
BUSINESS CLIMATE AND MANUFACTURING EXPORT PERFORMANCE IN AFRICA: *A Firm Level Analysis*

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Introduction

- Marginalisation of Africa in world trade
 - Sub-Saharan Africa's (SSA) share of world trade fell from more than 3 percent in 1950s to less than 1 percent in the early 1990s (Ng and Yeats, 1996)
 - Represents 'staggering annual income loss of US\$ 68 bill – or 21 % of regional GDP" (WB, 2000)
 - UNCTAD TDR (2006): Africa's share of world manufactured exports from 5.4 percent in 1980 to just 2 percent in 2003.
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Alternative views

1. Africa is marginalised because it has not globalised
 - Domestic policy distortions raise international transport costs (Amjadi and Yeats, 1995)
 - Tariffs in Africa are high (Amjadi et al., 1996 and Ng and Yeats, 1996)
 2. Africa trades as much as (or more than) can be expected given the underlying determinants of trade, such as income, geography and size (Foroutan and Pritchett, 1993; Rodrik, 1997)
 - Africa is marginalised because it has not grown
 - Composition of trade reflects endowments (Wood & Mayer, 2001)
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Alternative views

3. Weak infrastructural, institutional and regulatory environment inhibits export supply response
 - High internal transport costs and long delays (Djankov et al., 2006):
 - *“If Uganda reduced its factory-to-ship time from 58 days to 27 (the median for the sample), exports would increase by 31 percent*
 - *If the Central African Republic reduced its factory-to-ship time from 116 days to 27, exports would nearly double (Equivalent to a cut of 6200 km from its distance to the main markets)*
 - High transaction costs associated with a poor investment climate particularly bad for manufactures (Collier, 2000)
 - *Elbadawi (2001): “...transaction costs are major determinants of manufactures exports and that investing on reducing these costs generates the highest payoff for the capacity to export manufactures.*
 - High transport costs related to poor infrastructure explain Africa’s under-performance in trade (Limão and Venables, 2001: 41).

Aim of paper

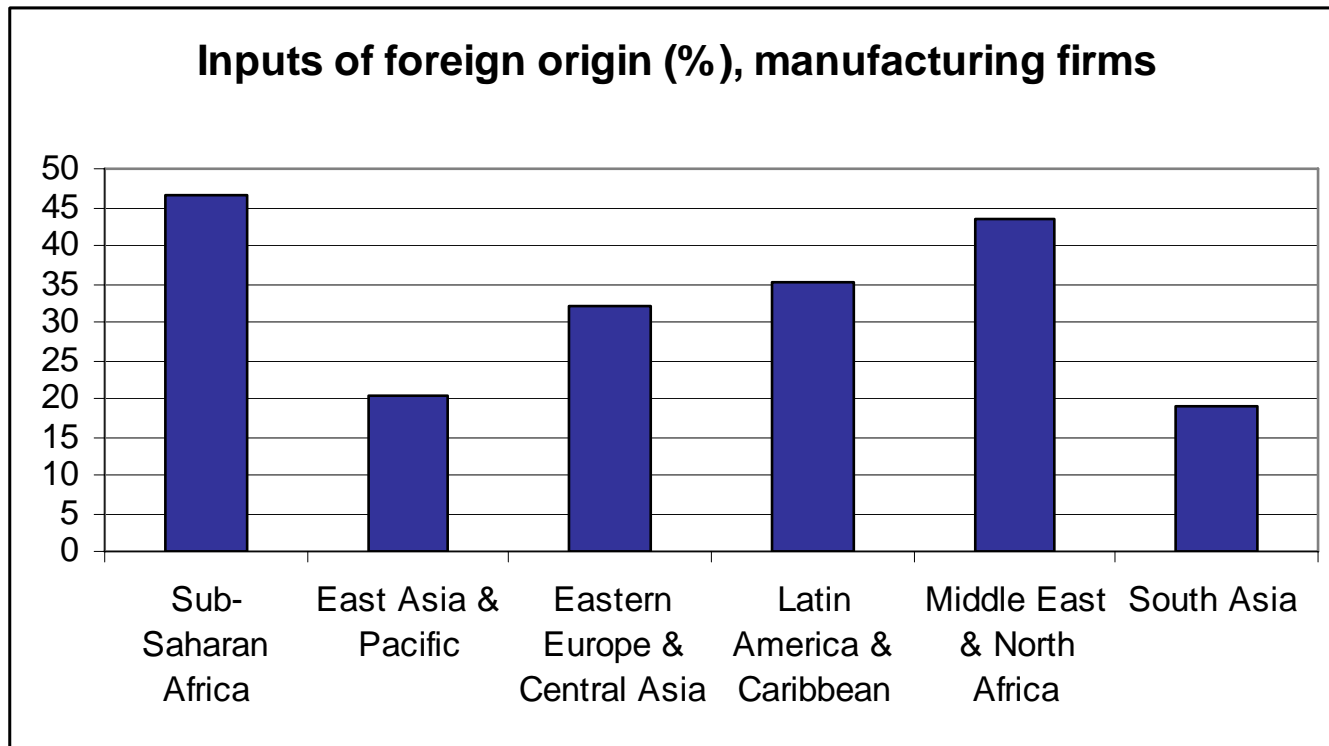
- Evaluate the role of the business climate in influencing firm-level export participation in Africa.
 - The business climate: Economic environment such as physical infrastructure, the legal and financial systems, features of the micro and macro policy environment, and social factors that are “not under the control of individual firms but that affect the expense, ease and reliability of doing business in a country”
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Channels

1. Business climate as an input in production and affects cost and profits
 - Indirect costs associated with operating expenses – transport, telecommunication, security, land, bribes, marketing – make up over 20 percent of total costs in Mozambique, Eritrea, Kenya, Tanzania, Uganda and Zambia and exceeded the direct labour costs (Eiffert et al., 2005).
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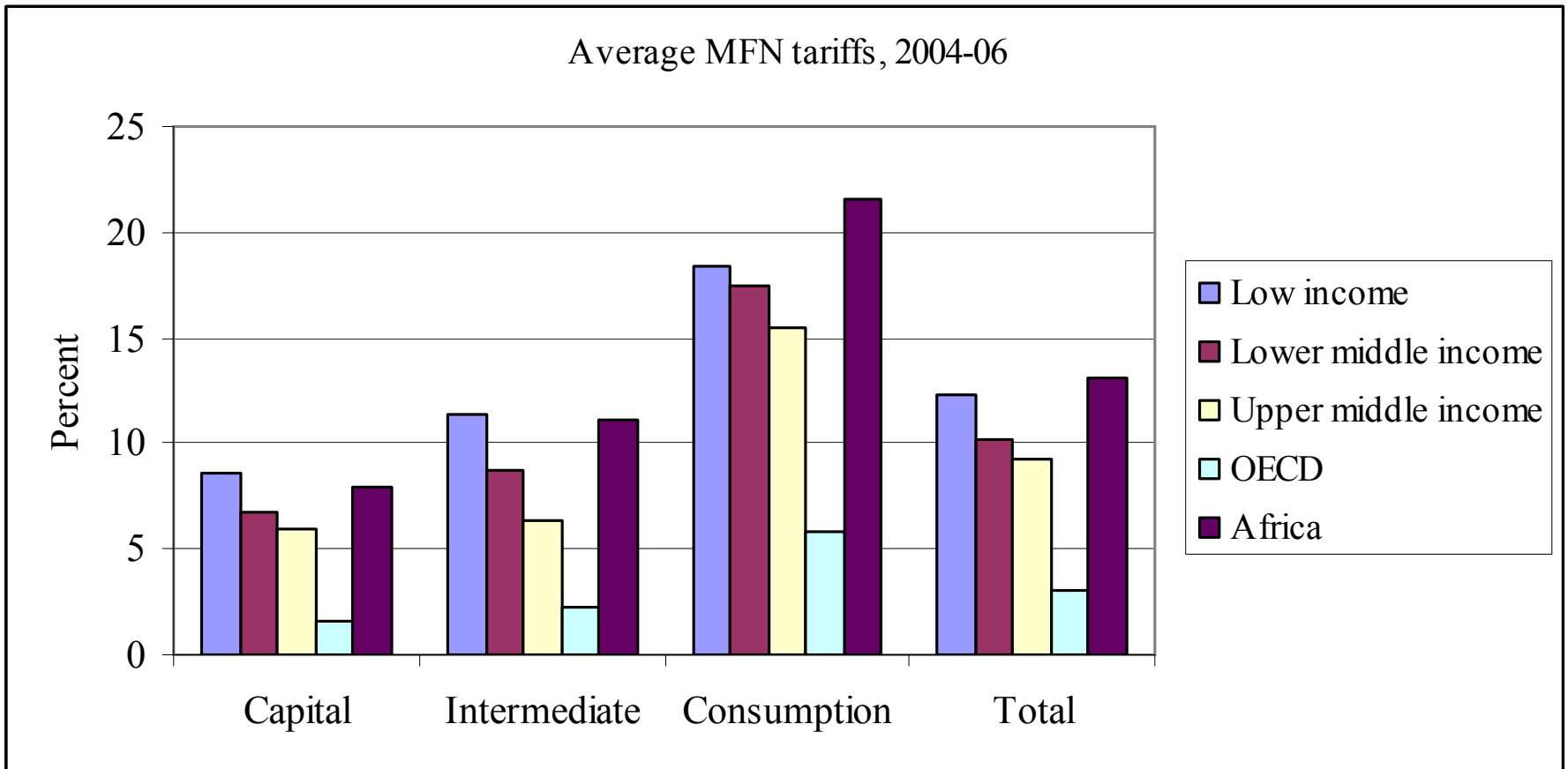
Channels

2. Access to competitively priced inputs
 - Product fragmentation
 - AGOA and growth in Apparel exports



Source: WB Enterprise Survey data

Tariff protection remains relatively high on key inputs and outputs



Source: Own calculations using TRAINS

Channels

3. Productivity

- Mengistae and Patillo (2004): Exporters have TFP premium of 17% (Ghana, Ethiopia, Kenya)
 - a) Firm heterogeneity models (Melitz, 2003)
 - **Selection-effect:**
 - Lower trade costs lead to entry into export market of relatively productive domestic firms.
 - Lower trade costs cause low productivity non-exporting firms to exit in response to greater competition from foreign varieties.
 - **Learning-by-exporting effect:**
 - Productivity gain in terms of value added of 20-25 percent in the short-run and up to 50 percent in the long run (Bigsten et al. 2004).
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Channels

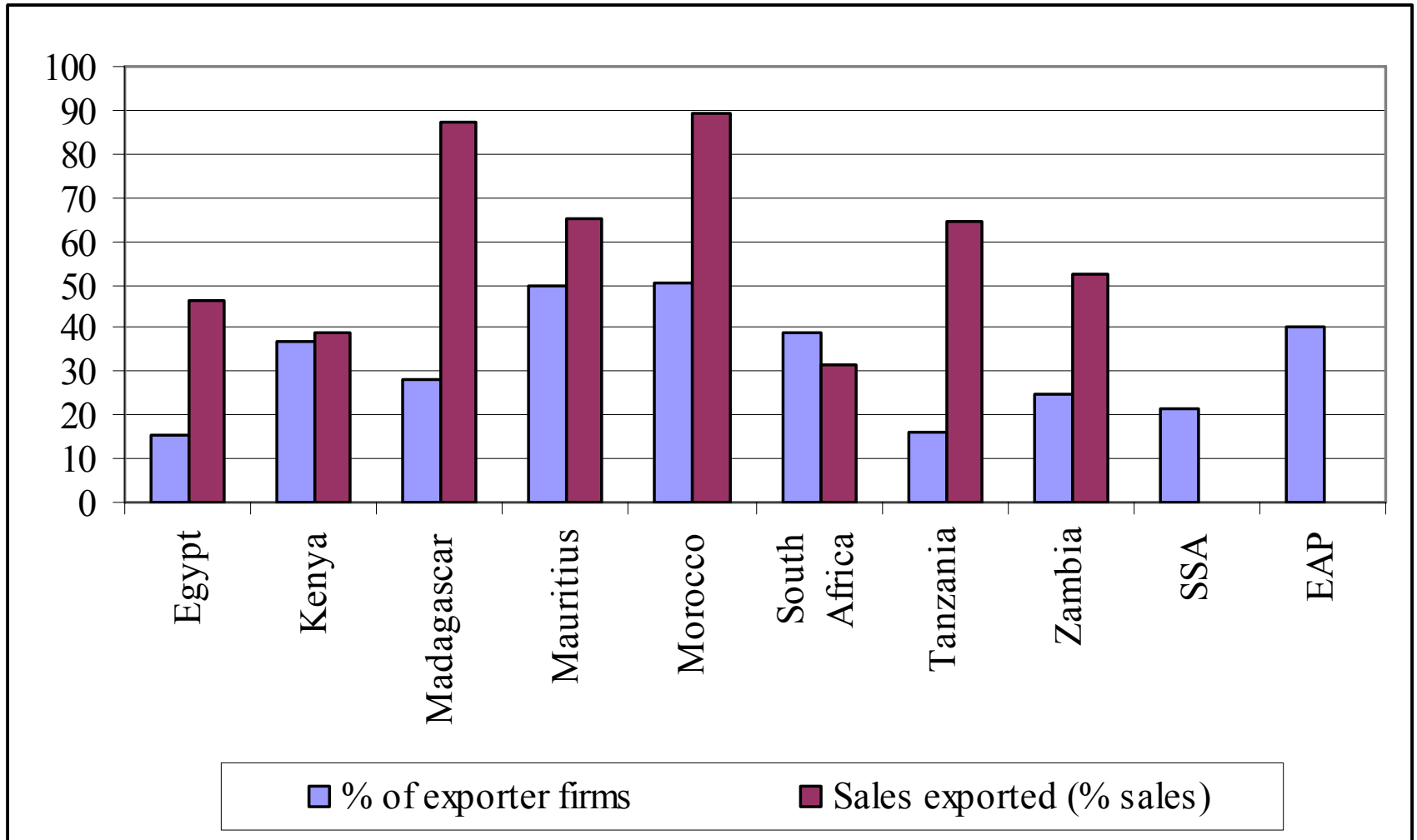
b) Direct productivity effect

- Lots of firm-level evidence, but mainly in East Asia and the Americas:
 - **Supply of power:** Bangladesh (Fernandes, 2005), India, China, Ethiopia and Pakistan (Dollar et al., 2002, 2003), South and Central America (Escribano et al., 2005, 2006).
 - **Customs clearance delays & Shipment losses:** India (Dollar et al., 2002), China and Brazil (Subramanian et al., 2005), South and Central America (Escribano et al., 2005, 2006).
 - **Transport service interruptions** (Escribano et al., 2006)
 - **Delays in receiving telephone connections or permits and licences** (Escribano et al., 2006)
 - **Crime:** (Fernandes, 2005)

Data

- World Bank manufacturing Enterprise Surveys Database
 - Eight African countries: Egypt (977), Morocco (839), South Africa (584), Kenya (265), Madagascar (292), Mauritius (184), Tanzania (265) and Zambia (179)
 - Period 2002-2005
 - 3 585 manufacturing firms
 - Large number of missing observations, particularly for quantitative infrastructure measures
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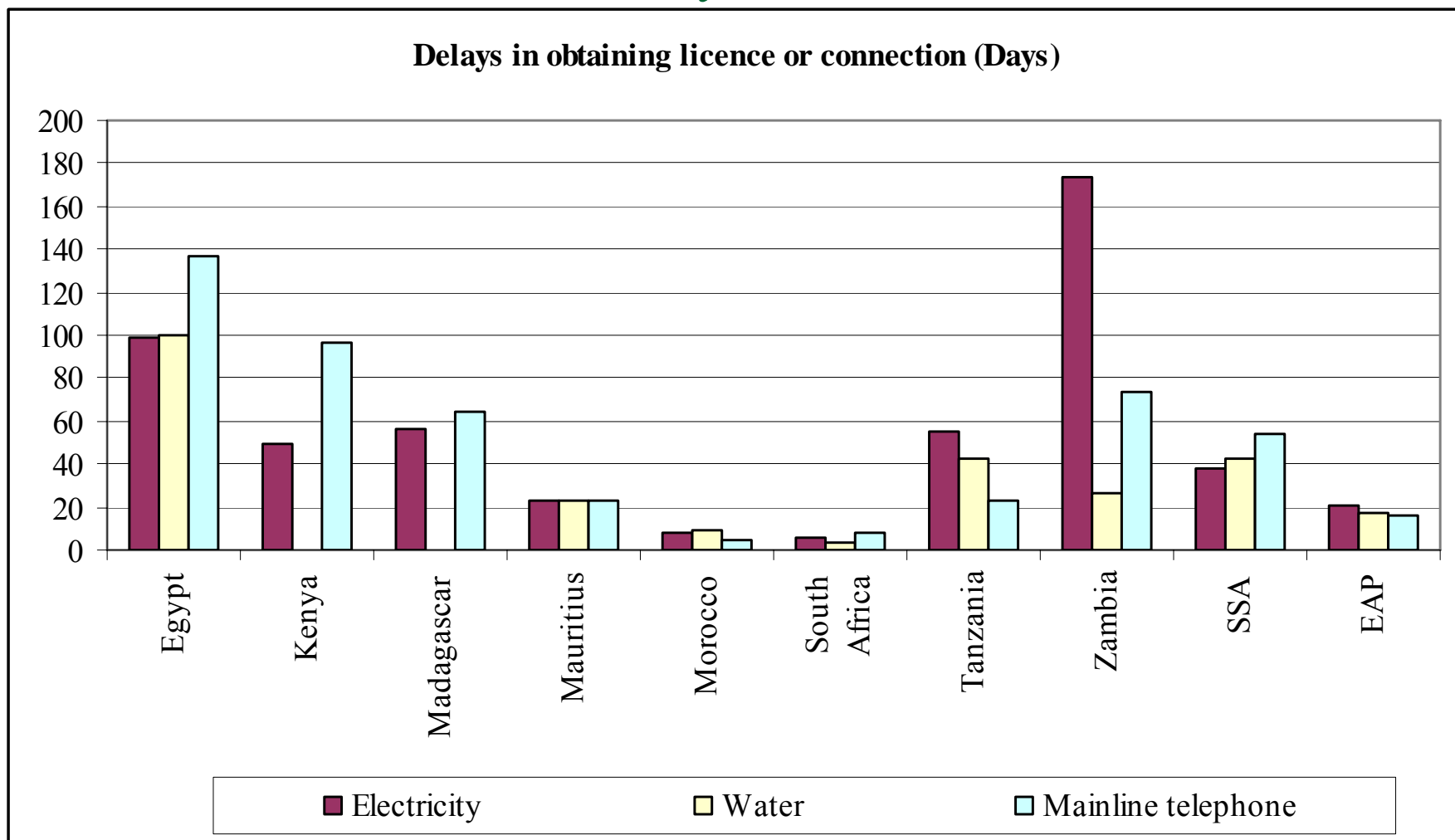
Export performance varies widely



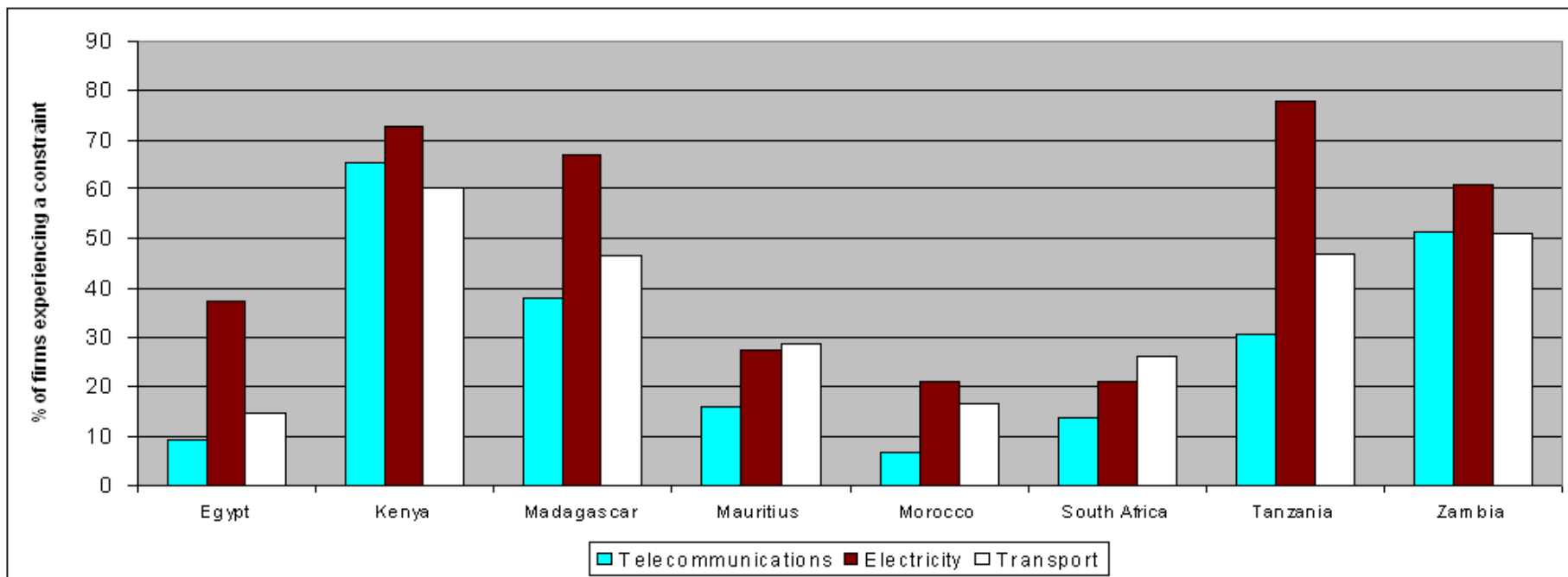
Trade-related business climate indicators

	Delay in obtaining an import license (days)	Average Time to Clear Direct Exports Through Customs (days)	Average Time to Clear Imports from Customs (days)*	Customs & trade regulations as a major constraint (% firms that trade)	Transportatio n as a major constraint (% firms) (all firms)
Egypt	38	5	10	29	8
Kenya	6	5	9	40	37
Madagascar	17	4	7	33	16
Mauritius	8	4	5	23	14
Morocco	-	2	3	0.4	10
South Africa	7	4	6	17	10
Tanzania	15	12	18	12	14
Zambia	11	3	7	10	30
SSA	14	5	9	23	24
East Asia & Pacific	13	4	5	22	15

Infrastructure services: Delays high in some, but relatively low in others



Leading to high % of firms experiencing infrastructure as constraint to business



Notes: The results are for all firms that experienced moderate, major or severe obstacle to their operations.

Empirical methodology

Firm export decision:

$$\begin{aligned} \text{Export}_i &= 1 \text{ if } \pi_{xi}(\theta_i, \tau, f_x) > 0 \\ &= 0 \text{ otherwise} \end{aligned}$$

Where:

- $\pi_{xi}(\theta_i, \tau, f_x)$ is profits from exporting,
- θ_i is productivity,
- τ are variable trade costs and
- f_x are sunk costs of entry into the export market.

We follow Dollar et al. (2006) and assume:

$$h(\theta_i, \tau, f_x, \varepsilon_i) = a\theta_i + b\tau + cf_x + \varepsilon_i$$

The export relationship can then be expressed as:

$$Pr(\text{Export}_i = 1 | \theta_i, \tau, f_x) = Pr[\varepsilon_i > -(a\theta_i + b\tau + cf_x) | \theta_i, \tau, f_x]$$

Probability model estimated using Probit

Endogeneity problems

- Measurement of productivity
 - Firm-level Business Climate (BC) indicators likely to be endogenous
 - a) Firm performance may affect the BC measures
 - b) 'Lobby effect'
 - c) 'Congestion effect'
 - *Possible solution:* Use city-industry averages of BC indicators?
 - (But does not solve the endogeneity problem if firms choose to self-select into cities with better BC)
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Empirical methodology

- Construct principal component based indices using perception-based indicators

Physical Infrastructure	Micro-level Supply Constraints
Telecommunications Electricity Transportation	Access to land Tax rate Tax administration Labour regulations Skills and education of available workers Business licensing and operating permits Access to finance Cost of financing
Legal Environment	Macroeconomic Conditions
Corruption Crime Anti-competitive or informal practices Legal system/conflict resolution	Economic and regulatory policy uncertainty Macroeconomic instability

Determinants of Export Propensity: Principal Components-based Business Climate Factors, marginal effects

	(1)	(2)	(3)	(4)	(5)
Firm-specific Characteristics					
Size (log)	0.086***	0.112***	0.116***	0.083***	0.114***
Age (log)	-0.046***	-0.062***	-0.067***	-0.037***	-0.064***
Ownership - some foreign (dummy)	0.097***	0.054**	0.049*	0.081***	0.071**
E-mail (dummy)	0.186***	0.222***	0.244***	0.189***	0.244***
Website (dummy)	0.102***	0.068***	0.078***	0.088***	0.072**
Skill intensity (log)	-0.015	0.009	0.003	0.001	0.002
Manager has tertiary education	0.117***	0.058**	0.059**	0.080***	0.098***
Principal Components Business Climate Factors					
Physical infrastructure	0.018	0.008			
Micro-level supply constraints	-0.007		-0.015**		
Macroeconomic conditions	-0.024			-0.021**	
Legal environment	-0.036**				-0.051***
Number of observations	1210	2912	2392	2324	1979

Notes: Country dummy variables included

Does infrastructure matter?

- Results similar to other firm-level studies
 - Correa et al. (2007) for Ecuador
 - Clarke (2005) for Africa
 - Problem: Not enough within country variation
 - Cross-country correlation between exports and infrastructure high
 - In estimates, export propensity large (relative to Egypt) in Mauritius and Morocco where infrastructure relatively good.
 - Export propensity relatively low in Tanzania and Zambia where the quality of infrastructure is relatively poor (as per firm response).
 - Principal components aggregate data, so disaggregated effect lost
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Physical Infrastructure

Determinants of Export Propensity

	Marginal Effect	Significant country results
<i>Firm-characteristics</i>		
E-mail (dummy)	0.627***	
Website (dummy)	0.298***	
<i>Infrastructure measure</i>		
Average duration of power outages	-0.001*	Mauritius, Zambia
Generator (dummy)	0.060**	Madagascar, Zambia
Lost value due to transport failures	-0.099**	
Business association (dummy)	0.053*	
ISO certified (dummy)	0.104***	Egypt, South Africa, Zambia

Note: Separate regressions estimated for each infrastructure variable

Trade-related Infrastructure and Services Determinants of Export Propensity

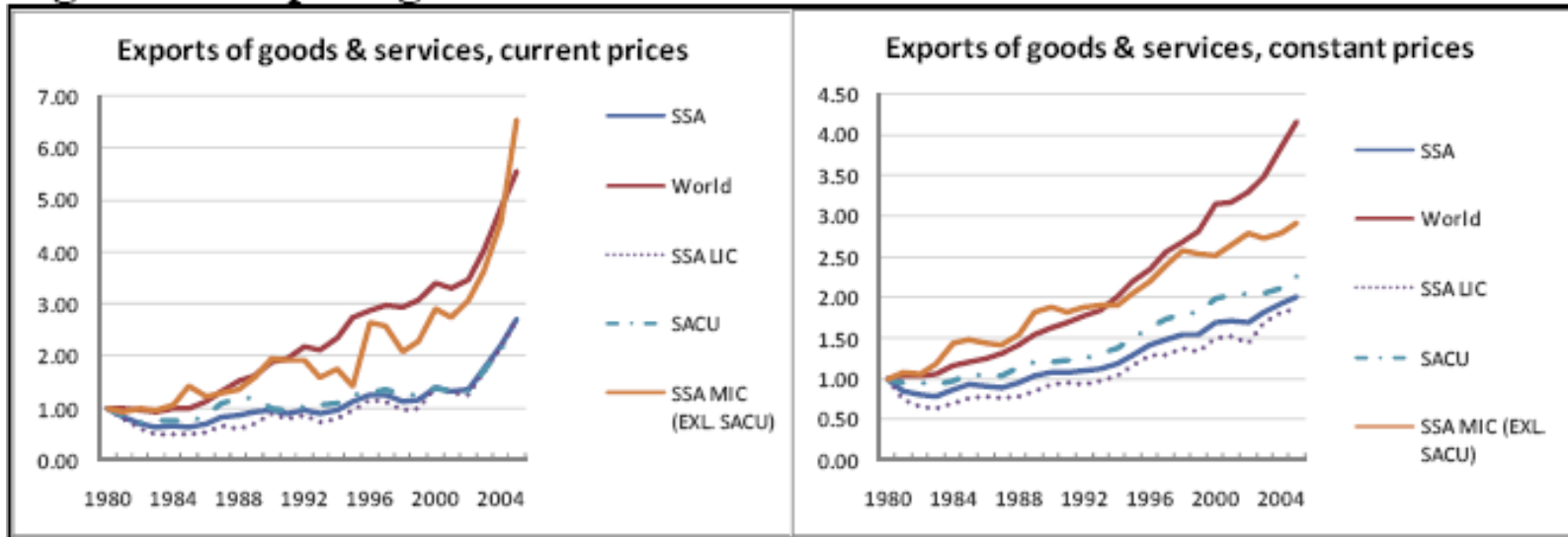
	Marginal Effect	<i>Mauritius</i>	<i>Morocco</i>	<i>Tanzania</i>	<i>Zambia</i>
<i>Firm Constraints</i>					
Customs and trade regulations	0.02	-0.388	-0.044	0.224	-0.536*
<i>Hard-data' Measures</i>					
Imported inputs	0.003***	0.011***	0.008***	-0.008*	-0.002
Average days to clear customs for imports	-0.003	-0.049*	-0.013	-0.008	0.005
Longest time to clear customs for imports	-0.002**	-0.018	-0.016*	-0.016*	0.011
Delay in obtaining an import license	0.001	-	-	0.201	0.015
Average days to clear customs for exports	0.002	-0.077	-0.027	-0.016	-0.106
Longest time to clear customs for exports	0.001	-0.020	-0.005	-0.007	-0.044

Note: Separate regressions estimated for each infrastructure variable

Conclusions

- Perceptions related to micro-level supply constraints, macroeconomic conditions and the legal environment are significant determinants of the probability of exporting.
- Several infrastructure measures also associated with probability of exporting
 - ISO certification, membership of a business association, own or share a generator
 - Exporting is less common where there are lengthy power outages or when losses in sales value due to transport failures are high
 - Access to internet associated with exporting
- **Access to imported intermediate inputs** are also important
 - Importing higher shares of material inputs and supplies directly is associated with higher probability of exporting
 - Exporting is less common when firms experience lengthy customs clearance times for imported goods

Figure 3: Export growth in sub-Saharan Africa



Source: World Bank World Development Indicators. LIC is low-income countries, MIC is middle-income countries and SACU is the South African Customs Union.

- Source: Behar and Manners (2008)