The Effect of Regionalism and Infrastructure on Bilateral Trade: An Augmented Gravity Analysis for ASEAN

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Abstract

This paper estimates the effects of regionalism in South East Asia (AFTA), infrastructure, economic size, distance, and common border on the ASEAN trade flows. The trade flow evolutions of 97 ASEAN's partner during 1990–2000 are considered in the analysis through the utilization of cross-sectional and panel gravity model. The results show that as a symbol of regionalism in ASEAN, the coefficient of AFTA and infrastructure are positively significant in affecting the ASEAN trade flows for most periods. The other determinants, *i.e.* economic size (income), and distance affect significantly the ASEAN trade flows. However, common border is found to have no effect on ASEAN trade.

Keyword: international trade, ASEAN, AFTA, gravity analysis

1. Introduction

Regionalism has re-emerged as a major concern in the agenda of international system (Behr & Jokela, 2011). There is no exception for the countries in South East Asian with the AFTA (ASEAN Free Trade Area). Through AFTA, which was initiated in 1992, the ASEAN6 (i.e. Indonesia, Malaysia, the Philippines, Thailand, Singapore and Brunei Darussalam) decided in opening their area for free trade by reducing and eventually abolishing tariff and non-tariff barriers to trade among themselves (see Schiff & Winters, 1998). However, since it was formed, the establishment of AFTA still raised criticism due to the fact of the relatively low share of intra ASEAN trade in total ASEAN trade (only ranging from 18% to 22%) and the presence of major contribution of non-ASEAN trading partners -Japan, USA and EU- on total value of ASEAN trade (De Melo et al., 1993; Plummer, 1996). In this case, AFTA is viewed in its infancy in terms of its role in boosting trade flows among the members and enhancing region's economic development (OECD, 1995).

Utilizing cross-sectional and panel analysis with the gravity model, this paper attempts to answer the question of what is the effect of regionalism and infrastructure on ASEAN trade during 1990–2000. In addition, we consider also the influence of other dominant factors in the model, such as economic size (income), distance and common border. In this paper, we find that the trade regionalism in ASEAN (AFTA) and infrastructure are positively significant affecting ASEAN trade flows for most periods. Other determinants, *i.e.* income, and distance show the expected effects, but the common border demonstrates a statistically insignificant impact on ASEAN trade.

The next section of the paper provides a brief overview about ASEAN members' trade and economies. Section 3 will introduces the theoretical review on regional integration. In Section 4, the analytical techniques and methodology are shown and Section 5 describes the empirical results of the model. Finally, Section 6 concludes.

2. Some Basic Facts about ASEAN Economies

In general, ASEAN countries depend heavily on exports and inward FDI. Except for Singapore, ASEAN countries commonly rely on natural resources, basic unskilled or semi-skilled industries. Their major employment sectors are agriculture, mining, forestry, and fisheries. As of 2000, manufacturing accounted for more than 20% of employment in Singapore and Malaysia, 20% of employment in Vietnam, 14.5% in Thailand, 13% in Indonesia and less than 10% for the rest of ASEAN countries. Other than Singapore, ASEAN countries are not known to have considerable endowment in managerial skills and advanced technology.

The economies of ASEAN are highly trade-dependent. In the period of Asian financial crisis (1997), as shown by Table 1 and Table 2, the ratio of ASEAN export to their GDP was about 46% while the ratio of their imports to

GDP was around 49%. After the crisis, ASEAN total GDP declined while exports continued to grow. That resulted in an increase in the exports to GDP ratio to 71% in 2000. Conversely, the value of ASEAN imports seemed down, but not as much as the decline of GDP. However, the value of imports bounced back in 2000, bringing the ratio of imports to GDP to 62%. The result was that the ASEAN countries have grown more dependent on trade (particularly on exports) in the post-crisis era. The reason could be due to the emphasis of ASEAN on AFTA deals execution.

Table 1. Total exports of ASEAN to its trading partners, by country of destination, 1993–2000 (Million USD)

Trade Data	1993	1994	1995	1996	1997	1998	1999	2000
Total Exports	209,626	250,820	296,697	330,617	351,570	326,002	354,293	410,986
Total GDP				723,468	694,045	473,216	546,071	577,776
Exports/GDP				0.4570	0.5066	0.6889	0.6488	0.7113
Country of Destination	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
ASEAN	43,681.1	58,571.5	70,178.9	80,973.7	85,351.8	69,312.9	74,698.9	90,440.8
Japan	129	34,229.6	42,680.7	43,150.3	42,008.6	34,716.8	37,628.6	51,928.8
EU-15	31,391.5	35,196.4	44,285.9	46,926.0	46,086.7	46,143.6	55,651.3	57,555.0
USA	42,008.2	49,370.7	54,993.7	59,515.5	70,034.4	64,620.0	70,003.4	67,685.0
World Total	206,637	246,765	296,697	323,361	342,670	316,651	341,067	389,758
ASEAN/Total	21.14%	23.74%	23.65%	25.04%	24.91%	21.89%	21.90%	23.20%
Japan/Total	14.98%	13.90%	14.39%	13.34%	12.26%	10.96%	11.03%	13.34%
EU-15/Total	15.19%	14.26%	14.93%	14.51%	13.45%	14.57%	16.32%	14.77%
USA/Total	20.33%	20.01%	18.54%	18.41%	20.44%	20.41%	20.52%	17.37%

Source: ASEAN Trade Statistic Database, 2001.

Table 2. Total imports of ASEAN from its trading partners, by country of origin, 1993–2000 (Million USD)

Trade Data	1993	1994	1995	1996	1997	1998	1999	2000
Total Imports	226,300	271,296	325,494	357,862	364,872	268,818	294,129	360,148
Total GDP				723,468	694,045	473,216	546,071	577,776
Imports/GDP				0.4946	0.5257	0.5681	0.5386	0.6233
Country of Origin	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
ASEAN	38,763.3	46,911.9	53,602.1	64,211.2	64,621.2	51,604.9	56,781.4	69,150.7
Japan	55,702.9	67,302.5	78,535.2	73,310.1	71,264.2	46,693.7	51,244.1	61,404.9
EU-15	31,822.4	38,729.3	46,392.8	57,380.5	51,009.8	33,256.1	34,675.5	36,934.8
USA	33,712.7	39,201.7	46,435.1	53,011.4	61,695.0	50,942.2	45,962.0	46,315.3
World Total	223,311	267,242	318,555	350,606	355,972	259,457	279,460	325,305
ASEAN/Total	17.36%	17.55%	16.83%	18.31%	18.15%	19.89%	20.32%	21.26%
Japan/Total	24.94%	25.18%	24.65%	20.91%	20.02%	18.00%	18.34%	18.88%
EU-15/Total	14.25%	14.49%	14.56%	16.37%	14.33%	12.82%	12.41%	11.35%
USA/Total	15.10%	14.67%	14.58%	15.12%	17.33%	19.63%	16.45%	14.24%

Source: ASEAN Trade Statistic Database, 2001.

The ASEAN trade patterns look consistent before and after the crisis (1996 vs. 2000). Intra-ASEAN exports contributed around 25% of total exports in 1996, while it dropped slightly to 23% in 2000. Nevertheless, intra-ASEAN imports grew from 18% of total in 1996 to 21% in 2000. Developed countries were the most dominant export and import partners of ASEAN. Among them, the most significant importer country was the US,

which accounted for 18% of the total value in 1996 and 17% in 2000. On the other hand, the most prominent exporter countries for ASEAN were Japan, EU, and the US. They accounted for 21%, 16%, and 15% of the total value, respectively. In recent years, trade with the rest of Asia (China) grew.

In the period of nineties, tariffs became the principal instrument of most ASEAN countries trade policy. Table 3 shows the evolution of average MFN tariff rates in five ASEAN countries during 1990–2000. Singapore recorded the lowest level of tariff, while Thailand and Philippines had much higher tariffs within the region. Indonesia and Philippines seemed to be in the same tier, whereas Malaysia did better than those two countries in opening and liberating its market. Thailand is an interesting case since it demonstrated the sharpest decline of tariff level in the region, *i.e.* averagely from 44 percent in 1991 to 18 percent in 1999. After the implementation of the General Agreement on Tariff and Trade (GATT), the average tariff in the five ASEAN countries had dropped to between 0 percent and 18 percent.

Table 3. The five ASEAN countries' MFN tariff rates (%) during 1990–2000 (in average)

	Indonesia	Phillipines	Thailand	Singapore	Malaysia
1990	22				
1991			44	0	
1992		26			
1993					15
1994	20				
1995			23		
1997					8
1998	10				
1999		10	18		
2000				0	

Source: Indonesia, Philippines, Thailand, Singapore, and Malaysia Trade Policy Review (WTO, Various Years).

3. Theoretical Review

According to *The Theory of Economic Integration* of Balassa (1961), the stages of regionalism (economic integration) can be distinguished into seven stages. The first stage is preferential trade area (PTA). PTA unifies countries which agree with the imposition of lower tariffs for each good produced in the member countries (see Table 4). PTA will be followed by free trade area (FTA) where it introduces the abolishment of tariffs among member countries. However, partner countries can still impose its own customs tariff with respect to the third countries. Certificate of origin is needed for FTA in order to evade a trade deflection. The third stage is a custom union (CU). CU is the extension of FTA where a common external tariff is imposed among member countries and the certificate of origin is no longer needed. The fourth stage is called the common market. In the common market, labor and capital of the member countries start to be able to move freely. The fifth stage is an economic union that unify all market regulations, macro economic and monetary policies and income redistribution policies among member countries. The next stage is monetary union where one common currency is created for all members, such as the European Monetary Union with its single currency, *Euro*, which is introduced in 2002. The last stage is political union where political institutions are also unified.

4. Methodology

4.1 The Empirical Model

Since its inception in 1940s, the gravity model has been used extensively in social science. In analogy to the Newtonian gravity model, Stewart in 1947 found strong correlation for traffic, migration, and communication between two places, based on the product of the population size and inversely related to their distance squared. This model became popular in the hand of Tinbergen when the model was applied to the field of international trade. Since then, the gravity equation has become a standard analytical tool for predicting the bilateral trade flows with simultaneous development of its theoretical discussion (see e.g. Bergstrand, 1989; Brulhart and Kelly, 1999; Egger, 2002; Greenaway and Milner, 2002; Matyas, 1997; Montenegro and Soloaga, 2006).

Table 4. Stages of economic integration

	Selective Tariff	No Internal Tariffs or Quotas	Common External Tariff	Free Flow of Factors	Harmonized Economic Policies	Unification of Political Institutions
Preferential Trade Area (PTA)	x					
Free Trade Area (FTA)	x	x				
Custom Union	x	x	x			
Common Market	x	x	x	x		
Economic Union	x	x	x	x	X	
Political Union	x	x	x	x	X	x

Source: Radelet (1997).

The classical gravity model connects the international trade flows and the economic size of a pair country with their distance through following multiplicative forms:

$$T_{ij} = C Y_i^{\theta 1} Y_j^{\theta 2} D_{ij}^{\theta 3} e_{ij} \qquad (1)$$

Where T_{ij} is the international trade flows from country i to country j, C is the constant term, Y_i is the income level of the origin country (reporting country), Y_j is the income level of the destination country (trading partner), D_{ij} is the distance between the two countries, e_{ij} is an error term.

In addition to the classical gravity model equation, we estimate an augmented gravity model equation to analyze the influence of FTA (in this case is AFTA) on the selected ASEAN countries' trade flows (Indonesia, Philippines, Thailand, Singapore and Malaysia). Beside that, we also examine the role of other factors that related to the gravity concept (see Eq. 2).

$$LogMij = \alpha + \beta_1 \log(Y_i Y_j) + \beta_2 \sqrt{D_{ij}} + \beta_3 \log(Inf_i Inf_j) + \beta_4 Dborder + \beta_5 DAFTA + e_{ij} \qquad (2)$$

Where M*ij* denotes the value of bilateral trade between country *i* and country *j*. M*ij* is the value of import between reporting country (*i*) and its trading partner (*j*). All explanatory variables in the augmented gravity model are defined as follows.

Income ($Y_i.Y_j$) is the multiplied GDP from both countries (using constant prices at 1995 in million US Dollar). The variable is used to measure the economic size or mass of the countries (see eg., Batra, 2004; Rojas et al., 2005). Specifically, a high level of income in the importing country suggests higher imports while a high level of income in the exporting country indicates a high level of production that increases the availability of export products. We expect the coefficients of the variables to be positive.

Distance (D_{ij}) is the distance between country *i* and country *j*. It was measured as the real distance in km (kilometers) between the center of gravity (capital city) of country *i* and *j*. Distance is defined as one main variable in the gravity concept, since it increases transport costs which impedes trade (Bougheas et al., 1999; Zarzoso & Lehmann, 2003). In this paper, its coefficient is expected to be negative.

Infrastructure (Inf_i Inf_j) describes the facilities which are provided by country *i* and country *j* for supporting their bilateral trade activities. The augmentation is inspired from study that was conducted by Bougheas et al. (1999). However, instead of using the length of motorway network, we utilize the telecommunication network (normalized by population) as an infrastructure proxy. The effect of this variable is expected to be positive since a higher level of public infrastructure should reduce transport costs which facilitate trade.

The paper includes dummy variables in order to capture the effects of the FTA establishment and the common border on ASEAN trade flows. Those dummy variables can be explained as follows.

Border (*Dborder*) is a dummy variable which identify a pair of countries that share a border. This dummy clarifies the effective distance among two countries (*i* and *j*) which may engage in large volumes of border trade (McCallum, 1995; Anderson & Wincoop, 2003). The dummy variable for *Border* is unity if countries *i* and *j* share a common border and 0 when they do not.

Regional Trading Arrangements (*DAFTA*): A country often enters into regional trading agreements with the intention of facilitating bilateral trade. The dummy variable is equal to one when both countries in a given pair belongs to the same regional group (in this case is AFTA bloc) and 0 otherwise. The estimated coefficient will describe the effect of AFTA on the bilateral trade flows for selected ASEAN countries during 1990–2000.

The coefficients for all dummy variables are expected to be positive since neighboring countries tend to trade more and a membership in trade block will incline to facilitate trade. Based on the explanation above, we decide the hypotheses of the paper as follow.

1). H_0: $\beta1$; $\beta3$; $\beta4$; $\beta5 \leq 0$; H_1: $\beta1$; $\beta3$; $\beta4$; $\beta5 > 0$;

2). H_0: $\beta2 \geq 0$; H_1: $\beta2 < 0$.

We utilize cross section and panel model which will be executed with the data of 1990–2000. Some trade observations are zero, probably due to the low level of trade for those countries that were too small to be recorded, or they are actually a small country and have a problem of remoteness for establishing trade. To ascertain whether their trade is zero or just minimal, we propose two different techniques in the execution of cross section and panel estimations using the gravity model, *i.e.* first, doing omission for zero pairs in the data set, and second, using *Tobit* techniques in the gravity equation.

Table 5. Variables, definitions and data sources

Variable	Definition	Source
M_{ij}	Import values between reporting and partner countries (Thousand USD)	NBER and UN Comtrade (various years)
$Y_i.Y_j$	Explaining the economic size. It is measured by GDP (Million USD) at constant price (1995)	WDI –World Bank (various years)
D_{ij}	Distance between the capital of reporting and partner countries (in kilometer)	www.haveman.org and www.indo.com/distance
$Inf_i.Inf_j$	Explaining the infrastructure. It is measured by the main telephone lines in operation (unit) that normalized by the population of the country	International Telecommunication Union (ITU) – *Yearbook of Statistics* in Telecommunication Services (various years)
Dborder	A dummy variable that takes value 1 if countries *i* and *j* share a common border and 0 otherwise	http://www.eiit.org/Trade.html or www.haveman.org
DAFTA	A dummy variable is equal to one when both countries in a given pair belong to the same regional group (in this case is AFTA bloc) and 0 otherwise. Value 1 will be given to Indonesia, Philippines, Thailand, Singapore and Malaysia; otherwise is 0	www.aseansec.org

4.2 Data Definition

The gravity model will be applied to examine the trade flows of the five ASEAN countries (Indonesia, Philippines, Thailand, Singapore and Malaysia). The model involves 97 ASEAN's trading partner in the world. Table 5 shows all information about variables and data source used by this paper. The data for the dependent variable (M_{ij}) are defined as total value of reporting country's imports from its trading partners in thousand US dollars. The independent variable $Yi.Yj$ is measured by GDP of reporting and partner countries (evaluated at 1995 prices). $Infi.Infj$ denotes the infrastructure provided by both countries (*i* and *j*) which are measured by annual main telephone lines in operation per person.

5. Empirical Results

This paper estimates the gravity model given by equation (2) which is constructed into 11 temporal cross-section (from 1990 until 2000) estimations and 1 panel estimation (for 1990 to 2000). Based on the descriptive analysis, we transform the variable of M_{ij}, $Y_i.Y_j$, $Inf_i.Inf_j$ into the log value, and Dij into the square root. Regressions are run for both (cross-section and panel model) in two different techniques. First, regression that eliminates the zero pairs from the data set; Second, regression that reformulates the gravity equation using *Tobit* technique. Each specific results of equation (2) are presented in Table 6 and Table 7.

Table 6. Regression results with the first technique[a]

	Log(Yi.Yj)	√Dij	Log(Infi.Infj)	Dborder	DAFTA	R^2	n
Cross-Section Analysis							
1990	0.911	-0.04	0.356	-0.440	1.113	0.643	430
	(17.63)[*]	(-8.17)[*]	(7.91.)[*]	(-0.45)	(2.00)[**]		
1991	0.877	-0.036	0.373	-0.369	1.127	0.638	431
	(17.12)[*]	(-8.09)[*]	(8.27)[*]	(-0.39)	(2.06)[**]		
1992	0.863	-0.041	0.371	-0.287	0.824	0.679	430
	(18.35)[*]	(-9.94)[*]	(8.81)[*]	(-0.33)	(1.64)		
1993	0.927	-0.043	0.301	-0.087	0.631	0.688	440
	(19.73)[*]	(-10.50)[*]	(7.02)[*]	(-0.10)	(1.25)		
1994	0.929	-0.038	0.301	-0.287	0.894	0.718	441
	(21.09)[*]	(-10.09)[*]	(7.34)[*]	(-0.35)	(1.91)[***]		
1995	0.927	-0.037	0.266	-0.628	0.934	0.738	447
	(22.58)[*]	(-10.46)[*]	(6.70)[*]	(-0.83)	(2.16)[**]		
1996	0.979	-0.040	0.279	-0.769	0.899	0.717	453
	(21.23)[*]	(-10.15)[*]	(6.17)[*]	(-0.91)	(1.86)[***]		
1997	1.122	-0.039	-0.002	-0.360	0.808	0.697	451
	(23.14)[*]	(-9.64)[*]	(-0.06)	(-0.42)	(1.63)		
1998	0.982	-0.045	0.230	0.093	0.854	0.690	443
	(19.60)[*]	(-10.88)[*]	(4.57)[*]	(0.10)	(1.68)[***]		
1999	0.988	-0.040	0.216	0.009	1.123	0.709	458
	(21.12)[*]	(-10.14)[*]	(4.43)[*]	(0.01)	(2.32)[**]		
2000	0.983	-0.046	0.282	-0.371	1.041	0.717	464
	(20.35)[*]	(-11.38)[*]	(5.47)[*]	(-0.42)	(2.07)[**]		
Panel Analysis							
1990–2000	0.958	-0.041	0.239	-0.372	0.920	0.684	4888
	(66.49)[*]	(-32.59)[*]	(18.54)[*]	(-1.40)	(6.03)[*]		

Notes: a) Omission of the zero pairs from the data set; [*]: Statistically significant at the 99% level of confidence; [**]: Statistically significant at the 95% level of confidence; [***]:Statistically significant at the 90% level of confidence; (*t-statistics* in parentheses); Dependent variable is $LogM_{ij}$.

For panel and all cross-section analyses, the R^2 show values of more than 0.50. In the first technique, only about 5% of the total data were neglected per year due to the zero pairs (the largest occurred in 2000). This tendency makes the Tobit technique seems less important to be executed. Table 7 illustrates that (see also Table 6 for comparison) only for 1992, the Tobit technique appears relevant, where the variable of AFTA establishment (DAFTA) is found to be statistically significant at 90% and has a positive impact in enhancing trade flows among its members. For the rest, the results of the first and the second techniques are almost similar.

Generally, our cross-section and panel analysis almost give a same conclusion in all periods. Four out of five independent variables were statistically significant at 99% (for *Yi.Yj* and *Dij*); 95% (for some of *DAFTA*); 90% (for some of *DAFTA*), while *Dborder* was found to be statistically insignificant. The panel analysis looks a bit more robust in terms of explaining the *DAFTA* variable. Related to the effect of AFTA, our panel model find that the dummy variable for intra-regional trade in ASEAN (AFTA) contributes a significant positive effect to trade for most years (except in 1993 and 1997), suggesting that FTA can foster trade in ASEAN and bring a positive impact to their trade flows.

According to the results, the role of FTA was less important in 1991-1998. However its role grew better in 1999 and 2000. Actually, this condition describes a bit about the criticism of the parties which believe that AFTA is still in its infancy in terms of its role in boosting trade flows among the members and enhancing economic development to the region (OECD, 1995). However, neglecting the period of crisis (1997), our results still corroborate the importance of FTA in fostering trade flows of a country in ASEAN region. From Tables 6 and 7, the variables of income, distance, and infrastructure show their significant expected signs while the variable of common border is found to be statistically insignificant. The variable of economic size (GDP) contributes a robust effect on ASEAN trade flows.

Table 7. Regression results with the second technique[b]

	Log(Yi.Yj)	√Dij	Log(Infi.Infj)	Dborder	DAFTA	N
Cross-Section Analysis						
1990	0.912	-0.038	0.356	-0.440	1.107	428
	(17.73)[*]	(-8.23)[*]	(7.96)[*]	(-0.46)	(1.99)[**]	
1991	0.877	-0.036	0.373	-0.369	1.127	431
	(17.24)[*]	(-8.15)[*]	(8.32)[*]	(-0.39)	(2.07)[**]	
1992	0.864	-0.041	0.371	-0.288	0.821	429
	(18.47)[*]	(-10.01)[*]	(8.86)[*]	(-0.33)	(1.65)[***]	
1993	0.927	-0.043	0.301	-0.087	0.631	440
	(19.87)[*]	(-10.57)[*]	(7.07)[*]	(-0.10)	(1.26)	
1994	0.929	-0.038	0.301	-0.287	0.894	441
	(21.24)[*]	(-10.16)[*]	(7.39)[*]	(-0.35)	(1.93)[***]	
1995	0.927	-0.037	0.266	-0.628	0.934	447
	(22.74)[*]	(-10.53)[*]	(6.75)[*]	(-0.84)	(2.17)[**]	
1996	0.979	-0.040	0.279	-0.769	0.899	453
	(21.37)[*]	(-10.22)[*]	(6.21)[*]	(-0.91)	(1.87)[***]	
1997	1.123	-0.039	-0.002	-0.360	0.807	450
	(23.28)[*]	(-9.71)[*]	(-0.05)	(-0.42)	(1.64)	
1998	0.981	-0.045	0.231	0.093	0.855	441
	(19.74)[*]	(-10.96)[*]	(4.62)[*]	(0.11)	(1.69)[***]	
1999	0.988	-0.040	0.216	0.009	1.123	458
	(21.26)[*]	(-10.21)[*]	(4.46)[*]	(0.01)	(2.34)[**]	
2000	0.983	-0.046	0.282	-0.371	1.041	464
	(20.48)[*]	(-11.45)[*]	(5.51)[*]	(-0.42)	(2.09)[**]	
Panel Analysis						
1990-2000	0.958	-0.041	0.239	-0.372	0.920	4888
	(-66.54)[*]	(-32.61)[*]	(18.55)[*]	(-1.40)	(6.03)[*]	

Notes: b) Regression with the reformulated gravity equation using *Tobit* techniques; [*]: Statistically significant at the 99% level of confidence; [**]: Statistically significant at the 95% level of confidence; [***]:Statistically significant at the 90% level of confidence; (*t-statistics* in parentheses); Dependent variable is *LogMij*.

6. Conclusion

Using a cross-sectional and panel gravity model, this paper attempts to answer the questions, whether AFTA and infrastructure create gains to the trade flows of its member and whether other variables, such as economic size, distance, and common border influence the ASEAN trade flows. Our empirical findings were found to be generally consistent with the considered hypotheses. The results show that as a symbol of regionalism in ASEAN,

AFTA was significant in bringing a positive impact to the trade flows among its member for most periods. The other factors, such as infrastructure, economic size (income), and distance also give statistically significant impact on the ASEAN countries' trade flows. Insignificant influence only appears for the effect of common border on ASEAN trade flows.

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