Regional Market Integration and City Growth in East Africa: Local but no Regional Effects?

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Motivation

Regional market integration: A magic bullet to unleash Africa's potential?

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▶ Distributional consequences are little understood

▶ Increasing concentration continues to be a dilemma for policy makers

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- Stability of urban systems (e.g. Davis & Weinstein, 2002; Miguel & Roland, 2011; Jedwab & Moradi, 2016).

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- Trade-induced spatial effects (e.g. Henderson, 1982; Krugman & Venables, 1995; Helpman, 1998; Redding & Sturm, 2008)
- Stability of urban systems (e.g. Davis & Weinstein, 2002; Miguel & Roland, 2011; Jedwab & Moradi, 2016).

We are the first to examine these trade-induced spatial effects of RTAs on city growth in a context where countries are similarly poor, largely agrarian, and undergoing structural transformation.

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► With almost immediate effect EAC member states started to remove discretionary duties on regional imports.

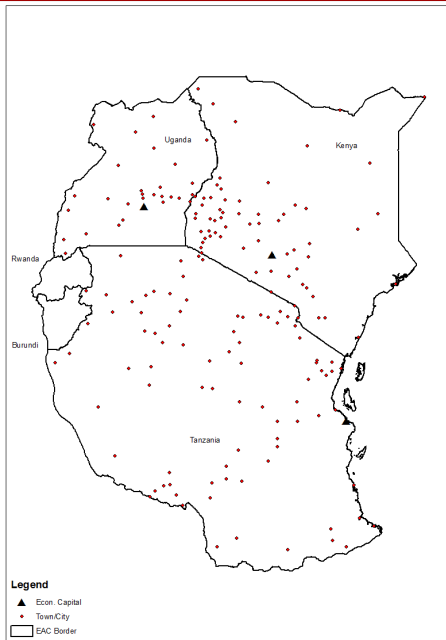► Countries embarked on significant trade facilitation efforts.

EAC Economic Geography
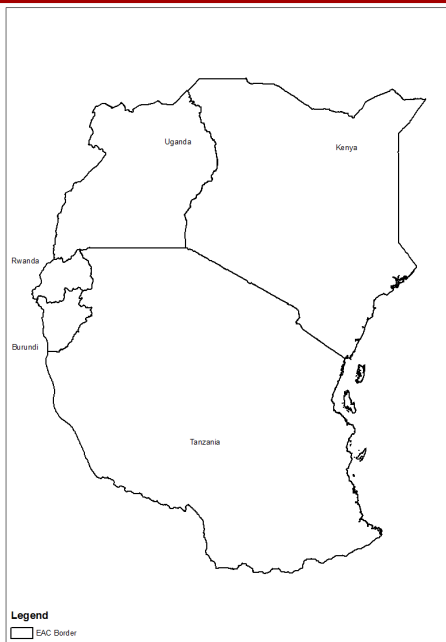
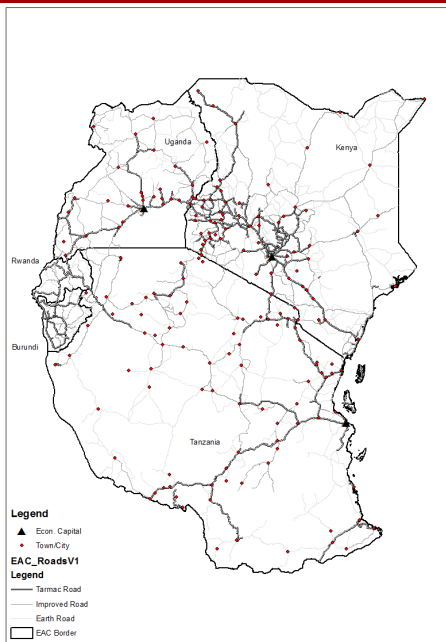▶ Focus on founding members of EAC: Kenya, Tanzania and Uganda.

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- ▶ Annual changes (1992-2013) in economic activity for 180 cities using nightlights.

- ▶ Quality of road network established using Michelin Map of 1991.

- ▶ Distance to border assuming different max. travel speeds on each type of road.
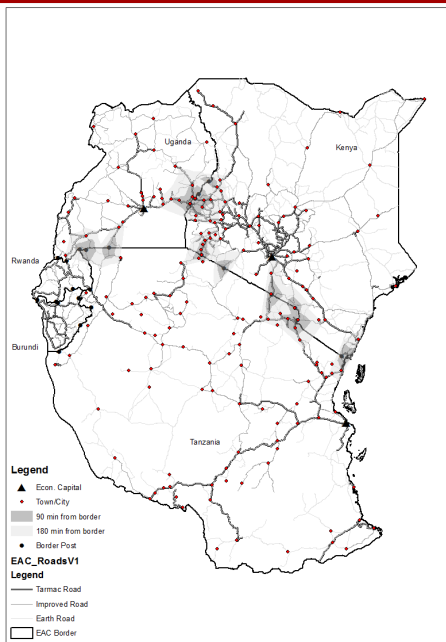
Table 1: Summary Statistics (excluding capitals)

	Non-Border City	Border City
Number of Cities	156	21
1992 Nightlights	924	874
1992 Population	31,299	23,457
1992 Domestic Market Access (DMA)	495,564	506,495
1992 Regional Market Potential (RMA)	326,421	679,672

DMA of city i: Sum of the population of all cities j≠i within same country weighted by the inverse of the travel time between i and j.

RMA of city j: Sum of the population of all cities outside the country weighted by the inverse of the travel time between i and j.

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▶ After EAC: Border cities have higher regional market potential and are thus likely to exhibit a higher response to the opening of borders.

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- ▶ <u>After EAC:</u> Border cities have higher regional market potential and are thus likely to exhibit a higher response to the opening of borders.

What is less clear is whether we should expect these growth effects to be short- or long-lasting.

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$$\Delta logNL_{it} = \alpha_0 + \beta Border_i +$$
$$\gamma(Border_i \times EAC_t) +$$
$$\alpha_1 \Delta HMA_{it} + \alpha_2 HMA_{it} + \alpha_3 C_i + \alpha_4 d_t + \varepsilon_{it} \quad (1)$$

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$$\gamma_1(Border_i \times EAC1_t) +$$
$$\gamma_2(Border_i \times EAC2_t) +$$
$$\gamma_3(Border_i \times EAC3_t) +$$
$$\alpha_1 \Delta HMA_{it} + \alpha_2 HMA_{it} + \alpha_3 C_i + \alpha_4 d_t + \varepsilon_{it} \quad (2)$$

Identification Strategy

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   - with distance to border
   - with regional market potential

Baseline Results

Table 2: Baseline Regression

	(1)	(2)
Border≤90min	-0.009**	-0.009**
	(0.015)	(0.009)
Border≤90min x EAC	0.015**	
	(0.006)	
Border≤90min x EAC 01-04		0.030***
		(0.009)
Border≤90min x EAC 05-09		0.005
		(0.006)
Border≤90min x EAC 10-13		0.008
		(0.007)
Home market access controls	YES	YES
Country, year, country-year FE	YES	YES
Observations	3,780	3,780

Varying Treatment Intensities

Table 3: Varying impact with distance to border

	Border $\leq$45min	45min$<$ Border $\leq$90min	90min$<$ Border $\leq$135min	135min$<$ Border $\leq$180min
EAC 01-04	0.038***	0.025**	0.004	0.004
	(0.011)	(0.011)	(0.008)	(0.007)

Notes: Controls for HMA, country, year, country-year, pre-EAC, EAC 05-13 not shown

Varying Treatment Intensities

Table 4: Varying impact with 1992 regional market potential (RMP)

	Border x 1992 RMP tertile 1	Border x 1992 RMP tertile 2	Border x 1992 RMP tertile 3
EAC 01-04	0.016 (0.010)	0.027** (0.012)	0.048*** (0.009)

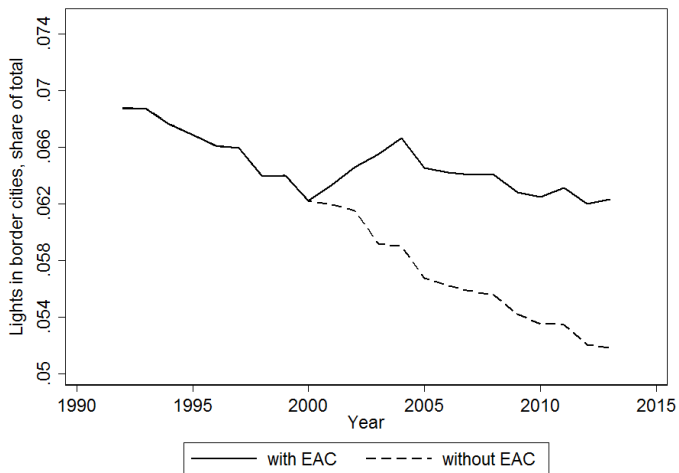Notes: Controls for HMA, country, year, country-year, pre-EAC, EAC 05-13 not shown

Local Effects

Figure 1: Ratio of nightlights in border city to nightlights in non-border city
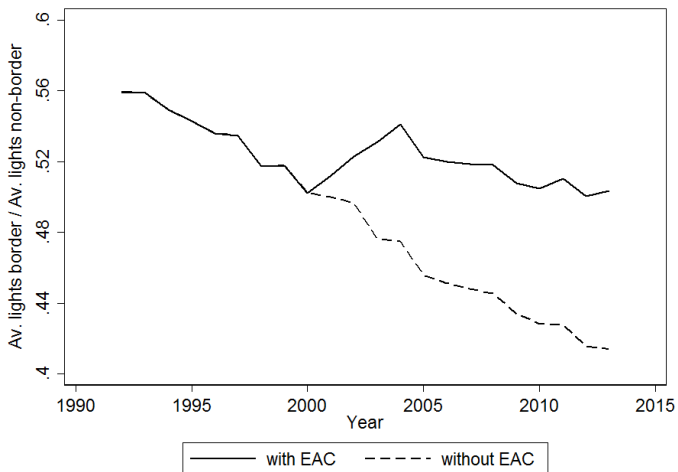
Regional Effects

Figure 2: Share of economic activity in border cities

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Conclusion

The establishment of the EAC had a marked asymmetric impact on city growth:

- ▶ Yet this effect was **temporary** in line with a one off levels effect with some gradual adjustment.
- ▶ **Local effect is large:** By 2013 economic activity in border cities is 21% larger relative to non-border cities than without EAC.
- ▶ **Regional effect is small:** By 2013 the share of economic activity emanating from border cities was only 1% point larger than without EAC.

Appendix

Data Construction `here`

EAC Trade Policy `here`

Intra-EAC Trade `here`

Urban Concentration `here`

Urban System `here`

Robustness Test - Leads and Lags `here`

Robustness Test - Border Falsification `here`

Robustness Test - Levels Specification `here`

Data construction

- ▶ Overlaying yearly nightlight images between 1992-2013 produces about 1700 separate light clusters.

- ▶ Outer envelope of overlaid images defines cluster boundaries.

- ▶ Annual nightlight measure for each cluster equal to sum of nightlights measure for each 0.86km2 grid cells falling within the boundary of cluster.

- ▶ Focus is on 250 on average most intensely lit clusters.

- ▶ 180 cluster can be linked to cities/towns in mainland Kenya, Tanzania, and Uganda. Overview
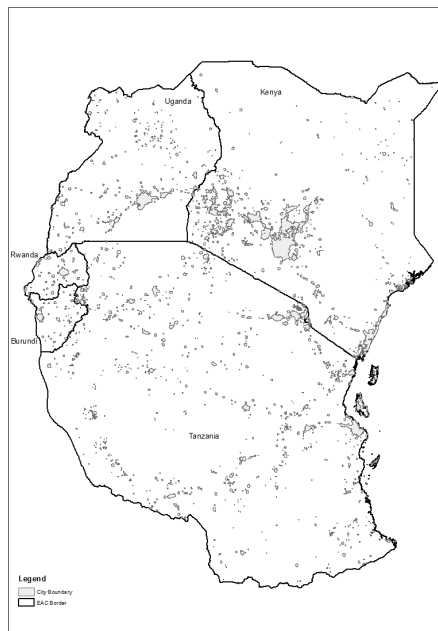
EAC Trade Policy Early Measures

On January 31st, 2001, EAC trade ministers agreed to discontinue the use of discretionary duties:

- In 2001 Kenya eliminated all suspended duties on regional imports and embarked on a comprehensive tariff reform to reduce the top tariff rates from 25% to 40% in preparation of the customs union.
- In 2001 Tanzania reduced the number of product categories liable to suspended duties from 17 to 4 products and lowered the maximum suspended duty rate from 50% to 20% on all imports from within the EAC.
- Tanzania also simplified its tariff structure from four to three bands as well as lowering the lower band taiff in the 2001/02 budget.
- Uganda eliminated a surcharge on alcoholic beverages in March 2001 and removed the special accorded to textiles.

All three countries embarked on trade facilitation efforts leading to the adoption of a common customs management law in 2004. Overview
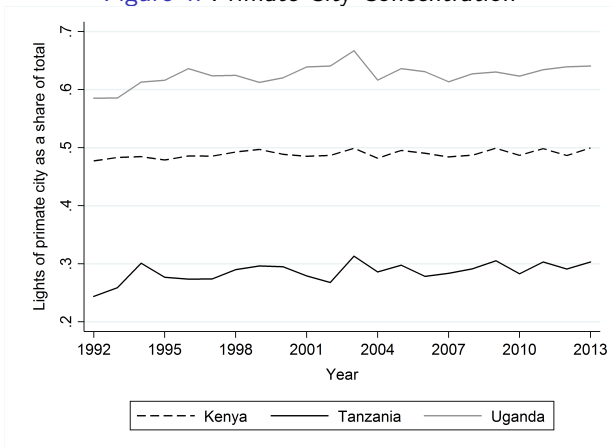
Intra-EAC Exports
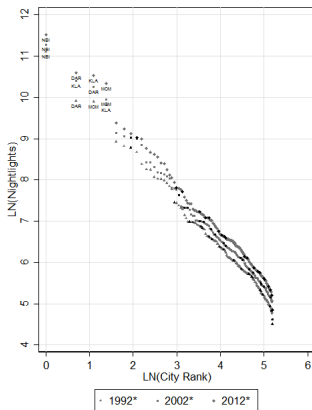

Figure 3: EAC Intra-EAC Exports
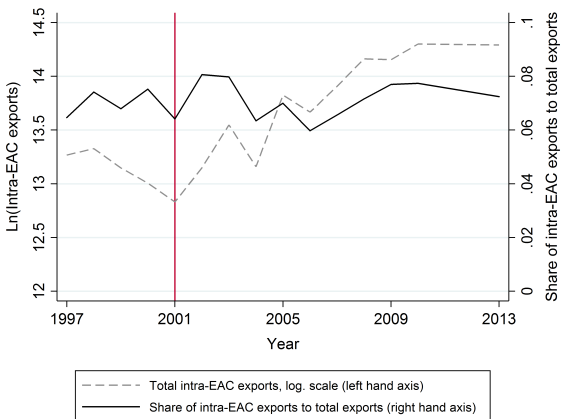
Urban Concentration

Figure 4: Primate City Concentration

Urban System Effects

Figure 5: Zipf's Law

· 1992*   · 2002*   · 2012*

*Cities within 90 min. of internal EAC border marked in black

Overview

Robustness Test 1

Table 5: Leads and Lags

Border≤90min	-0.040
	(0.019)
Lead(t-3)	-0.027
	(0.028)
Lead(t-2)	0.039
	(0.030)
Lag (t)	0.071***
	(0.027)
Lag (t+1)	0.072***
	(0.022)
Lag (t+2)	0.041*
	(0.023)
Home market access controls	YES
Country, year FE	YES
Observations	3,780

Robustness Test 2

Table 6: Border Falsification

Border≤90min	0.012
	(0.010)
Border≤90min × EAC 01-04	-0.009
	(0.016)
Border≤90min × EAC 05-09	-0.020
	(0.015)
Border≤90min × EAC 10-13	-0.056***
	(0.018)
Home market access controls	YES
Country, year, country-year FE	YES
Observations	3,780

Overview

Robustness Test 3

Table 7: Levels Specification

Border≤90min	0.169
	(0.221)
Border≤90min x trend	-0.045***
	(0.016)
Border≤90min x EAC 01-04	0.107***
	(0.038)
Border≤90min x EAC 05-09	0.107*
	(0.059)
Border≤90min x EAC 10-13	0.080
	(0.076)
Home market access controls	YES
Country, year, country-year FE	YES
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