

# DO FREE TRADE AGREEMENTS GENERALLY AND INDIVIDUALLY RAISE FOREIGN DIRECT INVESTMENT INTO VIETNAM?

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## Abstract

The paper examined whether signing FTAs generally and individually contributes to the changes of inward FDIs in Vietnam by using the gravity model with a panel data set of 20 countries including 14 FTAs partners of Vietnam and other 6 non-FTA trading partners, through 20 years from 1995 to 2014. We have found the evidences supporting that *FTAs do have significant and positive impacts on inducing the rise of abroad direct investment derived from FTAs' partners only*. Among 8 FTAs surveyed, *only 2 of them are significantly contribute to the increasing amount of FDI inflows in Vietnam, which are AKFTA and VJEPA*, as a result of actively taking advantages of preferential treatments relating to investment for the two biggest investors. The estimated results for AIFTA and AANZFTA are also significant but negative, as the late signatory of Agreement on Investment. Furthermore, the reduction in the impacts of joining FTAs after the WTO accession of Vietnam is also taken into account due to the lack of an appropriate strategy and other unpredictable events. Apart from FTAs, other factors namely exchange rate of the home country, WTO membership and the banking crisis that Vietnam experienced in 1997 are also found to be significant in explaining the independent variables.

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## 1. INTRODUCTION

According to the Ministry of Planning and Investment (MPI), in the first 7 months in 2014, Vietnam has 16,813 valid FDI projects registered with the total value of 242.4 billion USD. The accumulated implemented capital is approximately 118.9 billion USD, accounting for 69.4% of GDP in 2013 (World Bank Database). Vietnam has become an attractive host country, overtaking Philippines and Indonesia to become the third largest recipient of FDI inflow in the ASEAN after Singapore and Malaysia (Mirza and Giroud 2004).

This above rapid growth in FDI flows into Vietnam might be pushed up by the proliferation and intensity of free trade agreements (FTAs) since 1995, numerous of which include articles for investments (The detailed explanations about how FTA could have effects on FDI are made clear in Appendix 1). Until now, Vietnam has signed 10 FTAs including both multilateral and bilateral agreements, and several FTAs are in-progress and a variety of them are planned to execute. Many world-wide investors are considering Vietnam as a highly potential economy to invest in compared to other countries in the region by its openness and the speed of integration. Given the context of proliferating FDI flows and the increasingly popular trend of establishing FTAs, however, the role of FTAs in the determination of FDI pattern are in a big controversy with the varied results from different regions and individual economies.

For the case of Vietnam, there are only a few studies examining the effects of FTAs that Vietnam has signed recently on inward FDI of the country. Especially, several authors such as Pham (2011) and Nguyen et al. (2012) measured the impacts of these economic treaties by using economic models for their empirical studies. Nevertheless, given the assumption that all signed FTAs of Vietnam affect equally to FDI inflows and combined to one aggregate FTA dummy variable, these authors might devalue the effect of individual FTA. Meanwhile, Hoang et al. (2015) attempts to analysis how individual FTA that Vietnam has recently joined affects the FDI flows into the country, by using gravity model with a panel data set of 17 main FDI and trading partners of Vietnam between 1995 and 2011. However, the authors take all FTA dummy variables into one equation, which might reduce the estimation's accuracy.

Hence, with the target of contributing a more efficient study in this field, the authors would confine the impacts of FTAs that Vietnam has signed Vietnam by using the

gravity model with a panel data set of 20 countries including 14 FTAs partners of Vietnam and other 6 non-FTA trading partners, through 20 years from 1995 to 2014. The paper affirms that signing FTAs does have significant and positive impacts on inducing the rise of abroad direct investment of Vietnam derived from FTAs' partners only. Furthermore, only 2 of them are significantly contribute to the increasing amount of FDI inflows in Vietnam, which are AKFTA and VJEPA.

The remainders of the paper are organized as follows. Section 2 describes the model specification and methodology. Section 3 illustrates the database. The next section shows finding results of the research and the conclusion will be given at the last section.

## 2. METHODOLOGY AND MODEL SPECIFICATION

Studies about International economics, particularly on the impacts of two-sided, regional and multilateral relationships have offered proof to the strength of gravity models in clarifying effect of these connections. This issue was proved by many authors such as James E. Anderson (1979), Bergstrand (1985), Markusen and Wigle (1990), Eaton and Kortum (1997), Deardorff (1998), and Evernett and Keller (1998). In general, the advantages of this model in analyzing international trade flows are not only considering to a wide range of different factors affecting trade flows but also easily quantifying factors that explain the scale of international trade flows. Therefore, this study will approach the issue based on the gravity model.

In this research, the authors will employ the random-effect model for panel data with the forms taken as following:

(1)

$$\begin{aligned} \log\text{FDI}_{it} = & \alpha_0 + \beta_1\text{FTA}_{ivnt} + \beta_2\log\text{GDP}_{it} + \beta_3\log\text{GDP}_{vnt} + \beta_4\log\text{DIST}_{ivn} \\ & + \beta_5\log\text{EXR}_{it} + \beta_6\log\text{EXR}_{vnt} + \beta_7\text{WTO}_{it} + \beta_8\text{WTO}_{vnt} + \beta_9\text{CRIS}_{it} \\ & + \beta_{10}\text{CRIS}_{vnt} + \mu_i + \varepsilon_{ivn} \end{aligned}$$

(2)

$$\begin{aligned} \log\text{FDI}_{it} = & \alpha_0 + \beta_1\text{AFTA (AKFTA/ACFTA/AJCEP/VJEPA/AIFTA/AANZFTA/} \\ & \text{VNCHLFTA)} + \beta_2\log\text{GDP}_{it} + \beta_3\log\text{GDP}_{vnt} + \beta_4\log\text{DIST}_{ivn} + \beta_5\log\text{EXR}_{it} + \\ & \beta_6\log\text{EXR}_{vnt} + \mu_i + \varepsilon_{ivn} \end{aligned}$$

In which:

i denotes country i, vn denotes Vietnam, t is year t.

- $FDI_{it}$  denotes the FDI inflow of country  $i$  into Vietnam in year  $t$
- $GDP_{it}$  is the gross domestic product of country  $i$  in year  $t$  (2005 price)
- $GDP_{vnt}$  is the gross domestic product of Vietnam in year  $t$  (2005 price)
- $DIST_{ivnt}$  is the distance between country  $i$  and Vietnam
- $EXR_{it}$  denotes the real effective exchange rate of the currency of country  $i$  in year  $t$  against the US Dollar (on the year 2007 basis)
- $EXR_{vnt}$  denotes the real effective exchange rate of Vietnam Dong in year  $t$  against the US Dollar (on the year 2007 basis)
- $WTO_{it}$  is a dummy variable which equals to 1 if country  $i$  is a WTO member at year  $t$  and 0 otherwise.
- $WTO_{vnt}$  is a dummy variable which equals to 1 if Vietnam is a WTO member at year  $t$  and 0 otherwise.
- $CRIS_{it}$  is a dummy variable which is unity if country  $i$  witnesses a banking crisis at year  $t$  and 0 otherwise.
- $CRIS_{vnt}$  is a dummy variable which is unity if Vietnam witnesses banking crisis at year  $t$  and 0 otherwise.

*for equation (1)*

- $FTA_{ivnt}$  is a dummy variable which is unity if country  $i$  has a signed FTA with Vietnam and 0 otherwise

*for equation (2)*

- $AFTA$  is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN Free Trade Agreement at year  $t$  and 0 otherwise.
- $ACFTA$  is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN – China Free Trade Agreement at year  $t$  and 0 otherwise.
- $AKFTA$  is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN – South Korea Free Trade Agreement at year  $t$  and 0 otherwise.
- $AJCEP$  is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN - Japan Comprehensive Economic Partnership at year  $t$  and 0 otherwise.

- *VJEPA* is a dummy variable which is 1 after Vietnam and Japan have joined the Vietnam – Japan Economic Partnership Agreement at year  $t$  and 0 otherwise.
- *AIFTA* is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN - India Free Trade Agreement at year  $t$  and 0 otherwise.
- *AANZFTA* is a dummy variable which is 1 after Vietnam and partners have joined the ASEAN – Australia and New Zealand Free Trade Agreement at year  $t$  and 0 otherwise.
- *VNCHLFTA* is a dummy variable which is 1 after Vietnam and Chile have joined the Vietnam – Chile Free Trade Agreement at year  $t$  and 0 otherwise.
- $\mu_i$  measures the other impacts of a partner country
- $\varepsilon_{ivn}$  is the random error, assumed to follow the normal distribution

All the variables, except the dummies, are in natural logarithm form in the gravity equations. This is to make the models smoothly when the authors run computation. The coefficient of interest  $\beta_1$  measures the impacts of effective Vietnam's FTAs on FDI inflows. If participating in FTAs does enhance FDI attractiveness of Vietnam, this coefficient will be positive.

### 3. DATABASE

Variables used in this empirical study include a dependent variable (Foreign direct investment flows) and independent variables. A panel data set is collected from 20 trading partner countries within the period from 1995 to 2014, including 14 FTA partners: Thailand, Singapore, Philippines, Malaysia, Indonesia, Cambodia, Brunei, India, China, Republic of Korea, Japan, Australia, New Zealand, Chile; 6 other major trading counterparts of Vietnam: France, Germany, Denmark, Sweden, Switzerland and the United States of America. Statistics from Ministry of Planning and Investment show that investment from these trading partners accounts for more than 80% of total foreign investment capital during recent decades. Based on the previous discussion on the relevant variables for our model, the authors would summarize the choice of variables and source of data as follows:

***The dependent variable: Foreign direct investment (FDI):*** Total FDI capital registered and licensed in Vietnam from each partner countries are used. Data are

obtained from reliable sources such as Vietnam General Statistics Office (GSO), World Bank, UNCTAD, OECD's website, and governments' official websites of country *i*.

***Independent variables:***

- FTA data: This variable will be coded as 1 if in year *t*, there has been an effective FTA between Vietnam and partner *i*. Information for the year when individual FTA was signed are from an official website of WTO center in Vietnam ([www.trungtamwto.vn](http://www.trungtamwto.vn)) Some FTAs have been signed in the year 2015 but they are still excluded from calculation as data for 2015 are unavailable. Therefore, there are 8 FTAs which have been signed since 1995 taken into account in this research, namely AFTA (1995), ACFTA (2002), AKFTA (2005), AJCEP (2008), VJEPA (2008), AIFTA (2009), AANZFTA (2009), and Vietnam – Chile FTA (2011). (See Appendix 2 for the summary of Vietnam's trade integration milestones)

- Gross Domestic Product (GDP): In this study, the GDP index is used as a country characteristic. These indexes for foreign countries are collected mainly from World Bank, while Vietnam's GDP through years are from the GSO. All of the data are in constant 2005 U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 2005 official exchange rates.

- Distance (DIST) refers to the average distance between country *i* and Vietnam. The data is from the Institute for Research on International Economy (CEPII).

- Exchange rate (EXR): annually real effective exchange rates of all sample countries are calculated by Darvas (2012) and published in the website [www.brugel.org](http://www.brugel.org)

- WTO membership: information for year of participation is provided by the official website of WTO ([www.wto.org](http://www.wto.org)). According to that, all countries surveyed in this research have already joined this organization.

- Crisis data: The value of  $CRIS_{it}/CRIS_{vnt}$  is obtained from the previous work of some authors, primarily from Laeven and Valencia (2012), and supported by Naudé (2009) as well as Rose and Mark (2012). During the time length of this research, almost countries suffered from two significant banking crisis events including ASEAN financial crisis (1997) and the global financial and economic crisis in 2008. Two criteria which are given by Laeven and Valencia in order to define the situation of being affected by a banking crisis are: (i) There exist significantly negative changes in the banking system

(such as loss, reduction in liability) and (ii) The government has important banking policy intervention in response to the above negative changes in the system.

- AFTA, ACFTA, AKFTA, AJCEP, VJEPa, AIFTA, AANZFTA, VN-CHL FTA are free trade agreements that Vietnam has been a member. Related information of these agreements is gathered from the official website of WTO center in Vietnam ([www.trungtamwto.vn](http://www.trungtamwto.vn))

Table 1 (a) and (b) summarized statistically all variables (except individual FTAs) and individual FTA respectively in the model. Variable ‘country2’ which is encoded into numerical form from non-numerical variable ‘country’ shows the number of countries surveyed (20 countries) during the period from 1995 to 2014. According to this figure, we could see that apart from other variables, there are only 356 observations for FDI variable, a missing of 44 observations for all countries within this period of time.

**Table 1: Summary Statistics**

**(a) of all variables (samples of all countries)**

Variable	Obs	Mean	Std. Dev.	Min	Max
country	0				
year	400	2004.5	5.773503	1995	2014
logfdiivnt	353	17.55878	2.401091	11.51	23.43
ftaivnt	400	.48	.5002255	0	1
loggdpit	400	26.59117	1.874236	21.76337	30.32542
loggdpvnt	400	24.73215	.3634155	24.10785	25.30618
logdistivn	400	8.348404	.8448995	6.898414	9.83108
logexrit	400	4.612541	.1287539	3.927888	5.085967
logexrvnt	400	4.674682	.099936	4.527469	4.902892
wtoit	400	.9625	.1902215	0	1
wtovnt	400	.4	.4905115	0	1
crisit	400	.12	.3253685	0	1
crisvnt	400	.05	.2182179	0	1
country2	400	10.5	5.773503	1	20

**(b) of all individual FTAs**

Variable	Obs	Mean	Std. Dev.	Min	Max
afta	280	.5	.5008953	0	1
acfta	280	.3714286	.4840519	0	1
akfta	280	.2857143	.4525628	0	1
ajcep	280	.2	.4007162	0	1
vjepa	280	.025	.1564045	0	1
aifta	280	.1714286	.3775578	0	1
aanzfta	280	.1928571	.3952483	0	1
vnchlfta	280	.0142857	.1188785	0	1

## 4. RESULTS AND ANALYSIS

### 4.1 Baseline results:

The estimated results of  $\log FDI_{it}$  gravity equation are presented in Table 2 below applying the technique of Random Effects (RE). Analyzing data from all countries surveyed is accomplished first with an aim of shedding light on the effects of joining FTA to Vietnam's inward FDIs invested from not only member countries but also partners outside the region, then the authors will focus on the linkages between FTAs and FDI abroad of solely FTA partners into Vietnam by using the data from only Vietnam's 14 FTA partners. The authors also carry out Fixed Effects technique (FE) for two panel data sets. However, after using Hausman test for the purpose of selecting better technique, Random Effect (RE) technique is proved as a preferable technique to apply (see Appendix 3) for both samples of all countries and only FTA members. Hence, in the following section of this research, the authors will consider **RE-applying results** for analysis.

For  $FTA_{ivnt}$ , the authors find that joining FTAs only boost the FDI inflows of other FTA members into Vietnam but not that of the outsiders. The result for samples of all countries show that signing FTA does not contribute for the attractiveness of Vietnam's inward FDI, whereas the other result for samples of FTA countries which is statistically significant at the level of 5% indicates a contrasting conclusion. The sign of  $FTA_{ivnt}$  variable represents for the positive relationship between participating in FTAs and the flows of FDI into Vietnam. If this variable goes up by 0.01 unit, the inward FDI of Vietnam will increase by approximately 60% (=  $EXP(0.47121169) - 1$ ). One of possible explanations for this finding could be given as follows. Basically, FTAs' regulations are designed toward the favors of country members; as a result, they facilitate investment opportunities among insiders rather than investors outside the regions. Hence, in general, this cooperation does not affect the investment decisions of foreign investors, however in some extents, being members of free trade areas could yield a higher direct investment inflow from other members of those agreements.

**Table 2. Baseline results for main variables**

	Samples of all countries		Samples of FTA partners	
	RE	FE	RE	FE
	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>

<i>FTA<sub>ivnt</sub></i>	0.47121169	0.4069403	<b>0.63405297*</b>	0.6007096
	(0.3038142)	(0.3243214)	(0.307142)	(0.3117495)
<i>LogGDP<sub>it</sub></i>	<b>0.8640507***</b>	1.060562	<b>0.97526219***</b>	<b>1.661535**</b>
	(0.197763)	(0.565587)	(0.2708347)	(0.6209259)
<i>LogGDP<sub>vnt</sub></i>	<b>1.6382015***</b>	<b>1.54595***</b>	<b>1.268158***</b>	<b>0.7839433</b>
	(0.2571103)	(0.3808515)	(0.3438537)	(0.524162)
<i>LogDIST<sub>ivn</sub></i>	<b>-1.1587283*</b>		-1.0910017	
	(0.4785717)		(0.6892151)	
<i>Obs.</i>	353	353	242	242
<i>Time</i>	1995-2014	1995-2014	1995-2014	1995-2014

Detail findings for individual variables of the two models are as follows:

For *LogGDP<sub>it</sub>* and *LogGDP<sub>vnt</sub>* (presenting for Economic development), results in Table 2 illustrate that both GDP from Vietnam and its trading partners have significant impacts on FDI inflows of Vietnam. However, the effect from the change in Vietnam's GDP is stronger than that in its counterpart's. The rise of 1% in Vietnam's GDP will boost approximately 1.3% to 1.6% of inward FDI into Vietnam, whereas FDI inflow just rises by nearly 0.9% to 1% as country i's GDP increases by 1%. These positive impacts are consistent with what are expected from gravity model. The greater GDP means the better development of Vietnam's economy as well as higher purchasing power, which will give more opportunities to enhance sales revenue and gain more profit for companies. Hence, that will attract investors in different places to invest in.

For *LogDIST<sub>ivn</sub>*, the result for the first data set indicates that the change of this variable is significant in explaining the independent variable (FDI) but with a negative impact: The longer distance between Vietnam and partner country, the less investment in the form of FDI into Vietnam. Particularly, 1% increase of this distance will lead to a reduction of about 1.1% to 1.2% in FDI inflows. This negative relationship is also not out of expectation of this model type. There are a variety of obstacles arising from a faraway distance between two countries such as transportation cost, differences in cultures, consumer habits and legality, which often discourage investors to pour their money into. By contrast, distance is insignificant in the changes of Vietnam's inward FDIs from FTA members. Expectedly, the preferential investment treatments for investors from FTA countries of these agreements could outweigh so greatly the distance costs that they are

willing to trade off. Thus, distance is not put in consideration in their investment decision making.

#### 4.2 Results with Exchange rate, WTO membership and Crisis.

Table 3 illustrates findings for other factors such as exchange rate, WTO membership and banking crisis. Results for variable  $WTO_{it}/WTO_{vnt}$  in terms of both data sets are in column (1), while variables of exchange rate ( $LogEXR_{it}/LogEXR_{vnt}$ ) and crisis ( $CRIS_{it}/CRIS_{vnt}$ ) which both reflect the financial situation of an economy are shown in column (2).

In general, the proxy for *exchange rate* of Vietnam is statistically insignificant at the level of 5%, while it is significant for the case of country i. 1% increase in the real exchange rate of country i induces the rise of approximately 1.8% to 2% in Vietnam's FDI inflows and the magnitude of this variable in aligning with crisis factors is much lower than that but without those elements. A possible reason for the positive relationship between exchange rate of the home country's currency and their FDI abroad is given as follows: The increase in the exchange rate means the domestic currency is depreciated against USD. Investors will find domestic market less profitable due to their currency depreciation; hence, they tend to seek for potentially bigger market economies for the purpose of yielding profits from new foreign customers.

**Table 3. Results for other variables  
(including Exchange rate, WTO membership and Crisis)**

	Samples of all countries			Samples of FTA partners		
	(1)	(2)	(3)	(1)	(2)	(3)
	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>
<i>FTA<sub>ivnt</sub></i>	0.24907128	0.26014713	0.29617086	0.40862134	<b>0.60179565*</b>	0.53794457
	(0.3050169)	(0.30335)	(0.3056365)	(0.308014)	(0.2970251)	(0.3075564)
<i>LogGDP<sub>it</sub></i>	<b>0.77855207***</b>	<b>0.76948149***</b>	<b>0.78183562***</b>	<b>0.80440229**</b>	<b>0.96532886**</b>	<b>0.87637282**</b>
	(0.1973324)	(0.2190523)	(0.2098958)	(0.2740826)	(0.3004528)	(0.2991259)
<i>LogGDP<sub>vnt</sub></i>	0.35493683	<b>1.7870074***</b>	<b>1.4976686***</b>	0.22717545	<b>0.89505241*</b>	<b>0.87637282**</b>
	(0.3903992)	(0.3140711)	(0.3001236)	(0.46348)	(0.4188649)	(0.3848696)
<i>LogDIST<sub>ivn</sub></i>	<b>-1.2102159**</b>	<b>-1.1394606*</b>	<b>-1.1336731*</b>	-1.1016102	-1.1235467	-1.0199828
	(0.4672707)	(0.5297657)	(0.5053766)	(0.6730213)	(0.7765865)	(0.7678634)
<i>LogEXR<sub>it</sub></i>		<b>1.7597033*</b>	<b>2.0961993**</b>		1.3139298	<b>1.8805334*</b>
		(0.730119)	(0.7316227)		(0.7179601)	(0.7312899)
<i>LogEXR<sub>vnt</sub></i>		0.48382239	0.84254733		0.73191032	0.03566874

		(0.9584671)	(0.9275621)		1.079394	(1.051462)
<i>WTO<sub>it</sub></i>	0.92784121			0.93185954		
	(0.5188284)			(0.4896672)		
<i>WTO<sub>vnt</sub></i>	<b>1.1340465***</b>			<b>0.99248582***</b>		
	(0.2643981)			(0.2964245)		
<i>CRIS<sub>it</sub></i>		-0.30890619			-	
		(0.223)			<b>1.1626864***</b>	
					(0.308734)	
<i>CRIS<sub>vnt</sub></i>		<b>1.2064824***</b>			<b>1.1907351**</b>	
		(0.3597805)			(0.3988152)	
<i>Obs</i>	353	353	353	242	242	242
<i>R_squared</i>	39.78%	38.12%	38.72%	37.02%	37.57%	35.76%
<i>Time</i>	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014

In contrast, *banking crisis* proxies have a substantial effect to the changes of FDI flows into Vietnam, especially crisis events that Vietnam suffered from. The sign and significant level of  $CRIS_{vnt}$  proxy in terms of both data sets indicates that Vietnam's crisis affects positively and strongly to the attractiveness of inward flows of FDI. If the banking crisis of Vietnam goes up by 1%, Vietnam will attract the flows of direct investment from foreign investors by around 229% to 234%. Based on the work of Laeven and Valencia (2012), Vietnam only went through 1997 ASEAN financial crisis which was ended up in the same year. According to Nguyen et. al (2014), the impact of 1997 banking crisis on Vietnam's FDI inflows might be explained that the private capital flows intensely influenced by the banking crisis is fundamentally a short-term one, for example, Foreign Portfolio Investment (FPI), instead of a long-term investment as FDI. Throughout this period of time, Vietnam practically attracts and gets private capital flows under the FDI investment; consequently, there is no significant negative effect on FDI to Vietnam founded over the crisis time. Another conceivable reason might be, because of the lower level of being influenced by the crisis in comparison with different nations in the locale, Vietnam even becomes more attractive to FDI investors and encourages them to shift their capital from other Asian heavily-affected countries to Vietnam. There is the fact that FDI into Vietnam in 1997 is primarily from other Asian nations (Thailand, Singapore, Indonesia...). When it comes to banking crisis suffered by country *i*, the analysis on samples of FTA partners proved that investors from host countries does take their local financial situations into consideration when making choices of abroad

investment. It could become a source of demotivation in outward investment of country  $i$  due to the negative sign of  $CRIS_{it}$ 's coefficient. Noticeably, almost FTA partners of Vietnam are Asia countries who are also affected by the financial crisis in 1997 beginning in Thailand and quickly spreading throughout the region, damaging many Asia's economies. They had to face up with various difficulties derived from their nations, hence, in order to remain their domestic business, foreign investors were obliged to cancel or reduce capital for other foreign investment projects. The 1997 crisis in the other countries tend to last longer than in Vietnam which had experienced only during 1 year, therefore direct investment flows from abroad into Vietnam still increased in that year then fell in the following years when being captured by the consequences of crisis in country  $i$ .

As regards *WTO membership*, both data sets show the strongly significant and positive contribution of being a WTO member of Vietnam to attract FDI inflows into the country at the confidence level of 99.9%. Accession to the WTO of Vietnam increased inward FDI at about 170% ( $=EXP(0.99248582) - 1$ ) to 210% ( $=EXP(1.1340465) - 1$ ). However, the FTA dummy variable in the second data set becomes insignificant in case of being controlled by WTO variable. In other words, joining WTO could lessen the effects of FTAs to attract abroad direct investment into Vietnam. One explanation for that could be, the larger scope of WTO than FTAs creates more favorable conditions for all foreign investors not only FTA members and helps to enhance the FDI inflows into the country. Involving in the biggest trade organization in the world could increase believes of foreign investors in Vietnam's potential market as well as business environment.

#### ***4.3 Results in different periods of time***

Table 4 represents more detailed findings of the relationship between FTAs and FDI inflows of Vietnam in terms of different periods of time, using the data of FTA members due to the statistically significant coefficient of FTA variable. Given that WTO accession is considered as one of the biggest milestones in Vietnam's trade integration which encourages WTO members to sign FTAs via Article XIV GATT, in this section, the authors will carry out a deeper analysis in 2 different periods divided by the year of being a WTO member of Vietnam: from 1995 to 2007, and from 2008 to 2014. The estimated results for the first period are given in column (1) and (2), whereas the figures for the

other period are shown in column (3) and (4). The findings are expected to show the increase in the impacts of joining FTAs on attracting inward FDI flows into Vietnam.

Overall, the estimated coefficients of FTA dummy variable are paralleled with previous results for FTA members' data, which is statistically significant in inducing inward FDI into Vietnam. Another visible trend is that, the magnitudes of FTA's coefficients in the first period are higher than those of the second one, which is in contrast to the expectation. During the years from 1995 to 2007, Vietnam witnessed the increase of approximately from 236% (= EXP (1.2111091) - 1) to 376% (= EXP (1.5606292) - 1) in the flows of direct investment from abroad with the more FTAs that the country took part in. However, the figure for the time after joining WTO are lower, at only about 204% (= EXP (1.112432) - 1) to 207% (= EXP (1.12052) - 1).

**Table 4. Results for different periods of time**

	1995-2007		2008-2014	
	(1)	(2)	(3)	(4)
	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>	<i>LogFDI<sub>ivnt</sub></i>
<i>FTA<sub>ivnt</sub></i>	<b>1.5606292**</b>	<b>1.2111091*</b>	<b>1.112432*</b>	<b>1.12052*</b>
	(0.5506827)	(0.5344075)	(0.4718437)	(0.476956)
<i>LogGDP<sub>it</sub></i>	<b>1.0344625***</b>	<b>0.91023254**</b>	<b>0.8730504**</b>	<b>0.8767989**</b>
	(0.2870076)	(0.2883364)	(0.3005229)	(0.3128507)
<i>LogGDP<sub>vnt</sub></i>	0.77141531	1.0214043	<b>2.396725**</b>	0.9779583
	(0.4971919)	(0.5305143)	(0.9232242)	(1.790614)
<i>LogDIST<sub>ivn</sub></i>	-0.24760952	-0.08837855	-1.3518998	-1.3377108
	(0.8851263)	(0.8850559)	(0.7441686)	(0.7652584)
<i>LogEXR<sub>it</sub></i>		<b>2.5666611**</b>		1.223642
		(0.9290486)		1.771065
<i>LogEXR<sub>vnt</sub></i>		1.9384518		2.090708
		(2.244941)		(2.558737)
<i>Obs</i>	158	158	84	84
<i>R_squared</i>	32.42%	38.50%	36.64%	35.52%

A possible reason for the findings might be that, in the first period, the FTAs partners of Vietnam are almost key trading partners such as ASEAN countries, South Korea, and China, whose investment account for around 60% of total FDI capital of Vietnam (Ministry of Investment and Planning, 2007). Whereas, from 2008 to 2014,

despite new FTAs signed give opportunities for Vietnam to cooperate with some new partners, the proportions of their investment into Vietnam are not really substantial, which leads to the decrease in impacts of FTA variable on FDI inflows into Vietnam. Secondly, entering WTO does help Vietnam in enhancing the level of trade liberalization and opening more investment opportunities for foreign investors due to its investment-related regulation. These adding effects of WTO apart from FTAs has captured some small benefits of joining FTAs to attract abroad direct investment capital into Vietnam, as a result, it becomes less significant in comparison with the previous period. In some extents, the efficiency of FTA participation is lower after Vietnam enters WTO.

#### ***4.4 Detailed results for individual FTAs:***

In the previous equations, all joined FTAs are assumed to have the same impacts on the dependent variable and combined into only one representative variable as  $FTA_{ivnt}$ . In an effort to enhance the significance of the research, this section will examine the possible impacts of individual FTAs on inward FDI by replacing each FTA variable to  $FTA_{ivnt}$  variable in the prior measures, other variables are unchanged. The relationship between those FTAs and FDI inflows into Vietnam is shown in Table 5. The estimated results illustrate that AFTA, ACFTA, AJCEP and the Vietnam – Chile FTA have not affected in attracting inward FDI of Vietnam as the result of their statistically insignificant coefficients, while the other 4 FTAs namely AKFTA, VJCEP, AIFTA and AANZFTA are proved to have significant effects to the increase of FDI in Vietnam.

The sign and statistically significant coefficients of AKFTA dummy variable at the level of 1% indicate that the agreement does help to boost the FDI flows into Vietnam. If the agreement goes by 1%, the amount of inward FDIs will increase by nearly 140% ( $=EXP(0.87506533) - 1$ ). The Ministry of Planning and Investment of Vietnam who has recently calculated the investment of South Korea into Vietnam reveals that since 2014, this country has become the biggest foreign investor regarding the number of projects as well as the total investment capital in Vietnam with the total accumulative capital of over USD 50 billion, representing 18% of the total FDI in Vietnam in 2015.

It is said that this powerful partnership could be derived from the advantages of Vietnam against other intra-regional countries, for instance, similarities in cultures and norms against other intra-regional countries, low tariff and the potential market with relatively high growth rates. Furthermore, the significant impact of AKFTA on FDI

inflows into the country during the time surveyed might also be a result of the decision to formulating the bilateral agreement between Vietnam and South Korea after which was kickoffed in 2012 and became effective in 2015.

The estimated coefficient of VJEPA is positive with the highest magnitude suggesting that the VJEPA has a strongest impact on FDI inflows of Vietnam. The 1% rise of this agreement will contribute to the added value of around 398% ( $=EXP(1.60538) - 1$ ) to the FDI. Given that Japan was the biggest investor of Vietnam for long time before 2014 and is still ranked in top 3 key trading partners, this first bilateral FTA between Vietnam and other countries give Vietnam countless opportunities to attract investment from Japanese investors as well as improve the confidence of investors from other countries in a more favorable investment environment. In addition, it seems that the strong effect of VJEPA has captured the significance of AJCEP to the changes of direct investment from abroad - a regional FTA of Vietnam with Japan as an ASEAN member. It could be explained by the more intensively liberalized provisions related to investment of the bilateral negotiation in compared with the regional one.

By contrast, the Table 5 shows that joining AIFTA and AANZFTA affects negatively to inward flows of FDI in Vietnam due to the sign of their coefficients. One explanation for that could be after participating in these two agreements, the great benefits from lower tariff rates might facilitate investors from member states to export straightly to Vietnam. Hence, they are likely to decrease their abroad investment in the host country in an aim of avoiding the high tariff barriers that they had suffered from before signing those agreements. What is more, despite the AIFTA was officially signed in 2009, the Agreement on Investment was just contracted in 2014 and has become effective in 2015. It is reasonable that, therefore, the purpose of trading as exports and imports is more preferable and encouraged than direct investment by foreign investors of member countries during the time from 1995 to 2014.

**Table 5. Results for individuals FTAs**

	<b>AFTA</b>	<b>ACFTA</b>	<b>AKFTA</b>	<b>AJCEP</b>	<b>VJEPA</b>	<b>AIFTA</b>	<b>AANZFTA</b>	<b>VN-CHL FTA</b>
	<i>LogFDI<sub>ivnt</sub></i>							
<i>_FTA</i>	1.4471821	0.22394513	<b>0.87506533**</b>	0.56832609	<b>1.60538**</b>	<b>-0.64679198*</b>	<b>-0.7171714*</b>	-1.4995481
	(1.982468)	(0.314378)	(0.270851)	(0.2988697)	(0.6070736)	(0.3023935)	(0.3133916)	(2.511593)
<i>LogGDP<sub>it</sub></i>	<b>1.0149262**</b>	<b>0.83207049**</b>	<b>0.84433181***</b>	<b>0.89990375**</b>	<b>0.9592473**</b>	<b>0.85884715**</b>	<b>0.7563623**</b>	<b>0.77209367**</b>
	(0.371414)	(0.2990546)	(0.2226656)	(0.2788306)	(0.3004313)	(0.2988005)	(0.2789113)	(0.2602196)
<i>LogGDP<sub>vnt</sub></i>	<b>1.3586105***</b>	<b>1.2902855**</b>	<b>0.83391341*</b>	<b>1.2263555**</b>	<b>1.2821986***</b>	<b>1.6779148***</b>	<b>1.7731879***</b>	<b>1.5366689***</b>
	(0.392345)	(0.4429214)	(0.3876542)	(0.3741738)	(0.362483)	(0.3692749)	(0.369754)	(0.3457882)
<i>LogDIST<sub>ivn</sub></i>	-0.60655144	-1.048931	-0.88109795	-1.047595	-1.1877497	-1.2572068	-1.1743819	-0.7938786
	(1.046661)	(0.7708619)	(0.5488922)	(0.6989175)	(0.763208)	(0.7670536)	(0.6968097)	(0.8160907)
<i>LogEXR<sub>it</sub></i>	<b>1.9255272**</b>	<b>2.0519766**</b>	<b>2.0595776**</b>	<b>2.0163999**</b>	<b>2.4328538**</b>	<b>2.2277955**</b>	<b>2.4373602**</b>	<b>2.0463686**</b>
	(0.7387435)	(0.7364395)	(0.7200107)	(0.727619)	(0.7411442)	(0.7341448)	(0.7496732)	(0.7359657)
<i>LogEXR<sub>vnt</sub></i>	0.2791541	0.57368533	0.31652533	-0.61918121	-0.19517823	1.1285016	1.2365717	0.25776234
	(1.050559)	(1.139967)	(1.043255)	(1.142355)	(1.049154)	(1.11722)	(1.126909)	(1.05935)
<i>Obs</i>	242	242	242	242	242	242	242	242
<i>R_squared</i>	36.28%	35.19%	39.74%	35.94%	35.09%	35.55%	34.52%	35.58%
<i>Time</i>	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014	1995-2014

In summary, the key empirical results include firstly the scope of influence that signing FTAs has affected to. In particular, these agreements benefit Vietnam in the increase of FDI inflows from only FTA's insiders due to their preferential treatments toward investment among members. In the context of Vietnam's more opened market by joining free trade areas, the country's economic development does reflect by GDP proxies does enhance direct investment of foreign investors into Vietnam as their expectation of higher potential sales revenue. Secondly, the authors find that other factors namely exchange rate of the home country, and WTO membership and banking crisis of Vietnam do have great impacts on the changes of inward FDI in Vietnam. As the currency depreciation in the home country motivates local investors to develop their business in other potential markets outside the country, the fast growing economy of Vietnam has become attractive to foreign investors and gained increasingly FDI inflows into the country. Even Vietnam did suffer from the banking crisis in 1997, the less harmful consequences of the event in comparison with other nations in the region does help Vietnam to receive more FDI shifted from heavily-affected economies. Thirdly, accession to WTO have a strong positive linkage with the attraction of direct investment from outsiders, however, the effects of FTAs signed to these FDI flows are reduced after Vietnam being a member of WTO. Fourthly, the results imply that there is no evidence to demonstrate that AFTA, ACFTA, AJCEP and Vietnam – Chile FTA have promoted the country's FDI inflows. While the AKFTA and VJEPA have significantly increased direct investment from abroad to Vietnam, the AIFTA and AAZNFTA both affect negatively to the FDI probably caused by the more favorable conditions toward exports rather than investment.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

Theoretically, joining free trade areas creates a wide range of favorable conditions in boosting the economic development of a country in general and attracting FDI inflows in particular. However, it is undeniable that the trade integration does contain several drawbacks to both economic and non-economic aspects. The results of numerous researchers in over the world draw different conclusions, yet, they are consistent in some extents. FTAs tend to facilitate the flows of FDI by the ways of signaling investors to a more business-friendly environment as a member of an international agreement, or by

commitment devices between partners, as well as market expansion or cost reduction due to market-efficiency gain. Regarding Vietnam, there are not many works on studying this issue, but in general, the results all illustrate a positive relationship between involving in FTAs and the increase of FDI inflows, matching the finding of this study.

The paper examined whether signing FTAs contributes to the changes of inward FDIs in Vietnam by using the gravity model with a panel data set of 20 countries including 14 FTAs partners of Vietnam and other 6 non-FTA trading partners, through 20 years from 1995 to 2014. The authors find that FTAs do have significant and positive impacts on inducing the rise of abroad direct investment derived from FTAs' partners only. Furthermore, the reduction in the impacts of joining FTAs after the WTO accession of Vietnam is also taken into account due to the lack of an appropriate strategy and other unpredictable events. Apart from FTAs, other factors namely exchange rate of the home country, WTO membership and the banking crisis that Vietnam experienced in 1997 are also found to be significant in explaining the independent variables. Finally, among 8 FTAs surveyed, only 2 of them are significantly contribute to the increasing amount of FDI inflows in Vietnam, which are AKFTA and VJEPA, as a result of actively taking advantages of preferential treatments relating to investment for the two biggest investors. The estimated results for AIFTA and AANZFTA are also significant but negative, as the late signatory of Agreement on Investment.

This research suggests that a detailed strategy for signing FTAs with a focus on partner selection and the value-added of each agreement would be highly essential at the time of preparation for signing a series of FTAs in the near future. Along with that, the urgent needs for Vietnam are maintaining the macroeconomic stability and utilizing effectively commitments with South Korea and Japan.

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## **APPENDIX 1: CHANNELS FOR THE IMPACTS OF FTAS ON FDI INFLOWS**

In assessing the possible explanations for the effects of trade liberalization or economic integration on FDI inflows, a series of evidence supporting the mechanism in which assigning to signatories of global economic treaties enhances the attractiveness of a country toward foreign investors have been given by many researchers. The most common mechanisms reflecting how a joining free trade area affects the changes in inward flows of FDI are summarized as: signaling effect, commitment effect, commerce expansion and efficiency gain.

### ***Signaling effect:***

Most of researchers argued that one of the most important purposes of international organizations is that country members could be given better opportunities to signal their country' preferences and expectations, as presented in the study of Martin (2005). As regards economic aspects, the signaling mechanism means that by signing such agreements governments could get foreign investors' attentions as a piece of the international organization with friendly investment environments (Hallward-Driemeier, 2003; Neumayer and Spess, 2005; Salacuse and Sullivan, 2005, Kenyon and Margalit, 2014). Particularly, according to Kenyon and Margalit (2014): "The signal is of a country with a leadership that understands what it takes, and is keen to pursue policies that bring

about economic development. When evaluating a set of potential destinations for setting up operations in the developing world, the signal sent by membership in the club may thus make the host-country more appealing to foreign investors concerned about the orientation of the government's economic policies." A conclusion of this explanation is that the FDI-boosting impact of joining international trade integration could be substituted by different policies that prioritize investment-oriented industries, for example giving more incentives or being more opened to the finance sectors. The authors also give 2 criteria which need to be take in consideration to prove the signaling effect of trade agreements to FDI, including: firstly, the host countries who signed international trade and investment treaties receive a premium from overseas investors; and secondly, this premium is weaker or non-existent when different sorts of business-friendly approaches in the host nation are represented.

***Commitment effect:***

It is indicated that an international trade agreement can play a role of commitment scheme, thus investment is raised. The commitment effect of joining international trade agreement ties future government's administrations to attempted changes and acts because of particular provisions and regulations of the agreements or different determinants. Thus it decreases the amount of well-known time inconsistency problem whereby countries have an incentive to impose a higher tax rate (or even expropriate foreign investors) ex post although they had committed to national treatment of investors ex ante. Waldkirch (2002) points out that this affects partner country investment more than non-partner country FDI because it increased trade among partners alters the threat point and thus permits sustenance of a higher level of FDI.

A noticeable element in studies about FDI has shown that politics is an main feature affecting the performance of countries in appealing FDI. Significantly, researchers have said that overseas firms consider not just of the potential business environment in a given area, but also of the potential political danger connected with the host nation (Henisz, 2002). More specifically, there are arguments that firms are no longer fond of investing in locations where their investment's profitability may be compromised in the future by changes in conditions from the owner country. An aspect of such changes could be the security situation: politically unstable settings intercept potential investors as the eruption of violent conflict could lead to a significant disruption of business (Jensen and Young,

2008; Li, 2006). Government can be another important source for potential change, which could raise additional investment or alter regulations and impose new requirements on the MNC that would significantly reduce the profitability and value of the investment (Moran, 1998). Many developing countries have been avoided by investors due to such actions (Bubb and Rose-Ackerman, 2007; Guzman, 1998).

Significantly, this second source of change is required efforts to conquer by mere assurances from the government not to engage in such confiscatory actions. The government may alternate its policy if such a route becomes more advantageous for either economic or political reasons even if that government is genuine at the time it makes commitment to foreign investors. This problem, which so-call “time-inconsistency” is provoked by the truth that FDI often involves in high levels of upfront fixed costs. It means that if government decided to break the earlier commitment, investors definitely suffer a major loss. Moreover, even if a certain government is considered as trustworthy, it cannot be denied that it may late lose its power to a new leadership that does not see itself keep its predecessor’s commitments. Thus, countries in which potential investors envision such scenarios as more plausible – primarily countries with less stable regimes and with less transparent business and regulatory environments – are, all else equal, likely to suffer from persistently lower levels of foreign capital outlay.

Moran (1998) indicates that the possibility of outflow foreign investment has lessened essentially in late decades. However, there is a sufficiently increase in the threat of exploitative action by governments, such as weak enforcement of property rights or confiscatory taxation against multinational corporations, which pose a meaningful barrier to attracting foreign investment (Büthe and Milner, 2008; Büthe and Milner, 2014; Kesternich and Schnitzer, 2010). One solution to void the commitment issue is to pursue an arrangement that effectively ties the host-government’s hands in a way that the commitment would not be violated in the future, even if the government would like to do so. However, it is obviously difficult to create such type of credible arrangement. In a recent set of studies, they argue that membership in international institutions quite effectively helps overcome the commitment problem.

Other authors also point to that by joining bilateral investment agreements, governments increase their costs for changing certain policies, often because the treaties include explicit sanctioning mechanisms to punish such actions (Haftel, 2010; Kerner,

2009; Dreher and Voigt, 2011), while other scholars support the idea of a similar impact to the free trade agreements signing (Büthe and Milner, 2008; Büthe and Milner, 2014). Therefore, the argument is that through attending in an international treaty, foreign investors are offered greater reassurance which means key regulations and conditions appropriate to their investment would remain the same even after the investment was made. If the explanation for this effect is correct, the membership in free trade agreements of the host country should be most attractive to investors that provide reason for concerning about the regulatory environment and potential for confiscatory behavior by the government. Particularly, they expect to equip less mobile investments companies a higher premium for country's membership in international economic institutions rather than high mobile asserts firms.

***Commerce expansion:***

International trade agreements, including joining free trade areas, could allow countries to open the door of market to other *economies*. As a result, the country might be more appealing to foreign investors in several ways. The first advantage could be given to multinational companies. By signing such agreements with the companies' home country, their expenses can be reduced therefore, they might prefer to move their investment from the home country to the host country. Another argument given by Davis (2011) and Medvedev (2006) is that, the increasing number of market doors opened means a larger market size from which multinational enterprises could gain profits from their investment. Finally, if the host country signs free trade agreements with other nations in which the multinational companies' operation has located, it gives chances to extended intra-firm exchange, a key and developing segment of worldwide exchange (Bernard et al., 2010). Consequently, the signing of FTAs might help enhance overseas direct investment inflow through its direct benefit on the expanded commerce opportunities. If this mechanism is considered as the central factors in enlightening the positive effect of FTAs and inward FDI, a country that is a member in such agreements should become attractive to firms who investing for the objectives of taking advantages of preferential treatments from FTAs or the purpose of exporting back to the home country. Businesses interested in other factors might give a considerably lower premium to membership in international agreements.

***Efficiency gain:***

The mechanism indicates that by joining free trade agreements, the efficiency and cost of production could be enhanced, which benefit all country members. In particular, due to the elimination of tariff barriers, the country is allowed to import materials or parts of production with a cheaper price (Borensztein et al., 1998) or improve the productivity and efficiency of production through technology transfer and reallocate resources to the industry that the country having more competitive advantages in (Javorcik, 2004). Another explanation is given by Dunning (1993), enterprises who invest for the purpose of “take advantage of differences in the availability and costs of traditional factor endowments in different countries”, the signing of free trade agreements might be really crucial. In conclusion, the arguments above places an interest on the uncertainty in terms of the statement that developing countries attract more foreign direct investment by being a part of free trade areas in some extent: Firstly, whether the relationship occurs and is fundamental; and the second relates to the method by which this impact happens.

**APPENDIX 2: SUMMARY OF VIETNAM'S TRADE INTEGRATION  
MILESTONES**

The table below recaps some important milestones in the process of international economic integration of Vietnam, including participation in FTAs between the ASEAN and outsiders:

1986	Started Doi Moi policy, transform from a centralized economy to a market economy, lay the foundation for international economic integration
1994	Submitted documents to join GATT
1995	Became an official member of ASEAN
1996	Joined Common Effective Preferential Tariffs (CEPT) under the framework of AFTA.

	Being a founder of the Asia-Europe Cooperation Forum (ASEM)
1998	Became an official member of the Asia-Pacific Economic Cooperation Forum (APEC)
2002	Signed the ACFTA with China as an ASEAN member
2003	The Early Harvest Program in the framework of ACFTA was officially deployed. Started to negotiate AIFTA and AJCEP with India and Japan as an ASEAN member
2004	Started to negotiate AKFTA and AANZFTA with Republic of Korea, Australia and New Zealand as an ASEAN member
2005	Signed the AKFTA with Korea as an ASEAN member
2006	Became an official member of the World Trade Organization (WTO)
2007	Started to negotiate the FTA between ASEAN and EU Started to negotiate the bilateral FTA with Japan
2008	Started to negotiate the bilateral FTA with Chile Signed the AJCEP with Japan as an ASEAN member as well as VJEPA as a bilateral partner of Japan.
2009	Signed the AIFTA and AANZFTA with India, Australia and New Zealand as an ASEAN member
2011	Signed the bilateral FTA with Chile
2012	Started to negotiate the bilateral FTA with Republic of Korea (VKFTA)
2013	Started to negotiate the FTA with Eurasian Economic Union (EEUV – FTA)
2015	Signed the FTA between Vietnam and Eurasian Economic Union Signed the bilateral FTA with Republic of Korea Completed negotiations between Vietnam and EU

(Source: Official website of Vietnam's WTO Center, [www.trungtamwto.vn](http://www.trungtamwto.vn))

### APPENDIX 3. HAUSMAN TEST FOR THE SAMPLES OF

#### (a) All countries

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
ftaivnt	.4069403	.4712117	-.0642714	.113496
loggdpit	1.060562	.8640507	.1965111	.5298853
loggdpvnt	1.54595	1.638201	-.0922513	.2809665

b = consistent under H<sub>0</sub> and H<sub>a</sub>; obtained from xtreg  
 B = inconsistent under H<sub>a</sub>, efficient under H<sub>0</sub>; obtained from xtreg

Test: H<sub>0</sub>: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(3) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 0.35 \\ \text{Prob}>\text{chi2} &= 0.9503 \end{aligned}$$

The p-value of 0.9503 > 0.05 means that the null hypothesis H<sub>0</sub> which is applying fixed effect model will be rejected. Thus, random-effect model should be more suitable to use in this analysis.

#### (b) FTA members

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
ftaivnt	.6007096	.634053	-.0333433	.0534003
loggdpit	1.661535	.9752622	.6862724	.5587464
loggdpvnt	.7839433	1.268158	-.4842147	.395614

b = consistent under H<sub>0</sub> and H<sub>a</sub>; obtained from xtreg  
 B = inconsistent under H<sub>a</sub>, efficient under H<sub>0</sub>; obtained from xtreg

Test: H<sub>0</sub>: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(3) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 1.51 \\ \text{Prob}>\text{chi2} &= 0.6802 \end{aligned}$$

The p-value of 0.1246 > 0.05 means that the null hypothesis H<sub>0</sub> which is applying fixed effect model will be rejected. Thus, random-effect model should be more suitable to use in this analysis.