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Impact of Global Value Chain on Economic Growth: Evidence from Belt and Road Initiatives

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ABSTRACT

The Belt and Road Initiative is massive with a lot of potential, and number of positives. The disintegration of the mode of production of most countries across the globe has allowed the global dispersal of value-added activities in the production value chain networks. We examined the impact of global value chain on economic growth of Asian countries within the Belt and Road over the period of 2005 to 2017. We find robust evidence for a positive productivity effect from stronger GVC integration. Moreover, we find that relatively less productive countries can benefit more from GVC participation in terms of growth rate. Several policy recommendations support the findings.

Keywords : Global Value Chain, Economic growth, Belt and Road, Asian.

I. INTRODUCTION

Globalization has been characterized by the regional fragmentation and splintering of the processes that underpin development for decades (Mettler & Williams, 2011; Taglioni & Winkler, 2016). The global dispersion of value-added activities in manufacturing value chain networks has been enabled by the disintegration of most countries' modes of production (Orlic, 2017; Taglioni & Winkler, 2016). This indication has culminated into significant rise in the global trade across these networks of which Asian countries are no exception (Ghiasy & Zhou, 2017; Solmecke, 2016).

The GVC framework shows how a sector or a country and its sectors participate in the sequence of operational activities required to bring a product or a service from its stage of conception to production as well as sales (Kersan-Škabić, 2019). Cross-border linkages have been emphasized in the literature as paramount and vital determinants of global output and device delivery (Kersan-kabi, 2019; Orlic, 2017; Taglioni & Winkler, 2016) thanks to GVC. As a result, global reorganization and transformation of manufacturing and distribution, as well as sales into various value chain segments, has critical and profound consequences for Asian countries. (Kowalski, Lopez-Gonzales, Ragoussis, & Ugarte, 2015; OECD, 2013)

Each dimension of the value chain employs various combinations of production factors, resulting in a broad range of opportunities for value addition as well as relevant global linkages that include different opportunities, technical advantages, and capabilities (Leitner & Stehrer, 2014; Liu, Li, Long, Li, & Le, 2018; Orlic, 2017). GVCs have the potential to drive positive results, but there are winners and losers in GVCs, according to Stollinger (2016). Clearly, participation in the GVC does not necessarily lead to positive outcomes for all participants. The initiative is a massive international trade network that cuts across three continents; Asia, Europe and Africa (Kohl, 2019; Solmecke, 2016). This initiative also cuts across several corridors in different countries (Solmecke, 2016). The BRI has received a lot of positive feedback from a variety of stakeholders, but there are still a lot of questions about why China is championing it, and whether there is some link to a desire to promote its political dynamics wrapped around economic power in the many vulnerable and developing countries through which it passes (Ghiasy & Zhou, 2017).

In fact, the BRI is still evolving as a long-term Chinese vision for infrastructural development, connectivity and economic cooperation (Ghiasy and Zhou (2017). With BRI still in its early stages, it becomes imperative to extent literature on it, especially with its effectiveness in improving GVC participation. Also the assertion by Brückner and Lederman (2012) with regards to a lack of consensus on if trade increases growth, also forms a bases to evaluate how the GVC influences economic growth in a period of increasing global production fragmentation, within the implementation era of BRI. Our paper examined the impacts of global value chain on economic growth of Asian countries within the Belt and Road initiative. We employed aggregate panel data selected Asian 20 countries within the Belt and Road region over the period of 2005 to 2017. We find robust evidence for a positive productivity effect from stronger GVC integration. Moreover, and in line with Rodrik (2013), we find that relatively less productive countries can benefit more from GVC participation in terms of growth rate. However, our findings establish negative prediction of global value chain participation on economic growth rate. This speak global value chain participation of sampled countries contribution in the world via GDP growth rate is negative

Our paper contributes to the literature in diverse ways. First, the paper projected to extent the literature on the Belt and Road initiative. The findings of the impacts in promoting global value chain will add to the extant literature on the effectiveness the policy to China and all countries within the initiative. Second, the paper can be a basis for critical policy evaluations by governments. Belt and Road initiative is massive with a lot of potential, and number of positives. Therefore, we believed that, scholars and other stakeholders alike can also rely on the findings for critical evidence on the initiative, consequently assisting in promoting proper economic discourse and discussions.

II. LITERATURE REVIEW

According to Jingzi, Haitao, and Hua (2013) global value chain is a phenomenon that cannot be taken for granted. It was indicated that in recent time, GVC discussion has been in the fabric of almost all country, from developed to less developed countries. GVC is recognized to comprise of activities that cut across raw material and components procurements, manufacturing, and distribution across countries. GVC which promotes trade freedom and reduces cost of doing business also improves technological advancement, and improves the timely of product delivery and efficiency (ESCAP, 2015). The fragmented nature of production associated with GVC is positively shaping trade and production methods in current times (Pomfret & Sourdin, 2014).

The importance of GVCs in current times cannot be over emphasized, it is on the back of this that the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2015) projected that GVC plays an instrumental role in establishing future trade and Foreign Direct Investment (FDI) trends and economic growth avenues. GVCs includes a lot of sectors that have driven trade drastically high as shown in some trade figures like when trade grew from $300 billion in 1990 to $2,300 billion and a substantial number of this was service exports from East, South, and Southeast Asia (Pomfret & Sourdin, 2014).

The benefit of GVC is obviously enormous, with the capacity to improve efficiency and also save times, since with GVCs in current times, there is no need to design, and produce a product alone, as it is more advantageous to identify a specialty and focus on it (Baldwin, 2011). However, for this to happen smoothly, there is need to reduce the obstruction to the flow of products, information and capital (Jingzi, Haitao, & Hua, 2013), which has to be driven by specific policies (ESCAP, 2015).

It needs to be emphasized that there are certain factors that motivate players to participate in GVCs. One important condition for the participation in GVCs is the price of cost of production. The cost needs to be reduced in the sense that it allows for the use of location advantages of countries and economies-of-scale (Anukoonwattaka, 2011). Also in the case where a firm is already participating in GVCs, there is also the likelihood to increase their flow if there is a reduction in the cost of trade (ESCAP, 2015). Also the availability of natural resources in a particular country can be the reason why a firm move certain part of their production process to the country. For example, the availability of cheap labour. But it should however be stress that the availability of resources is not the only potent reason for firms to move their production process to another country. In instances where there is the ability of enjoy economies of scales, tax incentives, preferential trade arrangements and existing regulatory frameworks, these can very well influence a firm or a country to participate in GVCs (Bhattacharya & Moazzem, 2013). Asia plays a key role in GVCs, this is evidence in the "Factory Asia phenomenon, which the electrical and electronics industry plays an important part in (Pomfret & Sourdin, 2014). It should however, be emphasized that Asia also actively participates in other GVCs such as those related to the textiles, clothing, and footwear industries (Pomfret & Sourdin, 2014).

The importance of Asia in the GVC is also reflected in the Asia-Pacific region which has been established to be a major player in GVCs with regards to exporting of GVC products (ESCAP, 2015). For example, in 2013, approximately 45% of global GVC-related exports of final products were from the Asia-Pacific region, with China's export being half of the region's final exports (ESCAP, 2015). The gap between their export and import is however large. In the same year, the region's imports of GVC final products were about 26% of global imports, as it was dominated by the United States and a number of countries in the European Union (ESCAP, 2015)

Data from the Asia-Pacific region indicates that participation in GVC comes with enormous benefits that cover a number of stakeholders and levels, such as for firms and country. It comes with advantages such as creation of better employment opportunities (ESCAP, 2015). The fragmentation nature of GVCs which promotes the participation of different firms at different circle of production, has given the opportunity of certain small and medium firms to collaborate with multinational firms, giving them the opportunity to gain access to a global market, one that might not have been possible under the traditional mode of production (Mettler & Williams, 2011; Orlic, 2017; Taglioni & Winkler, 2016). This however does

not mean that it is an easy ride for those in the GCVs as competition is usually fierce for various spots in the GVCs (Taglioni & Winkler, 2016).this is also coupled with complex trade-off policies, which exposes firms to uncertainties that are associated with coordinating production across several locations (Taglioni & Winkler, 2016).

It must be emphasized that GVC participation sometimes increases volatility and inequality (Pomfret & Sourdin, 2014). This however does not mean not participating places the country in a better position as not participating in the GVC can result in reduced economic growth companied to those that participate in the GVC (Pomfret & Sourdin, 2014). The however does not change the fact that countries in Asia do not participate in the GVCs equally. This is indicted to be largely driven by the economic development level of the country. Low-income economies usually focus on tasks that involves low-wage or unskilled labour. They are usually not fully exposed to the benefit presented with technology distribution and skills upgrading. And the high-income economies hold the power to manipulate the knowledge-intensive activities of GVC (ESCAP, 2015). Pomfret and Sourdin (2014) agree, stating that the high cost of conducting business transactions in some Asian economies, such as those in Western and Central Asia, is the reason why some Asian countries have not participated in the GVC.

III. Data and Methods

The methodological strategy adopted for this quantitative approach. For the quantitative phase of the study, we used data from the World Bank, ILO, International Monetary Fund, and UIBE websites. We examined the impact of Global Value Chain on economic growth using panels from Belt and Road countries. For robust empirical analysis, we integrated into our model other explanatory variables, especially trade balance, and foreign exchange research following the works of ((Pomfret & Sourdin, 2014). Therefore, we employed a panel data of aggregate values of the adopted variables over the period of 13 years thus from 2005 through to 2017.

Empirical Models

We first estimate to predict the impacts of Global Value Chain on Economic Growth by integrating specific indicator variables. The regression specifications are shown as:

$$ECG = \alpha + \beta_1 GVCPTt + \beta_2 GVCPSt + \beta_3 FREX + \beta_4 TRDB + \varepsilon_t \quad \ldots\ldots\ldots\ldots (1)$$

The extent of a country's involvement in global value chains can be defined as the sum of GVC-related components divided by gross exports (E_{ijt}), as provided in our study as:

$$GVC\_Particiaption_{ijt} = FV_{ijt}/E_{ijt}) + IV_{ijt}/E_{ijt}) \quad \ldots\ldots (2)$$

$$GVC\_Position_{ijt} = \ln (1+IV_{ijt}/E_{ijt}) - \ln (1+FV_{ijt}/E_{ijt}) \ldots(3)$$

We derived the panel dataset from Asian 20 countries within the Belt and Road region from World Bank, ILO, International Monetary Fund, and UIBE websites. The yearly data covered the period from 2005 to 2017. The countries included in the study are: Vietnam, Thailand, Singapore, New Zealand, Mongolia, Malaysia, Korea, Rep, Indonesia, China, Cambodia, Brunei Darussalam, Tajikistan, Kyrgyz Republic, Kazakhstan, Azerbaijan, Sri Lanka, Pakistan, Nepal, India, and Bangladesh.

IV. Findings and Analysis

A summary of the descriptive statistics for the baseline series in their natural logarithmic form are reported in Table 1 for the selected 20 countries within the Belt and Road region over the period 2005 to 2017. The outcome shows, for all selected economic growth recorded the highest mean value of (0.4468), with a standard deviation of 0.2277, successive by global value chain position with an average value of 0.1955, and standard deviation of

0.0494, global value chain participation (0.1350, standard deviation 0.389). The outcome shows that, global value positively and significant impact economic growth as skewed.

	Mean	Std. deviation	Min	Max
ECG	0.4468	0.2277	0.2067	0.8700
GVCPTT	0.1350	0.3899	-0.4680	0.7880
GVCPST	0.1955	0.0494	0.1069	0.2590
TRADEB	0.1436	0.0372	0.0873	0.1925
FREXE	0.1567	3.5423	3.6000	14.4000

Regression Result

The table (3) establish statistical difference between GVC participation and position and their relationship with economic growth as proxy by GDP growth rate. The significance level was pegged at (0.05) with 95% confidence level. The results further show statistically significant difference of both GVC position and participation of all the selected countries as evident by (df=2, F=3.454, significant value=0.047 and p<0.05). The results imply that, global value chain envisage gross domestic product growth rate inversely. In fact, the mean differences exist as results of the effect of global value chain on economic growth of selected Asian countries.

Table 3. ANOVA Result from Regression

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4194.596	2	2097.298	3.454	.047[b]
	Residual	9714.878	16	607.180		
	Total	13909.473	18			

Note: Dependent Variable: GDP Growth Rate, and Predictors: (Constant), GVC Position, GVC Participation

However, the results in table (4) shows a statistically significant prediction of GVC participation on GDP growth. The results indicate negative prediction as evident ([β = -.644, t = -2.627, sign = .018, p < 0.05], and 64.4% of differences elucidated. The prediction explains Global value chain participation of sampled countries contribution in the world via GDP growth rate is negative. We established that, most of the GVC trading are been carried out locally. Our finding is obvious that participation index is moderately correlated with the size of countries and the import content of exports of countries. The findings are consistent with Gereffi and Fernandez-Stark (2011).

GVC participation sometimes increases volatility and inequality (Pomfret & Sourdin, 2014). This however does not mean not participating places the country in a better position compared to participating in the GVC and being exposed to inequalities, as not participation can result in a higher reduced economic growth compared to participating in the GVC (Pomfret & Sourdin, 2014). In addition, the findings show that, GVC position of selected countries failed to predict economic growth as proxy by GDP growth rate (β = -.322, t = -1.313, sign = .208, p < 0.05). This implies that position index, is not correlated with the size of countries and the import content of exports of countries in Asia.

Table 4. Regression Coefficient Result

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	92.657	9.291		9.973	.000
	GVC Participation	-16.444	6.259	-.644	-2.627	.018*

GVC Position	-.254	.193	-.322	-1.313	.208

V. Conclusion and Policy Recommendation

Being a project that is arguably in its early stages, the full effect of the BRI cannot be stated with all certainty. There is no doubt that the project is a massive one with a lot of potential, and to some extent a number of positives, but there is need to properly evaluate the long term effect of the project. We first estimate to predict the impacts of Global Value Chain on Economic Growth by integrating specific indicator variables. We employed panel unit root test of selected Asian 20 countries within the Belt and Road region over the period of 2005 to 2017. Our findings show that, countries' GVCs position and participation were not steady throughout, before and after the adoption of the BRI.

The key contribution of our study is to provide econometric evidence on the impact of GVC participation and position on economic growth rate using data since 2005 on 20 Asian countries. We find robust evidence for a positive productivity effect from stronger GVC integration. Moreover, and in line with Rodrik (2013), we find that relatively less productive countries can benefit more from GVC participation in terms of growth rate.

Our finding on participation is moderately correlated with the size of countries and the exports of countries. Finally, our findings establish negative prediction of global value chain participation on economic growth rate. This speak global value chain participation of sampled countries contribution in the world via GDP growth rate is negative. We established that, most of the GVC trading are been carried out locally. Our finding is obvious that participation index is moderately correlated with the size of countries and the import content of exports of countries. The findings are consistent with Gereffi and Fernandez-Stark (2011). This can be assumed at this point; the program is attaining its aspirations to some extent. Our paper encounter certain caveats where our paper did not evaluate the BRI within the long run, so future studies could look at roping in other economies from different regions that have adopted.

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