How Much Does Trade Activities Improve International Tourism Demand? Evidence from Indonesia

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Abstract. This study aimed to investigate the relationship between international trade and international tourism demand in Indonesia. This research combined dataset of 31 countries from 2005-2015, and use the *Generalized Method of Moments* (GMM) estimation to take down the notions of endogeneity, heteroscedasticity, and serial correlation. Furthermore, this study tried to fill the literature gap from have not examined the comparison between two proxy of international trade data, conventional measure, and *Trade in Value Added (TiVA)*, particularly in Indonesia. Based on the estimation, both indicators have a positive and significant relation with foreign tourist arrivals. Besides, we found that the TiVA measure was more potent than current data. These findings could be useful as complementary of government strategies in order to enhance the country trade as well as stimulate Indonesia's inbound tourism.

Keywords: International Tourism, Trade in Value Added, International Trade, Indonesia

1. Introduction

Since the 1950s, global value export has grown significantly according to Our World in Data[1]. There have been several empirical research that concludes international trade cause economic growth for its own country[2],[3]. Furthermore, the recent reign of neoliberal policies worldwide has popularized the policies to increase international trade.

International trade does push not only economic growth but also encourage international demand tourism for its country. Since the global financial crisis in 2009, world tourism revenue from visitor spending has grown faster than the world economy[4]. According to World Travel & Tourism Council (WTTC), in 2019, world tourism contributions to the world GDP worth US$8.9 trillion or 10.3 percent of global GDP and 330 million jobs absorbed[5]. Besides, the tourism sector was fostered by emerging and advanced economies as one of the crucial sources of foreign revenues to reduce trade deficits and to compensate for the weak export revenues. Over the past two decades, the number of international tourism arrivals in Indonesia has improved steadily[6]. The government of Indonesia has set the objective to attract more international tourist arrivals and become world-leading destination tourism.

International trade has escalated the existence of business travel well-mannered as individual, business, or country[7]. At the same time, export products became a medium for product advertisements to attract consumer attention and create awareness of the product or the origin of country products. Consequently, consumers are more likely to visit the source of the product [8]. International trade also pushes the existence of network effect, which could reduce international transaction costs as well as promoting travel and exchanges among

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countries[9]. International trade emboldens a country to develop essential infrastructures such as transportation and communication systems. Apart from the developing infrastructure, it has required for each country, improving infrastructure helps attract more tourists in the long run[10]. By those few research, we could assume that there is a correlation between international trade and tourism arrivals. However, tourism arrivals and international trade activities complement each other and act together[11].

Our study has been propelled to analyze the relationship between international trade and tourism arrivals in Indonesia. Unlike previous studies, we tried to fill some literature gaps. First, Indonesia's tourism and international trade connection have not been investigated yet. Second, we compare two proxy of international trade data by using conventional data and Trade in Value Added (TiVA) data that has been issued by OECD. Most of the previous studies have used conventional data such as from UNWTO, UN Comtrade, IMF, National Statistics Institute, and others[10], [12]–[18]. Thus, the findings could contribute to government strategies that aimed to enhance Indonesia's international trade and stimulate the number of tourism arrivals.

This paper will proceed as follows. Section 2 provides the works of literature that are related to this research and ends with the statement of hypotheses. Section 3 explains the research methods, variables, and data used. Section 4 discusses the result and connects it with the literature. Furthermore, Section 5 provides the conclusion as well as the policy recommendation of the research.

2. Literature Review

2.1 Tourism and Trade

Several literatures were discussing the relationship between international trade ratio, import and export ratio, and the number of tourists arrivals from other continents or regions. The number of tourist arrivals is used as the indicator of international tourism demand because international tourism demand is often measured either in terms of the number of tourist arrivals, tourist expenditure, and the number of tourist nights in the destination country[19]. Nevertheless, because of the limited available data, the number of tourist arrivals was used in this research. The number of tourist arrivals was also used in many tourism literature in the past.

For instance, International trade could reduce fixed, and variable cost trade such as (i) new information about markets provided by visits, (ii) improved infrastructure for tourism also facilitating trade, and (iii) reduced cultural distance between countries. About a 1 percent increase in tourist arrivals could increase the probability of export by 1.25 percent and raise the volume exports by 9 percent[10].

In Romania, using a fixed-effects static panel model across 23 European countries datasets from the Romanian National Institute of Statistics in 1997-2008, the estimation has described that GDP per capita, bilateral trade, population, prices are the main determinants of tourism flows to Romania[12]. In Portugal, using locally processed agro-food export datasets obtained from the Portuguese National Statistics Institute in 2000-2012, and Granger causality test discovered that in the short-run, agro-food products like wine, canned fish, and cheese, which are linked to attractiveness and authenticity of the destination, may induce international tourism arrivals[13].

In Turkey, using Panel ADRL analysis from international tourist numbers and figures of import and export data obtained from Foreign Trade Statistics of the Turkish Statistical Institute between 2000 and 2016 between 13 Silk Road countries, explained that there is a positive relationship between tourism with export in the short-run and import in the long-run[14]. In Thailand, using a dataset of 207 trade partnership countries that obtained from UN-Comtrade, there is an increase of about 0.046 percent of short term tourism demand and 0.807 percent of long term tourism demand[15].

An interesting finding in Malaysia, using panel data obtained from the Direction of Trade Statistics Yearbook published by the IMF, including numbers of arrival from 15 most important countries during the period 1995-2005. This research showed that international trade does not have a significant effect on international tourism. Foreigners did not consider tourism in Malaysia, which was highly influenced by word-of-mouth and Malaysia as a non-luxury service[16]. Other findings that use IMF data discovered that earnings from international tourism did not bring a significant decrease in the instability of exports in most of the developing and industrialized countries[17]. Also, other findings used national sources and WTO data, which have shown that tourism to less developed countries did not respond to price fluctuations, but tourism to developed countries was mostly affected by price elasticity approximately one[18].

2.2 Trade in Value Added (TiVA)

Trade-in Value Added (TiVA) is the new measure that has been issued by OECD to capture the flows of goods and services with global production chains. The objective of this new approach is filling the limitation at conventional data of international trade, especially when global production chains do not always reflect the phenomenon. TiVA variables tried to consider the value-added from each country in the production of goods and services that are consumed[20].

In this research, services data are excluded due to limitations of available data. Hence, by looking at previous literature, all studies have cited used conventional data as its measure, not TiVA data[10], [12]–[18]. Therefore, this research hypothesizes that Indonesia's international trade activities positively contribute to the international tourism arrivals sector of specific countries. Regardless of using conventional data or TiVA, we also hypothesize TiVA variables have more significant effects than conventional data since TiVA variables measures more accurately.

3. Method

Aforementioned, this research has tried to fill the literature gap with made a comparison of proxy in international trade between conventional data of international trade and Trade in Value Added (TiVA) data from the OECD database. TiVA data has not been used in the previous study. Both conventional and TiVA data will be estimated by the *Generalized Method of Moments* (GMM) as the econometrics model for the reason this quantitative method is highly suitable to get any kind of information that is getting out of the model[17]. In other words, GMM could be useful to render statistical inference without fully complete information about the distribution of data, just like *Maximum Likelihood Estimation* (MLE). Furthermore, the GMM estimator model is also capable of tackling the issues of endogeneity problem, heteroscedasticity, and serial correlation. The other reason due to the type of our data is the

dynamic panel, and the range of our time series is less than the number of our cross-section unit. Before estimated with GMM, we run the *rule of thumb* to determine whether to use *difference GMM* or *system GMM*, because our result in the *rule of thumb* is close or below to fixed effect, *system GMM* will be used [23].

In order to estimate the impact of international trade on Indonesia tourism performance, this research has opted for six models, three models for proxy in conventional data of international trade and the other three for proxy in TiVA data. The model is based on the research of Thailand's international trade and international tourism demand[12]. The three models below is a model for conventional international trade data:

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Trade+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (1)$$

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Export+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (2)$$

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Import+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (3)$$

Moreover, the other model below is for TiVA data:

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Tivatot+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (4)$$

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Tivaex+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (5)$$

$$\ln Tour=\beta_0+\beta_1 \ln Tour_{-t-1}+\beta_2 \ln GDPC+\beta_3 \ln Pop+\beta_4 \ln Tivaim+\beta_5 \ln Dist+\beta_6 \ln PPP+\varepsilon \quad (6)$$

lnTour is the logarithmic form of foreign tourist arrivals or inbound tourism in Indonesia, $lnTour_{t-1}$ is the logarithmic form of lag or the number of international tourist arrivals in the previous year, according to the theory and previous study this variable should have a positive association with the number of tourist arrivals[12] ($\boldsymbol{\beta}1 > 0$). *lnGDPC* is the logarithmic form of Gross Domestic Product per Capita of a certain country. According to the theory and previous study[12], this variable should have a positive association with the number of tourist arrivals ($\boldsymbol{\beta}_2 > 0$). *lnPop* is the logarithmic form of population of a tourist's country of origin. The population of the country of origin should have a positive relationship with the number of tourist arrivals ($\boldsymbol{\beta}3 > 0$). *lnDist* is the logarithmic form of a country's distance from Indonesia and *lnPPP* is purchasing power parity ratio with a conversion factor of GDP to market exchange rate between Indonesia and the country of tourist origin. According to the theory and previous study[12], variable *lnDist* and *lnPPP* should have a negative association with the number of tourist arrivals ($\boldsymbol{\beta}5 < 0$) and ($\boldsymbol{\beta}6 < 0$).

Furthermore, the diversifying variable of interest in each model hopefully will capture the effects on tourism in a more precise way. These six variables of international trade proxy should have a positive association with the number of tourist arrivals ($\boldsymbol{\beta}4 > 0$).

All of the variables have been collected from various economic databases such as CEIC, World Bank, UN Comtrade, CEPII for geographical distance data and TiVA OECD database. Furthermore, we have successfully gathered the variables from 2005 through 2015 on a yearly basis. Thus, this paper has 341 observations from 31 countries across the globe. We can see the definition and sources of variables and the $\boldsymbol{\beta}$ hypotesis on the table below :

Table 1. Definition of Variables, Hypotesis, and Source of the data

Variables	β Hypothesis	Definition	Source
lnTour	*Dependent Var.*	Logarithmic form of foreign tourist arrivals or inbound tourism in Indonesia	BPS
$lnTour_{-t-1}$	$\boldsymbol{\beta} > 0$	Logarithmic form of lag or the number of international tourist arrivals in the previous year	BPS

lnGDPC	$\beta > 0$	Logarithmic form of Gross Domestic Product per Capita of a certain country	CEIC database
lnPop	$\beta > 0$	Logarithmic form of population of a tourist's country of origin. The population of the country of origin	World Bank
lnTrade	$\beta > 0$	Logarithmic form of Value in Total Trade of Indonesia with the counties of tourist origin	UNCOMTRAD
lnExport	$\beta > 0$	Logarithmic form of Value in Total Export of Indonesia with the countries of tourist origin	UNCOMTRADE
lnImport	$\beta > 0$	Logarithmic form of Value in Total Import of Indonesia with the countries of tourist origin	UNCOMTRADE
lnTivatot	$\beta > 0$	Logarithmic form of Total Export in Value Added data and Total Import in Value Added data	TiVA OECD database
lnTivatex	$\beta > 0$	Logarithmic form of Total Export in Value Added data of Indonesia and the countries of tourist origin.	TiVA OECD database
lnTivaim	$\beta > 0$	Logarithmic form of Total Import in Value Added data of Indonesia and the countries of tourist origin.	TiVA OECD database
lnDist	$\beta < 0$	Logarithmic form of a country's distance from Indonesiand the countries of tourist origin	CEPII database
lnPPP	$\beta < 0$	Logarithmic form of purchasing power parity ratio with a conversion factor of GDP to market exchange rate between Indonesia and the country of tourist origin	CEIC database

4. Results And Discussion

Table 2. Result of estimation in conventional proxy of international trade (total trade, total export, total import)

Variable	**GMM for total trade, export, and import**		
	Model 1	Model 2	Model 3
β_0	-2.616**	-1.839**	-4.962**
	(1.094)	(0.853)	(3.616)
$lntour_{t-1}$	0.714***	0.711***	0.081*
	(0.126)	(0.112)	(0.043)
lgdpc	0.276**	0.298***	1.029**
	(0.123)	(0.107)	(0.372)
lpop	0.165**	0.167***	0.681**
	(0.073)	(0.059)	(0.264)
ltrade	0.151**	-	-
	(0.072)	-	-
lexport	-	0.121**	-
	-	(0.051)	-
limport	-	-	0.267*

	-	-	(0.145)
ldist	-0.321**	-0.341***	-1.365***
	(0.134)	(0.109)	(0.394)
lppp	0.244	0.301*	0.264
	(0.154)	(0.152)	(0.217)

Sources: Author's computations

Table 3. Result of estimation in TiVA proxy of international trade (TiVA total, TiVA export, TiVA import)

Variable	**GMM for total trade, export, and import**		
	Model 4	**Model 5**	**Model 6**
β_0	1.360	1.531	1.410
	(0.993)	(1.123)	(0.991)
$lntour_{t-1}$	0.567***	0.581***	0.564***
	(0.148)	(0.159)	(0.146)
lgdpc	0.347**	0.336**	0.564***
	(0.412)	(0.152)	(0.146)
lpop	0.315**	0.311**	0.316**
	(0.133)	(0.145)	(0.131)
ltivatot	0.148***	-	-
	(0.0301)	-	-
ltivaex	-	0.139***	-
	-	(0.038)	-
ltivaim	-	-	0.149***
	-	-	(0.0301)
ldist	-0.737**	-0.736**	-1.365***
	(0.277)	(0.277)	(0.275)
lppp	0.724**	0.8**	0.717**
	(0.316)	(0.343)	(0.315)

Sources: Author's computations

In order to prove the hypothesis, we have to investigate the estimation from GMM. This part examines the two basic models: GMM model using the conventional proxy of international trade, as a total *of trade, export,* as well as *imports*; and GMM model with *trade-in value-added* (TiVA), like *TiVA total of trade, TiVA in export, and TiVA in import*.

Table 1, the traditional measure of international trade, has shown that GDP per capita positively affected tourism activity, as proven by statistically significant figures of *lgdpc.* Also, the variables of population, total trade, exports, as well as import, have significantly affected dependent variables, at least for a 10 percent level of significance. The interesting fact

from the estimation came from the purchasing *power parity* (PPP) variable, which discovered that the export model is the only model with a statistically significant PPP variable. All of our variable's interests have a statistical contribution toward the dependent variable. Results for *lnimport* and *lntrade* have the same result as the case of Thailand [15], and the *lnexport* has an identical outcome in Turkey's research[14]. Nevertheless, these three variables interest have a small coefficient, for variable *lnTrade*, one percent increase in total trade will increase the inbound tourism Indonesia at 0.15 percent, for *lnexport* at 0.12 percent, and for *lnimport* at 0.26 percent, *ceteris paribus*. This coefficient was smaller than several previous findings [12]. Consequently, the connection between international trade and foreign tourist arrivals is quite inelastic.

Furthermore, the model for the TiVA variables has depicted the fact that the major of variables are also statistically significant towards international tourist arrivals. The distinguished discovery from the TiVA approach was: 1) total trade, exports, and imports in terms of value-added were significant at the level of 1 percent or stronger than first estimation, 2) all of the PPP variables have positively impacted the tourist activity. All of the variables interset also has a.small coefficient and a stable relationship with inbound tourism, for *lntivatot* at 0.148 percent, for *lntivaex* at 0.139 percent and *lnimport* at 0.149 percent. However, the second model successfully strengthened our main hypothesis in more compelling ways. On the other hand, all of *lnPPP* variables, as the proxy of price, have a positive sign. That results are quite different from the last paper from Thailand [15], Romania [12], and our null hypothesis. From the sign of that variable, inbound tourism in Indonesia can be classified as luxury goods and has different characteristics with the tourism sector in Malaysia [16].

Previous literature has not used TiVA as a trade measurement. These findings firmly prove our hypothesis that trade activities positively contributed to the international tourism sector of individual countries. Subsequently, as Indonesia's government has set an enormous number for tourist arrivals in recent years, they can promote trade, which indirectly conveyed the exceptional performance of the tourism sector. In other words, Indonesia's government should rouse international trade policies. Indonesia should transform the new paradigm of industrial and trade policy, where the production of goods and services relies on production networks as well as global value chains[22]. This new paradigm needs to alter previous protecting industrial policy into promoting trade openness. Nevertheless, the small coefficient in variables interest means that all of them would not be a match to become a main or the only policy to increase inbound tourism.

Unfortunately, this study has not concerned about economic and public-health disturbance due to COVID-19 because of the limitation of recent data. The global pandemic notion potentially delivers detrimental effects to the tourism sector as well as commercial activities in the foreseeable future.

5. Conclusion

The result has explained that both of the proxies in international trade have positively contributed to inbound tourism as a dependent variable. From that result, we can answer the first literature gap. On another side, we have found if the proxy of international trade by TiVA has a significant level at 1 percent, or we can conclude if those results are stronger than a proxy of international trade by conventional data. The powerfulness of TiVA as the proxy of

international trade because those variables tried to capture flows of goods and services with global production chains, the conventional data of international trade do not always reflect with that problem. TiVA variables tried to consider the value-added from each country in the production of goods and services that are consumed worldwide.

These outcomes prove our hypothesis that trade activities positively contributed to the international tourism sector of certain countries. Indonesia needs to implement paradigm policies that promoting trade openness. However, we must remember about the small coefficient at all of the interest variables, so this strategy can be applied to stimulate both of them but could not be the main strategic or the only strategy to stimulate inbound tourism. Furthermore, because of the limitation of data, this study has not involved the economic and public-health disturbance due to COVID-19 and cannot divide total travel become a holiday or leisure travel and business travel. Hopefully, the next research with the same topic can fill that acknowledgment of this research.

Acknowledgments

1. This study has not involved the economic and public-health disturbance due to COVID-19 due to the limitation of recent data.
2. This study has not divided total travel become a holiday travel and business travel due to the limitation of data.

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