

An empirical assessment of the role of trade in services in export diversification in Sub Saharan Africa

Bouraima Sawadogo, Constant Fouopi Djiogap
Idrissa Ouedraogo, Moukaila Mouzamilou Takpara

GTAP 25th Annual Conference on Global Economy Analysis
"Accelerating Economic Transformation, Diversification and Job Creation"

June 08, 2022



Outline

Background and Problem

Objective

Methodology

Results

Conclusion and Policy Recommendations

Background and Problem (1/7)

- Economic diversification, an important source of resilience to external macroeconomic shocks and development for low-income countries (Berthélemy, 2005; Caselli et al., 2015)
- Diversification is a source of economic growth, structural transformation, and sustainable development (Freire, 2019).
- Economic diversification means an economy's productive structure is dispersed into a large number of activities that differ from one another like goods and services produced (Berthelemy, 2005).

Background and Problem (2/7)

- Export diversification is still relevant in SSA, especially in a context where exports are still dominated by commodities, and is a priority on national, regional and international development agendas (Agenda 2063, SDG).
- Despite the downward trend in the export concentration index in SSA in recent years, the level is still high compared to other regions. Indeed, over the period 1996-2020, SSA has an average concentration index level of 0.466 meanwhile it is less than 0.1 in eastern and southern Asia, in Northern America and in Western Europe.

Background and Problem (3/7)

- The world economy is increasingly characterized as a service economy that takes an important proportion in international trade.
- Services are almost invisible in the exploration of the determinants of economic diversification (UNCTAD, 2020; WTO, 2020).
- The WTO's 2019 report that services are now the largest and most dynamic component of both developed and developing country economies (accounting for more than 60% of global output and employment, although about 20% of total trade).
- The share of developing economies in world trade in commercial services was 34% in 2017 (WTO, 2018).

Background and Problem (4/7)

- **Definition of Trade in services**

- Breinlich et Criscuolo (2011)

TiS as transactions in services between residents and non-residents of an economy

- GATS (1994) classified TiS according to the mode of supply :

Mode of supply (GATS)

- 1 Cross-border supply
- 2 Abroad consumption
- 3 Commercial presence
- 4 Presence of natural persons

- Catteneo et al. (2010), Su et al. (2020)

With reference to the GATS, define trade in services as all transactions in basic services including mainly communications, financial intermediation, and transportation, while trade in non-basic services includes most other categories of services.

Background and Problem (5/7)

The gap in the literature on export diversification and trade in services

- Empirical and analytical studies on diversification have long focused on the structure and dynamics of trade of tangible goods.
- Empirical findings (Agosin et al., 2012; Cadot et al., 2011; Elhiraika & Mbate, 2014; Fosu & Abass, 2019) show that diversification is determined by various factors that influence the long-term behaviour of the export structure of a country or region.

Background and Problem (6/7)

- The premises of the theoretical foundations on the contribution of services to real activity (Smith, 1776; Baumol, 1967; Fuchs, 1968)
- As Francois and Hoekman (2010) fingered out, the majority of research on services focuses more on liberalization in the services sector as well as the literature gives credit to trade and FDI in services. Meanwhile studies on the contributions of international services flows to world output and export patterns are even less visible

Background and Problem (7/7)

Contribution to literature

- The study intervenes in the context where there is a need of empirical investigation on the relationship between trade in services dynamism and exports diversification in SSA.
- We study the effect of the dimensions of trade in services on export diversification. This allows us to have an holistic and specific views of contribution of trade in services in to export diversification.
- We also highlight the role of tourism sector in to the export diversification in SSA.

Objective

The objective of the paper is to identify the dimensions of trade in services that promote exports diversification in SSA

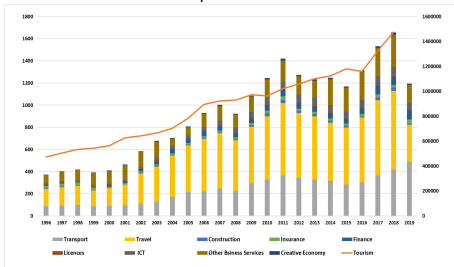
Methodology (1/4)

Data and sources

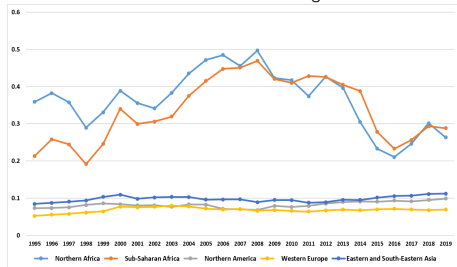
- We used secondary data collected from some data bases :
 - ① World Development Indicator (WDI) (2021)
 - ② Pen World Table (PWT)(2021)
 - ③ UNCTAD database (2021)
- Data are unbalanced panel data covering 48 SSA countries over the period 1996 - 2020

TiS Trends

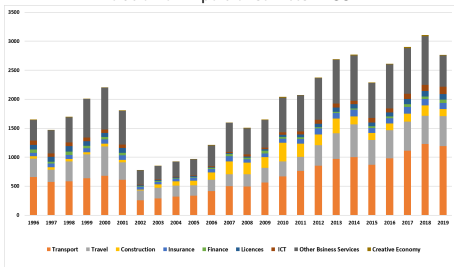
Evolution of export of services in SSA



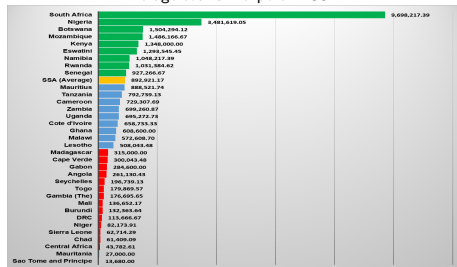
Evolution of HHI in some regions



Evolution of import of services in SSA



Average tourism export in SSA



Source: Authors' construction, data from UNCTAD(2021) and WDI(2021)

Empirical specification 1/2

Export diversification measure

- There are several indices that capture export diversification: warhead index (Attaran & Zwick, 1987; Hammouda & Ben, 2006), the entropy index (Attaran & Zwick, 1987; Berthélemy, 2005), the Herfindahl-Hirschman index (Agosin et al., 2012; Berthélemy, 2005; Hammouda & Ben, 2006), the aggregated specialization index (Berthélemy, 2005; Dadush & al., 2020; Hammouda & Ben, 2006) and the export ubiquity index developed by Hausmann & Hidalgo (2012).
- In this study, we use the normalized Herfindahl-Hirschman index (HHI) to measure the degree of exports concentration
- HHI is preferred because it is both the simplest to program and the most frequently used in the literature on export diversification

$$HHI_j = \frac{\sqrt{\sum_{i=1}^N (\frac{x_{ij}}{x_j})^2} - \sqrt{\frac{1}{N}}}{1 - \sqrt{\frac{1}{N}}} \quad (1)$$

Empirical specification 2/2

Model specification

- In this empirical exercise, we estimate the following equation: Agosin et al. (2012) ; Berthélemy (2005) ; Elhiraika & Mbate (2014) ; Fosu & Abass (2019) ; Hammouda & Ben (2006) ; Hausmann & Hidalgo (2012) ; Hausmann & Rodrik (2003) et de Imbs & Wacziarg (2003)

$$EXCOM_{it} = \lambda_0 + \lambda_1 EXCOM_{it-1} + \lambda_2 TS_{it} + \lambda_j \sum X_{it} + \eta_t + \mu_i + \varepsilon_{it} \quad (2)$$

Estimation strategy

- We have a panel of 48 countries that is covered over 25 years (1996 - 2020). Thus, the number of countries (N) is greater than the number of years (T). We can use OLS with FE or RE but their use can generate biases results (Heterocedasticity and auto-correlation).
- Therefore, GMM method is used for several reasons:
- Roodman (2009) explains that GMM in difference (Arellano & Bond, 1991) and GMM in system (Arellano & Bover, 1995) are suitable general estimators for these cases.
- It is established empirically and theoretically (Caselli et al., 2015; Gnangnon, 2020, Elhiraika and Mbate, 2014; Fosu and Abass, 2019), a phenomenon of endogeneity exists between trade openness, endowment in natural resources, trade in services and diversification.
- The fact that finding instruments is not an easy task, we use the lag of interest variable to solve the issue of endogeneity,
- The dynamic character of the dependent variable explains also the use of GMM

Results (1/3)

Effects of trade in services on export diversification

Positive effect and significant

- 1 Services total export
- 2 Transport services export
- 3 Travel services export
- 4 Insurance services export
- 5 Financial services export
- 6 Use of licenses and intellectual property export
- 7 Business services export
- 8 Tourism export

Positive effect and non significant

- 1 Construction services
- 2 ICT Services
- 3 Creative economy

Results (2/3)

VARIABLES	Dependent variable: Herfindahl-Hirschman Index (HHI)											
	(1)	Total export	Transport	Travel	Construction	Insurance	Finance	Licences	ICT	Business services	Creative services	Tourism
LHHI	0.528*** (0.0816)	0.649*** (0.0969)	0.519*** (0.0993)	0.581*** (0.0684)	0.745*** (0.0863)	0.595*** (0.0959)	0.640*** (0.0811)	0.628*** (0.128)	0.576*** (0.0769)	0.614*** (0.129)	0.429** (0.192)	0.582*** (0.0883)
POLSTAB	0.0226 (0.0165)	0.0201 (0.0199)	0.0109 (0.0228)	0.0166 (0.0160)	0.0187* (0.0109)	0.0205 (0.0139)	-0.0125 (0.0148)	0.00355 (0.0170)	0.00593 (0.0186)	-0.00378 (0.0164)	0.0398* (0.0235)	0.0222 (0.0186)
HC	-0.0303 (0.0385)	0.0446 (0.0528)	0.00549 (0.0418)	-0.0183 (0.0335)	-0.0180 (0.0353)	-0.00134 (0.0377)	-0.0255 (0.0430)	-0.0122 (0.0501)	-0.0394 (0.0372)	-0.0380 (0.0296)	-0.0766 (0.0842)	0.0190 (0.0468)
INFLATION	-9.48e-05*** (2.62e-05)	-0.000182* (0.000109)	-0.000144* (8.61e-05)	-0.000147*** (4.82e-05)	0.00111 (0.000695)	4.97e-05 (0.000118)	-0.000121*** (2.23e-05)	0.000126 (0.000102)	-9.87e-05*** (3.22e-05)	-5.85e-05 (3.84e-05)	0.000600 (0.000731)	-0.000133** (5.42e-05)
LMERCHTRADE	-0.0547 (0.0516)	-0.268** (0.108)	-0.123 (0.116)	-0.0628 (0.0682)	-0.0482 (0.0394)	-0.0900* (0.0496)	-0.00562 (0.0305)	0.0537 (0.0396)	0.00807 (0.0526)	0.0565 (0.0628)	-0.247* (0.135)	-0.121* (0.0693)
NATURALRESOUR	0.00713** (0.00299)	0.00359 (0.00277)	0.00449* (0.00238)	0.00413** (0.00182)	0.00226 (0.00150)	0.0072*** (0.00232)	0.000679 (0.00234)	0.00181 (0.00124)	0.00237 (0.00193)	0.00273 (0.00230)	0.00721 (0.00547)	0.00391* (0.00204)
CREDITPRIVATE	-0.00155** (0.000757)	-0.000784 (0.00124)	-0.00143 (0.000883)	-0.00178*** (0.000589)	-0.00126** (0.000577)	-0.00143* (0.000763)	-0.00123* (0.000689)	-0.00161* (0.000863)	-0.00236** (0.00103)	-0.00193** (0.00098)	-0.00111 (0.00122)	-0.00172** (0.000675)
FDI	-0.00158*** (0.000540)	0.000911 (0.00163)	-0.000328 (0.00112)	-0.00168** (0.000692)	-0.000303 (0.00121)	-0.000981 (0.000878)	-0.00178 (0.00118)	-0.000831 (0.00121)	-0.00181* (0.00109)	-0.00225*** (0.000688)	0.00261 (0.00211)	0.00110 (0.00136)
LGDPFA	0.0403*** (0.0135)	0.0989*** (0.0363)	0.0674*** (0.0226)	0.0338*** (0.0173)	0.0535*** (0.00931)	0.0425*** (0.0150)	0.0242 (0.0177)	0.0491*** (0.0260)	0.0344*** (0.0149)	0.0787** (0.0152)	0.0683*** (0.0307)	0.0683*** (0.0223)
Trade in services		-0.0548* (0.0330)	-0.0312** (0.0150)	-0.0118* (0.00712)	-0.00339 (0.0128)	-0.00971* (0.00513)	-0.0139* (0.00835)	-0.0103** (0.00502)	-0.000236 (0.0147)	-0.00682* (0.00390)	-0.00572 (0.0131)	-0.0391* (0.0230)
Constant	0.172 (0.185)	0.744** (0.294)	0.326 (0.366)	0.156 (0.220)	0.102 (0.120)	0.137 (0.164)	-0.0421 (0.146)	-0.187 (0.172)	-0.0904 (0.200)	-0.177 (0.212)	0.729* (0.410)	0.661** (0.316)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	745	721	687	687	330	593	501	356	603	634	352	604
Number of countries, <i>n</i>	37	37	37	37	31	37	33	31	36	37	31	35
No. of instruments, <i>l</i>	25	25	18	35	29	29	31	29	26	32	27	26
Instruments ratio, <i>n/l</i>	1.48	1.48	2.05	1.05	1.06	1.27	1.06	1.06	1.38	1.15	1.37	1.34
AR1 p-value	4.38e-05	0.000313	0.000105	8.69e-05	0.00729	0.000152	0.00560	0.00328	0.00101	0.00301	0.0290	0.000169
AR2 p-value	0.155	0.144	0.147	0.116	0.779	0.331	0.532	0.856	0.826	0.126	0.585	0.364
Hausen p-value	0.670	0.923	0.896	0.507	0.233	0.928	0.627	0.574	0.623	0.748	0.593	0.580

Results (3/3)

Robustness check of results

- we perform additional estimations by changing the dependent variable
- We use the Theil index of export diversification from the International Monetary Fund (IMF) database instead of the UNCTAD HHI index

$$TI_{it} = \delta_0 + \delta_1 TI_{it-1} + \delta_2 TiS_{it} + \delta_j X_{it} + \vartheta_t + \tau_i + \varepsilon_{it} \quad (3)$$

- Our results are robust because the results of the estimates with Theil index confirm our previous results out then making the variables that were not significant to significant except for the ICT services export which remained non significant.

Robustness check of results

VARIABLES	Dependent variable : Theil index										
	Total export	Transport	Travel	Construction	Insurance	Finance	Licences	ICT	Business services	Creative services	Tourism
L.THEIL	0.850*** (0.0782)	0.824*** (0.0968)	0.841*** (0.0810)	0.996*** (0.140)	0.807*** (0.0746)	0.847*** (0.0814)	1.079*** (0.156)	0.937*** (0.0943)	0.770*** (0.0938)	0.775*** (0.192)	0.866*** (0.104)
Political stability	0.103* (0.0621)	0.117 (0.0976)	0.205* (0.107)	0.0884 (0.118)	0.0969 (0.0958)	0.138 (0.209)	0.0349 (0.0914)	0.172* (0.104)	0.141 (0.110)	0.260** (0.132)	0.0691 (0.117)
Human Capital	0.199 (0.206)	0.160 (0.186)	0.151 (0.221)	0.142 (0.110)	0.174 (0.120)	-0.149 (0.207)	0.281 (0.215)	0.371 (0.290)	0.128 (0.180)	0.280 (0.219)	0.385 (0.294)
Inflation	-0.000206 (0.000215)	-0.000230 (0.000181)	-0.000249 (0.000295)	0.00411 (0.00646)	-0.000218 (0.000967)	0.000291 (0.000257)	0.000178 (0.000857)	-0.000654* (0.000378)	4.21e-05 (0.000272)	-0.00273 (0.00433)	-0.000271 (0.000278)
Trade Openness (merchandises)	-0.332 (0.458)	-0.0367 (0.276)	-0.240 (0.347)	0.0430 (0.585)	-0.168 (0.324)	0.315 (0.427)	-0.756* (0.395)	-1.065* (0.619)	-0.313 (0.473)	-0.0297 (1.014)	-0.390 (0.527)
Natural resources	0.0227** (0.0113)	0.0281** (0.0135)	0.0314* (0.0181)	0.00576 (0.0258)	0.0236** (0.0113)	0.0562 (0.0415)	0.0177 (0.0182)	0.0224 (0.0176)	0.0229 (0.0152)	0.0561 (0.0403)	-0.00193 (0.0208)
Credit to private sector	0.00260 (0.00445)	0.00376 (0.00552)	0.00185 (0.00381)	-0.00120 (0.00287)	-0.00240 (0.00240)	-0.00210 (0.00390)	0.000904 (0.00458)	0.000748 (0.00789)	-0.00288 (0.00443)	0.00500 (0.00519)	-0.00257 (0.00533)
FDI	-0.00106 (0.00494)	-0.00232 (0.00397)	-0.00404 (0.00409)	-0.0122 (0.0143)	0.000206 (0.00582)	-0.0191* (0.0114)	0.0105 (0.0125)	0.0146 (0.0109)	-0.00195 (0.00516)	-0.00586 (0.0147)	0.00866 (0.0137)
Log GDP per Capita	0.147 (0.165)	0.0533 (0.0963)	0.109 (0.139)	0.0333 (0.127)	0.149** (0.0723)	0.219* (0.132)	0.169 (0.156)	0.152 (0.162)	0.155* (0.0852)	-0.0970 (0.276)	0.217 (0.182)
Log Total services export	-0.201* (0.110)	-0.174** (0.0800)	-0.136* (0.0774)	-0.0744* (0.0404)	-0.116** (0.0575)	-0.110** (0.0553)	-0.0572** (0.0229)	-0.0722 (0.112)	-0.134* (0.0810)	-0.0801* (0.0453)	-0.285* (0.171)
Constant	1.527 (1.065)	0.633 (0.594)	0.996 (0.678)	-0.516 (1.209)	0.102 (0.976)	-1.949 (1.221)	0.814 (0.926)	2.738* (1.450)	1.237 (1.185)	0.626 (1.946)	3.711 (2.279)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	553	526	524	243	448	362	258	446	479	251	465
Number of countries, <i>n</i>	37	37	37	26	36	30	26	34	36	28	34
No. of instruments, <i>i</i>	29	31	35	20	30	29	19	31	35	21	30
Instruments ratio, <i>n/i</i>	1.27	1.19	1.05	1.3	1.2	1.03	1.36	1.09	1.02	1.33	1.13
AR1 p-value	0.0120	0.00925	0.00874	0.0948	0.0239	0.0210	0.0130	0.0429	0.0127	0.0914	0.0268
AR2 p-value	0.191	0.159	0.146	0.225	0.633	0.702	0.170	0.600	0.168	0.499	0.190
Hansen p-value	0.324	0.671	0.617	0.383	0.596	0.954	0.485	0.755	0.496	0.655	0.750

Conclusion and Policy Recommendation (1/2)

- The analysis of the theoretical foundations of the relationship between trade in services through its different components and export diversification led us to resort to empirical method to identify the dimensions of trade in services that promote diversification.
- The GMM in system is used as an estimation method.
- Econometrically, all our instruments are validated according to Hansen's instrument over-indexing test. The results obtained corroborate the economic theory.
- The results show that total export of services, export of transport, travel, insurance, financial, license and creative economy services and tourism promote export diversification in SSA.

Conclusion and Policy Recommendation (2/2)

Based on these findings, it is important for SSA countries to:

- Adopt policies and strategies to drain the development of services economy to high-skilled services with a strong contribution to diversification.
- Strengthen national strategies for the development and modernization of the tourism sector as a lever manufacturing sector development and economic diversification.

Final Words

THANKS FOR YOUR ATTENTION!