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Monetary and Fiscal Policy Interaction and the Global Value Chains: A Dynamic Panel Analysis

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Abstract

This paper examines the effects of the monetary and fiscal policies on global value chains (GVC's) in two panels of countries: the Organization for Economic Cooperation and Development (OECD) and the emerging Asian countries (EAC). We use a dynamic panel model during the period (2007-2019). Our empirical results show that monetary and fiscal policies are not significant in the OECD country model while they are significant and negative in the model of emerging Asian countries. However, their interaction affects positively the global value chains variable (GVCRT) in both groups of countries. Finally, results reveal that global value chains are generally explained by international trade variables namely the lagged year of global value chains, the upstream and downstream participation of countries with their trading partners also the export of final goods. Hence, these variables occupy a decisive place in explaining the global value chains.

Keywords: Global value chains; Monetary and fiscal policy interaction; OECD countries; Emerging Asian countries; Dynamic panel Model

JEL classification: E03; E52; E62; F06; F10; F14; F16

Introduction

Global value chains have become a dominant feature of global trade and Investment, encompassing developing emerging countries and developed economies, Borin and Mancini [1]. Approximately 70% of today's international Trade is based on global value chains, GVC's flows of services, raw materials parts, and components crossing borders often multiple times. They are integrated at the end of the chain into final products, which are then shipped to consumers around the world, OCDE (2015). Exporting from one country to another is often based on complex interactions between various local and foreign suppliers. Even more than before, trade is determined by companies' strategic decisions to outsource, invest and operate where the necessary skills and materials are available on competitive terms in terms of cost and quality, OCDE (2015). The unprecedented complexity of global networks potentially generates new dimensions for the international transmission of monetary policy shocks that go beyond standard textbook trade channels primarily driven by exchange rate fluctuations, GFC (2013). The purpose of this study is to investigate the effects of monetary and fiscal policies on global value chains related to trade (GVCRT) in both groups of countries OECD and emerging Asian countries EAC, according to Ca' Zorzi, we try to answer these questions in our study, can monetary policy spillovers account for the high degree of cross-country co-movement in real and financial variables? Can central banks in emerging Asian economies retain control over inflation and real activity in the presence of monetary policy spillovers from systemic advanced economies? This study examines the effects of monetary policy through policy rates (INT (% GDP)) or long-term interest rates which are usually averages of daily rates, measured in percentages. These interest rates are implied by the prices at which government bonds are traded in financial markets, not by the interest rates at which the loans were issued. These bonds whose repayment of capital is guaranteed by governments. Long-term interest rates are one of the determinants of business investment. Low long-term interest rates encourage investment in new equipment and high-interest rates discourage it. In a standard open

economy environment, monetary tightening influences the current account in two ways. On the one hand, imports are affected by the contraction in domestic demand; on the other hand, the subsequent appreciation of the national currency makes exports more expensive, if we operate according to a local currency pricing paradigm, Ca' Zorzi. Foreign economies are only affected by the local monetary policy shock to the extent that their Trade in goods and services depends on the local Trade balance, Olamide [2]. Also, the effects of Fiscal policy using final consumption expenditure (GGEXP (%GDP)) or general government expenditure, indicating the size of government in countries. The wide variation in this indicator highlights the diversity of countries' approaches to the provision of public goods and services and social protection, not necessarily differences in the resources spent. This indicator is measured in thousands of dollars per capita and as a percentage of GDP. These two economic policies were carried out by OECD countries and emerging Asian countries during the period (2007-2019), our objective is to study their effects on the evolution of global value chains linked to global trade (GVCRT (% Global trade) which is the dependent variable and measures the value of goods and services exported by a sector or a country that crosses more than one border, see Borin and Mancini. The interaction variable (INTGGEXP (%GDP)) between monetary and fiscal policies is also presented as an explanatory variable to check whether there is a coordination of monetary and fiscal policies during this period. The other independent variables which explain the endogenous variable are domestic production which does not cross any border and measures the value of imported inputs in the overall exports of a country (PDO(%Production overall du pays)), the variable Participation pure upstream participation in GVCs (GVCPB (% Gross trade of a country), the Pure downstream participation in GVCs variable (GVCPF (% Gross trade of a country), Trade in intermediate goods (TIG (% Gross trade of a Country) and Trade in Final Goods (TFG (% Gross Trade of a Country). The Stata 16 package program is used in the study. Data was compiled from the World Bank (WITS). we find that the global value chains are generally explained by the variables of international trade: the previous years of global value chains, the upstream, and downstream countries, their trading partners also the export of finished goods occupy a decisive place in GVCs, whereas in Asian countries it is not significant. The export of intermediate goods is not significant in both models group of countries, it is neglected by the presence of the export of finished goods. Monetary and fiscal policies are not significant in the OECD country model, while they are significant in the emerging Asian countries model, but each affects the global value chains variable negatively, but their interaction through the variable (INTGGEXP) positively affects the global value chains variable (GVCRT). This paper contributes to the existing literature in three ways. Firstly, this paper investigates the relationship between the Global Value Chains and Monetary and Fiscal policy for the period 2007–2019. The main objective is to verify on the one hand the diversion process of international Trade through the global value chains from the OECD countries to the Emerging Asian countries using the descriptive analysis. On the other hand, test the effects of monetary and fiscal policy on global value chains in these two panels of countries. Secondly, during the period of investigation including the global financial crisis, most countries tended to improve financial conditions and the significant monetary and fiscal policy measures put in place by governments. However, several factors are expected to limit demand and investment. Given these circumstances, we fill the vacuum in the topic by analysing the effects of these policies' measures on the evolution of global value chains in the Organization for Economic Cooperation and Development (OECD) and Emerging Asian countries (EAC). Thirdly, we apply both the static and dynamic panel approach which allows us to test the relationship between the variables related to Trade and the monetary and fiscal policy variables. This study is becoming increasingly important after the current outbreak of COVID-19. The pandemic is emerged in China and has swiftly spread globally. In addition, its effects have quickly reverberated on the global value chain's process. Therefore, this survey can help policymakers to opt for the optimal policies and to choose the better coordination of monetary fiscal policy in the favour of growing Trade in a period characterized by the alternation between normal and turbulent phases. The remainder of the paper is organized as follows. Section 2 concludes with an overview of the related literature. Section 3 explains the Research methods and illustrates the choice of the dynamic panel Model. Section 4 presents empirical results motivated by the model and discusses it. Section 5 concludes with a summary of the main messages and policy implications that arise from the analysis.

Literature Review

The relationship between global value chains and economic policies has been the field of study for several economic authors, these studies are increasingly adopted by scholars and practitioners as a means of understanding the global organization of industries and their impact on development, De Marchi [3]. Global value chains will undergo a drastic transformation in the decade ahead. The change will be driven by a push for greater supply chain resilience due to COVID-19, which adds to existing pressures from the technology revolution, growing economic nationalism, and the sustainability imperative. Based on UNCTAD's World Investment Report 2020, this column argues that the global trade and investment landscape will be reshaped by the restructuring of global chains, the build-up of new regional chains, and distributed

manufacturing. While these will present daunting challenges, they will also offer ample opportunities for firms and states alike and will lead to a GVC development paradigm shift Bolwijn. R, and Gereffi showed in his studies the attention paid to Non-Equity Trade governed by powerful multinationals, the so-called “big global corporations”, which are driving the development of industries around the world [4-7]. Central banks generally only target inflation from the CPI, in the presence of global value chains the economic literature launches the studies between the CPI or the PPI is more appropriate for the objective of monetary policy, De Paoli, De Gregorio [8,9]. These rapid and profound changes in the structure of the world economy have influenced macroeconomic decisions strongly on trade and industrial policy, which are becoming increasingly complex also on monetary and fiscal policies strengthen domestic companies to be more competitive and participatory in the global economy, Gereffi [10]. On the one hand, participation in global GVCs led by lead firms can facilitate learning and enhance the development potential of supplier firms and territories, especially in developing country contexts, Gereffi. On the other hand, the ability to capture the value and scale through participation in GVCs is not straightforward and requires government policy intervention, given the diverse stakeholder interests and asymmetries between large global corporations and their fragmented supplier base, [11-13]. Huang and Liu [14] showed in their study that the interactions between multistage production and economic openness and their implications for the design of monetary policy have not been much explored. For example, as an economy becomes more open, should the optimal upstream inflation weights increase or decrease relative to the end-stage inflation weights? Should trade frictions such as a tariff rate hike affect the design of monetary policy? The literature on monetary policy introducing global value chains has been referred to by several economic authors. In panel models, De Paoli demonstrates this in a model with a more general parameterization but also a single production stage and focuses on the externality of the terms of trade in the conduct of the optimal monetary policy. Shi and Xu [15] developed a two-country New Keynesian model with trade in vertical production, focusing on the cross-border ripple effect of the productivity shock and the discussion of optimal money supply policy. To explain international economic cycles, Huang and Liu constructed a two-stage production model with staggering prices. Aoki, among the first works, studies the optimal sector weights in the monetary policy rule when there are two horizontal sectors. Lombardo and Ravenna examined the optimal monetary policy in two (horizontal) sectors under a production stage with imported inputs or backward participation for export. Matsumura also studied monetary policy in a small open economy with several sectors but still with a single stage of production. In his study, strum [16] showed that trade intensity and business cycle synchronization depend on the substitutability between traded goods. Trade in intermediate goods increases the synchronization of economic cycles between countries, Kose and Yi. Global value chains involve greater trade in complements, hence stronger co-movement between economic cycles of production-sharing countries, De Soyres [17]. The COVID-19 crisis has reignited discussions on the international fragmentation of production. In advanced economies, most of the money has gone into preserving jobs and supporting household incomes. The health sector was also strongly supported. Large companies have benefited the most from business support compared to small and medium-sized enterprises. In this group of countries, governments have mostly introduced multi-year programs to promote and accelerate recovery. By comparison, in emerging economies, most funds have gone into public works, i.e., infrastructure projects, but also into maintaining employment through other channels. Many measures tended to take place in 2020 and were only minimally extended through 2021, IMF [18]. Although the efficiency gains from GVC’s are well established, questions arise as to whether the gains from deepening and expanding international specialization in GVCs outweigh the risks and instability associated. The risks associated with GVC’s were initially revealed in the very early phase of the pandemic. At the beginning of 2020, when the public health situation in the People's Republic of China (hereinafter "China) led to blockages. Most global manufacturers have operations in China, and many companies have reported disruptions to production and trade in this important GVC’s partner. Shortages of personal protective equipment (PPE) as well as key respiratory medical devices, such as ventilators, have raised greater concerns. Importantly, however, the global shortage of medical devices stems from the unprecedented demand shock induced by the spread of the pandemic around the world, not from the supply side. The global outbreak of COVID-19 in 2020 and its persistence in 2021 are generating severe economic damage and deteriorating overall household health. Enderwick and Buckley [19] predict stronger regionalization trends instead of deeper globalization. The authors argue that the pandemic is raising concerns about the vulnerabilities of GVCs, which may lead to de-globalization, hence however a renewed interest in regional alliances, i.e., on neighbouring countries, could emerge well. Regional alliances can overcome the disadvantages of small states while benefiting from economies of scale. The macroeconomic effects caused by the virus can be broadly categorized into demand-side and supply-side effects. According to Meichenbaum [20], demand dynamics emerge because households decrease consumption to reduce their likelihood of attracting the virus. Evenett and Baldwin [21] argue that a renationalization strategy does not promote resilience. Rather, they argue that alongside the COVID-19 crisis and the threat of "vaccine nationalism", all the other pressing challenges

currently facing the global community be it the climate crisis, the growing importance of digitization and e-commerce, and the trade war between the United States and China, which also reflects a rivalry of modes of capitalism must be addressed A number of recent columns in VoxEU warn against the risks of a reversal in economic globalisation and an unprecedented downsizing of the existing international production system [22-29]. In our globalized world, production has become increasingly interconnected across borders. The rise of global value chains (GVCs) implies that the production of today's manufactured goods hinges on inputs supplied from different corners of the world, see Cantore. Such fragmentation of production increases global efficiency as each country focuses on and specializes in the components it produces best. Yet fragmentation also bears risks: when an unexpected event disrupts production in a given location, its ripple effects quickly spread across borders, potentially serious the global production of several goods. The effects are even more severe if the disruption occurs in a location that contributes strategic inputs in several value chains, Cantore. Global value chains have become a dominant feature of global trade and Investment, encompassing developing emerging countries and developed economies. Borin and Mancini developed a natural measure of the importance of GVC's Trade in total international Trade. According to this measure from Borin and Mancini, the overall share of GVC's Trade in total world Trade increased very significantly in the 1990 and early 2000, but it seems to have stagnated or even decreased over the course of the decade of the last 10 years. Yet around half of the global Trade appears to be GVC's-related. The two components of GVC's participation, upstream (backward) and downstream (forward), can also be easily calculated at the national and even sectoral levels. In doing so, it becomes clear that the expansion of GVC's activity has occurred unevenly around the world. Participation in GVCs is much lower in other parts of the world, notably in Latin America and Africa. The process of producing goods, from raw materials to finished products, is increasingly fragmented and performed wherever the necessary skills and materials are available at competitive cost and quality, OECD (2015). Approximately 70% of today's international Trade is based on global value chains, GVC's flows of services, raw materials parts, and components crossing borders – often multiple times. They are integrated at the end of the chain into final products, which are then shipped to consumers around the world. Exporting from one country to another is often based on complex interactions between various local and foreign suppliers. Even more than before, trade is determined by companies' strategic decisions to outsource, invest and operate where the necessary skills and materials are available on competitive terms in terms of cost and quality. The pandemic led to massive capital outflows in emerging markets and massive currency depreciations in this group of countries in early 2020. Confidence in the stability of exchange rates and financial markets in many countries of the Global South has collapsed. In particular, foreign direct investment (FDI) has declined. Greenfield FDI fell in 2020 to 42% of the 1990s level, Altman and Bastian [30]. Portfolio investment outflows showing signs of panic seemed to trigger a new widespread financial crisis in many countries, IMF (2021) "a crisis like no other" [31]. The world has been plunged into a recession. And yet, many say the crisis could have been much worse, IMF (2021) [32]. The macroeconomic consequences of the transformation of Global Value Chains, World Bank Development Report [33]. Compared to traditional trade, in which producers compete to serve foreign markets, GVCs are associated with a higher degree of production complementarity across countries, as productivity and demand shocks propagate backward and forward value chains. This results in faster and more intense transmission of shocks between countries, as evidenced by natural disasters such as the 2011 Tohoku Earthquake [34,35], and at a more aggregated level, it also leads to higher co-movement of output and prices across countries, i.e., larger firms, cycle synchronization and inflationary spillovers, De Soyres and Gaillard. GVCs also weaken the effects of exchange rate changes on the trade balance. For example, the positive effect of depreciation on export competitiveness is counteracted by the increase in the cost of foreign Value Added used in production. Disrupted supply chains of a few essential goods and shortages of key medical products during the COVID-19 outbreak have highlighted the interdependence between countries through global value chains (GVCs) and rekindled the debate on the costs and benefits of globalization. More specifically, recent discussions emphasize the risks and instability associated with the international fragmentation of production.

Research Methods

To investigate the effects of monetary and fiscal policies on global value chains related to trade (GVCRT) in both groups of countries OECD and emerging Asian countries EAC, we have several countries from both groups (Appendices-Table1), and we choose the variables explaining the global value chains in our model (Table 1).

Descriptive statistics of OECD country study variables

According to the results obtained, the number of observations used in the study is 429. We note that the maximum value of the global value chains variable (GVCRT) is 0.785, while the minimum value is (0.279). The standard deviation is (0.096), while the Average is (0.507) we can say that there is a strong dispersion around the Average. When the statistic skewness (0.310) is greater than zero, the distribution is said to be skewed and skewed to the right.

Concerning the kurtosis coefficient. The value of this coefficient is equal to 3 if the distribution is normal, less than 3 if the distribution is more flattened, and greater than 3 if the distribution is less flattened. The kurtosis statistic here is equal to (2.837) is less than 3, and the distribution is less flattened. Concerning the probability of the Jarque-Berra statistic (0.025) we reject Ho, that is to say, that the distribution does not follow a normal law (Table 2,3) [36-46].

Table 1: *Variables, definitions, measures, and sources.*

Variable	Definition	Measure	Source
GVCRT	Global Value Chains related to Trade "GVCs linked to Gross Export" measures the value of exported goods and services by a sector or a country that crosses more than one border.	% Gross country Export	https://wits.worldbank.org/
PDO	Production Domestic Output Domestic productions that do not cross the border This indicator measures the value of inputs imported into the exports.	% Gross country production	https://wits.worldbank.org/
GVCPB	Global Value Chain's Production Backward the added value embedded in the foreigners used in production national exports.	% Gross country Exports	https://wits.worldbank.org/
GVCPF	Global Value Chain's Production Forward the added value of intermediate products that are exported to a partner commercial for retirees and re-exported by the business partner.	% Gross country Exports	https://wits.worldbank.org/
TFG	Trade of final goods	% Gross country Exports	https://wits.worldbank.org/
TIG	Trade of intermediate goods	% Gross country Exports	https://wits.worldbank.org/
LINT(INT)	Long-term interest rate	% GDP	https://data.oecd.org https://worldbank.org
GGEXP	General Government Expenditure	% GDP	https://data.oecd.org https://worldbank.org

INTGGEXP	Interaction variable between Monetary and Fiscal policy	% GDP	https://data.oecd.org https://worldbank.org
Note: All with annual frequency, in 2007-2019, Source: Author's preparation, https://worldbank.org			

Table 2: *Summary Statistics of OECD countries.*

	Mean	Median	Minimum	Maximum	Std. Dev	Skewness	Kurtosis	Jarque-Bera
GVCRT	0.507	0.505	0.279	0.785	0.096	0.310	2.837	7.364 (0.025)
PDO	0.523	0.522	0.069	0.851	0.157	-0.284	3.061	5.841 (0.053)
GVCPB	0.234	0.222	0.073	0.502	0.083	0.534	3.403	23.325 (0,000)
GVCPF	0.181	0.182	0.078	0.338	0.044	0.533	4.409	55.831 (0,000)
TIG	0.629	0.626	0.463	0.864	0.074	0.954	4.408	100.676 (0,000)
TFG	0.370	0.373	0.135	0.536	0.074	-0.954	4.408	100.676 (0,000)
INT	0.036	0.029	-0.004	0.254	0.036	2.858	14.027	2757.812 (0,000)
GGEXP	0.422	0.431	0.133	0.652	0.096	-0.872	3.902	69.017 (0,000)
INTGGEXP	0.014	0.012	-0.001	0.127	0.012	3.089	22.628	7569.193 (0,000)
Source: Author's preparation using Eviews								

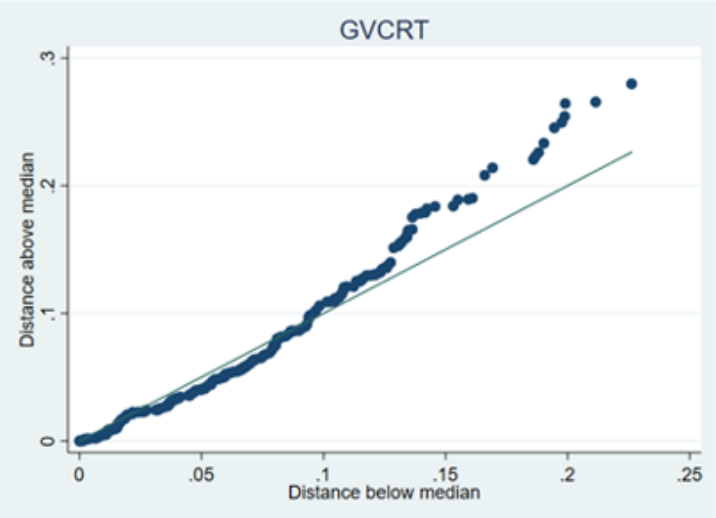
Table 3: *Summary Statistics of emerging Asian countries.*

	Mean	Median	Minimum	Maximum	Std. Dev	Skewness	Kurtosis	Jarque-Bera
GVCRT	0.424	0.409	0.239	0.685	0.106	0.652	2.712	15.496 (0.000)
PDO	0.547	0.560	0.172	0.839	0.174	-0.304	1.935	13.043 (0.001)
GVCPB	0.185	0.155	0.053	0.413	0.091	0.823	2.901	23.600 (0,000)
GVCPF	0.176	0.178	0.090	0.325	0.044	0.050	3.091	11.701 (0,002)
TIG	0.634	0.631	0.274	0.955	0.152	0.261	2.798	2.728 (0.255)
TFG	0.365	0.368	0.044	0.725	0.152	-0.261	2.798	2.728 (0.255)
INT	0.080	0.067	-0.122	0.354	0.058	0.832	6.201	112.871 (0,000)

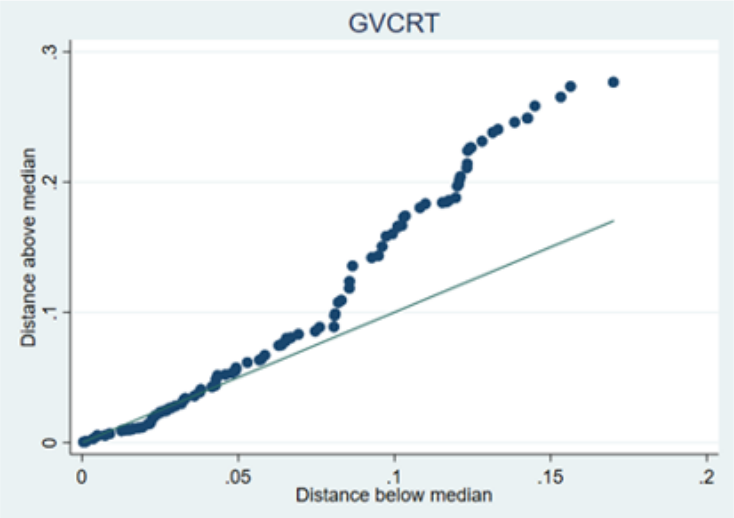
GGEXP	0.239	0.218	0.090	0.405	0.076	0.395	2.229	10.576 (0,005)
INTGGEXP	0.020	0.015	-0.036	0.123	0.020	1.658	7.594	278.243 (0,000)
Source: Author's preparation using Eviews								

Descriptive statistics of the variables of the study of emerging Asian countries

Depending on the results obtained; the number of observations used in the study is 208. We note that the maximum value of the variable of global value chains linked to trade (GVCRT) is 0.685, while the value minimum is (0.239). The standard deviation is (0.106), while the Average is (0.424) we can say that there is a strong dispersion around the Average. When the skewness statistic (0.652) is greater than zero, the distribution is said to be asymmetric and right-skewed. Regarding the kurtosis flattening coefficient. The value of this coefficient is equal to 3 if the distribution is normal, less than 3 if the distribution is more flattened and greater than 3 if the distribution is less flattened. The kurtosis statistic here is equal to (2.712) is less than 3, and the distribution is less flattened. Concerning the probability of the Jarque-Berra statistic (0.000) we reject Ho, that is to say, that the distribution does not follow a normal distribution. Looking at Figure 1 below, we can see that global value chains have evolved faster in emerging Asian countries than in OECD countries. This explains the diversion of international trade to Asia under the pressure of price competitiveness favoured by Asian countries, especially China (Figure 1).



Source: Author's preparation using STATA (OECD)



Source: Author's preparation using STATA (EAC)

Figure 1: *Global value chains in OECD countries and emerging Asian countries (2007-2019).*

The correlation matrix of macroeconomic variables presented in which concerns the study of OECD countries, informs us that five variables (PDO, GVCPF, TIG, INT, and tries INTGGEXP) are negatively correlated to the Global Value Chain's variable. Values linked to trade (GVCRT) one of which is strongly correlated is the variable (PDO) with a negative value (-0.8955), while the other three variables (GVPCB, TFG, and GGEXP) are positively correlated with whose variable (GVCPB) is highly correlated (0.8442). The correlation matrix of macroeconomic variables presented, which concerns the study of emerging Asian countries, shows us that six variables (PDO, GVCPF, TFG, INT, GGEXP, and INTGGEXP) are negatively correlated to the variable of global value chains linked to trade (GVCRT) one of which is strongly correlated which is the variable (PDO) with a negative value (-0.8270), while the other two variables (GVPCB and TIG) are positively correlated whose variable (GVCPB) is highly correlated (0.8485).

Stationarity of the variables

According to the stationarity below and by testing the stationarity of the selected macroeconomic variables, it was noticed that for the study of the OECD countries, the variables are stationary at the level except the variable (PDO) which n is not level stationery using the three stationarity tests but stationary in first difference.

For the macroeconomic variables whose sample is the emerging Asian countries, we note that the majority of the variables are stationary at a level including the variable (PDO) which is stationary according to the test of (Levin, Lin, and Chu) at a level at 10%, while the variables that are not stationary at the level are the variables of backward participation in GVCs (GVCPB) and forward participation in GVCs (GVCPF) which are stationary in first difference.

Model Estimation

Static panel model

We start our estimation by choosing a static model

$$GVCRT_{it} = \beta_0 + \beta_1 PDO_{it} + \beta_2 GVCPB_{it} + \beta_3 GVCPF_{it} + \beta_4 TFG_{it} + \beta_5 TIG_{it} + \beta_6 INT_{it} + \beta_7 GGEXP_{it} + \beta_8 INTGGEXP_{it} + \varepsilon_t$$

Hausmann test (Fixed effect model or random effect model)

The test statistics are as follows:

$$H = (\widehat{B}_{MEF} - \widehat{B}_{MEA})' [\widehat{V}(\widehat{B}_{MEF}) - \widehat{V}(\widehat{B}_{MEA})]^{-1} (\widehat{B}_{MEF} - \widehat{B}_{MEA}) \rightarrow \chi^2(k)$$

Under the null hypothesis of correct specification, this statistic is asymptotically distributed according to a chi-square with K degrees of freedom, i.e., the number of variable factors, Hausmann test. The estimate of the static panel model in OECD countries shows that this model has a random effect (Prob>chi2 = 0.4908 > 0.05), we note that only three explanatory variables are significant, of which two variables positively affect the variable of GVCs which are backward participation in GVCs (GVCPB) with a coefficient of (1.591) and the forward participation variable (GVCPF) with a coefficient of (1.515) while the variable trade in final goods negatively affects the variable (GVCRT) with a coefficient (-0.074). The other variables including monetary and fiscal policy variables are not significant. Estimation of the static panel model in emerging Asian countries shows that this model has a fixed effect (Prob>chi2 = 0.0396 < 0.05). Only four explanatory variables are significant, two of which positively affect the GVC variable, namely the upstream participation variable (GVCPB) with a coefficient (0.612) and the downstream participation variable with a coefficient of (0.453). The two other variables that negatively affect the endogenous variable (GVCRT) are domestic production (PDO) with a coefficient of (-0.194) and the trade in finished goods variable (TFG) with a coefficient of (-0.238). The other variables including monetary and fiscal policy variables are not significant.

Dynamic panel model

By applying the dynamic panel model, the GMM estimator in the first differences of Arellano and Bond (1991) takes the first difference of the equation to be estimated to eliminate the individual specific effects for each period. We obtain:

$$\Delta y_{i,t} = \boldsymbol{\beta} \Delta y_{i,t-1} + \boldsymbol{\varphi} \Delta \boldsymbol{X}_{i,t} + \Delta \boldsymbol{\varepsilon}_{i,t}$$

It is then a question of instrumenting the endogenous variable delayed by its past values of 2 periods and more. However, this method does not identify the effect of time-invariant factors, see Nickell (1981). Moreover, Blundel and Bond (1998) showed using Monte Carlo simulations that the system GMM estimator performs better than the first difference estimator, the latter gives biased results in finite samples when the instruments are weak. We formulate the following equation:

$$GVCRT_{i,t} = \beta_0 + \delta GVCRT_{i,t-1} + \beta_i X_{i,t} + \alpha_i + \varepsilon_{i,t}$$

With X_ (i,t) : the set of explanatory variables which are the financial variables

$X_{i,t}$: ($PDO_{it}, GVCPB_{it}, GVCPF_{it}, TFG_{it}$, $TIG_{i,t}$, $INT_{i,t}$ $GGEXP_{i,t}$, $INTGGEXP_{i,t}$,)

$$GVCRT_{i,t} = \beta_0 + \delta GVCRT_{i,t-1} + \beta_1 PDO_{it} + \beta_2 GVCPB_{it} + \beta_3 GVCPF_{it} + \beta_4 TFG_{it} + \beta_5 TFI_{it} + \beta_6 INT_{i,t} + \beta_7 GGEXP_{i,t} + \beta_8 INTGGEXP_{i,t} + \alpha_i + \varepsilon_{i,t}$$

GMM in first differences

The GMM estimator in the first differences of Arellano and Bond (1991) consists of taking the first difference of the equation for each period to be estimated to eliminate the individual- effects. We obtain:

$$\Delta y_{i,t} = \beta \Delta y_{i,t-1} + \varphi \Delta X_{i,t} + \Delta \varepsilon_{i,t}$$

It is then a question of instrumenting the endogenous variable delayed by its past values of 2 periods and more. However, this method does not identify the effect of time-invariant factors. In addition, Blundel and Bond (1998) showed using Monte Carlo simulations that the GMM estimator in the system is more efficient than that in the first differences, the latter gives biased results in finite samples when the instruments are weak.

GMM in system

The system GMM estimator of Blundel and Bond (1998) combines first difference equations with level equations. The instruments in the first difference equation are expressed in level, and vice versa.

$$\Delta y_{i,t} = \delta \Delta y_{i,t-1} + \varphi \Delta X_{i,t} + \Delta \alpha_i + \Delta \varepsilon_{i,t}$$

$$y_{i,t} = \delta y_{i,t-1} + \varphi X_{i,t} + \alpha_i + \varepsilon_{i,t}$$

- There is a correlation between y_(i,t) and y_(i,t-1)
- This correlation is direct via y_(i,t-1)
- This correlation is indirect via the persistence given by α_i

The main dynamic panel tests are based on the following assumptions, which must be accepted. Sargan's test has a null hypothesis (Ho): The Instruments as a group are exogenous. Sargan's p-value should not be less than <5% and >10%. However,

according to Roodman (2006), it is recommended that the p-value of Sargan be greater than 0.25.

Model: $GVCRT_{i,t} = \beta_0 + \delta GVCRT_{i,t-1} + \beta_i X_{i,t} + \alpha_i + \varepsilon_{i,t}$

With X_ (i,t) : the set of explanatory variables which are the financial variables

$X_{i,t}$: ($PDO_{it}, GVCPB_{it}, GVCPF_{it}, TFG_{it}$, $TIG_{i,t}$, $INT_{i,t}$ $GGEXP_{i,t}$, $INTGGEXP_{i,t}$,)

$$GVCRT_{i,t} = \beta_0 + \delta GVCRT_{i,t-1} + \beta_1 PDO_{it} + \beta_2 GVCPB_{it} + \beta_3 GVCPF_{it} + \beta_4 TFG_{it} + \beta_5 TFI_{it} + \beta_6 INT_{i,t} + \beta_7 GGEXP_{i,t} + \beta_8 INTGGEXP_{i,t} + \alpha_i + \varepsilon_{i,t}$$

Empirical Results and Discussion

Although the instruments are valid according to the Sargan test in both estimates of the two samples. By comparing the two methods of GMM one retains the method GMM in the system. According to the estimate of the GMM dynamic panel model in the system in the two samples of countries:

OECD countries

By applying the system GMM method During the study period (2007-2019), the global value chains variable (GVCRT) is explained only by the country trade variables: $GFCRT_{(t-1)}$, GVCPB, GVCPF and TFG), also, the Monetary and Fiscal policies (INT, GGEXP, and INTGGEXP) are not significant. This is explained by the choices of economic policies not oriented towards the attraction of global value chains. We note that four explanatory variables are significant: the delayed global value chains variable $GFCRT_{(t-1)}$at p-value= 0.008 < 0.05, and positively affects by the past year of coefficient (0.166) , also upstream GVC participation (GVPCB) is significant at p-value= 0.000< 0.05 positively affects (GVCRT) of (1.343), as well as downstream participation (GVCPF) positively affects the dependent variable (GVCRT) of coefficient equal to (1.791), the trade in finished goods (TFG) variable is significant and positively affects the global value chains variable with a coefficient of (0.119) while the monetary and fiscal policy variables are not significant. The model associated with the estimation of the sample of OECD countries; the dynamic panel model (GMM in system) is the following:

$$GVCRT_{i,t} = -0.249 + 0.166\, GVCRT_{i,t-1} - 0.030\, D(PDO)_{it} + 1.343\, GVCPB_{it} + 1.791 GVCPF_{it} + 0.119\, TFG_{i,t} - 0.113 INT_{i,t} - 0.021 GGEXP_{i,t} + 0.317 INTGGEXP_{i,t} + \varepsilon_{i,t}$$

Emerging Asian countries

By applying the GMM method in system during the study period (2007-2019), the variable of global value chains (GVCRT) is explained by six macroeconomic variables in the model studied: three of them are $GFCRT_{(t-1)}$,GVCPB, GVCPF), and three of the monetary and fiscal policies (INT, GGEXP and INTGGEXP) that are significant. The trade in finished and intermediate goods variables is not significant. The Global Value chains in Asian countries variable is affected by past year or it's lagged $GVCRT_{(t-1)}$ at p-value = 0.000 < 0.05, and positively affects past year by a coefficient impacting (0.948), also upstream GVC participation (GVPCB) is significant at p-value= 0.000<0.05 positively affects (GVCRT) of (1.192), as well as downstream participation (GVCPF) positively affects the dependent variable (GVCRT) with a coefficient equal to (1.449). The long-term interest rate is significant at 5% (0.054) and negatively affects the global value chains coefficient variable (-0.517). The fiscal policy variable (GGEXP) is significant at 10% and negatively affects the coefficient GVC variable (-0.132), while the interaction variable between monetary and fiscal policies is significant and positively affects the GVC variable by a coefficient equal to (1.644). The model associated with the estimation of the sample of Asian emerging countries according to the dynamic panel model (GMM in the system) studied is the following:

$$GVCRT_{i,t} = 0.072 + 0.948\, GVCRT_{i,t-1} - 0.012\, PDO_{it} + 1.192\, D(GVCPB)_{it} + 1.449 GVCPF_{it} - 0.011\, TFG_{i,t} - 0.517 INT_{i,t} - 0.132 GGEXP_{i,t} + 1.644\, INTGGEXP_{i,t} + \varepsilon_{i,t}$$

Conclusion

Global value chains offer a high degree of exposure and learning to the rapidly changing, technology-based business models that characterize fragmented production chains, even without the participating firms needing to engage in the disposition of property, here comes the role of economic decision to incentivize internationalization and the creation of added value to increase the role of economic policy maker degree of participation in GVCs. By comparing between patron the two trade blocks the OECD countries and the emerging Asian countries, we find that the global value chains are generally explained by the variables of international trade: the previous years of global value chains, the upstream , and downstream countries, their trading partners also the export of finished goods occupy a decisive place in GVC's, whereas in Asian countries it is not significant The export of intermediate goods is not significant in both models group of countries, it is neglected by the presence of export of finished goods. Monetary and fiscal policies are not significant in the OECD country model, while they are significant in the emerging Asian countries model, but each affects the global value chains variable negatively, but their interaction through the variable (INTGGEXP) positively affects the global value chains variable (GVCRT). The rebound in the global economy and the rise in

prices have pushed central banks on the path to the beginning of a reduction in asset purchases, even if the challenges remain numerous: global logistics tensions, commodity prices, and the trajectory of China. Market value action levels and the end of "whatever it takes" are a challenge for 2022 which could well mark the year of the normalization of the world economy. Analysis of macroeconomic and market prospects for the coming months. The multiple characteristics of GVCs that matter for production efficiency also determine the exposure to international trade shocks and economic policy shocks and the propagation of these shocks along the chain. A strong dependence of sales on foreign demand and a strong dependence on foreign value added in production govern the exposure to foreign supply and demand shocks. Governments still have a role to play and practical economic policies can be outlined to foster the diversification and resilience of GVCs while preserving the benefits of specialization and ensuring efficient management an ensuring of essential goods.

Static panel model

H_0: random effect model

H_1: fixed effect model

- Emergent Asian country: Prob>chi2 = 0.039 < 0.05, we reject H_0, so our model is fixed effect
- OECD countries: Prob>chi2 = 0.4908 > 0.05, we cannot reject H_0, so our model is random effect.

Dynamic GMM model

- The coefficient δ of variable AR (1) represents the persistence or memory of the process that generates $GVCRT_{i,t}$
- Xi's delays can also be included to solve this problem and obtain consistent estimators; we estimate our model with the GMM generalized method of moments. This GMM method is based
- on the orthogonality conditions between the lagged endogenous variables and the error terms. There are two Methods of GMM

1st Method: GMM in first differences

It is a dynamic method in first differences

- $(GVCRT_{i,t} - GVCRT_{i,t-1}) = \delta(GVCRT_{i,t-1} - GVCRT_{i,t-2}) + \beta(X_{i,t}-X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1})$
- $\Delta GVCRT_{i,t} = \delta \Delta GVCRT_{i,t-1} + \delta \beta_i X_{i,t} + \Delta\varepsilon_{i,t}$

On the other hand, we can use:

- $GVCRT_{i,t-2}$ as an instrument for $(GVCRT_{i,t-1} - GVCRT_{i,t-2})$
- $GVCRT_{i,t-2}$ is a valid instrument because it is not correlated with $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$
- $GVCRT_{i,t-2}$ is a good estimator because it is correlated with $(GVCRT_{i,t-1} - GVCRT_{i,t-2})$
- The estimator in this case is said to be identified
- A better estimate is more efficient and possible by using two additional lags of the dependent variable as an instrument, $(GVCRT_{i,t-3} - GVCRT_{i,t-4}$ …….,

In this case the estimator becomes over-identified, Anderson and Hsiao (1981) have suggested:

A-First difference, the model to be eliminated α_i

B-Using $\Delta GVCRT_{i,t-2} = (GVCRT_{i,t-2} - GVCRT_{i,t-3})$ or more simply

$GVCRT_{i,t-2}$ As an instrument for $\Delta GVCRT_{i,t-1} = (GVCRT_{i,t-1} - GVCRT_{i,t-2})$

Sargan's test specific

H_0 : instruments are valid

H_1 : instruments are invalid

OECD countries

- In first difference (FD-GMM), p-value =0.665 > 5%, we cannot reject H_0 , therefore the instruments (L. GGEXP, L2. GGEXP, L.INT, L2.INT, LD.PDO and L2D.PDO) are valid.
- GMM in system (SYS-GMM), p-value = 0.537 > at 5%, we cannot reject H_0, therefore the instruments (L. GGEXP, L2. GGEXP, LD.PDO, L2D.PDO, L.TIG and L2.TIG) are valid.

Emerging Asian countries

- In first difference (FD-GMM), p-value =0.878 > 5%, we cannot reject H_0, therefore the instruments (L.PDO, L2.PDO, L.TIG, L2.TIG, L. GGEXP, L2. GGEXP, L. GVCPB and L2. GVCPB) are valid.
- GMM in system (SYS-GMM), p-value =0.229 > at 5%, we cannot reject H_0, therefore the instruments (L.PDO, L2.PDO, L.INT, L2.INT, L. GGEXP, L2. GGEXP, LD.GVCPB and L2D.GVCPB) are valid.

References

1. Borin A, Mancini M. Measuring what matters in global value chains and value-added trade. Policy Research Working Paper No. WPS 8804, World Bank, Washington, DC. 2019.
2. Olamide E, Maredza A, Ogujiuba K. Monetary policy, external shocks and economic growth dynamics in East Africa: An S-VAR Model. Sustainability 2022; 14: 3490.
3. De Marchi V, Di Maria E, Golini R, Perri A. Nurturing international business research through global value chains literature: A review and discussion of future research opportunities. Inter Bus Rev. 2020; 29: 1017085.
4. Bolwijn R, Casella B, Santos-Paulino A, Zhan J. Global value chain transformation to 2030: Overall direction and policy implications. 2020.
5. Gereffi G. The global economy: Organization, governance, and development. Handbook Econ Sociol. 2005; 2: 160-182.

6. Gereffi G. Global value chains and development. Cambridge: Cambridge University Press. 2018.
7. Gereffi G. Global value chains and international development policy: Bringing firms, networks and policy-engaged scholarship back in. J Inter Bus Poli. 2019; 1-16.
8. De Paoli B. Monetary policy and welfare in a small open economy. J Int Econ. 2009; 77: 11-22.
9. De Gregorio J. Commodity prices, monetary policy, and inflation. IMF Econ. Rev. 2012; 60: 600-633.
10. Gereffi G. Global value chains in a post-Washington consensus world. Rev Inter Poli Econ. 2014; 21: 9-37.
11. Alford M, Phillips N. The political economy of state governance in global production networks: Change, crisis, and contestation in the South African fruit sector. Rev Inter Pol Eco. 2018; 25: 98-121.
12. Blazek J. Towards a typology of repositioning strategies of GVC/GPN suppliers: The case of functional upgrading and downgrading. J Econ Geo. 2016; 16: 849-869.
13. Ponte S, Ewert J. Which way is "up" in upgrading? Trajectories of change in the value chain for South African wine. World Develop. 2009; 37: 1637-1650.
14. Huang Kevin XD, Zheng L. Production chains and general equilibrium aggregate dynamics. J Monet Econ. 2001; 48: 437-462.
15. Shi, Kang, Xu, Juanyi. Optimal monetary policy with vertical production and trade. Rev Int Econ. 2007; 15: 514-537.
16. Strum Brad E. Monetary policy in a forward-looking input-output economy. J Money Credit Bank. 2009; 41: 619-650.
17. De Soyres F, Gaillard A. Trade, global value chains and GDP comovement: an empirical investigation. Policy Res Working Paper No. WPS 9091, World Bank, Washington, DC. 2019.
18. IMF (2020). Policies to support people during the COVID-19 pandemic, chapter 1, fiscal monitor April 2020. Washington D.C.: international monetary fund. IMF. World economic outlook April 2021. Washington D.C.: International Monetary Fund. 2021a.
19. Enderwick P, Buckley P. Rising regionalization: will the post-COVID-19 world see a retreat from globalization? Transnational Corporations. 2020; 27: 99-112.
20. Eichenbaum Martin S, Sergio R, Mathias T. The macroeconomics of epidemics. Rev Finan Stu. 2020; 34: 5149-5187.
21. Evenett S, Baldwin R. Revitalizing multilateral trade cooperation: why? why now? and how? In S. Evenett & R. Baldwin (Eds.), revitalising multilateralism. Pragmatic ideas for the new WO director-general. London: centre for economic policy research (CEPR). 2020; 9-38.
22. Bamber P, Fernandez-Stark K, Taglioni D. Why global value chains remain essential for COVID-19 supplies. VoxEU.org. 2020.
23. Baldwin R, Freeman R. Trade conflict in the age of Covid-19. VoxEU.org. 2020.
24. Espitia A, Rocha N, Ruta M. COVID-19 and food protectionism. Poli Res Working Paper. 2020.
25. Kilic K, Marin D. How COVID-19 is transforming the world economy. 2020.
26. Miroudot S. Resilience versus robustness in global value chains: Some policy implications. 2020.
27. Pisch F. Just-in-time supply chains after the Covid-19 crisis. 2020.
28. Seric A, Winkler D. COVID-19 could spur automation and reverse globalization – to some extent. 2020.
29. Stellinger A, Isakson H, Berglund I. To protect public health, preserve global value chains. 2020.
30. Altman SA, Bastian P. The state of globalization in 2021. Harvard Bus Rev.
31. IMF. Fiscal Monitor – A Fair Shot, April 2021. Washington D.C.: international monetary fund. 2021c.
32. IMF. COVID-19 financial assistance and debt service relief. 2021d.
33. World Bank. World development report 2020: trading for development in the age of global value chains, world bank publications. 2020.
34. Carvalho VM, Tahbaz-Salehi A, Nirei M, Saito YU. Supply chain disruptions: Evidence from the great east Japan earthquake. Mimeo, Cambridge University. 2017.
35. Boehm CE, Flaaen A, Pandalai-Nayar N. Input linkages and the transmission of shocks: firm-level evidence from the 2011 Tohoku earthquake. Rev Econ Statistics. 2019; 101: 60-75.
36. Michele C, Luca D, Georgios G, Marek J, Livio S, Georg S. Monetary policy and its transmission in a globalised world. European Central Bank, Frankfurt am Main, Germany. 2020.
37. Nicola C, Alejandro L, Niki R. Global value chains in the times of multiple crises. Originally published on UNIDO's industrial analytics platform. 2022.
38. Giancarlo C, Luca D, Sylvain L. Optimal monetary policy in open economies. Handbook Monetary Econ. 2010; 3: 861-933.
39. Jordi G, Tommaso M. Monetary policy and exchange rate volatility in a small open economy. Rev Econ Stud. 2005; 72: 707-734.
40. Johnson RC. Trade in intermediate inputs and business cycle comovement. Ame Econ J Macroecon. 2014; 6: 39-83.
41. Ayhan K, Kei-Mu Y. Can the standard international business cycle model explain the relation between trade and comovement? J Inter Econ. 2006; 68: 267-295.
42. Giovanni L, Federico R. Openness and optimal monetary policy. J Int Econ. 2014; 93: 153-172.
43. Misaki M. What price index should the central bank target? An open economy analysis. Working paper. Columbia University. 2019.
44. Nickell S. Biases in dynamic models with fixed effects. Econometrica: J Econometric Society. 1981; 49: 1417-1426.
45. Helene R. Dilemma not trilemma: the global cycle and monetary policy independence. Proceedings -Econ Poli Symposium - Jackson Hole. 2013; 1-2.
46. Michael W. Optimal monetary stabilization policy. Handbook Monetary Econ. 2010; 3: 723-828.