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# Impact of South-South integration on the export upgrading of African economies

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# Outline

- Introduction: Export upgrading and growth;
- External flows and export upgrading;
- Model design and empirical analysis;
- Results
- Discussion



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# Export upgrading and Growth

- Large literature on trade and economic growth:
  - Export diversification and structural transformation (Lall et al., 2006; UNIDO, 2009; OECD, 2013);
  - Export upgrading, the product space and growth (Hausmann et al., 2007; Hidalgo et al., 2007);
  - Positive impact of export diversification on productivity and value added (Songwe and Winkler, 2012; McMillan and Rodrik, 2011)
- But common findings for Africa:
  - The continent with the lowest rates of diversification (Amurgo-Pacheco and Pierola, 2008);
  - Export few products “at the periphery of the product space” (Hidalgo et al., 2007) and is “stuck in a ‘low-product’ trap” (Abdon and Felipe, 2011).



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# Trade and Export upgrading

- Traditionally, openness to trade is considered a channel for knowledge transfer (Romer, 1994):
  - Since it guarantees easier access to inputs and machineries (Grossman and Helpman, 1991) and imported goods foster learning opportunities and imitation (Frenken et al., 2007);
  - Forward linkages can favour incremental innovation, as the production process is standardized to low-wage settings (Puga and Trefler, 2010)
  - The origin of the imported good matters:
    - despite more distant technologies are less easily absorbed (Greenaway and Milner, 1990), evidence show that trading with the North results in stronger spillovers than trading with the South (Schiff and Wang, 2006)



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# FDI and Export upgrading

- Large literature on the developmental impact of FDI, including on export performance:
  - FDI bring new “ideas” and best practices to start new activities (Moran, 2010);
  - MNEs may engage in the production of new and more sophisticated goods (Crespo and Fontoura, 2007; Harding and Javorcik, 2010);
- However, the nature of the investment matters for its spillover potential (Morrisey, 2012):
  - South-South FDI provide goods and services that are more accessible to other developing countries (Lipsey and Sjöholm, 2011);
  - Similarly, they can more easily build-up networks and promote forward and backward linkages with domestic firms, providing at the same time more effective technological spillovers due to a smaller “technology gap” (Gelb, 2005);
  - Especially if accompanied by improvements in infrastructures (Mlachila and Takebe, 2011)



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# Empirical analysis

- We estimate the impact of external flows from different sources ('North' and 'South') on two different measures of export performance:
  - An index of **export diversification** (at the extensive margin), calculated as the inverse of the Herfindal index computed as the square of the 2-digit sectoral share of each 6-digit product exported;
  - The **unit value of exports** computed as a weighted average, the weights being the market shares of each 6-digit product  $p$  for any market  $j$  where country  $i$  has a positive flow



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# Explanatory variables

Variable	Expected sign	Source
GDP_PC	+	WDI
XRATE	+	IMF
INV_GDP	+	WDI
INFL	-	WDI
RES	-	UNCTAD
ToT	-	UNCTAD
POL_STAB	-	WGI
LLOCK	-	CEPII
M=M_North+M_South	+	CEPII
FDI=FDI_North+FDI_South	+	FDIMarkets



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# Empirical strategy

1. In our basic model we consider export diversification as a function of its lagged levels (Osakwe, 2007; Agosin et al., 2012):
  - This prevents the adoption of methodologies that do not account for the so-called dynamic panel bias. So, we run a GMM estimator based on Arellano and Bond (1991)
2. We employ a quantile regression approach to examine our relation by simultaneously minimizing the sum of the squared deviation of the dependent variable series from the respective mean of the deciles of the serie;
3. To estimate unit values, we include country-products fixed effects to take into account for any time invariant characteristic that may affect the unit values as well as to account for unobserved factors that may influence the relative quality of products



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## Results – Export Diversification (Summary)

- Path dependent, but less than in other studies (Agosin et al, 2012) and more within the primary sector;
- More developed countries are more diversified, especially in manufacturing (Cabral and Veiga, 2010);
- A depreciation favours more firms to export and diversification (Melitz, 2003), especially in the manufacturing (OECD, 2013);
- Domestic investments discourage diversification since they are inefficiently allocated;
- Politically stable countries are more likely to diversify (Osakwe, 2007; OECD, 2013), the relation being not significant only for mining;
- Countries with high dependence on natural resources diversify less (Sachs and Warner, 1999), especially in manufacturing.



## Results – Export Diversification

ED	All sectors	Agriculture	Mining	Manufacturing	Services
LED	0.153*** (0.0363)	0.286*** (0.0738)	0.361*** (0.0614)	0.154*** (0.0342)	0.145** (0.0626)
GDP_PC	0.240*** (0.0827)	-0.0922 (0.0615)	-0.0402 (0.0562)	0.201*** (0.0713)	-0.0774 (0.0796)
XRATe	6.46e-05*** (2.33e-05)	-7.16e-06 (1.89e-05)	1.71e-05 (2.94e-05)	5.08e-05** (1.99e-05)	2.01e-05 (3.02e-05)
INV_GDP	-0.0141*** (0.00481)	-0.00591 (0.00492)	0.00540 (0.00579)	-0.0152*** (0.00405)	-0.0116* (0.00682)
POL_STAB	0.291*** (0.0907)	0.384*** (0.105)	0.0819 (0.0710)	0.382*** (0.0801)	0.388*** (0.112)
IFL	-0.0119* (0.00693)	0.00840* (0.00488)	-0.00408 (0.00445)	-0.0111** (0.00565)	-0.0105* (0.00544)
LLOCK	0.124 (0.175)	-0.0866 (0.140)	-0.404** (0.158)	0.0732 (0.153)	0.0482 (0.138)
ToT	-0.000336 (0.00103)	0.00307** (0.00122)	0.00272** (0.00127)	0.000443 (0.00101)	-0.00269** (0.00136)
RES	-0.958***	-0.293	-0.0661	-0.925***	0.624**
M_North	0.00229 (0.0392)	0.0120 (0.0178)	-0.0273 (0.0231)	0.00511 (0.0304)	0.0131 (0.0151)
M_South	0.142*** (0.0404)	0.0270 (0.0171)	-0.0121 (0.0201)	0.112*** (0.0316)	0.0119 (0.0235)
FDI_North	0.0154 (0.0198)		0.0163 (0.0197)	0.0423* (0.0223)	-0.00308 (0.00707)
FDI_South	-0.0205 (0.0662)		0.0656 (0.0759)	0.00981 (0.0826)	0.0912 (0.094)
	(0.583)	(0.469)	(0.422)	(0.515)	(0.553)
Observations	9,980	983	910	7,498	589
Number of panel	1,570	150	164	1,137	119
Time effects	Yes	Yes	Yes	Yes	Yes
hansenp	0.591	0.771	0.325	0.258	0.128
ar2p	0.364	0.836	0.819	0.271	0.0742
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					



# Results – Export Diversification (Manufacturing)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ED	Man. of agricultural products (ISIC 15-16)	Textiles, apparel, leather (ISIC 17-19)	Wood, paper, printing (ISIC 20-22)	Man. of natural resources (ISIC 23-28)	Machinery & equipment (ISIC 29-33)	Motor vehicles and transport eq. (ISIC 34-35)	Low-tech industries	Medium-Low tech industries	Medium-High tech industries	High tech industries
<b>M_North</b>	0.0168 (0.0197)	-0.0308 (0.0361)	-0.0593 (0.0361)	0.0357* (0.0203)	0.0181 (0.0280)	0.0213 (0.0282)	0.00940 (0.0379)	0.0306 (0.0221)	0.00120 (0.0250)	0.00104 (0.0249)
<b>M_South</b>	0.0135 (0.0164)	0.0153 (0.0292)	0.0517* (0.0273)	0.0118 (0.0244)	0.0530* (0.0311)	0.0561** (0.0284)	0.0568** (0.0226)	0.0301 (0.0249)	0.0652 (0.0413)	0.0379 (0.0344)
<b>FDI_North</b>	0.0851*** (0.0226)	0.0899 (0.0317)	0.0409 (0.189)	0.0772* (0.0412)	0.0246 (0.0338)	0.0246 (0.0199)	0.0496 (0.0478)	0.0976* (0.0520)	0.0208 (0.0150)	0.440 (0.378)
<b>FDI_South</b>	0.189*** (0.0686)	1.032*** (0.243)	-0.499 (1.833)	0.199 (0.156)	0.0348 (0.230)	0.0175 (0.0705)	0.264*** (0.0974)	0.214 (0.172)	0.00705 (0.0627)	
<b>Constant</b>	1.556*** (0.476)	0.0761 (0.718)	1.193*** (0.633)	1.458*** (0.525)	1.035* (0.624)	1.522* (0.847)	1.504*** (0.441)	1.087** (0.550)	1.596* (0.873)	1.327** (0.625)
<b>Observations</b>	579	1,008	993	2,001	1,690	673	3,134	1,663	1,687	1,014
<b>Number of panel</b>	93	150	150	300	250	100	487	250	250	150
<b>Time effects</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>hansenp</b>	0.192	0.893	0.884	0.148	0.729	0.354	0.0725	0.268	0.115	0.585
<b>ar2p</b>	0.737	0.236	0.362	0.167	0.821	0.760	0.0467	0.508	0.682	0.551
<b>Standard errors in parentheses</b>										
*** p<0.01, ** p<0.05, * p<0.1										

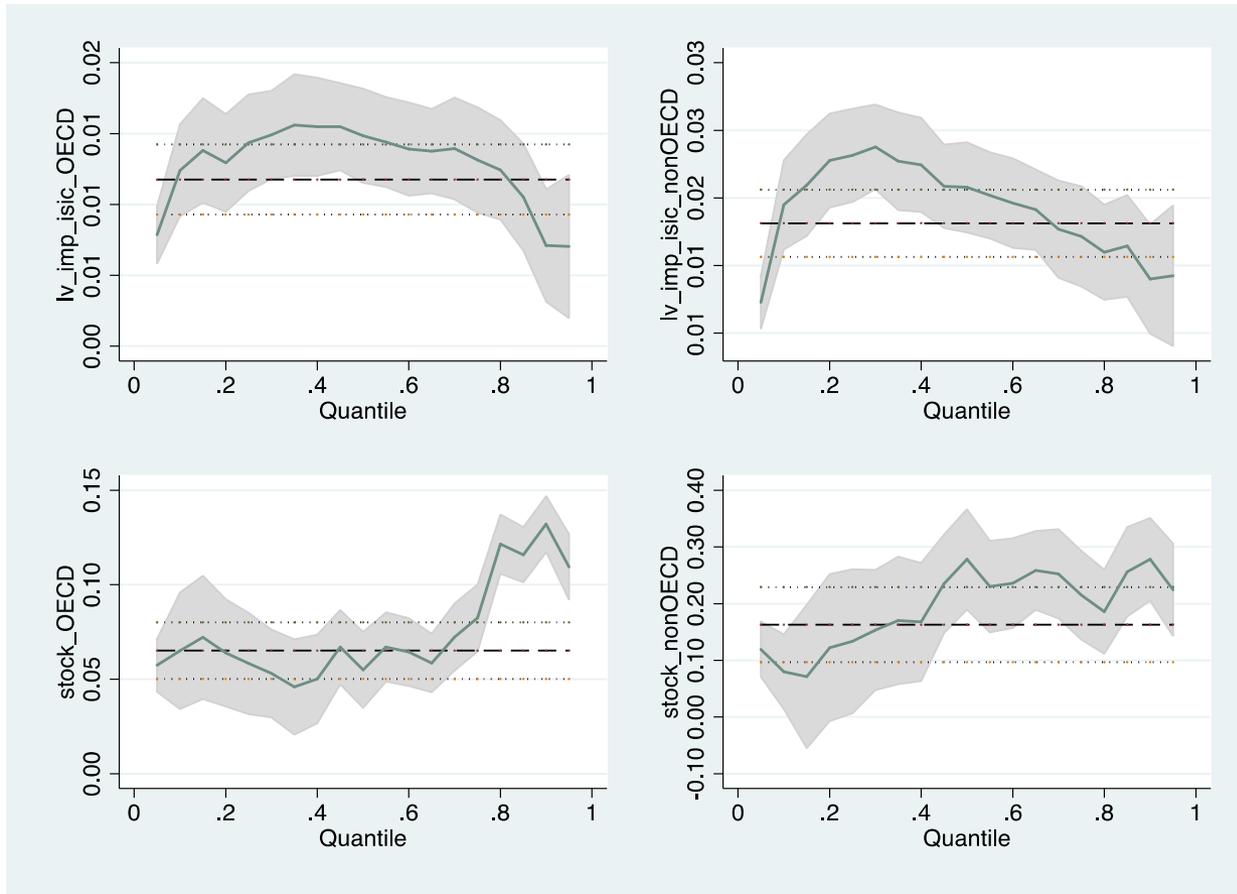


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## Results – Export Diversification (Quantile)





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## Results – Export Unit Values

UV	All sectors	Agriculture	Mining	Manufacturing	Services
<b>GDP_PC</b>	1.243*** (0.0222)	1.100*** (0.0829)	1.194*** (0.237)	1.237*** (0.0256)	4.325*** (0.685)
<b>XRATE</b>	1.51e-05 (1.05e-05)	-2.94e-05 (3.26e-05)	0.000174 (0.000117)	1.48e-05 (1.13e-05)	0.000214 (0.000313)
<b>INV_GDP</b>	0.00553*** (0.000651)	0.00874*** (0.00229)	0.0112 (0.00687)	0.00713*** (0.000747)	0.0593*** (0.0208)
<b>POL_STAB</b>	-0.0556*** (0.0191)	-0.143** (0.0687)	0.196 (0.197)	-0.0905*** (0.0218)	-0.925* (0.528)
<b>INFL</b>	0.00214*** (0.000484)	-0.00112 (0.00179)	-0.00122 (0.00458)	0.00349*** (0.000527)	0.0235* (0.0136)
<b>ToT</b>	0.00127*** (0.000149)	0.00168*** (0.000549)	0.00541*** (0.00142)	0.00148*** (0.000165)	0.0107*** (0.00403)
<b>RES</b>	-0.0197 (0.0376)	0.225 (0.159)	0.149 (0.420)	0.0257 (0.0440)	0.518 (1.004)
<b>M_North</b>	0.00983*** (0.00157)	0.0117* (0.00663)	0.00842 (0.0183)	0.0188*** (0.00229)	-0.00999 (0.0409)
<b>M_South</b>	0.00157* (0.000831)	-0.00251 (0.00241)	0.00178 (0.00642)	0.00171* (0.00101)	-0.00596 (0.0187)
<b>FDI_North</b>	-0.00334 (0.00207)		-0.0364 (0.0338)	-0.00520** (0.00214)	-0.0268 (0.0265)
<b>FDI_South</b>	0.0184** (0.00767)		0.0687 (0.110)	0.0147* (0.00783)	0.138 (0.232)
<b>Constant</b>	-0.129 (0.162)	-0.327 (0.594)	-10.40 (1.710)	-0.071 (0.185)	-39.39 (4.912)
<b>Observations</b>	544,399	29,854	7,118	412,566	1,763
<b>R-squared</b>	0.723	0.646	0.710	0.652	0.501
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					



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## Discussion

- We find that greater South-South integration can contribute more to African countries' export upgrading strategies compared to North-South. In particular:
  - Imports from Southern countries are important to introduce new higher-technology intensive goods in low diversified contexts;
  - FDI from the South foster diversification of strategic low-tech industries (such as the processing of agricultural products and the textiles-apparel sector), when at an advanced stage of diversification, and a small product upgrading in the manufacturing;
  - FDI from the North push the diversification of primary goods industries, but have no impact on product upgrading;
  - Importing from the North, on the other hand, push up productive capacities in higher-tech and more capital intensive sectors.



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## Discussion

- We show that if export upgrading can be related to higher productive capacities, external flows matter for Africa according to:
  - The origin of the partner country;
  - The type of external flow;
  - The dimension of export upgrading;
  - The stage of diversification.
- External flow can stimulate the process of industrialization and structural transformation in Africa favouring the rise of newer and more productive activities and moving resources from traditional to more advanced ones;
- As FDI are concerned, we show that recent improvements experienced by some African economies can not only be partially explained by the foreign ownership of firms (as in Harrison et al., 2013), but that the origin of the investment matters