Intra-Regional Trade Integration and EU-ACP Bilateral Trade

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Abstract

This paper examines whether intra-regional trade integration among African, Caribbean, and Pacific (ACP) countries acts as a stumbling block or building block for their bilateral trade with the European Union. Using a panel of 78 ACP countries across seven Regional Economic Communities (RECs) paired with all 27 EU member states over 1995–2021, we estimate PPML gravity models with exporter-year, ACP-country, and year fixed effects. Higher intra-REC trade shares are associated with significantly lower EU-ACP bilateral trade (coefficient -0.564, s.e. 0.322, $p < 0.10$), consistent with a stumbling-block effect. At the sample mean intra-REC trade share of 11.6%, bilateral trade is approximately 6.3% lower; at the 90th percentile (25.5%), the reduction reaches 13.4%. The stumbling-block pattern is robust across all seven RECs and is driven entirely by EU exports to ACP markets rather than ACP exports to the EU. Economic Partnership Agreements (EPAs) significantly moderate the stumbling-block effect ($+1.048$, $p < 0.05$), suggesting that deeper EU-ACP trade agreements can partially offset the trade-diverting effects of regional integration.

Paper Outline

1. **Introduction**
    - Research question: does intra-ACP regional integration help or hinder EU-ACP trade?
    - Stumbling block vs. building block debate à la Bhagwati (1993)
    - Preview of main findings and contribution
    - Relevance for EPA design and the post-Cotonou framework
2. **Institutional Background**
    - Cotonou Agreement (2000): shift from non-reciprocal Lomé preferences to EPAs
    - ACP groupings: ECOWAS, SADC, EAC, COMESA, Central Africa, CARIFORUM, PIF
    - EPA implementation timeline: CARIFORUM (2008), Pacific Gateway (2009), ESA-4 (2012), Cameroon/Fiji (2014), SADC (2016), Mozambique (2018), Comoros (2019)
    - EAC EPA: initialled but never provisionally applied within the sample period
3. **Data and Descriptive Statistics**
    - Trade flows: BACI HS92 V202601 (CEPII), 1995–2021
    - Gravity variables: CEPII Gravity Dataset V202211 (distance, language, colonial tie)
    - GDP/population: World Bank WDI; Cook Islands and Niue patched manually
    - Panel: $78 \times 27 \times 27 = 56{,}862$ potential dyad-years; PPML sample 45,647 after conditioning on data availability
    - Key variable: intra-REC trade share (IT share) = intra-bloc trade / total trade, time-varying at the country level
    - SACU imputation: five SACU members assigned non-SACU SADC annual mean for years with missing or zero BACI intra-bloc flows
    - Summary statistics by REC: Table 1
4. **Empirical Strategy**
    - PPML gravity model à la Santos Silva and Tenreyro (2006)
    - Fixed effects: exporter $\times$ year, ACP-country, year
    - Note on FE structure: importer $\times$ year FEs would absorb IT share and EPA (both vary only at the ACP-country $\times$ year level), so these are split into ACP-country FEs and year FEs to preserve identification while controlling for common time shocks
    - Identification: within-country variation in IT share over time, across 27 EU partner-year observations per country-year

- Secondary specification: IT intensity (IT share normalised by the bloc's world trade share)
- Interaction specification: EPA × IT share to test EPA moderation

5. **Main Results**

- Column (1): Baseline PPML—distance -1.729^{***}, language $+1.107^{***}$
- Column (2): IT share -0.564^{*} (s.e. 0.322)—stumbling-block confirmed
- Column (3): EPA × IT share $+1.048^{**}$; EPA attenuates stumbling block; sign reversal requires IT share > 0.60 (outside sample support)
- Column (4): IT intensity -0.006^{***}; result robust to integration measure
- Column (5): OLS (zeros dropped) -1.478^{***}; consistent in sign
- Marginal effects at mean (11.6%): -6.3% bilateral trade; at 90th percentile (25.5%): -13.4%
- Figure 1: IT share distribution and time series by REC
- Figure 2: IT share vs. EU-ACP trade scatter by REC (negative slopes throughout)

6. **Mechanisms and Heterogeneity**

- Trade direction: stumbling block driven by EU exports to ACP (-1.027^{***}), not ACP exports to EU (-0.059, insignificant)—consistent with import substitution displacing European goods
- REC subsamples: all seven RECs negative; five of six interpretable estimates significant; range -0.75 (Central Africa, n.s.) to -3.02^{***} (EAC)
- SADC EPA coefficient positive ($+0.408^{***}$): staggered entry generates genuine within-REC identification
- PIF instability: positive distance coefficient (+13.87) flags poorly conditioned PPML; excluded from coefficient stability plots
- Regional subsamples: Africa -0.357 (n.s.); Caribbean -2.327^{**}; heterogeneity across African blocs attenuates the pooled Africa estimate
- Figure 2: REC forest plot (coefficients with 95% CI, PIF excluded)
- Figure 2: Marginal effects curve with REC mean IT shares indicated

7. **Robustness Checks**

- NB-PML: coefficient -0.458 (s.e. 0.360), $\approx 81\%$ of PPML baseline—confirms overdispersion is not biasing PPML standard errors
- From 1998: -1.336^{***}—early sparse BACI years attenuate the baseline

- Excl. South Africa: -0.460 (n.s.); excl. Nigeria: -0.344 (n.s.) —dominant traders carry identification weight in the aggregate
- Excl. SACU: -1.590^{***}—imputation attenuates, does not generate, the result
- Excl. Somalia/Eritrea: -0.569^{*}—near-zero trade, no material effect
- Excl. CARIFORUM: -0.420 (n.s.); excl. PIF: -0.506 (n.s.)—reduced cross-bloc variation expected to widen standard errors
- OLS $\log(1+y)$ sign reversal: a well-known artefact of the transformation near zero; not interpretable

8. **Conclusion**

- Strong and consistent stumbling-block effect: IT share range -0.36 to -1.59 across sample cuts; -0.75 to -3.02 across RECs
- Effect driven by the EU-to-ACP direction: consistent with import substitution displacing European goods rather than ACP export reorientation
- EPAs partially offset the stumbling block: synergy between EPAs and regional integration requires simultaneous advancement, not sequential
- Policy: EPA conditionality design should account for the trade-diverting phase of integration; integration roadmaps should be coordinated with EPA schedules
- Limitations: causal identification relies on within-country time variation; no exogenous shocks to IT share exploited; future work could use specific tariff liberalisation episodes or corridor-infrastructure investments as instruments

Summary Statistics

Table 1: Summary Statistics by Regional Economic Community

REC	# Countries	Mean IT Share (%)	SD IT Share	Mean EU-ACP Trade ($000s)	EPA Active
SADC	8	29.9	22.6	247	Yes (2016–)
EAC	5	14.6	7.1	45	No
ECOWAS	16	13.9	9.2	136	Yes (2014–)
CARIFORUM	15	14.5	8.8	26	Yes (2008–)
COMESA	12	4.3	3.6	36	Partial
Central Africa	7	5.0	4.2	73	Yes (2014–)
PIF	15	4.0	6.3	7	Partial
Full sample	78	11.6	—	—	—

Notes: Panel: 78 ACP countries × EU-27 × 1995–2021. IT Share = intra-bloc exports plus imports as a share of total country trade. Mean Trade is mean bilateral EU-ACP trade per dyad-year in thousands of USD. EPA Active indicates the year from which an EPA is in force for at least one member. EAC EPA coverage is zero by construction (EU-EAC agreement never provisionally applied). SADC IT Share is elevated partly due to SACU imputation.

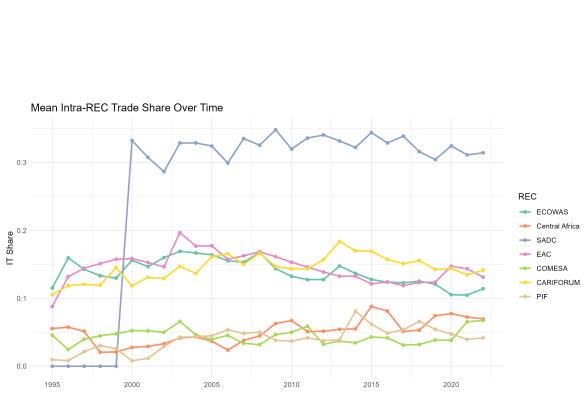
Main Results Table

Table 2: Intra-REC Trade Integration and EU-ACP Bilateral Trade

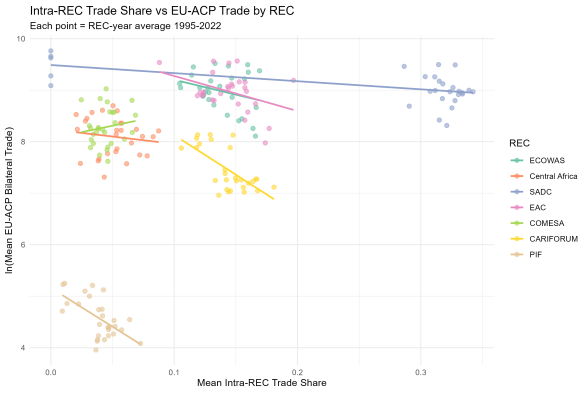
	Baseline PPML (1)	IT Share PPML (2)	IT × EPA PPML (3)	IT Intensity PPML (4)	IT Share OLS (5)
Dyadic controls					
ln(Distance)	−1.729***	−1.786***	−1.786***	−1.767***	−1.173***
	(0.609)	(0.644)	(0.644)	(0.642)	(0.239)
Common Language	1.107***	1.118***	1.118***	1.115***	0.674***
	(0.218)	(0.223)	(0.223)	(0.222)	(0.125)
Colonial Tie	0.201	0.188	0.188	0.180	1.255***
	(0.231)	(0.235)	(0.235)	(0.235)	(0.203)
ACP policy variables					
EPA (in force)	−0.018	−0.019	−0.139*	−0.044	−0.174***
	(0.049)	(0.049)	(0.075)	(0.045)	(0.046)
Intra-REC Trade Share		−0.564*	−0.625*		−1.478***
		(0.322)	(0.320)		(0.236)
EPA × IT Share			1.048**		
			(0.477)		
IT Intensity				−0.006***	
				(0.002)	
Fixed effects					
Exporter × Year	Yes	Yes	Yes	Yes	Yes
ACP Country	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Observations	46,160	45,647	45,647	45,317	42,305
R^2					0.755

Notes: Clustered (pair-level) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Panel: 78 ACP countries × EU-27 × 1995–2021. Columns (1)–(4): PPML. Column (5): OLS on log(trade) with zero-trade pairs excluded. EAC EPA = 0 throughout (EU-EAC EPA never provisionally applied). At the mean IT share (11.6%), column (2) implies a 6.3% reduction in bilateral trade; at the 90th percentile (25.5%), the effect is −13.4%. The EPA interaction in column (3) attenuates this effect for EPA-active country-years; a sign reversal requires IT share > 0.60, outside the sample support.

Figures

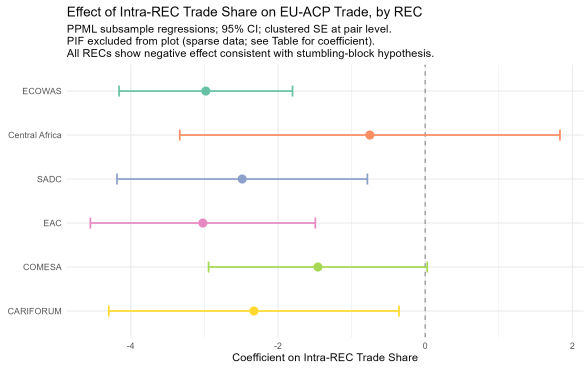


(a) IT Share Trends by REC

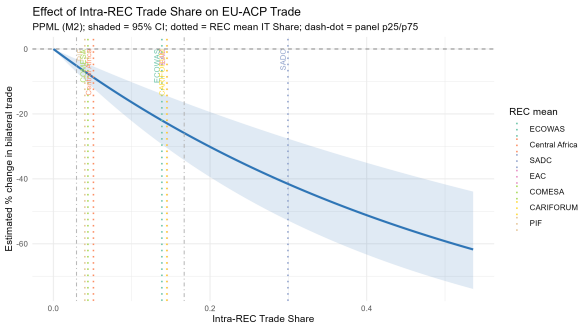


(b) IT Share vs. EU-ACP Trade by REC

Figure 1: Regional Integration and EU-ACP Trade: Descriptive Evidence. Panel (a) shows mean intra-REC trade shares over time by REC. Panel (b) plots REC-year average IT shares against mean log EU-ACP bilateral trade; fitted lines from OLS within each panel.



(a) REC-Level Coefficient Estimates



(b) Marginal Effects Curve

Figure 2: Effect of Intra-REC Trade Share on EU-ACP Bilateral Trade. Panel (a): PPML within-REC IT share coefficients with 95% CI (PIF excluded due to model instability). Panel (b): estimated percentage change in bilateral trade as a function of IT share, from PPML column (2); shaded area is 95% CI; vertical dotted lines mark REC mean IT shares; dot-dash lines mark the IQR.

Robustness Check Summary

Table 3: Robustness Checks: Intra-REC Trade Share Coefficient

Specification	IT Share Coefficient	Standard Error
Baseline PPML	-0.564^{*}	(0.322)
NB-PML	-0.458	(0.360)
Sample from 1998	-1.336^{***}	(0.326)
Exclude South Africa	-0.460	(0.357)
Exclude Nigeria	-0.344	(0.317)
Exclude SACU members	-1.590^{***}	(0.403)
Exclude Somalia & Eritrea	-0.569^{*}	(0.322)
Exclude CARIFORUM	-0.420	(0.340)
Exclude PIF	-0.506	(0.318)

Notes: All specifications follow column (2) of Table 2 with exporter × year, ACP country, and year fixed effects. Clustered (pair-level) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.