# Do Belt and Road Countries Promote Global Value Chains?

## Siphat Lim*

## ABSTRACT

*In order to strengthen the partnership both economically and politically among countries in the region, the Belt and Road Initiative (BRI) was introduced and implemented since 2013 by the People Republic of China. The main purpose of this policy is to provide the financial aids to the member states to develop necessary fundamental infrastructures such as roads, bridges, highways, railways, hydro dam and develop other sectors. Such an investment is vital to the member states to build their capacity to increase and strengthen their domestic production, especially encourage exporting the products to foreign markets. Moreover, BRI also aims to connect the production chains among the member states to allow them to share technology and build a strong manufacturing foundation and strengthen the competitive advantage. The purpose of this study, therefore, is to understand how the BRI encourage and increase the Global Value Chains (GVCs) participation. The Probit model is adopted in this study to predict the propensity score and also used to compare the economic structure between the BR and Non-BR member states. Based on the Balancing test, the result shows that the economic structure of BR countries, known as the treatment group are not similar to the Non-BR countries or control group. Last but not least, the empirical results of Different-in-Different (DID) model has indicated in contrast that becoming the member state of the BRI does not encourage the GVCs. Despite BRI is implemented since 2013 until now, it does not encourage the GVCs participation, instead it decreases the GVCs participation. On the contrary, the FTA between China and other partners is the major factor that encourages the GVCs participation.*

*Keywords: Global Value Chains; Probit Model; Different-in-Different Model.*

## INTRODUCTION

Global economic growth is highly correlated with the international political economy. Developing countries not only benefit from foreign capital inflow but also technology transfer from developed countries in order to enhance their manufacturing sector and create more job opportunities, and hence to boost their economic development. The increase in foreign direct investments to developing countries are driven by several factors, essentially low labor costs and the abundance of natural resources available in developing nations. A number of international economic policies are initiated by the world's leading countries and regions such as China, the USA and the European Union, to capture the economic interests from developing countries. Those policies include preferential tariff treatment, free trade agreement (FTA), as well as financial assistance to developing countries to improve the infrastructure system, enhance their manufacturing competitiveness, and promote exports.

Those international economic policies are established with basic objectives to strengthen the relationship among countries not only within a particular region but also of the entire world, as well as to foster global trade. The integration of one's production system into the global chain allows them to efficiently increase their productivity and comparative advantage in the international trade, which would yield a mutually beneficial partnership among those countries.

Given the rapidly growing international trade, the Belt and Road Initiative (BRI) is initiated as the foreign policy of China. It was first proposed by the Chinese President during his official visit to Kazakhstan in August 2013. The main purpose of this initiative is to provide financial assistance to its member countries for the infrastructure development such as but not limited to roads, railways and bridges. It is to stimulate the economic growth of its member states by filling the infrastructure investment gap, which is

---
* Siphat Lim, PhD. Professor, CamEd Business School.
  Email: lsiphat@cam-ed.com

the critical challenge for the production and supply chain development. Besides, the Belt Road Initiative also focuses on other sectors, particularly education, construction and real estate, electricity generation and transmission, as well as mining.

In order to examine if BR member states promote GVCs, in this study, a total of 30 countries are selected, which comprise 15 BR member states and another 15 non-BR member states. The primary purpose of this selection is to compare the economic characteristics of the two categories (or country groups). The comparison is performed via Propensity Score Matching (PSM) using Probit Model to estimate ten years of data from the Balanced Panel Data between 2010 and 2019. With 30 countries being selected, this study has a sample size of 300 observations. The Pool OLS estimation method is employed to estimate the sample parameters.

## LITERATURE REVIEW

As a result of globalization and economic liberalization, Global Value Chains (GVCs), the conceptual framework for international production, trade and investments, have increasingly risen as the most crucial domain for the world economic growth since 1990s (Johnson & Noguera, 2012). In recent years, the Belt Road Initiatives (BRI) has gained a great deal of attention as an effective international cooperation policy. The relevant studies are restricted to the theoretical discussion, while limited empirical studies that examine the effects of BRI on the participation of the member states in GVCs are available. This section reviews the global engagement in the GVCs and the benefits of various international cooperation policies on the promotion of GVCs.

GVCs is identified as a sequence of all functional activities in the production process that involve more than one country (Kaplinsky & Morris, 2003). GVCs emphasize the relative value of those activities that bring an individual good or service from conception through the different production stages, including a combination of physical transformation and the input of various producer services, delivery to final consumers, and final disposal after use (Gereffi & Kaplinsky, 2001). Though the definition of GVCs is widely available, the concept of participation in GVCs is not clearly identified in the existing studies. Participation in GVCs is generally understood as the degree to which one country integrates into the global production networks and with its key economic partners (Bullón et al., 2014).

Several works of literature have discussed the approaches to quantify GVC participation. Johnson, 2018) pointed out two broad methods to measure participation in GVCs. The micro-approach estimates the participation in GVCs at the industry or firm level. The macro-approach calculates the participation in GVCs at the national level by using aggregate input-output data in total trade, based on a classification scheme, particularly the Broad Economic Categories (BECs). Hummels et al. (2001) proposed vertical specialization using both VS and VS1 indicators to assess GVC participation from the aspects of import and export, respectively. VS measures the value of imported immediate inputs in proportion to the gross exported goods, while VS1 is the portion of exports embodied in another country's exported goods to its gross exports. However, later studies found that the vertical specialization approaches were not applicable when the manufacturing process takes place in many different countries (Koopman et al., 2010, 2014; Johnson & Noguera, 2012).

When it comes to the relationship between various policies and GVCs, the existing studies identify the need for policymakers to embed various effective development strategies and consistent policies to participate in GVCs (Abe & Proksch, 2017). As cited in Wu et al. (2020), the relevant policies to improve the integration in GVCs are classified into several broad categories, including trade and non-tariff policies (Amendolagine et al., 2019; Orefice & Rocha, 2014; OECD et al., 2013), development policies (Cattaneo et al., 2013), investment and industrial policies (Amendolagine et al., 2019; Raphael Kaplinsky & Morris, 2016), innovation and skill policies (Kergroach, 2019), and property rights policies (OECD et al., 2014).

Among those policies, BRI has drawn significant interest from researchers. Several in-depth analyses recognize the effects of BRI in terms of greater cooperation and greater flow of investment among BR countries (Du & Zhang, 2018; Fu et al., 2018; Liu et al., 2018; Wang & Picciau, 2018). However, it is worth noting that very few studies have focused on the relationship between BRI and GVC participation. Wu et al. (2020) indicate a promotion effect of BRI on its member states to participate in GVCs, especially for developing BR countries.

## METHODOLOGY

The primary purpose of this study is to investigate whether the Belt and Road Initiative (BRI) promotes the countries along the routes to participate in the Global Value Chains (GVCs). This study measures the level of GVCs participation of the ASEAN countries which are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, and some of the non-ASEAN countries who also become a member state of BRI such as Republic of Korea, Russian Federation, New Zealand, Pakistan and Turkey. All of these countries are the Belt and Road (BR) member states. This paper also take into account the Non-BR countries such as Argentina, Brazil, Canada, Finland, Germany, Norway, Australia, Japan, India, United Kingdom, United States of America, France, Mexico, Spain and Sweden. In this report, the BR countries are referred to as the treatment group, while the Non-BR are called the control group.

### Table I. BR and Non-BR Countries

| BR Countries | Non-BR Countries |
|---|---|
| Brunei Darussalam | Argentina |
| Cambodia | Brazil |
| Indonesia | Canada |
| Laos | Finland |
| Malaysia | Germany |
| Myanmar | Norway |
| Philippines | Australia |
| Singapore | Japan |
| Thailand | India |
| Viet Nam | United Kingdom |
| Rep. of Korea | United States of America |
| Russian Federation | France |
| New Zealand | Mexico |
| Pakistan | Spain |
| Turkey | Sweden |

The GVCs variable is measured by the value of export and import of intermediate goods proportionate to total trade. To control the time effect, the Difference-in-Differences (DID) model is constructed. The GVCs, as the dependent variable, is analyzed in the linear regression model with the other three independent variables, which are all dummy variables. The DID model is presented below:

$$gvcs_{i,t} = \beta_o + \beta_1 treated_{i,t} + \beta_2 time_{i,t} + \beta_3 treated_{i,t} \times time_{i,t} + \varepsilon_{i,t} \quad (1)$$

where, $\beta_o$ is the intercept or constant, $\beta_i$ (where i=1,2,3) is the slope coefficient of each respected dummy variable and $\varepsilon_{i,t}$ is the residual or disturbance term. For the treated dummy variable, 1 represents the BR country (treatment group) and 0 indicates the Non-BR country (control group). The time is another dummy variable indicated the period before and after the Belt and Road Initiative. The year lesser than or equal to 2013 are 0 and the year greater than or equal to 2014 are 1. The third variable is the product between treated and time.

To further control each country's characteristics, this analysis integrates other variables into the DID model such as market size, material capital, economic openness, urbanization, public service and natural resource abundance. The new DID model is specified as:

$$gvcs_{i,t} = \beta_o + \beta_1 treated_{i,t} + \beta_2 time_{i,t} + \beta_3 treated_{i,t} \times time_{i,t} + \beta_4 market_{i,t}$$
$$+ \beta_5 capital_{i,t} + \beta_6 open_{i,t} + \beta_7 urban_{i,t} + \beta_8 public_{i,t} + \beta_9 resource_{i,t}$$
$$+ \beta_{10} fta_{i,t} + \varepsilon_{i,t} \quad (2)$$

Market size (market) is the growth rate of Gross Domestic Product (GDP) per capita, material capital (capital) is the ratio of Gross Capital Formation to GDP, economic openness (open) is the ratio of net inflow of Foreign Direct Investment (FDI) to GDP, urbanization (urban) is the ratio of urban population to the total population, public service (public) is the ratio of general government final consumption expenditure to GDP, and natural resource abundance (resource) is the ratio of agricultural raw materials, ores, and metal exports to total manufactured exports and the free trade agreement (FTA) of each selected country with China. As illustrated in the equation, the DID model consists of ten explanatory variables and those variables are categorized into two main types, dummy and control variables. The estimated method of model 1 and 2 is Ordinary Least Square (OLS) with robust standard error. Table II. provides summarized information regarding the term and meaning of each specific variable.

### Table II. Dependent, Dummy and Control Variables

| Classification | Variable | Description |
|---|---|---|
| Dependent variable | gvcs | Ratio of the value of intermediate goods to total trade |
| Dummy variable | treated | Treated=1 is the BR country or Treated=0 is the Non-BR country |
| Dummy variable | time | Time=1 is if year >= 2014 or Time=0 if year <= 2013 |

| Dummy variable | treatedxtime | The product of treated and time |
|---|---|---|
| Control variable | market | Growth rate of Gross Domestic Product (GDP) per capita |
| Control variable | capital | Ratio of gross fixed capital formation to GDP |
| Control variable | open | Ratio of net inflows of foreign direct investment (FDI) to GDP |
| Control variable | urban | Ratio of urban population to total population |
| Control variable | public | Ratio of general government final consumption expenditure to GDP |
| Control variable | resource | Ratio of agricultural raw materials, ores, and metal exports/manufactured exports |
| Control variable | fta | Free trade agreement with China |

All variables are natural logarithm except the dummy variables such as treated, time, treated×time and fta. Before estimating the DID model, the control variables between BR and Non-BR countries are matched through the propensity score matching (PSM). The Probit model is applied to determine the propensity score. The propensity score model is demonstrated as follows:

$$p(\boldsymbol{x_i}) = prob(treated_i = 1|\boldsymbol{x_i}) = E(treated_i|\boldsymbol{x_i})$$

The propensity score is the conditional probability of being a BR country given pre-BR countries characteristics $x_i$. Estimate a Probit model for the propensity score of observations to be assigned into the BR countries. Use $x_i$ variables that may effect the likelihood of being assigned into the BR countries. In this case, the propensity score is a Probit model with $treated_i$ as the dependent variable and the matrix, $x_i$, as the matrix of independent variables. The primary motive that the model is carried out before the estimation of the DID model is to prevent the selection bias since the GVCs of the BR countries are compared with the Non-BR countries before and after the implementation of the BRI. After calculating the propensity score, the Common Support test and the Balancing test of the Propensity Score Matching are conducted.

In this study, Global Value Chains, which is the dependent variable, is measured by using the approach below:

$$gvcs = \frac{Export\ of\ Intermediate\ Products + Import\ of\ Intermediate\ Products}{Total\ Export\ of\ all\ Categories + Total\ Import\ of\ all\ Categories}$$

Export and import of intermediate goods comprise nine basic categories, particularly category 21, 22, 31, 42, 51, 53, 111, 121 and 322. The aforementioned data are obtained from the UN COMTRADE database under the BEC classification, which is organized into three main groups, namely final products, primary products, and intermediate products, including parts and semi-finished products. Total export and total import are the aggregate figures of the BEC classification. The data related to control variables are derived from other databases such as Asian Development Bank (ADB), World Bank (WB), and International Financial Statistics (IFS) of International Monetary Fund (IMF), as exhibited in Table III.

**Table III. Data and Sources of Data**

| Variable | Measurement | Source |
|---|---|---|
| Export of Intermediate Products | US$ | UN COMTRADE |
| Import of Intermediate Products | US$ | UN COMTRADE |
| Total Export (all categories) | US$ | UN COMTRADE |
| Total Import (all categories) | US$ | UN COMTRADE |
| Gross Domestic Product (GDP) | DC or US$ | ADB/IMF |
| GDP Per Capita | DC | ADB/IMF |
| Gross Fixed Capital Formation | Millions or Billions of DC | ADB/IMF |
| Net Inflows of Foreign Direct Investment (FDI) | Millions of US$ | ADB/IMF |
| Urban Population to Total Population | % | ADB/IMF |
| General Government Final Consumption Expenditure | Millions or Billions of DC | ADB/IMF |
| Agricultural raw materials exports to total manufactured exports | % | WB |
| Ores, and metal exports to total manufactured exports | % | WB |

Note: DC is Domestic Currency, UN COMTRADE is United Nation COMTRADE, ADB is Asian Development Bank, IMF is International Monetary Fund, WB is World Bank.

## EMPIRICAL RESULTS

First and foremost, the estimated result of the logistic regression between all control variables and the treated dummy variable representing the BR countries is presented and interpreted in this section. After that the common support test and balancing test are conducted afterward. Last but not least, the estimated result of the Different-in-Different model between the global value chains and treat and control variables is demonstrated thereafter. The summary statistics of all the variables are presented in Table IV down below.

**Table IV. Summary Statistics**

| Variable | Observation | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| lngvcs | 300 | 4.09344 | 0.14444 | 3.64880 | 4.48467 |
| treated | 300 | 0.50000 | 0.50084 | 0 | 1 |
| time | 300 | 0.60000 | 0.49072 | 0 | 1 |
| treatedxtime | 300 | 0.30000 | 0.45902 | 0 | 1 |
| lnmarket | 265 | 0.73895 | 1.00905 | -4.58063 | 2.52687 |
| lncapital | 294 | 3.13571 | 0.22076 | 2.52738 | 3.71090 |
| lnopen | 288 | 0.81571 | 0.99501 | -4.73103 | 3.35334 |
| lnurban | 300 | 4.16055 | 0.41209 | 3.01033 | 4.60517 |
| lnpublic | 294 | 2.72750 | 0.38670 | 1.57003 | 3.27628 |
| lnresource | 300 | 1.69773 | 1.05109 | -4.69544 | 4.20917 |
| fta | 300 | 0.46667 | 0.49972 | 0 | 1 |

**Table V. Probit Model of Propensity Score**

| treated | Coef. | Std. Err | z | P>|z| | [95% Confident Interval] | |
|---|---|---|---|---|---|---|
| lnmarket | 0.18989 | 0.11112 | 1.71 | 0.087 | -0.02789 | 0.40767 |
| lncapital | 1.44146 | 0.47414 | 3.04 | 0.002 | 0.51217 | 2.37075 |
| lnopen | 0.00004 | 0.10294 | 0.00 | 1.000 | -0.20173 | 0.20181 |
| lnurban | -0.63174 | 0.31279 | -2.02 | 0.043 | -1.24480 | -0.01869 |
| lnpublic | -1.61080 | 0.40019 | -4.03 | 0.000 | -2.39516 | -0.82643 |
| lnresource | -0.17929 | 0.10907 | -1.64 | 0.100 | -0.39307 | 0.03449 |
| _cons | 2.68460 | 2.04900 | 1.31 | 0.190 | -1.33137 | 6.70057 |

The main reason of performing the Probit model in this study is to understand the relationship of the control variables and the probability that each country will become the member of Belt and Road. The result indicated that the economy and FDI inflow of each country have positive relationship and significant to explain the probability of each country becoming the membership of BR at 10% and 1% confidence level respectively (see Table V).

On the other hand, although the urbanization and public service variables are statistically significant to explain the treated variable, the result indicates negative relationship at the significant level of 5% and 1% respectively. The result implies that the increase in urbanization and government expense on public service will result in the decreasing the probability of each country to become a member of BR. Finally, the opening of the economy and natural resources abundance by each country have no relationship with the treated dummy variable.

**Table VI. Common Support Test**

| | Percentiles | Smallest | | |
|---|---|---|---|---|
| 1% | 0.068157 | 0.061809 | | |
| 5% | 0.133125 | 0.067225 | | |
| 10% | 0.155160 | 0.068157 | Obs | 246 |
| 25% | 0.226062 | 0.069791 | Sum of Wgt. | 246 |
| 50% | 0.572906 | | Mean | 0.521801 |
| | | Largest | Std. Dev. | 0.303344 |
| 75% | 0.784239 | 0.996231 | | |
| 90% | 0.951004 | 0.996485 | Variance | 0.092018 |
| 95% | 0.984310 | 0.997360 | Skewness | 0.101000 |
| 99% | 0.996485 | 0.998013 | Kurtosis | 1.512319 |

Note: the common support option has been selected
The region of common support is [.06180887, .99801272]

As a matter of fact, the predicted propensity score must fall between 0 and 1; otherwise, the analysis will be inaccurate. Tackling this suspicion, the common support test is performed to ensure the accuracy. Based on this test, the propensity score is classified in percentile as shown in Table VI. As a result, the propensity score falls in the common support region between 0.0618 and 0.998.

**Table VII. Balancing Test**

| Variable | Mean | | | t-test | | V(T)/ V(C) |
|---|---|---|---|---|---|---|
| | Treated | Control | %bias | t | p>|t| | |
| lnmarket | 1.1154 | 0.96819 | 16.5 | 1.47 | 0.142 | 2.11* |
| lncapital | 3.2268 | 3.1528 | 36.8 | 3.05 | 0.003 | 3.56* |
| lnopen | 0.7801 | 0.6069 | 17.3 | 1.68 | 0.095 | 5.81* |
| lnurban | 4.0547 | 4.0936 | -10.5 | -0.74 | 0.459 | 0.94 |
| lnpublic | 2.6162 | 2.5477 | 20.8 | 2.22 | 0.027 | 1.88* |
| lnresource | 1.7312 | 1.3515 | 43.3 | 3.61 | 0.000 | 8.27* |

* if variance ratio outside [0.69; 1.46]

| Ps R2 | LR chi2 | p>chi2 | MeanBias | MedBias | B | R | %Var |
|---|---|---|---|---|---|---|---|
| 0.093 | 28.48 | 0 | 24.2 | 19.1 | 73.5* | 4.99* | 83 |

* if B>25%, R outside [0.5; 2]

Thereafter, the balancing test is conducted after the test thereof. The control variables are now divided into two different group, the treatment group consist of BR member states and control group consist of non-BR member state. The mean or average of control variables including market, capital, open, urban, public and resource between the two groups is compared. The balancing test, therefore, is nothing but simply a test to compare the difference between the two group means. The null-hypothesis states that there is no difference between the two group means of BR and non-BR countries' control variable. Demonstrated in Table VII, the result shows that there is no difference between the market size of the treatment and the control group. Giving that the p-value of 0.142 is greater than the significant level of 5%. Similarly, the null-hypotheses of the urbanization is also failed to reject at the same significant level. However, all the null-hypothesis of capital, public and resources are rejected at 5 percent significant level, except for the null-hypothesis of the open that is rejected at 10 percent significance level.

**Figure I. Propensity Score Matching, BR and Non-BR Countries**
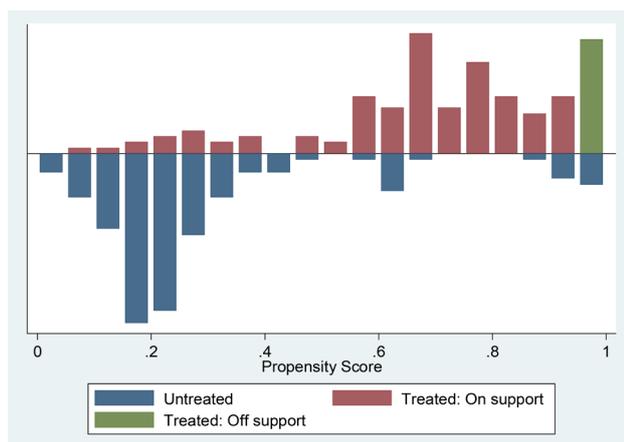


**Figure II. Kernel Density Propensity Score**
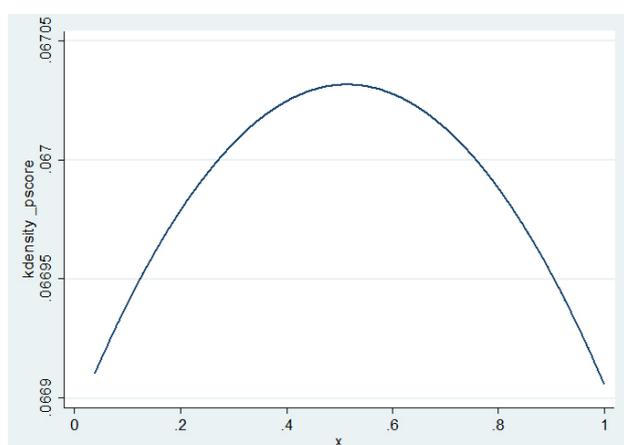


Presented in Table VIII is the first regression between the global value chains and dummy variables, known as DID, which are treated, time and treatedxtime excluding the control variables.

**Table VIII. DID Model without Control Variables**

| lngvcs | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| treated | -0.02712 | 0.02602 | -1.04 | 0.298 | -0.07833 | 0.02410 |
| time | -0.03677 | 0.01659 | -2.22 | 0.027 | -0.06941 | -0.00413 |
| treatedxtime | 0.01872 | 0.03386 | 0.55 | 0.581 | -0.04792 | 0.08537 |
| _cons | 4.12344 | 0.01272 | 324.08 | 0.000 | 4.09840 | 4.14848 |

The result of the DID model without control variables indicated that among the three dummy variables treated, time and treatedxtime, only time is significant at the significant level of 5 percent and can explain GVCs. However, the relationship between the two variables is negative which can be interpreted that since the BR is initiated in 2013 until now causes the GVCs participation to decrease.

**Table IX. DID Model with Control Variables**

| lngvcs | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| treated | -0.07531 | 0.02767 | -2.72 | 0.00700 | -0.12982 | -0.02080 |
| time | -0.03931 | 0.02046 | -1.92 | 0.05600 | -0.07963 | 0.00100 |
| treatedxtime | 0.00329 | 0.03078 | 0.11 | 0.91500 | -0.05735 | 0.06393 |
| lnmarket | 0.01814 | 0.00861 | 2.11 | 0.03600 | 0.00117 | 0.03510 |
| lncapital | 0.24146 | 0.04312 | 5.6 | 0.00000 | 0.15651 | 0.32641 |
| lnopen | -0.02065 | 0.00785 | -2.63 | 0.00900 | -0.03611 | -0.00518 |
| lnurban | 0.08041 | 0.03007 | 2.67 | 0.00800 | 0.02119 | 0.13964 |
| lnpublic | 0.01280 | 0.03885 | 0.33 | 0.74200 | -0.06374 | 0.08934 |
| lnresource | -0.01093 | 0.01586 | -0.69 | 0.49100 | -0.04217 | 0.02031 |
| fta | 0.06284 | 0.02269 | 2.77 | 0.00600 | 0.01816 | 0.10753 |
| _cons | 3.01355 | 0.14964 | 20.14 | 0.00000 | 2.71877 | 3.30833 |

After the control variables are included in the DID model, the empirical result has changed significantly. The treated variable is statistically significant at 1 percent level and can be used to explain the GVCs participation. Unfortunately, the two variables are negatively effecting each other. Meaning that the countries that join as the member of Belt and Road Initiative do not increase the GVCs instead it decreases the GVCs participation. On the contrary, the same empirical result illustrates that the Free Trade Agreement (FTA) which signed between the People Republic of China and the partner countries listed in this paper is facilitating to the growth of GVCs participation (see Table IX). The sample parameter of FTA is 0.06284, positive and highly significant at 1 percent level of significance. Likewise, the expansion of market size, increasing urbanization and especially the increase of new inflow of FDI are all contributed to the increasing of GVCs participation. In contrast, the opening of economy of each country does not contribute to the increase in GVCs, yet decreases the GVCs participation. While the government expense on public service and natural resource abundance are insignificant to explain the GVCs.

## CONCLUSION

Strengthening the good relationship among countries economically and politically is very important for partnership countries as well as the whole world. Belt and Road Initiative is the foreign policy proposed by the China aiming to bring together the local economy by providing the financial aids to the member-state countries to develop necessary fundamental infrastructure to promote manufacturing, especially connecting the production chains among the member states.

However, this study indicates that join the BRI membership does not contribute positively to the GVCs. In contrast, since the BRI was implemented in

2013 until now, the BRI has not contributed to the GVCs, yet making the GVCs to decrease. The decrease of GVCs possibly due to the different in economic structure of each member state as demonstrated in the Balancing test. Such a difference that formed a major setback for the BRI to not be able to increase the GVCs participation yet. Another possible reason for this setback possibly due to the time that the BRI is introduced from 2013 to 2019 is roughly 7 years only. GVCs participation indeed requires a lot more time for each country value chain to integrate. In contrast, the FTA between China and other partnership countries is undeniably encourage the GVCs based on this study.

## REFERENCES

Abe, M., & Proksch, M. (2017). Supporting participation of Asia-Pacific SMEs in global value chains. *Journal of Korea Trade*.

Amendolagine, V., Presbitero, A. F., Rabellotti, R., & Sanfilippo, M. (2019). Local sourcing in developing countries: The role of foreign direct investments and global value chains. World Development, 113, 73–88.

Bullón, D., Mena, T., Meng, B., Sánchez, N., Vargas, H., & Inomata, S. (2014). Using the input-output approach to measure participation in GVCs: The case of Costa Rica. 33rd General Conference of the International Association for Research in Income and Wealth, 24–30.

Cattaneo, O., Gereffi, G., Miroudot, S., & Taglioni, D. (2013). Joining, upgrading and being competitive in global value chains: A strategic framework. The World Bank.

Du, J., & Zhang, Y. (2018). Does one belt one road initiative promote Chinese overseas direct investment? *China Economic Review*, 47, 189–205.

Fu, X.-M., Chen, H.-X., & Xue, Z.-K. (2018). Construction of the belt and road trade cooperation network from the multi-distances perspective. Sustainability, *10*(5), 1439.

Gereffi, G., & Kaplinsky, R. (2001). Introduction: Globalisation, value chains and development. *IDS Bulletin, 32*(3), 1–8.

Hummels, D., Ishii, J., & Yi, K.-M. (2001). The nature and growth of vertical specialization in world trade. *Journal of International Economics, 54*(1), 75–96.

Johnson, R. C. (2018). Measuring global value chains. *Annual Review of Economics, 10*, 207–236.

Johnson, R. C., & Noguera, G. (2012). Accounting for intermediates: Production sharing and trade in value added. *Journal of International Economics, 86*(2), 224–236.

Kaplinsky, R., & Morris, M. (2003). A Handbook for Value Chain Research Brighton. UK: Institute for Development Studies.

Kaplinsky, Raphael, & Morris, M. (2016). Thinning and thickening: Productive sector policies in the era of global value chains. *The European Journal of Development Research, 28*(4), 625–645.

Kergroach, S. (2019). National innovation policies for technology upgrading through GVCs: A cross-country comparison. *Technological Forecasting and Social Change, 145,* 258–272.

Koopman, R., Powers, W., Wang, Z., & Wei, S.-J. (2010). Give credit where credit is due: Tracing value added in global production chains. National Bureau of Economic Research.

Koopman, R., Wang, Z., & Wei, S.-J. (2014). Tracing value-added and double counting in gross exports. *American Economic Review, 104*(2), 459–94.

Liu, H., Jiang, J., Zhang, L., & Chen, X. (2018). OFDI agglomeration and Chinese firm location decisions under the "Belt and Road" initiative. *Sustainability, 10*(11), 4060.

Orefice, G., & Rocha, N. (2014). Deep integration and production networks: An empirical analysis. *The World Economy, 37*(1), 106–136.

Organisation for Economic Co-Operation and Development, World Trade Organization, & United Nations Conference on Trade and Development. (2013). Implications of global value chains for trade, investment, development and jobs [Conference session]. G20 Leaders Summit. https://unctad.org/en/PublicationsLibrary/unctad_oecd_wto_2013d1_en.pdf

Organisation for Economic Co-Operation and Development, World Trade Organization, & World Bank Group. (2014). Global value chains: Challenges, opportunities and implications for policy [Conference session]. G20 Trade Ministers Meeting. https://globalvaluechains.org/publication/global-value-chainschallenges-opportunities-and-implications-policy

Wang, W., & Picciau, S. (2018). How to strengthen EU-China cooperation based on Belt and Road. Revista de Relaciones Internacionales, *Estrategia y Seguridad, 13*(1), 21–33.

Wu, Z., Hou, G., & Xin, B. (2020). Has the Belt and Road Initiative Brought New Opportunities to Countries Along the Routes to Participate in Global Value Chains? *SAGE Open, 10*(1), 2158244020902088.

**CamEd**
Business School