Competition among China and ASEAN-5 in the US Market:

A New Extension to Shift-Share Analysis

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Abstract

The United States has a robust trade and investment relationship with China and the Association of Southeast Asian Nations (ASEAN). ASEAN is collectively the fourth-largest trading partner, and China is one of the largest trade partners of the United States, the largest export destination for China. Thus, China and ASEAN countries are competing in the US market intensively. The purpose of this paper is to calculate the net gains or losses for the ASEAN-5 Members and China during 1993 and 2007 in the US market. There are two main contributions of this paper: one is to dynamically estimate the net shifts of the economies as compared to the traditional comparative static approach; the other is to extend the shift-share analysis to attribute the net gains or losses to competing exporters. This study adopts the widely used shift-share analysis technique to exam the net gains or losses for the ASEAN-5 and China during 1993-2007 in the Unites Sates market. The paper provides a new extension to the shift-share analysis to attribute the net shift to competing economies with a dynamic approach. The paper applies the methodology to the competition among China and ASEAN-5 in the US import market with the data drawn from World Integrated Trade Solution (WITS), a data consultation and extraction software developed by the World Bank. The discussion focuses on three periods: 1993-1997, 1998-2002 and 2003-2007. In general, China performs the best among the competing economies. Among the ASEAN-5 Indonesia, Malaysia and Thailand perform better than the other two members. During the first period, all economies have positive export growth as the actual export growth shows. However, in terms of net shift, only China and the Philippines are the winners with positive value of net shifts. During the second period, China stands out while the ASEAN economies show negative net shifts values. Similar is the case for the third period. In terms of the industries, China focuses on different industries during the thee periods, and the ASEAN economies depend heavily on a few industries. China's gains in these industries are much bigger than the ASEAN economies' gains in value. The ASEAN economies gain in small numbers of industries with small values. When attributed the gains or losses to competing economies, China only loses to the Philippines during 1993-1997, and gains from all competing economies during all periods. Though net losers, the ASEAN-5 also gain from other competing economies. For example, Indonesia gains from Singapore and Thailand during 1993-1997, from the Philippines and Singapore during 1998-2002, from Malaysia, the Philippines and Singapore during 2003-2007. The trade war between the United States and China provides opportunity for the ASEAN countries in the Unites Sates market, however, there are negative impacts on the ASEAN countries as well. The ASEAN countries are more vulnerable.

Cite as: He, Shuquan (2019). Competition among China and ASEAN-5 in the US Market: A New Extension to Shift-Share Analysis. *SocioEconomic Challenges*, *3*(4), 129-138. https://doi.org/10.21272/sec.3(4).129-138.2019.

1. Introduction

China and the Association of South East Asian Nations (ASEAN) are important economies in the world, especially in Asia. There are some studies on the competition among China and the ASEAN in their common export destinations. Herschede (1991) studies the competition among ASEAN, China and the East Asian new industrial economies in the Japan market for the period of 1982-1987. He concludes that China enjoys a significant competitive advantage relative to the reference economies, and that ASEAN exports suffered the

most from the emergence of China into the Japanese market. Voon (1998) studies the export competitiveness of China and ASEAN in the US market during 1980-1994. The study indicates that the competition among China and the ASEAN economies could enable them to compete with their competitors. He (2012) conducts a research on the competition among ASEAN members in the East Asia market. He finds that although in terms of market share, Indonesia and Malaysia take the lead in the East Asia, the Philippines, Thailand and Malaysia are gainers during 1998-2007 in the East Asian market.

The United States has a robust trade and investment relationship with the ten countries that comprise the Association of Southeast Asian Nations (ASEAN). ASEAN is collectively the fourth-largest trading partner and together represent a market with a GDP of more than $2.9 trillion and a population of 647 million people (USTR, 2019). And the United States is the second largest external export destination for the Association of South East Asian Nations (ASEAN), and the first export destination for China. The competition among China and ASEAN members, especially the ASEAN-5 (Indonesia, Malaysia, the Philippines, Singapore and Thailand), are intensive in the US market. The total value of US-ASEAN bilateral trade has increased 28%, from $177 billion to $227 billion in a decade. ASEAN's surplus in goods with the United States totaled $91 billion, while the US surplus in services with ASEAN totaled $10 billion (US-ASEAN Business Council, 2019).

As ASEAN become more and more international presented, some study the international competitiveness of ASEAN countries. Nababan (2019) investigates the development of global competitiveness index (GCI) of ASEAN-7 countries as an illustration of economic performance and potentiality and the factors or pillars are drivers for the improvement of GCI ASEAN-7 countries. Loo (2018) finds promising business opportunities in ASEAN. Since 2006, the United States has worked with ASEAN under the auspices of the ASEAN-U.S. Trade and Investment Framework Arrangement (TIFA) to further enhance trade and investment ties between the United States and ASEAN.

However, I'd like to see what the situation before this period was. In this paper, I adopt the widely used shift-share analysis technique to exam the net gains or losses for the ASEAN-5 and China during 1993-2007. The main contribution of this paper is to dynamically estimate the net shifts of the economies as compared to the traditional comparative static approach, and to attribute the net gains or losses to competing exporters. The rest of this paper is arranged as follow: section 2 is devoted to the description of the shift-share analysis adopted in the paper, focusing on the new extension. Section 3 presents the estimation results and relative analysis. And the last section concludes the paper.

2. Methodology

Shift-Share Analysis is widely used in regional economic analysis. It intends to express the factors causing differences of growth among regions. It was mostly used in employment growth in an economy in early days. Later it is applied in analysis on other economic variables such as industrial structure, labor productivity, etc. And it is recently employed to assess export competitiveness (Wilson, 2000; Wilson, Ting, Tu and Robinson, 2005), analysis on export competition among members of a reference group economies (Herschede, 1991). And Herath (2011) employs a dynamic shift share analysis on the economic growth in West Virginia., while Wu and Jiang (2019) research the forestry industry structure and competitiveness with the dynamic Shift-Share analysis.

1) The basic model

In its simplest form, the shift-share analysis decomposes the regional growth into three principal components: the national growth effect, the industry mix effect and the competitive effect. However, the competitive effect doesn't reflect exactly what it purports to measure (Esteban-Marquillas, 1972; Arcelus 1984). Esteban-Marquillas (1972) extends the identity into four components: share effect, industry mix effect, competitive effect and interactive effect. Arcelus (1984) provides more comprehensive decomposition to Esteban-Marquillas' extension. Hynes and Machunda (1987) discuss these extensions. Barff and Knight (1988), Hayward and Erickson (1995) extend the shift-share analysis technique for different purposes. For example, the technique has been used heavily in analyzing regional and international growth impacts. Barff and Knight III (1988) applied dynamic shift-share analysis to measure the employment growth from 1939 to 1984 in New England. Markusen, Noponen, and Driessen (1991) used dynamic shift-share analysis in tracking the sensitivity of regional growth to international flows.

The widely used forms is Esteban-marqillas' version. In this version, the decomposition of export growth is expressed as

$$\Delta x_{ij} = x_{ij}^0 w_{ir}^0 g_{ir} + x_{ij}^0 (w_{ij}^0 - w_{ir}^0) g_{ir} + x_{ij}^0 w_{ir}^0 (g_{ij} - g_{ir}) + x_{ij}^0 (w_{ij}^0 - w_{ir}^0)(g_{ij} - g_{ir}) \qquad (1)$$

where, x is the exports in value, w refers to the sector weight in the total exports, g is the export growth rate; the subscription i refers to export sector, r is the reference group, j is the individual economy in the reference group; superscription 0 and 1 refer to the initial and final years respectively.

The term on the left side of the identity is the actual export growth (AG). The first term on the right side is the group growth effect (GE). [1] It indicates the changes in export economy j should have in sector i if it follows the export growth rate and export structure of the reference group. The second term is the export structure effect (SE). It shows how much of the export differential is due to a divergence between the competing economy's export structure compared to the reference group. The third term is the export competitiveness effect (CE). It shows how much of the export differential is due to a difference between the export growth rate of the competing economy and the group. The fourth term is the interactive effect (IE). It suggests how much of the export differential is attributable to a combination of the industry mix effect and the competitive effect or export structure and competitiveness.

Summarizing the changes in export in each sector will the total export growth of economy j, and in turn the summation of export growth of economy j comes to the total export growth of the reference group. As the sum of the group growth effect GE is the export growth the individual economy should have, the sum of the GE of each economy is the same as the total export growth of the reference group but the GE is not the same as the actual export growth AG for each economy. That is

$$AG_r = \sum_j AG_j = \sum_j GE_j \qquad (2)$$

But, AG_j is not necessarily the same as GE_j. That is to say, the changes in export of some economies are more than what they *should*, while others achieve less than what they *should*. The distributions of AG_r among the individuals are different in terms of actual export growth AG and the group growth effect GE. The difference between the AG and GE for each economy is its net shift (gain or loss).

2) The Extension

However, these gains or losses result from comparison with the reference group as a whole, and don't reflect the competition with other economies in the reference group. I extend the shift-share analysis to attribute the gains or losses to competitors.

Let h be the home economy, c be competing economy, x_h be home economy's export, x_c be the competing economy's export, x_r be the reference group's export. Then, the export share of home economy in the reference groups is expressed as

$$s_h = x_h / x_r \qquad (3)$$

Similarly,

$$s_c = x_c / x_r \qquad (4)$$

And $\Delta s_{h,c}$ is the changes in export share of the home economy that ascribed to the changes in export share of competing economy. Thus,

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c [(x_c^0 / x_r^0) - (x_c^1 / x_r^1)] \qquad (5)$$

And $\Delta s_{h,c}$ does not necessarily equal to $[(x_c^0 / x_r^0) - (x_c^1 / x_r^1)]$. Following Chami-Bastista (2008), identity expressing $\Delta s_{h,c}$ should bear the following properties. Firstly, $\Delta s_{h,h} = 0$, as an economy cannot gain from or

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[1] In this paper, I rename these terms to reflect their meanings more directly.

lose to itself. Secondly, $\Delta s_{h,c} = -\Delta s_{c,h}$. Thirdly, the sum of the gains and losses of the home economy from or to all its competitors equals to the total gain or loss of the home economy in the period. And fourthly, $\Delta s_{h,c}$ has the same sign as and be a function of $(g_h - g_c)$, the difference between the export growth rates of the two economies. In other words,

$$\Delta s_{h,c} = \gamma_{h,c}(g_h - g_c) \tag{6}$$

Rearrange identity (6) as

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c [(x_c^0 / x_r^0)(x_r^1 / x_r^1) - (x_c^1 / x_r^1)(x_r^0 / x_r^0)] \tag{7}$$

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c [\frac{x_c^0}{x_r^0} \frac{(x_h^1 + \sum_c x_c^1)}{x_r^1} - \frac{x_c^1}{x_r^1} \frac{(x_h^0 + \sum_c x_c^0)}{x_r^0}] \tag{8}$$

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c (\frac{x_c^0 x_h^1}{x_r^0 x_r^1} + \frac{x_c^0 \sum_c x_c^1}{x_r^0 x_r^1} - \frac{x_c^1 x_h^0}{x_r^1 x_r^0} - \frac{x_c^1 \sum_c x_c^0}{x_r^1 x_r^0}) \tag{9}$$

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c (\frac{x_c^0 x_h^1}{x_r^0 x_r^1} - \frac{x_c^1 x_h^0}{x_r^1 x_r^0}) + \sum_c (\frac{x_c^0 \sum_c x_c^1}{x_r^0 x_r^1} - \frac{x_c^1 \sum_c x_c^0}{x_r^1 x_r^0}) \tag{10}$$

The second term on the right side is actually equals zero. Thus,

$$\Delta s_h = \sum_c \Delta s_{h,c} = \sum_c (\frac{x_c^0 x_h^1}{x_r^0 x_r^1} - \frac{x_c^1 x_h^0}{x_r^1 x_r^0}) \tag{11}$$

Noting that taking each change in export share $\Delta s_{h,c}$ as the change in the export share of home economy ascribed to the competing economy,

$$\Delta s_{h,c} = \frac{x_c^0 x_h^1}{x_r^0 x_r^1} - \frac{x_c^1 x_h^0}{x_r^1 x_r^0} = s_c^0 s_h^1 - s_c^1 s_h^0 = s_c^0 (s_h^0 + \Delta s_h) - (s_c^0 + \Delta s_c) s_h^0$$

$$\Delta s_{h,c} = s_c^0 \Delta s_h - \Delta s_c s_h^0 \tag{12}$$

Identity (10) is the same as

$$\Delta s_{h,c} = (\frac{s_c^0 \Delta s_h}{s_c^0 s_h^0} - \frac{\Delta s_c s_h^0}{s_c^0 s_h^0}) s_c^0 s_h^0 = (\frac{\Delta s_h}{s_h^0} - \frac{\Delta s_c}{s_c^0}) s_c^0 s_h^0 \tag{13}$$

Given $\dfrac{\Delta s_h}{s_h^0} = \dfrac{(x_h^1 / x_r^1) - (x_h^0 / x_r^0)}{x_h^0 / x_r^0} = [\dfrac{x_h^0 (1 + g_h)}{x_r^0 (1 + g_r)} - \dfrac{x_h^0}{x_r^0}] \dfrac{x_r^0}{x_h^0} = [\dfrac{x_h^0 (1 + g_h)}{x_r^0 (1 + g_r)} - \dfrac{x_h^0 (1 + g_r)}{x_r^0 (1 + g_r)}] \dfrac{x_r^0}{x_h^0}$ $\tag{14}$

$$\frac{\Delta s_h}{s_h^0} = \frac{g_h - g_r}{1 + g_r} \tag{15}$$

Similarly, $\dfrac{\Delta s_c}{s_c^0} = \dfrac{g_c - g_r}{1 + g_r}$ $\tag{16}$

Substitute identities (15) and (16) into (17), I have

$$\Delta s_{h,c} = \frac{g_h - g_c}{1 + g_r} s_h^0 s_c^0 \tag{17}$$

From identity (13), it is clear that $\Delta s_{h,c} = 0$, $\Delta s_{c,h} = -\Delta s_{h,c}$ and $\gamma_{h,c} = \dfrac{s_h^0 s_c^0}{1 + g_r}$ is greater than zero unless the reference group stop exporting in the final year. The third property is automatically satisfied by identities (5) and (9). $\Delta s_{h,c} x_r^1$ is the gain or loss of the home economy due to the competing economy's loss or gain.

3. Results

In this section, I apply the methodology to the competition among China and ASEAN-5 in the US import market. I draw the data for the calculation from World Integrated Trade Solution (WITS). WITS is a data consultation and extraction software developed by the World Bank, in close collaboration with the United Nations Conference on Trade and Development (UNCTAD). With WITS, users have access to the COMTRADE database maintained by the UNSD, the TRAINS maintained by the UNCTAD and the IDB and CTS databases maintained by the WTO. To make the data consistent, I use the import data reported by the US. That is, the data of exporters' export to the US are actually the import data reported by the US, not the export data reported by exporters. In my computation, the competing economies consist of the reference group. In addition, if there is no export data for some economy in certain sectors in specific year, I assign a small number to it in order to make the calculation work. Therefore, there will be very high growth rate in these sectors, and thus causing high value in competitiveness effect and interactive effect. These should be interpreted with caution. But as this number is very small, it cannot change the net shift.

Before get to the discussion, it is important to look at the market share dynamics of China and the five ASEAN economies in the US market. Figure 1 shows the changes of the market shares of ASEAN-5 and China in the US market from 1989 t0 2007. During the first half of 1990s, all these economies had gained more and more market share in the US. China's market share was much less than the five ASEAN economies' in a whole. However, things changes since the second half of that decade, especially after the 1997-98 crisis. While China kept its increase trend in market share, the ASEAN economies slowed down and even began to decrease. In 1998, China surpassed the ASEAN economies in the US market share and increased even faster since 2002. On the contrary, the ASEAN economies in a whole decreased its market share since 1997. Due to these facts, my discussion focuses on three periods: 1993-1997, 1998-2002 and 2003-2007.
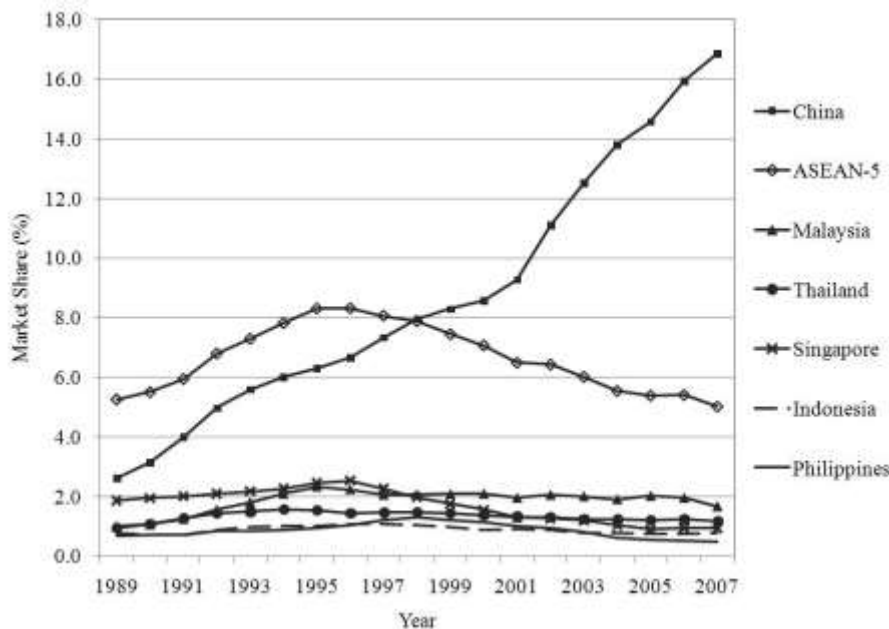

Figure 1. Market Share of China and ASEAN-5 in the US, 1989-2007

Source: UNCOMTRADE.

1) Shift-Share Effects

Table 1 presents the shift-share analysis estimation results. The table consists of three panels, each representing the results for the three periods. During the 1993-1997 period, all economies have positive export

growth as the actual export growth shows. However, in terms of net shift, only China and the Philippines are the winners with positive value of net shifts. All other ASEAN-5 economies show net loss during 1993-1997 suggested by the net shifts. In terms of competitiveness effect, China, Indonesia and the Philippines have positive effects, suggesting they are competitive during that period.

Table 1. Shift-Share Effects

1993-1997						
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
(1) Group Growth Effect	26.27	4.59	8.52	4.04	10.18	7.01
(2) Actual Export Growth	**32.14**	**3.85**	**7.60**	**5.62**	**7.32**	**4.07**
(3) Net Shift	*5.87*	*-0.74*	*-0.92*	*1.58*	*-2.86*	*-2.93*
(4) Export Structure Effect	-3.49	-1.03	2.00	-0.08	3.06	-0.45
(5) Competitiveness Effect	14.14	2.44	-1.79	1.56	-7.02	-2.65
(6) Interactive Effect	-4.78	-2.15	-1.13	0.11	1.10	0.17
1998-2002						
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
(1) Group Growth Effect	30.76	4.09	8.00	5.05	7.64	5.72
(2) Actual Export Growth	**58.39**	**0.41**	**5.21**	**-0.90**	**-3.56**	**1.71**
(3) Net Shift	*27.63*	*-3.67*	*-2.78*	*-5.96*	*-11.20*	*-4.01*
(4) Export Structure Effect	2.45	-0.41	-0.57	-0.52	-0.47	-0.48
(5) Competitiveness Effect	34.65	-3.04	-5.06	-5.77	-9.43	3841.42
(6) Interactive Effect	-9.48	-0.22	2.85	0.34	-1.30	-3844.96
2003-2007						
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
(1) Group Growth Effect	134.70	8.47	21.61	8.66	12.78	13.29
(2) Actual Export Growth	**176.86**	**4.94**	**7.51**	**-0.68**	**3.20**	**7.69**
(3) Net Shift	*42.16*	*-3.54*	*-14.10*	*-9.34*	*-9.58*	*-5.60*
(4) Export Structure Effect	-1.64	-0.30	1.19	0.02	0.91	-0.18
(5) Competitiveness Effect	49.12	-4.76	-11.09	1084.32	-7.96	-4.73
(6) Interactive Effect	-5.32	1.52	-4.20	-1093.68	-2.53	-0.69

Note: Unit: billion US$.

Source: author's calculation.

During the second period, China stands out with net shift increase from US$ 5.87 million during the first period to US$ 27.63 million. At the ASEAN side, the Philippines and Singapore experience negative export growth. Their negative competitive effects are the major contributors to the negative growth. These contribute to their negative net shift effects. Though experiencing positive export growth, the other three ASEAN economies also show negative net shifts values. The interesting thing during this period is that Thailand has very large high competitive effect, but it is offset by its interaction effect. This is because Thailand has no exports in 1998 for SITC 3, but exports 30 thousand US$ in 2002. It doesn't suggest that Thailand is more competitive than China although the latter has only US$ 34.65 million competitiveness effect.

The situation for the third period is similar to the second period. China is the only economy with positive net shift value, increasing its net shift further to US$ 42.16 million. Only China and the Philippines have positive competitiveness effects values. However, the Philippines experiences the same problem as Thailand does during the second period with respect to competitiveness effect as it has no exports in 2003 with SITC 3. The Philippines is the only economy with negative export growth. Other ASEAN economies perform as bad as they do during the previous period.

2) Net Shift by Industries

The total negative or positive net shift values of different economies do not mean that lose or gain in all industries. I decompose the total net shift values by industry to show what industries China and the ASEAN

economies focus on. Table 2 presents the decomposition results for the three periods. Let's look at China first. China focuses on different industries during the here periods. It gains in five industries during the first period: SITC 2, SITC 3, SITC 5, SITC 6 and SITC 8. While it loses only in two industries during the second period, it loses in all industries from SITC 0 to SITC 5. It thus focuses on SITC 6 to SITC 8 with positive net shift values during the third periods. The gains in these industries are much bigger than the ASEAN economies' gains in value.

Table 2. Decomposition of Net Shift by Industry

1993-1997	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
SITC 0	-0.29	0.42	-0.11	0.04	-0.13	0.07
SITC 1	-0.03	0.02	0.00	0.00	0.00	0.01
SITC 2	0.03	0.15	-0.05	-0.04	-0.13	0.04
SITC 3	0.19	-0.08	0.12	-0.03	-0.11	-0.09
SITC 4	-0.10	0.07	-0.02	0.12	-0.05	-0.03
SITC 5	0.19	-0.02	0.01	-0.07	-0.01	-0.10
SITC 6	1.49	-0.03	-0.38	-0.18	-0.64	-0.26
SITC 7	-2.76	-1.25	1.43	2.43	1.23	-1.07
SITC 8	7.29	0.03	-1.85	-0.70	-3.28	-1.50
SITC 9	-0.15	-0.05	-0.06	0.01	0.25	0.00
Total	**5.87**	**-0.74**	**-0.92**	**1.58**	**-2.86**	**-2.93**
1998-2002	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
SITC 0	0.50	-0.15	-0.10	-0.07	-0.11	-0.07
SITC 1	0.00	-0.01	0.00	0.01	-0.01	0.01
SITC 2	0.24	-0.22	-0.05	0.01	0.02	0.00
SITC 3	-0.03	0.02	0.02	-0.01	-0.02	0.02
SITC 4	0.08	-0.01	0.04	-0.14	0.02	0.02
SITC 5	-0.22	-0.09	-0.33	-0.21	1.00	-0.14
SITC 6	3.45	-0.75	-0.99	-0.59	-0.99	-0.13
SITC 7	13.07	-1.46	1.80	-2.68	-8.26	-2.46
SITC 8	10.45	-0.89	-3.30	-2.14	-2.91	-1.21
SITC 9	0.10	-0.10	0.14	-0.14	0.06	-0.06
Total	**27.63**	**-3.67**	**-2.78**	**-5.96**	**-11.20**	**-4.01**
2003-2007	China	Indonesia	Malaysia	Philippines	Singapore	Thailand
SITC 0	-0.30	0.34	-0.19	-0.08	-0.24	0.46
SITC 1	-0.03	0.01	-0.01	0.00	0.00	0.02
SITC 2	-0.47	0.67	-0.15	-0.06	-0.12	0.12
SITC 3	-0.53	0.23	-0.02	-0.03	0.06	0.30
SITC 4	-0.57	0.05	0.49	0.13	-0.05	-0.06
SITC 5	-0.32	0.00	-0.65	-0.28	1.59	-0.33
SITC 6	7.25	-0.67	-2.53	-1.21	-1.64	-1.20
SITC 7	22.61	-3.78	-5.75	-5.16	-6.28	-1.63
SITC 8	14.40	-0.29	-5.09	-2.51	-3.19	-3.32
SITC 9	0.11	-0.09	-0.18	-0.15	0.29	0.03
Total	**42.16**	**-3.54**	**-14.10**	**-9.34**	**-9.58**	**-5.60**

Note: Unit: billion US$.

Source: author's calculation.

The five ASEAN economies all show not much focused industries. Indonesia gains in half industries during the first period, but gains only in SITC 3 during the second period, and gains in all industries from SITC 0 to SITC 5 during the third period. All the gains are very small in value with no more than half million US$ except SITC 2 during the last period. Other ASEAN economies gain in small numbers of industries with small values. Malaysia seems to focus its gain mainly in industry SITC 3 as it gains in this industry during all three periods. The Philippines and Singapore gain in SITC 7 during the first period, but lose much more during later periods.

3) Gains from or Losses to the Competing Economies

Next, I apply the extension to attribute the net gains from or losses to the competing economies. I present the results in Table 3. The last column, net gains or losses, are the net shifts in Table 1. As Table 3 shows, China only loses to the Philippines during 1993-1997, and gains from all competing economies during all periods. China gains the most from Singapore during 1993-1997 and 1998-2002, from Malaysia during 2002-2007.

Though net losers, the ASEAN-5 also gain from other competing economies. Indonesia gains from Singapore and Thailand during 1993-1997, from the Philippines and Singapore during 1998-2002, from Malaysia, the Philippines and Singapore during 2003-2007. Malaysia gains from Indonesia, Singapore and Thailand during 1993-1997, from all except China during 1998-2002, from the Philippines, Singapore and Thailand during 2003-2007. The Philippines gains from all competing economies during 1993-1997, from Singapore during 1998-2002, but loses to all competing economies during 2003-2007. Singapore has only two gains during the three periods. Thailand loses to all during 1993-1997, but only to China during 2003-2007.

Table 3. Competitors' Contribution to Gains or Losses

1993-1997							
Exporters	Gains from or Loses to						Net Gains or Losses
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand	
China	0.00	0.77	1.22	-0.30	2.23	1.95	5.87
Indonesia	-0.77	0.00	-0.03	-0.17	0.09	0.14	-0.74
Malaysia	-1.22	0.03	0.00	-0.28	0.25	0.31	-0.92
Philippines	0.30	0.17	0.28	0.00	0.46	0.38	1.58
Singapore	-2.23	-0.09	-0.25	-0.46	0.00	0.16	-2.86
Thailand	-1.95	-0.14	-0.31	-0.38	-0.16	0.00	-2.93
1998-2002							
Exporters	Gains from or Loses to						Net Gains or Losses
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand	
China	0.00	3.69	5.00	5.27	9.07	4.59	27.63
Indonesia	-3.69	0.00	-0.29	0.09	0.29	-0.08	-3.67
Malaysia	-5.00	0.29	0.00	0.55	1.12	0.26	-2.78
Philippines	-5.27	-0.09	-0.55	0.00	0.18	-0.23	-5.96
Singapore	-9.07	-0.29	-1.12	-0.18	0.00	-0.55	-11.20
Thailand	-4.59	0.08	-0.26	0.23	0.55	0.00	-4.01
2003-2007							
Exporters	Gains from or Loses to						Net Gains or Losses
	China	Indonesia	Malaysia	Philippines	Singapore	Thailand	
China	0.00	4.18	14.08	8.14	9.17	6.59	42.16
Indonesia	-4.18	0.00	0.22	0.24	0.18	0.00	-3.54
Malaysia	-14.08	-0.22	0.00	0.40	0.13	-0.33	-14.10
Philippines	-8.14	-0.24	-0.40	0.00	-0.18	-0.38	-9.34
Singapore	-9.17	-0.18	-0.13	0.18	0.00	-0.28	-9.58
Thailand	-6.59	0.00	0.33	0.38	0.28	0.00	-5.60

Note: Unit: billion US$.

Source: author's calculation.

4. Conclusion

Southeast Asia is expected to collectively become the fourth largest economy in the world, overtaking the European Union and Japan, by 2050 (Harding and Kim, 2019). United States-Southeast Asia trade relations are critical for both sides. For the United States, Southeast Asia is one of the largest, fastest-growing markets in the world. The United States is the second largest external export destination for the ASEAN, and the first export destination for China. The competition among China and ASEAN members, especially the ASEAN-5, are intensive in the US market. In this paper I extend the shift-share analysis to attribute the net shift to competing economies. The new extension is applied to study the competition among china and the ASEAN-5 in the US market from 1993-2007.

The discussion focuses on three periods: 1993-1997, 1998-2002 and 2003-2007. In general, China performs the best among the competing economies, and Among the ASEAN-5 Indonesia, Malaysia and Thailand perform better than the other two members. (1) During the first period, all economies have positive export

growth as the actual export growth shows. However, in terms of net shift, only China and the Philippines are the winners with positive value of net shifts. During the second period, China stands out while the ASEAN economies show negative net shifts values. Similar is the case for the third period.

(2) In terms of the industries, China focuses on different industries during the three periods, and the ASEAN economies depend heavily on a few industries. China's gains in these industries are much bigger than the ASEAN economies' gains in value. The ASEAN economies gain in small numbers of industries with small values. (3) When attributed the gains or losses to competing economies, China only loses to the Philippines during 1993-1997, and gains from all competing economies during all periods. Though net losers, the ASEAN-5 also gain from other competing economies. For example, Indonesia gains from Singapore and Thailand during 1993-1997, from the Philippines and Singapore during 1998-2002, from Malaysia, the Philippines and Singapore during 2003-2007.

If one put his eyes on the recent development of the trade tension between China and US, he will notices that the ASEAN countries have more opportunities in the US market. Songwanich (2019) finds in his research that Vietnam is the biggest beneficiary of this trend. In the first quarter of 2019, US imports from Vietnam rose by 40 percent and many of these exports would otherwise have been sourced from China. However, the diversion of trade is unlikely to compensate for the ongoing contraction of ASEAN exports. Kamran and Raeissadat (2019) argue that the impact of a trade war between the United States and China has a negative impact on other countries and regions in particular the ASEAN countries. The ASEAN countries are more vulnerable to trade war between the United States and China as they are very exposed to China and United States.

Acknowledgements

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