



Quantifying Illicit Financial Flows through trade-mispricing and assessing their incidence on African Economies

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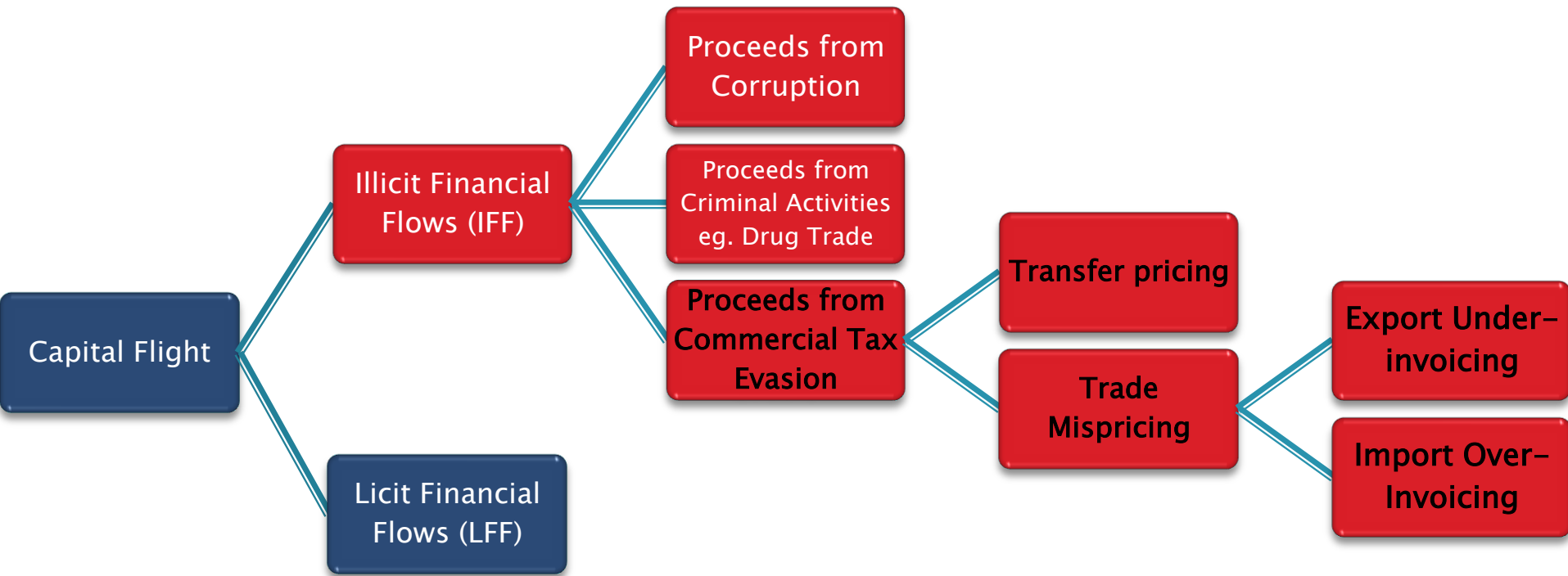
Outline:

1. Concepts and Definitions.
2. Quantifying IFF through trade mispricing (Methodology & Results).
3. Assessing incidence on African economies (Methodology & Results).
4. Conclusions and Policy Implications

1. Concepts and Definitions

- ▶ **Capital Flight** – Generally, capital flight is understood as the movement of funds abroad to secure better returns, often in response to an unfavourable business climate in the country of origin (Kant, 2002).
- ▶ **Illicit Financial Flows** – money that is illegally earned, transferred or used at its origin, or during movement or use, of which the flow of money has broken laws (Baker, 2005; and Kar, 2011).

1. Concepts and Definitions



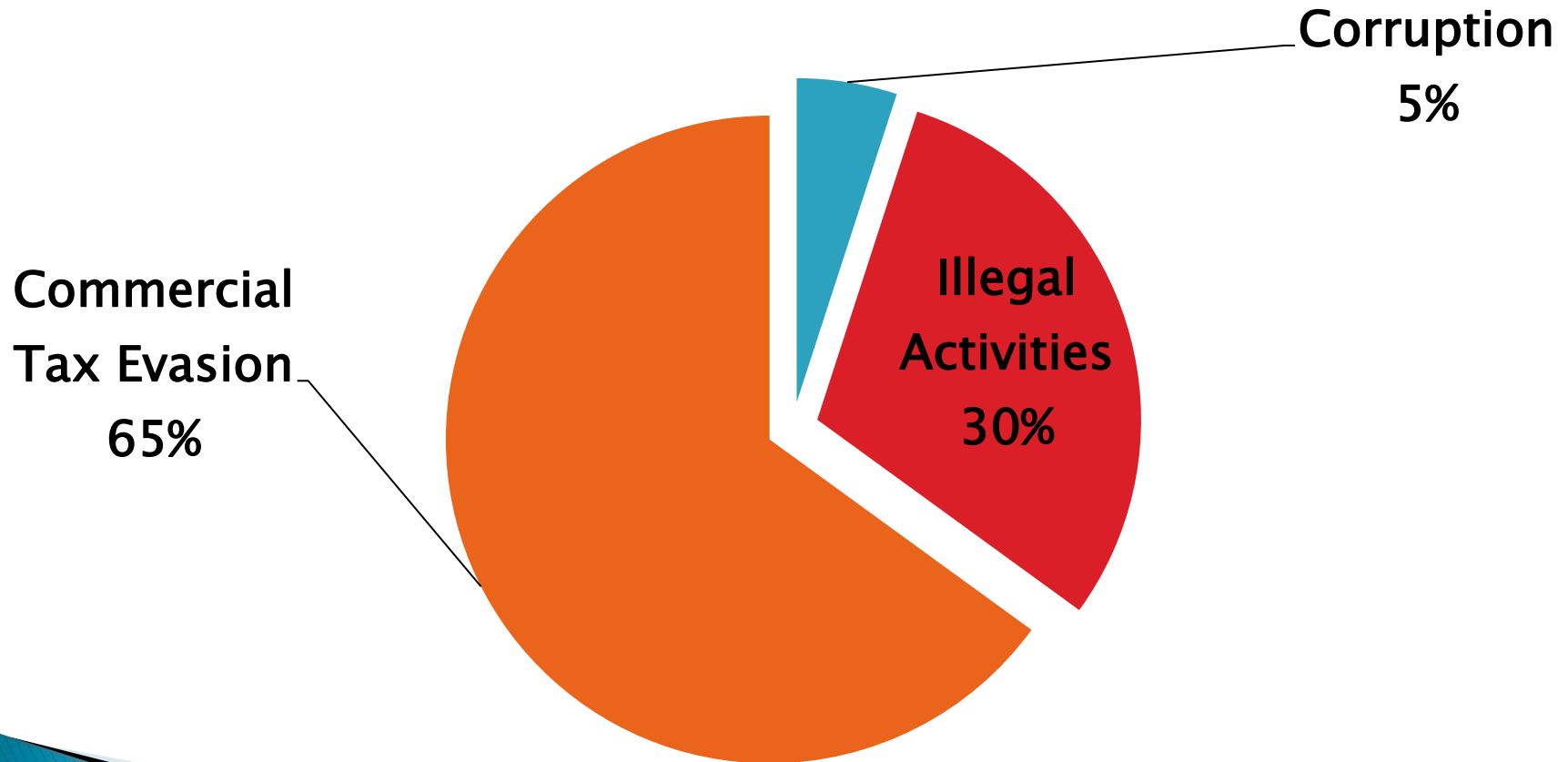
1. Concepts and Definitions

▶ Why measure IFF through Trade Mispricing?

1. **Corruption** is extremely difficult to measure; lack of credible indicators on actual corruption, only perception datasets exist (example, World Bank's World Governance Indicators).
2. Similarly, **criminal activities** are also difficult to measure.
3. Most of IFF comes from Commercial Tax Evasion, whereas **Transfer pricing** requires firm-level data (not readily available for most countries) and in-depth examination of individual MNC behaviours, which is costly and often impossible to access.
4. On the other hand, **Trade statistics** (COMTRADE) are readily available for most countries, over time.

1. Concepts and Definitions

Global IFF by Main Categories, Baker (2005)



1. Concepts and Definitions

IFF Estimations in Developing Countries

Study and Year	Estimated Amount (USD billion)	Countries	Cumulative Years	Methods Used*
Kar & Freitas (2012)	\$379	China	2000-2011	Adjusted Trade Mis-pricing Methods
Ndikumana & Bouyce (2012)	\$814	33 SSA Countries	1970-2010	Trade Mis-pricing and Residual Methods
Kar & Freitas (2011)	\$775-\$903	Developing Countries	2000-2009	Change in External Debt (CED) plus Gross Excluding Reversals (GER) Methods
UNDP (2011)	\$26.30	48 LDCs	2008	Residual adjusted for Trade Mis-pricing Methods
Kar & Cartwright-Smith (2010)	\$854	Africa	1970-2008	Residual Adjusted Method
Boyce & Ndikumana (2012)	\$450	Algeria, Morocco, Egypt and Tunisia	1970-2010	Residual & Trade Mis-pricing Methods
Claessens and Naude (1993)	\$500	84 Developing Countries	1971-1991	Residual & Dolley Methods
Note: * - Most of the studies introduce minor adjustments or combinations of the main methodologies.				

2. Quantifying IFF through trade mispricing

Methodology:

► IFF via trade-mispricing

$$\text{IFFMISINV } i,j,k,t = \text{UNDERINV_EXP } i,j,k,t + \text{OVERINV_IMP } i,j,k,t > 0$$

with,

i = any African country¹⁴;

j = any GTAP country/region (including African countries/regions);

k = any GTAP product;

t = any year from 2001 to 2010.

If $\text{IFFMISINV } i,j,k,t > 0$, IFF occurs from African country 'i' to country 'j' in product 'k' in year 't'.

2. Quantifying IFF through trade mispricing

Methodology:

► Export Under-invoicing & Import Over-Invoicing

$$\begin{aligned}\text{UNDERINV_EXP}_{i,j,k,t} &= (1 - \text{AdVCOST_EXP}_{i,j,k,t}) * \text{EXP}_{i,j,k,t} \text{ (as reported by } j) \\ &\quad - (1 - \text{AdVCOST_EXP}_{i,j,k,t}) * \text{EXP}_{i,j,k,t} \text{ (as reported by } i) \\ &= (1 - \text{AdVCOST_IMP}_{j,i,k,t}) * \text{IMP}_{j,i,k,t} \text{ from BACI} \\ &\quad - (1 - \text{AdVCOST_EXP}_{i,j,k,t}) * \text{EXP}_{i,j,k,t} \text{ from UN COMTRADE}\end{aligned}$$

with,

$\text{EXP}_{i,j,k,t}$ = Country i 's exports of product k to country j in year t ;

$\text{IMP}_{j,i,k,t}$ = Country j 's imports of product from country i in year t .

2. Quantifying IFF through trade mispricing

Methodology:

► Export Under-invoicing & Import Over-Invoicing

$$\begin{aligned}\text{OVERINV_IMP}_{i,j,k,t} &= (1-\text{AdVCOST_IMP}_{i,j,k,t}) * \text{IMP}_{i,j,k,t} \text{ (as reported by } i) \\ &\quad - (1-\text{AdVCOST_IMP}_{i,j,k,t}) * \text{IMP}_{i,j,k,t} \text{ (as reported by } j) \\ &= (1-\text{AdVCOST_IMP}_{i,j,k,t}) * \text{IMP}_{i,j,k,t} \text{ from BACI} \\ &\quad - (1-\text{AdVCOST_EXP}_{j,i,k,t}) * \text{EXP}_{j,i,k,t} \text{ from UN COMTRADE}\end{aligned}$$

with,

$\text{IMP}_{i,j,k,t}$ = Country i 's imports of product k from country j in year t ;

$\text{EXP}_{j,i,k,t}$ = Country j 's exports of product k to country i in year t ;

2. Quantifying IFF through trade mispricing

Methodology:

► Accounting for Time Lags in Export/Import Processes

$$AdVCOST_EXP\ i,j,k,t = Wgt.av.time_COST\ i,j,k * (Av.days_EXP\ i,t + Av.days_IMP\ j,t)$$

$$AdVCOST_IMP\ i,j,k,t = Wgt.av.time_COST\ j,i,k * (Av.days_EXP\ j,t + Av.days_IMP\ j,t)$$

AdVCOST_EXP i,j,k,t = Ad valorem time cost for country i to export product k to country j in year t;

Wgt.av.time_COST i,j,k = Weighted average time cost for country i to export product to country j;

Av.days_EXP i,t = Average number of days for country i to export in year t;

Av.days_IMP j,t = Average number of days for country j to import in year t;

AdVCOST_IMP j,i,k,t = Ad valorem time cost for country j to import product k from country i in year t;

AdVCOST_EXP j,i,k,t = Ad valorem time cost for country j to export product k to country i in year t;

Wgt.av.time_COST j,i,k = Weighted average time cost for country j to export product k to country i;

Av.days_EXP j,t = Average number of days for country j to export in year t;

Av.days_IMP i,t = Average number of days for country i to import in year t;

AdVTCOST_IMP i,j,k,t = Ad valorem time cost for country i to import product k from country j in year t.

2. Quantifying IFF through trade mispricing

Methodology:

► Accounting for Time Lags in Export/Import Processes

$$\begin{aligned} \text{AdVCOST_EXP}_{j,i,k,t} &= \text{Wgt.av.time_COST}_{j,i,k} * (\text{Av.days_EXP}_{j,t} + \text{Av.days_IMP}_{i,t}) \\ &= \text{AdVCOST_IMP}_{i,j,k,t} \end{aligned} \quad (2)$$

AdVCOST_EXP_{j,i,k,t} = Ad valorem time cost for country j to export product k to country i in year t;

Wgt.av.time_COST_{j,i,k} = Weighted average time cost for country j to export product k to country i;

Av.days_EXP_{j,t} = Average number of days for country j to export in year t;

Av.days_IMP_{i,t} = Average number of days for country i to import in year t;

AdVTCOST_IMP_{i,j,k,t} = Ad valorem time cost for country i to import product k from country j in year t.

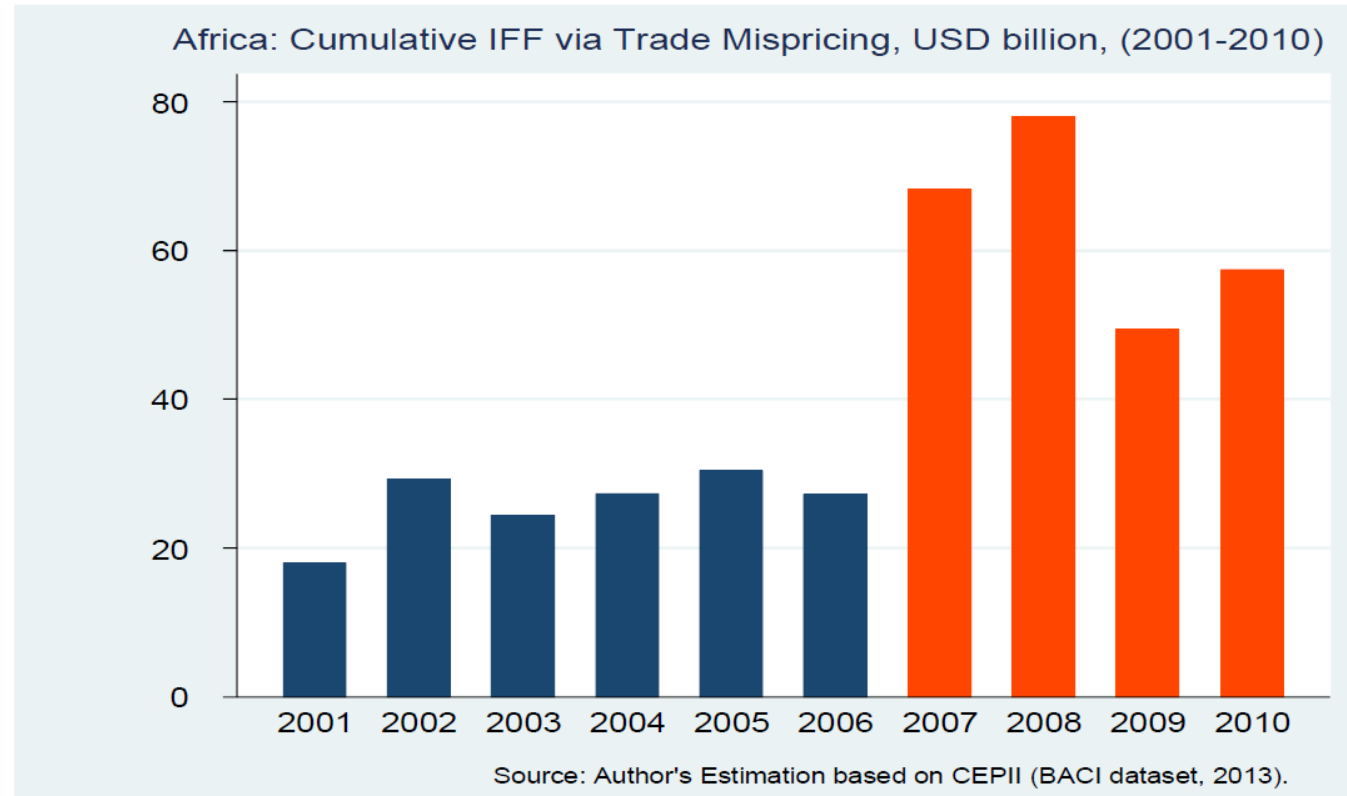
2. Quantifying IFF through trade mispricing

Methodology:

- ▶ **Limitations** of Trade–mispricing methodology:
 1. Quality of Trade statistics for African countries.
 2. Trade–mispricing (or mis–invoicing) methodology does not measure **ALL** forms of IFF.
 3. Risk of under–estimating due to the illicit nature of these activities.

2. Quantifying IFF through trade mispricing

Results:



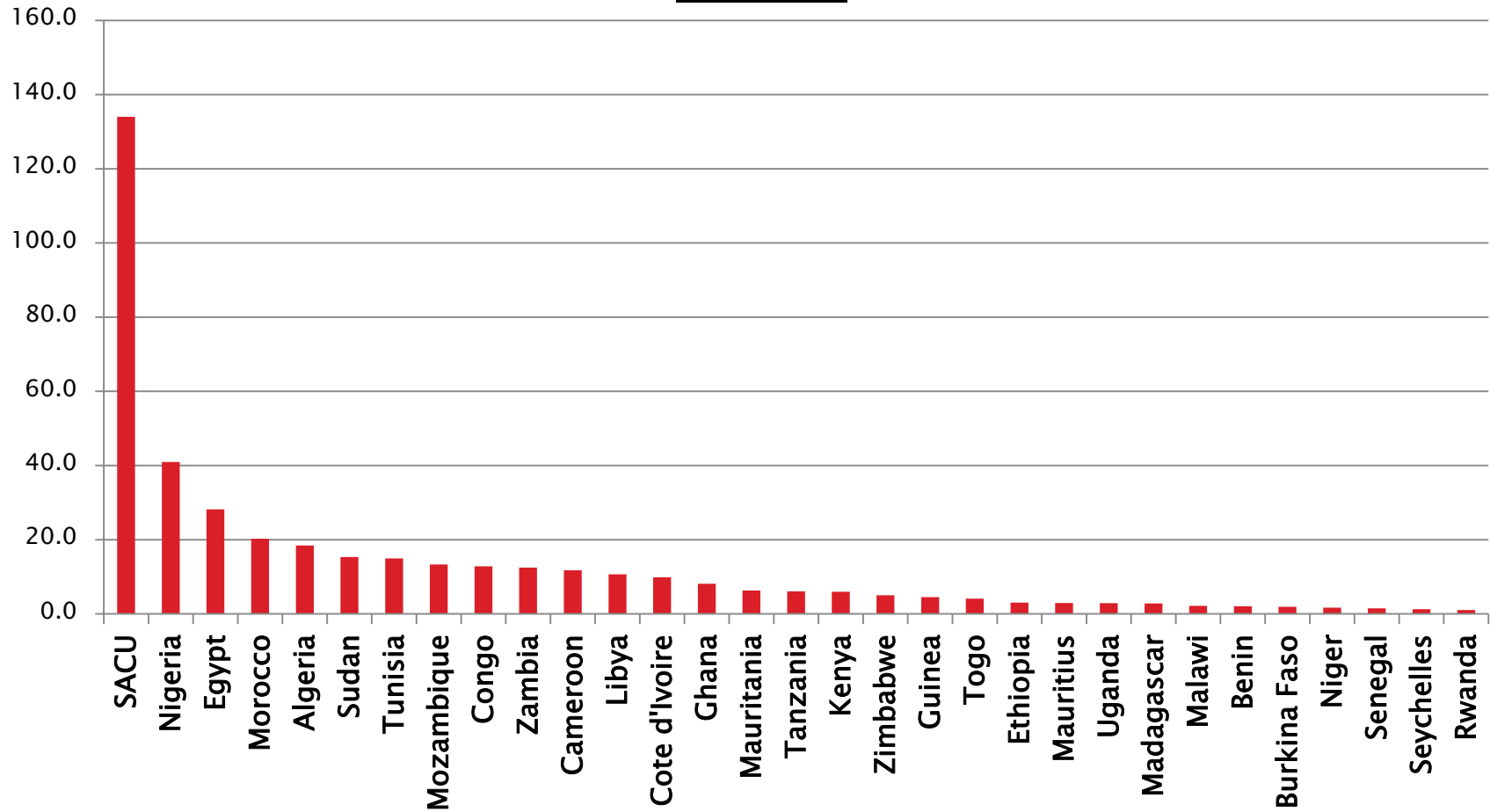
Between 2001 and 2010, it is estimated that **USD409 billion** left Africa as IFF

Year	IFF_USD_billion	Sub-Total (Cumulative)
2001	17.9	
2002	29.2	
2003	24.4	
2004	27.3	
2005	30.5	129.3
2006	27.2	
2007	68.1	
2008	77.9	
2009	49.4	
2010	57.4	280.0
	409.4	

2. Quantifying IFF through trade mispricing

Results:

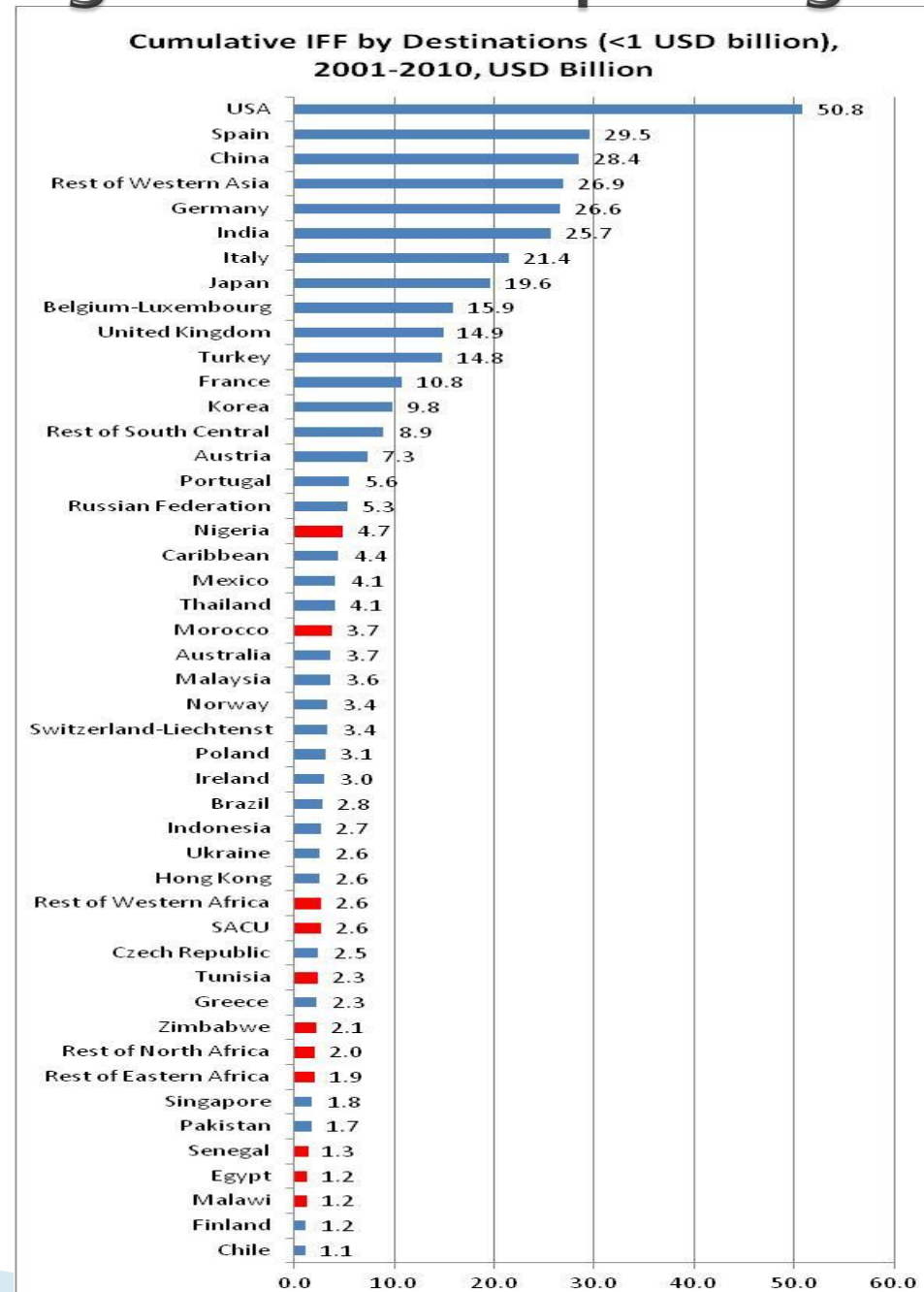
Cumulative IFF by African Economies, 2001–2010, USD billion



2. Quantifying IFF through trade mispricing

Results:

- ▶ USA is the biggest recipient of IFF from Africa (2001 – 2010)



2. Quantifying IFF through trade mispricing

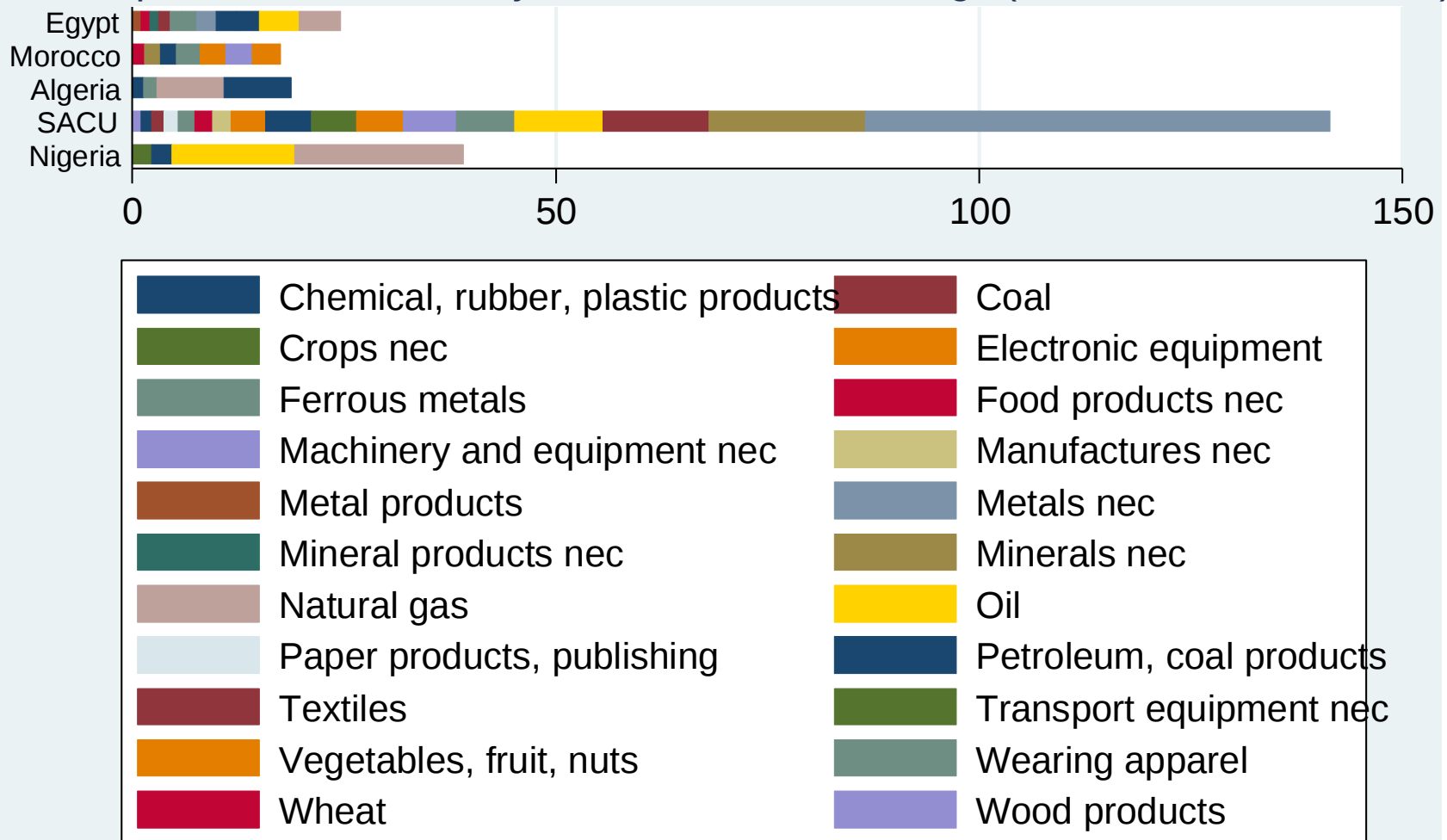
Results:

Top 10: Cumulative IFF from Africa by GTAP Sector, 2001-2010.	
GTAP Sector	USD Billion
Metals nec (Copper & Gold and other non-ferrous metals)	84.00
Oil	69.59
Natural gas	33.99
Minerals nec (non metallic minerals eg. Cement, gravel, plaster etc)	33.08
Petroleum, coal products	19.98
Crops	17.06
Food products	16.86
Machinery and equipment nec	16.82
Wearing apparel	14.00
Ferrous metals (Iron & steel)	13.15
Total	318.54

2. Quantifying IFF through trade mispricing

Results:

Africa: Top 5 Cumulative IFF by GTAP Sectors and Origin(2001-2010, USD Billion)



Note: (IFF of more than USD 1 billion)

Author's estimation based on CEPII(BACI Dataset, 2013).

2. Quantifying IFF through trade mispricing

Results:

Top 10 GTAP Sectors, by Origin and Destinations, 2010, USD billion			
GTAP Sector	Origin	Destination	USD billion
Oil	Nigeria	USA	3.2
Copper and other non ferrous metals	SACU	India	3.1
Oil	Congo	USA	2.2
Oil	Nigeria	Germany	1.6
Natural gas	Nigeria	Spain	1.5
Copper and other non ferrous metals	Zambia	China	1.5
Oil	Congo	China	1.1
Copper and other non ferrous metals	SACU	Italy	1.1
Natural gas	Algeria	Italy	0.9
Oil	Nigeria	Spain	0.7
		Total	16.9
Source: Author's estimation based on UNCOMTRADE, 2013.			

3. Assessing incidence on African economies

Methodology:

- ▶ Assess the economic impacts of IFF losses on African countries in terms of real income and trade.
- ▶ Analyses based on MIRAGE CGE multi-country multi sector dynamic model.
- ▶ GTAP database (version 7) used as global social accounting matrix (SAM) for the model. (57 sectors, 113 countries/regions and for year 2004).
- ▶ 31 Countries/Regions aggregated focussing on African, including main IFF origin and destination countries; 18 sectors.

3. Assessing incidence on African economies

Methodology:

Scenarios & Results:

Scenario 1: Progressive return of initially lost IFF from Africa over period 2006–2010, through international income transfer.

- ▶ IFF's recipient countries see their national incomes progressively reduced, while IFF's origin countries progressively increased over same period, (i.e. total income reduction equal total income increase).
- ▶ (IFF progressively returned between 2013 and 2017)

3. Assessing incidence on African economies

Results:

▶ *Results for Scenario 1:*

1. Africa's real income would be boosted, increasing by 21.2% in 2017, but effect of such int. income transfer on terms of trade would be such as **Africa's exports reduced by 19.3%** and **Africa's imports would be increased by 33.1%**, sourced by RoW.
2. This could therefore be a subsidy given to African consumers, allowing them to buy more goods from RoW that have become relatively cheaper.

3. Assessing incidence on African economies

Methodology:

Scenario 2: Countries having benefitted from IFF see their national incomes progressively reduced, while countries with IFF losses are constrained to spend additional income received towards improving trade facilitation measures.

- ▶ Progressive reduction of global trade costs associated to customs procedures, port handling and inland transport (2013–2017).
- ▶ At bilateral and sector levels.

3. Assessing incidence on African economies

Results:

▶ *Results for Scenario 2:*

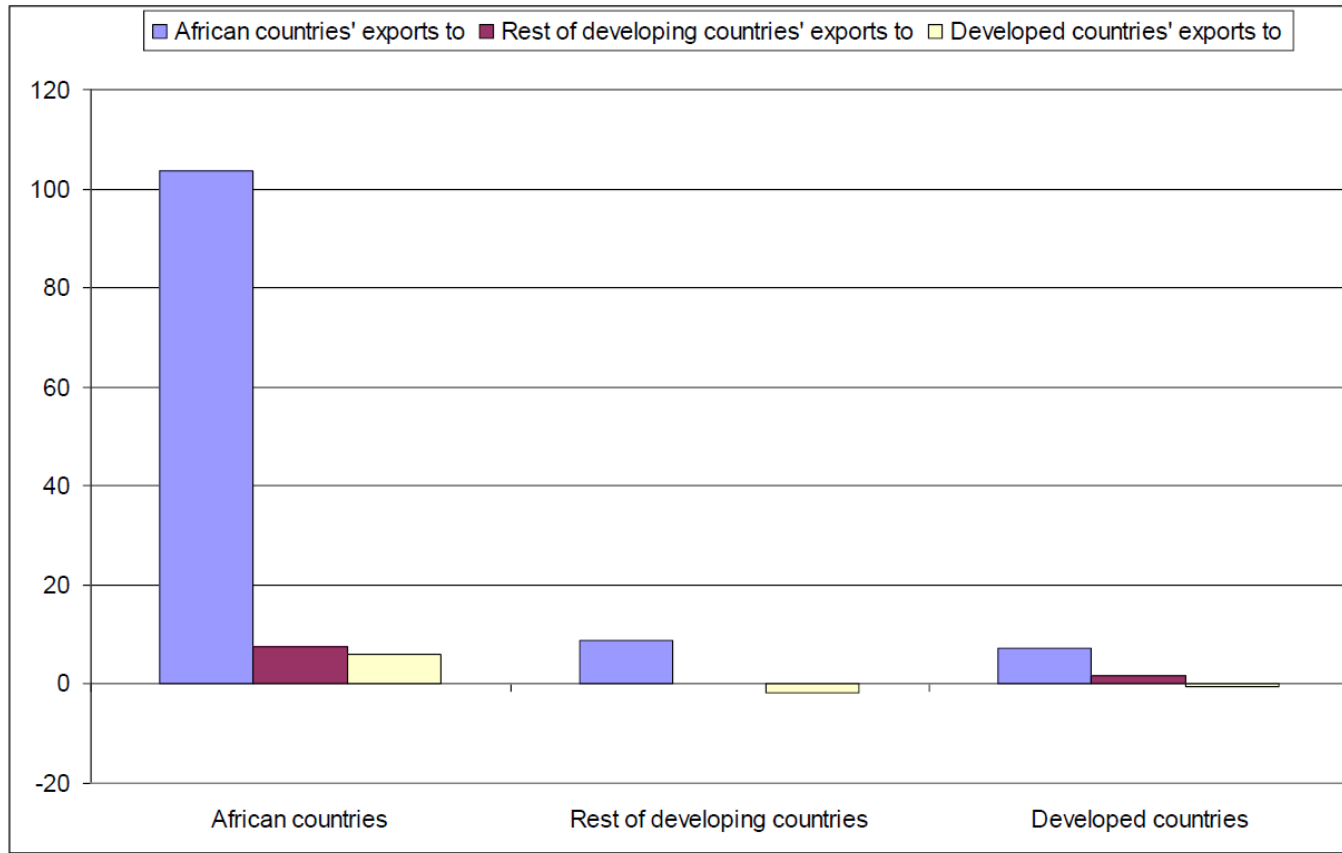
1. Africa's exports and imports would increase considerably (17.7%) and (17.9%) respectively.
2. Real income would increase by 2.7% (true for all countries).

3. Assessing incidence on African economies

Results:

► Results for Scenario 2:

% Change in Africa's exports, by Main Destinations,
compared to baseline in 2017



Africa's exports would increase the most towards Africa (Intra-African trade).

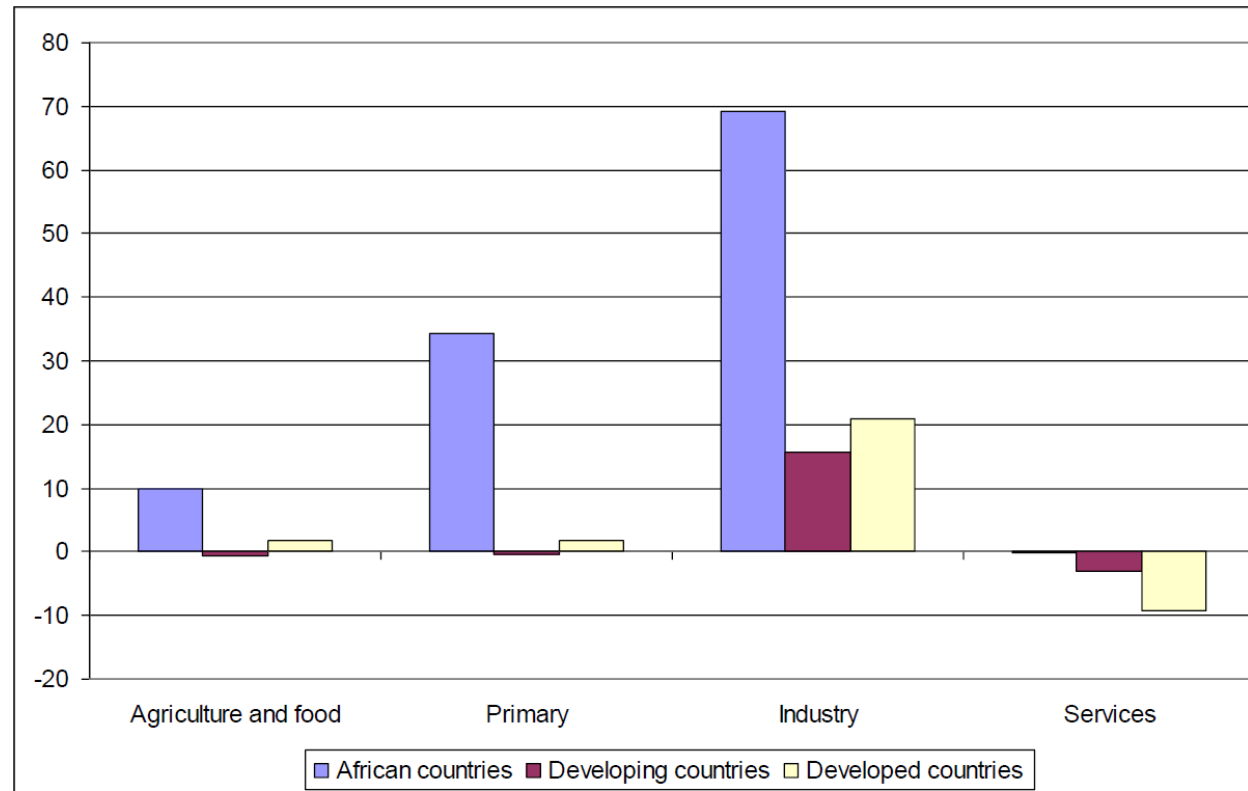
Source: Authors' calculation based on the MIRAGE model

3. Assessing incidence on African economies

Results:

► *Results for Scenario 2:*

Change (USD billion) in Africa's exports, by Main Destinations, and Sectors compared to baseline in 2017



Africa's exports by sector would increase the most in **industrial products**, especially in the case of intra-African trade.

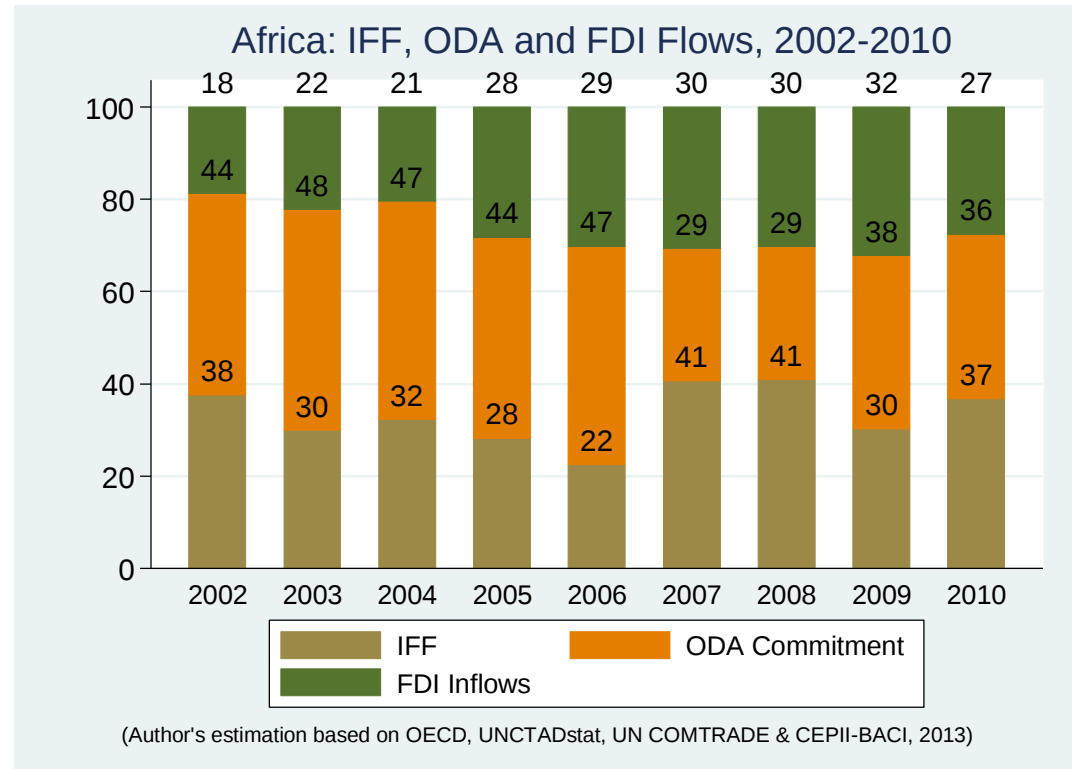
Source: Authors' calculation based on the MIRAGE model

4. Conclusions and Policy Implications

1. African a net creditor of IFF with an estimated cumulative total of USD409.4 (2001–2010).
2. IFF highly concentrated on few African countries (SACU, Nigeria, Egypt and Morocco) and a few primary sectors (Copper, Oil and Precious metal and mineral).
3. IFF recipients are concentrated to US, several EU, China and India.
4. If IFF funds returned through non–constrained int. income transfer, it would be ineffective in stimulating Africa's exports, however, if African governments are constrained towards use for funding Trade Facilitation measures, than both Africa's exports and imports would be enhanced, particularly Intra–African trade and its industrialisation.
5. Recovery of funds lost in IFF is difficult, hence the importance of curbing IFF in the first place.

4. Conclusions and Policy Implications

1. Transparent and effective regulatory policy on extractive industries agreements between Governments and MNCs.
2. Efficient industrialisation process to balanced out industrial development and protecting public interest.
3. Regulating the behaviours of MNCs is crucial, particularly taxation and investment policies, ensuring that MNCs adheres to such rules.
4. If these lost funds are curbed, it could be better used for developmental purposes.



	Total (USD billion), 2002-2010
IFF	391.5
ODA DAC commitment	437.8
FDI Inflows	322.6

Thank you!

Regional Integration, & Trade Division,



United Nations
Economic Commission for Africa