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African firm performance and public procurement participation

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(joint work with Marco SanFilippo, University of Bari)

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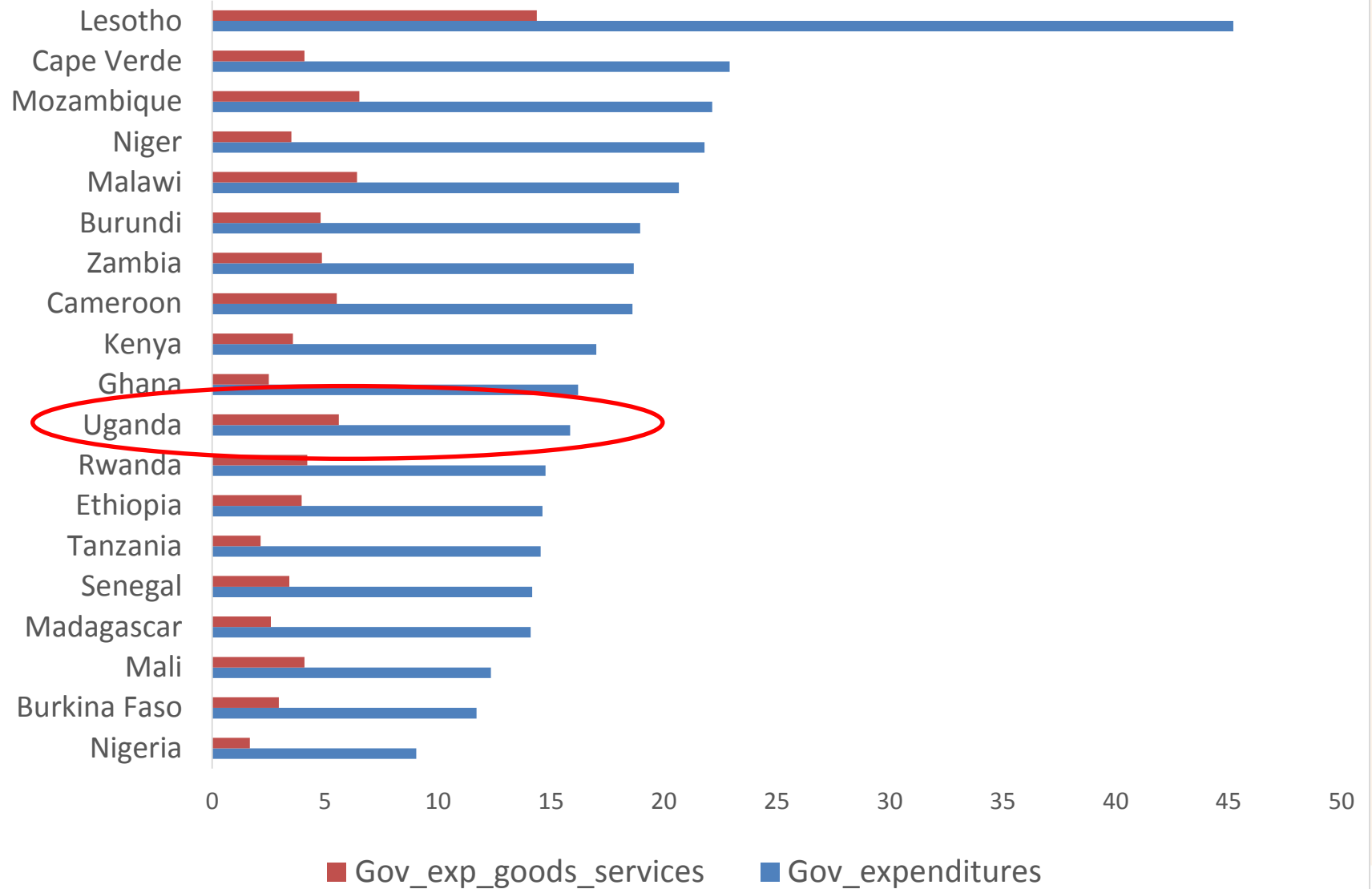


Government demand: a large market

- 10+% of GDP on average across the world
 - 14.4% in low-income countries
- Mostly local:
 - Imports account for some 5% of total government consumption on average (WIOD)
 - Somewhat higher for small countries
- Foreign procurement shares substantially less than the average import/GDP ratio for the world
 - 30% compared to $\leq 5\%$



Govt. expenditure (% of GDP) (average 2006-2016)





Policy, politics or economics?

- Why the strong home bias in procurement?
- Procurement preferences and explicit buy national rules only (small?) part of the story
- Non-tradables (services) are a big share of demand
- Fixed/transaction costs of contesting small contracts may deter foreign bidders
 - Turkey: 96% of contracts below value threshold requiring call to be open to foreign bids (Omur et. al)
 - Japan: around 75% < threshold (Shingal)
- Procurement occurs at many levels: central government, state/provincial, municipal
 - Sub-central procurement likely to attract less foreign bidders



Different interests and objectives

- **Firms:** market access
- **Procuring entities:** value for money
- **Governments:** often have additional objectives
 - Incentive to allocate tax money to tax payers – source locally
 - Industrial policy: PP (government demand) may encourage firms to invest more, innovate, expand employment and/or increase productivity
 - Social, equity, redistributive goals—e.g., SMEs
- Multiple objectives require multiple instruments
- Whatever the goals, need clear rules of the game (criteria), transparency and accountability
- Not just to achieve goals, but also to prevent capture
 - Players may seek rents and patronage— corruption
 - Or kick backs as a source of financing for politics
- Corruption/cronyism/favoritism may prevent attaining goals



Does PP attain underlying goals?

- Relatively little research on industrial policy dimension
- This paper: use data from UNIDO African Investor Survey of firms in 19 Sub Saharan African countries to assess relationship between PP and firm performance
- Stratified sample – by sector, size and ownership
- Firms ≥ 10 workers; 62% local; 38% foreign-owned
- Survey has data on share of output sold to government
- N=6,700. Of this, 4,600 responded to question re: selling something to government. 29.6% report such sales
- Questions:
 - Does PP help to offset demand weakness (capacity under-utilization)? (applies to one third of firms in sample)
 - Is there any evidence of “industrial policy” effects?



Ugandan firms in the sample

- 812 firms total (12.5% of the survey)
- 50% foreign-owned; 87% in Kampala
- 536 responded to PP question, of which 26% sell some of their out to government entities
 - On average, 6.4% of total sales (less than survey average)

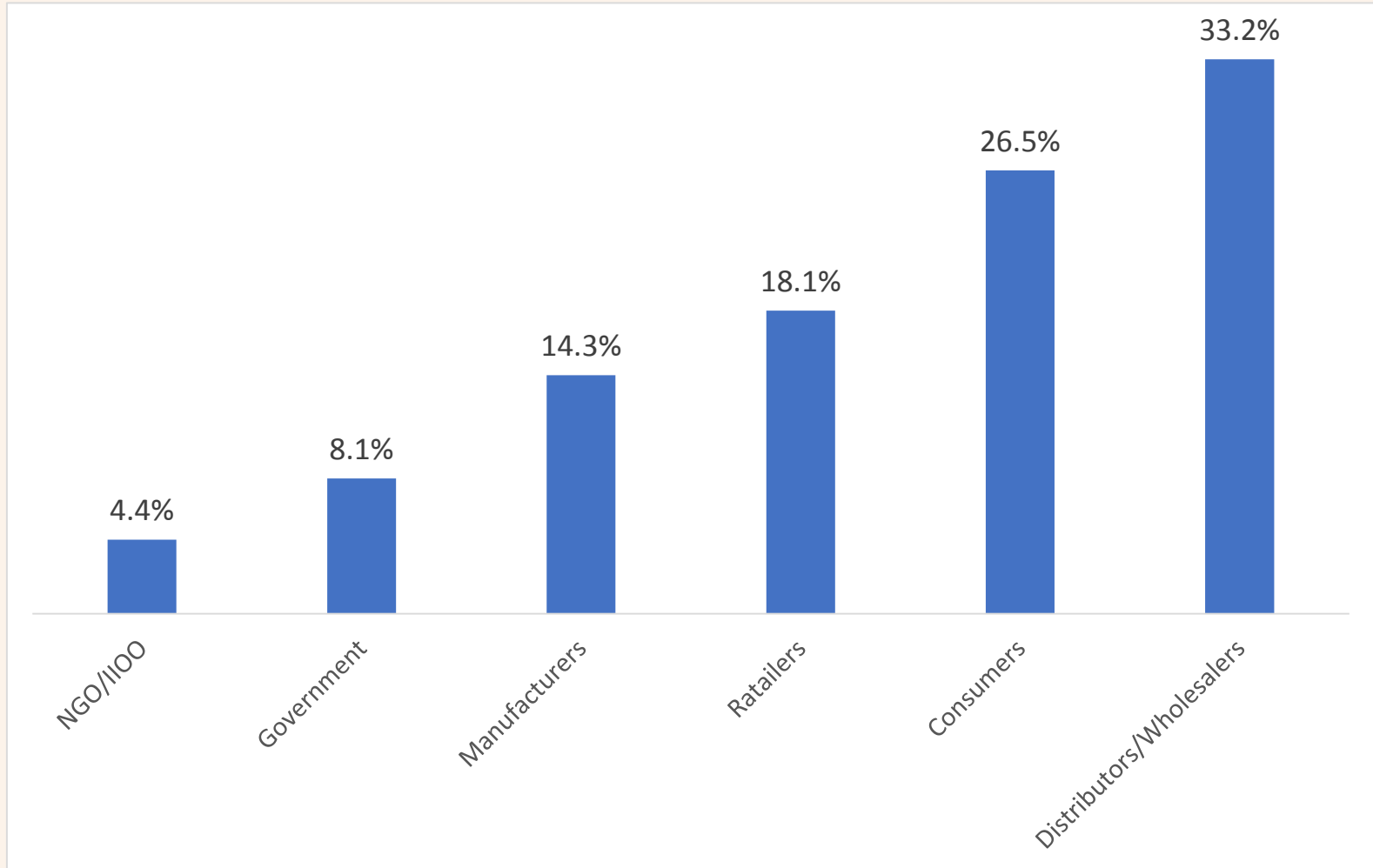


Share of total sales to government by firm-level characteristics

Firms' characteristics	Share of sales to Gov. (% on total sales)		No. of Obs.
	Whole sample	Uganda firms	
Domestic	9.4%	(5.8%)	2804
Foreign	6.0%	(7%)	1785
Family owned (>50%)	6.9%	(6.1%)	3069
Small (<50)	7.6%	(6%)	2058
Medium (50-100)	8.0%	(6.7%)	924
Large (>100)	8.8%	(7%)	1562
Young firm (<10 years)	6.7%	(4.2%)	1445
Old firm (>10 years)	8.7%	(7.4%)	3144
Exporter	4.6%	(4.2%)	1325
non-Exporter	9.6%	(7.5%)	2901
Capital city	8.8%	(6.7%)	1830
Other cities	6.9%	(4.6%)	2707
Agric. & Mining	4.5%	(1.7%)	334
Manufacturing	6.3%	(4.1%)	3124
Electricity-Water-Construction	28.9%	(20.5%)	313
Services	8.4%	(9.6%)	818
Total number of firms			4600



Average share of total sales across buyer types



Domestic firms: 9.4% of total sales go to government; foreign: 6%



Empirical framework

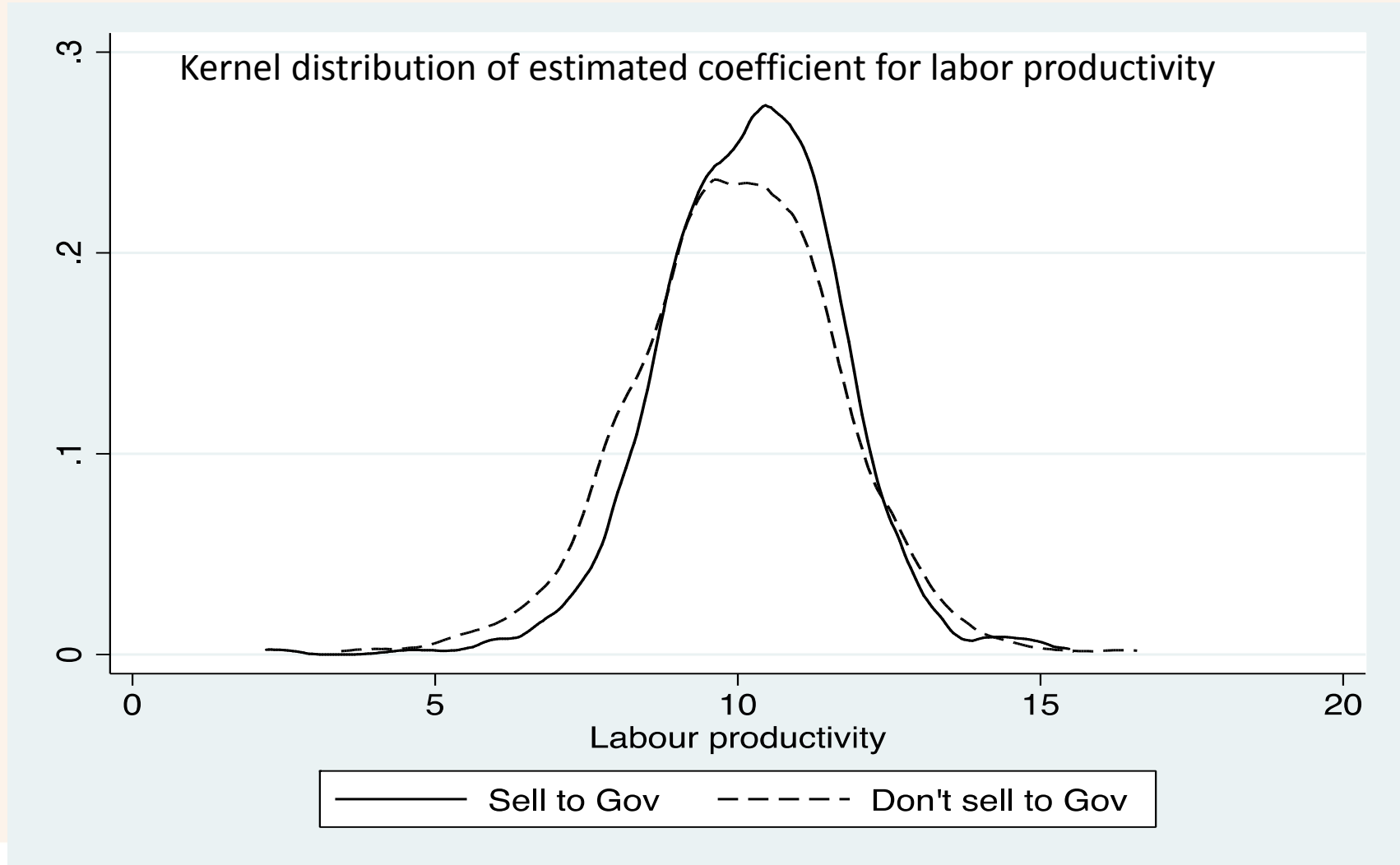
- Estimate labor productivity for firm i in country j and sector x :

$$y_{ijx} = \sum \beta Z_i + \gamma share_gov_i + \theta_j + \delta_x + \varepsilon_{ijx}$$

- Z = controls: age, size, family ownership, exporter, foreign-owned, skill intensity of workforce
- Share sold to government:
 - Zero/one dummy
 - Share (%) of total output



Estimated labor productivity: PP firms somewhat better





Selling to govt is associated with higher productivity

A 10pp increase in sales to govt associated with 4pp higher productivity level

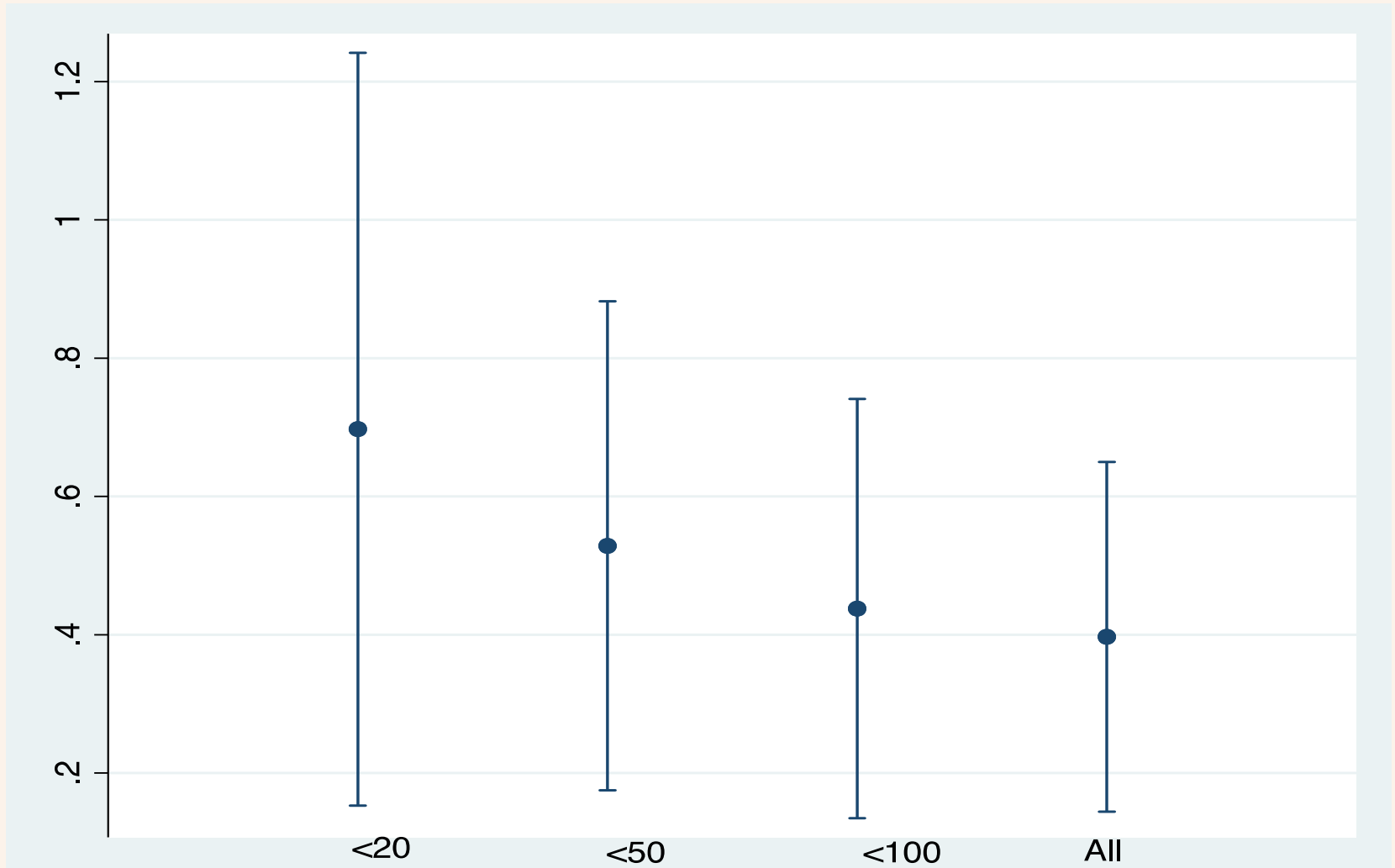
Effect is stronger for smaller sales

On average, 20 percent differential between firms that do/don't sell to the government

	Main	Squared_term	Main_dummy	IO/NGO
size_class	0.241*** (0.0289)	0.242*** (0.0289)	0.240*** (0.0289)	0.246*** (0.0290)
age	0.175*** (0.0304)	0.172*** (0.0304)	0.171*** (0.0304)	0.182*** (0.0301)
exporter	0.328*** (0.0558)	0.326*** (0.0558)	0.324*** (0.0558)	0.318*** (0.0560)
foreign	0.455*** (0.0529)	0.456*** (0.0528)	0.457*** (0.0528)	0.447*** (0.0527)
family	-0.265*** (0.0559)	-0.264*** (0.0559)	-0.265*** (0.0557)	-0.270*** (0.0559)
skill_ratio	1.152*** (0.145)	1.145*** (0.145)	1.146*** (0.145)	1.179*** (0.145)
share_gov	0.400*** (0.129)	0.930*** (0.309)		
Proc_dumy			0.202*** (0.0488)	
share_gov^2		-0.708* (0.388)		
Share_iioo				0.210 (0.172)
R-squared	0.325	0.325	0.326	0.323
Country & industry Effects	Y	Y	Y	Y



Firm heterogeneity: larger estimate for smaller firms





Additional findings

- Positive productivity result pertains to:
- Domestic firms, not foreign-owned or large firms (> 100 workers)
 - Suggestive of the demand mechanism operating
- Firms in manufacturing, not construction or services
- Controlling for corruption or governance quality does not affect estimates
- Controlling for import tariffs and inward investment promotion reveals productivity estimates rise conditional on these proxies for industrial policy
 - Suggests complementary policies may play a role
- Some evidence of a positive association between PP participation and measures of innovation
 - E.g., extent to which firms sell new products



Additional findings

VARIABLES	Domestic	Foreign	Manuf.	Services	Corruption	Tariffs	Targeting
size_class	0.330*** (0.0360)	0.0933* (0.0496)	0.256*** (0.0333)	0.175** (0.0766)	0.241*** (0.0289)	0.249*** (0.0347)	0.306*** (0.0408)
age	0.104*** (0.0371)	0.250*** (0.0546)	0.161*** (0.0357)	0.212*** (0.0767)	0.175*** (0.0304)	0.153*** (0.0369)	0.159*** (0.0417)
exporter	0.327*** (0.0747)	0.378*** (0.0863)	0.354*** (0.0616)	0.423** (0.167)	0.328*** (0.0558)	0.292*** (0.0642)	0.214*** (0.0731)
foreign			0.506*** (0.0625)	0.679*** (0.136)	0.455*** (0.0528)	0.469*** (0.0653)	0.487*** (0.0744)
family	-0.228*** (0.0575)		-0.199*** (0.0638)	-0.162 (0.139)	-0.265*** (0.0559)	-0.284*** (0.0674)	-0.218*** (0.0803)
skill_ratio	0.766*** (0.172)	1.768*** (0.253)	1.283*** (0.196)	0.497* (0.282)	1.152*** (0.145)	1.352*** (0.201)	1.405*** (0.251)
share_gov	0.375** (0.148)	0.446 (0.287)	0.480*** (0.164)	0.300 (0.311)	0.403* (0.213)	0.158 (0.209)	0.203 (0.199)
share_gov*corruption					0.00511 (0.269)		
share_gov*tariff						0.0103** (0.00463)	
share_gov*targeting							1.270*** (0.416)
Observations	2,485	1,612	2,817	720	4,103	2,787	1,799
R-squared	0.328	0.282	0.342	0.294	0.325	0.314	0.373
Country fixed effects	Y	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y	Y



Dealing with data limitations

- Analysis is based on a cross-section of firms in 19 African
- Only have one year of data: so impossible to determine if PP participation *causes* productivity *improvement*
 - Firms that engage in PP may be better to start with
 - PP contract award processes should pick better firms
- Use matching methodology to estimate a selection model
 - Construct a control group of firms that do not engage in PP that are as similar as possible to firms that engage in PP
 - 3,000+ firms do not sell to the govt – so match firms that do PP with very similar firms that do not
 - Selection model generates very similar results



Questions and potential implications / additional work

- Results indicate that procurement may be a useful tool to achieve industrial policy-type goals
 - Help firms improve performance
- But cross-section nature of data means this is just a possibility – we cannot assess causality
 - PP regimes may simply be picking better firms
 - NB: this would be a good thing too – it is what PP policies are designed to do!
- Findings suggest there is value in replicating analysis using panel data – need statistics for several years
- Need to include analysis of (changes in) procurement policies



More general policy considerations



On local content (LC) policies

- Can be costly, if effective
 - Supply constraints may impede effectiveness/competitiveness
 - Distinguish between foreign investors & public procurement
 - Private: LC policies may be redundant (e.g., often LC/training is in interest of foreign investors) or distorting (rent-seeking)
- Price preferences are less costly/easier to apply
- Other policies can target desired goals more directly, e.g.:
 - Work permit/visas (to limit foreign workers)
 - Provide information on local firms; enhance their capacities
- LC may impede/undercut realization of broader regional integration goals (EAC; CTFA) – and induce emulation
- Inconsistent with WTO rules if LC applied to private sector



On local content policies (2)

- Management challenges re: implementation of LC rules
 - “Command and control’ approach re: specifics (availability; quality; timeliness; technology) generates uncertainty.
 - Requiring ex ante LC plans (e.g., State-level rules in Australia) can result in costly ‘red tape’
 - Recognize & address potential for rent-seeking
 - Potential costs rise if LC includes
 - *Ex ante* authorization for non-local goods/services and oversight of contracting authorities/investors
 - Limits on/requirements for sub-contracting
 - Non-acceptance of international standards/certification
 - Compliance bonds; review & potential termination of contracts; criminal penalties
- Significant risk of adverse reputational/chilling effects



Good practices

- Maintain centrality of ‘value for money’ as a goal for PP
- Target specific constraints that adversely affect capacities of local firms to provide products
 - Engage with buyers/investors/contracting authorities
- Enhance information on local firms and capacities
 - Analyze sourcing/supply chain activity at national level: opportunities to better match demand to local supply
- Reduce participation costs for local firms
 - Thresholds for publication; revisit eligibility requirements
- Use incentives – e.g., a points system that gives credit for higher LC bids (independent of nationality)