

# Can FDI Help Build Africa's Industrial Capabilities

UNU WIDER conference  
Helsinki 13 September  
2018

Professor John Rand  
[john.rand@econ.ku.dk](mailto:john.rand@econ.ku.dk)

UNIVERSITY OF COPENHAGEN



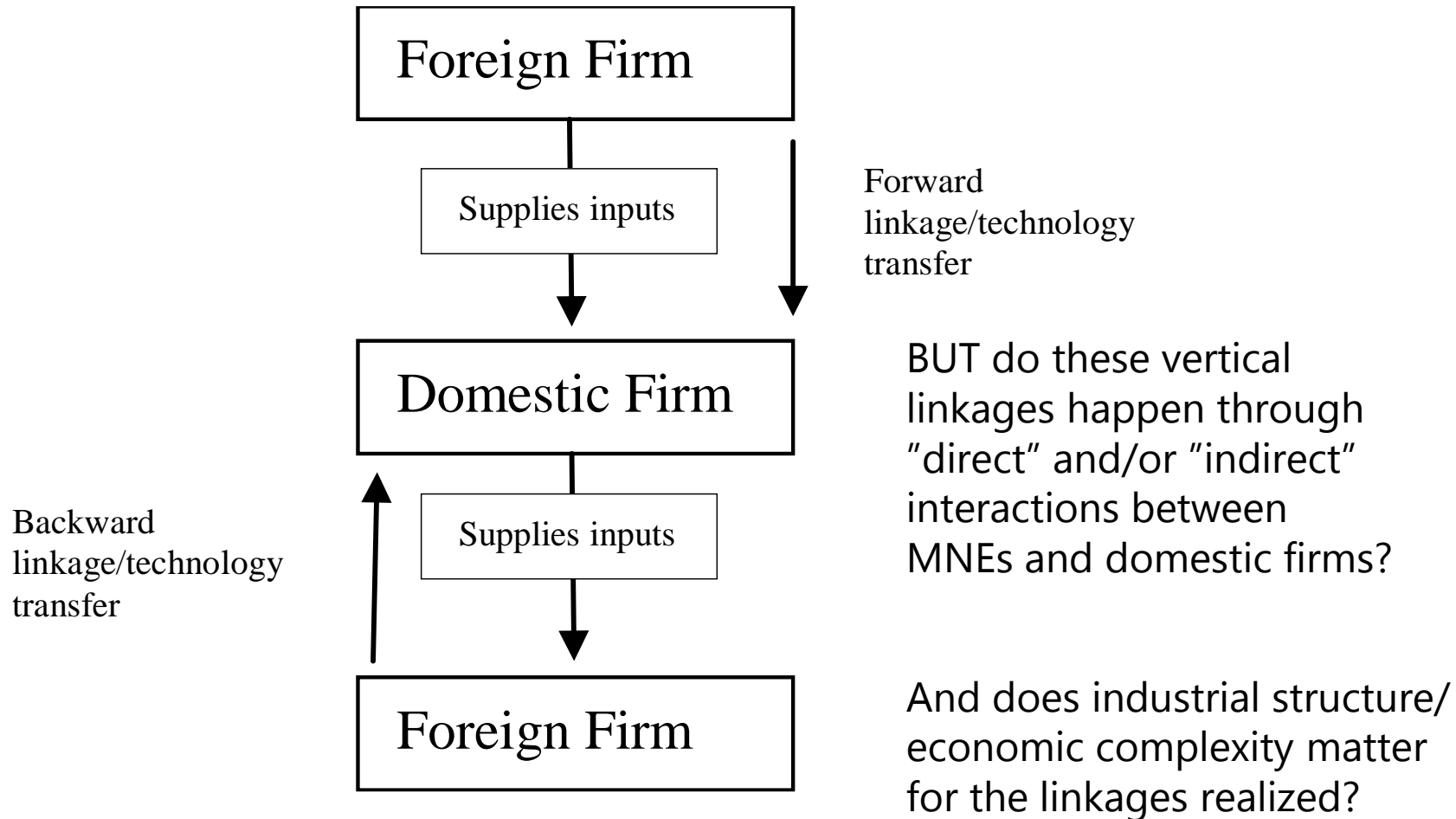
# Linkages/Spillovers - Externalities

- Attracting FDI is a policy priority in many developing countries.
  - Provide jobs and capital, but also **new technology and knowledge**.
  - Assumption: Entering MNEs are technologically superior to domestic firms.
- **Interactions/linkages** can lead to knowledge transfers to the domestic sector, leading to productivity improvements.
- **Many different mechanisms** but disentangling these empirically have been challenging.
  - Conflicting empirical evidence on the nature of spillovers and limited evidence on the underlying mechanisms.

# Conceptual distinctions (1)

- Innovation versus **diffusion** – localization versus urbanization effects.
- Traditional approach - **indirect approach** to measuring knowledge/technology spillovers.
  - Study the link between increased presence of MNEs in a sector and productivity improvements in local domestic firms in the same sector (**horizontal spillovers**) or in local domestic firms in other sectors through upstream or downstream mechanisms (**vertical spillovers**).
- Distinction between indirect spillovers/externalities and actual direct technology transfers may be important
  - Arrow (1969): Knowledge diffusion often requires direct interaction; knowledge diffusion is not an automatic process.
  - Hirschman (1958): In countries with less absorptive capacity and weaker industrial linkages, MNEs are less likely to generate positive externalities (risk of generating enclave economies).

# Conceptual distinctions (2)



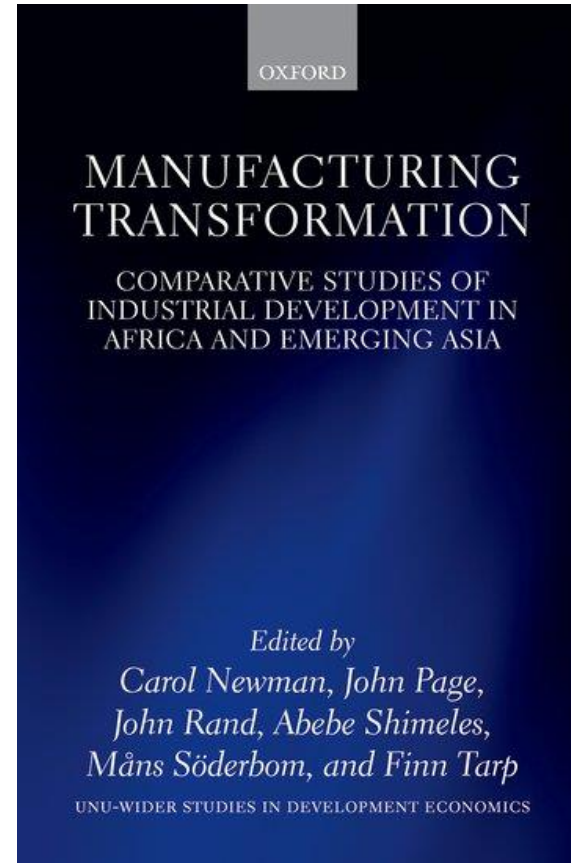
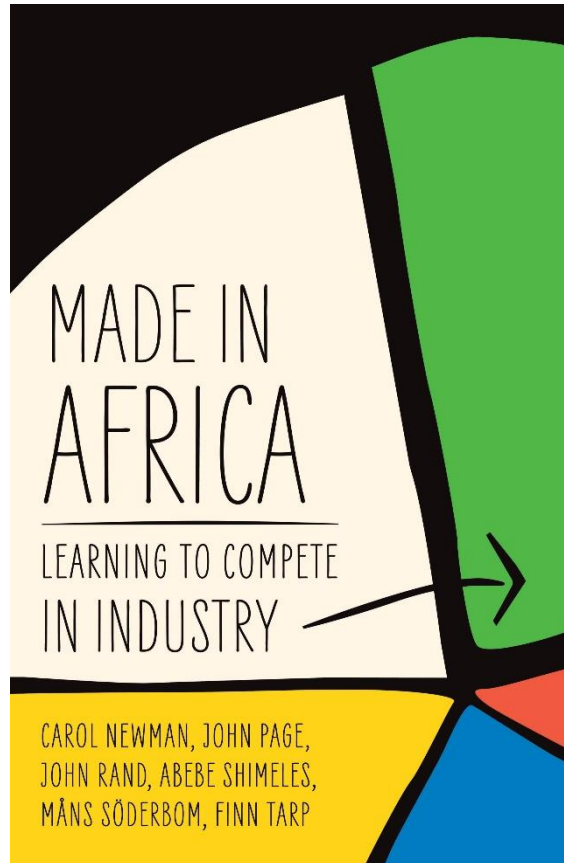
# Questions we aimed at answering

- Do **indirect** FDI spillover mechanisms depend on **inter-industry linkages** and underlying industrial structures?
  - Does lack of **economic complexity** will limit the scope for knowledge/technology diffusion of FDI spillover externalities?
  - Are FDI spillover externalities (all else equal) less likely to occur in countries where absorptive capacity is weak (Africa) as compared to countries with more complex industrial structures (Asia)?
- What role do **direct** (contractual) linkages play for improving capabilities?
  - The association between economic complexity and **direct** technology transfers not well studied.

# Simple Questions

- Are we able methodologically to distinguish between indirect/externalities and direct technology spillovers?
  - EER - Newman et al. (2015)
- If so, do we observe cross-country differences in the probability of a local manufacturing firm receiving direct technology transfer from FDI/MNEs?
  - If so, can we identify features that facilitate direct technology transfers?
- Are direct knowledge transfers more likely to occur through FDI than through trade?

# Outputs



**+ several journal articles**

# Identifying Direct Knowledge Transfers

- Purpose sampling using a methodological triangulation approach
  - 7 countries (Cambodia, Ethiopia, Ghana, Kenya, Mozambique, Uganda and Vietnam)
  - Structure: (1) IPAs – (2) FDI/MNEs – (3) (i) competitors , (ii) domestically owned industrial suppliers of FDI/MNEs and (iii) domestically owned industrial customers of FDI/MNEs.
- Outcome: Seven detailed interview reports (one for each country) focused on identifying **direct** FDI spillover mechanisms.
  - 102 FDI/MNE observations/interviews
  - 226 domestic firm observations/interviews
  - Conclusion: Identification of customer/supplier links not straight forward
- Illustration



# Identifying Links: Vietnam

FDI Firm				Supplier		Customer		Competitor	
No	City	Investor	Product	No	Inputs	No	Products	No	Products
1	Hanoi	Japan	Porcelain products	1	Chemical	1	Porcelain products	x	Porcelain products
						2	Porcelain products		
						3	Porcelain products		
2	Hanoi	Japan	Furniture	2	Glass	4	Furniture	x	Furniture
				3	Wood	5	Furniture	x	Furniture
				4	Wood	6	Furniture		
3	Hanoi	Singapore	Tires and tubes	5	Chemical	7	Tires and tubes	x	Tyres and tubes
				6	Chemical	8	Tires and tubes	1	Tyres and tubes
				7	Chemical	x	Tires and tubes		
4	Hanoi	China	Electrical equipment	8	Copper wire	9	Transformers	x	Transformers
				9	Copper wire	10	Transformers	2	Transformers
5	Hanoi	Japan	Motor components	10	Steel/Inox	11	Auto assembling	x	Auto spare parts
				11	Steel/Inox	x	Auto assembling	3	Auto spare parts
				12	Steel/Inox	x	Auto assembling		
6	Hanoi	Multiple	Rubber components	13	Rubber materials	12	Rubber products	x	Rubber products
				14	Raw rubber	13	Rubber products	x	Rubber products
				15	Raw rubber	14	Rubber products	x	Rubber products
7	Hanoi	Japan	Metal components	16	Steel	15	Locks	4	Metal products
				17	Steel	16	Misc. mechanical products	x	Metal products
				18	Steel	17	Antennas	x	Metal products
8	Hanoi	Taiwan	Fiber optic cable	19	Decal, printing ink	18	Optic cable	5	Fibre optic cable
				20	PP bags	19	Optic cable		
						20	Optic cable		
9	Hanoi	Japan	Paint	21	Packing bags/boxes	21	Auto assembling	6	Paint
						22	Misc. equipment	x	Paint
						23	Misc. equipment		
10	Hanoi	Multiple	Paint	22	Chemical	24	Doors	x	Paint
				23	Chemical	25	Concrete	x	Paint
				24	Products for packing				
11	Hanoi	Multiple	Chemical products	25	Acid	26	Construction	7	Chemicals for construction
				26	Chemical	27	Concrete	x	Chemicals for construction
				27	Chemical	28	Construction		
12	Hanoi	Multiple	Carton products	28	Paper	29	Beer	8	Paper
				29	Paper	30	Milk	x	Carton
				30	Printing	31	Mechanical items	x	Paper bags
13	Hanoi	Japan	Plastic products	31	Ammoniac	32	Plastic door	9	Plastic products
						33	Plastic door	x	Plastic products
						34	Misc. plastic products	x	Plastic products
14	Hanoi	Singapore	Electrical equipment	32	Electric wires	35	Transformers	10	Electric wires
				33	Misc. electronic products	36	Transformers	x	Electric wires
				34	Misc. electric equipment	37	Radios	x	Electric wires
15	Hanoi	Japan	Printing products	35	Printing paper	38	Misc. printing products	11	Printing
				36	Printing paper	39	Misc. printing products	x	Printing
				37	Printing paper	40	Misc. printing products	x	Printing

# Identifying Links: Kenya

No	City	FDI Firm Investor	Product	No	Supplier Inputs	No	Customer Products	No	Competitor Products
1	Nairobi	India	Packaging	1	Tissue/hygiene prod.	1	Dairy/Food processing	x	Carton packaging
						x	Dairy/Food processing	1	Packaging
								x	Packaging
2	Nairobi	Switzerland	Footwear	x	Textiles			x	Misc. Rubber products
								2	Food and Footwear
3	Nairobi	USA	Automotive Industry			2	Cement Trucks	3	Automotive Industry
4	Nairobi	UK	Pharmaceuticals					4	Pharmaceuticals
5	Nairobi	Mauritius	Iron and Steel Industry					5	Steel/roofing mat.
								x	Aluminum/roofing mat
6	Nairobi	Taiwan	Textile	2	Carton manufacturer				
7	Nairobi	UK	Tobacco	3	Printers			6	Tobacco
8	Nairobi	Netherlands	Petroleum	4	General plastics	x	Sugar		
				x	Misc. products				
9	Nairobi	USA	Beverages					7	Beverages/fresh juice
10	Nairobi	France	Cement					8	Cement
								x	Cement
								x	Cement

# Identifying Links: Kenya

FDI Firm				Supplier		Customer		Competitor	
No	City	Investor	Product	No	Inputs	No	Products	No	Products
1	Nairobi	India	Packaging	1	Tissue/hygiene prod.	1	Dairy/Food processing	x	Carton packaging
				#	Paper	x	Dairy/Food processing	1	Packaging
				#	Fibers	#	Dairy/Food proc./FMCG	x	Packaging
2	Nairobi	Switzerland	Footwear	x	Textiles			x	Misc. Rubber products
				#	Petroleum based mat.			2	Food and Footwear
				#	Textiles			#	Footwear
3	Nairobi	USA	Automotive Industry	#	Used car parts	2	Cement Trucks	3	Automotive Industry
						#	Food industry	#	Automotive Industry
						#	Cement Trucks	#	Automotive Industry
4	Nairobi	UK	Pharmaceuticals	#	Packing materials			4	Pharmaceuticals
								#	Pharmaceuticals
								#	Pharmaceuticals
5	Nairobi	Mauritius	Iron and Steel Industry	#	Paint			5	Steel/roofing mat.
				#	Fuel/Petroleum			x	Aluminum/roofing mat
				#	Electrical devices			#	Roofing materials
6	Nairobi	Taiwan	Textile	2	Carton manufacturer			#	Textiles
				#	Packaging material			#	Textiles
				#	Packaging material			#	Textiles
7	Nairobi	UK	Tobacco	3	Printers			6	Tobacco
				#	Packaging material				
				#	Glue				
8	Nairobi	Netherlands	Petroleum	4	General plastics	x	Sugar	#	Petroleum
				x	Misc. products	#	Food	#	Petroleum
				#	Packaging material	#	Cement	#	Petroleum
9	Nairobi	USA	Beverages	#	Sugar			7	Beverages/fresh juice
				#	Packaging material			#	Beverages/fresh juice
				#	Packaging material				
10	Nairobi	France	Cement	#	Packaging material	#	Construction	8	Cement
				#	Packaging material			x	Cement
								x	Cement

Red – JSC with majority foreign ownership

Very few forward linkages

# Illustration of Horizontal Spillovers

- Domestic firm answers

COMPETITION/DEMONSTRATION SPILLOVERS			
	Yes		No
Firm changed production techniques/processes due to competitive pressure from MNCs/FDIs within the same sector	81 (37)		140 (63)
Directly adopted production techniques/processes from these MNC/FDI competitors	34 (46)	No (54)	47

- FDI/MNC answers

LABOR SPILLOVERS			
	Yes		No
Firm hired employees initially trained in a MNC/FDI	57 (27)		154 (73)
The engagement of these employees directly result in changes in production techniques/processes	30 (53)	No (47)	27

COMPETITION/DEMONSTRATION SPILLOVERS			
	Yes		No
FDI observed domestic firms (competitors within the same ISIC 4-digit code) changing production techniques/processes as a direct result competitive pressure from the firm.	49 (57)		37 (43)
FDI observed domestic firms trying to directly adopt production techniques/processes (by observing or copying) from the FDI?	29 (59)	No (35)	NA 3 (6)

86% "linkage" consistency - very high

LABOR SPILLOVERS			
	Yes		No
Experienced employees leaving to set up a local enterprise directly connected to the FDI	33 (33)		67 (67)
Share as competitors	15	(45)	
Share as customers	19	(58)	
Share as suppliers	18	(56)	

# Illustration of Vertical Linkages (1)

## Domestic (local) firm sample

		Suppliers	Customers
		Percent	Percent
Produces mainly for final consumption		..	46
Customer/supplier relations with MNCs/FDIs either domestic links or through direct exports/imports		85	84
Share with 5 or less customers/suppliers		53	15
Relations with <u>customers/suppliers</u> required additional investments in order to obtain contract	All	19	30
	Kenya	31	38
	Vietnam	9	21
Relations with <u>customers/suppliers</u> required resulted in a direct technology transfer from the customer/supplier to the firm	All	76	41
	Kenya	75	80
	Vietnam	14	5
Share of firms receiving the technology transfer from a FDI/MNC		56	27

# Illustration of Vertical Linkages (2)

## FDI/MNE answers

		Customers (forward linkages)	Suppliers (backward linkages)
		Percent	Percent
Produces mainly for final consumption		53	..
100% sales to or import from other FDIs or through direct exports/imports		24	33
Share with 5 or less customers/suppliers		27	60
Relations with domestic <u>customers/suppliers</u> required a direct technology transfer from the FDI to the customer/supplier	All	21	18
	Kenya	50	30
	Vietnam	6	6
Transfer stipulated directly in contract	All	47	36
	Kenya	50	67
	Vietnam	0	0

# Results

- Very few direct linkages between MNEs and domestic firms in Sub-Saharan Africa as compared to Asia.
- **BUT** when linkages are present = more likely to lead to direct knowledge/technology transfers from MNEs to domestic firms.
  - In SSA, a large part of the successful direct vertical transfers of knowledge done by formal contractual arrangements.
- Direct knowledge/technology transfers are more likely to occur through FDI than through trade.
  - This is consistent with the view that tacit knowledge transfers are more likely to occur through localized linkages.
- Economic complexity and direct vs. indirect spillovers?

# Discussion

- Should we expect as much of FDI in terms of improving capabilities in Africa?
  - Innovation / diffusion
- Are targeted industrial policies even more important in Africa than it was in Asia?
  - Economic complexity