



Received: 17 May 2017
Accepted: 03 November 2017
First Published: 10 November 2017

*Corresponding author: Thai-Ha Le,
School of Business and Management,
RMIT University (Vietnam Campus), Ho
Chi Minh City, Viet Nam
E-mail: ha.lethai@rmit.edu.vn

Reviewing editor:
Caroline Elliott, Aston University, UK

Additional information is available at
the end of the article

GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Does economic distance affect the flows of trade and foreign direct investment? Evidence from Vietnam

Thai-Ha Le^{1*}

Abstract: This study examines the effect of relative economic distance (RED) between countries on bilateral foreign trade and foreign direct investment (FDI), using Vietnam as a case study. The difference in per-capita GDP is used as proxy for the RED between Vietnam and her partner countries. Modified gravity models are estimated using the procedure of panel-corrected standard errors (PCSE). The results indicate that there is a feedback and significantly positive relationship between Vietnam's trade and FDI inflows. The economic distance between Vietnam and her partner countries has a significantly positive influence on the country's bilateral trade and FDI inflows.

Subjects: Economics and Development; International Trade (incl. trade agreements & tariffs); Development Economics

Keywords: economic distance; trade; foreign direct investment; panel-corrected standard errors; Vietnam

JEL classifications: C23; F1; F21

ABOUT THE AUTHOR

Thai-Ha Le is a senior lecturer in economics at RMIT University, Vietnam. She holds Bachelor of Arts (Hons) and PhD in Economics from Nanyang Technological University, Singapore where she completed her PhD study within two years. Her primary research fields include Energy Economics, Environmental Economics and Applied Economics. Le is an active researcher with publishing 15 scholarly research articles in journals such as *Energy Economics*, *Energy Policy*, *Renewable Energy*, *Resources Policy*, *Applied Economics*, *Emerging Markets Finance and Trade*. She has consulted for Asian Development Bank Headquarters. Besides, Le is a recipient of multiple competitive research grants and fellowships.

PUBLIC INTEREST STATEMENT

The continuing trend of globalization has made foreign trade and investment one of the most extensively researched topics in the literature. This study examines the extent to which the relative economic distance (RED) between two countries impacts the flows of foreign trade and foreign direct investment (FDI) for Vietnam. This is because one of the underpinnings of her impressive economic growth has been the expansion in foreign trade and FDI since the late 1980s due to the promulgation of the Law of Foreign Investment. The results reveal a positive feedback between Vietnam's trade (exports and imports) and FDI inflows, suggesting that investment policies could be reviewed to attract foreign investments in export production. Besides, the findings suggest that Vietnam has weak supporting industries so she has heavily relied on imports for her exports. Vietnam should move toward increasing the export of manufactured goods while decreasing the export of unprocessed items.



Thai-Ha Le

1. Introduction

This study investigates how the relative economic distance (RED) between countries influences bilateral foreign trade and foreign direct investment (FDI), using Vietnam as a case study. This is an under-researched topic because many international studies have focused on how differences in the physical and cultural distance between countries impact on trade and FDI flows, while relatively neglecting the effect of economic distance (Tsang & Yip, 2007). According to Linder's (1961) hypothesis, similarities in the per-capita incomes of trading partners lead to more trade. In the context of FDI, the economic distance between home and host countries seems to reflect their differences regarding factor costs and technological capabilities, both of which affect FDI decisions and performance. As such, investigating the RED between countries could significantly enhance the understanding of bilateral trade and FDI flows.

Vietnam provides an interesting case study, as she is one of the fastest growing economies of the ASEAN region, as a result of increased trade and FDI, since the late 1980s (Das & Tuen, 2016, p. 249). Although, Vietnam's trade expansion was hindered by the 1997 Asian financial crisis, her economic development process has substantially been supported by the economy's export orientation and integration into the world economy (Abbott & Tarp, 2012). In terms of FDI, the promulgation of the Law of Foreign Investment has successfully attracted huge amounts of foreign investments to Vietnam, since the late 1980s (Das & Tuen, 2016). This has helped to revitalize the private sector, as well as transform the economy from an agriculture-based economy to an industrializing one (ADB, 2006). Due to the unavailability of data, however, studies on Vietnam in general and trade and investment issues in particular, have not received adequate attention in existing literature.

This study examines the extent to which the RED between countries impacts on the flow of foreign trade and FDI in Vietnam. This study uses the panel data-set over the period from 1996 to 2012 which consists of Vietnam's twenty-five (25) major trading and FDI partners. The empirical analysis employs a gravity-type model going beyond traditional geographical distance dimensions to include some socioeconomic and institutional variables. The difference in the real per capita gross domestic product (GDP) expressed in US dollars, is used as proxy for the RED between Vietnam and her partner countries. This variable reflects differences in factor costs (such as labor wage rate) and technological capability, which is an important determinant of the performance of foreign trade and investments (Tsang & Yip, 2007).

The study expects to make theoretical and practical contributions to the existing literature on trade and development. On the theoretical side, the concept of RED is particularly critical in the literature of development economics in general and the field of trade and investments in particular. However, it has not been widely utilized in existing studies. In the case of Vietnam, while there are a significant number of studies examining trade and investment issues, to the best of my knowledge, none of them have explicitly included "economic distance" as a variable in the regressions (see, for instance, Abbott, Bentzen, & Tarp, 2009; Anwar & Nguyen, 2011; Binh & Haughton, 2002; Hoang, 2013; Thanh & Duong, 2011; Trinh & Nguyen, 2015; Xaypanya, Rangkakulnuwat, & Paweenawat, 2015; Xuan & Xing, 2008). Furthermore, most of these studies on Vietnam fail to take into account "multilateral resistance" which can result in severe omitted variable biases (Anderson, 2011; Anderson & van Wincoop, 2003, 2004; Egger, 2008).

This research is perhaps the first study which applies a modified gravity model using the RED concept to examine Vietnam's bilateral trade and FDI inflows with her major partner countries. In the estimation equations, country fixed effects are included to capture the time-varying origin and destination fixed effects to control for this multilateral resistance problem. On the practical side, this study expects to generate significant policy implications for national trade and investment policy as Vietnam is undergoing rapid integration into the global economy.

The rest of the study is organized as follows. Section 2 reviews related literature on the topic and theoretical relationships between the variables of interest. Section 3 presents the baseline model

and econometric techniques used in this study. It also provides a rationale for the choice of explanatory variables and describes data sources. Section 4 discusses the empirical results while Section 5 concludes with policy suggestions.

2. Background information

2.1. Economic distance and the flows of trade

There are two different types of potential trade between pairs of countries, regions or economic blocs. The first is “existing trade” which exploits the current comparative advantages between the two countries or regions while the second is “new trade” which refers to trade that did not exist in the past (Hirsch, Ayal, & Fishelson, 1995; Hirsch & Hashai, 2000). The considerable factors for this new trade include economies of scale, input sharing, imitation, technology transfer and distance. In theory, economic distance has two contradictory effects on trade.

According to the Linder (1961) effect, higher economic distance between trading countries may hinder their bilateral trade, since higher economic distance implies difference in the demand structure. Countries with different demand structures import and export less horizontally differentiated products. As such, the volume of bilateral trade reduces with higher economic distance. Conversely, countries tend to increase their mutual trade (intra-industry trade) when they have more similar per-capita incomes, due to the match in demand structure.

On the contrary, the Heckscher–Ohlin (H–O) effect, where inter-country differences in factor scarcity is represented by per-capita income differences, argued that higher economic distance might foster inter-industry trade (IIT) between trading countries. Flam and Helpman (1987) proposed that higher income individuals tend to consume higher quality products. Consequently, when a country has comparative advantage in producing high-quality products, these high-quality products are exported to satisfy the demand of rich consumers in the trading partner country. Meanwhile, low-quality products are exported by the latter to meet the demand of poor consumers in the former. In this approach, there is a positive relationship between the share of vertical intra-industry trade and differences in per capita income, as long as differences in GDP per capita are proxies for differences in relative wage. The present trading patterns of Vietnam could be affected by both effects. If the negative effects (as suggested by Linder) dominate the positive effects (based on H–O, Flam and Helpman), economic distance between trading countries negatively affects bilateral trade. Meanwhile, the opposite might occur for others and in this case, economic distance will likely have a positive impact on trade.

2.2. Economic distance and FDI

Makino, Lau, and Yeh (2002) proposed that multinational corporations (MNCs) exploit their existing resources through FDI in host countries. Besides, they also explore opportunities for new resources. In the perspective of resource exploitation, FDI is considered as the transfer of an MNC’s propriety resources over borders. On the contrary, in the view of resource exploration, FDI is regarded as a means to obtain strategic assets, including the technology, management, and making expertise available in the host country. Based on this theoretical framework, it is argued that MNCs are keen on investing in host countries that are less developed than their home countries for the opportunity of resource exploitation. On the other hand, they tend to invest in host countries that are more developed than their home countries for the prospect of resource exploration (Tsang & Yip, 2007). This is because the technological, managerial, and marketing levels of a country are related to her economic development.

As far as resource exploitation is concerned, in host countries that are less developed than MNC’s home countries, these expertises are backward. Hence, inbound foreign firms can exploit their firm-specific advantages. In addition, local firms in transitional economies may not even be capable to compete in market-based economic systems (Child & Markóczy, 1993). This in fact provides a favorable environment for FDI, since MNCs could maintain comparative advantage over local firms and operate efficiently and profitably. Regarding a resource exploration perspective, investing in host countries that are more developed than MNCs’ home countries tend to increase the firms’ strategic

assets over time. This is an essential part of its dynamic ownership advantages, which have become more and more important in the knowledge-based global economy (Dunning, 2000). It is noted that, although less developed and more developed countries are expected to provide MNCs with opportunities for resource exploitation and exploration, respectively, countries at a negligible economic distance (that is, of a similar level of economic development) are less likely to offer such opportunities. Thus, MNCs will be less able to obtain desirable strategic assets or gain comparative advantage relative to local firms when investing in these countries.

2.3. The proxy for “economic distance” variable

The key ingredient in the analysis is the measure of economic distance. A natural first candidate for economic distance is geographic distance. In the increasingly integrated and globalized world, however, geographic distance among countries might not be as critical as it was in the past. A significant number of countries divided by thousands of miles may get close to each other in education, culture, economics, and technology or in access to information through the Internet. For example, the US may be farther from Mexico than it is from Canada in economic sense, while Hong Kong and Britain may be rather close (Conley & Ligon, 2002).

Two measures of economic distance were employed by Conley and Ligon (2002) to study a sample of 18 selected countries. Accordingly, transportation costs between economies were used as the first measure, which dealt with physical capital. This is given as United Parcel Service (UPS) ocean freight shipping rates (in US dollars). Meanwhile, the cost of airline fares between countries' capitals (in US dollars) was selected as the second measure. This measure relates to human capital (e.g. the cost of flight tickets of a consultant). However, this and similar methods have a disadvantage because of their dependence on a specific unit (which is the US dollar in this case). Although, both economic distance measures succeed in capturing some sort of fixed costs associated with the transportation of factors, it seems clear that both the lowest cost route and the fixed costs associated with shipping will also depend on the nature and quantity of the good being shipped.

This study refers economic distance to how similar the economic system and metrics are between the home and foreign countries. This could result from differences in terms of macro-economic indicators such as per capita gross domestic product (GDP), economic growth rates, inflation, unemployment rate, rich-poor differences, and access to natural resources. As such, in this study, the economic distance between Vietnam and her partner countries is measured as the difference between $\ln(y_i)$ and $\ln y_{VN}$, where y_{VN} and y_i represent the real GDPs per capita (expressed in US dollars) of Vietnam and her partner countries, respectively. Natural logarithmic difference is used as it is a standard practice in econometrics. The difference in the levels of per capita GDP is used as proxy for economic distance because this variable reflects the differences in factor costs and technological capability. These are critical factors which influence decisions and performance of foreign trade and investments. The use of this proxy could strengthen the understanding of foreign trade and investment.

3. Methodology

3.1. The benchmark model

In the case of Vietnam, many studies have attempted to explore potential FDI determinants such as market size, economic growth, labor cost, exports, imports, trade openness with Free Trade Agreements (FTAs) and World Trade Organization (WTO). However, the role of countries' similarity in size on FDI inflows into Vietnam has seemingly been ignored. To capture the difference or similarity in relative endowments, the proxy for economic distance between Vietnam and her partners is included in the equation in order to assess the impact of countries' similarity in size, on bilateral trade flows and FDI inflows into Vietnam. The economic distance between Vietnam and her partner countries, as specified earlier, is measured as the difference between $\ln(y_i)$ and $\ln y_{VN}$, where y_{VN} and y_i represent the real GDPs per capita in US dollars of Vietnam and her partner countries, respectively.

To examine the subject matter, besides including the three variables of interest: FDI, trade and economic distance, the baseline model also controls other variables, including: exchange rate, governance indicator, FTAs, which are commonly known to have an effect on the relationships among the three main variables.

Regarding the role of institutions (governance indicator) to trade, de Groot, Linders, Rietveld, and Subramanian (2004) argued that institutional quality and homogeneity plays a critical role in determining bilateral trade between two countries. Accordingly, uncertainty related to contract enforcement and general economic governance decreases with a quality institutional framework. The higher levels of property security and trust in the process of economic transactions greatly contribute to reducing transaction costs. Furthermore, if traders in both countries experience institutional homogeneity, this leads to similar norms of behavior and similar levels of trust in doing business. Thus, adjustment costs regarding natural unfamiliarity and insecurity with trading partners are reduced, as traders are better prepared to utilize each other's institutions and environment. In essence, a higher perceived quality of governance is expected to positively impact bilateral trade.

In addition, Burger, van Oort, and Linders (2009) pointed out that the traditional specification of the gravity model ignored the effect of relative prices on trade patterns, which might lead to omitted variable bias of the parameter estimates in the gravity model equation. Hoang (2013) argued that a higher real exchange rate implies the devaluation of the domestic currency, which may attract FDI inflows and vice versa. Nguyen (2010) mentioned two reasons for augmenting the gravity model with the exchange rate variable in his study. First, the theoretical linkage between the exchange rate and exports as well as imports is well-known in economics literature and supported by a large number of empirical research. Second, he opined that many studies related to gravity models indicate that exchange rate is a critical explanatory variable.

As for the effects of FTAs, Vietnam has signed a number of FTAs with major partners, including AFTA with ASEAN countries, ACFTA with China, AKFTA with Korea, JVEPA with Japan, AANZFTA with Australia and New Zealand. In theory, these FTAs facilitate bilateral trade (Nguyen & Xing, 2008). As such, following Hoang (2013), binary dummies are created accordingly, which are expected to capture the possible effects of bilateral and regional trade agreements on FDI inflows to Vietnam.

The baseline model also considers the traditional elements of a gravity model including geographical distance and border effect. The geographic (physical) distance between two countries is commonly known as a proxy for transportation and transaction costs. A longer distance means that the two countries are located far away from each other, which implies higher transport costs and hence, likely to cause a negative impact on the bilateral flows of trade and FDI. On the contrary, proximity makes transportation cheaper. Finally, border effect matters as whether two countries share the land border or not, influences the bilateral flows of trade and FDI.

Following the above discussion, the two benchmark models are estimated:

$$\begin{aligned} \ln FDI_{it} = & \alpha_{10} + \alpha_{11} \ln RER_{i/VND} + \alpha_{12} \ln DIS_{i/VND} + \alpha_{13} \ln (GOV_i \times GOV_{VN}) + \alpha_{14} ECONDIS_{VNi} \\ & + \alpha_{15} \ln TR_{it} + \beta_{11} BOR_{VNi} + \beta_{12} AFTA_{VNi} + \beta_{13} USBTA_{VNi} + \beta_{14} ACFTA_{VNi} \\ & + \beta_{15} AKFTA_{VNi} + \beta_{16} JVEPA_{VNi} + \varepsilon_{1it} \end{aligned} \quad (1)$$

$$\begin{aligned} \ln TR_{it} = & \alpha_{20} + \alpha_{21} \ln RER_{i/VND} + \alpha_{22} \ln DIS_{i/VND} + \alpha_{23} \ln (GOV_i \times GOV_{VN}) + \alpha_{24} ECONDIS_{VNi} \\ & + \alpha_{25} \ln FDI_{it} + \beta_{21} BOR_{VNi} + \beta_{22} AFTA_{VNi} + \beta_{23} USBTA_{VNi} \\ & + \beta_{24} ACFTA_{VNi} + \beta_{25} AKFTA_{VNi} + \beta_{26} JVEPA_{VNi} + \varepsilon_{2it} \end{aligned} \quad (2)$$

In which: FDI_{it} is the amount of FDI capital of country i at year t in Vietnam, expressed in millions of USD. $RER_{i/VND}$ is the real exchange rate, expressed in local currency units per US dollar. $DIS_{i/VND}$ is the physical distance between the capital of Vietnam and the capital of country i in km. $ECONDIS_{VNi}$ is the economic distance between Vietnam and country i at year t , calculated by taking the natural

logarithmic difference between per-capita GDPs of country i and Vietnam at year t . GOV_i and GOV_{VN} are the average value of government indicator of country i and Vietnam, respectively, at year t . TR_{it} is Vietnam's trade with country i at the year t , expressed in millions of USD (2005 price). BOR_{VNI} is a binary dummy which is unity (equal to 1) if Vietnam and country i share the land border and is equal to 0 otherwise.

AFTA is the binary dummy variable which is unity (equal to 1) if Vietnam and partners join/sign the ASEAN Free Trade Area (AFTA) at year t and is equal to 0 otherwise. USBTA is a binary dummy variable which is unity (equal to 1) if Vietnam and the USA sign the Bilateral Trade Agreement at year t and equal to 0 otherwise. ACFTA is a binary dummy variable which is unity (equal to 1) if Vietnam and partners join/sign the ASEAN-China Free Trade Area at year t and is equal to 0 otherwise. AKFTA is a binary dummy variable which is unity (equal to 1) if Vietnam and partners join/sign the ASEAN Korea Free Trade Agreement at year t and is equal to 0 otherwise. JVEPA is a binary dummy variable which is unity (equal to 1) if Vietnam and Japan sign the Japan-Vietnam Economic Partnership Agreement at year t and is equal to 0 otherwise. AANZFTA is a binary dummy variable which is unity (equal to 1) if Vietnam and partners join the ASEAN-Australia-New Zealand Free Trade Agreement at year t and is equal to 0 otherwise. ϵ_{jit} is a random error.

Ignoring “multilateral resistance” might have made the standard gravity model misspecified and lead to omitted variable bias (Anderson & van Wincoop, 2003). Anderson and van Wincoop (2003) suggest that empirically, the inclusion of country fixed effects captures “multilateral resistance” reasonably well and thus corrects this misspecification. In their illustrative application, Anderson and van Wincoop (2003) include country fixed effects for both importers and exporters to control for this multilateral resistance problem. However, in their study, the use of fixed effects is in a pure cross-section context. This study takes the idea of multilateral resistance to its logical conclusion in a panel context by including time-varying importer and exporter fixed effects in estimation equations to examine the determinants of Vietnam's FDI and bilateral trade flows.¹ Beyond capturing multilateral resistance, country fixed effects control for other sources of endogeneity bias (Head & Ries, 2010).

For a comparison purpose, besides estimating the two benchmark models (1) and (2) with the TR variable to capture the total trade effect, this study also estimate these main models with EX and IM (representing Vietnam's exports to and imports from country i at year t in millions of USD (2005 price), respectively) in lieu of TR in order to separately capture the exports and imports effects. As such, there are six estimation models in this study.

3.2. Data descriptions

Subject to data availability, the investigation period in this study spans from 1996 to 2012 ($T = 17$). The sample consists of Vietnam's twenty-five (25) major trading and FDI partners, including: Australia, Belgium, Canada, China, Denmark, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, South Korea, Laos, Malaysia, Netherlands, New Zealand, Philippines, Poland, Russia, Singapore, Switzerland, Thailand, United Kingdom (UK), and United States (US) ($N = 25$). Interestingly, Vietnam's main investors are also her major trading partners. A more detailed description of the sources of data is provided in Table 1.

3.3. Estimation method

The study first calculates a modified Wald statistic for group wise heteroskedasticity in the residuals of a fixed-effect regression model, following Greene (2003, p.598). The results, as reported in Table 2, indicate heteroskedasticity across panels for all equations. Further, the null hypothesis of no autocorrelation is rejected at all conventional significance levels for each of the specification models, as reported in Table 2. This is based on running a test of first-order (panel-specific and common) autocorrelation, according to Wooldridge (2002).

Table 1. Variable descriptions

| Abbreviations | Variable name | Source | Note |
|---------------|--|--|--|
| FDI | FDI capital inflow | Vietnam's Foreign Investment Agency | In millions USD |
| RER | Real exchange rate | International Monetary Fund, International Financial Statistics, supplemented by World Bank staff estimates. The details are presented in Appendix, titled "Conversion method for Local Currency Unit into US Dollars" | The DEC alternative conversion factor, which is the underlying annual exchange rate used for the World Bank Atlas method. It is the official exchange rate reported in the IMF's International Financial Statistics, expressed in local currency units per US dollar |
| DIS | Physical distance between Vietnam and partners | Centre D'Etudes Prospectives D'Information Internationales - CEPII | In km |
| CONDIS | Economic distance between Vietnam and partners | Per-capita GDP data was obtained from the World Development Indicators | Taking the natural logarithmic difference between per-capita GDPs of Vietnam and her partner country |
| GOV | Government indicator | Worldwide Governance Indicators (WGI) | The average of six dimensions of governance including Voice and accountability, Political stability and absence of violence, Government effectiveness, Regulatory quality, Rule of law, Control of corruption |
| TR | Bilateral trade flow | Vietnam's General Statistics Office (GSO) | In millions of USD (2005 price) |
| EX | Exports from Vietnam to partners | Vietnam's GSO | In millions of USD (2005 price) |
| IM | Imports to Vietnam from partners | Vietnam's GSO | In millions of USD (2005 price) |
| BOR | Dummy variable: 1 if Vietnam and partners share the land border, 0 otherwise | | Vietnam shares its borders with China, Laos and Cambodia |
| AFTA | Dummy variable: 1 if Vietnam and partners join/sign the ASEAN Free Trade Area, 0 otherwise | | AFTA was signed on 28 January 1992 in Singapore, originally had Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand. Vietnam joined in 1995, Laos and Myanmar in 1997 and Cambodia in 1999 |
| USBTA | Dummy variable: 1 if Vietnam and the USA sign the Bilateral Trade Agreement, 0 otherwise | | On 13 July 2000, US and Vietnamese negotiators signed a sweeping bilateral trade agreement (USBTA) |
| ACFTA | Dummy variable: 1 if Vietnam and partners join/sign the ASEAN-China Free Trade Area, 0 otherwise | | Vietnam joined the ASEAN-China Free Trade Area (ACFTA) on 4 November 2002, with China and 9 other ASEAN member states |
| AKFTA | Dummy variable: 1 if Vietnam and partners join/sign the ASEAN Korea Free Trade Agreement, 0 otherwise | | AKFTA was signed in 2005, with parties including Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam and Korea |
| JVEPA | Dummy variable: 1 if Vietnam and Japan sign the Japan-Vietnam Economic Partnership Agreement, 0 otherwise | | The JVEPA was signed on 25 December 2008 and came into force on 1 October 2009 |
| AANZFTA | Dummy variable: 1 if Vietnam and partners join the ASEAN-Australia-New Zealand Free Trade Agreement, 0 otherwise | | Countries: New Zealand, Australia, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam. Negotiations started in 2005. Agreement in force for all countries in 2012 |

Table 2. Heteroskedasticity and Serial-correlation test results

| | (1) FDI | (2) EXPORT | (3) FDI | (4) IMPORT | (5) FDI | (6) TRADE |
|--------------------|------------|---------------|-------------|---------------|------------|--------------|
| Heteroskedasticity | 276.59*** | 1,718.03*** | 1,138.99*** | 2,235.29*** | 746.77*** | 1,328.13*** |
| Serial-correlation | 3.742* | 159.22*** | 4.768** | 44.624*** | 3.624* | 120.441*** |

Notes: χ^2 statistics in parentheses (heteroskedasticity), *F* statistics in parentheses (serial correlation). Heteroskedasticity: Modified Wald test for groupwise heteroskedasticity in fixed-effect regression model. H_0 : No heteroskedasticity. Serial correlation: Wooldridge (2002) test for autocorrelation in panel data. H_0 : No first-order autocorrelation.

*Denote statistical significance at 5%.
 **Denote statistical significance at 1%.
 ***Denote statistical significance at 0.1%.

The results suggest the existence of common, not panel-specific, first-order autocorrelation. Consequently, the classical fixed- or random-effects panel estimators cannot be employed. Instead, this study estimates all the specification models using the Prais–Winsten panel-corrected standard error (PCSE) estimator. In this case, even though feasible generalized least squares (FGLS) could be an alternative estimation procedure, FGLS produces estimates which are conditional on the estimates of the disturbance covariance matrix and are conditional upon any autocorrelation parameters estimated (Greene, 2003). Beck and Katz (1995) also demonstrated that FGLS variance–covariance estimates are typically unacceptably optimistic (anticonservative) and the overconfidence in the standard errors makes this method unusable, unless where there are more time points than cross-section units, i.e. $T > N$. This is not the case of this study as here $T = 17 < N = 25$. Moreover, the ordinary least squares (OLS) or Prais–Winsten estimates with PCSEs have coverage probabilities that are closer to nominal. As such, the baseline models in this study are estimated using the procedure of the PCSE.

4. Results and discussion

Table 3 shows the results of estimating the benchmark models, with including country fixed effects in the regressions, using PCSEs. As can be seen from the table, a large part of the FDI inflows to Vietnam could be explained by a number of factors including geographical and economic distance, the interaction in governance, the export, import and bilateral trade flows between Vietnam and her partner countries. Among these factors, only geographical distance shows a significantly negative impact on FDI flows to Vietnam. The rest of the variables indicate a significantly positive effect. Besides, the results suggest that geographical distance, economic distance, bilateral/regional trade agreements of Vietnam and FDI inflows to Vietnam appear to have significant influences on the amount of Vietnam’s exports, imports and bilateral trade flows with her major partners. In addition, only the impact of geographical distance is negative whereas the other variables have positive effects.

Overall, the findings indicate a bidirectional and positive relationship between FDI inflows to Vietnam and export, import and bilateral trade flows with her major partner countries. This result indicates that for Vietnam, trade and FDI interact in such a way as to be mutually promoting. The estimated coefficients of FDI in the export, import, and trade models are equal to 0.04, 0.07, and 0.05, respectively. This result indicates that Vietnam appears to trade (including both import and export) relatively more with partners who invest significantly in the country. This is particularly true given that Vietnam possesses a large stock of export-oriented FDI, coupled with the country’s continuous efforts in implementing numerous incentives to promote export-oriented investments such as simplifying administrative procedures, building centralized industrial zones and export processing zones with adequate physical infrastructures and preferential conditions. Moreover, FDI inflows will increase exports from Vietnam to the country of FDI donors, if the main source of motivation of foreign investors in these countries is supplying the home country market. In this regard, the higher level of FDI inflows to Vietnam will increase the amount of bilateral trade between this country and

Table 3. Benchmark models: PCSE estimation results

| | (1) FDI | (2) EXPORT | (3) FDI | (4) IMPORT | (5) FDI | (6) TRADE |
|---|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| RER | -0.021 (-0.22) | 0.032 (0.90) | -0.002 (-0.37) | -0.027 (-1.23) | -0.022 (-0.34) | 0.062 (1.42) |
| DISTANCE | -2.124*** (-6.78) | -0.824** (-3.27) | -1.150*** (-3.61) | -2.020*** (-8.17) | -1.425*** (-5.52) | -1.911*** (-4.25) |
| Ln(GOV _i X GOV _{vn}) | 2.102** (2.87) | 0.171 (1.21) | 0.835** (2.72) | 0.087 (0.82) | 0.924*** (3.86) | 0.812** (2.21) |
| BOR | 0.018 (0.97) | 0.324 (1.45) | 0.141 (1.71) | -0.215 (-1.56) | 0.128 (1.02) | -0.217 (-0.82) |
| AFTA | 0.001 (0.01) | 0.914** (2.78) | 0.014 (1.23) | 0.527 (1.83) | 0.005 (0.03) | 0.615** (2.71) |
| USBTA | 0.813 (1.32) | 1.237** (2.11) | 0.081 (1.25) | 0.907 (1.63) | 0.402 (1.32) | 1.019** (2.62) |
| ACFTA | 0.716 (1.28) | 1.638** (2.84) | -0.282 (-0.69) | 1.291** (3.24) | 0.031 (0.08) | 1.268** (2.62) |
| AKFTA | 2.121** (2.81) | 1.197* (2.01) | 2.025* (2.08) | 2.124*** (3.23) | 2.250** (2.90) | 2.258*** (4.82) |
| JVEPA | 1.102* (2.02) | 1.918** (2.71) | 0.228 (0.86) | 1.142* (1.98) | 1.321* (2.02) | 1.656* (2.16) |
| AANZFTA | -0.014 (-0.02) | 0.125 (0.69) | 0.192 (1.35) | 0.629** (2.82) | 0.622 (1.33) | 0.828** (2.56) |
| ECONDIS | 1.005*** (3.23) | 1.090*** (5.23) | 1.138*** (4.14) | 1.705*** (7.25) | 1.184** (2.88) | 0.649*** (6.23) |
| FDI | | 0.270* (2.43) | | 0.081*** (5.27) | | 0.109*** (4.86) |
| EXPORT | 1.126*** (6.63) | | | | | |
| IMPORT | | | 1.135*** (5.74) | | | |
| TRADE | | | | | 0.568*** (6.21) | |
| CONST | -1.713 (-0.46) | 6.026*** (4.32) | 6.674* (2.32) | 10.12*** (8.68) | -6.528** (-2.91) | 8.29*** (5.80) |
| N | 450 | 450 | 450 | 450 | 450 | 450 |

Notes: Importer and exporter fixed effects are included (not reported). *t* statistics in parentheses.

*Denote statistical significance at 5%.

**Denote statistical significance at 1%.

***Denote statistical significance at 0.1%.

its FDI source country. This is consistent with the fact that the primary FDI donors of Vietnam are also the country's major trading partners.

The feedback and significantly positive relationship between Vietnam's trade (exports and imports) and FDI inflows also suggests that investment policies could be revised and reviewed in order to attract foreign investments in export production. For instance, Vietnam could realize policies on encouraging and attracting investments in supporting industries in order to meet domestic

demands and join in the global supply chain, especially in manufacturing mechanics, electronics and informatics, automobile components, garment and textile, footwear and high technology.

With regard to the geographical distance between Vietnam and her partners, $\ln DIS_{vni}$, its impact on FDI inflows, export, import and trade flows is significantly negative. This is expected in theory as the variable DIS_{vni} is a proxy for transport and transaction costs. When two countries are far from each other, transport and transaction costs are likely to be high. The farther two countries are, the less FDI and trade flows (including import and export) between them.

Even though the importance of the border for international trade flows has been documented in a number of empirical studies, this study does not find any significant impact of the border effect on any of the dependent variables in the specification models. This result has to be interpreted with care. The insignificant impact of the border effect does not necessarily mean that barriers implied by the border are negligible and countries have become more integrated. Instead, it could be explained as due to changes in the extent of integration among regions of the same country (Clark & van Wincoop, 2001).

The coefficient of the exchange rate is not statistically significant as expected, suggesting that the exchange rate regime did not influence the FDI inflows and trade flows of Vietnam. This could be explained by the fact that the Vietnamese Dong has adopted a “crawling peg” with the US dollar. Given the fact that the US is no longer the sole important partner to the economy, Vietnam should adopt an exchange rate mechanism based on a basket of major foreign currencies, or of foreign currencies of its major trading partners. This would help improve further the efficiency of Vietnam’s exchange rate regime in order to contribute to the country’s consistent exports and FDI inward growth.

The interaction of governance indicators between Vietnam and her partner countries appears to have a significant influence on the amount of FDI inflows to Vietnam but not on the country’s import, export, and trade flows. This finding suggests that the interaction of governance factors did induce FDI inflows to Vietnam, but not trade flows. This implies that to attract stable investment from overseas partners in the long term, Vietnam should improve on the competitiveness and transparency of its business environment by implementing further administration reforms, removing foreign trade barriers, completing infrastructure projects, and improving human resources.

Subsequently, the finding shows that economic distance has a significantly positive impact on FDI inflows, export, import, and trade flows of Vietnam. Vietnam receives nearly all (about 90%) her FDI inflows from countries which are more developed. As such, the significantly positive impact of economic distance on FDI inflows to the country could be explained as follows. Since Vietnam is less developed than most of the FDI donors, she could offer inbound foreign firms the opportunity to exploit their firm-specific advantages and operate profitably. For instance, the technological capability of Vietnam – the host country – is expected to be at a low level. Hence, MNCs of Vietnam’s FDI donors are able to exploit their own technological advantages. Further, many local firms in Vietnam might not be able to compete efficiently in the market-based economic systems, allowing MNCs to maintain a competitive edge. As a result, less developed host countries (i.e. at a significant economic distance) are likely to offer MNCs opportunities for resource exploitation and thus provide an environment which is favorable for FDI survival (Tsang & Yip, 2007). Although, this seems to contradict existing theories in the literature, the significantly positive impact of economic distance on trade flows of Vietnam also reflects what happens in this country. Vietnam’s major exports are unprocessed items including mobile phones and their parts and components, garments and textiles, computers and their parts and components, seafood, machineries and their parts and components, wood, rubber, rice and cashew nuts and coal (Vu, 2014). The main export markets for these items of Vietnam are the EU, the US, Japan, China, South Korea, Malaysia, India, all of which are more developed than Vietnam. Meanwhile, Vietnam’s primary imports are manufactured goods and processed items including refined petroleum products, machinery, equipment, fertilizers, animal foods and

materials, steel scraps and automobiles, most of which come from the EU, the US, Japan, China, South Korea, Malaysia, Singapore, Taiwan, all of which are more developed than Vietnam (Vu, 2014).

In a nutshell, Vietnam's major exports are unprocessed items while her major imports are manufactured goods and processed items. It suggests that Vietnam has heavily relied on imports for her exports, as the country has weak supporting industries. In the future, Vietnam's orientation would be to increase the export of manufactured goods while decreasing the export of unprocessed items. As a result, the countries should implement policies to promote domestic production of potential exports of high growth rate and high added value like building materials, petrochemicals, rubber, and hi-tech products and promote economic restructuring. The country should further renew technologies and invest in human capital to improve labor productivity in these industries. The latter could be done by strengthening supportive mechanisms and policies for firms and organizations' investment and involvement in labor training for production and export industries.

Finally, the study finds significant positive effects of the various FTAs on FDI inflows and trade flows of Vietnam. Specifically, the estimated results in several models show that AKFTA, ACFTA and USBTA facilitate FDI capital to the country. Besides, almost all the bilateral or regional free trade agreements signed by Vietnam have significantly and positively impacted trade flows between Vietnam and her major trading partners.

4.1. Robustness checks

The key ingredient in the analysis is the measure of economic distance. In this study, the simple natural logarithmic difference of per capita income between Vietnam and her partner countries is used as proxy for the economic distance variable, as it is a standard practice in econometrics. It is worth noting that logarithmic difference is a good approximation of the percentage difference in real GDP per capita when y_{VN} and y_i are not too far away from each other (Tsang & Yip, 2007). Following the study of Tsang and Yip (2007), this study tries an alternative proxy of economic distance for robustness checks. The estimation results are reported in Table 4 with the proxy for economic distance computed as the percentage of income difference with $(y_{VN} + y_i)/2$ as the denominator.

The findings are qualitatively the same and the geographical distance between Vietnam and her trading partners continue to have a negative and significant influence on FDI inflows to Vietnam while the impacts of the other variables (including the economic distance, government interaction, as well as the export, import, and bilateral trade flows between Vietnam and her partner countries) continue to have a significantly positive impact. The same conclusion applies to the factors influencing Vietnam's exports, imports and bilateral trade flows with her major partners. This study also conducts robustness checks using nominal exchange rate instead of real exchange rate. The degrees of significance of all these variables are found to be similar to what is obtained using real exchange rate as aforementioned and so the qualitative findings are mostly retained.²

5. Concluding remarks

This study examines the extent to which the RED between Vietnam and her partners impact on bilateral trade flows and FDI inflows to Vietnam. The difference in the real per-capita GDP expressed in US dollars is used as proxy for the RED between Vietnam and her partner countries. Besides including the three main variables of interest: FDI, trade and economic distance, the baseline model also controls other factors, including: exchange rate, governance indicator, and FTAs, which are commonly known to have an effect on the relationships among the three main variables. It also considers the standard variables of a gravity model including geographical distance and border effect.

The models are estimated using PCSE, with including exporter and importer fixed effects, to deal with the multilateral resistance issue. The results indicate that there is a positive feedback between Vietnam's trade (exports and imports) and FDI inflows. This suggests that investment policies could be reviewed to attract foreign investments in export production. Besides, the results show that

Table 4. Robustness check: Benchmark models, PCSE (with alternative economic distance proxy)

| | (1) FDI | (2) EXPORT | (3) FDI | (4) IMPORT | (5) FDI | (6) TRADE |
|-------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| RER | -0.283 (-0.62) | 0.105 (1.24) | 0.055 (0.65) | 0.035 (1.024) | -0.151 (-1.32) | 0.120 (1.50) |
| DISTANCE | -1.629*** (-5.83) | -1.052* (-2.01) | -1.025*** (-5.72) | -1.062*** (-4.55) | -1.104*** (-5.21) | -0.344*** (-6.37) |
| Ln (GOVi X GOVvn) | 1.102* (2.13) | -0.558 (-0.84) | 0.616 (0.82) | 1.413* (2.08) | 1.512* (2.05) | 1.255** (2.80) |
| BOR | -0.428 (-1.02) | 0.466 (0.82) | 0.942 (1.08) | -0.326 (-1.01) | 0.656 (0.55) | -0.410 (-0.96) |
| AFTA | -0.628 (-1.22) | 1.012 (1.42) | 0.273 (0.86) | -0.051 (-0.32) | -0.905 (-1.54) | 0.210 (0.84) |
| USBTA | 1.820* (2.12) | 1.963*** (6.26) | 2.284** (2.84) | 1.932*** (3.69) | 2.127** (2.86) | 2.525*** (3.72) |
| ACFTA | 1.226* (2.26) | 1.392*** (5.09) | 0.055 (0.28) | 2.516*** (4.07) | 0.350 (0.91) | 2.593*** (5.14) |
| AKFTA | 0.902*** (3.85) | 0.912*** (4.59) | 0.868* (2.20) | 1.825*** (3.92) | 2.022* (2.02) | 2.215*** (6.23) |
| JVEPA | 0.728 (1.22) | 1.225* (1.28) | 0.298 (1.51) | 1.892* (2.39) | 0.433 (1.06) | 1.263* (2.29) |
| AANZFTA | 0.282 (1.28) | 0.282 (1.86) | 1.192* (2.12) | 0.722* (1.92) | 1.144* (2.05) | 1.494* (2.15) |
| ECONDIS | 0.128*** (4.12) | 0.016*** (4.35) | 0.122*** (3.82) | 0.009** (3.34) | 0.101*** (4.56) | 0.011*** (4.23) |
| FDI | | 0.081*** (4.86) | | 0.100*** (4.98) | | 0.02** (2.92) |
| EXPORT | 0.868*** (6.26) | | | | | |
| IMPORT | | | 0.574*** (6.24) | | | |
| TRADE | | | | | 0.912*** (9.29) | |
| CONST | 6.424 (1.84) | 10.325*** (5.45) | 0.103 (0.20) | 11.25*** (6.22) | 2.630 (0.84) | 4.32*** (5.52) |
| N | 450 | 450 | 450 | 450 | 450 | 450 |

Notes: Importer and exporter fixed effects are included (not reported). t statistics in parentheses.

*Denote statistical significance at 5%.

**Denote statistical significance at 1%.

***Denote statistical significance at 0.1%.

economic distance between Vietnam and her partner countries appears to have a significantly positive influence on her bilateral trade flows and FDI inflows. This is consistent with the fact that Vietnam's major exports are unprocessed items while her major imports are manufactured goods and processed items. It suggests that Vietnam has weak supporting industries so she has heavily relied on imports for her exports. Vietnam should move toward increasing the export of manufactured goods while decreasing the export of unprocessed items. Thus, the countries should

implement policies to promote domestic production of potential exports of high growth rate and high added value like building materials, petrochemicals, rubber, and hi-tech products and promote economic restructuring. The country should further renew technologies and invest in human capital to improve labor productivity in these industries.

Funding

This work was funded by one of Dr Le's research grant schemes titled RMIT's College of Business Research Grant Scheme 2014.

Author details

Thai-Ha Le¹

E-mail: ha.lethai@rmit.edu.vn

¹ School of Business and Management, RMIT University (Vietnam Campus), Ho Chi Minh City, Viet Nam.

Citation information

Cite this article as: Does economic distance affect the flows of trade and foreign direct investment? Evidence from Vietnam, Thai-Ha Le, *Cogent Economics & Finance* (2017), 5: 1403108.

Notes

1. These country specific fixed effects are tested with the null hypothesis that their joint effects are zero. F-statistic are statistically significant at conventional levels. These results imply that estimating the models without these fixed effects would have produced biased estimates.
2. The results are not presented here to conserve space, but they are available upon request.

References

- Abbott, P., Bentzen, J., & Tarp, F. (2009). Trade and development: Lessons from Vietnam's past trade agreements. *World Development*, 37(2), 341–353. <https://doi.org/10.1016/j.worlddev.2008.04.005>
- Abbott, P., & Tarp, F. (2012). Globalization crises, trade and development in Vietnam. *Journal of International Commerce, Economics and Policy*, 3(01), 1240006. <https://doi.org/10.1142/S1793993312400066>
- ADB. (2006). *The Mekong region: Foreign direct investment*. Author: Manila.
- Anderson, J. E. (2011). The gravity model. *Annual Review of Economics*, 3(1), 133–160. <https://doi.org/10.1146/annurev-economics-111809-125114>
- Anderson, J. E., & van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *American Economic Review*, 93(1), 170–192. <https://doi.org/10.1257/000282803321455214>
- Anderson, J. E., & van Wincoop, E. (2004). Trade costs. *Journal of Economic literature*, 42(3), 691–751. <https://doi.org/10.1257/0022051042177649>
- Anwar, S., & Nguyen, L. P. (2011). Foreign direct investment and trade: The case of Vietnam. *Research in International Business and Finance*, 25(1), 39–52. <https://doi.org/10.1016/j.ribaf.2010.05.004>
- Beck, N., & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review*, 89, 634–647. <https://doi.org/10.2307/2082979>
- Binh, N. N., & Haughton, J. (2002). Trade liberalization and foreign direct investment in Vietnam. *Asean Economic Bulletin*, 302–318. <https://doi.org/10.1355/AE19-3E>
- Burger, M., van Oort, F., & Linders, G. J. (2009). On the specification of the gravity model of trade: Zeros, excess zeros and zero-inflated estimation. *Spatial Economic Analysis*, 4(2), 167–190. <https://doi.org/10.1080/17421770902834327>
- Child, J., & Markóczy, L. (1993). Host-country managerial behaviour and learning in Chinese and Hungarian joint ventures. *Journal of Management Studies*, 30, 611–631. <https://doi.org/10.1111/joms.1993.30.issue-4>
- Clark, T. E., & van Wincoop, E. (2001). Borders and business cycles. *Journal of International Economics*, 55, 59–85. [https://doi.org/10.1016/S0022-1996\(01\)00095-2](https://doi.org/10.1016/S0022-1996(01)00095-2)
- Conley, T. G., & Ligon, E. (2002). Economic distance and cross-country spillovers. *Journal of Economic Growth*, 7(2), 157–187. <https://doi.org/10.1023/A:1015676113101>
- Das, I., & Tuen, A. A. (Eds.). (2016). *Naturalists, explorers and field scientists in South-East Asia and Australasia* (Vol. 15). Cham: Springer.
- de Groot, H. L. F., Linders, G. J., Rietveld, P., & Subramanian, U. (2004). The institutional determinants of bilateral trade patterns. *Kyklos*, 57, 103–123. <https://doi.org/10.1111/kykl.2004.57.issue-1>
- Dunning, J. H. (2000). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 9, 163–190. [https://doi.org/10.1016/S0969-5931\(99\)00035-9](https://doi.org/10.1016/S0969-5931(99)00035-9)
- Egger, P. (2008). On the role of distance for bilateral trade. *The World Economy*, 31(5), 653–662. <https://doi.org/10.1111/j.1467-9701.2008.01098.x>
- Flam, H., & Helpman, E. (1987). Vertical product differentiation and North-South trade. *American Economic Review*, 76, 810–822.
- Greene, W. H. (2003). *Econometric analysis* (6th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Head, K., & Ries, J. (2010). Do trade missions increase trade? *Canadian Journal of Economics/Revue canadienne d'économie*, 43(3), 754–775. <https://doi.org/10.1111/j.1540-5982.2010.01593.x>
- Hirsch, S., Ayal, I., & Fishelson, G. (1995). The Arab Israeli trade potential: Methodological considerations and examples. In M. Kreinin (Ed.), *Contemporary issues in commercial policy*. New York, NY: Pergamon Press.
- Hirsch, S., & Hashai, N. (2000). The Arab-Israeli trade potential: The role of distance sensitive products. *The International Trade Journal*, 14(1), 1–35.
- Hoang, C. (2013). The impact of the world trade organization (WTO) regime on foreign direct investment (FDI) flows to Vietnam: A gravity model approach. *Journal of Modern Accounting and Auditing*, 9(7), 961–987.
- Linder, S. B. (1961). *An essay on trade and transformation*. New York, NY: Wiley and Sons.
- Makino, S., Lau, C. M., & Yeh, R. S. (2002). Asset-exploitation versus asset-seeking: Implications for location choice of foreign direct investment from newly industrialized economies. *Journal of International Business Studies*, 33, 403–421. <https://doi.org/10.1057/palgrave.jibs.8491024>
- Nguyen, X. B. (2010). The determinants of Vietnamese export flows: Static and dynamic panel gravity approaches. *International Journal of Economics and Finance*, 2(4), 122.
- Nguyen, X., & Xing, Y. (2008). Foreign direct investment and exports. *The Economics of Transition*, 16(2), 183–197.
- Thanh, V. T., & Duong, N. A. (2011). Revisiting exports and foreign direct investment in Vietnam. *Asian Economic Policy Review*, 6(1), 112–131. <https://doi.org/10.1111/aepr.2011.6.issue-1>
- Trinh, N. H., & Nguyen, Q. A. M. (2015). Determinants of inward foreign direct investment in Vietnam. *同志社グロークール・スタディーズ*, 6, 51–71.
- Tsang, E. W. K., & Yip, P. S. L. (2007). Economic distance and the survival of foreign direct investments. *Academy of Management Journal*, 50(5), 1156–1168. <https://doi.org/10.2307/20159917>

Vu, D. A. (2014). *Vietnam's international trade in 2013*. Korea Institute International Economic Policy (KIEP) Report.
Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.
Xaypanya, P., Rangkakulnuwat, P., & Paweenawat, S. W. (2015). The determinants of foreign direct investment in ASEAN: The first differencing panel data analysis. *International*

Journal of Social Economics, 42(3), 239–250.
<https://doi.org/10.1108/IJSE-10-2013-0238>
Xuan, N. T., & Xing, Y. (2008). Foreign direct investment and exports The experiences of Vietnam. *Economics of Transition*, 16(2), 183–197. <https://doi.org/10.1111/j.1468-0351.2008.00321.x>

Appendix

Conversion method for local currency unit into US dollars

To convert local currency national accounts data (e.g. GDP) into US dollars, DEC alternative conversion factor 20 series from the World Bank: World Governance Indicator is used. The exchange rates reported in this series are same as reported by the IMF in the International Financial Statistics (IFS), except for refinements made by the World Bank, if the reported exchange rates in the IFS are either unrepresentative or unreliable during a period. Mathematically, it can be written as:

$$GDP_{s,US\$}^t = \frac{GDP_{s,LCU}^t}{DEC_s^t}$$

where $GDP_{s,US\t is GDP in current US\$ for state s at time t ; $GDP_{s,LCU}^t$ is GDP in local current unit for state s at time t ; DEC_s^t is DEC alternative conversion factor for state s at time t .



© 2017 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format
Adapt — remix, transform, and build upon the material for any purpose, even commercially.
The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.
You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.



Cogent Economics & Finance (ISSN: 2332-2039) is published by Cogent OA, part of Taylor & Francis Group.

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com

