Navigating Economic Uncertainties: A Deep Dive into China's Impact on Africa's Global Value Chains

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Abstract

This paper investigates the nexus between the economic policy uncertainty of China and Africa's global value chains (GVC). The study was based on a panel analysis of pooled mean group (PMG) estimation which covers 19 years and 10 countries. The results of the estimation revealed a mixed reaction to the impact of China's economic policy uncertainty on Africa's global value chains. The economic policy uncertainty (EPU) indicated a short run negative effect on GVC and a positive significant effect in the long run. The result is in line with a section of the previous reports which suggests that uncertainty could have a positive effect on trade flows. This shows that the immediate shock of the EPU is detrimental to Africa's global value chain integration. However, as we approach the long run, Africa's global value chains improve alongside the EPU of China. It is therefore recommended that African countries diversify their trade partners through fostering good partnerships with other countries and regions beyond China, so that sudden uncertainty shocks in China's economy will not have much effect on their economies. Lastly, African decision-makers should invest in domestic industries while promoting a conducive environment for business to thrive. This will boost domestic production and reduce reliance on foreign intermediate products.

Keywords: Economic Policy Uncertainty, Global Value Chains, Pooled Mean Group

INTRODUCTION

The framework of the global value chains (GVC) illustrates the sector's involvement in the series of activities essential for bringing a commodity from its initial conception to production and sales (Hernandez et al., 2014). The literature explores the identification of activities and technologies retained as core competencies within a firm, as well as those outsourced to other firms domestically or internationally. This analysis emphasizes the cross-border connections between firms participating in global production and distribution systems. The global reorganization of production across different segments of the value chain carries significant implications for African countries. Each segment in the value chain employs distinct combinations of production factors, presents varied opportunities for value addition and backward linkages, and offers unique prospects for the development of specific technological capabilities.

Consequently, GVC presents opportunities for countries to participate profitably in the global network of production systems, irrespective of the requirements across the entire production process (Obasanjo et al., 2021). This suggests that Africa as a developing region, can capitalize on their comparative advantages and specialize in specific aspects of the fragmentation (Ajide, 2023). Global trade can therefore be transformed, influencing the dynamics of both imports and exports (Pan, 2020).

Despite the benefits that GVC have brought to international trade, it is crucial to acknowledge that African nations consistently demonstrate a relatively low level of engagement. Reports indicate that in 2018, African countries accounted for only 2.3% of global output and contributed 2.5% to global value added (Krantz, 2022). In the same vein, Africa's involvement in regional value chains participation is estimated at 2.7%, in sharp contrast to Latin America and the Caribbean at 26.4%, and developing Asia, where it reaches a significantly higher 42.9% (OECD, 2022). These statistics underscore the limited extent of Africa's participation in global value chains. The consequences of this modest involvement in GVC require careful consideration and the implementation of effective solutions to facilitate successful upgrading.

To better understand the challenges of Africa's low level of integration into GVC, we examined the impact of China's EPU on Africa's GVC. Africa is a major trading partner of China, supplying raw materials essential for China's industries, while China serves as a primary market for African exports. Given this strong economic tie, any shifts in China's trade policies or economic uncertainties are likely to affect Africa's GVC. The heavy dependence on external factors, particularly China's demand for raw materials or China's exchange rate movements, leaves African countries vulnerable to disruptions in the flow of goods and services

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(Ren and Sakouba, 2024). Most African nations, being heavily reliant on imports and unable to influence global prices for their exports, are especially susceptible to shocks in global demand and price fluctuations, making them prone to external economic disruptions.

Previous studies explain the importance of global value chains in Africa (Alhassan et al., 2021; Montfaucon et al., 2022; Ajide, 2023) as well as the implications of China's policy uncertainty (Wang and Wu, 2023; Huang and Luk, 2020; Hu and Liu, 2021). However, none has been able to examine the influence of China's EPU on Africa's GVC, despite China being one of Africa's most important trade partners. As traditional measures of global trade evolve, the significance of Africa's global competitiveness becomes increasingly vital. The effects within the GVC demand serious attention, necessitating effective solutions to ensure the removal of GVC impediments to Africa's participation.

LITERATURE REVIEW

Theoretical Literature

Countries become interdependent through GVC, specializing in specific tasks rather than handling the entire production process (Baldwin, 2011). As goods are exported, imported, and re-exported multiple times, all countries involved in providing intermediate inputs, benefit. This interconnected dynamic, often referred to as the "flying geese paradigm," has driven merchandise trade growth by 628.25% from 1990 to 2018 (World Trade Organization, 2019), underscoring the critical role of GVC participation in fostering economic growth and development.

The advent of GVC has thus made the production of a commodity not be solely determined by a country's absolute or comparative advantage or factor abundance; rather, it hinges on the ability to produce at lower costs, which is influenced by the availability of raw materials and labour costs in different countries (Ulfani and Ernawati, 2023). Consequently, some components may need to be imported for further processing, leading to various stages of production occurring across multiple countries. However, a significant challenge to this process is the uncertainty surrounding the economic policies of foreign partners, particularly when a domestic economy is highly dependent on these partners for intermediate inputs. Zhang et al. (2024) argued that increased economic uncertainty in a foreign economy can disrupt the sourcing of intermediate inputs by a domestic economy, resulting in value chain disruptions. This highlights a cross-border spillover effect, which EPU can transmit through exchange rate fluctuations and imported inflation, thereby affecting GVC. Other economic writers (Balli et al., 2017; Jiang et al., 2019; Colombo, 2013; Klößner and Sekkel, 2014; Sanni, 2024) also support the notion that economic policy uncertainty can have detrimental effects on domestic and bilateral economies. Conversely, some studies suggest that economic policy uncertainty can also yield positive outcomes. They argued that a positive relationship between uncertainty and investment can drive increased trading activities (Kester, 1984; Mitchell and Hamilton, 1988). This indicates that the effects of economic policy uncertainty on economic indicators are multifaceted; they can be both positive and negative depending on the nature of the economy and the specific context of the analysis.

Empirical Literature

Studies on the effect of EPU on other countries' GVC are scarce. As such, most discussions on this subject matter are centred on related economic indicators. According to Caldara et al. (2020), unanticipated policy shifts that result in the rise of policy uncertainty can reduce company investment and economic activity. Additionally, it was discovered that a rise in policy uncertainty affects Chinese businesses' involvement in new international marketplaces (Crowley et al. 2018). Cheng (2017) further indicated that macroeconomic variables are affected by foreign economic policy. Other economic indicators such as increased exports, firms' operations and employment have also been found to be affecting foreign economic policy (Greenland et al., 2019; Feng et al., 2017; Fontaine et al., 2017). Given GVC's influence on achieving a high level of economic growth, the effect of foreign economic policy on other economic indicators as stated earlier, could be detrimental to the economic growth objectives of a domestic economy.

However, a number of economic writers have also argued in favour of EPU, claiming that investment may be stimulated through uncertainty, leading to expansion in trading activities. They posit a positive relationship between uncertainty and investment, which thereafter motivates an increase in trading activities. Therefore, given the 'growth option nature of investment', a rise in uncertainty may enhance its value, thereby encouraging firms to increase their investment (Kester, 1984; Mitchell and Hamilton, 1988). In line with this, de la Horra et. al. (2022) have found that higher EPU exerts a positive significant effect on investment. Mulyani, et. al., (2021) also opined that firms who engage in risk propensity tend to benefit from their investment decisions. Sharma et. al. (2009) also found that risk propensity has a significant influence on investment decisions. This shows that firms may take more risks by increasing their investments with the intention of using them to compensate for the loss incurred by the increase in uncertainty (Arellano et al., 2010; Gilchrist et al., 2014). Jia et. al. (2020) therefore suggest that such a move could have a positive effect on trade. Trade policy uncertainty has also been found in some studies, to influence the global value chains positively (see Cebreros et al., 2018; Handley and Limao, 2017; Kyriazis, 2021; Sanni, 2024a; Reddy et al. 2024). In the analysis of Sanni (2024a), trade policy uncertainty was found to have a short run negative effect on GVC with a long run positive effect. The effect of EPU on trade flow vis a vis GVC could therefore be undetermined as there are two opposing views in regard to their relationships.

In general, earlier research has given useful theoretical as well as empirical understanding of the impact of EPU on GVC. Despite the wide range of theoretical underpinnings, empirical research has largely concentrated on the effects of policy uncertainty on GVC in a single country and at best, advanced economies, while ignoring the role of policy uncertainty on trading partners, especially the developing nations with small, open, emerging economies. The study also considered the role of macroeconomic variables under which the effects of uncertainty on GVC may vary. The objective of the current work is thus to fill up these knowledge gaps and further our insight of how policy uncertainty affects the GVC of trading partners.

Economic Ties between Africa and China

African countries have thus, depended heavily on profitable economic ties with developed nations for economic development despite their abundance of resources and huge potential. The connection between China and Africa has grown in recent years, with Africa being one of China's top trading partners and benefiting from significant infrastructural projects China has undertaken (Cheung et. al., 2012; Cudjoe, Yumei and hui, 2021). Due to China's quest for raw materials to support the development of her economy and Africa's need for manufactured items and relatively lower borrowing costs for her infrastructural projects, China and Africa have intensified their trade and economic relations. For instance, a wide range of consumer, intermediate, and capital products are purchased from China, while China is the primary market for a good number of Africa's raw material and mineral shipments, with 18% of its crude oil imports from Africa (Nyabiage, 2020). In 2019, the total amount of investment from China to Africa also hit a record high of $110 billion, contributing more than 20% of the continent's economic development. Therefore, a sizable portion of Africa's foreign currency earnings and addition to its international reserves can be linked to its transactions with China.

China has a significant economic impact on African economies, much like the rest of the globe; its macroeconomic policy has an effect on the economy of the majority of African nations. As a result, uncertainty in China's economic policy affects their relationships and their ability to trade. Due to these connections, China's ongoing foreign policy changes do not simply have an impact on domestic expectations in Africa; they also have an impact on other nations who interact with Africa (the US for example) and thereby having an indirect impact on Africa's trade. African countries may be less equipped to withstand uncertainty shocks brought on by much stronger economies than other emerging nations since they are the poorest continent in the world.

Interactions with China and other advanced economies coupled with greater international commerce have been two of the greatest ways African economies have been able to experience significant progress. African countries have made consistent economic success since the late 1990s. The IMF has thus elevated some African nations (including Ghana, Kenya, Nigeria, and Tanzania) to emerging markets classification as a result of their consistent successes (Olasehinde-Williams and Olanipekun, 2020).

Despite this progress, policy uncertainty from a strong trade partner could jeopardize their growth. China for example faces challenges ranging from economic slowdown, increase in unemployment and reduction in the performance of industries (Usman and Xiaoyang, 2024). As such, it calls for changes in economic policy. These changes therefore affect economic variables which is important in the international trade dynamics. Exchange rate for example is an important tool used by China to re-strategize its trading activities. This singular policy instrument can be used to flood other countries' markets when it is devalued, leading to mass importation of Chinese products. Similarly, it can be overvalued leading to an increase in the price of raw materials in other countries. Among the reasons why African countries are affected by such policies is the single-product nature of the African economy; export of low competitive raw materials on the global market, which has reduced their influence in setting the global market prices. Their macroeconomic variables thus experiences instability due to external policies and risks pushing global demand and prices for their main export commodities. The fact that these economies are so susceptible to outside influences explains why the uncertainty caused by negative economic policies throughout the world may sometimes undermine the numerous gains that Africa achieves over time.

MATERIALS AND METHOD

Model Specification

The empirical model for this study was derived from the study of Bussiere, et. al., 2011 and Constantinescu et. al., 2019. The effect of ChinaEPU on AfricaGVC is examined using the PMG estimation procedure of Pesaran et. al. (1999). The panel version of the model is as follows;

$$lnGVC_{it} = \alpha_i + \sum_{j=1}^{p} \gamma_{ij} lnGVC_{it-j} + \sum_{j=0}^{q} \partial_{1ij} lnChinaEPU_{it-j} + \sum_{j=0}^{q} \partial_{2ij} lnEXCH_{it-j} + \sum_{j=0}^{q} \partial_{3ij} lnINF_{it-j} + \sum_{j=0}^{q} \partial_{1ij} lnGDP_{it-j} + \varepsilon_{it} \quad (1)$$

Where lnGVC is the GVC index of the selected African countries, lnChinaEPU is China's economic policy uncertainty index, lnEXCH is the exchange rate, lnINF is inflation and lnGDP is the gross domestic product. The *i* represents the 10 cross-sectional units (10 countries), the t represents the 19-year period covered by the study and the ε is the error term.

The a-priori expectations of equation (1) are; it is expected that $\partial_1 < 0$ which means that GVC is expected to decrease due to an increase in China's economic policy uncertainty. The coefficient of exchange rate is expected to be negative, i.e., $\partial_2 < 0$, which means, as the rate of exchange falls, the global value chains increase. The rate of inflation is also expected to have a negative effect on the coefficient of the global value chains i.e., $\partial_3 < 0$, which means that as the rate of inflation decreases, global value chains rise. And lastly, the coefficient $\partial_4 > 0$ states that an increase in gross domestic product will lead to a rise in the global value chains ceteris paribus. The re-parameterized form of the equation which follows the Pesaran et. al. (1999) is given in equation (2). The lag of ChinaEPU is equally added into the model, in order to isolate its effect on Africa's GVC. This was done in order to provide stronger evidence for a potential cause and effect relationship rather than just a mere correlation between China's economic uncertainty and the global value chains.

$$\Delta lnGVC_{it} = \alpha_i + \varphi_i lnGVC_{it-1} + \beta_{1i} lnChinaEPU_{it} + \beta_{2i} lnEXCH_{it} + \beta_{3i} lnINF_{it} + \beta_{4i} lnGDP_{it} + \sum_{j=1}^{p-1} \gamma_{ij} \Delta lnGVC_{it-j} + \sum_{j=0}^{q-1} \partial_{1ij} \Delta lnChinaEPU_{it-j} + \sum_{j=0}^{q-1} \partial_{2ij} \Delta lnEXCH_{it-j} + \sum_{j=0}^{q-1} \partial_{3ij} \Delta lnINF_{it-j} + \sum_{j=0}^{q-1} \partial_{4ij} \Delta lnGDP_{it-j} + \sum_{j=0}^{q-1} \partial_{5ij} \Delta lnChinaEPU_{it-1j} + \varepsilon_{it} \quad (2)$$

Two estimators have been introduced by Pesaran, et al. (1999) for increased flexibility in handling parameter heterogeneity. In estimating the mean group analysis, separate equations for every country are enabled which caters for the heterogeneity in all their coefficients, while

the entire panel coefficients are computed as individual coefficients.

The pooled mean group differs from the mean group as it prefers a heterogeneity of a lower degree by estimating a long run coefficient homogeneity of the units with the consideration for short run heterogeneity across the units. The PMG estimator thus has some essential assumptions as described by Pesaran et al. (1999), the error terms exhibit no serial correlation and are unrelated to the regressors, indicating that the explanatory variables can be considered exogenous. Both the dependent and independent variables exhibit a long run relationship. And lastly, the long-run parameters are consistent across the cross-sectional units.

To determine the suitability of the PMG estimator relative to the MG estimator, one can conduct tests based on the consistency and efficiency properties of both estimators, using either a likelihood ratio test or a Hausman test. These tests help assess which estimation approach is more appropriate for capturing the underlying characteristics of the data and yielding reliable results (Simões, 2011).

Data Description

The study made use of a balanced panel data from 2000 to 2018 (the longest data for the dependent variable – GVC). The study period and the number of countries (Algeria, Angola, Cote D'voire, Egypt, Ghana, Kenya, Morocco, Nigeria, South Africa and Tanzania) selected was driven by the availability of data and the need for a balanced panel data structure. The GVC is measured in US dollars and obtainable from the UNCTAD-Eora GVC Database. EPU index of China is the Davis et al. (2019) index. Data on exchange rate, inflation, GDP and industrial value added were sourced from World Development Indicators. The logarithmic transformation of the variables is used in the estimation in order to facilitate the interpretation and address issues relating to non-linearity, non-normality, and heteroscedasticity present in the data (Olasehinde-Williams and Oshodi, 2021).

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std.Dev.	Min.	Max.
GVC	190	15.409	1.393	12.635	18.028
INDU	190	23.735	1.237	20.959	25.676
ChinaEPU	190	4.457	0.536	3.571	5.627
INF	190	1.826	1.071	-1.081	5.784
EXCH	190	3.84	2.065	-0.607	7.725
GDP	190	25.02	2.065	22.329	27.076

Source: Authors' computation, 2024

Table 2: Correlation matrix involving GVC as the dependent variable

	Lngvc	LnChinaepu	Lnexch	Lninf	Lngdp
Lngvc	1.000				
LnChinaepu	0.322*	1.000			
Lnexch	-0.267*	0.108	1.000		
Lninf	-0.162*	-0.034	-0.136	1.000	
Lngdp	0.346*	0.428*	0.300*	-0.387*	1.000

Source: Authors' computation, 2024

Note: * represents p-value at 10%

The correlation matrix is presented in Table 2. The purpose of this table is to show the potential relationships between the variables under study. The table indicates that GVC has a direct relationship with ChinaEPU and GDP, while it has an inverse relationship with EXCH and INF. The result also shows the absence of multicollinearity between the variables because the highest value of correlation among the variables is 0.428, which is less than the threshold of 0.80 (Field, 2009). Table 3 presents the panel unit root comprising 3 different methods. This is to ascertain the unit root levels of the variables. The unit root test results indicate that global value chains (LnGVC) and inflation (LnINF) are both stationary at levels across the three-unit root tests. Similarly, China's economic policy uncertainty (LNChinaEPU) and the exchange rate (LnEXCH) are stationary at the first difference, while gross domestic product (LnGDP) and industrial value added (LnINDU) are stationary at levels under the Levin, Lin, and Chu test, but stationary at the first difference according to the Im-Pesaran-Shin test. The stationarity levels of these variables confirm that the requirements for PMG estimation are satisfied, as all variables fall within the I(0) and I(1) bounds (Pesaran et al., 1999).

Table 3: Panel unit root tests of Im-Pesaran-Shin, ADF-Fisher and Levin-Lin-Chu

Variables	Im–Pesaran–Shin	Level of significance	ADF-Fisher	Level of significance	Levin, Lin and Chu	Level of significance
LnGVC	-2.351***	I(0)	32.898**	I(0)	-6.201***	I(0)
LnINDU	-4.245***	I(1)	53.401***	I(1)	-3.840***	I(0)
LnChinaEPU	-3.402***	I(1)	42.792***	I(1)	5.563***	I(1)
LnINF	-3.533***	I(0)	48.374***	I(0)	-3.402***	I(0)
LnEXCH	-4.195***	I(1)	52.135***	I(1)	-5.070***	I(1)
LnGDP	-3.991***	I(1)	51.316***	I(1)	-4.153***	I(0)

Source: Authors' computation, 2024

Note: ***P-value < 0.01, **P-value < 0.05, *P-value < 0.1,

Table 4: Johansen fisher panel cointegration test

Hypothesized No. of CE(s)	**LNGVC trace Statistic**	**Prob**	**LNINDU trace statistic**	**Prob**
None	361.3	0.000	339.9	0.000
At most 1	204.6	0.000	193.2	0.000
At most 2	89.44	0.000	108.6	0.000
At most 3	38.51	0.008	50.56	0.000
At most 4	27.92	0.113	29.52	0.078
		Trace Test		
		Individual cross sections		
Cross section	**Trace Statistics**	**Prob.****	**Trace statistics**	**Prob.****
		Hypothesis of no cointegration		
Algeria	127.025	0.000	113.530	0.000
Angola	177.422	0.000	200.577	0.000
Cote dIvoire	221.849	0.000	132.585	0.000
Egypt	113.322	0.000	151.523	0.000
Ghana	141.068	0.000	107.276	0.000
Kenya	99.903	0.000	119.313	0.000
Morocco	171.377	0.000	108.218	0.000
Nigeria	167.326	0.000	119.371	0.000
South Africa	NA	0.500	1001.077	0.000
Tanzania	120.020	0.000	150.535	0.000
		Hypothesis of at most 1 cointegration relationship		
Algeria	43.956	0.111	64.315	0.001
Angola	99.762	0.000	99.739	0.000
Cote dIvoire	105.249	0.000	74.005	0.000
Egypt	65.516	0.001	83.972	0.000
Ghana	72.404	0.000	54.721	0.010
Kenya	44.936	0.092	55.960	0.007
Morocco	73.109	0.000	64.452	0.001
Nigeria	98.031	0.000	68.788	0.000
South Africa	505.396	0.000	530.659	0.000
Tanzania	61.087	0.002	83.423	0.000

Hypothesis of at most 2 cointegration relationship				
Algeria	17.797	0.581	25.873	0.133
Angola	54.134	0.000	49.241	0.000
Cote dIvoire	37.081	0.006	33.718	0.017
Egypt	27.855	0.082	42.226	0.001
Ghana	32.087	0.027	21.799	0.310
Kenya	17.476	0.605	27.824	0.083
Morocco	25.598	0.141	29.144	0.059
Nigeria	41.696	0.001	36.754	0.007
South Africa	52.944	0.000	74.568	0.000
Tanzania	28.552	0.069	34.387	0.014
Hypothesis of at most 3 cointegration relationship				
Algeria	4.398	0.869	8.280	0.436
Angola	21.935	0.005	23.757	0.002
Cote dIvoire	12.734	0.125	12.068	0.154
Egypt	9.650	0.309	14.299	0.075
Ghana	9.634	0.310	7.700	0.498
Kenya	5.156	0.792	11.479	0.184
Morocco	11.707	0.172	10.519	0.243
Nigeria	11.822	0.166	16.758	0.032
South Africa	18.148	0.020	20.613	0.008
Tanzania	11.110	0.205	11.826	0.166
Hypothesis of at most 4 cointegration relationship				
Algeria	0.857	0.355	0.179	0.672
Angola	5.554	0.018	5.972	0.015
Cote dIvoire	0.131	0.718	1.310	0.252
Egypt	0.944	0.331	2.718	0.099
Ghana	1.882	0.170	0.114	0.736
Kenya	1.358	0.244	2.932	0.087
Morocco	2.783	0.095	1.255	0.263
Nigeria	0.648	0.421	0.664	0.415
South Africa	0.040	0.842	0.971	0.324
Tanzania	0.716	0.397	0.144	0.704

Source: Authors' computation, 2024

Table 5: Kao panel cointegration test

	Model 1 (GVC)	Model 2 (INDU)
Test	**T-Statistic**	**T-Statistic**
ADF	-3.875***	-2.789***
	Variance	
Residual	0.015	0.017
HAC	0.014	0.019
	Augmented Dickey-Fuller Test Equation	
Variable	Coefficient	Coefficient
RESID(-1)	-0.321***	-0.235***
D(RESID(-1))	0.140**	0.132*
Durbin watson	2.014	2.074

Source: Authors' computation, 2024

Note: ***P-value < 0.01, **P-value < 0.05, *P-value < 0.1

Given the cointegrations tests above, the two methods used in this study indicate the presence of a long run panel cointegration in the models. Starting from the Fisher cointegration results, the trace statistic measures the overall evidence of cointegration in the data. The probability value for all tested ranks (None, at most 1, 2, 3 and 4) are close to zero for both models except in model 2 where it is not significant at most 4. This shows evidence against the null hypothesis of no cointegration in the model and suggests a strong presence of cointegration in the panel data set. The individual cross-sectional results are also statistically significant with p-values close to zero and suggest the presence of cointegration at the individual cross-sectional level.

The Kao cointegration test also shows that there exists the presence of cointegration among the variables in the two models. The ADF test statistic with reported -3.875 and -2.789 in models one and two respectively and with a corresponding p-value of less than 0.01 in both models, coupled with their negative test statistic, suggests evidence against the null hypothesis of no cointegration. The p-values of less than 5% suggest that the models are statistically significant. The lower values of the HAC and residual variance show that the models are good to fit and that the cointegration models are reliable. The Kao cointegration test also shows the estimates of the coefficients for the variables in the ADF test which shows that the lagged residual (RESID(-1)) is -0.321 and the lagged differenced residual coefficient (D(RESID(-1))) is 0.140. The residual coefficients thereby show the effect of the lagged values on the current value. The Durbin-Watson statistic of 2.014 also indicates the absence of autocorrelation in the model. Overall, the results show strong evidence of panel cointegration for a long-term relationship among the variables in the panel. The regression result of equation 2 is given in Table 6.

Table 6: Pooled Mean Group (PMG), Mean Group (MG) and Dynamic Fixed Effect (DFE) Estimates of Equation (2)

	PMG		MG		DFE	
Variables	**Long Run**	**Short Run**	**Long Run**	**Short Run**	**Long Run**	**Short Run**
ECM		-0.327***		-0.849***		-0.270***
D.lnchinaepu		-0.0750**		-0.0152		-0.0599
LD.lnchinaepu		-0.277***		-0.179**		-0.294***
D.lnexch		-0.314*		-0.0034		-0.401***
D.lngdp		0.349**		0.158		0.255***
D.lninf		-0.0029		0.0506		0.00912
Lnchinaepu	0.403***		0.138		0.545***	
Lnexch	-0.276***		-0.284		0.0152	
Lngdp	0.442***		0.791***		0.264**	
Lninf	0.200***		-0.0693		0.0285	
Constant		1.103***		-3.983		1.788***
Hausman			4.28			
Observations	168	168	168	168	168	168

Source: Authors' computation, 2024

RESULTS AND DISCUSSION

Interpretation of Regression Analysis

We begin by reporting the outcome of the PMG, MG and the DFE results of equation (2) in table 6. We have the result of the Hausman test; its significance level is higher than the 0.1 threshold. The implication of that is that the test statistic rejects the null hypothesis of equality between the mean group and the pooled mean group estimators. This means that the two models do not differ in terms of their consistency and efficiency. We therefore interpret both with the inclusion of the dynamic fixed effect. In the three estimates, we realized that their speed of adjustment is negative and significant at the one percent level and they become smaller from MG to PMG and to DFE. This shows that the MG has a faster speed of adjustment than the PMG

and DFE and this is in line with Pesaran et. al. (1999). For the short run analysis, the ChinaEPU was only significant under PMG and thereby shows a negative relationship with the global value chains, while its lagged variable was statistically significant in the three models and was also consistent with the negative relationship with the global value chains. Exch was also significant only under PMG and DFE with negative relationships with GVC while GDP shows a positive statistically significant relationship with the GVC at PMG and DFE respectively, and the rate of inflation was not significant with any of the three estimates. For the long run relationships, the ChinaEPU under PMG and DFE show positive relationships with GVC, with both estimates having a significance value of 1%. The rate of exchange was only significant for PMG and also indicates a high level of significance. The GDP was significant for the three estimates and with positive relationship with the global value chains. And lastly, the rate of inflation shows a positive and statistically significant relationship with the GVC under the PMG only.

We also examined the effect of China's economic uncertainty on industrial value added, which is among the components of global value chains in Africa. In this case, we substitute the GVC for INDU and retain all other variables, as we have it in equation (2). The correlation matrix is given in table 7 while the regression result of equation (3) is given in table 8.

$$\Delta lnINDU_{it} = \alpha_i + \varphi_i lnGVC_{it-1} + \beta_{1i} lnChinaEPU_{it} + \beta_{2i} lnEXCH_{it} + \beta_{3i} lnINF_{it} + \beta_{4i} lnGDP_{it} + \sum_{j=1}^{p-1} \gamma_{ij} \Delta lnGVC_{it-j} + \sum_{j=0}^{q-1} \partial_{1ij} \Delta lnChinaEPU_{it-j} + \sum_{j=0}^{q-1} \partial_{2ij} \Delta lnEXCH_{it-j} + \sum_{j=0}^{q-1} \partial_{3ij} \Delta lnINF_{it-j} + \sum_{j=0}^{q-1} \partial_{4ij} \Delta lnGDP_{it-j} + \sum_{j=0}^{q-1} \partial_{5ij} \Delta lnChinaEPU_{it-1j} + \varepsilon_{it} \quad (3)$$

Table 7 below shows the nature of the correlation among the variables. The results shown in the table are similar to the ones in Table 2 with a slight difference in the non-significance of the rate of inflation in Table 7. The table therefore indicates that GVC has a positive relationship with ChinaEPU and GDP, while it has a negative relationship with EXCH and INF. The result also shows the absence of multicollinearity between the variables because the highest value of correlation among the variables is 0.428, which is less than the threshold of 0.80 (Field, 2009).

Table 7: Correlation Matrix involving INDU as the Dependent Variable

	Lnindu	**LnChinaepu**	**Lnexch**	**Lninf**	**Lngdp**
Lnindu	1.000				
LnChinaepu	0.374*	1.000			
Lnexch	-0.169*	0.108	1.000		
Lninf	-0.020	-0.034	-0.136	1.000	
Lngdp	0.269*	0.428*	0.300*	-0.387*	1.000

Source: Authors' computation, 2024

Note: ***P-value < 0.01, **P-value < 0.05, *P-value < 0.1

Table 8: Pooled mean group, mean group and dynamic fixed effect estimates of equation (3)

		PMG		**MG**		**DFE**
Variables	**Long Run**	**Short Run**	**Long Run**	**Short Run**	**Long Run**	**Short Run**
ECT		-0.178***		-0.206**		-0.139***
D.lnchinaepu		-0.0654**		-0.0636*		-0.0528
LD.lnchinaepu		-0.124***		-0.0783		-0.183***
D.lnexch		-0.650***		-0.636***		-0.630***
D.lngdp		0.352*		0.299		0.549***
D.lninf		0.0114		0.03		-0.0560***
Lnchinaepu	0.569***		-0.343		1.079***	
Lnexch	0.0406		-0.0218		-0.166	
Lngdp	0.834***		1.076***		0.181	
Lninf	0.0734		0.266		0.348*	
Constant		0.0323		-0.494		2.088***
Hausman	11.46**					
Observations	168	168	168	168	168	168

Source: Authors' computation, 2024

Note: ***P-value < 0.01, **P-value < 0.05, *P-value < 0.1

We begin the analysis of Table 8 with the result of the Hausman test which is significant at 5%. This implies the rejection of the null hypothesis of equality between the pooled mean group and the mean group. In this instance, there is statistically significant evidence that the consistency and efficiency of the two models are different from one another. The random effects assumption of the MG model is hereby violated given the p-value which is less than the chosen level of significance, in which case the fixed effects approach offered by the PMG model is more suited. The PMG estimator is consistent and efficient, whereas the MG estimator is inconsistent or less efficient as a result of potential individual-specific heterogeneity, as shown by the rejection of the null hypothesis. Nonetheless, we report the outcome of the three estimates since there is no difference in their signs across all the variables but only the significance level has little variation across the variables. All three estimates indicate a negative and statistically significant level of the error correction term indicating their speed of adjustments, which is a bit slow as compared with the equation (2) result. In the short run, ChinaEPU was statistically significant with only PMG and MG with a negative relationship with INDU. The rate of exchange in the three estimates is statistically significant at 1% and has a negative relationship with INDU. The GDP indicates a positive relationship with INDU with statistical significance at both PMG and DFE while inflation was only statistically significant with DFE with a negative relationship with INDU. In the long run, ChinaEPU was only statistically significant with INDU under PMG and DFE and the relationship was positive. GDP was also positively significant with INDU but under PMG and MG estimators. INF was positively significant with INDU with only the DFE estimator while Exch was not statistically significant with any of the estimators in the long run.

CONCLUSION

China, as the world's second-largest economy, undoubtedly wields significant influence, and uncertainties in its economic landscape can reverberate across trading partners. As such, this study delved into the nuanced impact of China's economic policy uncertainty on selected emerging economies in Africa, employing a comprehensive panel analysis to explore both short-run and long-run effects over the period 2000-2018. This is important in order to investigate how China's economic policy uncertainty could affect Africa's global value chains.

The empirical analysis, validated through Kao (1999) and Johansen Fisher panel cointegration tests, substantiates a long-run relationship between China's economic policy uncertainty (EPU) and Africa's global value chains (GVC), considering pertinent control variables. Employing pooled mean group, mean group, and dynamic fixed-effect estimators for short and long-run analyses, our findings unveil a short-run negative effect and a long-run positive effect of China's EPU on Africa's GVC and industrial value added**.** Remarkably, this indicates consistent impacts on global value chains and industrial value added over both temporal horizons.

The implications of our findings are profound. China's EPU serves as a barometer of the pressure African countries face within their global value chains, highlighting the potential transmission of economic disruptions between regions. The negative short-run impact suggests potential disruptions in trade and investment flows, leading to cautious decision-making by economic stakeholders, potentially delaying investments and reducing imports from Africa. However, the long-run positive effect signals a strategic opportunity for African countries to integrate more deeply into global markets. As uncertainties stabilize, Africa's connection to a Chinese-led GVC strengthens, positioning the continent to capitalize on emerging trade opportunities and industrial development. This long-run positive impact thus offers African countries the chance to strategically position themselves within the global market. By leveraging the strengthening relationship with China, African economies can not only diversify their export markets but also expand their role within global supply chains. In doing so, they can enhance their competitiveness and secure a more sustainable foothold in international trade.

It is therefore recommended that in order to mitigate the effect of China's economic uncertainty, African countries must diversify their trade partners by fostering good partnerships with other countries and regions beyond China so that sudden uncertainty shocks in China's economy will not have much effect on their economies. It is also recommended that strong intra-African trade and cooperation is important in order to foster regional economic integration. It is also recommended that African decision-makers should invest in domestic industries while promoting a conducive environment for business to thrive. This will boost domestic production and reduce reliance on foreign intermediate products.

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