-	-	Indonesia	-	29.6%	-	2.9%	Indonesia	1.8%	0.3%	-	0.0%	Indonesia	-	na	-	na
Singapore	44.1%	27.3%	17.9%	4.2%	Singapore	33.3%	14.4%	2.1%	4.7%	Malaysia	30.9%	24.0%	1.1%	1.1%	Malaysia	11.3%	4.5%	0.4%	0.1%	Malaysia	-	na	0.1%	na
Thailand	-	15.9%	0.4%	0.0%	Thailand	1.8%	14.1%	-	-	Thailand	9.5%	1.2%	2.5%	0.0%	Singapore	77.8%	14.9%	5.1%	0.2%	Singapore	-	na	10.2%	na
Vietnam	-	0.03%	-	0.0%	Vietnam	0.2%	4.0%	-	0.3%	Vietnam	6.1%	3.2%	1.1%	0.1%	Vietnam	0.2%	0.1%	-	-	Thailand	-	na	1.7%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na

Appendix 13 – ASEAN-China bilateral trade reported by ASEAN members, in % – Selected HS product groups at the 4-digit level



US 9431	Exp	oort	Imp	oort	HS 9421	Exp	oort	Imp	oort	US 9421	Exp	oort	Imp	port	US 9421	Exp	oort	Imp	port	HS 9421	Exp	oort	Imp	ort
13 0451	2002	2011	2002	2011	13 0431	2002	2011	2002	2011	13 0451	2002	2011	2002	2011	113 0451	2002	2011	2002	2011	13 0431	2002	2011	2002	2011
China	5.4%	1.9%	1.3%	12.2%	China	6.7%	7.5%	7.8%	14.6%	China	4.4%	5.0%	1.5%	5.4%	China	0.1%	0.7%	4.1%	26.2%	China		na	1.7%	na
Malaysia	1.0%	3.3%	0.3%	1.2%	Indonesia	3.7%	3.8%	0.8%	1.5%	Indonesia	-	21.9%	-	3.1%	Indonesia	13.1%	4.1%	10.9%	13.1%	Indonesia	-	na	1.1%	na
Singapore	37.4%	24.8%	14.8%	12.9%	Singapore	48.9%	30.2%	4.0%	11.5%	Malaysia	24.6%	15.0%	2.4%	5.8%	Malaysia	4.8%	5.3%	1.0%	1.7%	Malaysia	0.4%	na	0.3%	na
Thailand	15.1%	11.6%	0.9%	0.4%	Thailand	2.3%	3.3%	1.5%	1.9%	Thailand	6.3%	4.8%	0.7%	1.4%	Singapore	7.3%	9.1%	0.9%	2.2%	Singapore	89.9%	na	52.6%	na
Vietnam	0.1%	0.9%	0.0%	0.4%	Vietnam	2.1%	5.2%	0.1%	0.6%	Vietnam	6.9%	4.8%	0.4%	0.5%	Vietnam	0.3%	2.8%	-	0.2%	Thailand	0.5%	na	0.6%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
TIE BACA	Exp	oort	Imp	oort	110 9464	Exp	oort	Imp	oort	110 9464	Exp	oort	Imp	port	TTC 9464	Exp	oort	Imp	port	TTC 9464	Exp	oort	Imp	ort
115 0404	2002	2011	2002	2011	13 0404	2002	2011	2002	2011	115 0404	2002	2011	2002	2011	115 0404	2002	2011	2002	2011	13 0404	2002	2011	2002	2011
China	-	-	2.8%	38.0%	China	0.9%	63.3%	6.3%	26.7%	China	49.5%	6.2%	4.7%	6.2%	China	12.1%	4.7%	14.1%	10.3%	China	-	na	20.9%	na
Malaysia	-	-	3.5%	-	Indonesia	2.7%	0.6%	-	-	Indonesia	-	6.7%	-	-	Indonesia	3.2%	-	-	-	Indonesia	•	na	-	na
Singapore	6.3%	-	1.9%	0.5%	Singapore	14.5%	29.0%	2.3%	1.5%	Malaysia	33.3%	21.4%	1.3%	0.9%	Malaysia	2.6%	0.4%	2.2%	-	Malaysia	-	na	0.1%	na
Thailand	4.4%	-	0.1%	-	Thailand	18.2%	0.3%	0.7%	0.4%	Thailand	2.9%	2.6%	0.0%	0.0%	Singapore	2.1%	1.6%	0.9%	0.3%	Singapore	-	na	2.9%	na
Vietnam	-	-	0.2%	-	Vietnam	1.8%	0.5%	-	0.5%	Vietnam	0.4%	0.9%	-	0.3%	Vietnam	3.2%	4.7%	-	0.0%	Thailand	-	na	0.3%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
US 8466	Exp	oort	Imp	port	115 8466	Exp	oort	Imp	oort	115 8466	Exp	oort	Imp	port	115 8466	Exp	oort	Imp	port	HS 8466	Exp	oort	Imp	ort
115 0400	2002	2011	2002	2011	13 0400	2002	2011	2002	2011	13 8400	2002	2011	2002	2011	113 8400	2002	2011	2002	2011	13 0400	2002	2011	2002	2011
China	2.9%	0.7%	0.5%	8.4%	China	10.8%	14.1%	2.3%	8.2%	China	5.6%	16.9%	2.4%	17.3%	China	18.7%	3.6%	1.8%	4.8%	China	-	na	12.2%	na
Malaysia	17.9%	1.8%	0.2%	1.4%	Indonesia	1.0%	0.9%	0.4%	0.2%	Indonesia	-	14.8%	-	4.3%	Indonesia	4.5%	1.0%	0.1%	0.0%	Indonesia	-	na	0.2%	na
Singapore	22.1%	38.6%	2.3%	5.0%	Singapore	24.2%	16.8%	7.2%	18.3%	Malaysia	23.5%	10.3%	2.5%	5.3%	Malaysia	9.7%	36.4%	0.7%	2.1%	Malaysia	-	na	-	na
Thailand	-	0.2%	0.2%	1.3%	Thailand	9.7%	6.3%	1.8%	3.1%	Thailand	10.0%	3.7%	0.8%	0.5%	Singapore	8.4%	3.8%	1.6%	1.4%	Singapore	25.0%	na	7.3%	na
Vietnam	5.0%	2.3%	-	0.1%	Vietnam	0.9%	5.3%	-	0.2%	Vietnam	1.3%	1.8%	0.0%	0.1%	Vietnam	8.4%	2.1%	0.0%	0.0%	Thailand	-	na	0.2%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
HS 8467	Exp	oort	Imp	port	HS 8467	Exp	oort	Imp	oort	HS 8467	Exp	oort	Imp	port	HS 8467	Exp	oort	Imp	port	HS 8467	Exp	oort	Imp	ort
115 0407	2002	2011	2002	2011	115 0407	2002	2011	2002	2011	113 0407	2002	2011	2002	2011	113 0407	2002	2011	2002	2011	115 0407	2002	2011	2002	2011
China	4.8%	1.3%	3.9%	48.7%	China	1.7%	3.0%	9.9%	39.9%	China	5.2%	2.5%	6.3%	14.8%	China	-	6.6%	8.0%	56.8%	China	-	na	21.1%	na
Malaysia	9.5%	12.5%	0.8%	1.2%	Indonesia	0.7%	7.8%	0.5%	0.2%	Indonesia	-	22.6%	-	0.4%	Indonesia	1.1%	4.4%	-	0.0%	Indonesia	-	na	0.3%	na
Singapore	19.0%	50.0%	9.4%	8.4%	Singapore	59.4%	21.3%	6.3%	5.7%	Malaysia	47.5%	16.1%	7.9%	1.2%	Malaysia	1.1%	1.6%	0.2%	0.8%	Malaysia	-	na	0.5%	na
Thailand	-	3.8%	-	0.5%	Thailand	1.2%	3.9%	0.3%	0.4%	Thailand	2.6%	7.5%	0.4%	0.1%	Singapore	11.1%	5.0%	0.2%	2.7%	Singapore	33.3%	na	3.9%	na
Vietnam	-	-	-	0.2%	Vietnam	0.0%	0.6%	-	0.1%	Vietnam	9.0%	7.4%	0.0%	0.0%	Vietnam	44.4%	0.6%	-	0.0%	Thailand	33.3%	na	0.5%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na
HS 8479	Exp	oort	Imp	oort	HS 8479	Exp	oort	Imp	oort	HS 8479	Exp	oort	Imp	port	HS 8470	Exp	oort	Imp	port	HS 8479	Exp	oort	Imp	ort
115 0475	2002	2011	2002	2011	13 04/3	2002	2011	2002	2011	113 0473	2002	2011	2002	2011	115 0475	2002	2011	2002	2011	113 04/3	2002	2011	2002	2011
China	3.9%	2.9%	5.7%	11.8%	China	11.2%	7.9%	1.5%	12.1%	China	10.8%	17.2%	1.5%	5.8%	China	9.7%	10.9%	1.3%	13.3%	China	0.3%	na	9.3%	na
Malaysia	4.7%	3.6%	25.3%	20.2%	Indonesia	13.3%	18.8%	0.1%	0.1%	Indonesia	-	7.0%	-	0.4%	Indonesia	9.3%	5.0%	0.1%	0.1%	Indonesia	-	na	-	na
Singapore	28.1%	35.2%	5.9%	9.4%	Singapore	20.2%	23.0%	6.9%	8.7%	Malaysia	23.0%	7.3%	5.0%	5.4%	Malaysia	16.4%	12.5%	3.0%	6.1%	Malaysia	0.6%	na	0.8%	na
Thailand	1.6%	2.9%	1.5%	1.1%	Thailand	9.9%	9.2%	0.5%	2.0%	Thailand	7.3%	3.2%	1.2%	0.5%	Singapore	22.7%	14.4%	5.2%	5.8%	Singapore	2.5%	na	12.3%	na
Vietnam	1.6%	5.8%	0.0%	0.1%	Vietnam	0.4%	1.0%	0.0%	0.1%	Vietnam	1.1%	0.7%	0.0%	0.1%	Vietnam	3.2%	5.2%	0.0%	0.0%	Thailand	1.1%	na	3.6%	na
World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	100%	100%	100%	World	100%	na	100%	na



Insolve 2002 2011 2002 2011 2002 2011 13 0402 2002 2011 13 0402 2002 2011 13 0402 2002 2011 13 0402 2002 2011 10 0402 2001 11 0402 2011 2002 2011 2002 2011 2002 2011 2002 2011 10 0402 2001 11 0402 2001 11 0402 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 2002 2011 11 0402 2011 2002 2011 2002 2011 11 0402 China 0.7% 4.5% 7.3% 16.4% 0.3% 5.1% 29.5% China 4.6% 17.2% 4.7% 7.9% China 8.2% 13.1% 5.0% 12.2% China Malarria	2002 2011 2.5% pp	2002 2011
China 0.7% 4.5% 7.3% 16.4% China 0.3% 6.3% 5.1% 29.5% China 4.6% 17.2% 4.7% 7.9% China 8.2% 13.1% 5.0% 12.2% China	2.5% pa	
Velaurie 0.19/ 0.79/ 0.49/ 0.49/ Tedenseie 0.09/ 1.09/ 0.99/ Tedenseie 12.19/ C.CO/ Tedenseie 0.69/ 2.09/ Tedenseie	2.570 114	15.0% na
Malaysia 0.1% 0.7% 0.4% 0.8% indonesia 0.9% 0.8% 1.0% 0.8% indonesia - 15.1% - 6.6% indonesia 0.5% 8.8% 7.0% 2.2% indonesia	- na	- na
Singapore 86.2% 59.6% 10.9% 9.8% Singapore 34.1% 34.2% 8.1% 6.2% Malaysia 11.7% 8.3% 5.0% 6.4% Malaysia 1.5% 3.2% 3.4% 4.2% Malaysia	- na	0.0% na
Thailand 4.2% 3.8% 0.5% 6.4% Thailand 9.1% 7.5% 7.4% 4.2% Thailand 12.4% 7.5% 10.6% 3.9% Singapore 33.7% 16.4% 6.5% 2.5% Singapore	- na	21.9% na
Vietnam - 0.5% - 0.0% Vietnam 0.7% 0.9% - 0.1% Vietnam 2.2% 4.5% 0.0% 0.1% Vietnam 1.5% 5.8% 0.0% 0.1% Thailand	- na	0.1% na
World 100% 100% 100% 100% World 100% 100% 100% 100% 100% World 100% 100% 100% 100% 100% World 100% 100% World	100% na	100% na
HS 8501 Export Import HS 8501	Export	Import
113 0301 2002 2011 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 113 0301 2002 2011 2002 2011 2002 2011 2002 2011 113 0301	2002 2011	2002 2011
China 0.5% 9.4% 25.1% 34.5% China 4.3% 12.2% 26.2% 37.7% China 4.3% 7.2% 16.0% 20.1% China 9.7% 24.5% 28.7% 40.1% China	4.7% na	9.3% na
Malaysia 1.9% 4.7% 2.7% 2.5% Indonesia 11.1% 7.5% 4.4% 2.1% Indonesia - 14.1% - 18.3% Indonesia 0.3% 0.6% 2.6% 7.6% Indonesia	2.3% na	- na
Singapore 70.5% 30.4% 7.8% 8.9% Singapore 32.2% 11.1% 15.6% 7.8% Malaysia 38.0% 24.8% 16.7% 4.4% Malaysia 6.2% 23.5% 13.8% 2.9% Malaysia	0.2% na	1.9% na
Thailand 1.6% 21.9% 2.2% 1.8% Thailand 11.5% 20.0% 15.6% 13.8% Thailand 6.3% 7.2% 47.0% 6.0% Singapore 42.4% 1.6% 1.9% 0.8% Singapore	2.9% na	16.2% na
Vietnam 0.0% 0.0% 0.0% 2.1% Vietnam 0.1% 1.0% 0.7% 2.7% Vietnam 1.0% 5.5% 0.4% 3.0% Vietnam 0.1% 1.0% 3.9% 6.3% Thailand	7.5% na	1.9% na
World 100% 100% 100% 100% World 100% 100% 100% 100% World 100% World 100% 100% 100% 100% World 100% 100% 100% World	100% na	100% na
HS 8508 Export Import HS 8508	Export	Import
<u>2002</u> 2011 2002 2001 2002 2001 2002 2001 2000 2000 2000 2000 2000 2000 2000	2002 2011	2002 2011
China 1.3% 25.6% 56.1% 82.7% China 0.1% 2.7% 25.0% 70.4% China 1.4% 2.7% 13.4% 42.0% China - 9.0% 38.8% 73.8% China	- na	9.0% na
Malaysia 35.3% - 3.4% 0.0% Indonesia 0.0% 0.0% Indonesia - 19.4% - 0.0% Indonesia - 1.9% Indonesia	- na	0.1% na
Singapore 8.0% 51.3% 8.0% 8.1% Singapore 27.5% 9.6% 10.1% 3.0% Malaysia 10.4% 28.5% 62.1% 32.2% Malaysia 3.8% 2.4% 8.9% 2.6% Malaysia	- na	- na
Thailand 6.7% - 0.3% 0.0% Thailand 2.8% 0.3% 0.1% 0.2% Thailand 10.7% 3.2% - 1.1% Singapore 7.5% 32.9% 0.1% 0.2% Singapore	5.1% na	23.4% na
Vietnam 0.7% Vietnam - 0.2% Vietnam 1.3% 1.1% - 0.1% Vietnam - 0.4% 0.2% - Thailand	- na	0.9% na
World 100% 100% 100% 100% World 100% 100% 100% 100% World 100% 100% 100% 100% 100% 100% 100% 100	100% na	100% na
HS 8534 Export Import	Export	Import
2002 2011 2002 2	2002 2011	2002 2011
China 0.6% 0.1% 3.5% 18.2% China 12.9% 8.5% 11.7% 19.6% China 7.4% 8.2% 13.5% 31.5% China 3.8% 27.0% 8.6% 36.6% China	0.3% na	14.4% na
Malaysia 1.9% 1.9% 0.4% 3.5% Indonesia 0.5% 2.3% 1.2% 1.7% Indonesia - 12.7% - 0.7% Indonesia 0.3% 2.1% 0.7% 0.2% Indonesia	- na	- na
Singapore 87.9% 68.9% 1.3% 30.0% Singapore 28.9% 17.5% 11.5% 8.1% Malaysia 45.7% 34.9% 31.3% 14.6% Malaysia 4.7% 6.2% 7.3% 4.0% Malaysia	0.3% na	1.3% na
Inailand 0.8% 0.5% 50.0% 0.5% Inailand 7.5% 14.0% 5.0% 7.7% Inailand 3.2% 5.0% 5.7% 9.0% Singapore 11.5% 4.4% 4.9% 3.6% Singapore	10.1% na	2.9% na
Vietnam 0.0% 0.3% 0.1% 0.0% Vietnam 0.0% 0.3% 0.0% 0.1% Vietnam 0.1% 0.1% 0.0% Vietnam 0.2% 2.3% 0.0% 1.1% Thailand	12.8% na	0.0% na

Source: Authors' calculations based on UNcomtrade, 2013

Note: (-) either not reported separately or very small value (*) 2011-data for Vietnam is mirror data reported by partners

(na) figures are not available

