

Landlocked or Policy Locked?

**– How Services Trade Protection
Deepens Economic Isolation**

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Motivation

- Conventional view: landlocked countries are victims of geography
 - Current fashion: investment under “aid-for-trade” programmes in customs, ports, airports and other infrastructure (Cali and Te Velde, 2010)
 - But protectionism in services is often ‘under the radar’ because measures are behind-the-border.
- ⇒ Some landlocked countries (eg. Laos, Nepal, Zambia) choose policies that limit competition in “linkage” sectors.
- Road transport in Africa: Raballand and Macchi (2009); Arvis, Raballand and Marteau (2010); Raballand, Kunaka and Giersing (2008); Lall, Wang and Munthali (2009).
 - Portugal-Perez and Wilson (2008); Francois and Manchin (2007).

Research Questions

- Do services trade policies in landlocked countries differ from policies in other countries?
- Why do observed policies choices arise?
- Can concentrated markets and poor access to services be attributed to restrictive policies?

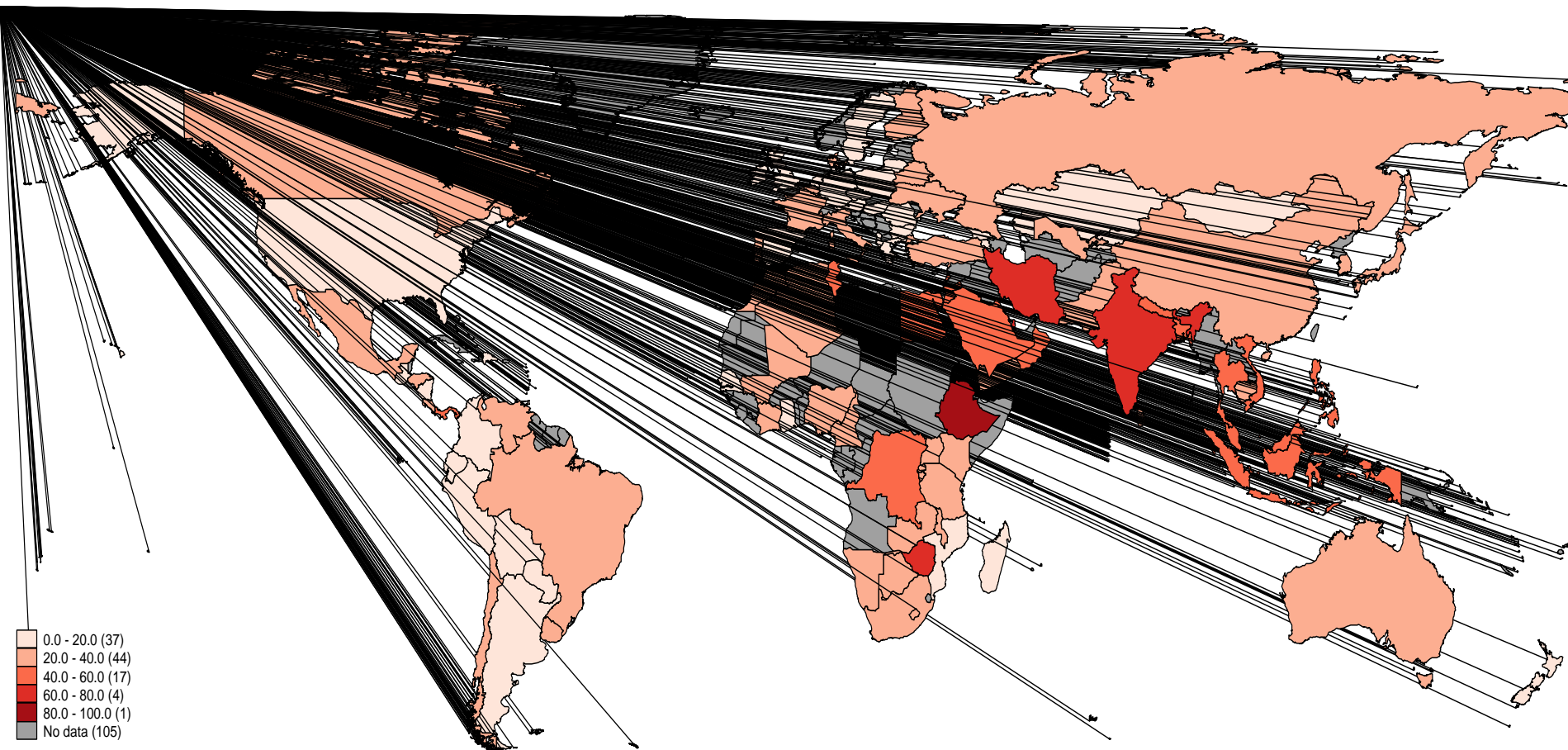
Findings:

- ⇒ Landlocked countries have on average more restrictive policies in telecom and air transport
- ⇒ Higher protection may be attributable to weak institutions, possibly exacerbated by geography
- ⇒ Restrictive policies are associated with more concentrated markets and poor access to services

Agenda

1. **Services Trade Policies**
2. Political Economy of Trade Openness
 - a. Understanding policy choices
 - b. Addressing endogeneity of policies
3. Empirical Results
 - a. Telecommunications
 - b. Air Transportation
4. Conclusions

New Services Trade Restrictions Database



Data: services policies

- 103 countries (81 coastal, 22 landlocked)
- Services sectors:
 - Fixed and mobile telecom (commercial presence)
 - International air transport (cross-border trade, commercial presence)
 - [financial, insurance, maritime, road, retail, professional services]
- Multiple policy dimensions but focus on discriminatory policy measures
 - Barriers to entry and ownership
 - Licensing
 - Operations and regulatory environment
 - Provisions of Bilateral Air Service Agreements (BASAs)
- Policy information subjected to government review

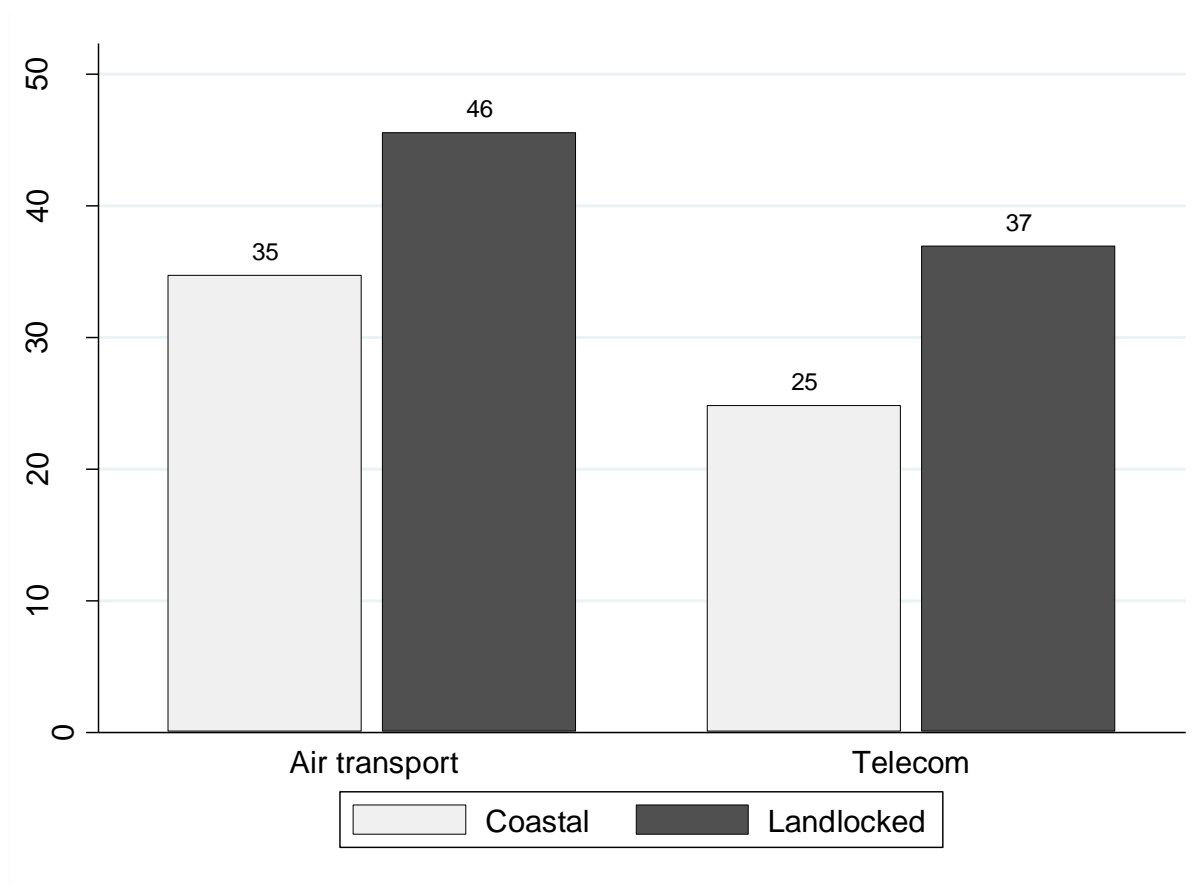
Quantitative analysis

Quantitative analysis is conducted...

- Directly using *individual policy variables*
(quantitative / qualitative variables)
- Constructing an *aggregate index* (STRI) of degree of openness
 - scoring rules and mapping into 5-point scale: [0, .25, .50, .75, 1]
 - Air transport mode 1: WTO's ALI
 - Use as set of discrete indicators
 - Use as (quasi-)continuous variable to illustrate policy differences and for IV estimation

The Policy Wedge

Landlocked countries have more restrictive policies than coastal countries in air transport and telecommunications



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Political economy

Simple oligopoly model, assume government controls n

- Suzumura and Kiyono (1987, RES); Zhao (2009, JEcon)
- Characterize $n^* \equiv \arg \max_{n>0} W(n, q^*)$

$$\begin{aligned} W(n, q(n)) &= CS(n) + \gamma \cdot \Sigma \pi(n) \\ &= \int_0^{nq(n)} P(z) dz - P(nq(n))nq(n) \\ &\quad + \gamma [P(nq(n))nq(n) - nC(q(n))] \end{aligned}$$

$$P(n^* q^*(n^*)) = \frac{\gamma \varepsilon}{\gamma(\varepsilon + 1) - 1} \cdot \left[\frac{C(q^*)}{q^*} - \frac{\alpha}{\beta} (AC'(q^*)Q^*) \right]$$

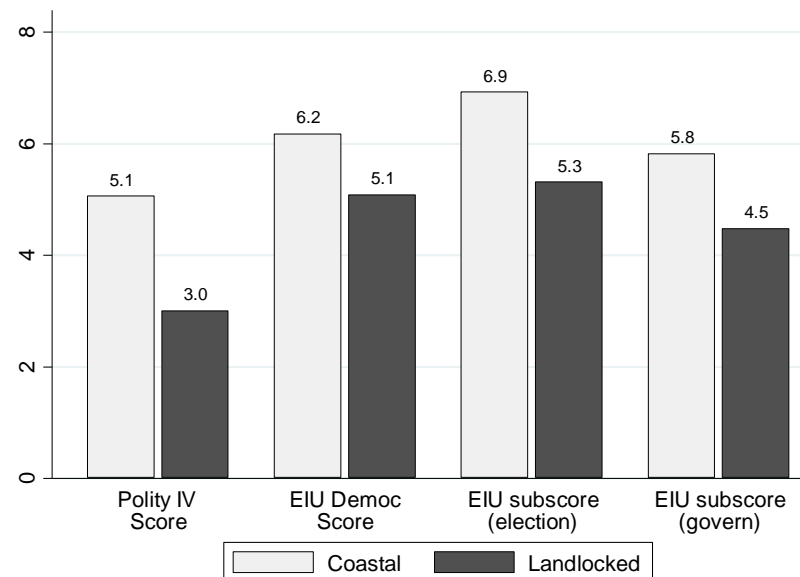
Political economy

Government's choice of n as depending on γ (and ε):

$$\frac{dn^*}{d\gamma} < 0 \quad \left(\frac{dn^*}{d\varepsilon} < 0 \right) \quad \frac{d(n^*)^2}{d\gamma d\varepsilon} < 0$$

⇒ “rent capture” distortion that depends on welfare mindedness and demand elasticity (on top of conventional “oligopoly distortion”)

- IV strategy: political institutions affect policy choices through accountability for public welfare
→ Polity IV democracy index



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Estimation

- Telecom market structure
 - Herfindahl index (HHI) of market concentration
- Telecom accessibility
 - Number of mainlines/100; # of cellular subscriptions/100
- Air transportation
 - Number of flights; seat capacity

Estimate reduced form:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \beta_3 STRI_i + \varepsilon_i$$

IV first-stage estimation:

$$STRI_i = \gamma_0 + \gamma_1 X_i + \gamma_2 Z_i + \gamma_3 PolInstit_i + \eta_i$$

Results: telecom market structure

	(1)	(2)	(3)	(4)	(5)	(6)
		Fixed line			Mobile	
	OLS	OLS	IV	OLS	OLS	IV
Log GDP (2007)	-743.4872*** (144.0017)	-798.2878*** (133.2533)	-809.0922*** (144.2164)	-355.4413*** (111.9333)	-430.3521*** (116.0360)	-434.3159*** (113.7538)
Log GDP p.c. (2007)	337.5251 (290.1874)	408.2233 (261.1358)	594.7895* (309.7016)	407.5149** (167.7087)	583.2758*** (182.1849)	658.5521*** (184.0177)
Urban population (% of total)	-4.6006 (13.5589)	-4.2191 (14.1653)	-10.0375 (15.8076)	-1.6786 (8.0325)	-6.7183 (8.6059)	-7.4386 (9.6040)
Population Density (people/sqkm)	-0.4287 (0.8240)	-0.2019 (0.6933)	-0.7863 (0.9776)	-0.1148 (0.4587)	-0.3848 (0.5504)	-0.5329 (0.6303)
LLC Dummy	-1209.7363*** (455.2252)	-728.4651 (465.9156)	-1042.8145** (495.3117)	285.2628 (322.4555)	-10.0693 (377.2240)	-101.0782 (389.1188)
Africa Dummy	851.3010 (553.7653)	909.5038* (526.0141)	741.3573 (572.6307)	594.0262 (397.5506)	632.0786 (438.5653)	434.1480 (504.4995)
License Limit	1636.2611*** (454.2623)			843.8367* (449.6106)		
Public Lic Criteria	-948.1628* (485.0377)			-2607.8056*** (782.2153)		
Foreign Ownership Limit	-15.1185* (7.6787)			-16.5561** (6.3750)		
Indep Regulator	552.6018 (477.1015)			-122.2010 (331.6972)		
STRI Tel Fixed M3		1338.7055** (564.5126)	3787.6651*** (1.4e+03)			
STRI Tel Mobile M3					2830.4262*** (798.9577)	4434.4475*** (1.6e+03)
Constant	10423.0639*** (1.9e+03)	8018.9008*** (1.8e+03)	6199.9453*** (2.2e+03)	6494.5364*** (1.5e+03)	1099.5716 (1.5e+03)	165.6405 (1.7e+03)
Obs	101	103	103	100	103	103

Results: telecom access

	(1)	(2)	(3)	(1)	(2)	(3)
	F-OLS	F-OLS	F-IV	M-OLS	M-OLS	M-IV
Log GDP (2007)	2.4746*** (0.6573)	2.3557*** (0.6778)	2.4097*** (0.6719)	-2.1839 (1.5264)	-2.2545 (1.4774)	-2.2555 (1.4775)
Log GDP p.c. (2007)	9.6955*** (1.7905)	10.0248*** (1.8087)	9.0947*** (1.7524)	23.0129*** (2.9013)	24.1328*** (2.6189)	24.1509*** (2.7118)
Urban population (% of total)	0.0085 (0.0647)	-0.0024 (0.0714)	0.0267 (0.0799)	0.1778 (0.1331)	0.1558 (0.1372)	0.1556 (0.1379)
Population Density (people/sqkm)	0.0032 (0.0035)	0.0052 (0.0038)	0.0082** (0.0038)	0.0072 (0.0121)	0.0072 (0.0120)	0.0071 (0.0120)
Africa Dummy	3.4644 (2.7466)	2.5261 (2.8603)	3.3690 (3.0360)	0.0528 (4.9500)	-0.4793 (4.6949)	-0.5268 (5.0101)
LLC Dummy	2.3882 (2.4563)	4.6915* (2.3725)	6.3080** (2.9229)	-2.0470 (3.9509)	-0.4325 (4.1121)	-0.4543 (4.2005)
Log HHI residual	0.0002 (0.0004)	-0.0001 (0.0005)	-0.0007 (0.0006)	-0.0041*** (0.0015)	-0.0036** (0.0015)	-0.0036** (0.0016)
STRI (F) = 0.25	-5.5564** (2.4903)			-12.9708** (5.6347)		
STRI (F) = 0.50	-1.1689 (2.5797)			-16.2788*** (5.5890)		
STRI (F) = 0.75	2.5276 (8.2894)			-28.9742*** (10.4050)		
STRI (F) = 1.00	-5.7834 (4.5554)			-17.3247** (8.3479)		
STRI Fixed Line		-4.0226 (4.0397)	-16.4599** (7.8692)		-27.9711*** (7.8014)	-27.5863 (18.7148)
Constant	-77.6332*** (13.7494)	-80.8423*** (13.2233)	-71.7368*** (13.0698)	-124.8579*** (22.2814)	-135.9442*** (19.7363)	-136.1684*** (21.7501)

Results: air transport

	(1)	(2)	(3)
	OLS-STRI	OLS-STRI	IV-STRI
Log GDP (2007)	0.5804*** (0.0381)	0.5903*** (0.0393)	0.6033*** (0.0460)
Log GDP p.c. (2007)	0.2824** (0.1255)	0.2757** (0.1224)	0.2510** (0.1233)
Urban population (% of total)	-0.0056 (0.0049)	-0.0056 (0.0049)	-0.0063 (0.0053)
Population Density (people/sqkm)	-0.0000 (0.0003)	-0.0001 (0.0003)	-0.0001 (0.0002)
Percent Tourists/Population	0.3151** (0.1359)	0.3282** (0.1325)	0.3313** (0.1321)
LLC Dummy	-0.1526 (0.1602)	-0.1657 (0.1585)	-0.1075 (0.1655)
Africa Dummy	0.1004 (0.1666)	0.0885 (0.1673)	0.1161 (0.1702)
airports paved runways	0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)
STRI intermed	-0.1486 (0.1319)		
STRI high	-0.4234*** (0.1317)		
STRI AirPass MO		-0.7003** (0.2738)	-1.4157* (0.8168)
Constant	5.8828*** (0.9141)	5.9809*** (0.8780)	6.4229*** (0.9164)

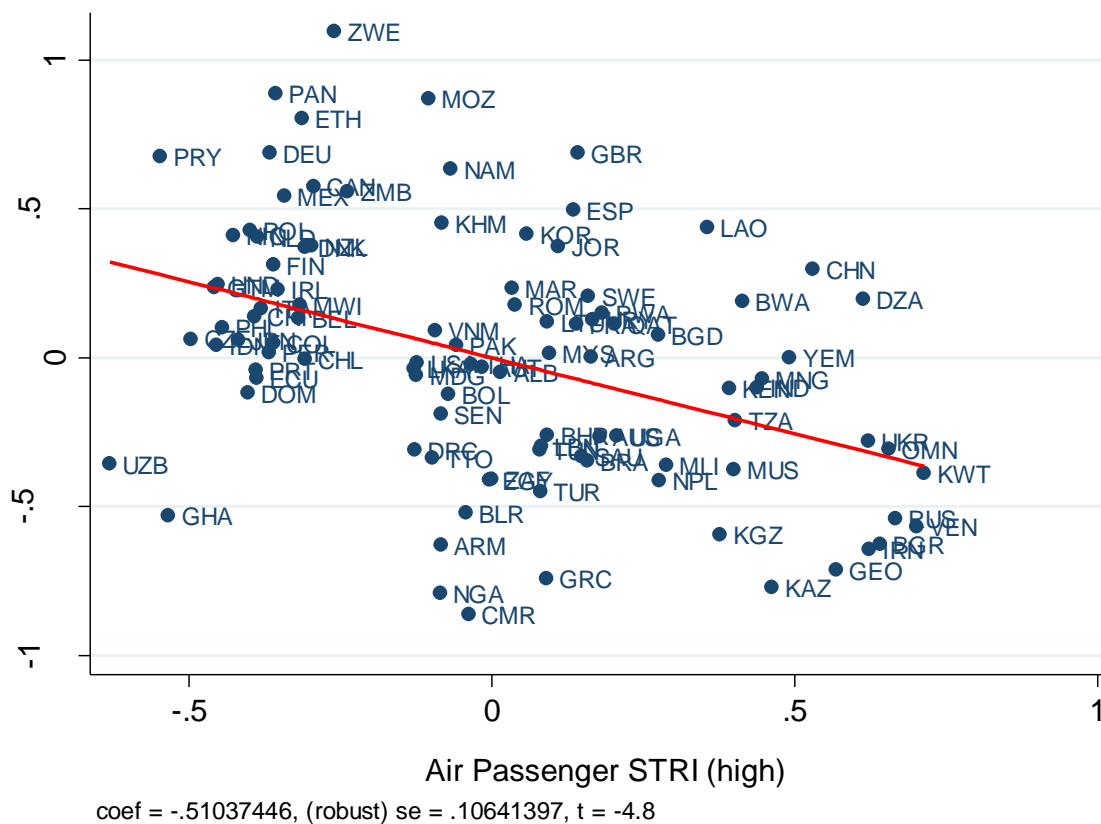
Results: air transport

Intensive margin vs extensive margin:

	(1)	(2)	(3)
	OLS		
	F-STRI	F/A-STRI	A-STRI
Log GDP (2007)	0.5804*** (0.0381)	0.2000*** (0.0328)	0.3804*** (0.0346)
Log GDP p.c. (2007)	0.2824** (0.1255)	0.2427*** (0.0723)	0.0397 (0.0866)
Urban population (% of total)	-0.0056 (0.0049)	-0.0039 (0.0030)	-0.0017 (0.0033)
Population Density (people/sqkm)	-0.0000 (0.0003)	-0.0001 (0.0002)	0.0000 (0.0003)
Percent Tourists/Population	0.3151** (0.1359)	0.1126* (0.0570)	0.2026* (0.1042)
LLC Dummy	-0.1526 (0.1602)	0.0443 (0.1269)	-0.1967 (0.1590)
Africa Dummy	0.1004 (0.1666)	0.2669* (0.1468)	-0.1667 (0.1771)
airports paved runways	0.0000 (0.0001)	0.0001** (0.0000)	-0.0001 (0.0000)
STRI intermed	-0.1486 (0.1319)	-0.2907*** (0.0961)	0.1420 (0.1127)
STRI high	-0.4234*** (0.1317)	-0.4941*** (0.1106)	0.0707 (0.1346)

Results: air transport

Number of flights per airline and restrictive air transport policies:



Conclusions

- Suggestive evidence that more restrictive policies lead to higher market concentration and more limited access to services.
 - Telecom STRI 50 → 25: gain in cellular subs by 7 percentage points, mainlines by 4 percentage points
 - Air transport STRI 50 → 25: increase in flights by 20 percent
- Addressing policy restrictions in services sectors could be as important as alleviating infrastructure bottlenecks, and vital to maximizing returns to aid for trade.
- But countries cannot unilaterally reform international transport; GATS excludes air traffic rights. More credible regional and multilateral initiatives could help.

Thank you for your attention!