



## A panel data analysis of trade creation and trade diversion effects: The case of ASEAN–China Free Trade Area



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### ARTICLE INFO

#### Article history:

Received 8 February 2013

Received in revised form 1 April 2014

Accepted 5 April 2014

Available online 13 April 2014

#### JEL classifications:

F10

F14

#### Keywords:

Gravity model

Panel data

Trade creation and trade diversion effects

ACFTA

### ABSTRACT

This study uses a theoretically justified gravity model of trade to examine the impact of the ASEAN–China Free Trade Agreement (ACFTA) on exports, focusing on trade creation and diversion effects. The model is tested on a sample of 31 countries over the period dating from 1995 to 2010 using aggregated and disaggregated export data for agricultural and manufactured goods and within manufactures for chemical products, as well as for machinery and transport equipment. In order to obtain unbiased estimates, multilateral resistance terms are included as regressors and the endogeneity bias of the FTA variables is addressed by controlling for the unobserved specific heterogeneity that is specific to each trade flow. A multinomial PML is also applied to solve the zero trade issue and the presence of heteroskedasticity. The results indicate that ACFTA leads to substantial and significant trade creation. Using disaggregated data, the significant and positive relationship between exports and ACFTA is confirmed in the case of both agricultural and manufactured goods, as well as in the case of the most important manufacturing industries, namely, chemical products and machinery and transport equipment.

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### 1. Introduction

Since the early 1990s, significant progress has been made in regional integration in the most important economic areas in the world. According to a report by the WTO in 2011, more than 500 regional trade agreements are currently in force. As bilateral and regional trade liberalisation is becoming increasingly prominent, it is important to ascertain what implications this may have for world trade. In the last two decades, Asian economies have been involved in market integration of all sorts and have gained fame as the “world factory” as a result. Since the economic crisis in 1997, Asia has been moving towards closer region-wide economic integration, including the proliferation of bilateral free trade agreements and even monetary institutional cooperation with neighbouring countries. Accompanied by enhanced economic interaction between Northeast and Southeast Asian countries, economic cooperation and integration between the economies in the region has become more efficient. ASEAN and China are playing a key role in the evolving dynamics of East Asian regionalism through their various bilateral free trade agreements. Since 2002, China and ASEAN have signed a series of free trade agreements as part of an economic cooperation agreement<sup>1</sup> (hereafter referred to as ACFTA<sup>2</sup>), including the agreement on a dispute settlement mechanism, the agreement on trade in goods and the

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<sup>1</sup> The full name of the agreement is “Framework Agreement on Comprehensive Economic Cooperation between ASEAN and China”.

<sup>2</sup> With regard to the Free Trade Area, China calls it the China–ASEAN Free Trade Area (CAFTA); ASEAN calls it the ASEAN–China Free Trade Area (ACFTA). In order to avoid confusion with other agreements such as the Central American Free Trade Agreement (also CAFTA), the acronym “ACFTA” will be used in this paper.

agreement on trade in services, as well as the agreement on investment.<sup>3</sup> The formation of ACFTA helps ASEAN members to access the prosperous Chinese market and fosters economic growth in ASEAN countries. As China's first attempt to take part in a regional economic cooperation agreement, ACFTA provides China with opportunities to obtain more raw materials to be used in production and helps Chinese enterprises to extend their foreign market in Southeast Asia. Generally, ACFTA can be seen as a fundamental step forwards that strengthens trade activities and initiates economic cooperation among ASEAN member countries and China.

The objective of this paper is to evaluate the trade creation and diversion effects of the free trade agreements between ASEAN and China. Any assessment of the trade effects stemming from the formation of free trade agreements is always accompanied by the concepts of trade creation and trade diversion, which were first introduced by Viner (1950). Trade creation occurs when new trade arises between member countries due to the reduction in internal trade barriers. Trade diversion emerges when imports from a low-cost extra-bloc country are replaced by imports from a higher-cost member country because the intra-bloc country has preferential access to the market and does not have to pay tariffs. Trade creation leads to a shift in the origin of a product from an intra-bloc producer, whose resource costs are higher to another intra-bloc producer whose resource costs are lower. This results in an improvement in resource allocation and presumably has positive welfare effects. Conversely, trade diversion refers to a welfare loss caused by a shift in the origin of a product from an extra-bloc producer whose resource costs are lower to an intra-bloc producer whose resource costs are higher.

Following the methodology proposed by the recent literature on this topic, we will first specify a gravity model of trade that includes multilateral resistance terms (MRTs), as proposed by Anderson and van Wincoop (2003), and we will obtain unbiased estimates by controlling not only for *country-and-time* effects, but also for *country-pair* fixed effects, as proposed by Baier and Bergstrand (2007). Next, as suggested by Head and Mayer (forthcoming), a multinomial PML is also applied to solve the zero trade issue and the presence of heteroskedasticity. The main contribution of the paper is twofold. First, this is to the best of our knowledge the first attempt to obtain ex-post unbiased estimates of trade creation and trade diversion effects in ACFTA taking into account the endogeneity bias of an FTA. Second, we will estimate the model not only using aggregated trade data, but also disaggregated data for four different sectors: agricultural goods, manufactured goods, chemical products and machinery products. The reason for doing so is to ascertain whether or not the trade effects in this region differ by commodity.

The rest of the paper is organised as follows. Section 2 describes the ASEAN–China Free Trade Agreement and addresses the most relevant related literature. Section 3 explains the theoretical foundations of the gravity model of trade. Section 4 presents the model specification and Section 5 describes the data and reports the empirical results. Finally, Section 6 concludes.

## 2. ASEAN–China Free Trade Agreement

### 2.1. ACFTA background information

In August 1967, Indonesia, Thailand, Singapore, the Philippines and Malaysia signed the “Bangkok Declaration”. The main aim of this declaration was to announce the establishment of the Association of Southeast Asian Nations (ASEAN). The regional group has since been extended to ten country members and has made great progress in economic integration.<sup>4</sup> Indeed, the ASEAN Economic Community (AEC) is due to come into force by 2015. The ASEAN Free Trade Area (AFTA), which entered into force in January 1992, is a common external preferential tariff scheme to promote the free flow of goods within ASEAN and the foundation of the AEC. As a quick-growing economic organisation, ASEAN's total aggregate nominal GDP amounted to USD \$ 1.8 trillion in 2010, ranking it the 9th largest economic bloc in the world and the 3rd largest in Asia.<sup>5</sup>

China has become one of the fastest growing economies in the world since it began the process of economic reform and liberalisation in the late 1970s. After recording an average annual growth rate of over 9% for the last two decades, China's nominal GDP reached 7.3 trillion US Dollars in 2011. In the same year, China's export value grew to about 3 trillion US Dollars and it ranked first in terms of exports, overtaking Germany in the global community.<sup>6</sup> During this period of time, China also started to become actively involved in regional economic cooperation processes. Before the 1990s, China only had limited official bilateral relations with certain individual ASEAN members. This situation has been changing gradually since 1991 and trade between China and ASEAN has grown substantially since the mid-1990s. In 2002, China and ASEAN started negotiating a number of free trade agreements. In 2004, the so-called Early Harvest Program (EHP) was launched,<sup>7</sup> which mainly focused on reducing bilateral tariffs levied on agricultural goods, including live animals, meat and edible meat, fish, dairy products, vegetables and fruits. The agreement on goods was signed in November 2004 and entered into force in January 2005. According to the Asian Development Bank (ADB) 2010 report, bilateral trade between China and ASEAN increased more than tenfold between 1995 and 2008 from about USD \$ 20 billion to USD \$ 223 billion. China's trade growth rate has increased rapidly since 2001, when the country joined the WTO and two initial meetings were held to discuss the creation of the ASEAN–China Free Trade Area. More specifically, the

<sup>3</sup> The agreement on trade in goods and the dispute settlement mechanism of the framework agreement on comprehensive economic cooperation between ASEAN and China was signed in 2004. The agreement on trade in services between ASEAN and China was signed in 2007. Finally, the agreement on investment between ASEAN and China was signed in 2009.

<sup>4</sup> Member countries today include Vietnam, Laos, Cambodia, Myanmar, Thailand, Malaysia, Singapore, Indonesia, the Philippines and Brunei.

<sup>5</sup> WTO (2012b).

<sup>6</sup> WTO (2012b).

<sup>7</sup> <http://www.worldtradelaw.net/fta/agreements/aseanchinafta.pdf>: “For trade in goods, the negotiations on the agreement for tariff reduction or elimination as set out in Article 3 of this Agreement shall commence in early 2003 and be concluded by 30 June 2004”.

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