

# Effect of International Trade and Regional Integration on Economic Growth: New Evidence from Africa

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#### **Abstract**

The need to re-engineer growth in Africa has become increasingly glaring in the face of the prevailing economic shocks that exposed their inadequate productivity power for basic and vital food and drugs. According to the World Bank and several other international agencies, the potential for international trade, especially regional integration remains huge. Theoretical literature supports this assertion, but the contradictory results from empirical studies necessitate employing robust techniques to reassess this relationship, especially as Africa engages in an all-continent regional agreement. This motivates the paper to assess the separate and joint effects of regional integration and international trade on economic growth. The study employed the System General Method of Moments GMM dynamic panel model for 40 selected countries across Africa. The findings show that in the context of increasing labour force, Foreign Direct Investment, government effectiveness and decreasing inflation, real interest rate and government debt, as well as regional integration and international trade, jointly and separately impact positively and significantly on economic growth. These results provide empirical justification for a continuous push for regional integration in Africa for the attainment of economic growth in Africa.

Keywords: international trade, regional integration, economic growth, Africa

**Jel:** F130; F150; 0470

# 1. Introduction

The recent twin global crisis of the Covid-19 pandemic and the Russia-Ukraine war has motivated the need for more efficient and effective economic management. As in the aftermath of every crisis, most economies in the world are revisiting their economic management tools, some of which include strategies to boost productivity, increase exports and ultimately improve self-sufficiency, economic growth and development. One key positive determinant of economic growth is international trade as the neo-classical international trade theories show that increasing gains of trade improves productivity. According to the World Trade Organisation (WTO), international trade has evidently been a key instrument in reducing poverty and improving economic growth in both developed and developing countries (WTO, 2023).

Another key consequence of the twin crises is the evidence of the increasing globalisation (interdependence) of today's world and the need for trade access. This highlights a key dynamic in the international trade debates, which is free trade. The proponents of free trade cite international division of labour, cheaper prices, increased efficiency due to competition and an increase in international corporations. However, the arguments against free trade include under-performance of local industries, risk of over-dependence, transfer of jobs to countries with comparative advantage, influence of bad consumption habits, dumping and propensity for it to favour industry-established developed countries over developing countries. In support of the latter, Ovamba (2019) empirically shows that when Kenya trades with the Sub-Sahara African (SSA) and the Arab countries, it records a positive economic impact. However, it records less when trading with South Asia and Northern Africa, and trading with high-income countries, harms the Kenyan economy.

It is in the light of such studies that free trade is encouraged by some, to the extent that it is confined to a specific group/calibre of countries in the form of regional integration. Regional integration could take several forms, but at its core is free trade, which is considered the first of the five stages of regional economic integration (Balassa, 1961). There exists eight officially recognised and a plethora of other regional agencies and organisations in Africa (Karkare & Byiers 2019). These regional integrations are mostly forged based on geographical locations, colonial associations, negotiations and agreements, as well as shared history between the countries and/or within the regional organisations, which ends with some countries belonging to more than one regional integration. Ultimately, Africa is practically seeking to institute an all-continental integration known as the African Continental Free Trade Agreement (AFCFTA).

The regional integrations have been ascertained to have the potential of boosting international trade, ultimately reducing poverty and improving equitable economic growth. It improves local competition, productive efficiency, and consequently, price convergence across countries and regions, as well as the transfer of technological innovation (United Nations Development Programme [UNDP], 2011; Kayizzi-Mugerwa *et al.*, 2014). The AFCFTA agreement, according to the World Bank Group, has the ability to end severe poverty for an estimated 30 million people, boost Africa's income by \$450 billion, increase Africa's exports by \$560 billion and boost income levels for an additional 68 million people by 2035 (World Bank, 2020). However, this potential is conditional upon long-standing challenges of the economic integration in Africa, such as macroeconomic disequilibria, poor human capital development, poor infrastructure, over-valued currencies, foreign debt service burdens, constrained income and the overlapping membership of Regional Economic Communities in Africa (Food and Agriculture Organization [FAO], 2003; Alexander & Garba, 2021).

In light of the potential for regional integration to improve national trade and economic growth in Africa vis-à-vis its challenges, there is a need to have empirical evidence on the extent to which the interaction between international trade and regional integration affects economic growth in Africa. This is very important given the ongoing plans for economic integrations at the regional levels of Africa and its continental level. The empirical literature on this topic abounds, particularly for

<sup>&</sup>lt;sup>1</sup> Officially recognised regional integrations include the following: Arab Maghreb Union (AMU), Community of Sahel-Saharan States (CEN-SAD), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD) and Southern African Development Community (SADC).

country-specific studies. There exist fewer panel studies that examine the relationship between international trade and economic growth, and even fewer that examine the relationship between regional integration. In both cases, there exist varying results depending on the specific country/region, time scope covered and methodology employed. For example, Naveh *et al.* (2012) show that the regional integration between Iran and Northern neighbouring countries affects its long-term growth and welfare. On the contrary, Singoro (2021) has opined that financial integration in East African Community (EAC) has had no significant effect on the economic growth in the region.

Meanwhile, only Kamau (2010) has investigated how economic integration and international trade jointly and separately impact on the economic growth of 26 African countries from specific regions. This study has used more updated data for a broader set of countries to employ economic integration and international trade (separate and jointly) on economic growth in Africa with a sample of 40 countries. More importantly, the study has employed the African Regional integration index (ARII), which is jointly produced by the African Union Commission (AUC), the African Development Bank (ADB) and the United Nations Economic Commission for Africa (UNECA), to proxy for regional integration. In addition, the study has engaged the System Generalised Method of Moments (S-GMM) as it is acclaimed for its ability to correct time-invariant country-specific effects, omitted variable bias, measurement error and endogeneity problems (Blundell & Bond 1998; Blundell *et al.*, 2000).

# 2. Literature Review

The mercantilist theory of the 1600s postulated that international trade and industry were significant in explaining an economy's wealth or prosperity (Magnusson, 2011). It, however, assumed that wealth was static, and this assumption was used to explain why the European nations ventured to amass as much as possible via exports (Kenton, 2020). In an attempt to theorise propensity to trade, Adam Smith (1976) in his Wealth of Nations posits that division of labour and capital accumulation remains key in explaining productivity or economic growth. In supporting free international trade, Smith also argues that free trade promotes cheaper goods, more productivity and more income if the countries produce goods in which they had an absolute cost advantage: all things being equal. Other growth and trade theories have established the relationship between international trade and economic growth. In 1817, David Ricardo posited that a country benefits from trade by producing and exporting goods for which it has the greatest comparative cost advantage and importing goods for which it has the greatest comparative disadvantage (Ricardo, 1817). Trade is a means for nations to increase revenue and reallocate wealth. Smith and Ricardo began a trend that was followed by Heckshare Ohlin in 1919 and other scholars who make up orthodox or classical international trade proponents today. Each successive author critiqued the former and developed the international trade theory further. Heckshare Ohlin's theory is an adaptation of the comparative advantage theory that justifies specialisation and commerce by considering the relative efficiency of the elements of production. The argument is based on the idea that endowments vary amongst the nations; some operate with a high capital intensity while others employ a high labour intensity. The classical-based theories explain the international trade theory predominantly from a country-specific based perspective and differ from the modern trade theories that are firm-based. The classical theories, in their attempt to explain international trade, inherently establish a strong positive relationship between international trade and economic growth.

From a country-specific perspective, Abdulkadir *et al.* (2017), Abubakar and Shehu (2015), Ahmad (2018), Bakit (2019), Javed *et al.*, (2012), Musinguzi and Rapha (2019) and Sulaiman and Ramli (2019) employed Vector Error Correction Mechanism (VECM), Autoregressive Distributed Lag (ARDL), multiple regression models and other tools to empirically show that the international trade had a positive impact on economic growth in Bangladesh, Kenya, Pakistan, Somalia, Malaysia, India and Uganda respectively. Similarly, Elias *et al.* (2018), Faruk (2018), as well as Obadan and Okojie (2016) found that international trade had a positive impact on the economic growth in Nigeria. On the one hand, Nwamuo (2019) established a bi-directional relationship between trade openness and economic growth in Nigeria. On the other hand, Mogoe (2022) and Mogoe and Mongale (2014), who used the VECM, established that the export and exchange rates are positively related to Gross Domestic Product (GDP) whilst the import is negatively related to the GDP in South Africa. From a panel perspective, Erkisi (2019) showed that international trade contributes to sustainable growth in the long run in Middle East countries.

Conversely, Malefane and Odhiambo (2019) employed the ARDL bound test to show that trade openness has an insignificant impact on the economic growth in Lesotho, both in the short and long run. Similarly, Husin (2018) showed that export had no relationship with the economic growth of Malaysia; rather, imports had a significant relationship with the omic growth. In addition, Silajdzic and Mehic (2017) employed a fixed effects panel model to show that international trade has no significant impact on the economic growth of Central and Eastern European countries. Also, Ovamba (2019) has empirically shown that when Kenya trades with the Sub-Sahara African (SSA) and Arab countries, it records a positive economic impact. It, however, records less when trading with South Asia and Northern Africa; and trading with high-income countries harms the Kenyan economy. Besides, Radimersky and Hajko (2018) used panel data analysis for European Union (EU) countries using the data set 1999–2011 to demonstrate that trade openness has an insignificant impact on growth, but when trade partner growth is considered in the model, it is revealed that the trade partner growth had a significant impact on the GDP.

In terms of the relationship between international trade and economic growth, Kamau (2010), Muriuki and Kosimbei (2015), Naveh *al.* (2012) and Vamvakidis (1998) have empirically established a positive relationship. Kamau (2010) employed the S-GMM estimation technique with the aid of a constructed economic integration index to show that economic integration and trade, separately and jointly, have a positive and significant impact on growth in the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and Southern African Development Community (SADC). Naveh *et al.* (2012) showed that the regional integration between Iran and Northern neighbouring countries affects its long-term growth and welfare. In the same vein, Muriuki and Kosimbei (2015) used terms of trade to proxy regional integration for a

panel of the countries in the EAC between 1977 and 2014 and showed that it had a significant and positive relationship with the GDP. Interestingly, Vamvakidis (1998) posited that the economies of the countries nearby huge and open economies grow quicker than when the neighbours are conservative. This assertion could be seen in the formation of the North-South trade alliances such as the African Growth and Opportunity Act. Contrary to these studies, Singoro (2021) opined that financial integration in the East African Community (EAC) has had no significant effect on economic growth in the region.

# 3. Methodology and Data

# 3.1 Methodology

The study adopts the new classical growth model of Solow (1956). The Solow model posits that growth is based on an aggregate production function that converges along a balanced growth path and is a function of technology, investment rate and population growth rate. The study adopts the Cobb Douglass form of this theory and incorporates international trade proxied by exports and net exports to specify the function below:

$$Y_t = AK_t^{\emptyset} L_t^{\pi} E_t^{\rho} \tag{1}$$

Where  $Y_t$  is the outcome variable,  $K_t^{\emptyset}$  is capital proxied with capital formation,  $L_t^{\pi}$  is Labour force,  $E_t^{\rho}$  represents exports and A is the parameter of technology, t represents the period  $(t = 1..., T_i)$  while  $\emptyset$ ,  $\pi$  and  $\rho$  are parameters to be estimated.

Given that the study employs a panel of 40 SSA countries with annual data from 2009 to 2020, the study employed a panel data analytic method, and the model above is transformed to:

$$Y_{it} = A_{it} K_{it}^{\emptyset} L_{it}^{\pi} E_{it}^{\rho} \tag{2}$$

With log-linearisation, introducing the proxy for regional integration and the addition of other control variables adapted from the empirical works of Goffa and Singh (2014) and Umeh *et al.* (2022), and the panel Cobb–Douglas production function stated in equation (2) becomes:

$$Y_{it} = \alpha_i Y_{it-1} + \emptyset_{it} K_{it} + \pi_{it} L_{it} + \rho_i E_{it} + \beta_i R_{it} + \delta_{it} X_{it} + \theta_i + u_t + \varepsilon_{it}$$
(3)

Where *i* represents the country (i = 1..., N),  $Y_{it}$  is real GDP;  $Y_{it-1}$  is the one-period lag of real GDP in the country *i*,  $E_{it}$  represents two proxies for trade (exports and net exports as a percentage of GDP) in the country *i*,  $R_{it}$  represents regional integration while  $X_{it}$  represents a vector of control variables.  $\alpha, \emptyset, \pi, \rho, \beta$ , and  $\delta$  are the parameters and vectors of parameters to be estimated,  $\theta_i$  represents country-specific effects,  $u_t$  represents period-specific effects and,  $\varepsilon_{it}$  is the error term. The control variables are based on theoretical and empirical inferences of the determinants of economic development. They include private sector credit (% GDP), inflation (CPI), real interest rate, Government Debt (% GDP), government effectiveness and FDI (% GDP).

The study employed the System Generalised Method of Moments (S-GMM) initiated by Bond (1991) and developed by Blundell and Bond (1998) to estimate the model. The advantage of the S-GMM estimator over other panel estimators has been satisfactorily authenticated in the literature (Blundell & Bond, 1998; Blundell *et al.*, 2000; Soto, 2009). Because it may address concerns about omitted variables and resolve endogeneity issues, the GMM is often admired for making parameter estimations more accurate (Maji *et al.*, 2019; Qudrat-Ullah & Nevo, 2021). Soto (2009) uses Monte Carlo simulations to demonstrate that the system GMM estimator outperforms all other estimators including the traditional first-differences GMM estimator in smaller sample sizes (less than 100), which is typical in cross-country studies like this one.

The S-GMM estimator combines a system with a first-differences regression with a level regression such that variables in differences are instrumented with the lags of their levels, and the variables in levels are instrumented with the lags of their differences (Bond *et al.*, 2009; Uddin *et al.*, 2017). According to Uddin *et al.* (2017), the variances in the S-GMM are uncorrelated even though the level of pre-set variables correlates with the country-specific fixed effect. Once more, according to Roodman (2009), the S-GMM is preferable to difference GMM because the latter has a tendency to accentuate the gaps in unbalanced panel data. As a result, the S-GMM is better suited to analyse this unbalanced data set.

#### 3.2 *Data*

The study used a panel of 40 nations with data spanning the years 2007 through 2020. In an effort to weed out cyclical swings and concentrate on the long-term, the study averages the data over 2-year non-overlapping periods, following Osei and Kin (2020). The amount of cross-sectional observations and time series used provides sufficient degrees of freedom for the methodology to produce robust and trustworthy conclusions. Most of the data were obtained from the World Bank depository while the index for regional integration was obtained from the ARII platform. The ARII was introduced into the data set as dummies across the time series observations, considering the 2019 report. Data for government effectiveness was obtained from the LOWY Institute Asia Power Index.

The 40 countries covered, which were based on data availability include Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe. The statistical summary of the variables used is presented below.

The statistical summary of the variables shows that the average log real GDP is 23.24, ranging between a minimum of 20.46 and a maximum of 26.94. The exports as a percentage of GDP average is around 29.06% with a huge standard deviation that shows gross variability across the selected countries. The regional trade index has a mean of 0.33 index and ranges between 0.20 and 0.63.

**Table 1: Summary Statistics of the Variables** 

Description	Obs.	Mean	Std. Dev.	Min	Max
LGDP	280	23.24	1.39	20.46	26.94
Exports (% GDP)	280	29.06	15.38	0.53	88.92
Capital formation (% GDP)	273	24.45	9.66	6.12	76.71
Inflation (CPI)	276	7.93	25.43	-4.29	406.25
Government Debt	259	45.22	29.00	6.90	236.63
FDI (% GDP)	280	4.10	5.22	-9.51	35.69
Real Interest Rate	210	7.57	11.04	-79.16	50.33
<b>Government Effectiveness</b>	280	0.05	6.18	-1.78	51.66
Labour Force	280	66.09	11.53	42.46	87.61
Regional Trade Index	280	0.33	0.07	0.20	0.63

The pairwise correlation matrix below shows that all coefficients are less than 0.6. This implies that we do not have enough information to suggest that there will be multi-collinearity between the variables.

**Table 2: Pairwise Correlation of Variables** 

Var.	LRG	PSC	CF	CPI	GD	FDI	RIR	GE	EXP	NEXP	LF
LRG	1										
<b>PSC</b>	0.23	1									
CF	0.04	0.01	1								
CPI	0.10	-0.08	-0.08	1							
GD	-0.09	0.05	0.23	0.26	1						
FDI	-0.11	-0.05	0.49	-0.04	0.16	1					
RIR	-0.05	-0.11	0.11	-0.52	-0.11	0.22	1				
GE	0.13	0.04	-0.05	0.02	-0.05	0.08	-0.06	1			
EXP	0.03	0.18	0.35	-0.04	-0.03	0.29	-0.07	0.03	1		
NEXP	-0.30	0.01	-0.01	-0.00	0.13	0.00	-0.02	-0.07	0.07	1	
LF	0.03	-0.26	-0.06	0.09	-0.08	0.04	0.12	0.05	-0.22	-0.04	1

where: LRG is the log of real GDP, PSC is private Sector credit (% GDP), GF is Capital formation (% GDP), CPI stands for Inflation (CPI), GD represents Government Debt, FDI for foreign direct investment, RIR for real Interest Rate, GE is government Effectiveness, EXP is Exports (% GDP), NEXP is Exports minus Imports (% GDP), and LF stands for labour force participation as a proportion of the population

# 4. Empirical Evidence

The results of the dynamic system GMM specified above is presented in Table 3 for three models (presented in the 3 columns). All have the log of real GDP as the dependent variable. In the first

two models, the exports and net exports are introduced interchangeably with regional integration as a separate variable. In the third model, only the interactive dummy between regional integration and exports is introduced besides the control variables.

Table 3: Effect of International Trade and Regional Integration on Economic Growth.

D	Dependent Variable - LRGDP					
Description	Model 1	Model 2	Model 3			
GDP (-1)	0.99***	0.99****	1.001***			
	(0.0001)	(0.0001)	(0.0001)			
Exports (% GDP)	0.001**					
	(0.0228)					
Net Exports as (% GDP)		0.001**				
		(0.0111)				
<b>Regional Integration</b>	0.278***	0.272***				
	(0.0001)	(0.0001)				
Interactive dummy (export &			0.0025***			
regional integration)						
			(0.0075)			
<b>Labour Force</b>	0.001***	0.001***	0.001***			
	(0.0001)	(0.0001)	(0.0006)			
Capital formation (% GDP)	-0.00022	0.00065	-0.001			
	(0.7390)	(0.1926)	(0.2810)			
Private Sector Credit (% GDP)	-0.001***	-0.0008***	-0.001***			
	(0.0001)	(0.0001)	(0.0001)			
Inflation (CPI)	-0.001***	-0.00054***	-0.001***			
	(0.0001)	(0.0001)	(0.0001)			
<b>Government Debt</b>	-0.0001***	-0.0009***	-0.001***			
	(0.0001)	(0.0001)	(0.0001)			
FDI (% GDP)	0.0027***	0.0029***	0.003***			
	(0.0001)	(0.0001)	(0.0001)			
<b>Real Interest Rate</b>	-0.001***	-0.0009***	-0.001***			
	(0.0001)	(0.0013)	(0.0001)			
<b>Government Effectiveness</b>	0.0118**	0.01042	0.0134**			
	(0.0480)	(0.1319)	(0.038)			
constant	0.221	0.3102	0.08			
	(0.0966)	(0.0061)	(0.56)			
Test for AR(1) errors - z	-1.724*	-1.725*	-1.73			
	(0.0846)	(0.0845)	(0.08)			
Test for $AR(2)$ errors – z	0.42	0.398	0.448			
	(0.67)	(0.69)	(0.65)			
Hansen over-identification test	17.16	17.67	20.29			

	(0.58)	(0.54)	(0.38)
Pesaran CD test for CSD	0.55	0.59	0.004
	(0.58)	(0.55)	(0.997)
<b>Number of Observations</b>	150	150	150

Notes: Coefficients and standard errors (in brackets) are given in this table. And \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The diagnostic tests of this model show that all three models confirm that the serial correlation in the error terms is not second-order given that the p-values of the AR (2) tests are all greater than 0.05, hence not significant at a 5% significant level. The number of instruments for the first model is 30 and 31 for the other two, which is less than the number of groups/countries – 40. The study equally employs the Hansen over-identification test to validate the instruments employed, given the insignificant p-values (all >0.05) at a 5% significant level. Finally, the Pesaran CD test with insignificant p-values also confirms that there exists no cross-sectional independence that could bias the estimators. We, therefore, perceive the estimators as robust and reliable enough for policy inferences.

The results show that the exports, net exports, regional integration and its interaction with exports, all contribute significantly and positively to economic growth in the panel of the selected African countries. In the first model, the exports as a percentage of the GDP and regional integration have a probability value of 0.028 and 0.0001, showing that they are significant at 5% and 1% levels of significant respect. This is the same case with the second model wherein net exports (% GDP) are introduced. In the third model, the probability value for the interactive dummy between international trade and regional integration is 0.0075 suggesting that it is significant at 1% significant level.

This result validates the existing theories relating to international trade and economic growth. The results also corroborate the works of Erkisi (2019), Mogoe (2022) and Mogoe and Mongale (2014), which suggest that international trade has a positive relationship with economic growth. The findings also uphold the arguments by Kamau (2010), Naveh *et al.* (2012), Muriuki and Kosimbei (2015) and Vamvakidis (1998), that show that regional integration positively affects economic growth. This empirically justifies the promotion of regional integration for the purpose of trade and infers that if other contextual trade challenges are met, then the African economies will record economic progress.

The lag of real GDP significantly and positively affects the economic growth at 1% significant level for all three models. Labour force and foreign direct investment are all significant and positively related to the economic growth for all three models while the government effectiveness is positively and significantly related to the economic growth only for the first and third models. These results are expected a priori, given that the labour force constitutes the human capital, which according to the Cobb Douglass production function, is relevant for growth. An increase in the FDI translates to

an increase in money in circulation through the multiplier effect, and the government's effectiveness reflects the effective and efficient allocation of resources and strong institutions.

On the other hand, inflation, government debt and real interest significantly and negatively affect the economic growth in all three models as expected. The higher the inflation, the lower the overall demand, which leads to a contraction of the economy. Increasing government debt translates to increasing debt servicing and decreasing expenditure in other vibrant sectors of the economy while lower interest rates generally boost investments and ultimately economic growth. Surprisingly, the private sector credit as a percentage of GDP is significant but negative. The private sector credit is expected to boost local firms, thereby increasing productivity. This could be explained by the characterisation of the African economics, which is predominantly driven by the government financing, so the share of the private sector to GDP seems to be dwindling in the face of increasing growth.

# 5. Conclusion

The need to re-engineer growth in Africa has become increasingly glaring in the face of the prevailing economic shocks that exposed their inadequate productivity power for basic and vital food and drugs. International trade remains a pertinent instrument for productivity, and its efficient constitution has seen the rise of several economic powers over the years. The economic integration stands out as a key policy destination for the African countries at the regional and continental levels. The regional integration has the potential to significantly draw the continent closer to achieve sustainable development goals by significantly reducing poverty, increasing income for all and increasing productivity. It is on this premise that this study sets out to investigate the separate and joint effects of the regional integration and international trade on the economic growth.

The study employed the system GMM dynamic panel model for 40 selected countries across Africa. The findings show that, in the context of increasing labour force, the FDI, government effectiveness and decreasing inflation, real interest rate and government debt, regional integration and international trade, jointly and separately impact positively and significantly on the economic growth. These results, therefore, present empirical justification for a continuous push in the regional integration in Africa for the attainment of continuous economic growth. It also presupposes that the challenges that prevent or limit the international trade and regional integration, such as, poor transportation infrastructure, customs duties, insecurity and political instability, amongst others, need to be addressed to optimally benefit from the regional integration and economic growth in Africa.

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