Determinants of Vietnam's exports: Application of the Gravity Model

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Abstract

The success of exports in Vietnam has become a driving force for economic growth since the reform in 1986. The paper uses data from 2001 to 2004 to estimates the gravity model for Vietnam's exports with the random effect estimation. The empirical results show that the bilateral trade of Vietnam has positive relationship with the country's GDP and importing countries' GDP. Furthermore, it has a negative relationship with distance from Vietnam to trading partners. These results are the same as the previous studies of the gravity model. Particularly, foreign direct investment, border effects and exchange rate play a significant role in promoting exports of Vietnam. Besides, the deepened integration into the region and world market also has significant impacts on expanding exports of Vietnam. Therefore, these factors have contributed to explaining the success in exports of Vietnam over the past few years.

Key words: Gravity model, exports of Vietnam, determinants of Vietnam's exports

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1 Introduction

Before the renovation process[1] in 1986, Vietnam experienced a prolonged central-planning regime, and import-dominated economy. Most decisions on foreign trade were made by central authority, and biased towards socialist countries. Moreover, international trade instruments were applied such as trading rights, quantitative restrictions, and a multiple exchange rate system. Following the loss of traditional markets in 1989, trade barriers on the export side were dismantled rapidly. This resulted in low competitiveness and poor economic performance.

In 1986, Vietnam launched economic reforms. Under the reform process, Vietnam's trade regime has gradually been liberalized. Most restrictions on an establishment of export and import companies have been eased. Since 1986, exports have made a significant contribution to the success of the renovation process and become a driving force for rapid economic growth of Vietnam.

According to General Statistical Office (GSO) in 2005, economic growth has partly contributed by the expansion of exports, which has been a 21.2 per cent of growth rate annually since the reforms. The turnover of exports increased from USD 789 million in 1986 to USD 26.4 billion in 2004. In 2004, exports accounted for 58.2 per cent of GDP of Vietnam. Vietnam's composition of exports reduced from 74 percent of resource-based products in 1985 to nearly 17.6 per cent in 2004. Manufactured exports represented of over 50 per cent of total exports of Vietnam (GSO 2005). The export market has been

[1] Known as '*Doi moi*'

diversified. At present, Vietnam has trade relations with over 221 countries and territories, exporting to 219 countries. Vietnam's export volume to the United States, The EU, Japan and China represented 62 per cent of total exports in 2004. In 2004, the USA ranked the largest imported country, with total imported value of USD 5.045 billion. Follow the USA, Japan imported USD 3.54 billion in 2004. The EU and China ranked third and fourth, which accounted for approximately 18.8 per cent and 10.9 per cent respectively.

Accompanied with the success of the economic reforms, there have been many factors which drive a significant increase in Vietnam's export such as the improvement of demand for export products and country's supplying capacity, the booming of foreign direct investment (FDI), an increase in competitiveness of exchange rate, and integration of Vietnam into the world economy. Identifying precisely the key factors which determine exports of Vietnam is essential for policy makers in order to achieve sustainable export growth, which is a driving force for Vietnam's economic growth.

Literature Review

There has been much research on the gravity model, which is widely applied in examining determinants of exports. Tinbergen (1962) was the first person who developed the gravity model. He states that GDP of trading countries has a positive effect on exports, while distance can impose a negative on exports. Based on Newton's Law of Universal Gravitation, Tinbergen shows that the trade from country i to country k is defined as:

$$EX_{ij} = G\frac{Yi * Yj}{Dis\tan ce_{ij}} \qquad (1)$$

Where EX_{ik} represents the trade between country i and k. Y_i and Y_k are GDP of country i and country k. $Distance_{ik}$ captures the distance from country i to country k.

Linnemann (1966) together with Aiken (1973) apply the gravity model but exclude prices. They provide a general specification of the gravity model which the flow of trade between countries is subject to GDP of country i, k (Y_i, Y_k), distance from i to k (D_{ik}) and factors that affect trade between country i and k. The equation is defined as:

$$EX_{ik} = \beta_0 (Y_i)^{\beta 1} (Y_k)^{\beta 2} (D_{ik})^{\beta 3} (A_{ik})^{\beta 4} u_{ik} \quad (2)$$

Similarly, Anderson (1979) develops the gravity model by applying product differentiation and Cobb-Douglas preferences for many goods. The model, however, is limited by the assumptions of identical preferences for goods and the identical structure for tax and transport. Bergstrand (1985) establishes a foundation for the gravity model. He developed the equation (2) from a general equilibrium framework. He concludes that the gravity equation is derived form of a model based on differentiated products. Baldwin (1994) uses the gravity equation to identify factors that affect trade of manufactured goods. His study emphasizes the effects of increasing return to scale on intra-industry trade. Like Baldwin, Deardorff (1995) applies the Heckscher-Ohlin theory to derive the gravity equation. He states that the Heckscher-Ohlin model can provide the foundation of the gravity model.

Finally, Helpman (1998) claims that the gravity model is only suitable for intra-industry trade, not inter-industry trade. He suggests that it works best for identifying factors affecting the trade volume. Feenstra (2004) shows that the bilateral trade between two countries depends on countries' GDPs.

There have been a few empirical researches on the exports of Vietnam. However, they did not consider all factors that affect exports, opportunities, and challenges of Vietnam's exports. Nguyen (2002) applies the gravity model to investigate effects of ASEAN Free Trade Area (AFTA) on Vietnam's exports to ASEAN countries. He concluded that AFTA was not a key element in Vietnam's bilateral trade. Like Nguyen, Tran (2005) uses the gravity model to forecast the impacts of the trade agreement on the economic relationship between Vietnam and Japan. Despite these studies' application of the gravity model, they have still not covered the whole picture of Vietnam's exports. Martin (2002) introduced the overview of Vietnam's exports. He pointed out factors that led to the success in the expansion of exports. Nevertheless, his study did not analyze exports quantitatively. Thus, so far there has been no research on the determinants of Vietnam's exports by using the gravity model.

Objectives

Although there is extensive literature on the gravity model and exports, Vietnam has not had much research. The objective of this research is, therefore, to identify factors which influence Vietnam's exports by applying the gravity model approach. It will apply the model developed by Bergstrand (1985) to empirically estimate the effects of GDP of Vietnam and trading partners, the distance, border, foreign direct investment, exchange rate and trading blocks on the exports of Vietnam. The findings of the research shows quantitatively effects of these factors on exports of Vietnam and the relevance of the gravity model in analyzing determinants, which explain the export growth of Vietnam.

The paper is structured as: Section 2 introduces the methodology of the research which includes model specification, hypotheses and data. Section 3 provides empirical results of the gravity equations. Section 4 assesses estimated results and gives some discussion and Section 5 provides conclusions.

2 Methodology

Bergstrand (1985) presents the gravity model, which calculates the effects of variables on exports between two trading countries. The model specification is shown in equation (2). The paper will use equation (2) with further extension of some variables to identify the gravity model specification for Vietnam.

$$EX_{ik,t} = \beta_0 (Y_{i,t})^{\beta 1} (Y_{k,t})^{\beta 2} (D_{ik,t})^{\beta 3} (FDI_{k,t})^{\beta 4} (ER_{ik,t})^{\beta 5} (B_{ik,t})^{\beta 6} (Block_{k,t})^{\beta 7} u_{ik,t} \quad (3)$$

Taking natural log of equation (3), the gravity model specification is defined as:

$$lnEX_{ik,t} = \beta_0 + \beta_1 lnY_{i,t} + \beta 2 lnY_{k,t} + \beta_3 lnD_{ik,t} + \beta_4 lnFDI_{k,t} + \beta_5 lnER_{ik,t} + \beta_6 B_{ik} + \beta_7 Block + u_{ik,t}$$

Where EX_{ik} is the export volume from Vietnam to trading partner at time t. Yi denotes GDP of Vietnam, Y_k denotes GDP of country k. FDI_k represents foreign direct investment of country k into Vietnam. ER_{ik} is the foreign exchange rate between VND and foreign currency (foreign currency per VND) at time t, B_{ik} denotes the dummy variable that captures border effects (1 if country k shares the same border and 0 if different border). $Block_{ik}$ denotes the dummy variable including three cases: a) country j signs the trade agreement with Vietnam (BTA), b) country k is a member of ASEAN and join ASEAN free trade area (AFTA) and c) country j is a member of the EU. D_{ik} is the distance from Vietnam to country k (from Hanoi to capitals of country k).

Table 1 **Description of specific variables**

Variables	Description	Sources
EX_{ik}	Export volume from Vietnam to country j	GSO
Y_i	Gross Domestic Products of Vietnam(base year 1995)	GSO
Y_k	Gross Domestic Products of country j	IMF
FDI_k	Foreign Direct Investment of country j into Vietnam	GSO
ER_{ik}	Exchange rate (foreign currency per VND)	IMF
Distance	Distance between Vietnam and country j	WRI
Border	Dummy variable (1 if sharing same border and 0 is others)	GSO
AFTA	ASEAN Free Trade Area (1 = member and 0 is others)	GSO
BTA	Bilateral Trade Agreement with Vietnam	GSO

Hypotheses

- GDP of Vietnam is defined as the production capacity of the economy. It is expected that the increase in GDP of Vietnam will encourage an improvement in exports ($\beta_1>0$).

- Y_j represents the GDP of country j, which captures the demand capacity for Vietnam's export products. If Y_j rises, country j will import more goods ($\beta_2 >0$).

- The gravity model can show the negative sign of distance variable due to the transaction, transport costs or risks of transportation and cultural differences ($\beta_3 <0$).

- Foreign direct investment becomes an important factor in promoting the export growth of Vietnam. It is expected that a positive relationship exists between FDI and the expansion of exports ($\beta_4 >0$).

- The Marshall-Learner condition holds (the sum of exchange rate elasticity of export and import are greater than unity). This means that a exchange rate depreciation will encourage exports ($\beta_5 >0$).

- Border effects contribute to explaining the increase in export growth of Vietnam. If country j shares the same border with Vietnam, trade will be higher ($\beta_6 > 0$).

- If Vietnam takes part in AFTA, it will support the improvement of Vietnam's exports. Similarly, if the country signs a bilateral trade agreement with country j, it also enhances exports.

Data

The paper covers data of 28 countries from 2001 to 2004. It uses the panel data, which shows the effects of different variables over time and unobservable variables. Data are collected from different sources including International Monetary Fund-IMF (GDP of country k, foreign exchange rate), GSO (export volume of Vietnam, GDP of Vietnam and FDI), World Resource Institute-WRI (distance from Vietnam to country k). The number of observations is 104. Summary of statistics are provided in Table 2.

Table 2 **Summary of statistics**

Variables	Unit	Mean	Std. Dev	Min	Max
EX_{ik}	1000 USD	644095.5	850041.2	15400	5024800
Y_i	1000 USD	3.67e+07	6311025	2.89e+07	4.53e+07
Y_k	1000 USD	1.14e+09	2.04e+09	3656000	1.17e+10
FDI_k	1000 USD	166697.8	195656.1	0	1074000
ER_{ik}	$ per VND	7711.211	8067.758	1.380756	33716.8
Distance	km	6361.357	3830.618	952	13362

3 Empirical results

There are three ways to estimate the model specification including pooled ordinary least square (OLS), fixed effects and random effects when using unbalanced panel data (Rahman

2004). This paper will use Stata 9 to estimate and test a method of estimation, which is likely to provide the best estimation of the gravity equation for Vietnam's trade.

Tests of the model selection

Some tests are applied to select the estimation method. First, the BP Lagrange multiplier test is used to identify the appropriate method between OLS and fixed effects and random effects (Appendix A1). Table 3 shows that the null hypothesis Ho: Var (u) = 0 can be rejected due to calculated value of chi2 is greater than the critical value at 5 per cent significant level. As a result, the OLS estimation could create biased coefficients. Therefore, this method cannot be applied in this paper. Second, the Hausman test is designed to verify fixed effects and random effects (Appendix A2). It can be seen in Table 3, the result of estimates using the Hausman test. The null hypothesis Ho: difference in coefficients not systematic cannot be rejected because chi2 is low at 2.77. Hence, the random effect estimation is selected to estimate the gravity model when using the panel data from 2001 to 2004.

Table 3 **Results of model selection**

Null hypothesis	χ^2 - statistics	χ^2 - critical value	Decision
1. BP lagrangian multiplier test:			
H_0: Var(u) = 0	123.40	3.84	Rejected
2. Hausman test:			
H_0: Difference in coefficients not systematic	2.77	5.99	Fail to reject H_0
3. Wald test:			
H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$	231.23	15.50	Rejected

Finally, a test of heteroskedasticity and autocorrelation is designed in a random effect model. Results of the random effect model show that some variables are not significant and the rho value is greater than 0.5 (Appendix B). This means that the estimation has heteroskedasticity and autocorrelation problem. Therefore, the generalized least squares (GLS) is applied to estimate the random effect model because it has corrected heteroskedasticity and autocorrelation by white covariance matrix.

The estimation result

The paper uses the GLS random effect estimation to identify parameters of the gravity model for Vietnam's exports. The results of the model using data from 2001 to 2004 are shown in Table 4.

Table 4 **Random effects model of Vietnamese exports**

	Coefficients	**Std. Errors**	***z* - ratio**
Constant	-12.2318	7.1593	-1.71
$\ln Y_i$	0.6479	0.4100	1.65
$\ln Y_j$	0.7257	0.0829	8.75
$\ln FDI_j$	0.202	0.0695	2.90
$\ln ER_{ij}$	0.0738	0.0353	2.09
Border	1.3139	0.4378	3.00
Distance	-05107	0.1494	-3.42
AFTA	1.1478	0.2406	4.77
BTA	-0.2879	0.4087	-0.70
Log likelihood	-111.5645	Num. of obs:	104

As can be seen in Table 4, coefficients are significant at the 5 per cent level. The increase in GDP of Vietnam and importing countries will encourage the expansion of Vietnam's exports. Similarly, the growing foreign direct investment into Vietnam will have a positive impact on exports. Moreover, if Vietnam depreciates its currency, this policy will enhance the competitiveness of Vietnamese export commodities.

A similar pattern can be seen in border effects, if country j shares the same border with Vietnam, the export volume to this country will be higher at 1.31 per cent than others without the common border with Vietnam. The dummy variable AFTA has the same outcome due to the positive sign of the coefficient, which means that exports to members of AFTA will have higher of 1.14 per cent than non-members. In contrast, the variable of distance has a negative relationship with export volume.

4 Discussion

Vietnam has gained great achievements in export growth. If oil exports are not calculated, the export earnings of manufactured goods constituted over 50 per cent of the export revenue. This shows a positive trend of Vietnam's export as sustainable the path of industrialization. This change in the export structure is the same as the path of successful exporting countries (Martin 2002). Vietnam is moving from resource-based products to labor-intensive and capital-intensive products. Through this trend, it is suitable for the development level of Vietnam and tapping available comparative advantage as labor abundance. Empirical results in this study can identify the effects of factors, which contribute to success in Vietnam's exports.

First, GDP of Vietnam, which shows production capacity, has a positive impact on Vietnamese exports. The economic growth rate of Vietnam maintained at 7.24 per cent annually from 1989 to 2004 (World Bank 2005). This contributes to enhancing the capacity of production and industrial development that was a key factor to upgrade the export composition. Experience of many countries shows that a strong industrial foundation promotes exports of manufactured goods. Over the past decade, Vietnam's industry has grown rapidly with an average rate of 14 per cent per year. From 1995 to 2003, Vietnam expanded its industrial capacity and technology base substantially, with the establishment of many new industries. Consequently, the gross value of industrial production at current prices more than tripled during 1995-2003. According to Vo (2002), the development of new industries such as electronics, electrical components and construction materials supported industries with high competitiveness. The total investment was USD 130 billion

in the period 1988-2003[2]. The investment focused on upgrading infrastructure and strengthening technology capacity, which facilitated growth of the industrial sector. Thus, economic growth will promote the economic structure shift, which contributes to diversifying export commodities and improve competitiveness.

Second, GDP of trading partners also has a positive effect on exports of Vietnam. It is defined as consumption capacity of importing countries. At present, Vietnam is still a small economy and depends much on foreign markets. The Heckscher-Ohlin theory shows that if an economy has relatively well endowment of factors, it will export goods, which produce goods that are intensive in the factors (Krugman 1997). Vietnam has a comparative advantage of labor. Thus, this country mainly exports labor-intensive products to developed countries such as Japan and the EU. In addition, Feenstra (2004) states that increasing return and monopolistic competition will make country export varieties of the differentiated product to another. Thus, there has been increasing demand for Vietnam's export products over the past few years. This finding is similar to the theory of the gravity model which shows that the bilateral trade between the two countries in directly proportional to the product of the countries' GDP (Feenstra 2004).

Third, FDI has become an important factor contributing to export growth of Vietnam. As can be seen in the empirical results, if there is an increase in FDI 1 per cent, export volume will rise by 0.202 per cent. Like other countries, Vietnam's exports have been influenced by a rapid increase in FDI. FDI shifted towards light manufactures and export industries in the period 2001-2004. During the period 1991-1995, exports of foreign invested enterprises

[2] Report of MPI, 2003

(FIE) were low because Vietnam attracted mainly import-substituting FDI, not export-oriented FDI. Exports of these enterprises in 2004 alone constituted 26.94 per cent of the total exports of Vietnam. Therefore, FDI was a key factor in the success of Vietnam's exports.

Table 5 **FDI and FIEs' trade and exports in Vietnam, 1991-2002** (1000 USD)

Year	Implemented FDI	FIEs' total trade	FIEs' exports
1998	2,744,000	2,962,000	920,000
1999	1,606,219	4,680,000	1,790,000
2000	904,281	4,650,000	1,982,000
1991	611,170	5,972,000	2,590,000
2002	749,581	7,670,000	3,320,000
2003	1,311,757	8,657,000	3,673,000
2004	1,152,854	11,000,000	4,500,000

Source: Vietnamese General Statistics Office, 2005, Hanoi.

Fourth, exchange rate plays a vital role in exports. Empirical results show that the increase in exchange rate will encourage export growth. Miles (1979), and Warner and Kreini (1983) found that the impacts of the exchange rate depreciation on exports is significant The adjustment of the exchange rate will impact on prices of export and import goods, and competitiveness of goods. With its outward-looking strategy, Vietnam has maintained the managed exchange rate regime in the last decade. The official exchange rate, however, has een identified by the foreign exchange market since 1994.[3] The government has allowed a 10 per cent margin between the official exchange rate and market rate since 1997. In order to encourage exports, Vietnam sustained competitive real exchange rates. The VND depreciated by nearly 20 per cent during the Asian financial crisis but has demonstrated broad stability

with a mild depreciation since then. The average increase between 1998 and 2004 was 3.2 per cent (GSO 2005).

Fifth, according to the empirical result, there is a large border effects on exports of Vietnam. Anderson and van Wincoop (2003) state that small economies have a greater border effects. Table 4 shows that Vietnam's exports are 1.31 per cent greater if sharing the same border than without. In recent years, there has been a blooming of Vietnam's exports to China, which became one of the largest markets. The reduction of transportation costs, time and risk has facilitated the improvement in the bilateral trade between Vietnam and China.

Finally, the ASEAN free trade area has a positive impact on Vietnamese exports (Table 4). The coefficient of this dummy variable is highly significant when Vietnam is a member of AFTA. AFTA was formally established in 1992. The Common Effective Preferential Tariff (CEPT) scheme was designed to bring down tariffs on all manufactured and processed agricultural products to 0-5 per cent within 15 years (Fukase and Martin 1999). This tariff reduction has provided Vietnam with greater access to ASEAN export markets.

5 Conclusion

The purpose of this paper is to identify determinants of exports of Vietnam in the period 2001-2004 and to support the gravity model by empirical results. Thestudy uses the econometric model to estimate coefficients in the gravity model. The random effect estimation is designed to provide the empirical result, which indicates that independent variables are significant with the exception of the dummy variable BTA. This result is the

[3] The inter-bank foreign exchange transaction market was established on the 20th of September 1994.

same as previous studies, which shows that bilateral trade has a positive relationship with the country's GDP and importing countries' GDP and a negative relationship with distance. In particular, foreign direct investment, border effects and exchange rate play a significant role in promoting exports of Vietnam. As the same time, the deepened integration into the region and world also contribute to explaining the success of Vietnam's exports.

The study, however, has some limitations. There are many other factors such as trade policies, the impact of World Trade Organization's accession, and protectionism of developed countries which are not captured by this paper. Therefore, the lack of these variables may have an impact on the accuracy of the result. Moreover, the paper only covers the data from 2001 to 2004. This is a short period that cannot capture the changes of export volume overtime. Nevertheless, this study may provide a picture of the gravity model for Vietnam's exports, which will enable policy-makers to have sound policies to increase the export volume of Vietnam such as further exports to large markets and countries sharing the same border with Vietnam, competitive exchange rate policy, the expansion of foreign direct investment and further integration in the world economy.

Appendices

Appendix A1 **Result of Breusch - Pagan Lagrange multiplier test**

	Var	Sd = sqrt(Var)
lnEXij	1.628517	1.276134
E	0.0273925	0.1655068
U	0.5920973	0.7694786

Source: Calculated from Stata 9.

Test: Var (u) = 0, chi2(1) = 123.40, critical value of chi2(1): Prob > chi2 = 0.0000

Appendix A2 **Hausman Test**

	Coefficients			
	(b) fixed	(B)	(b-B) difference	Sqrt(diag(V_b-V_B)) S.E.
$lnEX_{ij}$	0.2577181	0.9101578	-0.6524397	1.781519
lnY_i	-1.434201	0.35523	-1.789431	1.882997
lnY_j	3.756844	3.600641	0.1562028	0.0000
$lnFDI_j$	0.5397935	0.2880631	0.2517304	0.0575165
$lnER_{ij}$	0.7411722	0.2662983	0.4748739	0.754461

Note: Test Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 2.77

Prob>chi2 = 0.5962

Appendix 2 **Random effects model of Vietnam's exports**

Random-effects GLS regression				Number of obs = 104		
Group variable (i): id				Number of groups = 27		
R-sq: within = 0.6423				Obs per group: min = 2		
between = 0.6589				avg = 3.9		
overall = 0.6643				max = 4		
corr(u_i, X) = 0 (assumed)				Wald chi2(8) = 173.33		
				Prob > F = 0.0000		
$lnEX_{ij}$	Coef.	Std. Err.	z	P>/z	[95% Conf.	Interval]
lnY_i	0.762092	0.120845	6.31	0.000	0.525239	0.998944
lnY_j	0.756179	0.140168	5.39	0.000	0.481455	1.030903
$lnFDI_j$	0.015377	0.035734	0.43	0.667	-0.054660	0.085414
$lnER_{ij}$	0.058228	0.071301	0.82	0.414	-0.081519	0.197976
B_{ij}	1.252806	0.837069	1.50	0.134	-0.387819	2.893432
lnD_{ij}	-0.667642	0.278321	-2.40	0.016	-1.213141	-0.122143
AFTA	1.02289	0.514698	1.99	0.047	0.014099	2.031681
BTA	-0.146910	0.842709	-0.17	0.862	-1.798592	1.50477
_cons	-10.7621	3.207846	-3.35	0.001	-17.04936	-4.474834
sigma_u	0.769478					
sigma_e	0.1655068					
rho	0.9557821	(fraction of variance due to u_i)				

Appendix 3 **The Vietnamese export random effect model after correcting heteroskedasticity and autocorrelation**

Coefficients: **generalized least squares**				Number of obs = 104		
Panels: **homoskedastic**				Number of groups = 27		
Correlation: **no autocorrelation**				Obs per group min = 2		
				avg = 3.85185		
				max = 4		
Estimated covariances = 1				Wald chi2(8) = 231.23		
Estimated autocorrelations = 0				Prob > chi2 = 0.0000		
Estimated coefficients = 9						
Log likelihood = -111.5645						
lnEXij	Coefficient	Std. Err.	Z	P>/z/	[95% Conf.	Interval]
lnY_i	0.6747175	0.4100874	1.65	0.100	-0.1288391	1.478674
lnY_j	0.725718	0.082904	8.75	0.000	0.5632291	0.888207
$lnFDI_j$	0.2020653	0.0695702	2.90	0.004	0.0657102	0.3384204
$lnER_{ij}$	0.0738053	0.035384	2.09	0.037	0.0044539	0.1431567
B_{ij}	1.313918	0.4378992	3.00	0.003	0.4556515	2.172185
lnD_{ij}	-0.5107091	0.1494034	-3.42	0.001	-0.8035344	-0.217883
AFTA	1.147854	0.2406659	4.77	0.000	0.6761572	1.61955
BTA	-0.2879974	0.4087461	-0.70	0.481	-1.089125	0.5131303
_cons	-12.23189	7.159381	-1.71	0.088	-26.26401	1.800244

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