Global Exposure of African Economies: Evidence from the African Continental Input–Output Table and Trade in Value Added Indicators

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Main message

Why AfCIOT matters

Trade exposure is not only about what crosses a border directly. It is also about the value added, inputs, sectors, and partners embedded in production and final demand.

- AfCIOT links African countries and their industries, inputs, demand, imports, exports, and value added in one accounting framework.
- It reveals indirect exposure channels that gross trade and macro indicators cannot identify.
- It provides a 2020 baseline for AfCFTA monitoring and value-chain policy.

Motivation and contribution

Exposure beyond direct trade

- Commodity dependence such as reliance on oil, minerals, or a few crop exports.
- Direct trade statistics miss third-country value-added channels.
- Exposure comes as the channel through which a shock can arrive; vulnerability depends on diversification.

This paper assesses

- hidden foreign dependency;
- DVA and FVA in exports;
- partner concentration;
- sector concentration;
- intra-African value-chain linkages.

Data and indicator system

AfCIOT database

- 2020 current-US-dollar input-output framework.
- Current coverage: 25 African countries individually represented, with active expansion ongoing.
- Paper baseline: 22 African countries available when the draft was prepared.
- 67 non-African countries plus Rest of World aggregate.

TiVA outputs

- 52 AfCIOT-derived TiVA indicators for exposure and value-chain analysis.
- Disaggregation by sector, partner, or both.
- Built from national SUTs, national accounts, trade data, and OECD ICIO references.

What traditional approaches miss

Conventional indicators: first layer

- Direct trade shares show immediate import suppliers and export markets.
- Commodity dependence shows reliance on a narrow set of primary exports.
- Critical-import lists identify direct dependence on products such as food, fuel, or fertiliser.

AfCIOT adds embedded channels

- FVA in domestic final demand shows how much foreign production is ultimately absorbed.
- Imported-input use identifies the domestic sectors relying on foreign intermediate goods and services.
- Partner and sector concentration shows if value-added exposure depends on a few countries or industries.

Hidden dependency: FVA can exceed direct final imports

Aggregate result: 22-country baseline, 2020

- Direct final imports (`IMGR_FNL`): **USD 220.8 billion**.
- FVA in domestic final demand (`DFD_FVA`): **USD 348.2 billion**.
- Ratio: `DFD_FVA/IMGR_FNL` = **1.58**.

Direct final imports understate foreign production embedded in African final demand.

Selected country examples

Country	Final imports	FVA in FD	Ratio
Morocco	14.0	29.0	2.1
Kenya	8.5	16.4	1.9
South Africa	28.0	53.6	1.9
Uganda	4.0	7.2	1.8
Cameroon	4.0	6.9	1.7
Tunisia	9.1	15.4	1.7
Egypt	44.9	67.2	1.5
Nigeria	50.1	66.9	1.3

Source: Authors' calculations from AfCIOT base table and TiVA indicators. USD billions except ratio.

Indicator/calculation: `IMGR_FNL` gives direct final imports; `DFD_FVA` gives foreign value added embodied in domestic final demand.

Sectoral transmission chains: imported inputs

Imported petroleum inputs

Receiving sector	USD bn
Coke/refined petroleum products	5.5
Land transport and pipelines	3.8
Electricity, gas and steam	3.7
Construction	1.5
Wholesale and retail trade	1.3
Food/beverages/tobacco	1.1
Agriculture, forestry and fishing	1.0

Imported chemical inputs

Measure or receiving sector	USD bn
All receiving sectors	15.0
Agriculture, forestry and fishing	2.1
Food/beverages/tobacco	0.7

Source: Authors' calculations based on AfCIOT base table.

Indicator/calculation: Not TiVA indicators: sums of imported intermediate-use flows, with supplier country different from receiving country. Petroleum source industries are D05T06+D19; chemical source industry is D20.

Policy implication: imported-input exposure

What the sectoral evidence means

- Imported petroleum inputs are used not only by refined petroleum activities, but also by transport, electricity, construction, trade, food processing, and agriculture.
- A fuel price or supply shock can therefore move through production costs before it appears in aggregate inflation or trade balances.
- Imported chemical inputs are especially relevant for agriculture and food processing, so chemical or fertiliser shocks can affect food production and household welfare.
- The policy response should identify exposed sectors and input chains, not only monitor aggregate import values or consumer prices.

Indicator/calculation: Interpretation based on AfCIOT imported intermediate-use flows shown in the previous slide.

Regional value-chain exposure before AfCFTA

Sample averages: 22-country baseline

- DVA in exports absorbed by African partners: **6.7%**.
- FVA in domestic final demand from African partners: **4.7%**.
- Imported intermediate inputs sourced from African partners: **6.7%**.

Selected countries

Country	DVA exports to Africa	FVA final demand from Africa	Imported inputs from Africa
Mali	45.2%	19.9%	23.0%
Niger	35.9%	8.8%	17.5%
Senegal	15.2%	9.7%	13.9%
Burkina Faso	4.9%	12.8%	15.7%
Chad	3.5%	10.1%	12.1%
Mauritania	6.1%	4.4%	4.8%

Indicator/calculation: `AFR_DVA_SH` from `EXGR_DVA`; `AFR_DFD_FVA_SH` from `DFD_FVA`; `AFR_IMGR_INT_SH` from `IMGR_INT`.

Interpretation

On average, the covered countries were more exposed to extra-African than intra-African value chains. Regional channels were important for some countries listed.

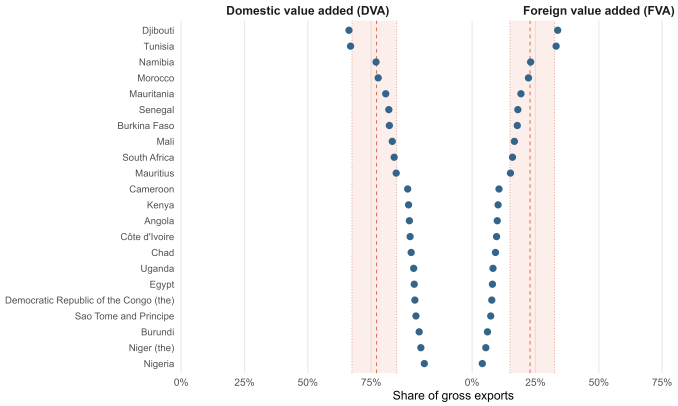
Source: Authors' calculations from AfCIOT base table and TiVA indicators.

Export value-added profile

Median shares

Group	DVA	FVA
Africa	89.6%	10.4%
Non-Africa	77.2%	22.8%

High domestic content does not automatically mean lower exposure: it can signal dependence on foreign demand or a narrow sector base.



Source: Authors' calculations from AfCIOT base table and TiVA indicators.
Indicator/calculation: `EXGR_DVASH` and `EXGR_FVASH`; non-African benchmark excludes ROW.

Export scale: where exposure is economically large

Key message

Composition identifies the type of exposure; export scale identifies where exposure is economically larger in dollar terms.

- South Africa had the largest export scale.
- Egypt and Nigeria combined large exports with high DVA levels.
- Morocco and Tunisia had larger external content than many higher-DVA economies.

Country	Gross exports	DVA	External
South Africa	84.7	71.2	13.5
Egypt	39.2	36.0	3.2
Nigeria	38.2	36.7	1.5
Morocco	26.1	20.3	5.8
Angola	20.9	18.8	2.1
Tunisia	16.3	10.9	5.4
DRC	13.8	12.7	1.1
Cote d'Ivoire	10.9	9.8	1.1
Kenya	8.2	7.3	0.9
Burkina Faso	5.4	4.5	0.9

Source: Authors' calculations. USD billions.
Indicator/calculation: TiVA indicators: `EXGR` and `EXGR_DVA`. External content shown here is `EXGR-EXGR_DVA`.

Partner concentration is a central exposure channel

How to read the numbers

For each country, partners are ranked by their share in that country's export-related value-added channel. The slide reports the median country in the African sample.

DVA destination concentration

41.7%

Median African country: share of domestic value added in exports absorbed by its top three identifiable destination partners

FVA source concentration

35.9%

Median African country: share of foreign value added in exports originating from its top three identifiable source partners

DVA destinations show market exposure: where African value added is sold. FVA source partners show upstream supplier exposure: where the imported value embedded in exports comes from.

Indicator/calculation: Partner concentration: top-three identifiable partner shares, excluding ROW, from `EXGR_DVA` and `EXGR_BSCI`.

Industry concentration is a central exposure channel

How to read the numbers

For each country, exporting industries are ranked by their contribution to that country's export-related value added. The slide reports the median country in the African sample.

Leading DVA industry

33.8%

Median African country: share of domestic value added in exports generated by its largest exporting industry

Leading FVA industry

29.1%

Median African country: share of foreign value added in exports embodied through its largest exporting industry

A country can have high domestic value-added content and still be exposed if that value is concentrated in one extractive, agricultural, or service activity.

Indicator/calculation: Industry concentration: leading-industry shares from `EXGR_DVA` and `EXGR_FVA`.

Imported intermediates embodied in exports: aggregate result

What REII measures

`REII` measures imported intermediate inputs that are used in domestic production and then embodied in exports. It is not pure re-exporting; it captures export production that depends partly on foreign inputs.

Level	Export share	Import-use share
USD 67.2 bn Re-exported imported intermediates	**22.6%** `REII/EXGR`	**39.9%** `REII/IMGRINT`

The result shows that export production in the paper baseline countries depended not only on domestic resources, but also on imported intermediate inputs.

Source: Authors' calculations from AfCIOT base table and TiVA indicators.
Indicator/calculation: TiVA indicators: `REII`, `EXGR`, and `IMGRINT`.

Imported intermediates embodied in exports: selected sectors

Selected high-REII country-sector rows

Country	Sector	USD bn
Nigeria	Mining and energy extraction	9.2
South Africa	Other mining and quarrying	7.4
DRC	Other mining and quarrying	4.7
Angola	Mining and energy extraction	4.6
South Africa	Basic metals	2.8
Burkina Faso	Basic metals	2.3
Mali	Other mining and quarrying	1.5
Morocco	Chemicals	1.2

Source: Authors' calculations. USD billions.

Indicator/calculation: Table rows are selected high-REII country-sector observations, not country totals.

Interpretation

- Large REII values appear in mining, metals, and chemicals.
- Resource exports can still rely on imported machinery, energy-related inputs, service.
- Exposure is therefore also about input supply chains.

AfCFTA readiness: regional export orientation

Regional starting point: 22-country paper baseline

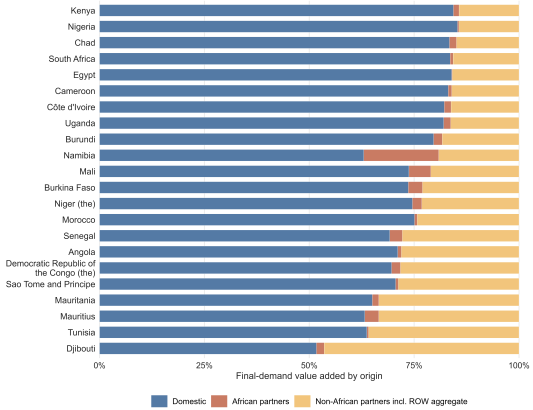
Exports from the paper baseline countries were much more oriented toward extra-African destinations than toward African partners in 2020.

Africa	Asia	Europe
3.9% exports to other AfCIOT African countries	**30.1%** exports to Asian ICIO/AfCIOT countries	**37.5%** exports to European ICIO countries

This means the AfCFTA started from a low intra-African trade base, even before considering deeper value-chain linkages.

Indicator/calculation: `EXGRpSH`, gross-export partner shares aggregated by destination region.

AfCFTA readiness: regional benchmark



Benchmark comparison

- Africa-to-Africa export share: **3.9%**.
- Asia sent **49.7%** of its exports within Asia.
- Europe sent **67.2%** of its exports within Europe.

The comparison highlights how much thinner intra-African export networks were relative to more integrated regions.

Source: Authors' calculations from AfCIOT base table and TiVA indicators.
Indicator/calculation: `EXGRpSH`, gross-export partner shares aggregated by destination region.

Backward linkages were externally anchored

How to read backward linkages

Backward linkages measure foreign value added embodied in a country's gross exports. They show where the imported value used in export production comes from.

Total	African partners	Non-African + ROW
13.4%	**1.5%**	**11.9%**
average FVA in gross exports	African-source FVA component	extra-African and ROW component

Most imported value embodied in exports came from outside the AfCIOT African-country set.

Source: Authors' calculations from AfCIOT base table and TiVA indicators.
Indicator/calculation: `DEXFVApSH`, foreign-value-added source shares in gross exports.

Forward linkages were externally anchored

How to read forward linkages

Forward linkages measure domestic value added from a country that is embodied in other countries' exports. They show whether domestic production feeds regional or extra-regional export chains.

Total	African partners	Non-African + ROW
22.6%	**1.4%**	**21.2%**
average forward participation	domestic VA embodied in African partner exports	domestic VA embodied in extra-African and ROW exports

The pattern suggests that African value added was linked more strongly to extra-African production networks than to continental export chains before AfCFTA implementation.

Source: Authors' calculations from AfCIOT base table and TiVA indicators.

Indicator/calculation: `FEXDVApSH`, domestic value added embodied in partner exports.

Conclusions and policy implications

Main conclusions

- Traditional trade indicators miss indirect channels through sectors, inputs, partners, and value-added chains.
- Lower imported-input reliance did not imply lower exposure: export value added was often concentrated.
- The 2020 baseline shows high domestic value-added content but limited regional integration.

Policy priorities

- Strengthen productive capacity and domestic value addition.
- Deepen regional value chains under AfCFTA.
- Reduce logistics, standards, customs, and payments frictions.
- Utilise AfCIOT to monitor exposure dynamically.

AfCIOT turns exposure analysis from who trades directly with whom into where value is created, embodied, absorbed, and transmitted.