

Exports, imported intermediate inputs and exchange rate volatility in Zambia

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Motivation

- Zambia remains dependent on copper and vulnerable commodity price swings, which impacts the exchange rate
- Economic development requires diversification
- Exporting, and importing, are important components of this diversification

This paper:

- Uses micro-data (at a transaction level) to understand export and import behaviour in more detail
- Examines how exchange rate volatility affects the export and import behaviour of firms

‘Stylised’ facts from other countries

- Productivity and exporting are closely linked
- Access to imported intermediate inputs associated with successful exporting
 - Integration into global or regional value chains
 - Improved productivity
 - More varieties
 - Cheaper inputs
 - May embody technology

'Stylised' facts from Zambia

Micro papers: Banda and Simumba (2013); Brühlhart, Kukenova, and Dihel (2015)

Macro work: Chipili (2015)

- Zambia's export revenue heavily dependent on movements in the price of primary products, particularly copper
- Zambian exporters do not participate in the export market for very long
- Export survival rates are the lowest of approximately 40 comparator countries
- Challenge is extending survival beyond one year

Data

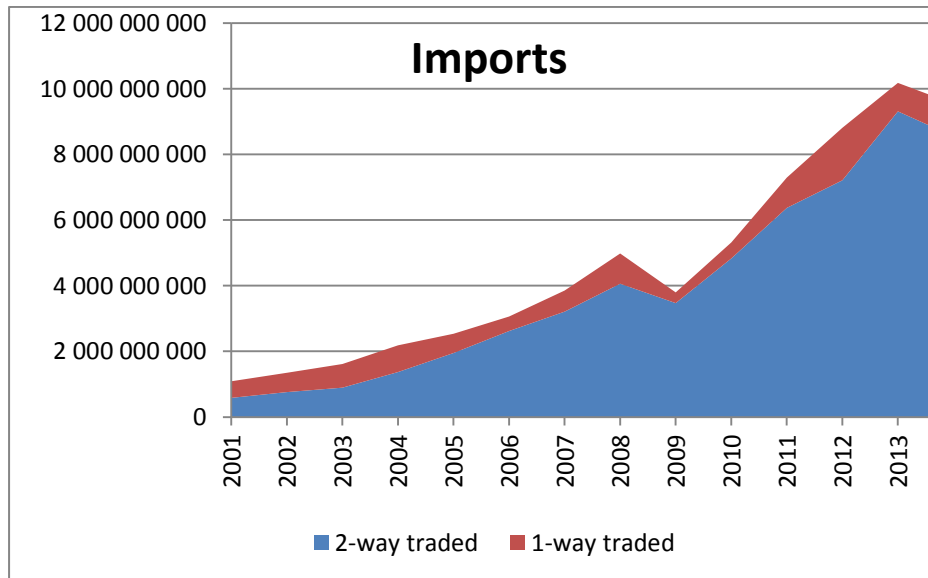
- Trader (firm) level data for exporters and importers
 - Link these so that can see imports and exports of the same firm
- Trade data on products and destinations
- Period :2000 – 2013
- No data on firm characteristics such as size and productivity

Three 'levels'

- Product level. Aggregate across traders to construct unique products at the HS-6/8 level.
- Traders or firms.
- Variety. Unique product by country combinations.

Growth in products traded

Export and import values: one-way (only imported or exported) and two-way (both imported and exported) traded products



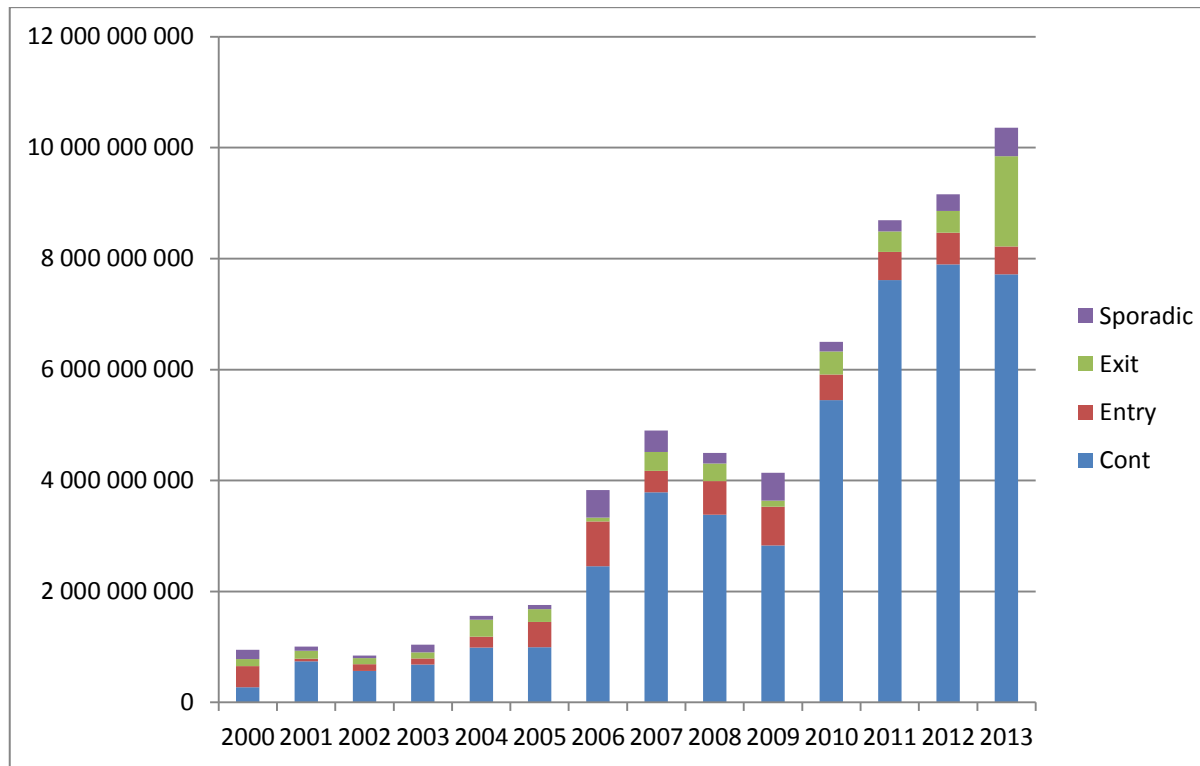
Export Value

Export value (proportion) by importer and exporter type. 2000-2013

Importer type		Exporter type				Total
		Continuous	Entry	Exit	Sporadic	
Non-importer	%	0.66%	0.24%	0.33%	0.26%	1.49%
	N	872	1 023	1 096	3 378	6 369
Continuous	%	79.19%	0.35%	0.51%	0.09%	80.14%
	N	4 560	1 430	1 129	1 728	8 847
Entry	%	0.12%	2.38%	0.00%	0.11%	2.61%
	N	166	652	42	468	1 328
Exit	%	0.93%	0.04%	12.09%	0.56%	13.63%
	N	230	94	889	990	2 203
Sporadic	%	0.08%	0.02%	0.20%	1.83%	2.13%
	N	117	126	169	1 315	1 727
Total	%	80.98%	3.04%	13.13%	2.85%	100.00%
	N	5 945	3 325	3 325	7 879	20 474

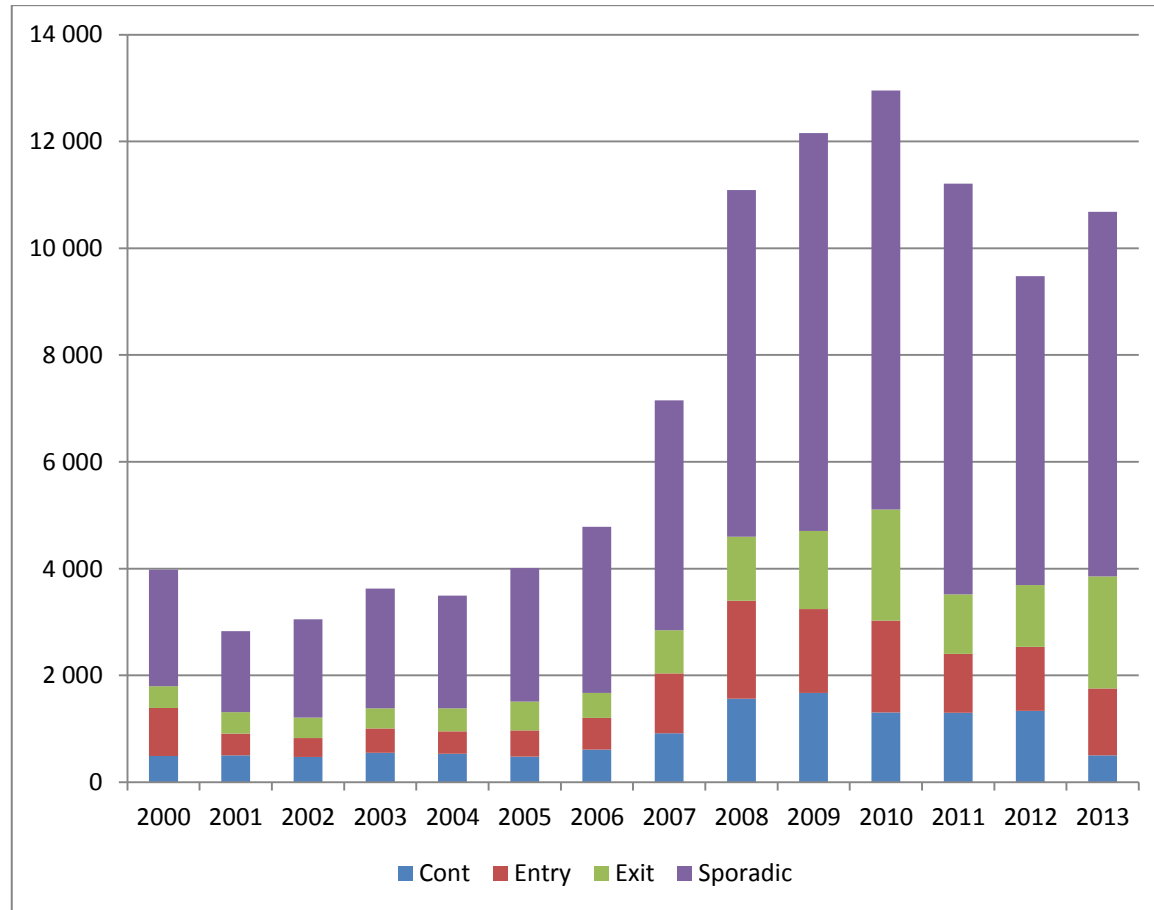
Export Varieties

Export varieties, value



Export Varieties

Export varieties, numbers



A summary

- Growth in value of both exports and imports
- Bulk of value comes from continuous exporters who import
- High number of sporadic exporters who do not import
- Continuous varieties provide most value
- Sporadic varieties are most numerous

Econometric analysis

Product quality: per unit price at variety (product x market) level

$$Q_{ijkt} = T_{ijkt} + \lambda_i + \mu_j + \tau_t + \varepsilon_{ijkt}$$

Where:

Q is the natural logarithm of the pre unit price;

T is a set of dummy variables for the traded behaviour of the variety (sporadic, entry or exit with continuous as the base);

λ are product specific effects;

μ are destination specific effects;

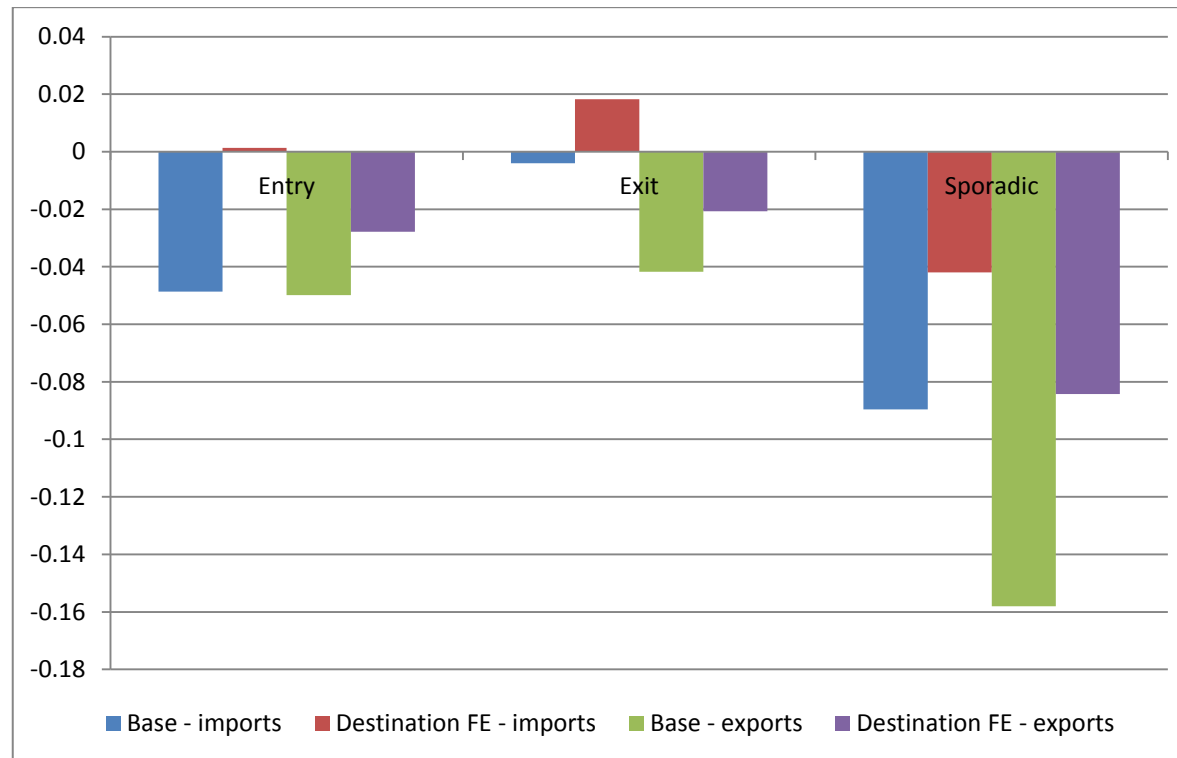
τ are time specific effects; and

ε is the usual residual term.

The subscripts i, j, k , and t index products, destinations, firms and time.

Results

Product quality differences relative to continuous importers.



- Destination explains some of the quality: lower quality associated with specific destinations
- But something else: firm-specific characteristics (low quality firms?)

Export variety entry

	(1)	(2)	(3)	(4)	(5)	(6)
	Exporter entry			Imports		
				Exchange rate		
Product quality	-0.0050*** (0.000625)	-0.0028*** (0.000633)	-0.0022*** (0.000630)	-0.0038*** (0.000727)	-0.0032*** (0.000724)	-0.0032*** (0.000724)
Importing firm			-0.0840*** (0.00367)		-0.0746*** (0.00408)	-0.113*** (0.00989)
Import country			-0.0856*** (0.00385)		-0.0853*** (0.00448)	-0.0850*** (0.00448)
Exchange rate volatility				2.220*** (0.433)	2.189*** (0.432)	-1.493 (0.962)
Exchange rate volatility × importing firm						4.229*** (0.987)
Destination controls	None	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
Year controls	Fixed effects	Fixed effects	Fixed effects	Trend	Trend	Trend
Observations	118,890	118,890	118,890	94,229	94,229	94,229
R-squared	0.028	0.047	0.056	0.022	0.030	0.030
Number of products	4,357	4,357	4,357	3,924	3,924	3,924

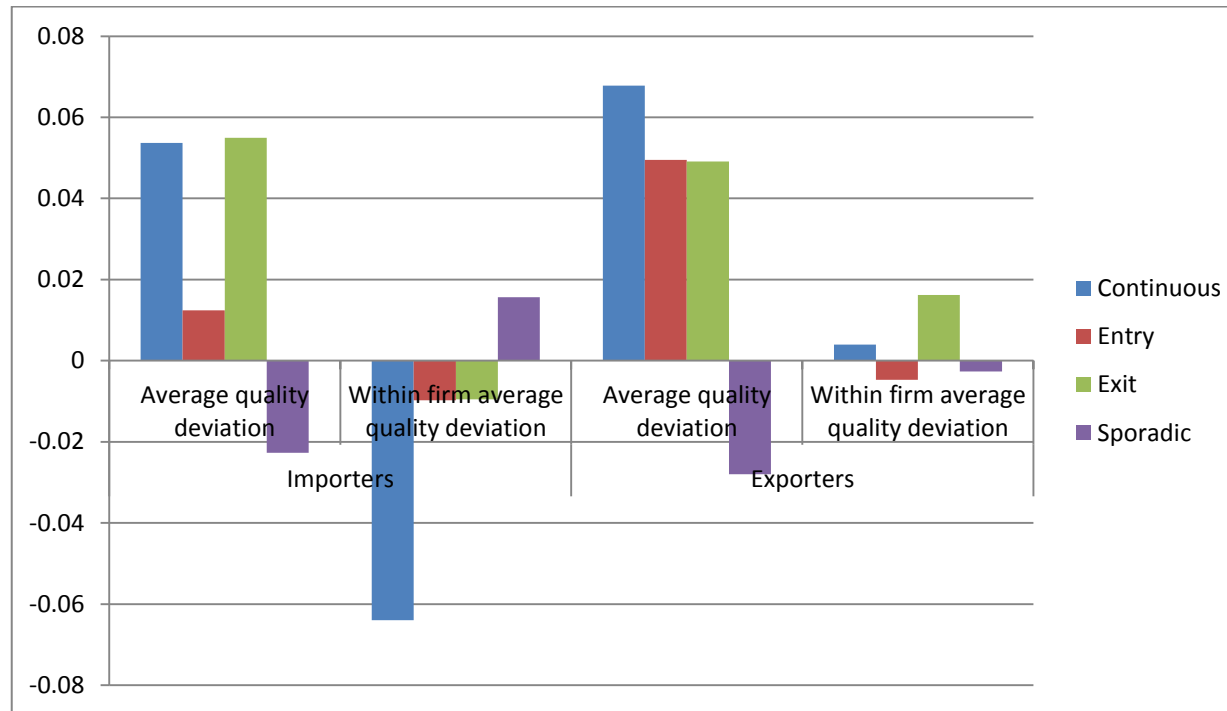
Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

- Low quality products enter
- Importers (at the firm or country level) do not
- Exchange rate volatility and being an importer positively associated with entry (potentially 'arbitragers')

Can sporadic exports be converted into continuous exports?

Deviations in product quality across and within firms.



Two 'types' of firms: firms which continuously trade the higher quality varieties; and firms that trade sporadically in the lower quality varieties.

Summary

1. Trade values are dominated by relatively small numbers of continuous traders but there are a large number of firms who participate in trade sporadically
2. Both sporadic import and export varieties are, on average, of lower product quality than continuous varieties. This is not fully explained by destination
3. Importing is not associated with higher product quality for exporters
4. Higher exchange rate volatility increases churn (entry and exit) in both the import and export market
5. Certain firms export higher quality products, rather than both high and lower quality product varieties being exported within the same firm, others specialise in the trade of low quality varieties

Policy

Improving the quality of products

- Imports
- Skills
- Uncertainty
- Infrastructure
- Access to finance
- Focus on firm productivity, including a new pool of higher productivity firms

Role of exchange rate

- Volatility discourages long-term trade of higher quality varieties but this in turn restricts export diversification which would reduce volatility