2018 ASSA Conference

African Economic Development: Regional Economic Integration

Jointly organized by

AFEA/NEA

Driving factors of intra-regional exports of manufactured goods: The case of West African Economic and Monetary Union

Philadelphia, January 5-7, 2018

Dr. Toussaint Houeninvo ,
African Development Bank
Senegal Country Office,
Dakar, Senegal

Presentation Outline

1-Introduction and context

2- WAEMU at a glance and Stylized facts

3-The research question

4- Brief literature review

5-Theoretical and empirical foundations of the gravity model in the analysis of trade in regional integration area

6- Presentation of the model, data sources and sampling

7- Estimation method and results

8- Conclusion and policy recommendations

1 – Introduction and context

- Export of manufactured goods plays a resilient role to external shocks and has a greater potential of generating a large number of jobs.

- And yet, manufacturing sector is still weak representing only 11% of Africa's GDP in 2014-2015 as compared to other regions: East Asia and Pacific (23 %), South Asia (16 %) and Latin America and the Caribbean (14%)

- For West African Economic and Monetary Union (WAEMU), manufactured sector is estimated at 9 % of GDP over 1995-2012.

- Obstacles to a successful upgrading in manufacturing value chain include ***lack of large internal market***, ***transport and logistics***, **Foreign Direct Investment** (FDI) that can **support the processed goods**.

2 – WAEMU at a glance and Stylized facts

- WAEMU member countries have a common monetary policy conducted at central level by the Central Bank of West African States (BCEAO).

- They also have a Common External Tariff (CET) implemented since January 1st 2000.

- Data obtained from WAEMU Commission indicate that intra exports represent 14 % of total export of WAEMU over 1996-2012.

- During the same period, intra exports of manufactured goods is estimated at 42 %t representing CFAF 5760.1 billion out of CFAF 13682.4 billion overall intra exports.

- It increased from 44 % during 1996-1999 to 47 % over 2010-2012 with the lowest share estimated at 38 % during 2005-2009

2 – WAEMU at a glance and Stylized facts(cont..)

- Côte d'Ivoire, the largest WAEMU Country, share of manufactured goods in intra-WAEMU exports went from 77.3 % during 1996-1999 to 28.7 % over 2010-2012, a 62 % drop as compared to its 1996-1999 level.

- The decrease has benefited mainly Senegal and Togo whose share increased from 18 % to 23.8 % for Senegal and from 01% to 18.2 % for Togo, almost 1700 percent over the same period.

- This is an indication that political crisis in early and late 2000 has deteriorated Côte d'Ivoire performance in manufactured exports and therefore the one of the WAEMU as a whole (44% during 1996-1999 to 37.6% over 2005-2009) .

3 – The Research question

- Major constraints to the development and intra WAEMU trade of manufactured goods are market size or demand to support the processing of those products and the quality of transport and logistics including Non-Tariff Barriers that jeopardize competitiveness.

- Most of the time, several goods imported from out of the continent especially from Asia, Europe and America have been more competitive than the intra WAEMU products.

- Hence, the main research question is on **the impact of distance (transport / logistical cost) and Economic size on intra-WAEMU manufactured exports**.

- The paper analyzes the determinants of intra-WAEMU trade in manufactured goods and therefore the variables on which policymakers could act to promote intra-regional manufactured exports.

- This is timely as African leaders and development partners such as African development are promoting measures that can help to industrialize Africa and foster regional integration

4-Brief literature review

- There is a bunch of studies showing that exports of sophisticated goods (manufactured) generate greater economic development outcome than those of raw materials [Haussmann, Hwang and Rodrik (2005); Lall 2000; Rodrik (2011a,b) Thorbecke and Pai (2013)]

- Anyanwu and Kponnou (2017) found that key positive drivers of Food beverage and Tobaco manufacturing for Africa include government consumption, household consumption and renewable electricity

- Effobi and Osabuohien (2016) found that poor infrastructure have been detrimental to manufacturing exports and competitiveness of Economic Community of West African States (ECOWAS) Countries.

5 –Theoretical and empirical foundations of the gravity model in the analysis of trade in regional integration area

- The underlining assumption is that the GDP, that is the economic mass, acts as the attractor of trade between two trading partners and therefore exert a positive effect on trade. In contrast, distance, a measure of the cost of transport used by most studies, serves as resistance factor and plays a negative role in trade.

- From an empirical point of view, This has been applied by Tinbergen (1962); Linnemann (1966); Obstfeld and Rogoff (2000); Xubei (2001); Jakab et al. (2001); Gbetnkom and Avom (2005); Coulibaly, Traore and Diarra (2015); Houeninvo and Sèdédji (2016); Seck (2017).

6 – Presentation of the model, data sources and sampling

- Following the literature the model could be presented as:

$$X_{mg_{ij}} = B \frac{Y_i^{a1} Y_j^{a2}}{DIST_{ij}^{a3}}$$

- With a1, a2 >0 and a3<0
- Where Xmij is the value of Exports of manufactured goods from country i to country j
- B is an intercept
- t is the period
- Yit is the GDP of Country i during the period
- Yjt is the GDP of Country j during the period
- DISTij is the distance between country i and country j (i ≠ j).

6 – Presentation of the model, data sources and sampling (cont..)

- Taking the logarithm of equation1 leads to

$$\log(X_{mg_{ij}}) = \log(B) + \alpha 1 \log(Y_i) + \alpha 2 \log(Y_j) + \alpha 3 \log(D_{ij})$$

- Where a1 and a2 are >0 and a3 <0

But external trade is not influenced only by these two factors. Therefore the basic model has been extended by adding other factors including the characteristics of partner countries(control variables) following Luo Xubei (2001), Gbetnkom and Avom (2005), Coulibaly Traore and Diarra (2015), Houeninvo and Sèdédji (2016).

- These control variables are Population, Foreign Direct Investment (FDI), Level of Integration (Common external tariff),Political Stability and Absence of Terrorism

6– Presentation of the model, data sources and sampling (cont..)

$$\log\left(X_{mg\ ijt}\right) = \log(B) + a_1 \log\left(GDP_{it}\right) + a_2 \log\left(D_{ij}\right) + a_3 \log\left(POP_{it}\right) + a_4 \log\left(FDI_{it-2}\right) a_5 Z_{it} + a_6 PS_{it} + \varepsilon_{it}$$

Where

- Yit is the GDP of Country i during the period

- j is country of destination (WAEMU as a block in our case since available data are on flows from each country to the block and not from each country to the other)

- DISTij is the distance between country i and country j (i ≠ j). In our case since WAEMU is considered as a block, it is the total critical trajectory by road from country i to the other WAEMU countries (block j); eg distance from Senegal to other WAEMU countries including coastal ones follows Dakar-Bamako-Ouagadougou axis.

6 – Presentation of the model, data sources and sampling (cont..)

- *POPit is the population of country I in the year t*
- *FDIit-2 is the Foreign Direct Investment of Country I in the year t-2*
- *Zit is the dummy variable for the Common External Tariff during the period t (level of integration)*
- *PSit stands for political stability and absence of terrorism (Governance variable)*
- *ε is the error term*

6 – Presentation of the model, data sources and sampling (cont..)

Expected signs of the variables

Variables	Intercept	GDPit	DISTij	POPit	FDIit	Zit	PSit
Coefficients	b0	a1	a2	a3	a4	a5	a6
Expected signs	+/-	+	-	-/+	+	+	+

Source of data

- WDI, UNCTAD, WAEMU Commission, www.Govindicators.org
- www.levoyageur.net

Sampling

- 119 observations of panel data covering 7 WAEMU member countries over 1996-2012 yearly data

7 – Estimation method and results

- We run fixed effect and random effect of the model under STATA.

- The General Least Squared random effect yields a better quality with a "between" coefficient of determination of 0.84 as opposed to "within" coefficient of determination of 0.43 in fixed effect model.

- After performing the required econometric tests (e.g: Hausman, Breusch and Pagan Lagrangian Multiplier test, Wooldgride autocorrelation test and correcting for heteroscedasticity), the result is summarized in table 1.

7 – Estimation method and results (cont..)

Recapitulation of the results

TABLE 1— SUMMARY OF THE RANDOM EFFECT RESULTS, 1996-2012

	(1)	(2)
	Log (Xmg)	Log (Xmg)
Intercept	30.58	29.23
	(9.04)	(0.34)
Log (GDP)	1.99	1.91
	(0.35)	(0.34)
Log (D)	0.78	0.83
	(0.32)	(0.32)
Log (FDI-2)	0.34	0.35
	(0.09)	(0.09)
Lop (POP)	-3.38	-3.30
	(0.54)	(0.54)
PS	-0.65	-0.65
	(0.12)	(0.12)
Z	0.20	-
	(0.21)	
Observations	111	111
Wald chi2 (6)	382.18	385.10
Prob>chi2	0.00	0.00

Notes: Standard errors are in parenthesis. All variables excepted Common external Tariff are significant at1%. Final model is in Column 2. model;

7 – Estimation method and results (cont..)

- As shown in column 2, in the panel random effects models, all the variables except the Common External Tariff are significant at 1%.
- FDI-2 (with 2 lag years) and GDP have positive effects while population has a negative effect.
- The negative sign of population suggests that Linder hypothesis applies.
- Surprisingly however, political stability and distance have the non-expected and significant signs. It could be either due to a "measurement bias" or that FDI and GDP positive effects outweighed the negative effect of distance and insecurity

7 – Estimation method and results (cont..)

- 1% increase of GDP leads to 1.9% increase in intra-WAEMU Manufactured goods exports
- 1% in the FDI (with 2 lag years) will yield 0.34% increase in intra WAEMU Manufactured exports.
- Those results have strong implications for export of manufactured goods, regional integration and more sustainable jobs within the region

8– Conclusion and policy recommendations

These results call for some policy recommendations including the following:

- Macroeconomic and structural reforms that can lead to an overall increase of GDP and the level of development of WAEMU which will in turn foster intra-WAEMU Manufactured goods exports.

- Reforms aims at attracting FDI in manufactured sector to promote industrialization and more sustainable jobs in the region as it appears in African Development Bank industrialization strategy for Africa (Raise industrial GDP of the Continent by 130% by 2025 so as to more than doubling Africa's overall GDP)

Thank you